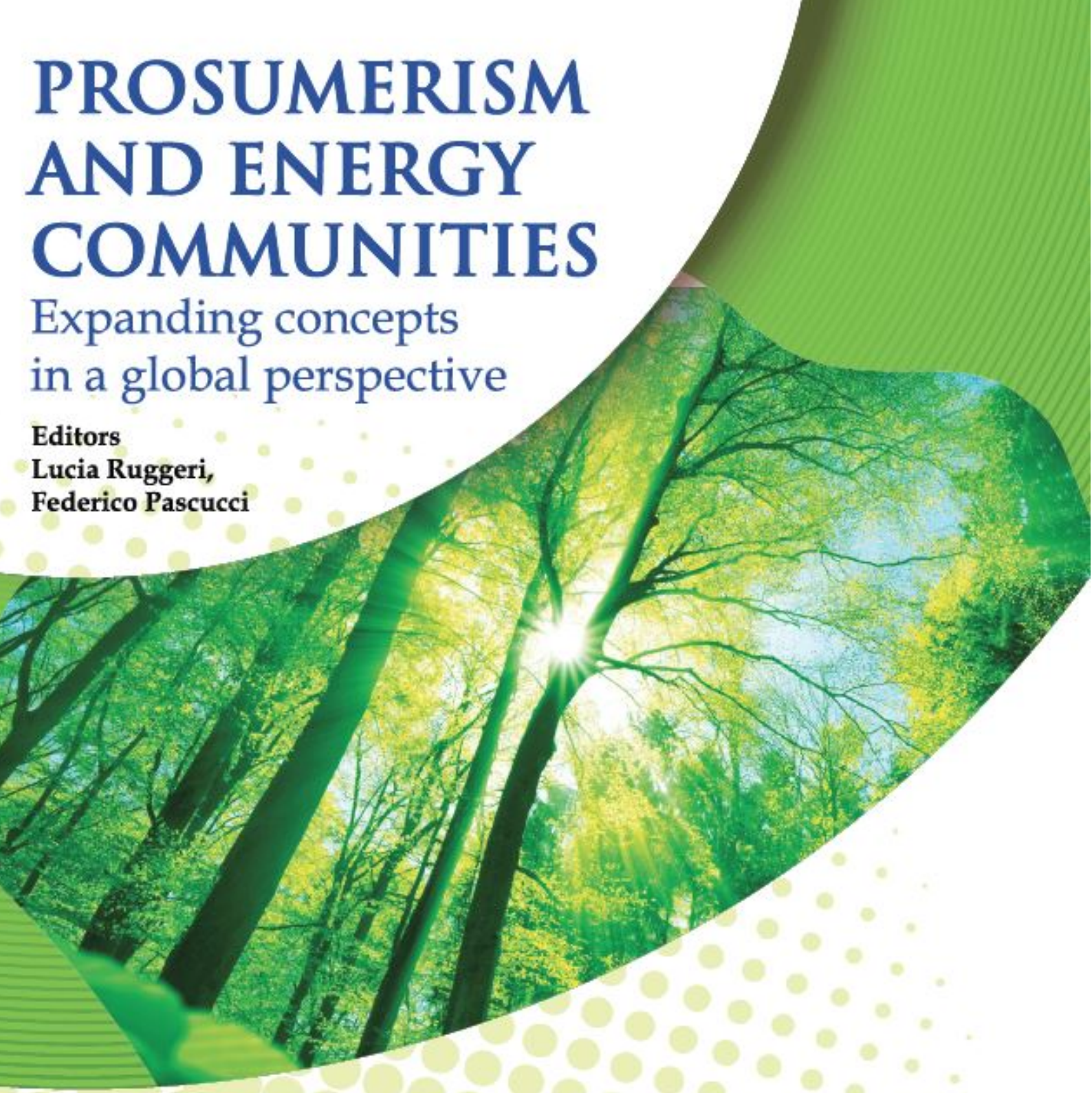
PROSUMERISM AND ENERGY COMMUNITIES

Expanding concepts in a global perspective

Editors
Lucia Ruggeri,
Federico Pascucci



enabling consumer
to become prosumer
in the energy transition era

2022
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PROSUMERISM AND ENERGY COMMUNITIES EXPANDING CONCEPTS IN A GLOBAL PERSPECTIVE

Eds

Lucia Ruggeri and Federico Pascucci

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Scientific International Committee:
Dr. George Siarov, Scientific Council, SWS Scholarly Society, Vienna, Austria.
Prof. Daniele Mantucci, Civil Law Full Professor, Università Politecnica delle Marche, Italy
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Contributors

Ivan Allegranti: Ph.D. Candidate, Research Fellow, University of Camerino, Italy.

Matteo Altobelli: Ph.D. Candidate, University of Camerino, Italy.

Cristian Arrieta Morales: District Attorney of Soledad, Public Prosecutor Office of Colombia, Atlantic District, Colombia.

Ciro Ascione: Ph.D. Candidate, University of Camerino, Italy.

Lidia-Lenuta Balan: Project Manager, Geological Institute of Romania, Bucarest, Romania.

Ricardo Andrés Cano Andrade: Master in Law Student, Cartagena University, Colombia.

Sharmin Nisar Chougule: Ph.D. Candidate, University of Camerino, Italy.

Luciano Cruz Morandé: Associate Professor of Private Law, Pontifical Catholic University of Chile, Santiago, Chile.

Rosario Culmone: Researcher in Computer Science, School of Science and Technologies, University of Camerino, Italy.

Alba Esther De Bianchetti: Professor of Agricultural and Environmental Law, Faculty of Law and Social and Political Sciences, National University of the Northeast, Argentina.

Maria Cristina De Cicco: Associate Professor of Civil Law, University of Camerino, Italy.

José Horacio De Jesús Grando: Professor of Administrative Law, Faculty of Law and Social and Political Sciences, National University of the Northeast, Argentina.

Esmeralda Del Carmen Gutiérrez Barranco: General Director of Science and Investigation Institute in Law and Jurisprudence, Mexico.

Mariastella Diociaiuti: Attorney, Unione Nazionale Consumatori, Delegation of Rieti and Terni, Italy.

Manuel Ignacio Feliu Rey: Professor of Civil Law, University Carlos III de Madrid, Director of DERINRE (UC3M) Researching Group, UC3M, Spain.

Ari Rogério Ferra Júnior: Ph.D. Candidate, University of Camerino, Italy.

Roberto Garetto: Ph.D., Research Fellow, University of Camerino, Italy.

Manuela Giobbi: Ph.D., Researcher, University of Camerino, Italy.

Kozue Kashiwazaki: Assistant Professor, Faculty of Global and Regional Studies, Toyo University, Tokyo, Japan.

Vassiliki Koumpli: Senior Legal Expert, Hellenic Institute of International and Foreign Law, Attorney at Law at Areios Pagos, Athens Bar Association Member, Greece.

Yaru Li: Ph.D. Candidate, University of Camerino, Italy.

Martina Lorenzotti: Ph.D. Candidate, University of Camerino, Italy.

Maria Francesca Lucente: Ph.D. Candidate, University of Camerino, Italy

Jané Manso Lache: Ph.D. Candidate, University of Camerino, Italy.

Maria Paola Mantovani: Associate Professor of Comparative Private law, University of Camerino, Italy.

Silvia Montecchiari: Ph.D. Candidate, University of Camerino, Italy.

Leonardo Mostarda: Associate Professor, Computer Science Division, University of Camerino, Italy**.**

Elena Napolitano: Ph.D. Candidate, University of Camerino, Italy.

Meruyert Narenova: Professor of Economics Department, University of International Business, Almaty, Kazakhstan.

Arthur Nash: Associate Professor of Energy, Institute of Agriculture, Natural Resources and Extension, University of Alaska Fairbanks, Alaska, USA.

Salvatore Antonello Parente: Researcher of Tax Law, Department of Economy, Management and Business Law, University of Bari 'Aldo Moro', Italy.

Federico Pascucci: Ph.D., Research Fellow in Private Law, University 'Politecnica delle Marche', Ancona, Italy.

Riccardo Perona: Tenured Professor, Public Law Area, Faculty of Law and Political Sciences, University of Cartagena, Colombia.

Luis Edoardo Quintero: Assistant Professor, Carey School of Business, Johns Hopkins University, Maryland, USA.

Laura Rimsaite: Research Fellow, Law Institute of the Lithuanian Centre for Social Sciences, Legal Counsel at Lietuvos Energija, UAB, Lithuania.

Lucia Ruggeri: Full Professor of Private Law, University of Camerino, Italy.

Maria Dolores Sánchez Galera: Research Associate and Teaching Fellow in Law and Sustainability, "Pascual Madoz" - Institute of Land, Urbanism and Environmental Law, Universidad Carlos III, Spain.

Hiroyoshi Sano: Professor, Faculty of International Tourism Management, Toyo University, Tokyo, Japan.

Camilla Sbicca: Ph.D. Candidate, University of Camerino, Italy.

Norihisa Shima: Associate Professor, Department of Regional Development Studies, Toyo University, Tokyo, Japan.

Francesca Letizia Tasselli: Specialist in Civil Law, Italy.

Aura Esther Vilalta Nicuesa: Professor of Civil Law, Oberta University of Catalonia, Spain.

Karina Zabrodina: Ph.D. Candidate, University of Camerino, Italy.

Table of contents

Foreword
(*Lucia Ruggeri and Federico Pascucci*) 1

Part I

How Far We have come, how Far We still have to go: how Energy Communities can help Prosumerism

Just Energy Transition: From Energy Consumer Protection to Energy Consumer Empowerment
(Lucia Ruggeri) 5

Part II

Comparing the Experiences in a Global Context

Energy Bills and Catastrophes: The Italian and German Energy Bills Practices During Natural Catastrophes and COVID-19 Pandemic
(*Ivan Allegranti*) 15

The Application of Blockchain to Smart Grid
(*Matteo Altobelli, Rosario Culmone and Leonardo Mostarda*) 35

Benefit Corporations and Energy Communities
(*Ciro Ascione*) 47

Liberalization of the Energy Market in Romania
(*Lidia-Lenuta Balan*) 59

Internet of Things (IoT) with Blockchain: The Future of Energy Community Management through Industry 4.0
(*Sharmin Nisar Chougule*) 67

Fundamental Duty to Sustainable Development in the Brazilian Federal Constitution of 1988 and Solar Energy (Sdg 7) as an Energy Policy in the Current Brazilian Conjuncture
(*Maria Cristina De Cicco and Ari Rogério Ferra Júnior*) 75

Cooperatives as Active Players in the EU Energy Transition under Social Justice Premises. An Overview of their Current Regulatory Framework and its Contextualisation under the Spanish Climate Change and Energy Transition Law Auspices.
(María Dolores Sánchez Galera) 85

The Pursuit of Energy Justice in a Post-pandemic Scenario. The Fight to Energy Disconnection in Spain 101
(*Roberto Garetto*)

Energy Communities as a New Tool of Energy Self-production and Sustainable Development
(*Manuela Giobbi*) 113

Emerging Prosumers under Different Contexts of Partnerships in Japan
(*Kozue Kashiwazaki, Norihisa Shima and Hiroyoshi Sano*) 119

Promoting 'Prosumerism' Through Energy Communities. The Greek Legal Framework
(Vassiliki Koumpli) 135

Protection Tools in Energy Market Disputes: Alternative Tools in Italy and France
(Martina Lorenzotti) 143

The Legal Form of Energy Communities in Union Regulations
(Maria Francesca Lucente) 155

The Notion of Consumer: Comparative Legal Profiles
(Maria Paola Mantovani) 169

Renewable Energy Communities: Danish and Italian Experiences by Comparison
(Silvia Montecchiari and Karina Zabrodina) 183

The Energy Authorities: Nature and Powers in Italy, Great Britain and France
(Elena Napolitano) 201

The Energy Policy in Kazakhstan
(Meruyert Narenova)
217

Prosumerism in America's Final Arctic, Frontier-Moving Forward
(Arthur Nash) 223

The Production of Energy from Renewable Sources: Which Tax Regime?
(Salvatore Antonello Parente) 229

Energy Communities as Cooperatives in Italy and Japan: Can a Workers' Cooperative be an Energy Community?
(*Federico Pascucci*) 237

The Cooperative Entity as Prosumer in Spain. The Cooperative of Energy and the Cooperativized Energy. A New Challenge? 253
(Manuel Ignacio Feliu Rey)

The Digitalization of the Energy Sector: The New Frontier of the Smart Contract. Comparison between Disciplines
(*Camilla Sbicca*) 265

Green Hydrogen: The Leading Resource in the Energy Transition Stage
(Francesca Letizia Tasselli) 279

Part III

National Surveys

Introduction to the ECPE Questionnaire
(*Federico Pascucci*) 297

Argentina
(José Horacio De Jesús Grando and Alba Esther De Bianchetti) 299

Brazil
(*Ari Rogério Ferra Júnior*) 321

Chile
(*Luciano Cruz Morandé*) 329

China
(*Yaru Li*) 333

Colombia
(*Cristian Arrieta Morales, Ricardo Andrés Cano Andrade and Riccardo Perona*) 339

Cuba
(*Jané Manso Lache*) 343

India
(Sharmin Nisar Chougule) 351

Lithuania
(*Laura Rimsaite*) 367

Mexico
(Esmeralda del Carmen Gutiérrez Barranco) 373

USA
(*Luis Edoardo Quintero*) 381

Part IV

A Voice from Society

The Regulatory Framework of the Energy Transition
(*Mariastella Diociaiuti*) 387

Table of contents

Foreword

This is the second book that sees the light within the ECPE Project. if inside the first volume we focused our attention on the issues concerning barriers and obstacles to the phenomenon of prosumerism and self-production and self-consumption of energy, this book will have as its object of research the various possibilities offered by the energy communities. So the studies will analyze mainly the legal form an energy community could cover inside the national framework, comparing the experiences of different countries both within the European Union, both outside Europe.

The comparison between virtuous experiences of countries that can also be very different from each other, both for legal tradition and contingent needs, could transform this book into an important tool to understand the problems which arise with the birth and the develop of energy communities, their link with the local situations and the advantages that they can bring to the territorial areas in which they operate. All this, however, provided that the communities could receive all the correct means (legal, fiscal, judicial) that will enable them to be the protagonists of that long awaited change in the energy paradigm. A change long awaited indeed, but that still seems far away.

This time also we wanted to remain faithful to the multidisciplinary approach which had yielded such fruitful results in the first book of the ECPE Project, by collecting the essays and surveys of many researchers that offer different perspectives and methodologies to analyze the energy phenomenon and energy communities in particular.

The book is divided into four parts. At the beginning Prof. Lucia Ruggeri enlights how far European policies have come, how far all energy market's players still have to go in the implementation of sustainable development's values. In the second part are collected essays that analyze the energetic communities and the legal context in which they operate, comparing the Italian experience and those of many other countries, European and not. In the third part are hosted the answers to the questionnaire trying to cover the experiences of those states that do not find their examination in the second part, with an insight to the experiences of the large emerging countries (Cina, India, but also Argentina and United States), where the problem of pollution has become an emergency that can no longer be postponed and therefore the need for decarbonisation and energy transition to clean and renewable sources is more strongly felt. The final part, in continuity with the structure already tested in the first volume, hosts the thoughts of one witness of civil society engaged in the Italian energy transition.

As editors of this work we hope you will appreciate this volume as a useful tool for dealing with problems, but also opportunities, that the energy transition continues to offer for the sustainable development of our society.

Lucia Ruggeri and Federico Pascucci

Part I

How Far We have come, how Far We still have to go: how Energy Communities can help Prosumerism

Just Energy Transition: From Energy Consumer Protection to Energy Consumer Empowerment

Lucia Ruggeri

Abstract: The European legal scenario in the field of energy is undergoing a profound and unstoppable change. Europe, with the Green Deal before and with the 'Fit for 55' now, has adopted legislative policies that favour the rapid achievement of the objective of 'climate neutrality'. The energy transition underway, however, risks being not very inclusive and is characterised by a lowering of safeguards. For this reason, it is necessary to analyse to what extent the transformation of the consumer from a mere consumer of energy to a 'prosumer' or 'prosumager' can be accompanied by a different concept of consumer protection based on 'empowerment'. One answer can be the introduction through European Directives 2001/2018 and 944/2019 of new legal categories that focus on energy communities, offering new perspectives for the fight against energy poverty and vulnerability.

Keywords: Consumer, Prosumer, Energy Market, Energy community, Contract

1 The European Scenario

European energy policies are profoundly influenced by the urgent need to combat climate change,[1] but, more generally, they seem to be deeply rooted in the international principle of 'sustainability'.[2]

The adoption of the Green Deal,[3] which took place immediately before the spread of the COVID 19 pandemic, undoubtedly focused on the need to accelerate and intensify 'decarbonisation' processes, but, since the pandemic, energy has also become a crucial issue to achieve the other objectives of the UN 2030 Agenda,[4] such as the need for responsible consumption and production and the fight against poverty.

At the European level, growing awareness of the extent to which energy is necessary for economic and social development is the basis of the new regulatory

[1] 'EU Action Plan: Towards Zero Pollution for Air, Water and Soil', CO (2021) 400.

[2] F. Capra and U. Mattei, *The Ecology of Law. Toward a Legal System in Tune with Nature and Community* (Oakland: Berrett-Koehler Publishers, 2015); D. French and L. Kotzé, *Sustainable Development Goals – Law, Theory and Implementation* (Cheltenham: Edward Elgar Publishing 2018); E. Caterini, *Sostenibilità e ordinamento civile. Per una riproposizione della questione sociale* (Napoli: Edizioni Scientifiche Italiane, 2018), 96-113; M. Kaltenborn et al, *Sustainable Development Goals and Human Rights* (Berlin: Springer 2020); P. Perlingieri, *Il diritto civile nella legalità costituzionale secondo il sistema italo-europeo delle fonti* (Napoli: Edizioni Scientifiche Italiane, 4th ed , 2020), IV, 254-256.

[3] C. D'Orta, 'Green Deal 2030 un progetto per garantire sostenibilità e promuovere un "ambientalismo maturo"' *Comparazione e diritto civile*, 99-148 (2021).

[4] UN General Assembly, 'Transforming Our World: the 2030 Agenda for Sustainable Development', UN Doc A/RES/70/1 (21 October 2015).

package 'Fit for 55',[5] where, not without opposition,[6] an expansion of the taxonomy of renewable sources is envisaged on the one hand, and, on the other, huge investments are planned to favour energy transition in a context characterised by clear signs of a global economic crisis.[7]

2 From Consumer to Prosumager: The Impact of Legislative Policies on Consumer Protection

European policies on the energy market have led to a rethink of the notion of consumer,[8] which can no longer be based on the legal definition of the term 'consumer', the consequence of which is that serious and well-founded protection needs can come from legal entities that cannot be subsumed under the legislative definition.[9]

The energy market is one of the markets in which this phenomenon is most developed because it is strongly affected by 'pro-transition' rules, which were adopted quickly and were equally speedily changed in an attempt to rapidly reach the objectives negotiated at international level, such as those agreed in the Paris agreements or in the very recent COP 26.[10] Energy transition requires a paradigm shift in the market, which involves the timely expansion of energy supply and, at the same time, the elimination of fossil-type energy sources. The transition to clean energy, a fundamental objective in the fight against climate change, takes place through the decentralised[11] management of power generation and distribution and requires the active involvement of consumers, whether citizens or professionals.

[5] Communication from the Commission to the European Parliament, the Council, the European Economic and Social Committee and the Committee of the Regions, 'Stepping up Europe's 2030 climate ambition. Investing in a climate-neutral future for the benefit of our people', COM (2020) 562 final, Brussels, 17 September 2020.

[6] The draft of Complementary Delegated Act amending Delegated Regulation (EU) 2021/2139 as regards economic activities in certain energy sectors and Delegated Regulation (EU) 2021/2178 as regards specific public disclosures for those economic activities includes gas and nuclear activities. The proposed inclusion causes strong critical reactions. For a first analysis see Platform on Sustainable Finance, Response to the Complementary Delegated Act, 21 January 2022, available at https://ec.europa.eu/info/files/220121-sustainable-finance-platform-response-taxonomy-complementary-delegated-act_en (last visited 29 January 2022).

[7] S. Galera Rodrigo, 'Changing the Energy Model: Step Back on the Europe 2050 Strategy?' 25 *European Energy and Environmental Law Review*, 65-72 (2016).

[8] M. Giobbi, *Il consumatore energetico nel prisma del nuovo quadro regolatorio italo-eurounitario* (Napoli: Edizioni Scientifiche Italiane, 2021), 42.

[9] L. Ruggeri, 'Consumatore e prosumerismo energetico nel quadro regolatorio europeo' 16 *Actualidad Jurídica Iberoamericana*, 1-15, (2022).

[10] UN Climate Change Conference 2021, Decision -/CP.26, Glasgow Climate Pact, 13 November 2021, available at https://unfccc.int/documents/310475 (last visited 29 December 2021).

[11] Communication from the Commission to the European Parliament, the Council, the European Economic and Social Committee and the Committee of the Regions, 'Launching the public consultation process on a new energy market design', COM (2015) 340 final, Brussels, 15 July 2015.

All this is well evidenced by the idea of creating a European Energy Union[12] in which access to energy is conceived as a 'universal service',[13] adequately supported by the States, and in which every consumer can have understandable information on the cost of the energy they consume, but above all they may also have the opportunity to choose whether to become energy producers. In this respect, the European Energy Union[14] is connected with the New Deal for Consumers[15] which resulted in the Omnibus Directive no 2161 of 2019. The latter seeks to standardise and harmonise the consumer protection system through adequate sanctioning tools for practices that can undermine their power and their contractual prerogatives.

Directive 2018/2001 (RED II)[16] on renewable energy sources expressly enables citizens to produce the energy they consume by providing a complete regulatory framework that includes consumption of self-generated electricity, forms of collective self-consumption, and the creation of renewable energy communities (REC).[17] Likewise, Directive 944/2019 (IEM)[18] takes energy self-generation and its storage to heart as tools that make the system flexible and as such are worthy of protection and incentives.

The European legislator clearly identifies[19] the main barriers to electricity self-generation: disproportionate charges for the electricity consumed by the self-producer, obligations to enter self-generated electricity into the system, and subjecting consumers who generate energy to the same obligations as professional suppliers. In this context, Directive 944/2019 favours EU forms of energy supply at affordable prices achieved by creating citizen energy communities (CEC), which, unlike traditional electricity companies, operate on a non-profit basis. Thanks to the use of technologies, energy communities can create intelligent distribution networks and contribute to demand management in an integrated way. The

[12] Communication from the Commission to the European Parliament, the Council, the European Economic and Social Committee and the Committee of the Regions, 'A Framework Strategy for a Resilient Energy Union with a Forward-Looking Climate Change Policy', COM (2015) 80 final, Brussels, 25 February 2015.

[13] N. E. Hatzimihail, 'SDG 7: Affordable and Clean Energy', in R. Michaels et al eds, *The Private Side of Transforming our World UN Sustainable Development Goals 2030 and the Role of Private International Law* (Cambridge: Intersentia, 2021), 73-78.

[14] The development of the Energy Law in the European Energy Union is analyzed by several experts in S.-L. Penttinen and I. Mersinia eds, *Energy Transitions: Regulatory and Policy Trends highlights the recent developments in EU energy law and underlying policy aspects that shape the regulatory approach to energy* (Cambridge: Intersentia 2017), 1-260. The creation of an Energy Union is a pivotal issue at this moment. For a focus on the role of the Energy Community funded by the countries of South-East Europe see D. Buschle and K. Talus eds, *The Energy Community. A New Energy Governance System* (Intersentia: Cambridge 2015), 1-618.

[15] Communication from the Commission to the European Parliament, the Council, the European Economic and Social Committee and the Committee of the Regions, 'Delivering a new deal for energy consumers', COM (2015) 339 final, Brussels, 15 December 2015.

[16] Directive (EU) 2018/2001 of the European Parliament and of the Council of 11 December 2018 on the promotion of the use of energy from renewable sources (recast) [2018] OJ L328/82 (RED II Directive).

[17] Following Recital 66 of the RED II Directive 'Member States should be allowed to differentiate between individual renewables self-consumers and jointly acting renewables self-consumers due to their different characteristics to the extent that any such differentiation is proportionate and duly justified'.

[18] Directive (EU) 2019/944 of the European Parliament and of the Council of 5 June 2019 on common rules for the internal market for electricity and amending Directive 2012/27/EU (recast) [2019] OJ L158/125 (IEM Directive).

[19] Recital 42 of the IEM Directive.

reduction of consumption and tariffs brought about by the implementation of energy communities can be considered a new type of consumer protection.

Consumer protection in the traditional form is constituted by the explanation of rights whose violation is sanctioned by law. By participating in the energy community, the exercise of these rights is strengthened and, in a certain sense, 'anticipated' so as to avoid the infringement of the right and to favour its implementation.

3 The Effectiveness of the Rights of Energy Consumers. From Consumer Protection to their Empowerment

If we analyse energy communities from the perspective of consumer rights,[20] it can indeed be noted that every right increases the level of its effectiveness if exercised within the energy community.

The collective dimension of energy generation, consumption and storage can be seen as the new European way to raise the effective level of consumer protection. It is evident that the passage from an individual to a collective dimension strengthens the power of consumers who can, if united, become energy suppliers themselves, expanding thus possible choices in the energy field that can no longer be reduced to the mere possibility of choosing between different suppliers, but also to become suppliers.

Each consumer has the opportunity to become part of energy communities, thus increasing the possibility of understanding contractual mechanisms since they are an active part of the establishment of an organisation whose aim is to achieve shared objectives such as the mitigation of energy costs, but also to implement activities that bring benefits to the community in which they live.

In this sense, the European unitary option for energy communities that carry out generation, distribution, and storage activities without pursuing a profit-making purpose[21] constitutes an important characterisation whose aim is to serve the interests of the people and communities involved. It is well understood that the European choice to strengthen the position of consumers by transforming them from recipients of protection standards into market players is not simple and represents one of the many challenges posed by energy transition.[22] Collective consumption and production initiatives can in fact involve very heterogeneous subjects such as private citizens, small and medium-sized enterprises, and local authorities in a new context and in ways that have often never been experienced before. The coexistence of many heterogeneous subjects within the same aggregation requires the careful implementation of the principles of non-

[20] 'Clean energy for all Europeans package'. V. European Commission, Directorate-General for Energy, European energy consumers' rights: what you gain as an energy consumer from European legislation, Publications Office, 2015, https://data.europa.eu/doi/10.2833/109209

[21] CEC is realized following no profit goals. See art. 2, n. 11, lett. b) of the IEM Directive. REC also is a non-profit organization. See Art. 2, n. 16, lett. c) of the RED II Directive.

[22] A. Duterque, 'The liberalisation of EU energy markets: A consumer's perspective' 2 *Journal of European Consumer and Market Law*, 80-96 (2013).

discrimination, participation, transparency and fairness in every phase of the life of the community.

It is no coincidence that in both Directives the European legislator has given some indications that can be considered mandatory by the Member States when transposing the Directive and even more so when drafting the statutes and constitutive acts of the community.[23]

The REC is characterised by open participation on a voluntary basis. It is an autonomous legal entity with respect to its constituent entities. Control of the community is entrusted to shareholders or to members operating nearby, thus giving a local connotation to the community. But certainly, the profile of greater "empowerment" is represented by the fact that the power plant for power generation using renewable sources is owned by or is in any case under the legal disposal of the community.

It is evident that the connotation of proximity favours the capturing of the needs and requirements of the local community so much that this legal entity becomes an important point of reference that manages to aggregate citizens, businesses, and local authorities in the realisation of a shared programme that pursues objectives of economic, social, or environmental benefit. Abandoning financial profit as the only logic underlying power generation is one of the most important consequences of the European New Green Deal. Significantly, in transposing this directive, the Italian legislator has provided an enlarged list of subjects that can give life to the REC, including research and training entities, religious entities, third sector and environmental protection entities, as well as local administrations.[24]

In the CEC, the active participation of citizens is reflected in areas that until recently were characterised by strong 'centralisation': in fact, they can participate in energy generation, distribution, supply, consumption, aggregation, storage and energy efficiency services. According to Directive 944 of 2019, the CEC could operate charging services for e-mobility and, more generally, could become a player in the provision of other energy services for those who are members or partners. It is clear that the interaction between the energy community thus composed and traditional operators of the energy market implies the elimination of administrative-regulatory, fiscal and more generally bureaucratic obstacles, and a profound rethinking of the organisation of the energy market.

4 'Speedy' Transition v 'Just' Transition? The Problem of Energy Poverty.

The implementation of the legislation in the Member States will take time, which, unfortunately, is hardly compatible with the need to more quickly reach the decarbonisation objectives. In this regard, it is a matter of concern that, while the States are preparing to modify the economic activities and the regulatory instruments on the basis of the rules contained in the RED II Directive 2001 and in the IEM Directive, the European Union has already initiated a process of

[23] M. Jasak, 'Energy Communities in the EU. Challenges for the Implementation of the EU Legal Framework', in M. M. Roggenkamp and C. Banet eds, *European Energy Law Report* (Cambridge: Intersentia, 2021), XIV, 204-218.

[24] Decreto legislativo 8 November 2021, Art 31, par 1, lett b.

modification of the regulatory framework. As can be seen from the accompanying report to the proposed amendment of the RED II Directive '(…) the current EU target of at least 32% renewable energy by 2030, set in the RED II Directive, is not sufficient and needs to be increased to 38-40%, according to the Climate Target Plan (CTP)'.[25] In the proposal for the modernisation of Directive 2001/2018, the introduction of an information obligation to improve the transparency of the energy market and increase the level of awareness of citizens, businesses and more generally of civil society on the role of renewables is of particular importance. The operators of the transmission and distribution system are, in fact, obliged to make available information on the share of renewable energy sources and on the greenhouse gas content of the electricity they supply. The growing role attributed to the energy storage activity leads the European legislator to provide that battery owners and third parties who may act on their behalf have the right to access information on 'battery capacity, state of health, state of charge and power set point'.[26]

The IEM has introduced a legal definition of energy poverty and vulnerability by deeply innovating the culture of protection: the taxonomy that distinguishes consumers from professionals is not aligned to energy transition that is based on equity. The introduction of poverty and vulnerability into the regulatory scenario[27] is one of the most fruitful outcomes of plans which, starting from 2015, have focused on declining European policies in terms of equity.[28] Poverty and vulnerability are problems that have been brought to the attention of the legislator since 2015:[29] energy tariffs impact on people in poverty in a consistent way with significant consequences also on fundamental rights such as the right to health.

Directive no 944 of 2019, matured in a legislative scenario now aware of the problem of energy poverty, defines vulnerability by outlining as a possible strategy an integrated approach of social and energy policies, such as the energy efficiency of public residential buildings, mitigation of energy costs for those in poverty, thus making these issues inescapable for the Member States.[30] The Directive marks a turning point because it combines and harmonises the objectives of the UN Agenda 2030 which contemplate not only clean energy, but also accessible energy with a common commitment in the fight against poverty.[31] It acts as a 'forerunner' to new,

[25] V. Proposal for a DIRECTIVE OF THE EUROPEAN PARLIAMENT AND OF THE COUNCIL amending Directive (EU) 2018/2001 of the European Parliament and of the Council, Regulation (EU) 2018/1999 of the European Parliament and of the Council and Directive 98/70/EC of the European Parliament and of the Council as regards the promotion of energy from renewable sources, and repealing Council Directive (EU) 2015/652, Explanatory Memorandum, sub par 1.

[26] V. Proposal for a DIRECTIVE OF THE EUROPEAN PARLIAMENT AND OF THE COUNCIL amending Directive (EU) 2018/2001, n 25 above, 12.

[27] Even Directive RED II mentions energy poverty where in recital 67 identifies in the CERan instrument capable of reducing consumption and supply tariffs.

[28] V. ILO, 2015, Guidelines for a just transition towards environmentally sustainable economies and societies for all.

[29] Reference is made to Commission Communication of 25 February 2015 titled 'A Framework Strategy for a Resilient Energy Union with a Forward-Looking Climate Change Policy'.

[30] *Considerando* 60 and Art 5, para 2 and 3 of Directive no 944 of 2019.

[31] Art 29 of the Directive expressly covers energy poverty and requires Member States to identify criteria such as low income, high energy expenditure relative to disposable income and low energy efficiency to identify families in poverty. On the issue J. Lowitzsch, 'The Consumer at the Hearth of the Energy Markets?', in Id ed, *Energy Transition. Financing consumer co-ownership in renewables* (Palgrave Macmillan: Frankfurt, 2019), 68.

more specific rules that can better combat energy poverty and which will most likely be contained in the Recast of Directive 2012/27/EU on energy efficiency.[32] The vulnerability of the energy market customer is something more than and different from mere contractual weakness.[33] The vulnerable customer is one who, due to income conditions and the cost of energy, is unable to use energy, an asset whose purpose is the effective enjoyment of a plurality of fundamental rights. Particular health conditions can cause a vulnerability that consists of the need for the continuous use of medical-therapeutic equipment powered by electricity, which is necessary to sustain life. Even people with severe disabilities[34] or who are located in rural or remote areas or who, as a result of disasters, are infrastructurally 'fragile' and as such deserving of targeted interventions[35] fall into this category.

For example, if the customer or their family member needs electrically powered life-saving machines, it will be necessary to prohibit the interruption of the supply of electricity during critical periods that could otherwise be legitimately done by the suppliers. If an energy community is constituted in a given area, be it made of citizens or a renewable community, specific measures must be adopted to allow also the inclusion of potentially existing vulnerable subjects: energy communities are, therefore, thought of by the European legislator as inclusive communities 'tailored' for the poor and/or frail.

Vulnerability does not end in economic poverty, but is characterised by a condition of fragility sometimes determined by non-economic factors: for this reason, measures such as the establishment of National Energy Poverty Observatories[36] and those contained in the Proposal for the establishment of a Social Climate Fund[37] are highly important. In the Proposal, we witness an expansion of protection: energy poverty affects not only families who have to pay the costs of heating, but also micro-enterprises that are unable to meet the cost of energy with their turnover.[38] It also expressly contemplates the cost of transport: the energy cost of transport, as in the case of the cooling or heating of homes, risks being passed on

[32] See Proposal for recast of Directive 2012/27/EU on energy efficiency.

[33] On the issue L. Ruggeri and M. Giobbi, 'Vulnerabilità economica tra diritto emergenziale e contrattuale' 12 bis *Actualidad Jurídica Iberoamericana*, 340, (2020).

[34] The definition of serious disability is contained in Art 3 of legge 5 February 1992, no 104.

[35] Vulnerability has become a very topical issue following the pandemic. For an examination of emergency legislation and its impact on contractual relationships in the energy market cfr L. Ruggeri, 'Morosità e tutela dei clienti tra nuova regolamentazione del mercato energetico e gestione dell'emergenza pandemica', in E. Llamas Pombo et al eds, *Il consumatore e la normativa emergenziale ai tempi del Covid-19* (Edizioni Scientifiche Italiane: Napoli, 2021), 627.

[36] Commission Recommendation (EU) 2020/1563 of 14 October 2020 on energy poverty C/2020/9600 (OJ L 357, 27.10.2020, p. 35).

[37] Reference is made to Proposal for a Regulation of the European Parliament and of the Council establishing a Social Climate Fund or 14 July 2021, COM(2021) 568 final 2021/0206 (COD).

[38] In the Proposal it is literally stated that (see page 5): 'The Fund addresses in particular the energy poverty challenges for vulnerable households and vulnerable micro-enterprises. It should support measures to promote energy efficiency, energy saving and the development of new and renewable forms of energy, as indicated in Article 194(1)(c) of TFEU. The Fund also needs to address the situation of vulnerable transport users. It should support measures to facilitate their access to zero- and low-emission mobility and transport solutions, including public transport, and thereby contribute to achieve the objectives of the common transport policy as indicated in Article 91(1)(d) of TFEU'.

to end users without an adequate assessment of the impact of that cost on people's lives.

We therefore understand the relevance of a principle of substantive equality, well known for example in the Italian Constitution (Art 3, para 2). In a non-formal vision of equality, the sharing of energy costs carried out in the logic of equal treatment becomes the cause of 'injustices'. In the logic of equality, those who are rich still manage to have income to spend on other needs, even non-essential ones, while those who are poor suffer such impoverishment that they can even put the satisfaction of primary needs at risk. The impact of the energy cost, if we look at it as being related to a primary and essential asset, is also significant in a gender dimension: 'women are particularly affected by carbon pricing measures as they represent 85% of single parent families. Single parent families have a particular high risk of child poverty'.[39]

In this scenario, the energy community constitutes an expression of subsidiarity understood as an action that promotes the pursuit of general interests from the bottom up, just as expressly prefigured by Art 118 of the Italian Constitution. The energy community, therefore, also becomes an instrument for promoting solidarity, a value closely connected to dignity, in a value dimension well rooted in European constitutionalism.

As can be seen, the impact on regulation of Just Transition is truly significant, a harbinger of legislative innovations, capable of consolidating jurisprudential orientations closely connected to the needs of safeguarding human dignity and, more generally, life on the planet.[40] If we want to summarise, without a just and inclusive energy transition, many of the objectives that serve as the underlying reason for the transition are put at risk.

[39] Ibid, recital 19.

[40] L. Ruggeri, 'Legislative Policies and Jurisprudence on Climate Change: New Tools for Removing the Barriers to New Forms of Energy Consumptions', in L. Ruggeri ed, *Needs and Barriers of Prosumerism in the Energy Transition Era* (Dykinson: Madrid, 2021), 98-110.

Part II

Comparing the Experiences in a Global Context

Energy Bills and Catastrophes: The Italian and German Energy Bills Practices During Natural Catastrophes and COVID-19 Pandemic.

Ivan Allegranti

Abstract: This article analyzes how energy bills are regulated both in Italy and in Germany thus highlighting if there are any differences in their structure. The simple question: which consumer of the two nationalities spends more on energy in a normal scenario? Based on this premise, the article will then focus on the German and Italian laws and regulations promulgated in the matter. In particular it will be analyzed how both countries have reacted to energy bills during the emergency situation. For Italy the focus will be both on the earthquake of 2016 which destroyed 138 municipalities of the Marche Region and on COVID-19 pandemic while for Germany the analysis will concentrate only on the pandemic emergency regulations related to energy bills. The outline of the paper will be a comparison of both energy bills practices during emergency periods thus highlighting how the countries have reacted during these extraordinary situations.

Keywords: Natural Disasters, Electricity Bills, Earthquakes, COVID-19

1 The EU Legislation on Energy Bills

For years the European Union strategy[1] has made many efforts in the promotion of the continent's energy transition in order to contribute to a carbon-neutral society and economy, thus 'empowering consumer for the energy transition'.[2]

This paper will concentrate on the European, German and Italian legal discipline related to electricity bills. In detail it will be analyzed which Member State, between Italy and Germany, has adopted a better 'best practice' on energy bills during the emergency periods. For Italy the focus will be on both by the 2016-2017 Italian earthquakes that hit four regions of the country and by the COVID-19 pandemic, while for Germany the focus will be only on the 2020 pandemic. The EU legal framework on energy bills is composed by Directive 2012/27/EU (Energy Efficiency

[1] H.F. Más and D. Kuiken,'Beyond energy savings: The necessity of optimising smart electricity systems with resource efficiency and coherent waste policy in Europe', 70 *Energy Research & Social Science*, 1, 1-10 (2020).

[2] The 2022-2025 Council of European Energy Regulator (CEER) strategy can be summarized as a strategy in three steps which consist in 'Enabling energy system integration: integrating renewables and incentivising innovation; Placing consumers at the centre of energy markets with consumer-centric dynamic regulation, empowering consumers to actively contribute to and benefit from a flexible energy system; and Ensuring open, well-functioning and resilient markets nationally and in Europe: delivering flexibility and new business models'. CEER 2022-2025 Strategy Empowering Consumers for the Energy Transition, Ref:C21-SSG-06-05, 21 June 2021. On a complete statistic of the Electricity prices in Europe: EUROSTAT, 'Electricity price statistics' available at https://
ec.europa.eu/eurostat/statisticsexplained/index.php?title=Electricity_price_statistics#Electricity_prices_for_household_consumers (last visited 01 July 2021).

Directive)[3] and by Directive 2019/944 EU (Electricity Market Directive).[4] Before digging into how on an EU level energy bills are ruled and their impact on the Italian and German policies, it's necessary to make a premise. In fact, to date, only Germany has adopted both Directives[5], while Italy has only adopted the 2012 Directive.[6]

This analysis of the European discipline on energy bills starts with the EED Directive who's subject matter, on the one hand, is to establish a common framework that will allow Member States of the European Union to achieve 'the Union's 2020 20 % headline target on energy efficiency' and on the other hand, to 'remove barriers in the energy market and overcome market failures that impede efficiency in the supply and use of energy, and provides for the establishment of indicative national energy efficiency targets for 2020'.[7] Most importantly, the Directive lays down in its articles a set of 'minimum requirement' rules that States need to introduce in their own legal framework binding them on their application. At the same time the Directive allows states to avoid their application only if on a national level they do set a more stringent discipline. Art 2, then, provides the definitions of important concepts such as 'final energy consumption', 'energy service', 'final customer', 'energy service provider'.

These definitions set the standards for the entire Directive and allow us to move on into the analysis of Art 10 (Billing information), Art 11 (Cost of access to metering and billing information) and Art 12 (Consumer information and empowering programme) of Directive (EU) 2012/27.

What draws to our attention is Art 10 which specifies the minimum requirements of energy bills. In particular the article differentiates two billing situations. The first one is referred to the final consumer who has not installed smart-meters in their

[3] European Parliament and Council Directive (EU) 2012/27 of 25 October 2012 on energy efficiency, amending Directives 2009/125/EC and 2010/30/EU and repealing Directives 2004/8/EC and 2006/32/EC [2012] OJ L315/1.

[4] European Parliament and Council Directive (EU) 2019/944 of 5 June 2019 on common rules for the internal market for electricity and amending Directive 2012/27/EU (recast) [2019] OJ L158/125.

[5] In Germany, the EED (*Energie Effizienz Richtlinie*) has been adopted by the Law on Energy Services and other Energy Efficiency Measures (*Energiedienstleistungsgesetz* - EDL-G) taking legal effect as of 22 April 2015. In regards to Directive 2019/944 Germany has voted its adoption on the 10 February 2021. The Directive has brought modifications to the *EnergiewirtschaftsGesetz* (EnWG) in particular to title 4 of the law (*Regelungen zu den Endkundenmärkten*). The EnWG modifications will enter into force by October 2021 available at https://www.bmwi.de/Redaktion/DE/Artikel/Service/Gesetzesvorhaben/referentenentwurf-enwg-novelle.html (last visited 18.06.2021).

[6] The Italian Government has adopted Directive (EU) 2012/27 with the decreto legislativo 18 July 2014 no 102 '*Attuazione della direttiva 2012/27/UE sull'efficienza energetica che modifica le direttive 2009/125/CE e 2010/30/UE e abroga le direttive 2004/8/CE e 2006/32/CE*'. On the contrary, Directive (EU) 2019/944 has not been adopted yet. Only recently it has been adopted legge 22 April 2021 no 53 '*Delega al Governo per il recepimento delle direttive europee e l'attuazione di altri atti dell'Unione europea*' which produces effects from 8 May 2021, and delegates the Italian government to adopt many European regulations and acts such as Directive (EU) 2019/944.

[7] Recital 2 of European Parliament and Council Directive 2012/27 EC.

houses,[8] the second one if there are smart meters applied.[9] In the first scenario, the EED Directive billing discipline is also regulated in Annex VII.[10] In fact, Art. 1.1. of Annex VII establishes that billing is based on actual consumption; that billing information should be taken at least once a year and that billing information should be made available at least quarterly upon the consumer's request as well as if the consumer has opted for an electronic billing. Annex VII Art. 1.2 requires then that billing information should be: appropriate, clear and understandable to final consumers; that includes current the actual consumption of energy, a comparison of the consumer's consumption of the previous year of when he receives the bill; the contact information for final consumer's organization or other bodies that might help the consumer in improving his energy efficiency and, if possible, an average or normalized schedule of consumer's energy consumption in the same category of the billed one. Finally, Art 1.3. of Annex VII advises organizations and energy companies to inform consumers on efficient energy policies to reduce energy consumption. It's important to underline that Art 10 (1) rules that, if smart meters are not installed, the obligation to roll out a bill based on the actual consumer's consumption may be fulfilled by 'a system of regular self-reading by the final customers whereby they communicate readings from their meter to the energy supplier' or, if this is not the case, the bill shall be rolled out either by an estimated consumption or on a flat rate. In regards to Art 10,[11] it's worth mentioning para 3 (d) which advises Member States to give to the final customer the billing information they need without this meaning that 'the information contained in these bills […] constitute a request for payment'. Most importantly, Art 10(3)(d) continues by stating that Member States shall ensure that suppliers of energy sources offer flexible arrangements for actual payments' thus keeping an eye to the customers and their potential financial difficulties.

Continuing our analysis, Art 11 of the EED Directive rules that metering, bills and billing information requested by consumers are free of charge and in any-case customers are offered free of charge access to their consumption information. This obligation is underlined by the next article, Art 12, which, in fact, obliges Member

[8] In 2014 the Commission published 'Benchmarking smart metering deployment in the EU-27 with a focus on electricity' analyzing how Member States have adopted the smart mater obligation required by the 2012 Directive. For more details, Report from the Commission, 'Benchmarking smart metering deployment in the EU-27 with a focus on electricity', COM(2014)356 final, 17 June 2014.

[9] The 2012 Directive refers at Art 10 (1) to two directives: European Parliament and Council Directive (UE) 2009/72/EC of 13 July 2009 concerning common rules for the internal market in electricity and repealing Directive 2003/54/EC [2009] OJ L211/55 and to European Parliament and Council Directive (UE) 2009/73/EC of 13 July 2009 concerning common rules for the internal market in natural gas and repealing Directive 2003/55/EC [2009] OJ L211/55. For this article which focuses on electricity it's useful to specify that the smart meters mentioned in Art 10 of the 2012 Directive are disciplined at Art 2 of Annex 1 of European Parliament and Council Directive 2009/72 which requires that by 2020, 80% of consumers shall be equipped with intelligent metering systems. On the role of gas smart meters C. Sandei, 'Distribuzione convenzionale del rischio e abuso di dipendenza economica nei contratti di fornitura degli smart meters del gas' *Rivista di diritto civile,* 230, 230-254 (2019). On the feasibility of smart meters in the Italian peninsula G. Zizzo et al., "A feasibility study of some DSM enabling solutions in small islands: The case of Lampedusa," *140 Energy* 1030, 1030-1046 (2017).

[10] Annex VII sets a more detailed discipline on energy bills, while Art 10 (2) rules in regards to 'complimentary information on historical consumption'.

[11] Art 10 (3) rules the same provisions stated in Annex VII of the Directive.

States to 'promote and facilitate an efficient use of energy' as part of 'a national strategy'.[12]

Analyzing the EMD Directive, it is important to mention that this Directive goes a step further from the 2012 one as it gives a more detailed discipline on energy bills and consumer's protection in the energy market. While the 2012 Directive focal point is energy efficiency, the 2019 Directive main scope is to establish common rules on the electricity market and to 'address the persisting obstacles to the completion of the internal market for electricity'.[13] The obstacles ruled by the Directive are those concerning prices,[14] energy poverty[15] and consumer's legal protection on electricity matters.[16]

The definitions set in Art 2 of the EMD Directive are a step beyond those disciplined in Art 2 of the 2012 Directive. In fact, as recital 56 of the 2019 Directive states 'the full implementation of Directive 2012/27/EU will help consumers to reduce their energy costs', thus meaning that only through the full adoption by Member States of the EED Directive, the 2019 Directive can be effective thus establishing 'a smooth transition towards a sustainable low-carbon energy system'.[17] For instance, the new definitions set by the EMD Directive which are of interest for this article are those of household customer, electricity supply contract, billing information and electricity undertaking as 'the information provided on a final customer's bill, apart from a request for payment'.

Moving forward to the articles that discipline electricity bills, those are Art 10 (Basic contractual rights), Art 18 (Bills and billing information), Annex I (Minimum requirement for billing and billing information) and Art 28 (1) (Vulnerable customers).

Art 10 is a multifaceted article. In fact, on the one side, Art 10 (3) provides a detailed list of rights addressed to consumers that shall be fair and well known in advance, prior to the conclusion of the agreement as well as in between communications if contract conditions might change from the supplier side (Art 10 [4]). On the other side, from Art 10 (5) to 10 (12), are set out the supplier's obligations in order to allow customers to pursue their rights.

The central article of the EMD Directive is Art 18 'Bills and billing information' which is an evolution of the EED's Art 10 and Annex VII. In fact, beside recalling the principles of an 'accurate, easy to understand, clear, concise, user-friendly and

[12] Art 12 (2) includes the measures that Member States may adopt in order to fulfill the obligation of Art 12 (1). These measures can be: a) fiscal incentives, b) access to finance, grants or subsidies, c) information provision; d) exemplary projects, e) workplace activities; f) communication, in relation of possible roll out of smart meters, of cost-effective and easy-to-achieve changes in energy use and on energy efficiency measures.

[13] Recital 8.

[14] As stated in Recital 19, the Directive shall, by securing common rules on the market, avoid or stop that 'undistorted market prices would provide incentives for cross-border interconnections and for investments in new electricity generation while leading to price convergence in the long term'.

[15] Recital 22.

[16] Recital 36 and Recital 48. In particular Recital 48 points out that energy bills disputes are a key factor for the lack of interest in the energy sector of customers and for this reason the European Union should create more clear yet consumer-driven energy billing policies.

[17] Art 1 (2).

presented in a manner that facilitates comparison by final customers'[18] and free of charge bill, Art 18(5) obliges Member States to 'consult consumer organizations when they consider changes to the requirements for the content of bills'. The importance of this article is that it represents the exact scope of the Directive which is to empower customers.[19] Article 18 (6) then is linked to Annex I of the Directive which sets in detail how exactly energy bills need to be structured and which data should be inserted, the frequency of billing, the price's breakdown, the consumer's access to complimentary information and the disclosure of energy sources.

The last article specifically related to energy bills is article 28 (1) which is devoted to vulnerable clients. In particular the EMD Directive aims to protect the vulnerable customers by defining when a customer can be defined vulnerable, by prohibiting the disconnection of electricity in critical times, by obliging member states to respect the right and obligations set for normal customers also to the fragile ones (which include those who live in remote areas) and by applying the same levels of transparency regarding contractual terms and conditions, general information and dispute settlement mechanisms. After having set out the perimeters in which the European legal framework disciplines energy electricity bills it is possible to investigate how electricity bills are disciplined both in Germany and in Italy.

2 The German Scenario on Energy Bills during Ordinary Times

In Germany electricity bills are regulated by the *Energiewirtschaftsgesetz* (EnWG).[20] The EnWG (Energy Industry Act) at Title 4 '*Energielieferungen an Letzverbraucher*' (energy supply to final customers) from §36 to §42 a regulates the relationship between supplier (*Lieferanten*) and final customer (*Letztverbraucher*).

§36 '*Grundversorgungspflicht*' (obligation to provide the service) defines Grundversorger (basic supplier) as the energy supply company that supplies energy for most households in a specific area. The article obliges basic energy suppliers to publish the general contract condition and prices for low voltage electricity supply and low pressure gas supply on their website as well as to supply each domestic customer with the prices communicated on their webpage. The exception to §36 (1) is stated in the article's second sentence which excludes the above mentioned obligation if the energy supply is unreasonable for the company for economic reasons. In case the basic energy supplier changes in the Region, §36

[18] Art 18 (1) and Art 18 (2).

[19] On consumer's empowerment: M. Iaonnidou, 'Effective Paths for Consumer Empowerment and Protection in Retail Energy Markets', 41 *Journal of Consumer Policy*, 135, 135-157 (2018) and F. Hanke and J. Lowitzsch, 'Empowering Vulnerable Consumers to Join Renewable Energy Communities—Towards an Inclusive Design of the Clean Energy Package' 13 *Energies*, 1615, 1615-1642 (2020). In Germany there is a specific consumer's organization devoted to make the consumer's interests in energy matters which is the '*Bund der Energieverbraucher*' available at https://www.energieverbraucher.de (last visited 20.06.2021). In Italy there are, on the other side, many consumer's organizations which operate in the consumer's interest direction also in energy matters. Those organization are: *Federconsumatori* available at https:// www.federconsumatori.it (last visited 20.06.2021); *Unione Consumatori* available at https://www.consumatori.it (last visited 20.06.2021) and *Altro Consumo* available at https://www.altroconsumo.it (last visited 20.06.2021).

[20] '*Energiewirtschadtsgesetz vom 7. Juli 2005 (BGBI.I S.1970, 3621), das zuletzt durch Artikel 3 des Gesetzes vom 18. Mai 2021 (BGBI. I S.1122) geändert worden ist*'.

(3) allows the domestic customer to keep valid the agreement as well as contract conditions until the agreement expires. The exceptions to §36 are ruled in §37 '*Ausnahmen von der Grundversorgungspflicht*' (Exception to the obligation to provide the service) which states that prosumers and those who are supplied by a third party energy supplier (not the basic energy supplier), are not subject to the rules stated at §36 (1). §38 '*Ersatzversorgung mit Energie*' (Energie replacement supply) refers to a particular situation that happens if customers do not have an actual agreement with a supplier. In this case, to both customers and suppliers will still be applied the limits ruled at Para 36 (1). This situation, as stated in §38 (2), comes to an end if the parties rule an energy supply agreement. If this case occurs, the energy supplier is obliged, in maximum three months, to inform the customer about the supply agreement in force, thus inserting the energy consumed in the timeframe of Para 38 (1) in the new energy bill rolled out in accordance to the new contract.

Entering now into detail about how actual energy bills are regulated, §39 '*Allgemeine Preise und Versorgungsbedingungen*' (General prices and energy supply conditions) rules at §39 (1) that energy prices as well as energy policies both before the conclusion of the supply agreement as well as after that, are set by the Federal Ministry of Economic Affairs and Energy in agreement with the Federal Ministry of Justice and Consumer Protection.

The central articles on energy bills are article §40 '*Strom- und Gasrechnungen, Tarife*' (Electricity and Gas bills) and §41 Energielieferverträge mit Haushaltskunden (Energy supply contracts with domestic customers). Art 40 recalls the EU general provisions in electricity bills matters disciplined in the EED Directive[21] by imposing to suppliers to send to final customers simple (einfach) and comprehensible (verständlich) bills written using a certain graphic and linguistic forms. §40 (2) then rules in regards to all the data that bills should indicate such as the supplier's name, address, competent court registration as well as information enabling the supplier's quick electronic contact including the email. In the bill, according to §40 (2) should also be indicated the contract duration, the consumption price and the earliest possible termination date and notice period, the relevant metering point operator and the relevant metering point designation and code number of the system operator, the determined consumption in the accounting period and, for household customers, the initial count and the final count of the billed period. It is also required according §40 (2) (5) that electricity bills report the consumption of the comparable prior-year period and in the case of household customers, using graphs to show how their own annual consumption relates to the annual consumption of peer groups. Article 40 (2) (7) includes in the mandatory bill's information also to inform the customers of the charges arising from the concession fee and from the network charge. Also important is Article 40 (2) (8) which obliges electricity supplier to insert in the bill information the rights of household customers in relation to dispute resolution procedures available to them in the event of a dispute; including the ADR organization established for consumer complaints under section 111b and its address as well as the contact details of the consumer service of the Federal Network Agency for Electricity and

[21] See n 14 above.

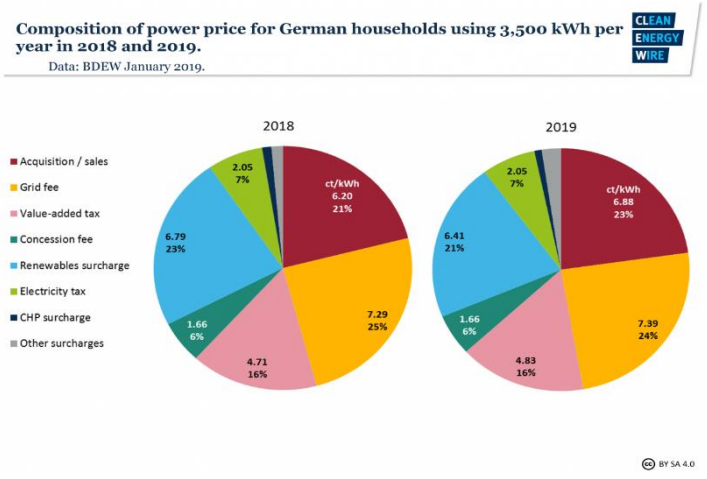
Gas separately. Suppliers are obliged to bill energy consumption on a monthly basis or in other periods of time, which may not exceed twelve months (for example, a quarterly or semi-annual billing). Final consumers whose consumption values are read out via an intelligent measuring system in the sense of the Metering Point Operation Act must be provided with a monthly free of charge consumption bill. Suppliers then, according to §40 (4) shall ensure that the final consumer receives the invoice referred to in paragraph 3 no later than six weeks after the end of the period to be billed and the final invoice no later than six weeks after the end of the termination of the supply relationship. Article §40 (6) rules that for final consumers, suppliers shall report the calculation factors relevant to be billed using standardized terms and definitions. In this regard, §40 (7) states that the Federal Network Agency may make decisions on the minimum content of invoices for energy supplies to final consumers in accordance with paragraphs 1 to 5, as well as further details on the standardized format in accordance with paragraph 6, by determining the supplier in accordance with § 29 para 1.

While §40 sets out the general rules and content of energy bills, §41 EnWG, rules in particular on domestic customer's electricity bills.[22] In fact, in addition to the requirements stated in article §40, bills sent to domestic customers need to provide also: a) the duration of the contract b) the price adjustment, termination dates and notice periods as well as the right of withdrawal of the customer; c) the services provided by the supplier, including the maintenance services offered; d) the accepted payments methods, the liability and compensation regulations in the event of non-compliance with contractually agreed services, the information about the free (without penalties) and prompt change of supplier as well as on how to update information on applicable tariffs and on the suppliers maintenance charges is available; e) the information on the rights of household customers with regard to dispute resolution procedures available to them in the event of a dispute, including the conciliation body for consumer complaints under section 111b with their address and website, including the supplier's obligation to participate in the conciliation procedure thus reporting in the bill also the contact details of the consumer service of the Federal Network Agency for Electricity and Gas. EnWG's §41 (2) then states three important rules related to energy bills. The first one is that the available payment methods must be offered to the household customer before the contract is concluded. The second one is that if an advance payment is agreed between parties, this must be based on the consumption of the previous billing period or the average consumption of comparable customers. In this case, if the customer demonstrates that its consumption is significantly lower than the billed one, the energy supplier must take this into account appropriately. At the same time the article rules that an advance payment is not mandatory nor required

[22] The provisions disciplined in both articles are basic provisions on electricity bills. In fact, according to 41 (5), the Federal Ministry of Justice and Consumer Protection, the Federal Ministry for Economic Affairs and Energy may, by ordinance with the consent of the Federal Council, lay down more stringent rules (außerhalb der Grundversorgung) on the supply of energy to household customers outside the meet basic needs, lay down provisions of the contracts in a uniform manner and, in particular, lay down rules on the conclusion of the contract, the subject matter and the termination of the contracts, as well as the rights and obligations of the contracting parties. Still, as disciplined in §41 (4), Energy suppliers are obliged to provide the general information on the provisions of para 1 sentence 2 of both articles both in or as an annex to their invoices to household customers and in advertising material addressed to them as well as on their website.

before the start of the energy supply delivery. On the supplier's side, §41 (3) rules that energy suppliers must inform the final consumer in a timely manner, and in any case before the end of the normal billing period and in a transparent and comprehensible manner, of any intended change to the terms of the contract and on the customer's rights of withdrawal. For instance, if the supplier unilaterally changes the terms of the contract, the final consumer may terminate the contract without observing the notice period rules.Anyway, if, as stated at §41 (3a), there is a change in the passing on of additional or reduced VAT charges resulting from a legal change in the applicable VAT rates, there is no need to inform the household customer of the modification as ruled in paragraph 3 sentence 1 of §41. This brings to the customer no special right of termination before the natural time stated in the agreement under paragraph 3 sentence 2, thus applying the normal rules on the agreement concluded between parties.

§42 '*Mieterstromverträge Stromkennzeichnung, Transparenz der Stromrechnungen, Verordungsmächtigung*' (Electricity labelling, transparency of electricity bills, authorisation to issue regulations) provides provisions in regards to the actual transparency on where the energy comes from, if the electricity is an electricity mix and the environmental impact of the supplied electricity. For this information, energy suppliers are obliged, according to §42(1) to inform the customer before the 1st November of each year. Finally, §42 (a) '*Mieterstromverträge*' (Tenant electricity contracts) disciplines the situation of energy consumption by a tenant. In this case, as §42 (a) (1) rules, it is prohibited to insert in the tenancy agreement a decisive clause (Bestandteil) on the energy consumption as part of the tenancy contractual obligation by the tenant. If an agreement with those details is ruled by both tenant and landlord, the agreement is null. This means, that energy agreements and tenancy agreements should be separate. In detail, §42(a)(1) declares that both articles §815 BGB '*Kentniss der Nichtschuld*' (Knowledge of non-debt) and §817 BGB '*Verstoßß gegen Gesetz oder gute Sinne*' (Violation of the law or good morals) are not applicable in regards to energy bills. In order to protect the customer, §42 (a) (2) rules that if the tenancy agreement ends before the natural time conclusion of the agreement, the tenant should not stop the energy supply agreement, which remains in force. In this case, it is on the landlord duty side to stop the energy supply agreement.



This graphic released by Clean Energy Wire Journalism for the Energy Transition[23] shows off in detail and in a simple yet effective way, how electricity bills expenses are divided in Germany: From the graphic which puts in relationship the 2018 and the 2019 electricity bills cost, it emerges that in 2019 the energy bills cost of an average customer where divided in: 24% of the expenses for the Grid fee, 23% for the acquisition/sale of electricity, 21% for renewables surcharges, 16% for VAT, 7% for electricity tax, 6% for concession fee and the remaining 3% in other surcharges. It emerges from 2018 and 2019 comparisons that except the acquisition/sales fee which price increased by +2% in 2019, the rest of the index lowered (grid fee index -1%, renewables fee -2%) or remained stable such as the VAT and the CHP and other surcharges indexes.

3 The Italian Scenario on Energy Bills during Ordinary Times

Italian energy bills are regulated by the Delibera 16 October 2014 '*Bolletta 2.0: criteri per la trasparenza delle bollette per i consumi di elettricità e/o gas distribuito a mezzo di reti urbane*' (Bill 2.0.: criteria for the transparency of energy and gas bills distributed through urban distribution)[24] by the ARERA (Italian's independent authority on Energy)[25] which entered into force on 1 September 2015.[26] The decision is composed of 1 article and Annex A which counts 22 articles that regulate the content of energy bills in Italy. The scope of this decision is to 'simplify and give more flexibility on the structure and on the content of the new bills also in regards on how the tariffs are graphically shown up on the bill, on all the other information included in the bills and on the periodicity of the communications of bills'. The resolution of 2014 states that the new bills are structured in two: the first one is a synthetic bill that summarizes the content of the bill and reports their minimum requirements ruled by law; and a second part of the bill which contains all the details of the bill such as detailed elements of the consumption. This second part of the bill is sent to the customer only upon his request. Annex A of the Delibera regulates from Artt 4 to 10 the minimum requirements that an energy bill should have. Art 4 is entitled '*Struttura della bolletta sintetica*' (structure of the synthetic bill) gives the general provisions on the matter. In particular the article requires that the bills need to be in line with the fiscal provisions and at the same time respect the requirements stated from

[23] E. Thalman and B. Wehrmann, 'What German households pay for power' available at https://www.cleanenergywire.org/factsheets/what-german-households-pay-power (last visited 1 July 2021).

[24] ARERA 501/2014/R/com 16 October 2014. It's worth noting that while in Germany both the seller and the customer obligations and duties are part of EnWG, in Italy there is as Conduit codex for the sellers `*Codice di condotta commerciale per la vendita di energia elettrica e di gas naturale ai clienti finali*` (conduit commercial codex for the sell of electricity and gas to final customers) which can be found at Annex A of the ARERA Decision 366/2018/R/com of 28 June 2018– Coordinated text with the integrations and modifications done by Decision 109/2019/R/eel and by Decision 426/2020/R/com and Decision 97/2021/R/com which will enter into force on 1 July 2021.

[25] The ARERA (*Autorità di Regolazione per Energia Reti Ambiente*) is the Italian independent authority on energy matters. ARERA was founded with legge 14 November 1995 n. 481 '*Norme per la concorrenza e la regolazione dei servizi di pubblica utilità. Istituzione delle Autorità di regolazione del servizio di pubblica utilità*'. The Law entered into force on 19 November 1995 and the ARERA began to operate from 23 October 1997.

[26] This decision was taken at the 838th assembly of the ARERA which took place on 16 October 2014.

Artt 5 to 10 of Annex A. Art 4 (2) then states that bills should be written in a clear manner not only graphically but also on the type of character used to write the bill. In regards to the graphic design of the bill, article 4 (2) rules that energy suppliers should be free to decide the design while at the same time opt for a clean and clear communication of the data of the bill. Art 5 '*Elementi minimi della bolletta sintetica*' (minimum elements of the synthetic bill) discloses in detail all the data that the synthetic energy bill should have. Article 6 '*Dati relativi alle letture, ai consumi e ricalcoli degli importi*' (Data referred to reading, consumptions and recalculation of the bill amount) states that when the provider is issuing the bill, the reading on the energy consumption should be calculated on all the periods in which the bill is referred to. In particular, in the bill, there needs to be highlighted: a) how the readings have been done (self reading, estimated reading or measured reading) in relation to the hours in which the consumption has taken place; b) the details of the consumption distinguished into effective consumption, estimated consumption and billed consumption with the indication of the hours in which the electricity has been used; c) the reactive consumption and d) if the consumption is estimated, the amount that will be recalculated in the next bill. If the bill is based on estimated consumption, Art 6 (2) states that the recalculation should provide the time frame in which the new calculation is referred to and the consumption that have been already calculated in relationship with previous energy bills and the detraction of them in regards to the just released bill. If the estimated calculation of energy consumption occurs for reasons not according to Art 6 (2), Art 6 (3) obliges the energy supplier to motivate the new calculation thus providing the reasons for the impossibility to apply the recalculation of the bill according to 6 (2). The same rule is applied also if energy prices change. Art 7 '*Informazioni relative al pagamento e alla rateizzazione*' (informations regarding payments and installments payments) disciplines how energy payments should be communicated by the energy supplier to the domestic customer and how the customer can pay the bills. In particular the bill should provide: a) the payment methods that customer might have to pay the bill; b) the entire billing situation of the customer; c) if the domestic customer has unpaid bills in its account; d) the interest rates per day for each delayed payment bill. In case that the customer does not serve his payment obligation, Art 7 (2) states that the bill should also indicate the procedure to resolve this situation, how to start the proceeding to fulfill the obligation and its cost. If, as ruled in Art 7(3) the payment of the bill can be paid through installments, the energy supplier should state how to apply to this service and its cost.

Art 8 '*Sintesi degli importi fatturati*' (Synthesis of the billed tarifs) states that energy tariffs should indicate: a) the cost of energy or gas; b) the cost for transportation; c) the cost for the system. Beside this, Art 8 (2) states that bills should also provide informations in regards of the recalculation made according article 6 (2) or 6 (3) as well as all the index voices that contain a cost, including the social bonus that a domestic customer might have obtained due to its financial situation. Art 8 (4) obliges suppliers also to include in a separate index the VAT

related to the expenses.[27] Art 9 '*Costo medio fornitura*' (average supply cost) then defines what the average cost of the bill and of the energy supply are. The average cost of the bill is the ratio between the total amount price in the bill and the energy consumed by the customer. While it can be defined as the average cost of the energy supply, the ratio between the transportation costs and the consumption billed. Art 10 '*Ulteriori elementi minimi*' (other minimum elements) makes a list of all the other data that should be inserted in the synthetic bill thus including: a) the latest bills consumption in 12 months divided, if possible, in time hours, b) the data related to the main characteristics of the agreement between supplier and customer so that he can manage to control his energy consumption. In particular, Art 10 (1) (b) rules that it is mandatory that the first bill has the data of when the supply has started, the tension of the electricity supply according to Art 5 and c) the information related to the energy mix if used for the supply. Those obligations are mandatory also for energy suppliers part of the free market as entered into force in 2007.[28] The rest of the article is a list full of specifications that require synthetic bills. Art 12 then disciplines how a customer can require all the details of the full bill as regulated in Art 4 of the Delibera 16 October 2014 501/2014/R/com.

It is also worth mentioning the Delibera 4 August 2016 '*Disposizioni relative alla fatturazione di periodo, indennizzi a carico dei venditori e delle imprese di distribuzione e ulteriori obblighi in capo alle suddette imprese in tema di misura*' (Rules regarding the billing time, indemnification of sellers and distribution undertakings and additional obligations on those undertakings in respect of the measure)[29] disciplines the timing of when bills should be shipped to customers. Art 4 '*Emissione e frequenza della fattura di periodo*' (Emission and frequency of billing) of Annex A of this Decision disciplines in detail when bills should be sent to customers. In particular Art (2) rules that billing should be sent before the 45th solar day of the last day of the billed consumption. At the same time it provides two exceptions on bill timing: the first one is that the free market supplier can adopt a more frequent billing emission timing, and the second one that free market suppliers might adopt another timing as the 45 days stated in article 4 (2).

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[27] In Italy the VAT is 22% on the cost of the god/service purchased. Available at https://www.agenziaentrate.gov.it/portale/web/guest/iva-regole-generali-aliquote-esenzioni-pagamento/norme-generali-e-aliquote (last visited 26 June 2021).

[28] The free market in the energy sector has been introduced in Italy by the decreto legge 16 March 1999 no 79, *Attuazione della direttiva 96/92/CE recante norme comuni per il mercato interno dell'energia elettrica* (called 'Bersani Decree'. For an analysis of the Italian energy market see the Italian Implementation Plan published by the European Commission Ref.Ares (2020)3317597-25-06-2020 available at https://ec.europa.eu/energy/sites/default/files/italy_market_reform_plan.pdf (last visited 30.06.2020) and IEA Energy Policies of IEA Countries: Italy 2016 Review available at https://www.iea.org/reports/energy-policies-of-iea-countries-italy-2016-review (last visited 30 June 2021).

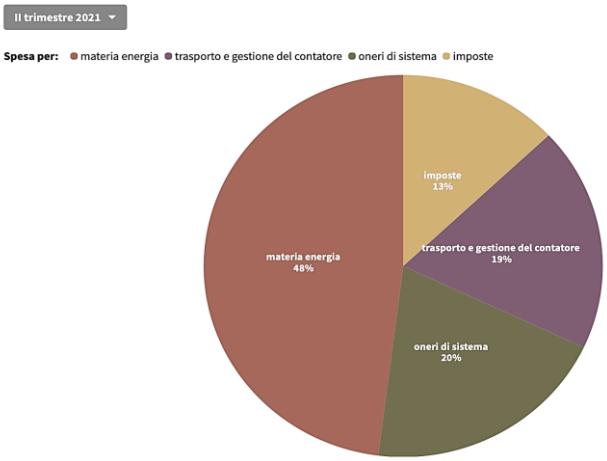
[29] ARERA Delibera 463/2016/R/com 4 August 2016. This decision was approved at the 930th assembly of the ARERA which took place on the 5 August 2016. This Delibera approves the '*Testo integrato delle disposizioni dell'Autorità per l'energia elettrica il gas e il sistema idrico in materia fatturazione del servizio di vendita al dettaglio per i clienti di energia elettrica e di gas naturale (TIF) ed introduce indennizzi a carico dei venditori e delle imprese di distribuzione e ulteriori obblighi in capo alle suddette imprese in tema di misura*' (Integrated text of the provisions of the Electricity, Gas and Water Authority concerning the invoicing of the retail service for electricity and natural gas customers [TIF] and introduces indemnification for sellers and distribution undertakings and additional obligations on the undertakings concerned in respect of the measure).

In any case, for more detailed information, the article refers to table 2 which in a simple manner explains when bills should be sent to customers.

Table 1: Frequency of electricity billing for type of customers[30]

Type of Customers	**Frequency of Billing**
Non domestic customers with law voltage and with a power of more than 16,5 kW	Monthy
Non domestic customers with low voltage and with a power minor or of 16 kW	Bimonthly
Domestic customers	Bimonthy

This second graphic provided by ARERA[31] shows off in detail for the 3rd semester of 2021 how electricity bills expenses are divided in Italy for an average domestic customer.



From the graphic it emerges that, on an average domestic bill, 49% of the expenses are for the energy itself, 20% are devoted for ancillary charges, 19% of the bill is related to transport and electric meter management and 13% on taxes.

4 Emergency Regulations and Energy Bills in Germany

In the previous pages, it has been analyzed as a 'normal' situation on energy bills. In the upcoming paragraphs it will analyze the policies adopted by both countries in relation to energy bills. On the 27th of March 2020, the German Bundestag has adopted the '*Gesetz zur Abmilderung der Folgen der COVID-19-Pandemie im Zivil-,*

[30] This table is the translation of Table 2 of Annex A of Delibera 463/2016/R/com 4 August 2016.

[31] ARERA, 'Composizione percentuale del prezzo dell'energia elettrica per un consumatore domestico tipo' available at https://www.arera.it/it/dati/ees5.htm (last visited 01 July 2021).

Insolvenz- und Strafverfahrensrecht'.[32] This law entered into force on 27 March 2020 but its Art 5 '*Änderung des Einführungsgesetzes zum Bürgerlichen Gesetzbuche*' (Modifications to the EGBGB) modified §240 of the EGBGB[33] and entered into force on the 1st April 2020.[34] In particular the new Art 240 EGBGB rules in regards to the new contractual principles applicable due to the COVID-19 pandemic.[35] The article is divided into seven sections. Section one introduces a moratorium on continuous obligations *(Dauerschuldverhältnis),* section two and three discipline both rent and mortgages agreements, section 4 disciplines the applicability time frame of section one, two and three of the Law, section five and six are devoted to events and travel contractual obligations while section 7 on the disturbing behaviour of mortgages and rents. In regards to electricity bills, only section 1 which introduces a 'moratorium' on payments can be applicable.

In fact, as stated in 240 (1) (1) both consumers as well as micro enterprises[36] who have concluded before the 8th of March 2020 a continuous agreement were allowed to refuse performance until no later than 30 June 2020.[37] It is important to underline that these provisions are applicable only if consumers were not able to render performance because of a consequence of circumstances which can be attributed to the SARS-CoV-2 virus (COVID-19 pandemic. The rules stated in Art 240 (1) find the exception at subsection 3 and subsection 4. Art 240 (1) (3) allows the consumer creditor to pretend the honoring of the obligation - contrary to what stated in Art 240 §1 (1) - if the obligation itself does not 'endanger the economic foundations of his or her business undertaking'.[38] The same right is applied also to the microenterprise creditor who can pretend the fulfillment of the obligation to the debtor if 'non-performance would endanger his or her own decent livelihood or that of his or her dependants or the economic foundations of his or her business undertaking'. The other exception is ruled in Art 240 (1) (4) which clearly rules that subsection (1) and (2) do not apply in regards to leases and usufructuary leases pursuant to section 2, loan agreements and in regards to entitlements under labour

[32] *Bundesgesetzblatt Jahrgang 2020 Teil I Nr. 14, ausgegeben zu Bonn am 27. Mär̈z 2020, s.569*. In this regard M. Meißner, 'Gesetzgeber plant umfangreiche Änderung des Insolvenzrechts (COVID-19-Insolvenzaussetzungsgesetz – COVInsAG)' available at https://community.beck.de (last visited 9 September 2021).

[33] '*Einführungsgesetz zum Bürgerlichen Gesetzbuche in der Fassung der Bekanntmachung vom 21. September 1994 (BGBl. I S. 2494; 1997 I S. 1061), das zuletzt durch Artikel 2 des Gesetzes vom 25. Juni 2021 (BGBl. I S. 2133) geändert worden ist*'.

[34] Art 8 (6) of '*Gesetz zur Abmilderung der Folgen der COVID-19-Pandemie im Zivil-, Insolvenz- und Strafverfahrensrecht*'.

[35] Art 240 '*Artikel 240 Vertragsrechtliche Regelungen aus Anlass der COVID-19-Pandemie*'.

[36] The adopted definition of microenterprise is the one adopted by the Commission Recommendation 2003/361/EC of 6 May 2003 [2003] OJ L 124/36.

[37] This means that the moratorium starts from when the law enters into force until 30 June 2020. For a detailed overview of the law, the Ministry of Economy released on the 1st of July 2020 a FAQ related to the Moratorium. The FAQ is available at https://www.bmjv.de/DE/Themen/FokusThemen/Corona/Miete/Corona_Miete_node.html;jsessionid=07CE0D6E494363B56C8BDA80453 (last visited 03 July 2021).

[38] This sentence has to be read together with Article 2 of the Basic Law of the German Republic which rules that 'Every person shall have the right to free development of his personality insofar as he does not violate the rights of others or offend against the constitutional order or the moral law'. In this case, the moratorium will not apply if the corresponding temporary waiver by the creditor is as unreasonable as the performance by the debtor, because their creditor's rights would be violated by the debtor's request.

law. On the debtor side, beside Article 240 (1) (1), there is also the last sentence of Art 240 (1) (3) and Art 240 (1) (5). In particular Art 240 (1) (3) states that 'where the right to refuse performance under sentence 1 or 2 is ruled out, the debtor has the right to terminate the contract'. The importance of this sentence lays down to the fact that if the conditions stated in Art 240 (1) (1) or Art 240 (1) (2) apply, the debtor can terminate the contract thus deciding to not use anymore the service previously used (i.e.: mobile phones promotion agreements) due to the COVID-19 economic loss he is facing. Art 240 (1) (5) then rules that 'derogations from subsections (1) and (2) which are prejudicial to the debtor are not permissible'. This means that also if there is a significant insolvency situation on the debtor's side, this cannot produce worse contractual and economic effects on him. For example: due to this situation the debtor cannot face a future surcharge on the continuous agreement he had sealed before the 8th of March 2020 or he needs to pay a penalty because of the derogations ruled according to Art 240 (1) (1) or Art 240 (1) (2). Analyzing the central part of the 'Moratorium' disciplined in Art 240 (1) (1) and Art 240 (1) (2), it's important to underline a few characteristics. The first one is that it refers only to continuous obligations. Secondly, that the procedure in order to receive the beneficium of the moratorium starts after the claim by the debtor to the creditor of his performance impossibility. The creditor may, after he received the debtor's claim, refuse to receive the obligation performance by the debtor thus applying the payment deferral until 30 June 2020. The article also states that in order for the creditor to allow the deferral of the payment, the debtor has to demonstrate that the continuous obligation is referred to 'a service of general interest'.[39] Lastly, in order for this provision to fully operate, the agreement had to be concluded before the 8th of March 2020. This means that if a debtor has sealed an agreement after this date, the provisions ruled in Art 240 (1) (1) or Art 240 (1) (2) are not applicable. The legal consequences of the Moratorium are many. The first one should be a right of the debtor to refuse performance. By asserting this effect, the debtor may not be in default with his performance. This in any case precludes the creditor from a right of withdrawal under §323 I BGB (Withdrawal due to services not provided or not provided in accordance with the contract) and the right to claim damages instead of performance under §281 I BGB (Damages instead of performance due to not or not due performance). Furthermore, the refusal to perform does not constitute a breach of duty which could justify an extraordinary termination of the agreement by the creditor's side under §314 BGB (Termination of continuous obligations for good cause). This does not preclude, however, that the adherence to the contract becomes unreasonable for the creditor for other reasons, which would entitle him to extraordinary termination of the contract. With the end of the moratorium on 30 June 2020 brings the expiry of the right to refuse performance, all outstanding payments are due in one fell swoop.[40] In regards to

[39] The second sentence of Art 240 §1 (1) states '*Das Leistungsverweigerungsrecht besteht in Bezug auf alle wesentlichen Dauerschuldverhältnisse*' (The right to refuse performance applies to all essential continuous obligations). The Article defines essential continuous obligations as the ones that, for the consumer, 'are necessary so that consumers are adequately supplied with services of general interest' and for the microenterprise are 'necessary to ensure a supply of services which is adequate to continue the business undertaking'.

[40] T. Rihiem, 'Gesetzesentwurf der Bundesregierung zur Abmilderung der Folgen der COVID-19-Pandemie: Allgemeines Zivilrecht' available at https:// community.beck.de (last visited 9 September 2021).

electricity and gas bills, the German ruler, has not disciplined the total prohibition to interrupt during COVID-19 pandemic moratorium time the supply of gas and or electricity, thus allowing energy suppliers to interrupt the energy supply service also citizens in need.[41] In fact, Art 19 'Unterbrechung der Versorgung' (Energy supply service interruption) of the Stromgrundversorgungsverordnung (StromGVV) - Ordinance regulating the provision of basic electricity supplies[42] - allows electricity suppliers to interrupt the energy supply if the consumer is in debt from 100,- and more euros for more than four weeks. Jumping now to the conclusions on the policies adopted by Germany in regards to energy bills during COVID-19 has not been effective because it did not allow household consumer to fully recover from the economic crisis given by the pandemic, thus creating only a potential billing stop for 2 months[43] and allowing the energy suppliers to interrupt the service also in time of a global pandemic.[44] At the same time, as Rûfner has stated,[45] the moratorium ruled Art 240 §1 (1) and Art 240 §1 (2), on the one hand was too short, and on the other hand the obligations included were too general, thus being uncertain and mining the certainty of law, which is very important in case of emergencies.[46]

5 Emergency Regulations and Laws in Italy

After the analysis of the German scenario, it's time to analyse the electricity bills scenario in Italy during emergency periods. As mentioned in the previous pages, Italy has been hit by two disasters in recent years: the first is the earthquake that hit the Abruzzo, Lazio, Marche and Umbria regions in August and October 2016 and January 2017,[47] the second one is the COVID-19 pandemic. As for Germany, the Italian government, due to the seismic events, adopted a policy of 'suspension'.[48] In

[41] 'Zehntausenden Haushalten wurde in Bayern der Strom abgedreht' available at https://www.nordbayern.de/politik/zehntausenden-haushalten-wurde-in-bayern-der-strom-abgedreht-1.11140907?cid=19.1611682 (last visited 3 July 2021).

[42] '*Stromgrundversorgungsverordnung vom 26. Oktober 2006 (BGBl. I S. 2391), die zuletzt durch Artikel 4 der Verordnung vom 14. März 2019 (BGBl. I S. 333) geändert worden ist*'.

[43] In this regard, a statement by the National Consumer Association of 1 December 2020, asks the *Bundestag* to study a law that will allow a longer moratorium or will find an exception to Art 19 *StromGVV*. The statement is available at https://www.vzbv.de/pressemitteilungen/verbraucher-nicht-im-kalten-und-dunklen-sitzen-lassen (last visited 03 July 2021).

[44] A FAQ of the German's Consumer Association says, with concern, that the Moratorium has not been extended thus obliging consumers to pay regularly the bills they will receive after 1st of July 2020. 'Stromsperre -was nun?' available at https://www.verbraucherzentrale.de/wissen/geld-versicherungen/kredit-schulden-insolvenz/stromsperre-was-nun-11674 (last visited 3 July 2021). In the same direction also the report 'Corona-Politik stürzt vor allem Junge in finanzielle Not' available at https://www.welt.de/finanzen/verbraucher/article227308779 /Corona-Politik-stuerzt-vor-allem-Junge-in-finanzielle-Not.html (last visited 3 July 2021).

[45] T. Rüfner, 'Das Corona-Moratorium nach Artikel 240 EGBGB', 75 *JuristenZeitung*, 443, 443–448 (2020).

[46] The Author at page 448 refers to the French government that with '*Ordonnance n° 2020 – 316 du 25 mars 2020 relative au paiement des loyers, des factures d'eau, de gaz et d'électricité afférents aux locaux professionnels des entreprises dont l'activité est affectée par la propagation de l'épidémie de covid-19, Journal Officiel Nr. 74 vom 26. 3. 2020, Nr. 37*'.

[47] For more information about the 2016 and 2017 earthquakes, visit the official website SISMA 2016, available at https://sisma2016.gov.it (last visited 3 July 2021).

[48] The first law that entered into force due to the seismic events of 2016 is the decreto legge 17 October 2016 no 189 *Interventi urgenti in favore delle popolazioni colpite dagli eventi sismici del 2016* which entered into force on the 19th of October 2016. Today, in 2021, because the reconstruction of the territories hit by the earthquakes

particular, Art 48 (2) of the decreto legislativo 189/2016 ruled that for the energy sectors (electricity, gas and water), the energy authority (ARERA), should provide legislative acts related to bill suspensions for a maximum period of six months. At the same time, the Article demands the ARERA to rule before 120 days from the entry into force of the decreto legislativo, all the provisions concerning the installments methods for the suspended payments as well as discounts on the tariff for the inhabitants of the municipalities that have been hit by the earthquakes. On the 18th of April 2017, almost 200 days after the seismic events of 2016, the ARERA adopted the Decision 964-*bis* which introduced the definitive[49] provisions recalled at Art 48(2) of the decreto legge 189/2016.[50] This decision[51] is very important because it sets the entire discipline on energy bills for the populations which faced the events. Article 1 of the decision rules the definitions that will be valid for the entire provision. The definitions are related in regards to the property damages that have faced the inhabitants of the territories affected by the earthquakes. In fact, the suspensions benefices were based depending on the property in which people were living or people were owners of. Art 2, then, rules on the characteristics to receive the benefits from the Decision. In particular, the benefits apply to the energy supply agreements stipulated before the 24th of August 2016 or befor 26 October 2016 or before 17 of January 2017.[52] The Article also distinguishes two types of beneficiaries. In fact, benefits can be automatic if people live in emergency housing such as SAE, MAPRE, MAP or in houses built for the population's assistance.[53] On the other side, benefits can be given upon the request of the interested person if those demonstrate the relationship between the destroyed house or the property damage and the earthquake.[54] As stated in Art 2 (3), benefits lasted until 31 December 2020[55]. Important is Article 2(4) which states that the earthquake benefits can be combined with other bonuses given by law[56] and Article 2(7) which allows people

are not finished, this decree law is still in force and maintains its importance as the primary rule for the regions hit by the seismic events of 2016-2017.

[49] Before the Delibera 18 aprile 2017 252/2017/R/com, the ARERA adopted on the 28th of December 2016 which ruled that the bill suspension period was valid for six months from the date of both seismic events of 2016.

[50] Delibera 18 Apil 2017 252/2017/R/com '*Disposizioni in materia di agevolazioni tariffarie e rateizzazione dei pagamenti per le popolazioni colpite dagli eventi sismici verificatisi nei giorni del 24 agosto 2016 e successivi*'.

[51] This decision has been integrated by other ARERA decisions until the last one: 111/2021/R/com '*Misure urgenti in materia di servizi elettrico, gas e idrico integrato a sostegno delle popolazioni colpite dagli eventi sismici verificatisi a far data dal 24 agosto 2016 nel centro Italia e in data 21 agosto 2017 nei Comuni di Casamicciola Terme, Lacco Ameno e Forio*'.

[52] Art 2 (1) (a), Art 2 (1) (b), Art 2 (1) (c).

[53] Art 2 (1) (d).

[54] Art 2 (1)(e), Art 2 (1) (f), Art 2 (1) (g), Art 2 (1) (h).

[55] The original text of the Delibera 252/2017/R/com ruled that the suspensions were valid for 36 months. With the integration at article 5(3) of Delibera ARERA 587/2018/R/com, the suspension is valid until the 31st of December 2020. In fact the article states that '*All'articolo 2 della deliberazione 252/2017/R/com, dopo il comma 3, è aggiunto il seguente comma: "2.3 bis. Limitatamente alle utenze e forniture localizzate in una zona rossa, in deroga a quanto previsto al precedente comma 2.3, le agevolazioni di cui al presente provvedimento sono riconosciute fino alla data del 31 dicembre 2020*'". Delibera 587/2018/R/com entered into force on the 20th of November 2018, the same day of when the Decision has been made. In 2020, the Delibera 54/2020/R/com extended the billing suspension also to the municipalities of Comuni di Casamicciola Terme, Lacco Ameno e Forio which faced an earthquake on 21 August 2017.

[56] Art 2 (4) *'Le agevolazioni disciplinate dal presente provvedimento sono cumulabili con il bonus elettrico e il bonus gas*'.

who put the residence in a house after the earthquake of 2016, to join the benefits provided by this Decision for both the condemned building as well as the new house where the residence after the 2016 earthquake is located regardless of what stated in article 2(1). In order to join these benefits, Art 3 of the Decision disciplines the procedure to request them, if not given automatically as ruled in Art 2 (3). The procedure to request the benefits was the following. The consumer had to provide to the energy supplier, the certificate from the municipality of the property rights of the condemned house,[57] that no other benefits have been requested,[58] the identifying elements of the energy supply agreement,[59] that the condemned house is the residency house[60] and, if the person requesting the benefits is another one from the rightful owner of the house, that the interested party is resident in that house.[61] In order to successfully fulfill the request, people had 18 months to send all the requested documents, in particular the certificate that the house is condemned. The energy supplier then, according to Art 3 (5) (a) (ii) will send the benefits request to the energy distributor in 30 days from when they received it. After, the distributor will proceed in 30 days to ensure that all the documentation sent by the customer to the supplier is correctly filled and will inform the energy supplier on the results of the control. If the procedure is positive, the distributor will grant him the benefit. In order to 'protect' the customer, Art 4 sets the discipline that energy suppliers need to apply for these emergency periods. In fact, Art 4 (1) obliges energy suppliers to inform on their official website about the possibility to request the benefits. It's also mandatory for the energy supplier to inform the customer that: a) he has the right to receive the benefits; b) the end of period of the benefits. The supplier is also obliged to inform the customer, at least once a year, of the amount that is related to the benefit generated from the energy supply agreement. Lastly, because the Decision entered into force in April, Art 4 (4) rules that the energy distributor should inform before the 17th of September 2017 the energy supplier in regards the energy consumption made by customers from the earthquake until the date of the entry into force of the Decision. From this, the energy supplier will calculate the bill for the customers. In regards to this paper, the central part, is article 5 of the Decision, which rules the bills benefits for the population hit by the earthquake. In particular, Art 5 states that the components ruled respectively at Art 29 (1) will not apply for year 2017, 30 (1), 30 (2) will not apply for year 2016 and 39 (1) of TIT[62] will not apply. This means that the person who faced the emergency should not pay the costs for the transmission, distribution, measurement and infrastructures of the energy supplier as well as the ancillary surcharges inserted in the bill but only the effective cost of the consumed energy. While article 6 regulates the benefits for non-domestic energy supply contracts, Art 7 (1) rules in regards the benefits that people who live

[57] Art 3 (1) (a).

[58] Art 3 (1) (b).

[59] Art 3 (1) (c).

[60] Art 3 (1) (d).

[61] Art 3 (1) (e).

[62] The TIT is the *Testo Integrato delle distribuzioni per l'erogazione dei servizi di trasmissione e distribuzione dell'energia elettrica*. In regards to the seismic events of 2016, the TIT applicable was the one approved by the ARERA Decision of 23 December 2015, 654/2015/R/EEL. The Mathematics referred to the TIT bills voices are available at https://www.arera.it/it/docs/15/654-15.htm (last visited 10th July 2021). The TIT entered into force on the 1st of January 2016.

in emergency accommodations such as SAE, MAPRE or MAP have the right to ask for. In fact, as the article states, the inhabitants of those houses, can request the benefit of the nonapplication of TITLE II[63] and Art 28 (1)[64] of the TIC.[65] Art 14, then, rules in detail the payment methods of the suspended energy bills. In particular the article allow consumers to ask for an installment payments method and obliges energy supplier to not apply any kind of interests for the suspended bills.[66] In this regard, Art 14 (3), rules that bills arrive on a regular basis, that installments are not possible for bills under 20 euros and that the installments can be asked for maximum 24 months after the customer has received the bill. The same rules apply also if the customer has both gas and electricity supply service provided by the same supplier.[67] Art 14(6) allows the customer also to pay the entire amount without installments. If the energy supplier has stopped to send energy bills to the customer or the timing period of the bill payments[68], he is obliged to send one bill either before 31 December 2017 for the customers whose suspension payment time is before the 30th of April 2017 or before six months from the end of the suspension period provided by law.[69] In any case, this only bill will take into consideration the benefits ruled by the Decision. Lastly, it is important to underline that, according to Art 15 (1) of the Decision, if the customer is in arrears, the payment of the arrear, starts from the end of the suspension period. As we have seen in the previous pages, the bill suspension for the people who faced the seismic events of 2016 had been extended until 31st of December 2020. In this regard, a new Delibera by ARERA of 18 March 2021[70] has extended the billing suspension period until the 31st of December 2021.

6 Energy Bills Policy Comparison

In the previous paragraphs it has been analyzed the discipline for both Germany and Italy in regards to electricity bills after COVID-19 and the Italian seismic emergency. It's now time to give some remarks in regards to both of them.

Starting from the German policy, the biggest problem faced by domestic customers concerns the short time of the suspension. For instance, also if the pandemic is in due course, the suspension of the electricity bills lasts for only two months, thus affecting the categories of the people in need. On the other hand, if we

[63] Title II of the TIC is entitled 'provisions for ordinary low-voltage connections'. In this regard, the final customer will not have to face costs for the installment of low-voltage connections.

[64] Article 28 is entitled 'volture e subentro' (vulture and replacements) and states that for the vulture and replacements there is a fixed price for administrative costs of it. Art 28 (2) then states that for the change of energy supplier, no fee is applicable for the customer.

[65] The TIC is the Testo Integrato delle condizioni economiche per l'erogazione del servizio di connessione". In regards to the seismic events of 2016, the TIC applicable was the one approved by the ARERA Decision of 23 December 2015, 654/2015/R/EEL. The TIC entered into force on the 1st of January 2016.

[66] Art 14 (2).

[67] Art 14 (5).

[68] Art 14 (7).

[69] Art 14 (8).

[70] Delibera ARERA 111/2021/R/com '*Misure urgenti in materia di servizi elettrico, gas e idrico integrato a sostegno delle popolazioni colpite dagli eventi sismici verificatisi a far data dal 24 agosto 2016 nel centro Italia e in data 21 agosto 2017 nei Comuni di Casamicciola Terme, Lacco Ameno e Forio*'.

analyze the billing policy adopted by the Italian government, few problems need to be highlighted. The first one is referred to the fact that from January 2021 until March 2021, no decisions by ARERA in regards to the billing suspension has been made, thus brining much confusion to the customers and at the same time allowing energy suppliers to believe that the suspension period had finished, thus pretending the billing payment from customers. Furthermore, because the billing suspension has been so long (almost 50 months from the first seismic event of 2016) and because Article 14(7) of the Delibera 252/2017/R/com allows energy suppliers to send a cumulative bill for the entire suspension period, customers might receive, when the suspension period ends, an incredible expensive electricity bill.[71]

7. Conclusions

Jumping now to the conclusions of this article is worth to say that none of the policies adopted by both countries are consumer oriented as, on the one hand, the German one, did not take into consideration the duration of the pandemic, while on the other hand, for the Italian one, on the contrary, the billing suspension periods were too long thus creating risks for the customers to receive incredible expensive bills which might affect their financial stability. In this last case, the billing policy is the opposite of the German one, but in both cases, energy poverty for consumers might be a big risk, because they were not protected from the duration of the emergency period. In fact, as Thomas Pellerin-Carlin[72] declared in an interview with Euractive magazine 'COVID-19 has two extremely negative effects on energy poor households. The first one is that the number of people experiencing poverty, generally speaking, is increasing because of the loss of revenues, created by this economic crisis. The second reason obviously is the fact that as people are compelled to stay in their homes for longer because of lockdowns, because of curfews, because of other COVID-related measures, the energy bill is increasing'.[73]

[71] In this regard, the Italian newspaper Il Resto del Carlino reports that a customer, victim of the seismic events of 2016 who is resident in Pieve Torina (Macerata), received in December 2020 an electricity bill of 16.985,98 euros. L. Gentili, 'Terremotato riceve bolletta da 17 mila euro' available at https:// www.ilrestodelcarlino.it/macerata/cronaca/terremotato-bolletta-17-mila-euro-1.5878185 (last visited 10 July 2021).

[72] Thomas Pellorin-Carlin is director of the Jacques Delors Energy Center.

[73] K. Taylor, '30 million Europeans were in energy poverty in 2019' available at https://www.euractiv.com/section/energy/news/30-million-europeans-were-in-energy-poverty-in-2019/?_ga=2.160840765.1814204154.1625942711-744294739.1625942711 (last visited 10 July 2021).

The Application of Blockchain to Smart Grid

Matteo Altobelli, Rosario Culmone and Leonardo Mostarda

Abstract: The Smart Grid (SG) is a new vision where green and renewable energy are integrated. Smart Energy Internet is a further technological evolution where energy optimization is achieved everywhere at any moment. The main purpose of these technological advances is to build a society which is sustainable. This requires integration and coordination of a huge number of prosumers that are consumers and producers of energy. Coordination via a centralized system does not scale and constitutes a single point of vulnerability thus decentralized coordination of smart grid should be considered. In this context blockchains have the necessary features to implement an intelligent and secure distributed smart grid. In this paper we review the application of blockchain technology to the smart grid. We identify security challenges with particular focus on those that can be solved by means of blockchain. We also focus on blockchain based solutions that make use of AI. We conclude the paper with various case study scenarios and future directions.

Keywords: Smart Grid, Blockchain, Smart Contract, Energy Management System

1 Introduction

The Smart Grid represents the evolution of the traditional electricity management system. The spread of renewable source systems, such as photovoltaic, wind, micro-wind and mini-hydroelectric, are transforming the standard centralized energy production system into a distributed and more complex one, ie the smart grid. While in a centralized system energy is produced by a limited number of large power plants a Smart Grid (SG) proposes an *open* system where end users do not play just the consumer role but can also introduce their exceeding energy into the grid. This new type of end user is often referred to as 'prosumer', i.e. the union of the words 'producer' and 'consumer'.

Prosumers transform the unidirectional flow of electricity of the traditional system into a 'bidirectional flow', which leads to a real-time redistribution of the energy, depending on actual needs. The bidirectional energy management, together with the introduction of smart devices into the network, increases the energy efficiency of the system, optimizing the consumption of the electricity produced. In this scenario not only energy exchange has an important role but also information on the state of the devices, the network and any other hardware is essential. This is at the basis of the intelligent management that is leading the Smart Grid to the next evolutionary step, i.e., the Smart Grid 2.0, also known as the Internet of Energy (IoE). IoE integrates internet technology into the Smart Grid structure. Although Smart Grid 2.0 has several benefits, its interconnected of IoT devices also introduce problems of privacy, security, agreement on cost and direction of energy flow, and

trust between prosumers. These problems can be faced with the help of blockchain technology.

A Blockchain is a form of Distributed Ledger Technology (DLT) that is used to record data and financial transactions in a distributed registry. A network of distributed peers implements the DLT. More precisely, each peer has a copy of the whole data and a consensus protocol is used to keep data consistency. This is achieved without the need of a central administrator. The ways in which consensus is reached and the structure of the registry are some of the characteristics that distinguish the different forms of DLTs. In the Blockchain, for example, the registry is structured as a chain of blocks containing information (transactions, smart contracts, etc.). The information is recorded by distributing it among multiple nodes to ensure its security. Effectively, once written on the blockchain, the information can no longer be changed and is visible to all participants in the network. Security, immutability and transparency are the main features of this technology.

'The whole point of using a blockchain is to let people – in particular, people who don't trust one another – share valuable data in a secure, tamperproof way'.

— MIT Technology Review

2 Smart Grid

Since its inception, the energy distribution model has seen continuous development aimed at adapting its technology to the ever-increasing needs of the population. However, some elements have remained largely unchanged, such as the highly centralized architecture of the system and the actors involved in the energy distribution process. Until the beginning of 2000, *producers* were construction and management companies of large power generation plants, which could reach the production of many Mega-Watts. Generally, the plants were of the thermal type (with fossil fuels), hydroelectric or nuclear. Subsequently, producers began to support these plants with systems for generating energy from renewable sources, such as wind, solar and marine generators.

Supply and distribution of energy were generally performed by the same company. After 2005 a new EU regulation required that supply and distribution had to be done by different companies. This led to the creation of distribution companies that are responsible for getting electricity from the supplier to homes or businesses. Furthermore, the distributors are the owners of the meters that allow the monitoring of electricity consumption. The birth of distributors gave the impetus to the first generation of *smart grids*. The term energy smart grid defines the collection of information necessary for the correct distribution, management and optimization of the energy delivery process. In 2006, Italy was the first in the world to create a smart grid on a national scale through the use of smart meters and a remote reading system based on power line communication where the distribution network is also used for data collection.[1] The last link in the distribution chain is the *consumer*. With

[1] B. Botte et al, 'The telegestore project in ENEL's metering system' *Electricity Distribution*, 1, 1-4 (2005); S. Rogai, 'Enel telegestore project' available at

the advent of domestic micro-production of energy, a new player appears on the market, the *prosumer*. This word is created from the merge of producer and consumer words and represents an adaptation of the consumer to the new characteristics of electrical distribution. The prosumer is represented by small companies, condominiums or single families. They are capable of producing small volumes of electricity through cogeneration systems, micro-wind, photovoltaic or micro-hydroelectric plants capable of satisfying completely (or partially) the domestic or business needs. Unlike the case of centralized plants, the energy production of prosumers may not be estimated in terms of amount and time. A prosumer can consume energy but also distribute exceeding one into the network. At the same time a prosumer can demand energy from the network when his production is not enough. The distribution or consumption of energy by a consumer is usually regulated by using a contract. In some plants a small accumulation system using batteries is also used to satisfy the energy demand at different moments of production (deferred self-consumption). At the end of 2010 there was a notable increase in prosumers which not only had an impact on the economic system but also strongly modified the distribution system. Effectively prosumers changed the classic distribution of energy from unidirectional (one to many) to bidirectional (many to many). These changes have affected not only the technical aspects, i.e. the sizing of the distribution network and its transformation plants, but also the resulting trading system that is the contracting aspects.

The prosumer is at the same time a producer who sells excess energy and a consumer when the self-produced energy is not sufficient to meet his needs. This change has given rise to the second generation of smart grids. In this case the distribution network is not enough to collect the information necessary for the distribution and accounting of the energy produced and consumed, but a new actor, i.e. the prosumer, is needed for economic purposes and network management. The new model is schematically described in Figure 1. Let $v_1^p \dots v_n^p$ be the instantaneous energy produced by producers $p_1 \dots p_n$ and let $v_1^{pc} \dots v_k^{pc}$ be the instantaneous energy produced by the prosumers $pc_1 \dots pc_k$. Let $v_1^p \dots v_n^p$ be the instantaneous energy consumed by consumers $c_1 \dots c_m$ and let $w_1^{pc} \dots w_k^{pc}$ be the instantaneous energy consumed by the prosumers $pc_1 \dots pc_k$. Then Equation 1 must be valid. This models that the sum of the energy produced must be greater than the energy consumed since electricity is an asset that cannot be stored by the distributor (at least until today).

https://unece.org/fileadmin/DAM/energy/se/pp/adhoc/adhoc8May06/2_Rogai.pdf (last visited 16 September 2021); Id, 'Enel's metering system and Telegestore Project' available at https://docplayer.net/50668053-Enel-s-metering-system-and-telegestore-project.html (last visited 16 september 2021).

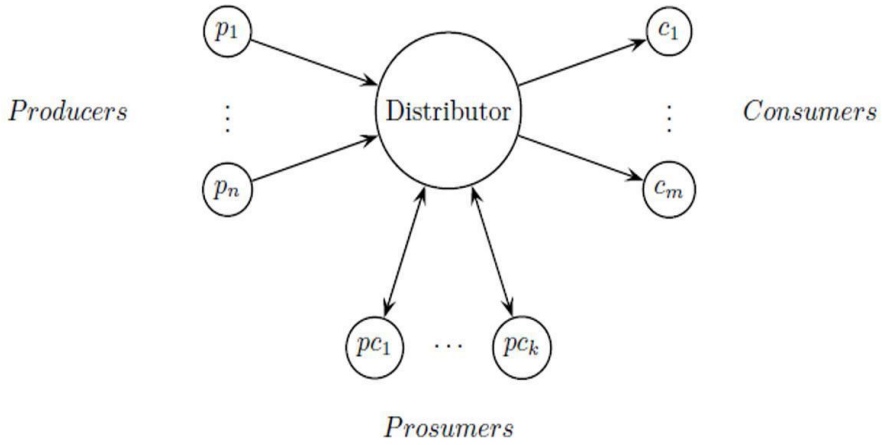


Figure 1: Actors of Smart Grid 2.0

$$\sum_{i=1}^{n} v_i^p + \sum_{i=1}^{k} v_i^{pc} \geq \sum_{i=1}^{m} w_i^c + \sum_{i=1}^{k} w_i^{pc} \quad (1)$$

In the smart grid 1.0 meters are owned by a distributor. This is a trusted entity that calculates consumption and production of energy. The distributor charges the user according to well defined contractual terms. The big change in the smart grid 2.0 (SG2) is that energy is not anymore only produced by a centralized supplier but also potentially by many prosumers. These, unlike smart grid 1.0, can stipulate contracts between them. The contractual terms between prosumers should consider the following conditions:

- The non-continuity of production by prosumers must enter into the rules of supply;
- The cost of energy in the SG2 model can vary over time as a result of the amount of energy produced and consumed;
- The presence of domestic storage systems makes it possible to manage the sale according to criteria of impromptu economic advantage;
- Domestic energy saving systems can intervene in the control of consumption and therefore on the policies of acquisition and sale of the energy produced or consumed.

The SG2 model implies a considerable increase in the degree of complexity compared to SG1 and therefore requires adequate technological support allowing that:

- Different prosumers can stipulate different contracts among them;
- Contracts can automatically select prosumers by considering their instantaneous energy profile;
- Interaction with systems external to SG2 such as energy saving systems.

3 BlockChain

In the last years there has been a lot of talk about Blockchain technology; we are in a historical period in which this innovation is attracting a lot of attention, but too often we fall into a still fairly generalized confusion, where the words 'cryptocurrency', 'Bitcoin', and 'smart contract' stand out from others. To understand the potential and the areas of application of this technology, we must first understand its characteristics.

Blockchain technology is included in the broader family of Distributed Ledger Technologies (DLT), i.e. systems in which all the nodes of a network have the same copy of a database that can be read and modified independently by the individual nodes. In DLT systems, changes to the ledger are regulated by consensus algorithms. This allows distributed peers to reach synchronisation among their local copies of the ledgers. In addition to the consensus algorithms, to maintain the security and immutability of the ledger, DLT protocols also make extensive use of cryptography.

Being a form of the DLTs, the blockchain inherits all its main features: it takes advantage of a distributed network of peers which manage and update, in a univocal and secure way, their local copies of the ledgers containing data and information (for example transactions). This is performed in an open, shared and distributed way without the need of a central entity that controls and verifies. Blockchain also introduces some peculiarities. First of all, its structure: the blockchain is composed of blocks of data (hence its name). Also, the blocks are linked together in a specific sequence. Data management within the blockchain is 'append-only', which means that the new block of data is appended at the end of the chain, and it is not possible to modify the existing data (or at least is extremely difficult). This ensures persistence and integrity. Each block contains a reference that links it to the previous one. The information contained in a block is immutable and the entire sequence of blocks is replicated over the peer- to-peer network. All these features were presented in November 2008 with the publication of the 'Bitcoin' protocol by Satoshi Nakamoto (pseudonym), then distributed for the first time in early 2009. This protocol lays the foundations for a new way of conceiving *trust* in networks of computers, proposing 'a solution to the double-spending problem using a peer-to-peer network'.[2]

Bitcoin belongs to the category of 'permissionless' blockchains (ie,'public blockchains') where any node can join the network and participate in the transaction validation process. The main advantage of this architecture is that it is fully decentralized, as each node has the same value as the others. But, on the other hand, it is slow when it comes to transaction speeds and more difficult to scale. One of the main examples of permissionless blockchain, besides Bitcoin, is Ethereum. Ethereum is a decentralized platform based on the concept of blockchain introduced by Bitcoin. Bitcoin and Ethereum allow the use of digital money without resorting to intermediaries or banks but only Ethereum allows the execution on Turing equivalent smart contracts. These allow the realization of Decentralized

[2] S. Nakamoto, 'Bitcoin: A Peer-to-Peer Electronic Cash System' available at https://bitcoin.org/bitcoin.pdf (last visited 16 september 2021).

applications (Dapps), smart tokens, Decentralized Autonomous Organizations (DAOs) which lay the basis for automated financial applications based on cryptocurrency.[3] A smart contract is a computer pro- gram which is intended to automatically execute, control or document legally relevant events and actions according to the terms of the agreement. Digital smart contracts have existed well before the advent of blockchains. These have enhanced smart contracts by enhancing immutability and transparency and allowing automatic payments. Nonetheless, the design and implementation of complex contractual agreements becomes complicated, if not impossible, when contractual terms have a difficult interpretation, and the agreements are deliberately left ambiguous or vague because of the flexibility of the parties involved. An alternative to public blockchain are the 'permissioned' ones where a central authority determines who can access the network and what roles a user can play within it, also defining rules on the visibility of recorded data. Also called the 'consortium blockchain', this type of blockchain instead of allowing any person with an internet connection to participate in the verification of the transaction process, entrusts the task to a few selected nodes deemed trustworthy, who may also charge a fee for their operations. Therefore, it introduces the concept of governance and centralization in a network that was initially conceived as decentralized and distributed. The characteristics of the permissioned blockchains make them safer than the public ones and allow to have the required level of secrecy, controlling who can access them and who can view the recorded data. They are also more performing, faster, scalable, and less expensive than public ones, given that they have a smaller size and diffusion and that transactions are verified by a limited number of users.

A decentralized consensus algorithm allows peers to compute and 'crystallize' the blockchain state. With particular reference to permissionless blockchains, the absence of centralized authorities (historically delegated with control and approval activities) determines the need for network participants to reach a general agreement regarding the 'state' in which the blockchain is. This allows peers to proceed with a correct registration of new transactions within the next block and to make these registrations final in the ledger. But how can a distributed network of nodes agree on a decision if some of the nodes might fail or act dishonestly? Consensus represents a very complex problem and is of- ten associated with the so-called Byzantine Generals Problem, from which the concept of 'Byzantine fault tolerance' derives. This problem involves a group of generals, each commanding a division of the Byzantine army, camped outside the walls of an enemy city. Observing the enemy, the generals must decide whether to attack or withdraw, but they can only communicate with each other by messenger. The important thing is not the final decision (to attack or not) but to reach a unanimous consensus so that all honest generals can follow the same decision. However, some dishonest generals may decide to selectively tell some generals to attack and others to withdraw, trying

[3] V. Buterin, 'Ethereum: A next-generation smart contract and decentralized application platform' available at https://blockchainlab.com/pdf/Ethereum_ white_paper-a_next_generation_smart_contract_and_decentralized_application_ platform-vitalik-buterin.pdf (last visited 16 september 2021).

to prevent an agreement from being reached.[4] If we apply the problem of Byzantine generals in the blockchain context, each general represents a node of the network with decision- making power, while the choice of the action plan represents the single decision that the nodes must take regarding the validation of the new block. While Byzantine protocol solves the general problems, it does not scale since the number of sent messages is factorial.

The most popular consensus is the 'Proof of Work' (PoW) protocol. Despite being a concept that has been around since the '90s,[5] PoW is being implemented for the first time in the Bitcoin blockchain. In this protocol transactions to be approved and recorded on the ledger must first be selected and collected in blocks. This task is performed by the 'miners' that create a block by solving a puzzle. This requires a miner to use its computation resources to search for a numerical value that is extremely difficult to find but which, once found, is easily verifiable by the other nodes. The miner who manages to solve the mathematical problem hashes the new block and communicates it to the other nodes that verify its correctness. If 51% of the nodes believe the solution is valid, the miner wins a reward and gets the new block added to the chain. If we take into account the huge resources required to support the mining activity, the difficulty and the time needed to solve the problem, the PoW appears to be able to limit malicious actions aimed at compromising the security. Despite the robustness of the protocol, which still makes it the main system to reach consensus in blockchains, PoW has some vulnerabilities, especially related to the 51% attack that occurs when a miner, or a block of colluding miners, reaches the 51% of the total computing power ('hashrate') of the network thus obtaining the possibility of controlling faster than the remaining miners both the generation of new blocks and the approval of new transactions or causing phenomena such as 'double spending'.

A protocol that was immediately proposed as an alternative to PoW and which has received a lot of attention is the 'Proof of Stake' (PoS). In a PoS system, there is no concept of miner, specialized hardware, or massive power consumption; what you put into play is not an external resource (such as electricity or hardware), but an internal one: cryptocurrency. In order to participate in the validation process (called 'staking') there is a minimum amount of funds that must be held. Then, the funds will be locked in a wallet (they cannot be moved while staking) as a guarantee of your operations. In a sense, you are betting on the block that will be selected, and the protocol will choose one. If your block is selected, you will receive a percentage of the transaction fees, depending on the stake you have bet; the more funds you have blocked, the more you can earn. If, on the other hand, you try to cheat by proposing invalid transactions, you will lose all or part of the stake.

[4] L. Lamport et al, 'The Byzantine Generals Problem' 4 *ACM Transactions on Programming Languages and Systems*, 382, 382–401 (1982).

[5] C. Dwork and N. Naor, 'Pricing via Processing, Or, Combatting Junk Mail, Advances in Cryptology' 740 *CRYPTO'92: Lecture Notes in Computer Science*, 139, 139–147 (1993).

4 Concrete Use Cases

Despite the evident usefulness of blockchain technology in sectors where there is no physical exchange of material, such as in the financial one, in recent years, thanks to the greater diffusion of electricity production systems from renewable energy sources, numerous projects have integrated the blockchain to the energy sector. The possible applications are a consequence of the characteristics of the technology, and range from smart device coordination to energy trading and electric vehicles (EVs) management. The next paragraphs contain applications of the blockchain to smart grids and are grouped by application areas.

4.1 Asset Management

The development of technologies for the collection and management of energy-related information, together with the possibility of a two-way communication, have allowed greater interaction between all the participants of a smart grid. However, the presence of a centralized structure can cause issues such as information leakage or tampering, or the presence of a single point of failure.

The application of blockchain technology, and the consequent change from a centralized to a decentralized structure, allows to solve the problem of the single point of failure. Furthermore, the properties of the blockchain guarantee immutability and security, as well as transparency, of information, and thanks to the use of cryptography it is possible to obtain a high level of privacy. Finally, the application of smart contracts introduces automaticity in the information gathering process.

4.2 Energy Trading and Market

The figure of the prosumer has allowed the exchange of generations or surplus of energy from local distributed renewable sources within the smart grids. This new scenario requires a change in the current energy trading system, which is still highly centralized, and raises issues regarding the reliability of energy transactions and the privacy of those who take part in them. Furthermore, due to the volatility of these energy sources, the current energy system faces various difficulties in order to integrate them into its flow.

The blockchain, once again, comes to our aid with its tools. The presence of a distributed ledger, immutable and transparent, allows all the nodes of the network to verify at any time the correctness of the operations that take place within it. Privacy of energy exchange can be ensured by using encryption techniques or by performing off-chain computations. Finally, the presence of smart contracts and off-chain execution can speed up the execution of transactions. Therefore, P2P trading between consumers and prosumers allows to remove third-party intermediaries and retailers from the process, with a consequent reduction in the final cost of operations.

4.2.1 WePower

WePower was founded in 2017, and in 2018 was recognized by the american business magazine *Fast Company* as one of the world's most innovative companies in energy.

It is an online platform that allows its participants to 'meet' and define power purchase agreements (PPAs). During the auction, the organizations seeking to obtain renewable energy, referred to as *buyers*, define the desired energy volume and price through bids. If the auction's success criteria are met, then the auction is successfully concluded and PPAs are generated; an agreement between the buyer and the owners of renewable energy projects (called 'owners') is made and stored into the blockchain.

Transactions are executed and managed through smart contracts, and the use of blockchain technology as a repository of this information gives the plat- form transparency, immutability and security, so that the authenticity of con- tracts can always be verified.

4.2.2 Power Ledger

Power Ledger uses blockchain technology to enable peer-to-peer energy trading in a trustless environment.[6] Since the system does not rely on a central player, it avoids excessive bureaucracy and commissions. This also makes the system less vulnerable to attack as it doesn't have a single point of failure.

The Power Ledger platform operates on two layers of blockchain and is powered by two different coins: Power Ledger Token (POWR) and Sparkz (see Figure 2).

POWR uses the Ethereum public blockchain and is traded to acquire Sparkz. These tokens are required by application hosts and participants to access the platform. Sparkz is the token needed for the supply of electricity. Through a blockchain of private consortia it can be purchased and redeemed using fiat currencies within individual trading platforms that have closed-loop exchanges for energy and Sparkz. Essentially, customers pay to get Sparkz, which is then used to trade electricity.

In addition to services of P2P trading and management of electricity transactions, an interesting project that recently completed the trial process involved EVs. With the collaboration of Silicon Valley Power, the City of Santa Clara's Municipal Electric Utility, Power Ledger has successfully implemented a blockchain-based solution for measuring and monetizing renewable electricity used for electric vehicles.

[6] Power Ledger Pty Ltd, 'Power Ledger White Paper' available at https:// cdn2.hubspot.net/hubfs/4519667/Documents%20/Power%20Ledger%20Whitepaper.pdf (last visited 16 September 2021).

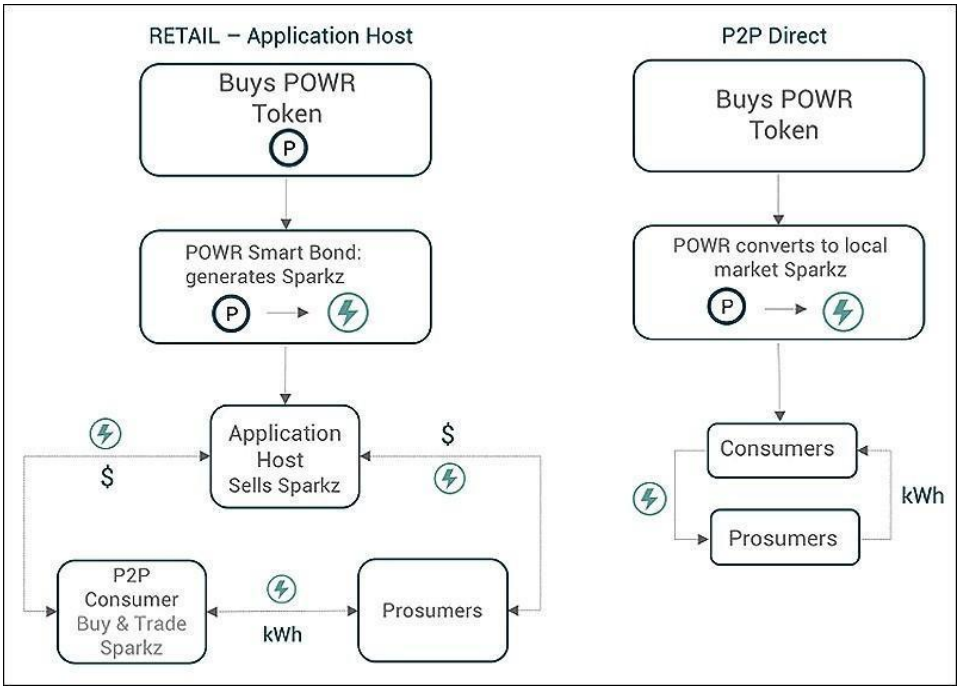


Figure 2: How Power Ledger and its tokens work.

4.3 Electric Vehicles and Charging Units Management

Although still in an early stage of development, electric vehicles are becoming more and more popular. In particular, in addition to the more basic and evident exchange of energy between charging units and vehicles, called 'Grid-to-Vehicle' (G2V), some models and projects have introduced the concept of 'Vehicle-to-Grid' (V2G) exchange, in which vehicles take on the characteristics of accumulators and are able to inject part of their energy into the system in exchange for a reward (for example in the form of money or free energy). Thanks to the smart grid, this two-way exchange can be easily implemented, however it is not sufficient to satisfy security, trust and privacy requests. The blockchain comes into play with its tools, not only allowing the management and trading of energy in a transparent way, but also maximizing the security and speed of transactions.

4.3.1 Share and Charge

Share and Charge is a platform developed in 2017 by the startup MotionWerk. The platform is based on the Ethereum blockchain and allows P2P energy trading between EVs and private charging stations, without the need for an intermediary. The transparency gained by the use of blockchain technology helps in building trust among different players, allowing users to make authenticated payments and have access to more charging stations.

5 Example of Smart Contract Application

Below we describe how a smart contract that includes prosumers can be defined. When each prosumer has its own storage system, we can think of a standard contract that sales energy. This happens when its storage system is full and there is little internal consumption for the next few hours. This estimate can be made with any criterion, for example on a statistical basis. The sale price is calculated by using the amount of energy available instantly from the start of the provisioning. The purchase of energy takes place when energy stocks are minimal and internal consumption is expected for the next few hour (again on a statistical basis). The purchase price is calculated on the basis of the instant price and the availability of energy produced by the prosumers. The prosumer who buys energy pays a fee to the grid operator for the right to transport. Finally, since the equation 1 must always apply, if the total energy produced is not enough to satisfy the demand for consumption, it is possible to insert safeguard clauses, such as forcing the sale by producers who have accumulated energy or providing for the stipulation of a purchase contract with a large producer. Everything concerning the reading of consumption and production meters, the estimate of consumption, and the calculation of the cost of sale and purchase is managed automatically.

It is worth noticing that there is no rule in this contract about the prosumer sales or purchase policy. It could be envisaged the inclusion of specific rules that maximize profit, so that each prosumer decides under which conditions to sell or buy energy. In the contract there is no type of planning at a global level, that is, no mechanism that allows the planning of consumption based on the availability of energy (both solidarity and speculative). This last possibility can be offered if the buying and selling system interacts with domestic energy saving systems. For example, the powering on of household appliances whose functionality can be postponed (dishwashers, washing machines, dryers, refrigerators, etc.) can be managed in such a way as to maximize profit or manage in solidarity (lowering) consumption.

The information concerning the reading values of the meters can be managed by a private blockchain confined only to the participants of the contract while the cash transactions could be managed by a public blockchain and can take place on a monthly basis. In this way, the trust and confidentiality on the readings is limited only to those who sign the contract. The private blockchain also allows better scalability in terms of transaction per seconds. The money transaction can be managed by a public blockchain and allows transactions to be carried out even with electronic money.

6 Conclusions

The use cases that have been presented show the application of blockchain in various smart grids. Some application areas, such as those concerning EVs, are still at an early stage of development. For some applications, although blockchain is useful, the problems associated with the absence of laws make blockchain technology inapplicable.

Benefit Corporations and Energy Communities

Ciro Ascione

Abstract: This work analyzes, the possible legal forms that energy communities can assume – taking into account the definitions of energy community given by the European directives 2018/2001 and 2019/944 – focusing in particular on the benefit corporations, by comparing that model with other and more specifically with the cooperative one. Moreover, it will be compared the italian experiences with those of the United Kingdom, with the aim to understand which are the best legal form and governance to assume as to facilitate the management of the energy community and the production made by the same.

Keywords: Benefit Corporations, Energy Communities, Governance, Corporate Social Responsibility, Cooperatives

1 The Context

The international context is crossed by global mega-trends of growth and development of the entire planet. The energy sector is affected by these trends in multiple dimensions and directions which tend to speed up the energetic transition towards an economy with neutral carbon impact and of sustainable growth, also because of the seventeen Sustainable Development Goals (SDGs) adopted by the ONU with the 2030 Agenda.[1]

To these purposes answers the EU directive 2018/2001, on the promotion of the use of renewable energy (RED II). In this directive, the auto-production and consumption of renewable energy occupies a leading role, also on the basis of the crucial conviction that a bottom up approach can instigate the change. Here is, then, how the self-consumption becomes (also) an important tool, beyond the fight against the climat changes, to instigate the market, making it more competitive. This last objective is explicitly pursued from the EU directive 2019/944, on the common rules for the internal market of electric energy.

Art 42 *bis* of the legislative decree called 'milleproroghe' (signed into law on 28 February 2020, no 8) gave entry into the Italian legal system to two new figures, entitled collective self-consumption and (energy communities) Renewable Energy Communities (REC), provided for by the European law on the promotion of the use of renewable energy sources. Both, sharing mechanisms of self-production and renewable energy consumption, successfully used for a long time in many countries, not only in Europe.[2]

[1] For further information on the link between decarbonization and environmental sustainability see L. Ruggeri, 'Legislative Policies and Jurisprudence on Climate Change: New Tools for Removing the Barriers to New Forms of Energy Consumption', in L. Ruggeri ed, *Needs and barriers of prosumerism in the Energy Transition Era*, (Madrid: Dykinson, 2021), 99.

[2] M. Meli, 'Autoconsumo di energia rinnovabile e nuove forme di energy sharing' *Nuove Leggi Civili Commentate*, 630, 632 (2020); M. Giobbi, 'Autoconsumo, mercato energetico e protezione del consumatore' *Le Corti Umbre*, 304, 306 (2020). See also: L. Tricarico, 'Community Energy Enterprises in the Distributed Energy Geography: A

The regulation introduces sharing mechanisms which range from the use of small home appliances, to the benefit of an entire building, to most ambitious projects which involve an entire community.[3]

Everything revolves around the Prosumer[4] figure, that is a subject who is producer and consumer at the same time, but also capable of generating social benefits which arise from new models of shared economy.

A shared economy which, for the profiles in question, sees the main interest focused on the 'renewable energy community'[5] with respect to which the considerations relating to the transformation process and (supposed) democratization of the electricity market[6] apply.

Upstream, the decision to create an energy community, and therefore to ensure that more subjects together become producers of renewable energy, to satisfy their common need, can pass through the most disparate solutions: it will be possible to proceed with a widespread collection of assets to find the means necessary for the purpose, it will be possible to benefit from the initiative of private investors, it will be possible to rely on mechanisms of project financing, cooperation or other forms of aggregation.

2 Benefit Corporations

In this regard, benefit corporations can definitely have an important role, given their peculiarities.

review of issue and potential approaches' 18 *International Journal of Sustainable Energy Planning and Management*, 81, 83 (2018), on the London experience of Banister House Solar, ; M. Sokolowski, 'Renewable Energy Communities in the Law of the EU, Australia and New Zealand' 28 *European Energy and Environmental Law Review*, 34, 39 (2019).

[3] Especially referring to this second hypothesis, the newly introduced figure is often depicted in terms of a proper process of democratisation of the energy system. It is in fact, of a circumstance which makes a form of production assets (of renewable energy) co-ownership and a shared management of the allocation mechanisms: In other words, all the users can become producers, consumers and managers, giving rise to a new sector development model. In this regard, G. Osti, 'Energia democratica: esperienze di partecipazione' *Aggiornamenti sociali*, 113, 114-116 (2017).

[4] Neologism created by Toffler in 1987, with the forecast that the producer and consumer roles would begin to blur and merge; today it is a key concept of the energy transition, defined by the directive EU 2018/2001 art 2 para 2 no 14, where the 'self-consumer of renewable energy [is] an end customer who, operating in its sites situated within defined boundaries or, if allowed by a Member State, in other sites, produces renewable electric energy for its own consumption and can store or sell self-produced renewable electric energy if, it is for a self-consumer or renewable energy who is different from the households, these activities do not constitute the principal business or professional activity'. In this regard, see also: M. Giobbi and G. Russo, 'Energy transition and E-mobility: a difficult combination', in L. Ruggeri ed, *Needs,* n 1 above, 77, 79; M. Giobbi, 'Dal consumatore al prosumer: l'evoluzione della protezione del cliente nei servizi di fornitura energetica' *Le Corti Umbre*, 23, 24-26 (2017). R. Garetto, 'Overcoming energy poverty through becoming a prosumer', in L. Ruggeri ed, *Needs,* n 1 above*,* 43, 48.

[5] The directive RED II of 2018 at Art 22 defines the renewable energy community, as 'a legal entity who: a) according to the applicable national law, relies on the open and voluntary participation, is autonomous and is actually controlled by shareholders or members who are located near the renewable energy production facilities which belong or are developed by the subject in question; b) whose shareholders or member are physical persons, SME's or local authorities, including the municipalities; c) whose main object is to provide for environmental, economic or social benefits at the community level to its shareholders or members or to the local areas in which it operates, rather than financial profit'.

[6] M. Meli, n 2 above, 633.

Companies with a hybrid corporate purpose owe their formalization in legal texts to the continuous and progressive accreditation on the world market of a private US certification body the B-Lab. The latter, since 2006, attaches, with only *social effects*, and not legal effects, the possibility of using the name B-Corp to those companies that decide to carry out a commercial enterprise in compliance with the stakeholders involved.[7]

The advantage for a company of becoming a benefit corporation is given by the possibility to obtaining the B-Corp certification, which is a certification issued to companies by B Lab,[8] a US non-profit organization, where they respect high social and environmental sustainability performances. Obtaining this certification allows companies to differentiate themselves on the market and to be included in an elite of institutions of excellence which pursue, together with the profit, a positive impact on the society and the environment.[9]

Benefit corporations, therefore, welcome a corporate purpose in which the traditional pursuit of stakeholder value,[10] is mitigated or, in any case, diluted by other values unconditionally adopted by shareholders during the establishment of the company or during the amendment of the statute.

In this way, benefit corporations aligned with a line of models with which different legal systems of common and civil law have offered to the market players the possibility to adopt alternative means for the functioning of the collective enterprise in the sign of social sustainability.

In the United States, in particular, benefit corporations represent a response from the legal system to a precise demand for models of this type coming from the customers, investors and entrepreneurs themselves.[11]

In the United Kingdom, to stick to common law systems, the Community Interest Companies (CIC)[12] emerged because as many people have pointed out there's an absence of forms of company with social purposes and non profit corporation,

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[7] A. Gallarati, 'Incentivi e controllo del mercato nella società benefit. Un'analisi economica e comparata' *Contratto e Impresa*, 806, 810 (2018). See also https://www.bcorporation.net/what-are-b-corps/about-b-lab (last visited 1 June 2021) .

[8] Alternative certification is issued by Global Reporting Iniziative according to the standards.

[9] A. Ruotolo, 'Questioni notarili' available at https//:www.quotidianogiuridico.it/ documents/2016/05/09/le-societa-benfit (last visited 30 April 2021).

[10] On this subject see M. Friedman, 'The social responsibility of Business is to Increase its Profits' available at http://www.colorado.edu/studentgroups/ libertarians/issues/friedman-soc-respbusiness.html (last visited 2 May 2021) ; M.C. Jensen, 'Value Maximization, Stakeholder Theory, and the Corporate Objective Function' 14 *Journal of Applied Corporate Finance*, 8, 14 (2001); H. Hansmann and R. Kraakman, 'The End of History of Corporate Law', available at https://papers.ssrn.com/sol3/papers.cfm?abstract_id=204528 , 7-8 (last visited 27 May 2021).

[11] A. Gallarati, n 7 above, 810. W.Jr Clark and E.K. Babson, 'How Benefit Corporations Are Redefining the Purpose of Business Corporations' 38 *W. Mitchell Law Review*, 817, 823 (2012).

[12] The principal legislation covered is: i. the Companies Act 2006, subordinate legislation made under that Act, and related legislation, such as, the Insolvency Act 1986. These are generally referred to in this guidance as the 'Companies Legislation'; ii. the Companies (Audit, Investigations and Community Enterprise) Act 2004 Part 2 and Schedules 3 to 7 In this guidance this is referred to as the 'CAICE Act'; iii. the Community Interest Company Regulations 2005. In this guidance this is referred to as the 'CIC Regulations 2005'. See, C. Witchard, 'Office of the Regulator of Community Interest Companies: Information and guidance notes' available at https://www.gov.uk/government/publications/community-interest-companies-how-to-form-a-cic (last visited 31 May 2021).

similar to the USA benefit corporation. The purpose of the CIC is primarily a community benefit, rather than private profit. Although the returns for the shareholders are allowed, they must be balanced and reasonable, to encourage the investment in the social enterprises' sector, while ensuring a real benefit for the community.

Community benefit is the main objective of CICs which, after passing the community interest test, see very few restrictions on the purposes for which a CIC can be used.

Understanding the community concept is fundamental, considering that it can have a wide range of meanings: from the population as a whole to a part of the community, such as the resident in a particular area or a group of people suffering from a particular disadvantage. In any case a CIC cannot be used solely for the financial benefit of a group of people, for political purposes or for the benefit of employees, directors or member of a single organization.

Another type of company with common benefit purposes is the Community Benefit Society, or Ben-com.[13]

A form of company, registered with the Financial Conduct Authority (FCA), which must exist and operate for the benefit of the community, with the envisaged restriction of the liability for its members to the share capital of the company. It protects directors from personal liability for acts done within their managerial authorities, so that they can operate without the risk of operational responsibility.

This type of company must reinvest any potential profit in the business for the benefit of the community for which it was created. If its purpose is solely for charity, it can apply for recognition as charitable institution and, if accepted, it can enjoy the same tax benefits as registered charities. Likewise, a Ben-com may not have entirely charitable purposes, but in any case the FCA will only register it if 'the company's industry, business or trade are or are intended to be conducted for the benefit of the community'. There is, also the continuous obligation to carry on the business activity, under penalty of removal from the register.

The requirement for a Ben-com to carry on an industrial or commercial activity is noteworthy, because in other legal forms of business with common benefit purposes, the entrepreneurial activity is not a legal requirement. For example, there is nothing to prevent a Community Interest Company (CIC) from operating according to a fully grant-funded and non-profit model.

Since 2016 benefit corporations have also been introduced in Italy by paras 376[14] to 384 of the Sole Article of law 28 December 2015, no 208 (Legge di Stabilità 2016). In no way is it a question of a new social type, so much that partnerships and corporations, cooperatives and mutual insurance companies can be benefit corporations. Basically, the only peculiarity of these companies constitutes in

[13] See: www.stoneking.co.uk (last visited 1 June 2021).

[14] G. Marasà, *Imprese sociali, altri enti del terzo settore, società benefit* (Torino: Giappichelli, 2019), 13: '*L'incipit di tale comma precisa che il legislatore italiano si prefigge l'obiettivo di promuovere la costituzione delle società benefit e favorirne la diffusione. Dunque, anche tale disciplina di inserisce nell'ambito della legislazione premiale e di sostegno alle imprese*'.

accompanying the goal specific to the particular type of company with the fulfilment of a common benefit[15]; it is, indeed, inserted the mandatory requirement of indicating in the corporate purpose the obligation to operate 'in a responsible, sustainable and transparent manner towards people, communities, territories and the environment, cultural and social assets and activities, organizations and associations and other stakeholders'.

3 Corporate Purpose and Corporate Social Responsibility

The foregoing implies, at least, that the corporate purpose includes a commitment to pursue a social responsibility policy – partly generic and partly aimed at pursuing the common benefit – which may, depending on the case, take shape into a real non-profit activity, positioning itself within the action area reserved for associations, foundations and other non-profit entities.

A first difference is therefore considered with the benefit corporation, as implemented, on the teaching of the Model Benefit Corporation Legislation (Model Act), in most North American States.

The benefit corporation, in fact, combines the traditional (for-profit) purpose with a general public benefit, attributable to our 'operating in a sustainable, responsible and transparent manner', to which the shareholders can possibly add a *specific public benefit,*[16] attributable to some extent to the *common benefit* envisaged by our legislation. The first, which consist in a 'material positive impact on society and environment', considered as a whole,[17] is an essential element of this type of institutions. The second, on the other hand, which represent a possible element, cannot in any way limitate the first one and must be traced in any further specific benefit for the society or the environment, including, by way of example, the action of the company in favor of specific individuals or communities, the creation of jobs beyond the ordinary course of business, the preservation of the environment and health, the promotion of the arts, sciences, and in general, of the knowledge, as well as the financing of non-profit institutions and organizations.[18]

It would seem, therefore, that US benefit corporations, established under the Model Act, must primarily behave in general respect for the environment and society, and can eventually be concerned with one or more specific aspects of society and the environment. Consequently, such companies should adopt, by statute, a

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[15] '*Per beneficio comune, in particolare, si intende il perseguimento, nell'esercizio dell'attività economica della società benefit, di uno o più effetti positivi ovvero della riduzione degli effetti negativi, che debbano prodursi rispetto a: (i) persone; (ii) comunità; (iii) territori e ambiente; (iv) beni ed attività culturali e sociali, (v) enti e associazioni; nonché (vii) altri portatori di interesse (cioè il soggetto o i gruppi di soggetti che la società coinvolge, direttamente o indirettamente, nella propria attività d'impresa, come i lavoratori, i clienti, i fornitori, i finanziatori, i creditori, la pubblica amministrazione e la società civile, nel suo complesso)*' in this regard A. Gallarati, n 7 above, 806, 812.

[16] For the Maryland see MD Corp. & Assn. Code § 5-6 C-06 (2015) available at https://law.justia.com/codes/maryland/2019/corporations-and-associations/_and the Model Benefit Corp. Leg. § 102 available at https:// law.justia.com/codes/maryland/2015/article-gca/title-5/subtitle-6c/ (both of them last visited 2 June 2021).

[17] Model Benefit Corp. Leg., n 16 above, § 102.

[18] A. Gallarati, n 7 above, 820.

policy of corporate social responsibility, to which another non-profit purpose, characteristic of non-profit organizations, may be associated.[19]

In the Italian legal system, however, both the profit and the common benefit purpose, are indicated for benefit corporations, without specifying whether one or the other should prevail. The result is a functionally very flexible corporate model that lends itself to encompassing a vast range of concrete cases.

The consequence is that the autonomy of the shareholders can attribute a functionally preponderant or minimal role to the common benefit purpose so that, specularly, the profit purpose – objectively understood as the production of maximum profit – will be more or less compressed.[20]

From this point of view, there is the difference with the Third Sector Institutions in which the pursuit of solidarity and social utility purposes must constitute the exclusive or main purpose of the participants, with the result that if a partial distribution of the results in favor of the same participants is permitted, as allowed in social enterprises in corporate form, the derogation from the absence of the profit purpose – subjectively understood – must not exceed the maximum threshold set by the legislator and, therefore, the subjective profit purpose of the members should not become the predominant purpose.[21]

Furthermore, the doubt relating to the problem can be considered overcome if an ordinary company pursuant to art 2247 codice civile, as well as an ordinary cooperative company pursuant to art 2251 codice civile – considering that in para 377 of the introductory law of benefit companies they are allowed access – can pursue common benefit purposes as now defined by law. Well, before the introduction of benefit corporations into the legal system, this doubt was almost non-existent due to the fact that these purposes of common benefit, could easily be traced back to corporate social responsibility policies adopted by the directors, in full compatibility with the pursuit lucrative and/or mutualistic purposes of the members.

This approach seems to be acceptable even today, taking into account that the regulatory provision of para 379 of the aforementioned law, which obliges the amendment of the law for the pursuit of common benefit purposes, can be considered a burden on those companies which want to acquire the status of benefit corporation and not as a prohibition on others (non-benefit) to pursue common benefit purposes.[22]

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[19] A. Gallarati, n 7 above, 821.

[20] G. Marasà, n 14 above, 112.

[21] G. Marasà, n 14 above, 113.

[22] G. Marasà, n 14 above, 20. Confirmations in this sense can also be obtained from the current standardization, also of a European origin, on the subject of sustainability, where the obligations of the SDGs objectives must be clearly pursued from all the companies, which choose policies related to an ESG identity, but which does not take into account the qualification of benefit corporation that, in a certain sense, can be considered a further commitment on the value level with management implications operated by this 'choice'. *Contra*, L. Ventura, 'Benefit corporation e circolazione di modelli: le *società benefi*t, un trapianto necessario?' *Contratto e Impresa*, 1134, 1141 (2016): At least the possibility of cooperatives adopting the benefit clause in the corporate purpose seems doubtful. More precisely, the Author considers 'the reference to cooperatives asystematic. These, in fact, cannot be placed within the category of profit companies referred to in art 2247 of the Codice civile and,

4 Cooperatives and Energy Communities

The purposes for the benefit of the communities of the corporations described up to now determine, at least on the ideological level, an approach of the same to the cooperatives. These are an excellent vehicle for mediating the exchange of knowledge, encouraging positive change through the mutual collaboration. The cooperative business model, through complex relationships, allows direct benefits for the individuals and the organizations horizontally involved. According to the International Cooperative Alliance, cooperatives are essentially an autonomous association of people united voluntarily to satisfy their common economic and social interests, and needs and cultural aspirations through a common property and/or a democratically controlled enterprise.[23]

The aforementioned definition is very close to that of the Codice civile, according to which a cooperative company is a corporation established to jointly manage an enterprise, which aims to provide above all to the same shareholders, through the mutualistic purpose, those goods or services for which the cooperative was founded. Cornerstones of the cooperative system are the principles of mutuality, solidarity and democracy.

The cooperative, therefore, is an enterprise – in the status of a company – in which the purpose and foundation of economic action is the satisfaction of the needs of the person, that is, the partner. The cooperative is based on the common will of its members to protect their interests as consumers, workers, cultural operators and the like.

The distinctive and unifying element of any type of cooperative, can be summarized in the fact that, while the ultimate purpose of the limited companies different from the cooperatives is the realization of profit and takes shape in the distribution of the patrimonial profits, the cooperatives instead have a mutualistic purpose, which consists, depending on the type of cooperative, in ensuring the members the work, or consumer goods, or services at better conditions than those they would get from the free market.[24]

These are the reasons why energy communities, both in Italy and in other countries, are often set up in the form of cooperatives. Just think, for example, of one of the best-known energy communities in the UK, namely Banister House Solar,[25]

therefore, do not fall within the general definition of benefit corporations provided by the legislator in art 1, para 376, of the 2016 Legge Stabilità, since they are characterized by a different purpose, the mutualistic one (arts 2511 and 2515 of the Codice civile)'.

[23] J. Martin Rodriguez, 'The Cooperative Model Can Clear the Hurdles to Prosumerism', in L. Ruggeri ed, n1 above, 119-121. See also: International Cooperative Alliance 'Le note di orientamento sui principi della cooperazione' (2017), available at www.ica.coop/en/media/research-and-reviews/guidance-notes-cooperative-principles .

[24] A. Concas, *Le strutture societarie. Caratteristiche a confronto* (Rimini: Maggioli, 2018), 27.

[25] First solar power project owned by the Hackney community. The project was funded and supported by the Hackney Council. Banister House Solar is the UK's largest social housing community energy project and follows the success of the three Brixton Energy solar cooperatives of Repowering. The Banister House Solar Cooperative was formed in November 2014 with 5 residents of the estate assuming the role of administrators. The cooperative will earn income from the generation and sale of solar electricity providing investing members with an average return of 4% on their investment. The solar panels will power the buildings' municipal supplies, thus providing Hackney Council with great savings by selling electricity at a discounted price during the project's 20-year life. http://www.hackneyenergy.org.uk/banister-house/(last visited 19 May 2021).

leading case which inspired all the other subjects that have launched similar initiatives in subsequent years.

Recently, however, there has been a trend towards the establishment of energy communities with various corporate forms. Right in the UK: 'evidence from the online survey suggests the profile of the community energy sector has evolved considerably in recent years. A substantial number of Community Interest Companies, Industrial and Provident Societies, Community Benefit Societies and Co-operatives have been registered in the last three years'.[26]

Last but not least, also in Italy, energy market players,[27] have chosen to operate in the form of benefit corporations, precisely to underline the company's statutory commitment in pursuing the social and community objectives of the UN 2030 Agenda, implementing a significant will not to limit oneself to having an ESG identity, but pointing out precisely through the statutory commitment and the certification as benefit corporation that it want to give – certainly in terms of values, but not only – a preponderance to the purposes of common benefit to the advantage of all stakeholders, rather than for the advantage of the members only in the pursuit of profit only.

The energy communities developed for people in the form of 100% renewable energy cooperatives, aim to aggregate people attentive to a sustainable lifestyle, around a model of production and consumption of clean energy, produced in a shared way by the plants owned by the cooperative itself. The implemented model aims to spread an energy culture and provide tools which guarantee transparency and support capable of transforming the consumer into a responsible and informed partner. Combining the business skills of the founding partner – who handles the technical management of the entire energy supply chain: from the production to the consumption – with the desire to aggregate consumers who are aware and attentive to their consumption choices, it allows its members to virtually exchange the energy produced by the plants purchased in shared form. This in the belief that energy is a vehicle through which every person can live and every company can develop its market, in a truly sustainable way and in harmony with the environment. Benefit corporation, for which doing business means constantly striving for the generation of generated value, widespread and shared with stakeholders, communities and territory.

The importance of sustainability issues at a global level is such, that now even the jurisprudence[28] in Europe, on the wave of international principles in the fight

[26] See Department of Energy & Climate Change, *Community Energy in the UK: Part 2 Final report. Undertaken by Databuild Research & Solutions Ltd, supported by the Energy Saving Trust*, (London: Department of Energy & Climate Change, 2014), 8.

[27] For example, For Green s.p.a. As declared by the company itself, any market activity has the purpose of generating benefits for the communities it is aimed at. Through the design of social responsibility for the company, funds targeted to social projects are developed, of ecologic teaching having the purpose of sensitizing newer generations, along others of communicative type, that assist the companies in telling their own choice of sustainable energy.

[28] See Leghari v. Federation of Pakistan [2015] W.P. 25501/201. On this decision see E. Barrit and B. Sediti, 'The Symbolic Value of Leghari v Federation of Pakistan: Climate Change Adjudication in the Global South' 30 *King's Law Journa*l, , 203, 206 (2019).

against climate change, opens new frontiers[29] for the development of a legal culture which knows how to promote a society in which the energy issue is seen as a key moment in implementing a plurality of policies, all with the aim to provide a liveable planet for future generations. The very concept of justice changes, to appeal to the judge to protect the needs of the new generations by starting a sort of intergenerational justice whereby the present generations do not act to protect current interests, but bring to the attention of the judge the need to safeguard the right to live and health of future generations.[30]

5 Governance

Said change in the field of sustainability is also having effect on the governance and management choices and, in general, with the understanding that times are mature to favour social interests considered from a wider point of view rather than limited to the shareholders' interests.[31]

It is strictly necessary to be aware of the idea that the business activity, naturally inclusive of the shareholders' interests, cannot be detached from the context where the company operates and from the interests of all the subjects, namely stakeholders, different than the shareholders and that for various reasons get in contact with the company itself.[32]

In the United States, from various sides[33] beginning with the relevance attributes to corporate social responsibility,[34] they sustain the end of the so-called shareholder primacy and the necessity to require the administrators to pursuit interests of different constituencies.

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[29] See L. Ruggeri, *Needs*, n 1 above, 109, footnote 50.

[30] For further details, L. Ruggeri, *Needs*, n 1 above, 108 -109.

[31] The paradigm of M. Friedman (above n 10) is abandoned, according to whom companies are only created in order to generate profit and the managers responsibilities is only that of increasing earnings.

[32] A. Busani, *Regole di corporate governance*, (Milano: Giuffrè, 2021), 10. '*Da ultimo, l'associazione dei CEO delle più importanti società per azioni statunitensi (Business Roundtable) ha rilasciato un comunicato su Lo scopo di una società per azioni, nel quale si afferma che, pur perseguendo ciascuna società il proprio scopo sociale, gli amministratori esecutivi firmatari condividono un impegno essenziale verso tutti (sottolineato, nel testo della dichiarazione) i loro stakeholder. All'affermazione segue una lista di destinatari di tale impegno: primi i clienti, seguono lavoratori, fornitori, comunità di riferimento, e solo ultimi si menzionano gli azionisti, verso i quali si promette di generare valore nel lungo periodo. Ciascun gruppo di stakeholders viene qualificato come essenziale*'; this way N. Ciocca, 'Sostenibilità dell'attività di impresa e doveri degli amministratori', in F. Massa ed, *Sostenibilità. Profili giuridici, economici e manageriali delle PMI Italiane* (Torino: Giappichelli, 2019), 91, and *Business Roundtable, Statement on the Purpose of a Corporation*, available at https://www.businessroundtable.org/business-roundtable-redefines-the-purpose-of-a-corporation-to-promote-an-economy-that-serves-all-americans (last visited 27 May 2021): 'While each of our individual companies serves its own corporate purpose, we share a fundamental commitment to all of our stakeholders'. For different document reading keys M. Roe, 'Why Are America's CEOs Talking About Stakeholder Capitalism Now?' *Oxford Business Law Blog* (2019), available at https://www.law.ox.ac.uk/ business-law-blog/blog/2019/11/why-are-americas-ceos-talking-about-stakeholder-capitalism-now (last visited 1 June 2021).

[33] N. Ciocca, n 32 above, 91, that in footnote 54 suggests for a synthesis: C. Williams, 'Corporate Social Responsibility and Corporate Governance' *21 Corporate governance. An international Review*, 413, 415 (2013).

[34] M. Libertini, 'Economia sociale di mercato e responsabilità sociale di impresa' *Orizzonti del diritto commerciale*, 7, 7-9 (2013). Also see: G. Nigriet al, 'Governance and accountability models in Italian certified benefit corporations' *27 Corporate Social Responsibility and Environmental Management,* 2368, 2371, (2020).

More recently, some prominent members[35] of the American business world have pushed the administrators to the adoption of what they suggest to call a New Paradigm, in contrast with Friedman, suggesting the voluntary adoption, by joint stock companies and their administrators, of managing rules more conscious of said issues, in the form of cooperation between all the different parties, in order to produce sustainable profit in the long term and resist the pressure of short term investments.

The link between customer constituency and the last of shareholders appears unbreakable, with the awareness that without the firsts there cannot be satisfaction of the seconds, but this doesn't negate that the final aim is the satisfaction of shareholders. It thus appears that no contradiction seems to exist between taking care of customers and assuring profit maximisation of the shareholders.[36]

Also, the English Corporate Governance Code[37] clarifies that, for listed companies, the administrators' job is that of promoting sustainable success in the long term of the company, producing value for the shareholders and contributing to society in a broad sense. The remark of the final aim in creating value for the shareholders is however clearly stated.

The logical conclusion is that inclusion of sustainability subjects in the administrators' choices should be undertaken, whenever it contributes to the research and development of strategies aiming to management efficiency and continuity in production of value, but while still remaining oriented towards the objective of profit, although in the long term.

In relation to benefit corporations, it should be highlighted that even though it is required to the administrators of said companies to balance the shareholders' interest with the interest of those upon which social activity might have an impact, it is of course not hindered to non-benefit corporations as well to perform their activity in such a way that said balance[38] is undertaken, which is an essential means for the operation and survival of the company, expressing the search of a balance among production factors.[39]

It must also be remarked that Benefit Corporations are and remain profitable companies in which the shareholder structure has voluntarily chosen to constrain the administrative body to respect the mission of common benefit (with administrators being held responsible in case of non-compliance according to the corporate type involved) in response to a logic based on business capacity and on the power underlying personal interest, to generate an outcome positive for the society.

It is exactly this aspect that can push an evolved capitalism that aims at solving the more urgent social problems without surrendering, but in fact using, the logic of

[35] N. Ciocca, n 32 above, 92, and M. Lipton et al, 'It's Time To Adopt The New Paradigm' (2019) available at https://corpgov.law.harvard.edu/2019/02/11/its-time-to-adopt-the-new-paradigm/

[36] N. Ciocca, n 32 above, 92.

[37] The UK Corporate Governance Code, 7/2018, in force from the 1st of January 2019.

[38] G. Marasà, n 14 above, 112.

[39] N. Ciocca, n 32 above, 95.

profit,[40] that renders benefit corporations a juridical instrument highly suitable for the management of an energy community which operates not only towards the shareholders' gains – both in the services and profit production – but that also operates according to a statutory commitment looking towards a view necessarily advantageous for the whole community, directly or indirectly touched by the business activity performed by the B-Corp.

[40] A. Busani, n 32 above, 10, footnote 18.

Liberalization of the Energy Market in Romania

Lidia-Lenuta Balan

Abstract: In Romania, from 1 January 2021, in order to harmonize the provisions regarding the tariffs that apply to the beneficiaries of domestic energy, it is moving from a regulated market to a competitive electricity market. This operation involves the choice by the household consumer of an electricity supply offer for a period of time, in accordance with its requirements and needs, from the list provided by the National Energy Regulatory Authority and subsequently after choosing the service provided a contract is concluded between the household consumer and the electricity supplier.

Keywords: Energy Market, Renewable Sources, Electricity Market, Environmental Protection

1 General Aspects Regarding the Liberalization of the Energy Market in Romania

At the base of the construction and development of the human society is the spiritual and material development of the individual in the context of protecting and defending the environment that would offer him the possibility of evolution and well-being by using the natural resources existing on earth. By using natural resources, the necessary framework is created for the use of goods and services that serve the human being in order to ensure for the present and future a decent and comfortable life. To ensure a decent and comfortable life, the human being has used since ancient times, the natural riches aware that nature is his ally in his struggle for survival and later progress on earth.

Progress, for the human being, represented at that time the use of occupations that would allow the production of energy to ensure the survival and life of the individual on earth, so that later the energy field would become one of the fundamental pillars of human society that had and is based on evolution and its development with an essential role in the production of goods and the execution of services, finally generating the product desired by all of us, combating poverty and obtaining well-being for present and future generations.

In order to obtain the well-being of present and future generations, the energy field has engaged over time, the states of the world through its decision makers and international organizations that have devised strategies and policies designed to identify optimal, efficient and long-lasting solutions for safe sources of energy production. energy, ensuring cheap costs for the consumer, but also to prevent and combat where possible the degradation of the environment.

Over time, studies and research conducted, especially in the field of industrial civilization, have highlighted the fact that industrial civilization is one of the transitions of the energy field, by moving from the first forms of use and exploitation of energy from fire sources or other types of biomass for heating homes and for

preparing the individual's food for complex forms of energy use such as the use and exploitation of renewable energy sources that lead and support the economy and society in general.

The support and development of the economy in general implies the involvement of the energy sector without which society cannot develop and no progress in this regard can be made.

It can be noticed that the primary energy sources such as: fire sources or other sources of biomass, coal, oil and natural gas have proved for this moment, insufficient to support the energy sector and the economy in general. In the current context in which each stage of economic sustainability was based on a transition in terms of energy from a major fuel source to another fuel source, we note that fossil fuels such as natural gas, oil and coal no longer represent dominant sources for the support of industrial economies, world economies or society in general. The current energy society is characterized by an economy oriented from fossil fuels to renewable energy sources.

The orientation of these concerns was also determined by the need to protect the environment which as a result of the development of society through excessive industrialization generated numerous environmental degradations due to the adoption by the individual and large economic operators of irresponsible behavior and harmful to the environment and human being.

That is why at this moment, at European and national level in terms of environmental protection, the development of the economy must involve a development based on renewable energy sources, but also to ensure the necessary energy for domestic and industrial consumers.

The major priorities of the energy sustainability policy in accordance with the provisions of the EU Directive 2009/28/EC[1] are to make the energy sector more efficient and to assume the obligations to adopt a national action plan for capitalizing on renewable energy sources for domestic and industrial consumers.

'The efficiency of the energy sector, both at European and national level, must follow the transition from a high-carbon economy to a low-carbon economy, and this plan involves the mobilization of considerable investment from state governments, both for the segment of electricity, thermal energy, energies from renewable sources, energy efficiency of buildings, and encouraging industrial research and innovation in the field.

But the real challenge for European as well as national leaders is to maintain an efficient functioning of the internal energy market, in which the final consumer to benefit from concrete energy products and services necessary to maintain and improve life in order to ensure a decent and long life for present generations as well as future ones.

We note that, along with other sectors of activity, the energy sector has a huge potential for the Romanian economy, in the sense that it can provide and maintain

[1] European Parliament and Council Directive 2009/28 /EC of 23 April 2009 on the promotion of the use of energy from renewable sources and amending and subsequently repealing Directives 2001/77/EC and 2003/30/EC [2009] OJ L140/16.

jobs, can support economic growth, can stimulate the business environment, can support research and innovation in the field and can positively influence the competitiveness of the economy in various forms and segments of production, services, delivery that ultimately facilitate the consumer and achieve a saving on fossil fuels, thus limiting the costs of energy imports.

Romania has all the necessary resources to increase the energy sector, which in turn must support the development, especially of industry and agriculture, the economy in general and which will ultimately generate an improvement in the quality of life of citizens both in urban and to the rural one.

Starting from the observance of the principle of sustainability and of the improvement of the citizen's quality of life, Romania, through its entities and bodies, must capitalize on the energy potential of all its regions, regardless of whether we are talking about electricity, thermal energy or renewable energy'.[2]

Harnessing energy potential must include the development of strategies and sustainable development plans that involve an evolution to encourage solutions to the important aspects of efficient use of energy resources, regardless of the energy source we are talking about prevention and environmental protection.

At national level, the implementation of these plans and strategies requires an active involvement of operators and economic agents and the Romanian government to adopt complex policies for energy efficiency, to support the business environment by creating a legal and institutional framework that to allow the use of non-polluting equipment for the energy sector, but to ensure protection and protection of the environment as well as the health and life of the human being.

From an economic point of view, energy efficiency involves decisions in the investment sector that involve the use of major capital prices as well as insecurity for subsequent operating prices. These decisions on efficient investments in the energy sector generate a number of effects, such as setting initial prices for expected future savings, determining potential savings that will generate the initiation of national pricing policies in the future, in the field of energy, changes in some operating prices determined by the use of energy, the finding of the intensification with which the product is used, as well as the lifespan of the products and equipment.

In order to ensure the consumption of energy services, it would be necessary to use a relevant and sustainable efficiency mode that would allow the current level of prices to be limited to an individual threshold, while economic efficiency at the macro level would establish the limitation of social prices.

At national level, amid consumer dissatisfaction with energy performance, the lack of a competitive market through which consumers have the opportunity to opt for services and offers advantageous to them and the lack of a legislative and institutional framework to promote, support and protect the final consumer determined the complete liberalization of the electricity market.

[2] L.L. Balan, 'Romania in the context of renewable energy sources', in International Conference, *Perspectives of Law and Public Administration*, (Bucharest: ADJURIS - International Academic Publisher, 4th ed, 2021), p. 210 - 217.

The liberalization of the electricity market at national level was also done in accordance with the provisions and obligations assumed as a member state of the European Union and of the normative acts at European level, regarding the establishment of the liberalization of the electricity markets.

The objectives of the new policy at national level of liberalization of the electricity market must include an improvement of the energy capacity of the existing technologies through their refurbishment /transformation and modernization, creation and development of new equipment to determine an increase of energy efficiency and use of sources renewable energy with limited greenhouse gas emissions for the environment.

The establishment of this policy at national level aims at developing a national economy determined by a limited energy consumption, safer, more competitive and more sustainable in terms of guaranteeing a competitive functionality of the internal energy market, security of the country's strategic supply and emission limitation greenhouse gases for the environment and the elimination of regulatory costs regarding the supply of electricity, respectively the delivery of natural gas.

At national level, the system for eliminating the regulated costs regarding the supply of electricity, respectively for the delivery of natural gas, was made in accordance with the provisions of the European legal instruments, as follows:

- for the electricity sector, the provisions of the European Union Directive 2019/944 of the European Parliament and of the Council of 5 June 2019[3] on common rules in the internal electricity market as well as amending and supplementing the European Union Directive no 2012/27 of the European Parliament and of the Council of 25 October 2012 [4]on energy efficiency and the provisions of the Regulation of the European Union no. 2019/943 of the European Parliament and of the Council of 5 June 2019 on the internal market in electricity[5];

- for the gas sector, the provisions of Directive 2009/73 /EC of the European Parliament and of the Council of 13 July 2009[6] on common rules for the internal market in natural gas and repealing the text of Directive 2003/55 / EC and Directive (EU) 2019/692 of the European Parliament and of the Council of 17 April 2019[7] amending and supplementing Directive 2009/73 /EC on common rules for the internal market in natural gas.

By transposing the provisions of the above-mentioned directives, the central objective of the national electricity and natural gas markets, markets that have been progressively implemented throughout the European Union, since 1999, is to supply

[3] European Parliament and Council Directive (EU) 2019/944 of 5 June 2019 on common rules for the internal market in electricity and amending Directive 2012/27/ EU [2019] OJ L158/125.

[4] European Parliament and Council Directive 2012/27/EU of 25 October 2012 on energy efficiency, amending Directives 2009/125 /EC and 2010/30/EU and repealing Directives 2004/8/EC and 2006/32/EC [2012] OJ L315/1.

[5] European Parliament and Council Regulation (EU) 2019/943 of 5 June 2019 on the internal market for electricity [2019] OJ L158/54.

[6] European Parliament and Council Directive 2009/73/EC of 13 July 2009 concerning common rules for the internal market in natural gas and repealing Directive 2003/55 /EC [2009] OJ L211/94.

[7] European Parliament and Council Directive (EU) 2019/692 of 17 April 2019 amending Directive 2009/73/EC concerning common rules for the internal market in natural gas [2019] OJ L117/1.

all final customers in the European Union, whether we are talking about individuals or legal entities, varied and real ranges of options, new opportunities for the business environment, conditions, tools necessary for the establishment of competition, competitive, competitive and advantageous prices, a favorable and sustainable climate for new investments, improvement and improving the quality of services for consumers, but which should also contribute to achieving a long-lasting energy security for energy supply and delivery in the context of a sustainable economy and development of Romania.

The establishment of the national framework for the liberalization of the energy market at national level was also carried out in accordance with the Romanian state's commitments to the European Union regarding the observance of the freedoms regulated by the Treaty establishing the European Communities: free movement of goods, freedom of establishment and freedom to provide services, and all this can be achieved only on the basis of the establishment and functioning of a fully open market that allows all its consumers to have the opportunity to freely choose the products offered by to the operators and suppliers of electricity and natural gas in the market.

Although Romania requested over time, several derogations, it was still the last country in the European Union that had not liberalized the electricity market at national level, in the context of compliance with the obligations stipulated by European regulations.

Thus, at national level, through the text of the provisions of Law no 123/2012[8] on electricity, with subsequent amendments and completions, it is established that the supply of electricity and the supply of natural gas, as established activities, as follows:

- for the electricity sector, 'the supply of electricity under the regulated conditions is made to ensure the supply of electricity to the customers provided in art. 55 para. (1) until December 31, 2013 for non-household customers, respectively until December 31, 2017 for household customers'. Until December 31, 2020, for household customers in Romania, the supply of electricity was made under the conditions imposed and regulated on the market by the National Energy Regulatory Authority.[9]

On the regulated market, the competent authority has the right:

- to impose public service obligations on producers, the transmission system operator; distribution operators and suppliers of last resort to ensure the supply of electricity to customers provided in art. 55 para. (1), according to art. 16;

[8] Law no 123 of 10 July 2012 on electricity and natural gas, with subsequent amendments and completions, was published in the Official Gazette of Romania no 485 of 16 July 2012.

[9] The National Energy Regulatory Authority is a public entity with administrative and autonomous role, with legal personality, which has as main objectives the elaboration, approval and supervision of the implementation of mandatory provisions at national level indispensable for the realization and functioning of the field and market of electricity, heat. and natural gas in compliance with the instruments of protection, competition, transparency, efficiency, transparency of Romanian consumers.

- to impose on the suppliers of last resort transparent procedures for the acquisition of electricity on the competitive market destined to the clients provided in art. 55 para. (1);

- to approve and publish the prices and quantities from the contracts concluded between the producers and the suppliers of the clients provided in art. 55 para. (1);

- to approve and publish the tariffs applied by the providers of last resort to household customers for the period until 31 December 2020;

- to approve methodologies for monitoring the expenses with the acquisition of electricity according to let. b);

- to approve and publish the prices proposed by the suppliers of last resort for the electricity supplied to the customers provided in art. 55 para. (1), after the elimination of regulated tariffs.

'In order to ensure the operational safety of SEN, the competent authority may approve the prices and quantities from the contracts for the acquisition and delivery of system services.

The supply of electricity to the customers provided in art. 55 para. (1) under the conditions of par. (1) is made on the basis of regulated contracts.

The competent authority will continuously monitor the effect of the regulated market on the competitive electricity market and will take the necessary measures to avoid possible distortions and to increase the transparency of commercial transactions.

The competent authority will organize, within the monitoring action, a process of detailed annual evaluation of the functioning of the electricity market, in the conditions of gradual renunciation of the application of regulated tariffs for non-household customers provided in art. 55 para. (1) lit. a), in which at least the following general indicators will be used:

- number of active suppliers in the electricity market every year;

- market share of each of the active suppliers;

- economic-financial capacity of active suppliers and their behavior in the market;

- the evolution of the annual number of changes of the energy supplier by categories of customers;

- the level and evolution of prices in the market;

- the degree of information of the final clients regarding the electricity market;

- facilities granted to vulnerable customers and their number;

- the number of clients who benefit from the universal service under the conditions of the present law;

- degree of transparency of information in the energy market'.

Also, 'based on the monitoring process, the National Energy Regulatory Authority draws up a report every 2 years, regarding the regulated prices as public service obligations and their impact on the electricity market'.

- for the natural gas sector*:* 'the supply of natural gas at a regulated price and based on framework contracts will be made until June 30, 2020 for household customers'.

It should be noted that the text of the provisions of art 1, para (1) of Law no 123 of 10 July 2012 on electricity and natural gas, with subsequent amendments and completions, establishes: "the regulatory framework for carrying out activities in the electricity sector and thermal energy produced in cogeneration, in order to make optimal use of primary energy resources and to achieve the objectives of energy security, competitiveness and sustainable development in conditions of accessibility, availability and affordability of prices and respecting the rules of safety, quality and protection of environment".

2 Conclusions

Although since 1 January 2021 the electricity market has been liberalized in Romania, in the sense that every consumer in Romania can opt for an offer that benefits him financially, from the competitive market of electricity suppliers, still there is a risk that only 10% of final consumers will migrate after the regulated market to the competitive one, free due to the lack of information and the distrust they plan towards the measures imposed by the new policies of the Romanian state for the population.

In conclusion, I specify that Romania was the last country in the European Union not to liberalize the electricity market, but the introduction of competitiveness on the domestic energy market should not have a reducing effect on electricity sales prices, in the sense that prices fall, and the benefits obtained to be stopped by the producing companies, based on high profits and not to pursue the favoring of consumers by using low prices.

The argument would be that the main aspect of the demand for public utilities would be its lack of elasticity, a situation that generates insecurity for consumers to the abuses generated by power in determining prices. As a result, it is preferable for the Romanian state to develop norms through instruments to regulate consumer protection against the abuse of electricity companies not to allow the limitation of social welfare and the delegation or transmission of social policies to private economic agents.

Also, at national level in the context of assuming the obligations of the Romanian state to liberalize the energy market, it is necessary to develop a legislative package to regulate the protection and support of vulnerable consumers and to identify sources of funding to support them.

Internet of Things (IoT) with Blockchain: The Future of Energy Community Management through Industry 4.0

Sharmin Nisar Chougule

Abstract: This paper talks about how IoT, along with cyber-physical systems - revolutionises the communication process making the non-reticulate processes more calculable in the unoptimized renewable energy sector. This vision of renewable energy replacing conventional sources, primarily fossil fuel, is achievable only with globally reinforced unified efforts in line with the United Nations Sustainable Development Goals (UNSDG). Researcher believes that IoT will expedite energy efficiency by keeping a check on the 'real-time energy consumption'. This research ponders on the challenges, enabling technologies and possible solutions in the application of IoT. Researcher also considers that each technology comes with its own holdups. In today's centralised world driven by data, Blockchain, with its decentralised approach, will not only help in synchronisation of data without infringing user privacy and system security, but will also lead to effective transmission and distribution of energy.

Keywords: Blockchain, Internet of Things, UNSDG, Industry 4.0, Energy Community

1 Introduction

We are using technology in some form in our daily lives, maybe not in its sense of the term associated only with communication technologies but also otherwise, be it in healthcare, transportation, entertainment or increasing productivity. A life of technological isolation is not something that is practical today. Technology will, in the future, change many things in our lives including how we live, how we connect with one another or work. The COVID-19 Pandemic has been a very good example of reliance on technology where we all were under strict lockdowns not able to meet each other and only connected over technology (again in any form).

IoT, which is one of the manifestations of the fourth-generation Industrial revolution (Industry 4.0), along with other such communication technologies including *inter alia* blockchain, robotics, quantum computing, Artificial Intelligence (AI), simulation, augmented reality, will interconnect various gizmos, data, people, systems and processes thereby causing the boundaries to be indistinct between physical and digital world and allowing them to communicate smoothly with each other.

IoT, along with the smart machines, interconnects in a faster and more efficacious way. This happens through the process of collection and processing of huge amounts of data. Researcher notes that, in the various sectors, these non-conscious yet smart technologies are perceived to have the potential to effectively change a lot. These include health services, logistics, transportation, construction industry, irrigation and agriculture, smart cities and the utility services therein like energy, water management, telecommunications to reach their maximum optimisation. However,

Researcher in this paper concerns herself only with the role of IoT (with blockchain) in the energy sector.

IoT will also act as a catalyst in having an integrated 'energy management system' in place by generating awareness of energy performance at all levels of supply chain and actuating deployment of renewable sources of energy. In making IoT a more practical and workable solution in energy efficiency management and in dealing with the intricacies of IoT application in the energy sector, one of the notable methods is its convergence with the Blockchain technology.

2 Technology and Energy Community Management: Role of IoT

2.1 Renewable Energy – Sine qua non *for Sustainability*

A topic which has called for attention time and (time) again is that of the constant use of non-renewable energy sources. The worldwide use of energy indicates the main source of Greenhouse Gas (GHG) is the emissions by humans. About 2/3rd of these GHG emissions is associated with fossil fuels burning for energy, for end use purposes of electricity, heating, transport and industry.[1] Well, nevertheless, the fact of course also remains that the electricity sector puts up only 1/5th of global energy consumption.

It is to be noted that the role of renewables in the transportation and heating sectors remains critical to the energy transition. In the opinion of Bill Gates,[2] 'if we are able to harness more power from the sun and wind, we can do more than just light our homes and power our grid. We'll unlock a source of carbon-free energy to help power the sectors of the economy that produce the maximum of GHGs'.

2.2 Key Global Effort – UNSDG 2030

Goal 7 of the 'United Nations Sustainable Development Goals (UNSDG)' aspires to 'ensure access to affordable, reliable, sustainable and modern energy for all'.[3] This goal was also revisited in 'the Sustainable Development Goals Report 2021'.[4] This Report although appreciated the expansion of electricity access, the increased use of renewable energy and the improved energy efficiency, however, it cites disheartening numbers taking 1990-2010 as base period. It quotes the 2030 target of doubling the annual improvement rate in energy intensity during the base period. The report also points out that the Global primary energy intensity between 2010

[1] European Environment Agency, 'Energy and climate change', available at https://www.eea.europa.eu/signals/signals-2017/articles/energy-and-climate-change (last visited on 18 December 2021).

[2] B. Gates, 'A critical step to reduce climate change', *Gates Notes*, 14 May 2019.

[3] United Nations Documents, 'Goal 7, United Nations Sustainable Development Goals (UNSDG)' available at https://sdgs.un.org/goals/goal7 (last visited on 18 December 2021).

[4] United Nations Documents, 'The Sustainable Development Goals Report 2021' available at https://unstats.un.org/sdgs/report/2021/ (last visited on 18 December 2021).

and 2018 improved only 2% annually compared to the required 2.6% therefore, to meet the set target of 2030, an average 3% growth annually is now required.

Further, it also cites the numbers of renewable modern energy share in total final energy consumption. It can be seen that the share of electricity sector is 25.4% but that of the heat and transport sector is 9.2% and 3.4%, respectively.

This report therefore, sets targets for 'increasing substantially the share of renewable energy in the global energy mix' and through investments in cost-effective technology for clean energy and efficiency improvements. Researcher therefore, notes that such switching to renewable sources of energy **with efficiency** can be brought in with investments in technology like IoT further with the use of blockchain.

2.3 Role of IoT

a. IoT for Neophytes: IoTs is a sensor network interconnecting gizmos, data, people, systems and processes. IoTs have Unique Identifiers (UIDs), to be able to transfer data over a huge worldwide network.[5] IoT uses sensors, controllers, actuators and communication hardware (physical device) to collect and process data. Once the data is sensed and collected, it shares the data through an IoT gateway. This gateway sends the data for analysis, processing or storage. While sensors sense the environment, the controller makes the decision and when the decision is made, it is sent to the actuator as a comeback to the data which was earlier sensed. The actuators will then perform the action needed under the decision. At times, in order to act on the information, they get from one another, IoT devices might also communicate with other related devices.[6]

With addition of new smart devices to our smart cities, smart homes and other unconsciously intelligent systems, IoT has gained tremendous ascendancy and is sought after for opportunities and further development. It is expected that there will be 25.4 billion connected devices by 2030[7]

b. IoT in Energy Sector: Researcher believes that against the present reliance on non-renewable sources majorly, fossil fuels, an integrated renewal 'energy management system' based on IoT, can help keeping a check on the 'real-time energy consumption' and thereby on energy efficiency. This in turn will not only assist in elevating the awareness level about the energy performance throughout the supply chain but also help in deploying and integrating the renewable sources of energy. The system may eventually assist in switching from non-renewable to renewable sources of energy in the near future.

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[5] H. Barthel et al, 'Identifiers in Internet of Things 2 (IoT)', *Alliance for Internet of Things Innovation* (2018).

[6] A. Majumdar, 'Free-Space Optical Communications: Role and Integration with the Internet of Things', in A. Majumdar ed, *Optical Wireless Communications for Broadband Global Internet Connectivity* (Elsevier Publications: Amsterdam, 1st ed., 2019), available at https://www.sciencedirect.com/science/article/pii/B9780128133651000084 (last visited on 15 December 2021).

[7] A. Holst, 'Number of Internet of Things (IoT) connected devices worldwide from 2019 to 2030', *Statista*, 19 October 2021.

IoT will play a massive role not only in the generation of energy (supply side), but also, it's on the demand side. IoT will aid the generation, transmission, distribution and consumption of energy. In terms of improving efficiency in generation and implementation of variable resources of energy (VRE), IoT through automated controls will identify the most conducive areas to produce energy thereby utilising these VREs to an optimum level on the basis of real time data.

But obviously, just improving efficiency in generation is not the solution that IoT might offer. In an energy system with VREs, there is yet another problem of intermittency which can limit their best use. Further, to add to the uncertainty, there is also often a mismatch in demand and supply during different times of the day. IoT in such situations, will be able to provide solutions to this intermittency problem and mismatch gap.

Further in terms of generation, IoT with automated controls can also enable having automated power plants in place. Therefore, IoT will be able to help with not only generation forecasts and automation of power plants but also help in keeping dependability and stability in the grid thereby facilitating transmission and distribution. Autonomous energy grids can be put into place through automation of substations, this will help the system indeed to address intermittency problems since both the industrial and residential plants will remain interconnected. This will further allow these players 'to participate in frequency regulation markets and provide balancing services to the grid'.[8]

Aggregation of energy sources from consumers, retailers and others, in VPP through digitalised automated control, will assist in sending out signals to them for immediate action in order to benefit from the transaction. IoT will, in terms of Consumption, improve data integration and monitoring of end-devices.

One of the use cases in this regard is that of Elia, an electricity transmission system operator in Belgium, which bridges the gap between production and peak power demand by accepting distributed energy resource capacity with capacity help, load shifting and constant monitoring by REstore and Next Pool, the aggregators.[9] Optimisation of the energy market is something that can be also aided by IoT systems, using algorithms to favourably tweak retorts to market prices movements and varying forecasts, at a much-reduced cost. However, this might lead to some level of unemployment.

3. Challenges and Key Factors in IoT Deployment

Although the world has moved way forward in terms of technology, there are certain legal as well as other challenges which might need some serious attention.

[8] S. Ratka et al, 'Internet of Things, Innovation Landscape Brief' available at https://www.irena.org/-/media/Files/IRENA/Agency/Publication/2019/Sep/ IRENA_Internet_of_Things_2019.pdf (last visited on 17 December 2021).

[9] Ibid 11.

3.1 User Privacy

The one very obvious legal challenge is that of the privacy of users. The more we are connected, the more our realisation of protecting our private space comes to the forefront. Data privacy issues can have two factors: using personal data by asking for consent (legal permission); or commercialising/monetising of personal data. While there are certain situations where a person might allow access and control of personal data, however, there are other times when a person wants certain other things to remain private to a person. The point is to generate awareness on the former part as to what personal data will actually be shared, while on the latter, to govern by law, the breach of privacy and thereby also generate awareness on what must remain private. However, both include empowering the person through rights in case of breaches because privacy is something that is not only physical but is also digital.

3.2 Security of the System from Threats and Cyberattacks

Security is an important issue that needs to be solved for IoT technologies to be widely deployed. IoT is very vulnerable to threats and cyber-attacks.[10] In the energy sector, this becomes a challenge because the IoT devices are connected into a central server and also the data generated from users is in humongous quantities.[11] Further, the deployment of IoT systems is very large affecting the overall security of the system and making it prone to cyberattacks.

3.3 IoT Standards, Communication Protocol and Subsystems

Given the fact that in IoT, a large number of devices are connected, there is a discrepancy amongst IoT devices in terms of standards. These standards could be the ones related to the network and data or regulatory ones. Adoption of these standards in terms of user data privacy and cyber security across various dissimilar devices with different protocols has been a challenge for IoT systems.[12]

Also, yet another challenge for an IoT energy system using various Information Communication Technologies (ICT)s, is to ensure proper exchange of data between, and the integration of an IoT system with the various subsystems of the energy system, in order to avoid risks like delays of synchronisation.[13]

[10] T. Horák et al, 'Vulnerability of Smart IoT-Based Automation and Control Devices to Cyber Attacks' in R. Silhavy ed, *Applied Informatics and Cybernetics in Intelligent Systems*, (Online, Springer Publications, 1st ed., 2020) available at https://www.researchgate.net/publication/343516079_Vulnerability_of_Smart_IoT-Based_Automation_and_Control_Devices_to_Cyber_Attacks (last visited on 15 December 2021).

[11] N. Motlagh et al, 'Internet of Things (IoT) and the Energy Sector' 13 *MDPI*, 494 (2020).

[12] Ibid 18.

[13] Ibid 18.

4 Convergence of IoT and Blockchain as Against Only IoT

A general consensus seen in the literature available is that the challenges of application of IoT in the energy sector, particularly the VREs, are better addressed in convergence with other manifestations of Industry 4.0. The three primary ones forming a combination in most of the proposed solutions are the AI and big data and blockchain. While this topic entails a lot of research, researcher focuses on the combination of these technologies that have the potential to succour the energy sector, predominantly, the IoT and the blockchain.

Blockchain which provides for a decentralised approach, as against the centralised cloud based one of the current IoT systems, requires each node to work independently. The distributed ledger system of Blockchain also helps in synchronisation of all the IoT devices. At present, IoT devices are synchronised and interconnected which itself makes the synchronisation a difficult process. What's surprising in some studies[14] is to see one very important problem which lies at the epicentre of IoT related challenges, is the way how (specifically, a low power) IoT device syncs its internal clock to align with the clocks of other devices in a network. Blockchain's peer to peer (P2P) network facilitates ease of access of data of IoT in one block. Each node in the blockchain works on this P2P consensus and requires every other node to perform the same function as itself. A transaction performed is saved, shared, and synced as verified and is accessible to all the parties using their encryption keys. Blockchain works on PKI (private/public key infrastructure) and secured transactions using 'asymmetrical cryptography'.[15] This immutability of blockchain which is guaranteed using these advanced cryptography algorithms, helps in turn to point out if there is any potential glitch of data privacy or user security. Also, such recorded transaction (as a block) cannot be altered or erased since it is linked to the previous transaction in the chain further.

With more network technologies now being added to the literature of IoT, there is a rise consequently in the issues of data security, users' privacy and confidentiality of the entire network for such technologies and are coming to the forefront. Blockchain is more like a knight in shining armour for IoT's fostering a highly secure and privacy-preserving technology. Although nothing is a cent per cent solution and because in practical life technologies work differently from in theories, blockchain might also have some of its snags. Researcher covers this in the Conclusion section. However, some researchers have proposed a solution,[16] to protect the application usage pattern and the user data privacy is using a private blockchain with details of the block being 'Transaction Identification (TID), the energy transferred, a digital signature of the seller and the Local Aggregators and using technologies like Bloom Filter, data aggregation, authentication techniques to protect security and privacy'.

On the production, transmission, distribution and consumption front also blockchain can be particularly helpful in the energy sector because such a

[14] H. Yi˘gitler et al, 'Overview of Time Synchronization for IoT Deployments: Clock Discipline Algorithms and Protocols' 20 *MDPI*, 5928 (2020).

[15] Md. Uddin et al, 'A survey on the adoption of blockchain in IoT: challenges and solutions' 2 *Blockchain: Research and Applications*, 100036 (2021).

[16] T. Alladi et al, 'Blockchain in Smart Grids: A Review on Different Use Cases' 19 *MDPI*, 4862 (2019).

decentralised approach will avert the need of involving third parties (here authorities) while transacting in energy.[17] So also, on the basis analysis of on demand and usage data, Blockchain technology will also help in the effective transmission and distribution of energy. Blockchain will help more consumers becoming prosumers by connecting producers and consumers securely. Blockchain will not only boost the efficiency of the ICTs in the IoT system with more versatility but also aid the ease of control of data generation and exchange in order to make the consumption as well as trading of energy simple thereby improving the efficiency of energy utilities.

Blockchain also manages 'microgrids' or 'smart grids' and energy storage. What these microgrids do is they basically bridge the gap between power demand and distributed energy resources into a distinct single controllable unit from the microgrid. On the other hand, mini-grids facilitate disposition of renewable energy in 'grid-connected areas', thereby enabling independence from the main grid. Also, in areas 'not connected to the grid, mini-grids provide remote communities with distributed generation'. A smart meter will be able to login units generated on a blockchain ledger. [18] Blockchain can be very effective here when coupled with smart devices, it can enable decentralised, peer-to-peer trading in mini-grid systems.

One of the use cases that PWC proposes is a virtual power plant (VPP) using blockchain capable of being monitored and controlled remotely.[19] Another use case is the one of local trading via local energy market based on EPEX SPOT next-hour prices between small consumers and prosumers using blockchain. [20]

Yet another convergence of blockchain in IoT systems, is to help in the diagnosis and maintenance of equipment within smart grid. Researcher could find a proposal on 'Blockchain Based Secure Equipment Diagnosis Mechanism of Smart Grid'[21] to do a safety equipment diagnosis with 'consortium blockchain' for convenient, effective and safe maintenance of devices using smart contract and encryption techniques without breaching privacy.

5 Conclusions

Overall, it can be concluded that presently, blockchain holds tremendous potential when combined with IoT. Further, AI with the help of big data, will help to train these smart machines. The potential is not even unfolded yet in terms of new technologies or the industries in which it can be used or how it can be used.

Also, blockchain is not the ultimate solution since it has its own snags. These include keeping a balance between the consumption, performance, and security;

[17] N. Motlagh, n 11 above, 18.

[18] S. Ratka, n 8 above, 14.

[19] G. Dutsch and N. Steinecke, *Use Cases for Blockchain technology in Energy & Commodity Trading*, (PriceWaterhouseCoopers, 2017) available at https:// www.pwc.com/gx/en/industries/assets/blockchain-technology-in-energy.pdf; (last visited on 18 December 2021).

[20] Ibid 11.

[21] X. Zhang and M. Fan, 'Blockchain Based Secure Equipment Diagnosis Mechanism of Smart Grid' 6 *IEEE Access*, 66165 (2018).

problem of maintaining transparency and privacy in certain situations; reduced bandwidth and output of blockchain due to high IoT data concurrency; requiring high computing storage requirements and networking resources capability for IoT big data and connectivity on blockchain; there are also certain regulatory challenges of blockchain in IoT viz., keeping privacy - although blockchain through immutability algorithms, promises security solutions, but because there is no governance by law of these block records, keeping privacy of these records becomes difficult before publishing them blockchain, yet another challenge is the execution of smart contract on distributed ledger system. Since it is through codes, the purpose of the contract could be anything (including being illegal).

It is very obvious that the more we automatise the decision-making processes, the more there may be systemic failure and cyber-attacks. In the energy sector, in terms of technical requirements, even from a customer's perspective a lot is required to be done by the market participants. Before even the consumers become prosumers, the technicalities of the system need a transition that could be of the hardware, software or even the protocols.

In terms of policies and regulatory interventions, a more prosumer centric approach is needed to make the energy market more seamless in terms of exchange of data, ensuring network neutrality, governing of user data privacy and security of the system and guaranteeing healthy competition. Just not the making of these interventions, but also making prosumers aware of their rights. One of the most important requirements is to sync the interventions with the market sentiment and the new technology convergences. These interventions should not lag behind or inhibit the working of the market but indeed support the process at the same time protecting rights of all the stakeholders involved.

Lastly, the technologically abled always forget that there are also the technologically unmindful people in the world. In any work, there is a basic forgetting of the fact that there are people who don't know how to use technology at all. In such scenario, adding to the literature of how to make the systems work without transitioning the not abled into abled will let them only believe that it is been done at their cost, no matter how much good the think-tanks want to add through their research to the world. Change is required, no doubt. Technology needs to be used for the good of the world – but 'with everyone, not without!'.

Fundamental Duty to Sustainable Development in the Brazilian Federal Constitution of 1988 and Solar Energy (Sdg 7) as an Energy Policy in the Current Brazilian Conjuncture

Maria Cristina De Cicco and Ari Rogério Ferra Júnior

Abstract: Energy policies are in a moment of transition due to the emergence of the new energy system based on a decentralized model and coming from renewable sources which seeks energy self-sufficiency with energy production by the consumers themselves – prosumers. The Brazilian energy model is still heavily centralized and solar energy, an example of a decentralized model, represents only 1.7% of the national energy matrix. The article is divided into three topics, dealing with fundamental duties; sustainable development, green economy and accessible and clean energy matrix, in line with global goal 7 of the 2030 Agenda; and solar energy as a renewable source in Brazil, demonstrating the challenges that the country faces to diversify its energy matrix, which is still very dependent on the hydraulic matrix.

Keywords: Duties-Rights, Freedom-Responsibility, Sustainable Development, Green Economy, Brazilian's Clean Energy

1 Duties of Solidarity

The question of the sustainability of a universal extension of any type of right, and in particular of social rights both in terms of their effectiveness, and with regard to the abuse of the so-called common goods and the environment is not new. It even seems indisputable that, by an already consolidated position, the right to the environment is placed as a precondition for the enjoyment of fundamental rights, both in the individual and collective dimensions. In fact, in a sense, it is faced with the individual's right to a healthy environment, in another sense, the collective dimension that evokes the interest of the community to control the territory. Therefore, a State that must be competitive, but that, necessarily, is based on social cohesion and on the recovery and preservation of a healthy environment.

The ongoing social and economic crises require not only rigor, and restraint, but also solidarity policies, shifting attention to the tensions that today permeate the issue of solidarity duties, the changes that have occurred in the content of constitutionally established duties and in the expansion of solidarity in time and space. At the same time, the need to protect cultural heritage and the environment, the need for sustainable development also raises questions about the unfolding of solidarity over time, highlighting the links between future generations' rights and present generations' duties.

The 1988 Brazilian Federal Constitution, in addition to a chapter, an *ad hoc* on the environment (Art 225), introduces the concept of environmental protection within

the framework of the constitutional principles of economic activity, providing for it, in Art 170, item VI.[1] In fact, by establishing the parameters of free enterprise, its scope was to ensure a dignified existence for all, indicating, for this purpose, as one of its limits 'the defense of the environment, including through differentiated treatment according to the environmental impact of products and services and its elaboration and delivery processes'. It is an internal limit that even conforms to the content of this freedom, whose disrespect makes it incompatible with the fundamental principles of the order.

In these questions, the correlation between rights and duties presents itself as the road to be followed for a positive approach to the problem because,[2] as the doctrine has shown, without an indispensable nucleus of duties there is absolutely no community. This new paradigm seems to have become the 'duties of man', not in opposition to rights, but to demonstrate that if rights are fundamental, also duties, mainly of solidarity, are non-derogable and equally fundamental. The truth of this statement rests on the necessary existence of two inseparable binomials in any society that defines itself as democratic: duties-rights; freedom-responsibility, with the awareness that in a Democracy the two binomials do not exist separately, and whenever they dissolve or separate, democracy runs the risk of going into crisis.

Indeed, democracy does not live only on rights, although they are its foundation, since if democracy is based on rights, it is consolidated with duties. It is therefore necessary to raise awareness of the importance of duties for the realization of rights, in order to prevent democracy from being at the mercy of individual selfishness.

As will emerge from the text, as public policies are important in terms of the environment and the energy crisis, they alone are not enough to solve the problem, because much depends on individual behaviors which can be seen, thus, as a fundamental driver of sustainability.

The duty concerns all of us and all sectors of society, including the market, and on this point, it is necessary to highlight the change in mentality that has gradually been characterizing the governance of companies, previously reluctant to the rights and interests of stakeholders today sensitive to ethics, which increasingly penetrates into economic relations and gradually changes the perception of the company's role in contemporary society, in addition to directing its action.[3]

2 Sustainable Development through a Green Economy and Sdg 7 (Clean and Affordable Energy)

In addition to the commitment to sustainability duties, whether from the community or public authorities, it is necessary to undertake economic growth with energy policies aimed at clean energy.

[1] Text given by Constitutional Amendment n. 42, of 19 December 2003.

[2] See for an analysis of the problem presented here M.C. De Cicco ed, *The duties in the era of rights between ethics and the market* (Napoli: Editoriale Scientifica, 2020), which addressing the issue of duties in relation to various sectors of law and society presents rich doctrinal and jurisprudential indications.

[3] An example can come from the recent Code of Corporate Governance approved in Italy by the Committee for Corporate Governance on 31 January 2020.

In this sense, to promote a sustainable economy, the United Nations (UN), through the United Nations Environment Program – UNEP launched in 2008 the Green Economy Initiative.[4]

UNEP aims to carry out 'global research and assistance at the national level, serving as a spur to policy makers and support for environmental investments in the context of sustainable development'.[5]

So important is the theme of sustainable development that the UN held in 2012 in Rio de Janeiro (Brazil), the United Nations Conference on Sustainable Development ('Rio+20'),[6] with the 'green economy' as its central theme.

The 'green economy' is fundamental for improving the well-being of humanity, with social equality, and, above all, reduction of environmental risks, and ecological scarcity, terms that are even present in the central axis of UNEP, for which an economy is low carbon, resource efficient and socially inclusive.

Thus, the UNEP report 'Towards a green economy: paths to sustainable development and poverty eradication - a synthesis for policymakers' explains that, in the context of the 'green economy', it is essential that 'the income and employment growth must be driven by public and private investments that reduce carbon emissions and pollution, increase energy and resource efficiency and prevent the loss of biodiversity and ecosystem services'.

The 'green economy' has three dimensions, representing: (i) transition from large-scale use of fossil fuels to renewable energy sources; (ii) economy with knowledge of nature, with the use of biodiversity products and services; and (iii) techniques that are capable of reducing pollutant emissions, such as reusing waste and reducing energy use in production processes.[7]

In this sense, the 2030 Agenda[8] adopted in 2015 by the United Nations provides for the construction of a sustainable society whose development is based on environmental, economic and social balance, which are fundamental for achieving sustainability.

In this way, solidarity is essential for the realization of global goals and the 2030 Agenda, as global society, being transnational, imposes the need for a 'sense of community and also intra and intergenerational responsibility, between States and even interspecies'.[9]

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[4] See UNEP, 'Why does green economy matter?' available at http:// www.unep.org/explore-topics/green-economy/why-does-green-economy-matter (last visited 16 June 2021).

[5] See A.R. Ferra Júnior et al, 'Economia verde como ferramenta para a concretização do objetivo n. 7 (energia limpa e acessível) da Agenda 2030 para o desenvolvimento sustentável', in L.G.B. Campello, *Direitos humanos e meio ambiente: os 17 objetivos de desenvolvimento sustentável da Agenda 2030* (São Paulo: IDHG, 2020), 266.

[6] See UN Report 'O futuro que queremos' from the Rio+20 Conference available at http://www.rio20.gov.br (last visited 16 June 2021).

[7] See R. Abramovay, *Muito além da economia verde* (São Paulo: Editora Planeta Sustentável, 2012), 82-85.

[8] See 'Transforming our world: the 2030 Agenda for Sustainable Development' available at https://sdgs.un.org/2030agenda (last visited 16 June 2021).

[9] See L.G.B. Campello and R. De Deus Lima, 'A cooperação internacional solidária no contexto do desenvolvimento sustentável para a efetivação da Agenda 2030', in L.G.B. Campello, n 5 above, 683.

In addition, global society is characterized by – drastic – social and economic differences, imposing, therefore, the 'adoption of a multilateral approach', above all to 'achieving sustainable development on the world stage marked by a growing threat arising from the global environmental crisis and by the great inequality between the realities of countries in the Northern and Southern hemispheres'.[10]

The fundamental economic, social, cultural and environmental rights are recognized as important for the dignity of the human person – individually and collectively – is achieved; therefore, the notion of sustainability must be realized 'from the economic, social and environmental axes'.[11]

In this scenario, another relevant issue to be discussed by the States concerns the awareness and adoption of green policies, aiming at raising awareness of individuals regarding their own responsibilities and on governmental issues, as well as strengthening the institutional and professional capacity of the media to, thus, promote the inspection and information.

Therefore, the realization of accessible and clean energy – which is even a global goal n. 7 of the 2030 Agenda – requires that the States fulfill this objective, diversifying their energy matrix, making it increasingly clean.

Affordable and clean energy can – and should – be seen as a necessary aspect of sustainable growth. There is a demand for a shift between the production of goods and services and its current material energy base to new sources of energy, that is, new forms of energy production, with a public, private and associative focus, which are considered the challenges for the advancement of technological innovations.[12]

In this sense, the importance of the 'green economy', which represents a fundamental aspect for sustainable development, due to the 'use of clean energy and valuation of biodiversity, as it contributes to a better quality of life in nature, reduction of inequalities, conservation of biodiversity and preservation of environmental services'. Furthermore, they also include 'job offer, conscious consumption, recycling, reuse of goods'.[13]

Thus, the 'green economy' can be considered as directly related to the aforementioned global goal n. 7 for the realization of development with respect to the well-being of present and future generations.[14]

In addition to the States, society is also interested in the issue of global energy matrices, whether in the micro or even macro issue, such as Bill Gates, who has recently shown interest in combating the global climate disaster on a worldwide basis.

In this way, public policies, technology and the market must be united in favor of global innovations with a focus on development, and overcoming the dependence on the use of fossil fuels, as 'policy initiatives, such as increased spending on

[10] ibid.

[11] ibid.

[12] R. Abramovay, n 7 above, 81.

[13] A.R. Ferra Júnior et al, n 5 above, 276.

[14] ibid.

research and development, can lead to new technologies and trigger market mechanisms to reach millions of people'.[15]

The market, which holds great monetary power, and, without a doubt, is necessary to face the environmental challenge, which, together with the States and research and development with innovation, and technology, constitute fundamental positions for the advancement and realization of sustainable development.

It is essential, then, that sustainable development in order to be effective imposes the commitment of state and non-state actors as well as demands that public policies, technological progress, and the market are united in favor of the commitment to environmental balance, economic and social.

The transition to the use of an energy matrix based on renewable sources is understood, therefore, as essential for advancing sustainable development. For example, with regard to solar energy, it is already possible to see that the market has been offering solar panels (photovoltaic systems) at lower costs, offering greater demand for the products, which are necessary for photovoltaic energy, and thus lowering costs. The cheaper and increased efficiency of equipment on the market favors competition and encourages the growth of the use of solar energy in homes.[16]

The States themselves (including Brazil) are implementing incentive policies for the use of renewable energy such as tax exemption. This inevitably causes a transition from a centralized energy model to a new decentralized model.

3 Solar Energy as an Energy Policy in Brazil: Challenges

Brazil's energy sources derive from renewable sources, as shown by the website of the Brazilian governments' Ministry of Mines and Energy, the country has 65,2% of hydraulic matrix, 8,8% of wind matrix, 9,1 % originating from biomass and biogas, though, only 1.7% of Brazil's energy results from solar energy,[17] being in an excellent position, as, in relation to renewable energy targets, recent data show that, in Brazilian Energy Balance 2021, the country had extensive use of renewable energy sources, with a good majority coming from the hydraulic matrix, but also using biomass, wind, and photovoltaics.[18]

However, the hydraulic matrix is criticized, because hydroelectric plants' construction imposes the need to flood a large social area, which produces social and environmental damage. Furthermore, another problem caused by hydroelectric plants are the periods when the plants' water reservoirs are low, generally during

[15] See B. Gates, *Como evitar um desastre climático: As soluções que temos e as inovações necessárias* (São Paulo: Companhia das Letras, 2021), 224-225.

[16] See S. Giacomazzi Dantas and F. Mezadre Pompermayer, *Viabilidade econômica de sistemas fotovoltaicos no Brasil e possíveis efeitos no setor elétrico* (Rio de Janeiro: Ipea, 2018), 32-33 available at http://repositorio.ipea.gov.br/bitstream /11058/8400/1/TD_2388.pdf (last visited 16 June 2021).

[17] See *Brasil termina 2021 com maior acréscimo em potência instalada desde 2016* available at http://www.aneel.gov.br/sala-de-imprensa/-/asset_publisher/ zXQREz8EVlZ6/content/id/22877477 (last visited 30 January 2022).

[18] See *Brazilian Energy Balance 2020* available at https://www.epe.gov.br /pt/publicacoes-dados-abertos/publicacoes/balanco-energetico-nacional-2021 (last visited 30 January 2022).

periods of drought. When, then, the government is forced to resort to the use of thermoelectric plants, which generate energy from the burning of fossil fuels to avoid dependence on the hydraulic matrix.

Whenever it is imperative to use thermoelectric plants which are more expensive, and polluting, the reflex is manifested in the electricity bill, since, in these cases, the mechanism of the energy tariff flag system is activated, causing an increase in electricity production costs. Thus, Brazilian citizens are constantly suffering from the unbridled increase in electricity, especially the most vulnerable.

Firstly, it is relevant to remark that Brazil's electricity bill is related with a system of tariff flags,[19] which changes the value of the energy to be transferred to the final consumer. The modalities of the tariff flags are: green, yellow and red. Each modality has a characteristic, namely: (a) green flag, when energy conditions are favorable, the tariff does not increase in value; (b) yellow flag, when energy generation conditions are less favorable, the tariff is increased by R$ 0,01874 for each kilowatt-hour (kWh) consumed; (c1) red flag – level 1, when energy generation conditions are more costly, the tariff is increased by R$ 0,03971 for each kilowatt-hour kWh consumed; and (c2) red flag – level 2, when under even more costly generation conditions, the tariff is increased by R$ 0,09492 for each kilowatt-hour kWh consumed. Flag prices can be changed by the federal government at any time.

The monetary addition may seem irrelevant, or derisory. However, it is relevant, because Brazilian families' household budget is extremely committed to spending on essential services such as gas, water and sewage, and especially electricity, as shown by the 2017-2018 household budget survey (POF) carried out by the Institute Brazilian Geography and Statistics (IBGE). In this sense, when it comes to spending on electricity, the impact on the budget of the poorest families is 42.2%, in the first income bracket.[20]

Therefore, understanding the impact of the tariff increase on the electricity bill of the poorest families in Brazil is essential to acknowledge the importance of electricity consumption and its costs in Brazilian families' budget. In addition, precisely because it is not possible to talk about sustainable development without also facing social inequality.

The problem generated by the water crisis when the reservoirs of hydroelectric plants are low should be faced from a sustainable perspective. That is, it is not advisable to replace a matrix that is considered clean, and renewable, even if not immune from criticism as in the case of the hydraulic matrix by non-renewable sources, such as thermoelectric.

In this sense, solar energy is one of the hypotheses that can – and should – be considered by the government and citizens for the production of electricity. That is,

[19] See *Bandeiras Tarifárias - ANEEL* available at https://www.aneel.gov.br /bandeiras-tarifarias (last visited 30 January 2022).

[20] See IBGE, *Pesquisa de orçamentos familiares 2017-2018: primeiros resultados* (Rio de Janeiro: Coordenação de Trabalho e Rendimento, 2019) available at https://biblioteca.ibge.gov.br/visualizacao/livros/liv101670.pdf (last visited 16 June 2021).

when the use of thermoelectric power plants reaches the most vulnerable population in the country, since it makes the electricity bill more expensive.

Therefore, solar energy production is part of the solution to be adopted as the objective to make the country's electric matrix 100% clean and renewable. Then, solar energy is an example of a renewable source, and should be used as a means to transform electricity's sector, because it is a cheap source that contributes to the decarbonization of energy generation.

Nevertheless, the 2030 Agenda has as global goal n. 7 – accessible and clean energy – foreseeing to expand universal access to renewable energies in the global energy matrix.

The use of solar energy as a national energy source is an objective that must be expanded by the public authorities. Thus, with solar energy development produced through photovoltaic panels the growth of prosumers, and of a model based on decentralized generation which is interconnected with new digital technologies, with distributed generation,[21] for example, is inevitable.

In Brazil, after the National Electric Energy Agency's (ANEEL)[22] Resolution n. 482/2012, Brazilians' consumers are allowed to generate their own electricity through renewable sources or qualified cogeneration, and may even supply the surplus to the distribution network in their locality. It is, according to ANEEL, the micro and mini distributed generation of electric energy,[23] innovations that claim to increase financial savings, socio-environmental awareness and self-sustainability.

In the country, it is ANEEL's competence to regulate the policies and guidelines of the Brazilian federal government for the use and exploitation of electric energy services, including captive and free consumers, independent producers and self-producers, as well as being responsible for generation, transmission, distribution and commercialization of electric energy in the national territory. ANEEL established, furthermore, that shared generation enables several interested parties in a consortium or cooperative, to install a micro or mini distributed generation and use this generated energy to reduce their bills.[24]

However, for citizens to diversify their energy matrix, leaving the dependence on the use of hydroelectric plants for the production of solar energy, for example, it is necessary that the legal framework for solar energy be voted and approved, guaranteeing more freedom, choice, economy, and sustainability for consumers. As mentioned, distributed generation is regulated only by a normative resolution from ANEEL, offering less legal certainty than a federal law regulating the sector would offer.

[21] In Brazil, distributed energy generation is the technical term given to electrical energy generated at or near the place of consumption, which is valid, above all, for cases of renewable energy sources, such as solar energy.

[22] See Resolução n. 482/2012 available at http://www2.aneel.gov.br/cedoc /ren2012482.pdf (last visited 16 June 2021).

[23] See *Geração Distribuída - ANEEL* available at https://www.aneel.gov.br /geracao-distribuida (last visited 16 June 2021).

[24] See *Regulação do Setor Elétrico - ANEEL* available at https://www.aneel.gov.br /regulacao-do-setor-eletrico (last visited 16 June 2021).

From 2012, the federal government offered some subsidies to consumers who chose to install and use solar energy, such as exemption from some charges, to encourage the use of the renewable electric model; since the cost of Brazilian electricity is made up of two factors: (i) tariff referring to the value of electricity and (ii) system infrastructure charges. At the moment, it is discussed whether the 'benefits' that were given to solar energy producers should be reduced, or even eliminated.

Currently, the solar energy producer does not pay to use the distribution grid or the electricity tariff charges. It is the controversial point of dispute between solar energy producers and the federal government.

At this moment, argue the bill n. 5.829/2019 authored by Federal Deputy Silas Câmara and with a report by Federal Deputy Lafayette de Andrada which establishes the legal framework for solar energy.[25]

The legal framework for solar energy is important for the use of this renewable source in Brazil to be regulated, as it would bring legal certainty to consumers and companies that wish to diversify the energy matrix, making use of solar energy.

Anyhow, due to the lack of consensus among federal deputies in the Brazilian Congress, the bill has not yet been voted on and concluded. The themes that generate debate among the congressmen are, basically, that the great monopolies and electric energy entities, blatantly, are in a campaign to stop or even impede the growth of the use of their own generation of electric energy by consumers in the country. This, however, no longer seems to be possible since the need for renewable sources of electricity is a global trend.

Therefore, it is not possible to state which path will be followed by Brazilian legislators in relation to the issue of solar energy and its legal regulation; however, in summary, it is necessary to understand that the Brazilian Congress debates an issue that will undoubtedly influence the future of the national energy matrix. Until then, resolution n. 482 of ANEEL and its provisions for distributed energy generation in the country.

However, there is no way for the country not to invest and encourage the use of renewable energy sources. In this sense, the project 'Energy Systems of the Future: Integrating Variable Sources of Renewable Energy in the Energy Matrix of Brazil', by the Ministry of Mines and Energy (MME) of the Brazilian government, Energy Research Company (EPE) and National System Operator (ONS), in partnership with the Federal Ministry of Economic Cooperation and Development (BMZ) of Germany and the Deutsche Gesellschaft für Internationale Zusammenarbeit (GIZ), within the scope of the Brazil/Germany Cooperation for Sustainable Development, concluded that the inclusion of larger amounts of solar and wind energy in the Brazilian

[25] See Bill n. 5.829/2019 available at https://www.camara.leg.br/proposicoes Web/fichadetramitacao?idProposicao=2228151 (last visited 16 June 2021).

electricity matrix.[26] As seen, then, the production and generation of solar energy is an alternative to integrate and diversify the Brazilian energy matrix.

Despite the need to diversify the energy matrix, the approval of a legal framework will be essential so that legal security is established in the Brazilian environment. In this way, current and future producers of solar energy will have the freedom, choice, economy and sustainability to understand how the Brazilian energy model of the solar matrix is based.

This inevitably opens another important debate for the Brazilian government, with a focus on energy poverty and social inequality, which is affecting the country and impacting the budget of families with the increase in the cost of the electricity bill, however, they are unable to improve their solar power generation systems due to financial vulnerability.

4 Conclusion

Brazil is a country heavily dependent on the hydraulic matrix which represents 65,2% of its total energy matrix. However, the country has faced challenges as the need to make use of thermoelectric plants to act as aid for energy production is increasingly recurrent.

The problem is that, in the case of the hydraulic matrix, periods of drought affect the level of water reservoirs, putting the energy production model at risk. In this sense, the federal government is haunted by the possibility that the country will once again experience an 'electric blackout'.

Consequently, national policies were developed so that thermoelectric plants were used in periods of drought. However, in a global context in which sustainable development is no longer an alternative, but the rule, there is no way to continue investing in an energy matrix that is not clean and renewable – as are thermoelectric plants.

It is imperative that the country evolve its economic model, based on a model that includes low-carbon production that is resource efficient and socially inclusive. Thus, the energy matrix which is a fundamental point of the national economy must necessarily be accessible, clean and from renewable sources. Therefore, solar energy is an excellent example of a renewable source that can – and should – be used to diversify the national energy matrix. At the moment, the country is facing a major legislative debate on the subject, showing that it is aware of the challenges that are arising and expanding the objective of diversifying the energy matrix as foreseen in global goal n. 7 of 2030 Agenda.

[26] See *Sistemas de Energia do Futuro - Ministério de Minas e Energia* 2021 available at http://antigo.mme.gov.br/web/guest/secretarias/planejamento-e-desenvolvimento-energetico/acoes-e-programas/programas/sistemas-de-energia-do-futuro (last visited 16 June 2021).

Cooperatives as Active Players in the EU Energy Transition under Social Justice Premises. An Overview of their Current Regulatory Framework and its Contextualisation under the Spanish Climate Change and Energy Transition Law Auspices.

María Dolores Sánchez Galera

Abstract: Cooperatives and communities have been active players of the local Energy markets since the very beginning of the European energy transition. Prosumers, in fact, are a key instrument for the development of a fair European energy transition that is equally important at technical, social, political, economic and regulatory level. This paper is a review of the origins and current development of this fair, democratic and participative bottom-up initiatives in Europe. This contribution stresses the importance of this topic as a multi-faceted phenomena concerning social science in general and policy makers in particular. European countries in general, and Spain in particular are still facing the challenges of integrating all policy and decision making scenarios regarding energy to ensure wider social acceptance and cooperative participation for the realisation of a just transition with the prosumer at the heart of such sustainability transformation.

Keywords: Cooperatives, Prosumerism, Social Justice, Spanish Energy Transition

1 Introduction

European countries are still facing one of the major challenges of the transition, this is the prosumer active participation in the energy market by strengthening, not only energy justice premises, but also procedural and regulatory mechanisms. The whole regulatory framework behind the energy transition process is highly complex and it concerns a growing variety of topics (i.e., business models, grid policies, market policies, etc…) and different regulatory levels. The energy transition process is a topic that concerns social science in general and policy makers in particular, but the need to integrate all policy and decision making scenarios regarding energy to ensure wider social acceptance, alongside enabling more efficient implementation of new energy technologies is crucial to the realisation of a just transition with the prosumer at the heart of such sustainability transformation. The right to participation for consumers in the energy transition still needs to be underwired by protecting the rights of energy consumers, procedural innovations and accessible participation, as well as better instruments of regulatory nature and legal protection.[1] Within this context that we will be analysing subsequently some questions arise: Is the cooperative a crucial player in the energy market? Is the

[1] On this see further, S. Lavrijssen, 'The Right to Participation for Consumers in the Energy Transition' 25 *European Energy and Environmental Law Review*, 152, 152-171 (2016).

Green Deal in Europe[2] advancing new policy instruments? What about the new Climate Change and Energy Transition Law in Spain?

There is definitely a strong link between people-centred initiatives, such as energy cooperatives, and sustainable solutions.[3] Cooperative's core mission is bridging social and economic aspects with a long-term view for the sake of future generations and sustainable energy production which is the main goal of Europe's decarbonisation plans. The European Green Deal policy roadmap is very ambitious. Under this light, it becomes essential to ensure coordination at all policy levels to encourage green public investment initiatives involving all stakeholders and partners, including cooperatives, which naturally involve local communities and all type of decentralised sectors (specially rural communities) in the transition towards a green, sustainable and just economy and society, while putting people at the centre of economic and social growth. The Communication clearly states that the clean energy transition should involve and benefit consumers.[4] The role of local-economic members-based actors is crucial. The Clean Energy for all Europeans Package[5] had already legally defined energy communities in a broad sense for the sake of empowering customers and citizens and adapting the energy system to the decentralization of the power system.[6] Further than that, the Green Deal communication of the European Commission is just a new starting point for an ambitious transition that it is still half way to go and the policies and measures shall be updated and then implemented by Member States together with the European Commission.

The European active engagement on decarbonisation in a decentralised manner is certainly not new. The Clean Energy for all Europeans Package proposed by the European Commission in November 2016 including eight legislative texts is the essential base ground on which the Green Deal energy ambitious plans stand. The 8 legislative texts in the electricity market and consumers, Energy Efficiency and Energy Efficiency of Buildings, Renewables and bioenergy sustainability as well as governance of the Energy Union were all published in the Official Journal of the EU by June 2019. In 2019 the Clean Energy for all Europeans package (CEP) marked a vital step towards the implementation of the energy union strategy (it was first published in 2015) to deliver on the EU's Paris Agreement commitments for reducing greenhouse gas emissions. Furthermore, the CEP introduced a new area

[2] COM (2019) 640 final; Brussels, 11.12.2019. In the introduction, in the 6th paragraph the Communication states that: 'This Communication presents an initial roadmap of the key policies and measures needed to achieve the European Green Deal'. The European Green Deal overarching aim is making Europe climate neutral in 2050.

[3] The UN has declared in 2012 as the International Year of Cooperatives, 'recognising that cooperatives in their various forms promote the full participation in the economic and social development of all people', see further S. Smith, 'Promoting Cooperatives: An information guide to ILO recommendation' available at https://www.ilo.org/empent/Publications/WCMS_311447/lang--en/index.htm (last visited 9 September 2021).

[4] COM (2019) 640 final.

[5] In 2019 the EU completed a comprehensive update of its energy policy framework to facilitate the transition away from fossil fuels towards cleaner energy and to deliver on the EU's Paris Agreement commitments for reducing greenhouse gas emissions.

[6] On this topic, see further, A. Noucier and L. Meeus, 'The EU Clean Energy Package' (82) available at https://cadmus.eui.eu/bitstream/handle/1814/ 68899/QM-01-20-700-EN-N.pdf?sequence=1 (last visited 9 September 2021).

within the competence of European Energy policy, a novelty highlighting the crucial role of decentralised ownership and alternative governance structures. The CEP opened a new chapter in energy governance dealing with prosumers' main obstacles and taking European citizens to be leaders of the required transformations within the complexities of traditional energy systems.[7] Still, whilst research results indicate that the current legal framework at EU level represents a clear opportunity for collective prosumers there is room for improvement in countries like Spain and Portugal where there has traditionally been less favourable framework for renewable energy prosumers in general, not just in their collective form[8].

Spain has set its own national ambitions in its Climate Change and Energy Transition Law project (CCETLP) aligned to the EU Green Deal ambitions. Before the CCETLP became law, the current Spanish Government had put forward a large-scale transition strategy with the EU framework, the Integrated National Energy and Climate Change Plan (NECP) establishing ambitious target to increase the use of RES in the final energy mix promoting domestic RES generation, and trying to reduce energy exports from 73% to 61%.[9] Under this light, the so-called small scale community initiatives for renewable energy (RE), particularly cooperatives (RE coop) are receiving growing attention from policymakers and they represent, not only a more decentralised way of production and consumption of RE, but also a more socially oriented and democratic way to regulate and finance energy within sustainable constrains promoting a distributed energy generation system in the country. It has also been advanced as vital solution to localise energy according to sustainable 'degrowth' proposals in the (rather scattered) scientific literature. This is mainly due to their modularity and capacity to generate energy at local level fostering the development of bottom-up, local and participative initiatives that erase the need of geopolitical control from the advanced economies over regions of the world in terms of strategic energy resources.[10]

2 Theoretical Approach to Social Justice Energy Approaches

The challenge of reconciling regulatory, economic and social concerns in the EU Energy Law together with the protection of vulnerable consumers have increasingly become a priority under the realm of the 'EU social market economy' generally speaking.[11] The European regulatory framework with its latest regulatory proposal has settled the premises for a more democratic global energy transition based on

[7] The normative framework on Energy Governance is an important step at European level considering that the Energy Market is still mainly dominated by large companies and top-down governance structures.

[8] A favourable framework for collective prosumers has been developed in: France, Germany, Netherlands and the United Kingdom in the form of renewable energy communities, citizen energy communities and jointly-acting renewable self-consumers and renewable energy cooperatives. For a cross-country comparison between regulatory frameworks see further, I. Campos et al, 'Regulatory challenges and opportunities for collective renewable energy prosumers in the EU' 138 *Energy Policy*, 1, 1-11 (2020).

[9] Ministerio de Transición Ecológica, 'Plan Nacional Integrado de Energía y Clima 2021-2030' available at https://www.miteco.gob.es/images/espnieccompleto_ tcm30-508410.pdf (last visited 9 September 2021).

[10] I. Capellán-Pérez et al, 'Assessment of the potential of Renewable Energy Cooperatives (RESCoops) in Spain towards Sustainable Degrowth' 123 *Energy Policy*, 215, 215-229.

[11] See further D. Ferri and F. Cortese eds, *The EU Social Market Economy and the Law: Theoretical Perspectives and Practical Challenges for the EU* (Milton Park: Routledge 2018).

cooperation that tackles energy poverty and energy unfair disparities at every regulatory level.[12] Consumers are placed firmly at the centre of this so-called 4th package, and fighting energy poverty is among its primary objectives while attempting to balance out the competing aims of energy security, protection of the environment and respect for market economic principles. As it has been advanced elsewhere,[13] full participation of consumers in the market will necessitate a better connection between retail and wholesale markets and attractive investment conditions to provide incentives for development of new technologies by both producers and consumers. Since its inception, the Energy Union project, launched in 2015[14] has aimed at accelerating the transition and modernisation of the European economy towards a low carbon, efficient and socially fair system, which ultimately benefits Europe's citizens. Thus, consumer empowerment and protection is placed at the centre of this energy transition that should be accelerated in its social dimension under the light of the new ambitious Green Deal plans. In fact, although an increasing number of consumers actively participate in the market, and there has been a rise of solar photovoltaic capacities on private houses, energy prices have remained high, and the need to introduce measures to address energy poverty and the protection of vulnerable consumers remain an important challenge within the energy transition process.

It is within this context that social justice approaches in energy policy make their appearance. These approaches advocate for the protection of such vulnerabilities, they contrast inequalities. These theoretical approaches try to foster equitable sharing of all the obligations and benefits of the energy system services aiming at a more inclusive decision-making processes that cannot be detached from a prosumer view of energy access and production. It has also been used as a framework to identify when, where, and how injustices occur within energy systems and how these injustices can be eliminated.[15] This theoretical approach is quite novel, but it is founded in literature of environmental justice, and more recently, climate and atmospheric justice.[16] It has indeed been remarked by these novel conceptual approaches the vital role of education to policy-making and the understanding and development of the energy justice concept.[17]

[12] Communication from the European Commission, 'Clean Energy for All Europeans', COM (2016) 0860. 'Clean Energy for All Europeans' proposals provide the principle of post-2020 regulatory framework, the Commission's objective is more than ever, following the first regulatory directives fostering the unbundling and the complete liberalisation of the energy market, the democratisation of the Energy transition accessible to all citizens and at a global level.

[13] G. Mete and R. Heffron, 'The Social Dimension of EU Energy Law', in D. Ferri and F. Cortese eds, n 11 above, 252.

[14] COM (2015) 80 final: 'A Framework Strategy for a Resilient Energy Union with a Forward-looking Climate Change Policy'. It has five pillars: energy security, solidarity and trust, a fully integrated internal energy market, energy efficiency, climate action, decarbonising the economy, research, innovation and competitiveness.

[15] N. Simcock and C. Mullen, 'Energy Demand for Everyday Mobility and Domestic Life: Exploring the Social Justice Implications' 18 *Energy Research and Social Science*, 1, 1-6 *(*2016); K.E.H. Jenkins et al, 'Energy Justice: A conceptual review' 11 *Energy Research and Social Science*, 174, 174-182 (2016); B.K. Sovacool and M. Dworkin, 'Energy Justice: Conceptual insights and practical applications' 142 *Applied Energy*, 435, 435-442 (2015).

[16] D. NcCauley et al, 'Advancing energy justice: the triumvirate of tenets' 32 *International Energy Law Review*, 107, 107-116 (2013).

[17] See further, R. Heffron and D. McCauley, 'The concept of Energy Justice across disciplines' 105 *Energy Policy*, 658, 658-667 (2017).

The crucial aspect lies on identifying the concept of energy justice based on several core tenets of modern justice. Two main conceptual approaches have been suggested, depending on the quantity of tenets that need to be applied across energy systems. These tenets are applicable at a variety of scales aiming to identify where injustice occurs within energy systems. There are advanced three[18]or four core tenets[19] of modern justice:

(1) The first tenet of energy justice is distributional justice: It represents a call for the distribution of benefits and ills on all members of society regardless of income, race, etc. Energy projects of different nature, like wind energy projects for instance, face distinct local opposition, and fair consultation process are necessary.

(2) The second tenet concerns procedural justice, it manifests as 'a call for equitable procedures that engage all stakeholders in a non-discriminatory way. It states that all groups should be able to participate in decision making, and that their decisions should be taken seriously throughout'.

(3) The third tenet is recognition justice. It must not be confused with participation. It manifests as 'the process of disrespect, insult and degradation that devalue some people and some places identities in comparison to others'.[20] This meaning tries to go conceptually further the limits of 'tolerance', meaning that every individual must be fairly represented.

Considering the global scope of the energy matters, and how geopolitical relations influence energy systems, Sovacool[21] has rightly propose a fourth tenet of the energy justice framework, this is, cosmopolitan justice. This tenet states that energy justice is not merely a national problem, any issue triggering injustice becomes a universal problem that applies to all human beings in all nations. This is crucial when considering the global natural resources interdependence and the complex geopolitical circumstances associated to energy resources. Global cooperation should be indeed at the basis of any energy transition towards a fairer energy system. Heffron and McCauley,[22] and Jenkins et al[23] which have been pioneering this environmental justice approach to energy systems have supported this approach and they have emphasise the importance of this wide-ranging approach in energy justice matters to apply the core tenets to each element of the energy lifecycle throughout energy market supply chains even reconciling different energy justice approaches.[24] Within small energy communities, and cooperatives context the social justice approach becomes more tangible. It is particularly evident when it comes to the market scenario and the contrasting cooperative action to fight high or unfair prices of production and transmission. It is undeniable that policy makers should take into account considerations of social justice touching upon the

[18] D. NcCauley et al, n 16 above; K.E.H. Jenkins et al, n 15 above; B.K. Sovacool and M. Dworkin, n 15 above.

[19] B.K. Sovacool, 'How Long will it take? Conceptualizing the temporal dynamics of Energy Transitions' 13 *Energy Research and Social Science*, 202, 202-2015 (2016).

[20] For this definition, G. Walker, 'Beyond Distribution and Proximity: Exploring the Multiple Spatialities of Environmental Justice' 41 *Antipode*, 614, 614-636 (2009). See further, D. McCauley et al, n 16 above.

[21] B.K. Sovacool, 'The political ecology and justice of energy', in T. Van de Graaf et al eds, *The Palgrave Handbook of the International Political Economy of Energy*, (London: Palgrave 2016), 529-558.

[22] R.J. Heffron and D. McCauley, n 17 above.

[23] K. Jenkins et al, 'Energy Justice, a whole systems approach' 2 *Queen's Political Review*, 74, 74-87 (2014).

[24] R. Heffron and D. McCauley, n 17 above.

most critical aspects of the current energy market for a fair transition avoiding to leave anyone behind. In a social justice approach barriers among consumers, producers, regulators, society and energy transmission bodies should be less evident. These core tenets of social justice should become vital to manage current transition governance and regulatory instruments and should be embedded in policy regulation without diminishing social, environmental and economic considerations.

3 Historical and Regulatory Roots of Collective Ownership in Europe as a Part of the Energy Transition and Green Deal Ambitions

Collective ownership has deep roots in Northern European countries, more particularly in Denmark. So, it is natural to find at the origins of Northern energy transition active communities willing to produce their own energy. Denmark have been financing individual wind turbines to power a village or farm, since the 1970s. The Danish government decreed that new wind farms must be at least 20% community-owned as early as 2011. The origins of this bottom-up energy transition community-based helped private owners to avoid problems such as the 'not in my backyard (NIMBY)' issue, and problems of citizens empowerment on the basis of lack of resources. Cooperative wind farms would become an active instrument towards the early transition to renewable energy sources (RES) in the country.

It is only during the past decade that the emergence of increasing numbers of energy cooperatives through citizen initiatives, which produce and supply themselves with clean, renewable energy becomes more evident in other parts of Europe.[25] A variety of energy communities have emerged going from a gathering of household consumers on a small scale to a more structured larger group of citizens and stakeholders rendering more sustainable the energy system in general. An essential feature of energy communities are not just the benefits from competitive energy prices and investment returns. Energy communities aim to realise a fair energy transition and effectively fight climate by providing accessible, shared and open participation to the energy system (i.e., production and consumption).[26] Moreover, this trend is expected to grow in the future as new bottom-up governance flows take the leadership at local level in Europe, in the form of rural communities, or collective urban initiatives.[27]

EU citizens have more recently started investing in energy communities and especially renewable energy cooperatives in countries like Spain, Croatia, France, and Greece. However the complexities of varying national legal frameworks and lack

[25] See for instance the experience of Som Energia, in Girona, Spain available at https://www.somenergia.coop/es/ (last visited 9 September 2021).

[26] See further, REScoop, 'Compile. Best Practice Guide' available at https://www.rescoop.eu/uploads/rescoop/downloads/D4.1.1_Best_Practice_Guide.pdf (last visited 10 September 2021).

[27] It has also been pointed out in the scientific literature that '[A]cademic research on RE co-ops is widely dispersed and limited; particularly for southern European countries, that is, countries that have no tradition of disseminating green energy', S. Soeiro and M. Ferreira Dias, 'Energy Cooperatives in Southern European Countries: Are they relevant for Sustainability targets?' 16 *Energy Reports*, 448, 448-453 (2020). See further, I. Heras-Saizarbitoria et al, 'The emergence of renewable energy cooperatives in Spain: A review' 94 *Renew Sustainable Energy Review*, 1036, 1036-1043 (2018).

of effective support mechanisms and energy justice procedures have prevented those countries from keeping up with the more developed energy community countries of the North, such as the Denmark, Sweden, Netherlands, Germany and Belgium. Still, community energy development has been globally pointed as crucial to fight energy poverty and universal access to energy production when they are supported by solid regulatory models.[28]

At Member States (MS) level the regulatory frameworks are mostly focused on grid-related issues and renewable energy (RE) associated mostly to individual RE prosumerism**.** Their current regulatory framework at European level is provided by the Clean Energy Package (2019). The most relevant regulatory frameworks for this type of socially oriented business model is provided by the recast of the Renewable Energy Directive (RESD)[29] and the recast of the EU Directive on common rules for the internal market in electricity (ED).[30] At MS level the RESD defines 'Renewable Energy Communities' (RECs) in Art 2 (16), they are defined as 'legal entities which are optional, member-controlled organisations proximate to RE project they own or operate.' RECs primary purpose goes beyond financial profit and has clear social and economic concerns under sustainability auspices. Art 21 of RESD is devoted to RES self-consumers, and Art. 22 aims at regulating specifically community prosumerism, this is RES energy communities. According to Art 22 (1) 'MS shall ensure that final costumers, in particular household customers, are entitled to participate in a renewable energy community while maintaining their rights or obligations as final customers', their aggregation and participation in the market should not be subject to discriminatory conditions and procedures. MS should facilitate and adapt their regulatory models to include RES energy communities as active players. Nonetheless, as it has already been pointed in previous studies,[31] despite of the specific provision of the category of low-income household participants to RES communities, RESD does not provide explicit guidelines and measures to ensure that RECs are accessible to low-income households. This issue has to be resolved by MS internally to empower these type of prosumers that are most likely to act as prosumers if they act collectively. This is an important challenge that falls within the global debate of universal access to modern energy services to contrast energy poverty and foster the right to energy access and energy production that unfortunately goes beyond the scope of this study.[32]

The ED introduces instead a new definition for collective prosumerism in the internal energy market in its Art. 2(11), this is, 'citizen energy community' (CEC)

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[28] J. Wentz and C. Pappalardo, 'Scaling up local solutions: creating and enabling legal environment for the deployment of community-based renewable microgrids', in J. Jaria-Manzano et al, *Energy, Governance and Sustainabilit*y (Cheltenham: Edward Elgar publishing, 2016), 99-124.

[29] Directive (EU) 2018/2001 of the European Parliament and of the Council of 11 December 2018 on the promotion of the use of energy from renewable sources [2018] OJ L 328/82.

[30] Directive (EU) 2019/944 of the European Parliament and of the Council of 5 June 2019 on common rules for the internal market for electricity and amending Directive 2012/27/EU [2019] OJ L 158/125.

[31] I. Campos et al, n 8 above.

[32] By providing access to modern energy services like electricity, the poor are given the opportunity to move up the energy ladder, as it were, from traditional biomass fuels to modern energy, and reap its positive environmental and health effects. Also, a variety of income-generating activities and business opportunities becomes possible, in B.k. Sovacool and I.M. Drupady, *Energy Access, Poverty and Development* (Milton Park: Routledge 2012), 46.

replacing the term 'local energy community' in the Commission. This definition is based on three dimensions: membership; primary purpose, and activities. Art 2 (11) states that a CEC means 'a legal entity that:

(a) is based on voluntary and open participation and is effectively controlled by members or shareholders that are natural person, local authorities, including municipalities, or small enterprises;

(b) has for its primary purpose to provide environmental, economic or social community benefits to its members or shareholders or to the local areas where it operates rather than to generate financial profits;

(c) may engage in generation, including from renewable sources, distribution, supply, consumption, aggregation, energy storage, energy efficiency services or charging services for electric vehicles or provide other energy services to its members or shareholders'.

According to recitals 43 to 47 of the ED, CECs must be considered as a category of cooperation between citizens or local actors' and should be 'subject to recognition and protection under the Union law'. Besides, CECs 'should not face regulatory restrictions if they apply existing or future ICT technologies to share electricity', as it was provided by the RESD.

Moreover, the Climate Energy Package recognises the overarching value of citizens' energy communities (CECs) for encouraging the involvement of the individual development of the electricity sector and requires MSs to ensure implementation of enabling legal frameworks and to guarantee the right to energy sharing.[33] Within this regulatory framework, 'cooperatives' are a traditional category of CECs with shared decision making powers among members. Member States are forced to adopt a legal framework for the establishment of CECs in the internal energy market Art 16 (1) of the E-IM Directive introduces a catalogue of applicable rights and obligations for ECs that are mandatory; but it also sets optional provisions (Art 16 [2]) that MSs can adopt in order to facilitate cross-border participation as well as CECs ownership, establishment, purchase or lease of distribution networks. They should cooperate in the market on a level-playing field without creating market distortions.[34] Furthermore, Member States can also decide whether to establish a framework allowing CECs to have the role of a Distribution System Operator (DSO) either under the general regime or as a 'Closed Distribution System Operator) (Art 16 [4] according to the specific framework for DSO provided by the ED in Chapter IV).

What happens under this regulatory context is that the diverse reality of these forms of collective self-consumption and energy communities, and the wide scope of definitions in the CEP means that active consumers, renewable self-consumers and energy communities touch upon many different areas of regulation that still should be implemented by MS. The EU framework still leaves a lot of liberty to MS for the transposition, thus the criticality of many of these aspects will depend on how the principles of the Directives are reflected in national laws. Particularly

[33] A. Noucier and L. Meeus, n 6 above.

[34] ibid 85.

within the realm of social investment and public promotion of collective forms of energy production, not just access. Also, regulatory aspects triggering issues of consumer protection associated to network regulation, including supplier and network charging arrangements that have been the main hurdle to universal energy access and market unbundling in contrast with energy security and high energy revenues.

The last issue to be dealt under collective self-consumption premises regards the possibility of collective-self consumption without taking place in an energy community. Energy communities imply a certain organisation, while collective self-consumption can be organised differently, this is, through the so-called 'peer to peer' (P2P), doing away with traditional market pools. P2P trading platforms can also enable collective self-consumption. It has been observed that the introduction of regulatory frameworks for collective self-consumption typically started later than frameworks for individual self-consumption, but earlier than frameworks for energy communities in the countries that already have frameworks, such as Austria, France and Germany[35]. This has determined the advancement of (especially economic) tools for individual prosumers market interaction rather than collective ones. Today the existing regulatory frameworks associated to collective forms of self-consumption in the most advanced regulatory systems mostly refer to households as well as commercial buildings via private grids, where energy can be shared between the members without the direct involvement of the electricity suppliers.[36] P2P trading platforms allow prosumers to exchange their self-generated (renewable) electricity with other prosumers or consumers. This possibility becomes a revolutionary challenge for traditional market design. But this is outside the scope of this analyses. In addition to this, collective prosumers not confined to a specific location, for instance a virtual prosumer project may generate future market opportunities that still need further regulation and prosumer awareness about their potential and existence.[37]

4 Cooperatives as Active Players: Market Access and Challenges in the EU Energy Policy

Energy Cooperatives, particularly RES cooperatives are part of the variety of concepts that have proliferated to define collective social engagement to auto-produce, consume or retail energy in the market ('community energy', 'community solar' and 'clean energy communities', 'virtual power plants', 'small-scale energy communities', etc.).[38] As we mentioned before the European Climate Energy Package, containing the recast of the RESD and ED, remains the key regulatory instrument ensuring a legal framework for citizen's active participation under this

[35] D. Frieden et al, 'Overview of emerging regulatory frameworks on collective self-consumption and energy communities in Europe' available at https:// doi.org/10.1109/EEM.2019.8916222 (last visited 9 September 2021); A. Noucier and L. Meeus, n 6 above, 82.

[36] CEER, 'Regulatory Aspects of Self-Consumption and Energy Communities. Fostering energy markets, empowering consumers' available at https:// www. ceer.eu/documents/104400/-/-/8ee38e61-a802-bd6f-db27-4fb61aa6eb6a (last visited 9 september 2021).

[37] See further, I. Campos et al, n 8 above.

[38] ibid.

particular legal form. It provides the legal basis for enabling active, transparent, accessible and shared participation of citizens to the energy market. Prosumers become the main players of the energy transition and the main object of regulation. Cooperatives are a traditional category of CECs with shared decision making powers among their members, thus they become potential and crucial active players of the Internal Energy Market. In fact, as a category of the more general referred term of CECs, cooperatives remain a traditional legal category of great economic value for European Member States. Thus, European Member States are forced to adopt a legal framework for the establishment of CECs in general terms in the internal energy market facing many internal challenges.

Art 16 (1) of the ED introduces a catalogue of applicable rights and obligations for CECs that are mandatory as a regulatory enabling framework for internal market participation. Such enabling framework ensures:

(a) participation in a citizen energy community is open and voluntary;

(b) members or shareholders of a citizen energy community are entitled to leave the community, in which case Art 12 applies;

(c) members or shareholders of a citizen energy community do not lose their rights and obligations as household customers or active customers;

(d) subject to fair compensation as assessed by the regulatory authority, relevant distribution system operators cooperate with citizen energy communities to facilitate electricity transfers within citizen energy communities;

(e) citizen energy communities are subject to non-discriminatory, fair, proportionate and transparent procedures and changes, including with respect to registration and licensing, and to transparent, non-discriminatory and cost-reflective network charges in accordance with Art 18 of Regulation (EU) 2019/943, ensuring that they contribute in an adequate and balanced way to the overall cost sharing of the system.

The ED also sets optional provisions (Art 16 [2]) that MSs can adopt in order to facilitate cross-border participation as well as CECs ownership, establishment, purchase or lease of distribution networks. They should cooperate in the market on a level-playing field without creating market distortions[39]. So, the optional provisions should help CECs as active players to keep up with the market balance. Furthermore, Member States can also decide whether to establish a framework allowing CECs to have the role of a Distribution System Operator (DSO) either under the general regime or as a 'Closed Distribution System Operator' (Art 16 [4]). Therefore, the challenges remain concerning owning, operating and managing electricity networks for several reasons: 'Energy communities deploying local grids in areas where DSO grid already exists may lead to unnecessary duplication of assets and costs; if an energy community also acts as a producer or suppliers, the principles of unbundling are jeopardised; DSO of a certain size have shown that scale effects can lead to an economically efficient grid operation. A move to smaller grids could, in turn, lead to higher system costs; smaller entities facing little regulatory pressure

[39] ibid 85.

may develop grids in a way that cannot be sustained in the long run; and with smaller entities that are not efficiently regulated, it becomes more difficult to ensure an adequate quality of service'.[40]

Furthermore, full participation of CECs in the energy market will necessitate better connection between retail and wholesale market and prolific investment conditions to provide incentives for development of new technologies by both producers and consumers.[41] Two main challenges remain in order to provide a favourable environment for CECs: (1) Displacing traditional business companies from the energy market; (2) the necessity to contrast the rising of electricity prices, as an increasing number of consumers become prosumers, leading to a continuous loss of utility taxes. The way these challenges will be contrasted will depend on the functioning of each energy market and the various grid policies targeting prosumers.

The Council of European Energy Regulators has dealt with the most challenging regulatory aspects of energy Communities regarding self-consuming, selling and sharing electricity; managing electricity consumption and providing flexibility; owning, operating and managing electricity networks.[42] They have examined the most relevant regulatory issues associated to the challenges of energy communities in general that can be transposed to energy cooperatives in particular, for every challenge they have analysed the business models and market design; the technical and network considerations; and consumer rights and protection. We have to wait and see whether the EU latest regulatory model will accelerate MS maximisation of their internal social justice resources to address the main challenges of self-consumption and energy communities creating the right environment for social and technical investments while empowering citizens and developing higher levels of decarbonisation in a collective and democratic manner.

5 Are Cooperatives better Equipped for Transition than other Active Players in the Energy Market? The Case of Spain and the Climate Change and Energy Transition Law (CCETL)

CECs, energy cooperatives of any kind are definitely better equipped for transforming energy markets and prosumers, towards sustainability aims, but they have traditionally been faced with adverse and hostile market conditions and lack of competing capacities. The fact that there has been an increasing attention from policy makers to provide a regulatory framework is a clear sign of their key role in the energy transition in a fair sustainable manner.[43] Indeed, they have helped rural communities, or delocalised ones connecting to the main grid or even produce their own energy off the grid. They have developed within the RES market (Photovoltaic, wind, mainly) offering a key transformative potential from a social point particularly

[40] CEER, n 36 above.

[41] See further, European Commission, 'Fact Sheet, State of the Energy Union: questions and Answers' available at http://europa.eu/rapid/press-release_ MEMO-15-6106_en.htm (last visited 9 september 2021).

[42] CEER, n 36 above, 14-53.

[43] As we discussed before, they have triggered interest even in sustainable 'degrowth' approaches.

allowing rural local development and social empowerment mostly in bottom-up initiatives.[44] Their most important economic impact in the energy market is their contribution to democratise the energy system, a traditionally hierarchical system; and to promote 'energy citizenship',[45] co-projecting, and co-designing. The collaborative nature of their governance mechanism is essential to favour a democratic and universal energy development either at urban or rural level.

Cooperative solutions in the energy system offer better equipped solutions for social justice matters linked to the energy and sustainability transition by welcoming collective solutions based on democratic decision making and action, sustainable and decentralised production with a myriad or beneficiaries that bring to the market fairer solutions without jeopardizing individual energy producers that should still be depending on main grid providers. Surely, cooperatives and solidarity oriented solutions could assist policy solutions and new regulatory frameworks to, first transpose EU latest regulatory directives and Green Deal energy plans; and secondly facilitate full social potential of the MS markets that in the end should enhance the more socially oriented side of the EU internal market. It is important to say that a whole paradigm shift is needed to achieve this transformation process,[46] and full empowerment of collective energy prosumers. A good example of the growing potential of this type of cooperatives can be taken from the UK, particularly Scotland.[47] This type of network RES cooperatives in certain delocalised regions provide stabilization through sharing learning process and creating horizontal integration. They are mostly formed by consumers (prosumers) or providers. Instead, in France other type of cooperatives cluttering the classical governance structure has been formed, cooperatives in which the members are not just consumers or producers but other agents of the energy supply chain. This would be an example of vertical integration helping the governance model to have more influence in the energy market, considering that they can exist at regional or local level, this type is represented by the French Enercoop.[48]

In Spain the regulatory framework facilitating prosumerism and autoproduction fostering the creation of RES cooperatives has been hostile since the Law 54/1997 opened the production and retailing of electricity to the free market implementing EU legislation.

There are two main issues that should be highlighted in order to describe the Spanish energy picture before the arrival of the CCETL 2021 trying not to exceed our research scope. The first one regards the lack of legal certainty that has dominated the Spanish sector of renewable energies during the last decades. The sector has

[44] Applied to the Spanish context, see further, C.E. Falcón-Pérez, 'Las cooperativas energéticas verdes como alternativa al sector eléctrico español: Una oportunidad de cambio'104 *Actualidad Jurídica ambiental*, 50, 50-108 (2020); also, I. Capellán Pérez et al, n 10 above.

[45] S. Soeiro and M.F. Dias 'Energy Cooperatives in southern European Countries: Are they relevant for sustainability targets?' 6 *Energy Reports*, 448, 448-453 (2020).

[46] See further on this, D. Ferri and F. Cortese, n 11 above; M.D. Sánchez Galera, *Educational and Cultural Challenges of the European Sustainability Model. Breaking Down Silos in the Legal Domain* (Heidelberg: Springer 2020), 29-102.

[47] See further the Energy4all experience available at http://energy4all.co.uk (last visited 9 September 2021).

[48] See further http://www.enercoop.fr (last visited 9 September 2021).

gone through several severe regulatory changes since 2007[49] and the worst consequences have been for final consumers and small prosumers. In 2007 electric feed-in tariff installations were regulated in Spain by a Spanish Royal Decree 661/2007[50], governing a specific remuneration system, since then the regulatory scenario has constantly changed, and fixed premium tariffs were suspended, and constantly amended. New decrees have reflected the government's desire to limit the growth of installed photovoltaic power capacity, which has far exceeded the goals of the Plan for the Promotion of Renewable Energies of previous decrees. These changes have generated not only fiscal burdens such as the '*impuesto del sol*', but an scenario of instability and permanent regulatory risk[51] that not only has jeopardises the rule of law by creating legal uncertainty for national and international investors[52], additionally it has created distortions in terms of energy justice with thousands of claims for damages against Spain (embedded in the 'regulatory polyarchy'[53]). They have created unfavourable regulatory conditions for private investors and prosumers at local level that have remained unprotected by the national legal system contrary to the fate of foreign investors that have submitted their claims to investment international arbitration gaining favourable results. Uncertainty and 'polyarchy' leading to unfair energy systems is the opposite of what the energy transition needs. But this remains part of the Spanish 'story' concerning renewable energies.[54] Spanish energy transition up till now has not favour at all social justice premises within the energy context and cooperatives could help to overcome such millstones.

The second issue describing the Spanish Energy scenario determines Spanish future integration into the European Energy Market. It regards the fact that Spain remains an energy island, traditionally highly dependent on external resources for its energy mix. Spanish policy makers have tried to compensate this by introducing regulatory changes fostering RES transition in a globally interconnected world that cannot longer offer technical or technocratic solutions, but need to welcome more cooperative models presenting clear advantages for sustainable and decentralised

[49] Just one year later than that, the Royal Decree 1578/2008 (published in the *Official Gazette* on 27 September 2008) introduced significant changes to the financial regime relating to power generation through solar photovoltaic technology which was previously governed by Royal Decree 661/2007.

[50] At that time the Electric energy production facilities were subject to the special regime under the Spanish Royal Decree 661/2007, of May were entitled to a feed-in tariff, consisting in the payment of a regulated tariff or the perception of a fixed premium, additional to the market price.

[51] J. Castro-Gil et al. *Riesgo Regulatorio en las Energías Renovables* (Cizur Menor: Aranzadi, 2015).

[52] A.M. López-Rodríguez and P. Navarro, 'Investment Arbitration and EU Law in the Aftermath of Renewable Energy Cuts in Spain' 25 *European Energy and Environmental Law Review*, 2, 2-10 (2016).

[53] On this, see further ibid; P. Navarro Rodríguez and A. Ruiz Robledo, 'Reforma energética en España: Análisis constitucional y administrativo' 189 *CEF Legal*, 75, 75-116 (2016); O. Gerstenberg, 'Law's Polyarchy: A Comment on Cohen and Sabel' 3 *European Law Journal*, 343, 343-358 (2002).

[54] At European level major changes have been constantly succeeding towards common ambitions of governing climate change. In 2009, a specific energy provision was introduced into the Treaty on the Functioning of the European Union (TFEU). Art 194 TFEU is therefore a fairly new provision and since its introduction there have always been reasonable doubts concerning how the European Court of Justice would interpret the wording and scope of the different elements encapsulated into this specific energy chapter. Coupled with the emphasis on climate change mitigation objectives, the first secondary legislation enacted at EU level (namely RES directive 2009/28) regarding the promotion of renewable energy was based on Art 192 TFEU, the environmental provision, and not on Art 194 TFEU. The Clean Energy Package and the Green Deal clearly open a new Chapter towards the promotion of the European Energy Transition.

production that could help the people and communities to better connect to the "Energy transition".

Spanish RES cooperatives started to emerge with the first electricity market liberalisation at local level. Rural areas have been the right environment to emerge. These organisations participate in the electricity market retailing or generating renewable energy sources. Their particular contribution to a more social market consist on satisfying market and consumers need in terms of energy production or/and consumption while following a non-profit business model and improving local participation in the complex energy system and social innovation. Thus, different typologies of cooperatives have emerged in small scale in different areas mostly focused on RES generation and RES retailing in the energy Market. In fact, one of the earliest cooperatives in Spain, Som Energia,[55] was founded in 2010 by staff and students of the University of Girona to promote the energy transition in combination with an economically viable business model that today tries to educate and expand contrasting the jeopardising mechanisms of the energy market like RES auctions where small community projects or cooperatives have been denied the right to participate.[56] The new CCETL approved by the Spanish Congress the 8th of April with years of delay after the Paris Agreement follows Green Deal ambitions of complete to be climate-neutral by 2050 – an economy with net-zero greenhouse gas emissions**.** has tried to compensate these discriminatory instances by implementing particular social measures of up to 30% associated to financial compensation from carbon emission rights (Art 30.4 of the Spanish CCETL).

Most of the cooperatives try to generate as much energy as necessary to cover their memberships' consumption and share the surplus to the market whilst respecting social justice organisational composition and governance mechanisms to relocate the impact of the technical projects and founding their decisions on bottom-up approaches[57]. Their growth in the following years will very much depend on systemic changes involving a broad array of institutional and regulatory arrangements, first to educate people to the idea of being active players in the energy system, and second, to act collectively looking for the 'common good'. Some studies on current RES cooperatives have highlighted their value as a laboratory of social and economic innovation with a strong emphasis in participation and localisation, which is key to strengthen the most social aspects of sustainable (de)growth.[58]

The current regulatory framework offered by the CCETL[59] implementing EU Green Deal ambitions of decarbonisation and energy transition has not particularly acclaimed the vital role cooperatives must have in coming years in order to transform our energy systems. Still, the Spanish Climate Change Law in its preamble,

[55] https://www.somenergia.coop/es/quienes-somos/#quesomos (last visited 9 September 2021).

[56] https://blog.somenergia.coop/comunicados-prensa/2021/01/ndp-som-energia-denuncia-que-el-mecanismo-de-subasta-del-regimen-economico-de-energias-renovables-deja-fuera-comunidades-energeticas-y-proyectos-pequenos/ (last visited 9 September 2021).

[57] i.e. Som Energia (Girona), Zencer, GoiEner, Solabria, Nosa Enerxía, EnergEtica, For a more detailed study on this and specific examples, see further, Som Energia, one of the first cooperative in Spain.

[58] I. Capellán et al, n 10 above.

[59] *Ley de Cambio Climático y Transición energética*, BOCG 19 *Mayo*, 2021.

and in Art 2 (Guiding principles) in section h, it highlights the importance of vulnerable groups and the attention must be given to them for a 'fair transition'. It also includes as an effective instrument for the ecological transition title VIII on 'Education, Research and Innovation in Climate change and Energy Transition', Art 35 (following the model of the Paris Agreement) underlying the important role education plays for a systemic transition, in which collective action remains at the heart.[60]

The Spanish Law tracking most of the Paris Agreement planning and monitoring tools fosters the institutional basis for the transformation of the economic model that is needed for a higher social impact regulating mechanisms that should contrast an unfair energy transition jeopardising collective action, vulnerable locations, or rural areas in which RE cooperative initiatives in Spain had their incipient leading role (Title VI of the CCETL, Art 27 'Strategy for a fair transition'). Moreover, the future of cooperatives and small-scale RES cooperatives lies on their attractiveness to share and produce RE participating in the market to limit the unfair polarisation among big companies. Expanding collective action could help regulate the problem of electricity prices.

6 Conclusions

Cooperatives, as key collective actors of social energy development, either at urban or rural level have the potential to become crucial players in the energy market, but their role has been marginal. Still, collective prosumers are likely to increase according to new governance arrangements and different business models, as well as the enhancement of technology solutions go ahead in order to get rid of the grid. Cooperatives in the EU Renewable Energy market have an important social, political and economic impact. Their regulatory framework is not exhaustive at some instances (i.e. DSO issues, and vulnerabilities) but it is perfectly adequate and aligned with global climate change deals to foster the right national policies and instrumental measures.

Cooperatives contribute to strengthen 'energy citizenship', energy justice and democracy and energy governance with their multifaceted consequences leading to sustainability transformation under strong energy justice premises and have not been disregarded in the latest European regulatory proposals following the requirements of an ambitious just transition. Within these collaborative form of energy prosumerism, production and transmission the possibility of embedding principles of social justice are more tangible. Still, the rise of these collective prosumerism has never been released from challenges associated to fiscal measures, maintenance costs of the grid, market imbalances and displacement of traditional business models in traditionally monopolistic energy markets. Competency problems related to energy policy at EU, regional and national level might not help to transpose specific good working practices of northern Europe that could empower urban or rural communities in other regions elsewhere. This means

[60] On this topic see further, M.D. Sánchez Galera, n 46 above.

that the inertia of the energy market still needs to be dismantled following strong social justice principles.

European regulation recognises the overarching value of citizens' energy communities (CECs) for encouraging individual involvement within the electricity sector development and requires MSs to ensure enabling legal frameworks to guarantee the right to energy sharing. The new CCET Spanish Law is ambitious and contains the right regulatory framework to favour a stronger evolution of energy cooperatives with a major social and economic impact in urban areas but further policy development under the auspices of social justice theories is urgently needed.

The Pursuit of Energy Justice in a Post-pandemic Scenario. The Fight to Energy Disconnection in Spain

Roberto Garetto

Abstract: Energy production, storage and distribution must be accessible, secure, sustainable, and equitable. In the legal sphere, this raises the question of energy justice. According to the Treaty on the Functioning of the European Union, a principle of energy solidarity needs to be applied in energy policies with regards to situations of vulnerability, in a perspective of justiciability of energy solidarity. Energy Poverty is indeed a problematic issue, which requires solidaristic support for vulnerable consumers. Furthermore the Covid-19 pandemic generated a severe economic crisis, which increased the incidence of energy poverty. With this regard, Spain can be an interesting observatory for understanding how to address energy poverty in an emergency situation. In an existing framework of specific attention to the problem of energy poverty, in order to address the pandemic, Spain provided support measures for vulnerable groups. Catalonia in particular has very protective regulations with respect to people in energy poverty. However, the application of this regulation is still sometimes inadequate, with negative implications for vulnerable households.

Keywords: Energy Justice, Energy Solidarity, Energy Poverty, Vulnerable Consumer, Energy Disconnection

1 Introduction

The issue of vulnerable consumers[1] and the relationship between rights and duties in the energy field are providing material and research topics

for a new branch of legal disciplines: energy justice.[2]

The concept of energy justice puts an essential but scarce and easily perishable element at the centre: energy. The ways in which energy is produced, stored,

[1] On the concept of vulnerability, cf: D. Schroeder and E. Gefenas, 'Vulnerability: Too Vague and Too Broad?' 18 *Cambridge Quarterly of Healthcare Ethics*, 113, 116 (2009); E. Gilson, *The Ethics of Vulnerability: A Feminist Analysis of Social Life and Practice* (London: Routledge, 2014), 8-9; M.A. Fineman, 'Beyond Equality and Discrimination' 73 *SMU Law Review Forum*, 51, 57 (2020); R. Garetto and F.G. Viterbo, 'Choosing Law and Jurisdiction for Matrimonial Property and Property Consequences of Registered Partnerships: Associated Risks', in A. Limantė et al eds, *The EU Regulations on Matrimonial Property and Property of Registered Partnerships* (Cambridge: Intersentia, 2021), forthcoming; C. Riefa and S. Saintier, 'In search of (access to) justice for vulnerable consumers', in Idd eds, *Vulnerable Consumers and the Law. Consumer Protection and Access to Justice* (London: Routledge, 2021), 6-9.

[2] K. Jenkins et al, 'Energy justice: A conceptual review' 11 *Energy Research & Social Science*, 174, 175 (2016): '[e]nergy justice has recently emerged as a new cross-cutting social science research agenda, which seeks to apply justice principles to energy policy, energy production and systems, energy consumption; energy activism, energy security, the energy trilemma, political economy of energy and climate change'.

transmitted and distributed must be equitable,[3] accessible,[4] secure,[5] and sustainable.[6] The concept of energy justice therefore hinges on the need to provide accessible, secure and sustainable energy to all people, in all areas and all contexts. In relation to energy distribution, energy justice focuses on the fair attribution of costs and benefits arising from the distribution process, by applying a principle of energy solidarity.[7] This principle is clearly stated in the Treaty on the Functioning of the European Union (TFEU), which in Art 194 para 1 expressly refers to 'a spirit of solidarity' with regards to the Union policy on energy.

The solidarity aspect has to be linked - of course - to the issue of energy poverty.

The definition of energy poverty has been evolving since the 1980s.[8] Bradshaw in 1983 identified it as 'a lack of sufficient resources to buy adequate heat and light',[9] while in 1991 Boardman proposed a more objective definition referring to the absence of 'adequate energy services for 10 per cent income'.[10] Bouzarovski recently pointed out that energy poverty 'occurs when a household is unable to secure a level and quality of domestic energy services – space cooling and heating, cooking, appliances, information technology – sufficient for its social and material needs'.[11] This definition has the merit of taking into account aspects - such as information and technology - that are indispensable in daily life today.

The EU Energy Poverty Observatory (EPOV) provides four different primary indicators of energy poverty. Two indicators are based on self-reported experiences of limited access to energy services (late payment of energy bills and low absolute energy expenditure). The other two ones are calculated using household income and energy expenditure data (high share of energy expenditure in income and inability to keep home adequately warm). The Observatory also provides other secondary indicators. They are relevant in the context of energy poverty, but cannot be directly considered indicators of energy poverty itself. These secondary indicators include energy prices and housing-related data.[12]

[3] S. Hall, 'Energy justice and ethical consumption' 18 *Local Environment*, 422, 422–437 (2013).

[4] L. Middlemiss and R. Gillard, 'Fuel poverty from the bottom-up' 6 *Energy Research & Social Science*, 146, 146–215 (2015).

[5] B.K. Sovacool et al, *Energy Security, Equality and Justice* (London: Routledge, 2013).

[6] B.K. Sovacool, 'What are we doing here? Analysing 15 years of energy scholarship and proposing a social science research agenda' 1 *Energy Research & Social Science*, 1, 1–29 (2014).

[7] S. Andoura, *Energy Solidarity in Europe: from Independence to Interdependence* (Paris: Notre Europe-Jacques Delors Institute, 2013).

[8] For a review of the evolution of the concept of energy poverty, starting from the earliest definition of 'fuel poverty', after the energy crisis of 1973, cf R. Garetto, 'Overcoming Energy Poverty through Becoming a Prosumer?', in L. Ruggeri ed, *Needs and Barriers of Prosumerism in the Energy Transition Era* (Madrid: Dykinson, 2021), 43-46. See also: N. Creutzfeldt et al, 'The Social and Local Dimensions of Governance of Energy Poverty: Adaptive Responses to State Remoteness' 43 *Journal of Consumer Policy*, 635, 635-637 (2020).

[9] J. Bradshaw, 'Introduction', in Id and T. Harris eds, *Energy and Social Policy* (London: Routledge and Kegan Paul, 1983), 2.

[10] B. Boardman, *Fuel poverty: From cold homes to affordable warmth* (London: Belhaven, 1991), 227.

[11] S. Bouzarovski, *Energy poverty: (Dis)assembling Europe's infrastructural divide* (Cham: Palgrave Macmillan, 2018), 1.

[12] More extensively, cf R. Garetto, n 8 above, 45.

The outbreak of the Covid-19 pandemic generated a severe economic crisis[13] that also had serious repercussions in the energy sector, increasing the incidence of energy poverty.[14] It is reasonable to say that the households most affected by the effects of the pandemic, increasing energy poverty, are those with low incomes.[15] The application of energy justice criteria requires the activation of solidaristic support for vulnerable consumers in the pandemic and post-pandemic phases. Such supportive measures cannot be restricted to legislation and regulations, but often require also case law to ensure a justiciable principle of energy solidarity.

Vulnerable consumers encounter objective difficulties in their access to justice. Asserting a principle of energy solidarity in court is difficult for vulnerable persons who suffer unfair harassment.[16]

In this sense, Spain is an interesting observatory for understanding how to address energy poverty in an emergency situation. In 2019, shortly before the outbreak of the pandemic, Spain had formally adopted a National Strategy containing objectives to be implemented over a five-year period.[17] Moreover, during the pandemic Spain increased the protection of vulnerable households, preserving them from the risk of energy disconnection.[18] Nevertheless, vulnerable households, who found themselves in severe energy poverty preventing them from paying their energy bills, did not always find adequate protection in concrete situations.

2 The National Strategy against Energy Poverty 2019-2024

The issue of energy poverty is the centre of attention in Spain.[19] That Country has recently started to address it with the launch of the National Strategy against Energy

[13] I. Chakraborty and P. Maity, 'COVID-19 outbreak: Migration, effects on society, global environment and prevention' 728 *Science of the Total Environment*, 1, 4-5 (2020): 'human civilization has not faced such an unprecedented emergency after the World War-II'.

[14] B.K. Sovacool et al, 'Contextualizing the Covid-19 pandemic for a carbon-constrained world: Insights for sustainability transitions, energy justice, and research methodology' 68 *Energy Research & Social Science*, 1 (2020): '[t]he global Covid-19, or coronavirus disease, pandemic has overwhelmed our societies, shocked the global economy, thrown energy markets into disarray and overburdened struggling health care systems and other social institutions around the world'.

[15] R. Nagaj and J. Korpysa, 'Impact of COVID-19 on the Level of Energy Poverty in Poland' 13 *Energies*, 1, 12 (2020): 'it can be concluded that the lower the household's income, the more severe the effects of the COVID-19 pandemic on financing expenditure on energy carriers'.

[16] C. Riefa and S. Saintier, n 1 above, 6.

[17] Cf R. Castaño-Rosa, 'Energy poverty goes south? Understanding the costs of energy poverty with the index of vulnerable homes in Spain' 60 *Energy Research & Social Science*, 1, 2 (2020).

[18] D. Bienvenido-Huertas, 'Do unemployment benefits and economic aids to pay electricity bills remove the energy poverty risk of Spanish family units during lockdown? A study of COVID-19-induced lockdown' 150 *Energy Policy,* 1, 1-3 (2021).

[19] Cf F. Martín-Consuegra, 'Pobreza energética: experiencias europeas de análisis nacional, regional y urbano. El caso de la Península Ibérica, Europa', in J.R. García Chávez and J.R. Maldonado Yáñez eds, *Arquitectura Bioclimática Sostenible en Europa II* (Ciudad de México: Universidad Autónoma Metropolitana Azcapotzalco, 2019), 17-38; M.T. Costa-Campi et al, *La pobreza energética en España. Aproximación desde una perspectiva de ingresos* (Madrid: Fundación Naturgy, 2019); E.M. Arenas et al, 'La pobreza energética en España', in A. Blanco et al eds, *INFORME España 2019* (Salamanca: Universidad Pontificia Comillas, 2019), 176-177; Cruz Roja Española, 'La Vulnerabilidad asociada al ámbito de la vivienda y pobreza energética en la población atendida por Cruz Roja' 17 *Boletìn sobre vulnerabilidad social*, 1, 1-124 (2018); S. Tirado Herrero et al eds, *Pobreza, vulnerabilidad y desigualdad energética. Nuevos enfoques de análisis* (Madrid: Asociación de Ciencias Ambientales, 2016); J.C. Romero et al, *Pobreza energética en España. Análisis económico y propuestas de*

Poverty 2019-2024 (*Estrategia Nacional contra la Pobreza Energética 2019-2024*). The document, which was approved by the Council of Ministers on 5 April 2019,[20] set several milestones that had not yet been addressed in Spain. For example: providing the first official definition of what is considered 'energy poverty', quantifying how many people suffer from it in different ways in Spain and, most importantly, setting objectives and a strategy to overcome it.

The document establishes the first official definition of what is considered energy poverty: 'energy poverty is the situation in which a household finds itself in a condition where basic energy supply needs cannot be met as a result of an insufficient level of income and which, in same cases, may be aggravated by having an energy inefficient dwelling'.[21]

After giving a definition of energy poverty, the document also provides a reliable indication of how many people suffer from it. In Spain, according to the data stated in the document, between 3.5 and 8 million people live with energy poverty problems on a daily basis.

Of course, no one would say that a problem that affects between 7% and 16% of the population is a negligible issue. Behind them are families - and very often vulnerable persons[22] - who are forced not to turn on their heating in winter - or who do not have it at all, in areas where it is necessary - or who activate the heating systems, despite the cost of maintaining these supplies takes up a very large part of their income.[23]

To quantify the extent of energy poverty in Spain, the Ministry of Energy Transition used the four primary indicators proposed by the EPOV.

Specifically, they are as follows:

- Population with disproportionate expenditure on energy consumption: the number of households that spend more than double the national average on energy supplies in relation to their income (in other words: a very important part of their income is spent on something essential).
- Hidden energy poverty: this concept, until recently unnoticed, quantifies the number of people who have a very small energy expenditure - less than half the average - indicating that they are probably people who avoid using

actuación (Vigo: Economics for Energy, 2015); S. Tirado Herrero et al eds, *Pobreza energética en España. Análisis de tendencias* (Madrid: Asociación de Ciencias Ambientales, 2014); Id et al eds, *Pobreza energética en España. Potencial de generación de empleo derivado de la rehabilitación energética de viviendas* (Madrid: Asociación de Ciencias Ambientales, 2012).

[20] The drafting and approval of the document is carried out in compliance with Royal Decree-Law 15/2018, of 5 October, on urgent measures for the energy transition and consumer protection.

[21] In the original language, this is the definition given in the document: '[*l*]*a pobreza energética es la situación en la que se encuentra un hogar en el que no pueden ser satisfechas las necesidades básicas de suministros de energía como consecuencia de un nivel de ingresos insuficiente y que, en su caso, puede verse agravada por disponer de una vivienda ineficiente en energía.*' Cf official definitions of energy poverty in some other EU Member States in: N. Creutzfeldt et al, n 8 above, 645.

[22] E.M. Arenas, n 19 above, 185: '[*l*]*os grupos más vulnerables a las enfermedades sobrevenidas por entornos térmicamente no adecuados son los niños, los adolescentes, los adultos con problemas de salud y las personas mayores*.'

[23] Cruz Roja Española, n 19 above, 70.

electricity or consumption they need because they cannot - or fear they cannot afford to pay - for it.

- Percentage of population reporting that they are unable to keep their home at an adequate temperature: this indicator is not misleading, as it quantifies the percentage of people who recognise, through surveys, that something so basic to them is prohibitively expensive.
- Percentage of population reporting delays in paying bills.

With these indicators, and thanks to data from the National Statistics Institute, the document shows the percentage of the population facing each of these difficulties.

Comparing the data as a percentage over a decade (from 2008 to 2017), disproportionate expenditure in consumption in 2017 affected 17.3% of the Spanish population, an increase compared to the data of ten years earlier (in 2008 it was 15.9%). Hidden energy poverty is detected in 11.5% of the population (in 2008 the percentage was higher: 14.6%). Inadequate temperature in the home was recorded in 8% of the population (in 2008: 5.9%). Finally, late payment of bills affects 7.4% of the population (4.6% in 2008).

The comparison with 2008 does not result from a meaningless linkage, as in the wake of the financial and housing crisis, cases of energy poverty rose sharply.[24] As evident, some of the indicators have improved over the years, but not enough.

With regard to the indicator for households whose energy expenditure in relation to income is more than double the national average, this situation occurs more frequently among the over-65s living alone (30.1%). Hidden energy poverty affects above all couples with three or more children (28.4%), while one-adult households with financially dependent children (single-parent households) suffer most from inadequate temperature (14.1%) in winter, and the same is true for delayed bills (13.5%).

Considering that the resident population in Spain amounts to about 47 million,[25] it is possible to transpose the percentages into numerical figures to understand the concrete situation. Based on 2017 data, 8.1 million Spanish nationals have disproportionate expenses in relation to their income; 5.1 million people suffer from hidden energy poverty; some 3.7 million people spend the winter in inadequate temperatures and 3.5 million people have to face delays in paying their bills.

The National Strategy against Energy Poverty 2019-2024, following the diagnostic analysis, sets out - as implied by the denomination itself- a strategy from several standpoints. The minimum goal is to reduce each of the four indicators listed above by at least 25% by 2025, but the optimal reduction would achieve 50%. Thus, in the case of the proportionate expenditure indicator, the starting point is 17.3% of

[24] E.M. Arenas, n 19 above, 175.

[25] INE, Instituto Nacional de Estadística, data of 1 January 2021: population resident in Spain amounts to 47.394.223.

the population in 2017, with a minimum target of 12.9% and a maximum reduction goal of 8.6% by 2025.

3 Prohibition of Energy Disconnection in Special Cases and Support Measures for Vulnerable Groups in a State of Pandemic Emergency

Art 52 of Law 24/2013, of 26 December, on the Energy Sector, establishes a group of consumers whose supply cannot be suspended. These are the so-called essential supplies. These include hospitals, funeral services, penal institutions, dwellings where there is evidence that the electricity supply is essential for the medical equipment that is necessary to keep a person alive. The Royal Decree Law 7/2016, of 23 December, also added, among the essential supplies, those relating to dwellings of severely vulnerable consumers covered by the social allowance and who are being cared for by social services because they are at risk of social exclusion based on their income, as well as supplies in default of payment of the electricity bill whose holder is a beneficiary of the social allowance and for its application has accredited forming part of a family unit in which there is at least one minor under the age of sixteen, or the holder, or any of the members of the family unit, is in a situation of recognised dependency of degree II or III,[26] or has a recognised disability equal to or greater than 33%, and provided that they are in a situation of social vulnerability accredited by a document issued by the social services of a competent Public Administration.[27]

However, these protective measures are not sufficient to cope with the situation arising from the pandemic. The health shock generated by COVID-19 has uncovered the existence of a large number of households in a very vulnerable socio-economic environment. These households were previously already at risk of poverty, either because they were unemployed, working in the informal economy under precarious conditions, or because they suffered from a high level of job instability. Also included in this group are households that will not be able to carry out their only work activity associated with the seasonal activities (like tourism) and their income will probably be seriously affected. In short, many households have found themselves unable to meet the costs of renting their homes or paying for essential supplies, electricity in particular.

The Ministry for the Ecological Transition and the Demographic Challenge (MITECO), to address the outbreak of COVD-19,[28] established the extension of the social allowance to people in a situation of economic vulnerability as a result of COVID-19 and no suspension of supply during the state of alarm. This provides those

[26] Grade II. Severe dependency: assistance is needed to perform several basic activities of daily living two or three times a day, but it does not require the permanent support of a caregiver. Grade III. Severe dependency: help is needed to carry out several basic activities of daily living several times a day and, due to a total loss of physical, mental, intellectual or sensory autonomy; it requires the indispensable and continuous support of another person. Royal Decree 291/2015, of 17 April, defines the care to which degree II and III dependents are entitled.

[27] I. Del Guayo Castiella, 'Consumidores vulnerables en el sector eléctrico, lucha contra la pobreza energética y el bono social' 203 *Revista de Administración Pública*, 343, 365 (2017).

[28] M. Tapia and J. Bouza, 'Lo que la pandemia deja al descubierto. El COVID-19 en España' 17 *Espaço e Economia*, 1, 3 (2020).

who find themselves in such situations with a social bonus, that is a direct discount on electricity bills, aimed at users in a situation of vulnerability.

The sixth additional provision of Royal Decree-Law 30/2020, of 29 September, on social measures in defence of employment, creates a new category of vulnerable consumer with the right to receive this social electricity bonus.

Exceptionally, they may apply for this social benefit when the holder of the supply point, or any of the members of their family unit, is unemployed, undergoing a temporary layoff plan - an '*Expediente de Regulación Temporal de Empleo*' -,[29] or has had their working day reduced due to caregiving (in the case of an entrepreneur) or other similar circumstances that entail a substantial loss of income.

In order to be eligible for the social electricity bonus, the total income of the members of the family unit must not reach the following thresholds:

- That the total income does not exceed €988.58, if there are no minors in the household.
- That the total income does not exceed €1,318.10 if there is a minor.
- That the total income does not exceed €1,647.63, if there are two minors in the household.

Without prejudice to the above, the following are considered special circumstances:

- That the consumer or any of the members of the family unit has a recognised disability equal to or greater than 33%.
- That the consumer or any of the members of the family unit accredits a situation of gender violence, in accordance with the provisions of current legislation in Spain.
- That the consumer or one of the members of the family unit is a victim of terrorism, in accordance with current legislation in Spain.
- That the consumer or one of the members of the family unit is in a situation of recognised grade II or III dependency,[30] in accordance with the provisions of current legislation in Spain.
- That the consumer accredits that the family unit is made up of a single parent and at least one minor. For the sole purpose of verifying this special circumstance, the supplier will check through the family record book and the census registration certificate that a second parent does not live in the home to whose supply the social allowance is linked.

[29] *Expediente de Regulación Temporal de Empleo*, or *ERTE*, is a labour flexibilisation measure that enables companies to reduce or suspend employment contracts. It is regulated by Art 47 of the Workers' Statute.

[30] Cf n 26 above.

In the event of any of the aforementioned special circumstances, the thresholds for the total income will be as follows:

- That the total income does not exceed €1,318.10, if there are no children in the household.
- That the total income does not exceed €1,647.63, if there is a minor.
- That the total income does not exceed €1,977.15, if there are two minors in the family unit.

These beneficiaries of the social bonus will be considered users in a vulnerable situation, which means a direct discount of 25% before taxes on the electricity bill in case of voluntary price contract for small consumers - '*Precio voluntario para el pequeño consumidor*'-,[31] with a limit on the energy consumed (which depends on the size of the household).

They will have the condition of 'vulnerable person' as long as they do not resume their work activity,[32] and the consumer is obliged to communicate this fact to the supplier. In any case, the aid will be provided for a maximum period of 6 months from the date of accrual of the social allowance.

At any time, before or after this six-month period, users may avail themselves of another of the cases envisaged in the social allowance regulations (already referred to above) and which, in the case of severely vulnerable beneficiaries or those at risk of social exclusion, entails a 40% reduction in the electricity bill (applying the aforementioned energy limit).

In addition, for consumers covered by the electricity social bonus, the temporary period of validity of the state of alarm will not count towards the deadlines set out in the cut-off procedure for non-payment.

In accordance with the fourth additional provision of Royal Decree-Law 37/2020, of 22 December, and until the end of the state of alarm, the supply of electricity cannot be suspended for consumers covered by the electricity social bonus.

Those who met the requirements could apply for the allowance until the last day of validity of the allowance, which was 30 June 2021. As the aid can be provided for a maximum period of 6 months, the protection regime of the social electricity bonus was supposed to be applied until 31 December 2021 at the latest.

Subsequently, the validity of this provision was extended by Art 4 of Royal Decree-Law 8/2021 of 4 May until 9 August 2021. Taking into account the proximity

[31] '*Precio voluntario para el pequeño consumidor*', or *PVPC*, is the regulated electricity tariff, as provided by the Royal Decree 216/2014 , of 29 March.

[32] It is possible that a person is not the holder of the supply contract for the home he (or she) lives in, but he (or she) is a part of the family unit and meets the requirements of Art 3 of Royal Decree 897/2017, of 6 October, establishing criteria for identifying vulnerable consumers. This person can present a certificate from the social services or social mediators to the supplier with which the supply contract for the home is signed, certifying this circumstance, the supply of electricity to the home cannot be suspended either. This measure, therefore, applies to homes inhabited by people who are not direct beneficiaries of the energy social bonus (as they are not holders of the supply contract) and to both free market and regulated market suppliers (depending on the existing supply contract for the home).

of the date on which the aforementioned measures were supposed to cease to have effect, as well as the pace of recovery of economic activity in Spain at a time of uncertainty in the current health situation, it was deemed necessary to continue to have a legal framework to support certain groups in a situation of economic and social vulnerability that have not yet been affected by the positive effects of the economic recovery that is taking place. Therefore, the Royal Decree-Law 16/2021, of 3 August, extended the period for providing the discount on the social electricity bonus and the guarantee of supply to vulnerable consumers until 31 October 2021.

4 Legal Protection from Energy Disconnection in Catalonia

The Spanish Constitution of 1978, as provided for in Art 149.1.8, allows the exclusive competence of the central State in matters of civil legislation to coexist with the capacity of certain Autonomous Communities to dictate their own civil rules.[33] Despite different doctrinal approaches to the issue,[34] this complex regime characterises Spain as a multi-legislative system.[35] The Autonomous Communities may assume through their Statutes of Autonomy legislative competencies concerning, inter alia, the 'social welfare' ('*asistencia social*').[36]

Art 9.25 of the Statute of Autonomy of Catalonia confers on the *Generalitat* (in a broad sense: both legislative and executive branches) exclusive competence in the field of social welfare.

As a result of a serious economic crisis, in 2014 some social organizations launched a Popular Legislative Initiative (*Iniciativa Legislativa Popular*) aimed at proposing a new law project on housing and energy poverty to the Catalan Parliament. The initiative was widely followed and led to the desired result.[37] The Catalan Parliament enacted thus Law 24/2015, of 29 July, on urgent measures to address the emergency in the field of housing and energy poverty.

Preamble I of the Law highlights that among Spain's Autonomous Communities, Catalonia is one of the hardest hit by the economic crisis. In 2015 more than 200,000 households had all their members unemployed, and 95,000 of these households did not receive any income. It points out the growth of energy poverty, in terms of the difficulty in paying bills for basic supplies of electricity. The prices of access to these supplies have become unaffordable for the population. Since 2008, electricity has risen by 60% and there are 193,000 households in Catalonia - 6.9% of the total - that cannot afford to maintain their homes at an adequate temperature (2011 data).

[33] Cf Art 149.1.8: 'without prejudice to the preservation, modification and development by the Autonomous Communities of their civil laws, "fueros" or special laws, whenever these exist'.

[34] X. Souto, 'Las competencias en derecho civil de las comunidades autónomas de España' 89 *Boletim da Faculdade de Direito da Universidade de Coimbra*, 853, 864 (2013).

[35] J.J. Álvarez Rubio, 'La vecindad civil como punto de conexión ante la creciente complejidad del sistema plurilegislativo español: balance y perspectivas de futuro' 38 *Derecho Privado y Constitución*, 11, 18-23 (2021); E. Zabalo Escudero, 'El Derecho aplicable a las situaciones privadas internacionales en los ordenamientos plurales', in J.J. Forner i Delaygua et al eds, *Entre Bruselas y La Haya. Estudios sobre la unificación internacional y regional del Derecho Internacional Privado. Liber Amicorum Alegría Borrás* (Madrid: Marcial Pons, 2013).

[36] Art 148.1.20 of the Spanish Constitution.

[37] A. Varo and E.R. Bartlett, 'Energy Poverty and Access to Justice in Catalonia', in N. Creutzfeldt et al eds, *Access to Justice for Vulnerable and Energy-Poor Consumers: Just Energy?* (Oxford, Hart: 2021), 221.

Preamble I extends the assessment to energy supply companies. It indicates that during the first three quarters of 2013, the electricity oligopoly operating in Spain (Endesa, Gas Natural Fenosa, Iberdrola, EON España and EDP) made a profit of 7,638 million euros, double that of European electricity companies and the main electricity distribution company in Catalonia, Endesa, reported a profit of 1,879 million euros in 2013.

To address this critical situation, Law 24/2015 establishes the protection of individuals and family units at risk of residential exclusion ('*exclusión residencial"*), in the face of supply cuts that may be imposed by the companies providing electricity due to non-payment. Therefore, distribution companies may not interrupt supplies to individuals or families at risk of residential exclusion without first requesting a report from the social services.

Art 6, para 2 of the Law establishes, as a precautionary principle, an obligatory protocol of communication to social services and intervention by these services prior to the granting of the necessary aid to avoid supply cuts, in cases of non-payment due to the lack of economic resources of the households involved.

In order for the precautionary principle established by para 2 to be applied, Art 6, para 4 provides that, when the energy company has to cut off the supply, it must first request a report from the municipal social services to determine whether the person or family unit is in one of the situations of risk of residential exclusion determined by the same Law 24/2015 (Art 5.10, which provides objective evaluation parameters). In the event that these requirements are met, basic supplies must be guaranteed in accordance with the provisions of Art 6, para 1 (namely: basic supplies). Art 6, para 3 provides necessary aid to be applied so as not to generate any debt for the person or family unit. Specifically, this paragraph establishes mandatory agreements or arrangements with energy companies to ensure that they grant non-refundable subsidies to persons and households at risk of residential exclusion or apply very substantial discounts on the cost of minimum consumption.

Despite very precise legal provisions, the Public Administration has not always been able to conclude agreements with the supply companies.

As early as 2019, well before the outbreak of the Covid-19 pandemic, the Ombudsman ('*Síndic de Greuges*') of Catalonia[38] recognised, in an official publication[39] the lack of regulatory deployment of Law 24/2015 and the non-uniformity of agreements between the local Administrations and the supply companies.[40] The Ombudsman, in the same publication, affirmed that more than three years after the approval of Law 24/2015, there still were failures and inadequacies of the configuration of the system of protection of individuals and

[38] ibid 226.

[39] Síndic de Greuges de Cataluña, 'El derecho al suministro de electricidad: obstáculos y soluciones en el precio, el acceso al servicio y la garantía de su calidad' available at https://www.sindic.cat/site/unitFiles/6104/Informe%20dret%20al%20subministrament%20electric_cast_def.pdf (last visited 10/09/2021).

[40] ibid 35

families in situations of energy poverty that prevents them from meeting the costs of basic supplies.[41]

Previously, the same Catalan Ombudsman, in a resolution of 2018, referred also to irregular and ethically questionable practices exercised by some supply companies on vulnerable people through collection agencies[42]. More specifically, this concerns the methods of debt collection carried out by private companies (collection agencies) on behalf of supply companies, without taking into account whether the cases involve vulnerable persons. In the Ombudsman's opinion, supply companies should not cede to third parties either the debt or the debt collection procedures generated by the non-payment of basic supplies of people who have duly accredited that they are at risk of residential exclusion. These cases, as the Catalan Ombudsman's resolucion emphasises, should be assessed by the supply companies themselves, given the situation of vulnerability in which these people find themselves. Far from the harassment to which they are subjected, they should receive, both from the Administration and from the supply companies themselves, the necessary information and support to be able to find the best solution to the situation of energy poverty in which they find themselves.

Since the provisions of Law 24/2015 were already problematic in terms of their implementation before the pandemic, it is clear that the situation worsened even more after the pandemic occurred. The most critical phase of the Covid-19 pandemic, led - as known - to a very serious economic crisis and the spread of the scourge of poverty. The aforementioned requests for compliance made by debt collection agencies have become more and more pressing.

Following repeated, pressing, and perturbing demands for payment made against a vulnerable person, on 30 July 2020 *Alianza contra la Pobreza Energética* (*APE*)[43] filed a complaint against the collection agency who heavily harassed the person in a vulnerable situation. According to the appellants, the facts could constitute the crimes of usurpation of public functions (Art 402 of the Criminal Code), arbitrary execution of one's own right (Art 455 of the Criminal Code), and coercion (Art 172 of the Criminal Code).

On 27 October 2020, the Juzgado de Instrucción no 5 of Barcelona admitted the complaint for processing. As the above-mentioned allegations are not minor offences, the proceedings will include a pre-trial phase and the oral trial, a procedure that could take more than eighteen months.

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[41] ibid 36-37: '[*e*]*n todo caso, transcurridos más de tres años de la aprobación de la Ley 24/2015, se evidencian carencias e insuficiencias de la configuración actual del sistema de protección de las personas y familias ante situaciones de pobreza energética que les impide atender puntualmente los gastos de los suministros básicos y que, en consecuencia, se ven en riesgo de no disponer de agua, electricidad o gas*'.

[42] See: https://www.sindic.cat/es/page.asp?id=53&ui=5819 (last visited 10/09/2021).

[43] Cf A. Varo and E.R. Bartlett, n 37 above, 228: '[t]he APE is a key social actor in understanding the deployment of energy poverty policies in Catalonia, at both regional and local levels (particularly in cities with APE's local nodes, such as Barcelona). The APE was launched in 2014 by neighbourhood associations, workers' assemblies and water and housing rights platforms. Their activity can be structured into two main dimensions: collective assemblies of energy-poor people for mutual support and their advocacy of for regulations and policy changes to ensure the right to basic supplies (energy but also water). It also was a key member of the group that promoted the current Catalan Act 24/2015.'

Regardless of the results of the criminal proceedings, it will be particularly interesting to see whether the favour established by the law for persons in a state of vulnerability can be the basis for the establishment of a general principle of energy solidarity.

5 Conclusion: Towards the Justiciability of Energy Solidarity

The judgement in Catalonia concerning the harassment of non-compliant customers in vulnerable situations by energy supply companies attests to the plaintiffs' efforts to assert the inviolability of a principle of energy solidarity.

Both the national legal framework (in particular: Law 24/2013) and that of the Autonomous Community of Catalonia (Law 24/2015) offer solid ground for a full protection of this principle.

It should also be noted that the recognition of a principle of energy solidarity raises the question of its justiciability.

Justiciability of energy solidarity is increasingly taken into account by the Court of Justice of the European Union. Significant in this respect the Opinion delivered on 18 March 2021 by the Advocate General Campos Sánchez-Bordona in Case C-848/19 P *Germany v Poland*.[44] The Advocate General agreed with the General Court's judgment in Case T-883/16 *Poland v Commission*,[45] which held that energy solidarity under Art 194, para 1 of the TFEU is a justiciable principle of EU primary law. The Advocate General specifies that the principle of solidarity must be considered in a broad way, being 'linked to relations both horizontal (between Member States, between institutions, between peoples or generations and between Member States and third countries) and vertical (between the European Union and its Member States).'[46] Of course the situation described above, with regard to Spain, relates to the horizontal dimension (institutions and peoples).

On the question of the justiciability of the principle of energy solidarity, the Advocate General considers the aspect of sovereignty of the Member States in order to energy policies and points out that "in the light of the establishment of an EU energy policy based on the principle of solidarity (...) the justiciability of that principle is as indisputable as that of the safeguards for State sovereignty.'[47] Thus, to some extent, the Advocate General in Case *Germany v Poland* points out to both the legislator and the judicial authorities of each Member State the need to fully apply the principle of energy solidarity and to make it effective not only through legislative measures but also through consistent decisions in the courts.

[44] Opinion of Advocate General Campos Sánchez-Bordona in Case C-848/19 P, *Germany v Poland*, ECLI:EU:C:2021:218.

[45] T-883/16, *Poland v Commission*, ECLI:EU:T:2019:567.

[46] Opinion of Advocate General Campos Sánchez-Bordona, para 60.

[47] ibid para 79.

Energy Communities as a New Tool of Energy Self-production and Sustainable Development

Manuela Giobbi

Abstract: Energy communities play a key role in the energy transition process, which aims at combining technological innovation and social benefit, and at mitigating the issues related to climate change. The new energy self-production models based on the use of renewable sources allow greater production variability and a variety of players to participate in the market. Moreover, they contribute to lessening the economic vulnerability of citizens.

Keywords: Energy Communities, Vulnerable Customers, Sustainable Development

1 Introduction

The decentralised and flexible generation of energy underlies the innovation of the energy market in terms of access, distribution, and economic benefit. Indeed, the European Union is increasingly oriented towards ensuring that all citizens have the right to produce, use, store or exchange the energy generated individually or collectively, to improve energy efficiency and actively participate in the market.

Achieving the binding objectives set by the European Union for the decarbonisation of the energy system, as well as an equitable use of energy for the mitigation of the economic vulnerability of citizens, implies developing energy generation models that are increasingly based on the use of renewable sources. In this sense, green energy plays a role of fundamental importance for the implementation of an energy transition that combines technological innovation, social benefits[1] and and the issues related to climate change,[2] which now constitute a global emergency.[3] What therefore appears to be necessary is the creation of an energy sector characterized by the presence of multiple actors and production variability.[4]

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[1] In this regard see 10ª Commissione, Industria, Commercio, Turismo, 'Green Energy. Il sostegno delle attività produttive mediante generazione, accumulo e autoconsumo di energia elettrica' available at www.senato.it (last visited 10 July 2021). A. Caramizaru and A. Uihlein, 'Energy communities: an overview of energy and social innovation' (7-34) available at www..ec.europa.eu.jrc/en/publication/ eur-scientific-and-technical-research-reports/energy-communities-overview-energy-and-social-innovation (last visited 15 July 2021).

[2] Recital 2 of Directive 2018/2001 also points out that the promotion of forms of energy from renewable sources is one of the objectives of the Union's energy policy. The use of renewable sources forms an important part of the package of measures aimed at reducing greenhouse gas emissions and complying with the Union's commitments on climate change following the Conference of the Parties to the United Nations Framework Convention on climate change, so-called 'Paris Agreement'.

[3] United Nation, 'The Report of the World Commission on Environment and Development: Our Common Future', so-called Brundtland Report, available at https://www.are.admin.ch/are/it/home/media-e-pubblicazioni/pubblicazioni/ sviluppo-sostenibile/brundtland-report.html (last visited on 28 July 2021), considers sustainable such development that satisfies the needs of present generations without compromising the possibility for future generations to satisfy theirs. Regarding sustainable development see M. Pennasilico, 'Sviluppo sostenibile, legalità costituzionale e analisi "ecologica" del contratto' *Persona e Mercato*, 37, 37-50 (2015).

[4] In this regard see Commission Staff Working Document, 'Best practices on Renewable Energy Self-consumption' available at https://eur-lex.europa.eu (last visited 20 July 2021). On this subject see, M.A.

Recent European directives have therefore promoted energy production models focused on self-generation, which are aimed at ensuring that the community has facilitated and shared access to energy, but also at encouraging 'energy citizens' to participate in energy communities and to become prosumers.[5]

2 Energy Communities in the European Union

With Directives 2018/2001 and 2019/944, the European Union introduced the possibility of establishing renewable energy communities and citizen energy communities. Renewable energy communities are defined by in Art 2, para 2, no 16 of Directive 2018/2001, as a legal entity which, in accordance with the internal law of the Member States, is autonomous and controlled by the participants who can be natural persons, small and medium-sized enterprises, local authorities or municipal administrations. Instead, it is up to the Member States, in accordance with the provisions of Art 22, to ensure the right for end consumers to actively participate in energy communities while maintaining their rights and duties, without being subject to unjustified or discriminatory conditions or procedures. In this way, European legislation specifically indicates that internal regulations cannot introduce limitations which are designed to hinder the participation of citizens in energy communities. Citizen energy communities, on the other hand, are defined by Art 2, para 1, letter a of Directive 2019/944, but have intrinsic characteristics that are completely similar to renewable energy communities,[6] even though they seem to be the expression of a broader operational scope.[7]

Energy communities constitute innovative energy generation mechanisms that are part of a so-called process of productive democratization and are functional to the development of economic, social, and environmental benefits in the territorial context in which they operate.[8] Regardless of the type, both communities do not seem to be precluded from carrying out ancillary activities such as services relating to energy efficiency or e-mobility.

Heldeweg and S. Saintier, 'Renewable energy communities as "socio-legal institution": a normative frame for energy decentralization?' 119 *Renewable and Sustainable Energy Reviews*, 1, 1-4, (2020).

[5] Resolution of the European Parliament 2015/2323(INI), P8TA(2016)0234, 'New deal for energy consumers' available at www.europarl.europa.eu (last visited on 10 July 2021), points out that prosumerism should be implemented through a decentralised and inclusive participatory process, which empowers actors to hire or share the production, distribution and storage of renewable energy, while at the same time protecting renewable consumers. In this regard see Communication from the Commission to the European Parliament, the Council, the European economic and social Committee and the Committee of the Regions. Delivering a New Deal for Energy Consumers, Brussels, 15 July 2015 COM(2015) 339 final available at https://eur-lex.europa.eu (last visited 11 July 2021).

[6] In this regard see CEER, 'Fostering energy market, empowering consumers' available at www.ceer.eu (last visited 20 July 2021).

[7] In this regard see Art 16, Directive 2019/944/UE.

[8] In this regard see M.N. Cooper et al, *Equity and energy: rising energy prices and the living standards of lower income Americans*, (New York: Routledge, 2019), 42-45; K.E.H. Jenkins, *Energy Justice, Energy Democracy, and Sustainability: Normative Approaches to the Consumer Ownership of Renewables* (Berlin: Springer International Publishing, 2019), 79-97; R.P. Thombs, 'When democracy meets energy transition: a typology of social power and energy system scale' 52 *Energy Research & Social Science*, 159, 159-162 (2019); K. Szulecki and I. Overland, 'Energy democracy as a process, an outcome and a goal: a new conceptual review' 69 *Energy research & Social Science*, 2, 2-6, (2020).

These associative systems of energy production are often attributed an automatic correspondence between the use of renewable sources and the redistributive function of energy as the main result of their operation. Indeed, as also highlighted by Directive 2019/944 in Recital 43, energy communities constitute an effective and economically efficient way of responding to the needs and expectations of citizens with regard to the development of energy production from renewable sources and the implementation of a more distributed and collaborative energy system.[9]

We are talking about an innovative system of sharing production tools in which all citizens have the opportunity to become prosumers.[10] In fact, it can be considered a best solution that allows all consumers who want to directly participate in the production and consumption of energy to directly access the energy market.

The close correlation with the territory and the plurality of services these energy communities have the potential to provide make them highly integral, precisely because they contribute to reducing consumption and costs, and contrast energy poverty. In this way, energy communities perform a function that expresses a high level of sociability and provide all participants and in particular economically vulnerable subjects with the services necessary for the satisfaction of their needs.

Energy communities are therefore one of the most efficient ways to respond to the lack of services, the reduction of costs and consumption, as well as the development of local areas where the activity is implemented. Their organizational structure is that of collective and autonomous entities that supply energy at low prices, rather than generating financial profits as in the case of traditional energy suppliers. These forms of cooperation in the production and consumption of energy are expected to be the most responsive to the interests of consumers and businesses and are increasingly oriented towards overcoming individual operations in favour of collective ones.[11]

Considering that the introduction and internal regulation of energy communities depends on the individual Member States, they have not developed uniformly. The greatest diffusion is found in the states of Northern Europe, or even in those outside Europe, where they are not a recent phenomenon, but have represented 'virtuous' models of energy management for some time.[12] For example, an energy cooperative

[9] Energy communities already introduced in the so-called Clean Energy Package and subsequently implemented with Directive (EU) 2018/2001 of the European Parliament and the Council of 11 December 2018 on the promotion of the use of energy from renewable sources [2018] OJ L328/82 and Directive (EU) 2019/944 of the European Parliament and of the Council of the 5 June 2019 on common rules for the internal market for electricity and amending Directive 2012/27/EU [2019] OJ L158/125

[10] In this regard see L. Ruggeri ed, *Needs and barriers of prosumerism in the energy transition era* (Madrid: Dykinson, 2021) available at www.dykinson.com (last visited 21 July 2021).

[11] In this regard see E. Cusa, 'The EU law on energy communities and its transposition into Italian law' *Rivista trimestrale di diritto e economia*, 287, 318-327 (2020).

[12] For example, the energy communities in Belgium, Holland, Denmark, and Finland have been operating for many years. In Denmark, energy communities account for 80% of energy production from renewable sources. In Germany, they developed in the nineties and currently there are about 1800, while in 2018 the United Kingdom was one of the main producers of energy from renewable sources. Regarding energy communities see 'Transposition guidance', available at www.rescoop.eu (last visited 20 July 2021); D. Buschle and J. Navickaite eds, 'The energy community: legal framework', available at www.energy-community.org/dam/jcr:18069918-5f46/EnC_LF3_2013.pdf (last visited 21 July 2021); B. Schmid et al, 'Energy cooperatives and municipalities in local energy governance arrangements in Switzerland and Germany' 29 *Journal of Environment & Development,*

was created in Germany in 2005 which made a village completely self-sufficient in terms of energy. Energy communities have also been created in the Netherlands, making it possible to connect all the households in a neighbourhood to a smart platform that is able to manage the exchange of local energy and adequately supply all citizens. Another virtuous case is that of Slovenia, where an energy community consisting of a multiplicity of production systems from renewable sources is intended to supply energy to households, to create e-mobility charging services, etc. In this case, the network set up by the community makes it possible to optimize the energy needs of prosumers.[13] These are diversified experiences that are essentially attributable to cooperative models that exchange energy at low costs, create relevant connections between citizens, businesses, and institutions, and offer greater choice and significant social benefits.

3 Energy Communities in the Italian System as 'innovative' Models of Energy Self-production

A few projects related to energy communities were carried out in Italy following the implementation of Art 22 of Directive 2018/2001. Art 42-*bis* of Law Decree 162/19, so-called *Milleproroghe*,[14] defines energy communities by recalling the notions dictated by European Directive 2018/2001, but does not provide for a specific constitutive model, thus leaving any choice in this regard to the autonomy of the parties. In fact, it appears to be an 'experimental' legislation, since Art 42-*bis*, para 1, specifies that pending the implementation of directive 2018/2001, the creation of renewable energy communities is allowed. Art 42-*bis* also points out that the monitoring of the establishment of energy communities is functional to the acquisition of useful elements for the implementation of the provisions of Directives 2018/2001 and 2019/944. Therefore, there is no specific regulatory framework, but just a provision that could undergo changes upon implementation of the European Directives on the energy market.

For example, in implementing Directive 2018/2001, even Portugal and France have defined renewable energy communities in a way that is very similar to the one dictated by European legislation without establishing a coordinated and specific discipline.[15]

123, 124-141 (2020); B. Schmid, T. Meister, B. Klagge and I. Seidi, 'How municipalities support energy cooperatives: survey results from Germany and Switzerland' 10 *Energy*, *Sustainability and Society*, 10, 12-18 (2020); D. Magnusson and J. Palm, 'Come together, the development of Swedish energy communities' 11 *Sustainability*, 1, 2-19 (2019).

[13] In Germany, the Junde energy cooperative, established in 2005, is the first village where renewable energy is produced with the participation of consumers. In the Schoonschip residential district of Amsterdam, Netherlands, every home has renewable energy production systems controlled by smart platforms. In Slovenia, the Luče community serves a rural network with multiple renewable energy production systems; see 'H2020 Project. Integrating community power in energy islands – Compile 2020' available at https://www.compile-project.eu/ (last visited 31 July 2021. For in-depth information see A.L. Pisello et al, 'Un nuovo modello per il sistema energetico nazionale ed europeo: le comunità energetiche. A new model for the National and European energy system: energy communities' available at www.aicarjournal.org (last visited 15 July 2021).

[14] See Art 42-*bis*, Decreto legge, 30 December 2019, no 162, converted Legge 28 February 2020, no 8, *Gazzetta Ufficiale* 29 February 2020, no 51, no 10/L.

[15] Directive 2018/2001 was implemented in Portugal with Decree Law no 162/2019 of 25 October 2019, in the Official Gazette of Portugal, and in France with Law no 2019-1147 of 8 November 2019 concerning energy and

In any case, the Italian legal system, as well as the provisions of the European Directive, provides for maximum flexibility with regard to the organizational structure of energy communities, as it is compatible with internal regulations.

In this regard, the cooperative form seems to envisage an organizational context in which private individuals have the possibility to satisfy their own needs, as well as general interests. Basically, the need is to overcome traditional production models, ensuring that prosumerism fits properly within a process of development of local areas and considers consumer vulnerability, energy poverty and environmental sustainability.

An energy community established in Italy, in the municipality of Pinerolo, was included in the 2021 G20 Report since it is considered as one of the 'world best practices', alongside the energy communities created in Jakarta for the smart management of traffic and the parking system, and that of Vancouver, which made it possible to equip all buildings with columns for charging electric vehicles.

The Italian energy community of Pinerolo was referred to as a structure to be replicated for the creation of 'smart cities' within residential buildings so that all citizens or residents can actually be actors in the energy transition. This is therefore an important social inclusion project[16] and in particular an energy community model that promotes the sustainable use of natural resources, reduces harmful emissions and helps regenerate the ecosystem.

4 Energy Communities, Environmental Sustainability, and Economic Vulnerability. Conclusive Remarks

In order for a 'virtuous management' of renewable energy production to be achieved, the evolution of society must be taken into account and energy communities should constitute an optimal solution to the energy supply that transversely affects every aspect of it. Energy, in fact, is the subject of a plurality of interests referable to a community of people.

The new collaborative models of energy generation envisaged by the European legislation and partly implemented by internal law base their operations on simplified systems for sharing energy and services that modify the traditional negotiation operations in favour of sharing economy systems or peer to peer relationships.[17]

More generally, energy communities can be regarded as forms of social aggregation that favour collaborative operations and the shared use of energy as an alternative to purchasing. In particular, they also offer vulnerable or energy poor

climate, in the Official Gazette of the French Republic. In this regard see H. Argavio, 'The role of local citizen energy communities in the road to carbon-neutral power systems: outcomes from a case study in Portugal' 4 *Smart Cities*, 840, 842-863 (2021); M.M. Sokolowsky, 'Renewable energy communities in the law of the EU, Australia, and New Zealand' 28 *European Energy and Environmental Law Review*, 34, 35-46 (2019).

[16] See International Energy Agency, 'Empowering Cities for a Net Zero Future: unlocking resilient, smart, sustainable urban energy systems' available at www.iea.org/t&C/ (last visited 15 July 2021).

[17] In this regard see G. Smorto, 'I contratti della sharing economy' *Foro italiano*, 221, 222-223 (2015).

consumers the opportunity to access energy, thus becoming a tool for alleviating economic hardship.[18]

The new associative models of decentralised and collaborative energy production take on a social and functional relevance to the balance between the needs of the person[19] and environmental sustainability.[20] In fact, energy communities operating in specific areas of the local territory are a means of overcoming the difficulties of subjects who are unable to access an essential service, such as energy, for satisfying needs that are essential to ensure that each individual fully realizes himself or herself.[21]

The innovative methods of energy generation based on the rational use of renewable sources become functional to the achievement of an equitable use of energy and the satisfaction of the basic needs of all individuals. Through energy communities, access to energy is no longer just an individual right separated from the social context, but above all a possibility to ensure that the most vulnerable individuals enjoy goods and services that can be useful for the satisfaction of their needs.[22]

Access to energy thus also takes on a collective benefit connotation and tends to conform patrimonial situations to the values of the person and the duties of solidarity.

The advantages achieved by energy communities are essentially not limited to the provision of energy services,[23] but become specifically relevant in the balance between the satisfaction of collective interests of in terms of access, and energy use and environmental sustainability.

[18] In this regard see L. Ruggeri and M. Giobbi, 'Vulnerabilità economica tra diritto emergenziale e contrattuale. Economic vulnerability between emergency and contract law' *Actualidad Jurídica Iberoamericana*, 340, 341-351 (2020).

[19] In this regard see P. Perlingieri, 'Persona, ambiente e sviluppo', in M. Pennasilico ed, *Contratto e ambiente. L'analisi 'ecologica' del diritto contrattuale* (Napoli: Edizioni Scientifiche italiane, 2016), 326-330.

[20] See W.M. Adams, 'The future of Sustainability: re-thinking environment and development in the twenty-first century, 2006, Report of the world 29-31 January 2006' available at http://cmsdata.iucn.org/downloads/iucn_future_of_ sustanability.pdf (last visited 28 July 2021).

[21] See P. Perlingieri, *La personalità umana nell'ordinamento giuridico* (Napoli: Edizioni Scientifiche Italiane, 1972), 164-166.

[22] In this regard see G. Carapezza Figlia, 'I rapporti di utenza dei servizi pubblici tra autonomia negoziale e sussidiarietà orizzontale', in E. Caterini et al, *Scritti in onore di Vito Rizzo. Persona, mercato, contratto e rapporti di consumo* (Napoli: Edizioni Scientifiche Italiane, 2017), 441-449.

[23] In this regard see Recital 43 of Directive 2019/944/EU.

Emerging Prosumers under Different Contexts of Partnerships in Japan

Kozue Kashiwazaki, Norihisa Shima and Hiroyoshi Sano

Abstract: This chapter introduces three emerging cases of prosumer actions from different contexts and explores the partnerships behind these actions. The first case, Daimaruyu (OMY), is Japan's oldest business center located around Tokyo Station of approximately 120 ha. Their prosumer actions initially launched by a private company are now supported by public private partnership since the redevelopment started in the 1980s, and the district can be the best practice leading to an economical and social as well as environmental prosumer. The second case is Hamamatsu City where has been implementing the renewable energy management such as solar and biomass power generation at the city level by the initiatives of local government. Utilize abundant local natural resources for renewable energy, the city has increased the ratio of self-sufficiency of renewable energy especially by solar power generation in the last decade. The last case is Itoshiro village where is a mountainous area with a population of only 250. Almost all residents have invested to start a small hydroelectric power generation project. The project contributes to the creation of various new businesses. Though three cases can be emerging cases, triggered actions and partnerships are highlighted as potentially critical success factors toward prosumer actions.

Keywords: Partnership, District Heating and Cooling (DHC), Mega Solar Plant, Micro Hydro Power Plant, Japan

1 Introduction

Energy production and consumption has been a critical issue in Japan. Due to the geographical characteristics, Japan has been rely on the imported fossil fuel from Middle East and Southern Asian Countries for energy production. The energy self-sufficiency rate is approximately 11.8% in 2018, though gradually improving since 2012. The dependance rate in 2018 was 85.5% gradually decreasing particularly after Great East Japan earthquake and Fukushima Daiichi nuclear disaster in 2011. In order to achieve the goal of carbon neutral in 2050 which Japan joined in 2020, strategic energy plans just presented with basic principle of 'S+3E' indicating Safety, Energy security, Economic efficiency, and Environment.[1]

In order to apply the concept of prosumer for Japan, this chapter focuses on the partnership by not only government but also several stakeholders such as private sectors and local residents through three advanced case studies, Daimaruyu (OYM), Hamamatsu and Itoshiro (Fig.1). Through the cases in totally different socio-economic background, it is aimed to explore the required process to create the partnership of prosumer actions.

[1] Agency for Natural Resources and Energy, *Cabinet Decision Made on the FY 2019 Annual Report on Energy (Japan's Energy White Paper 2020)* (Ministry of Economy, Trade and Industry, 2020).

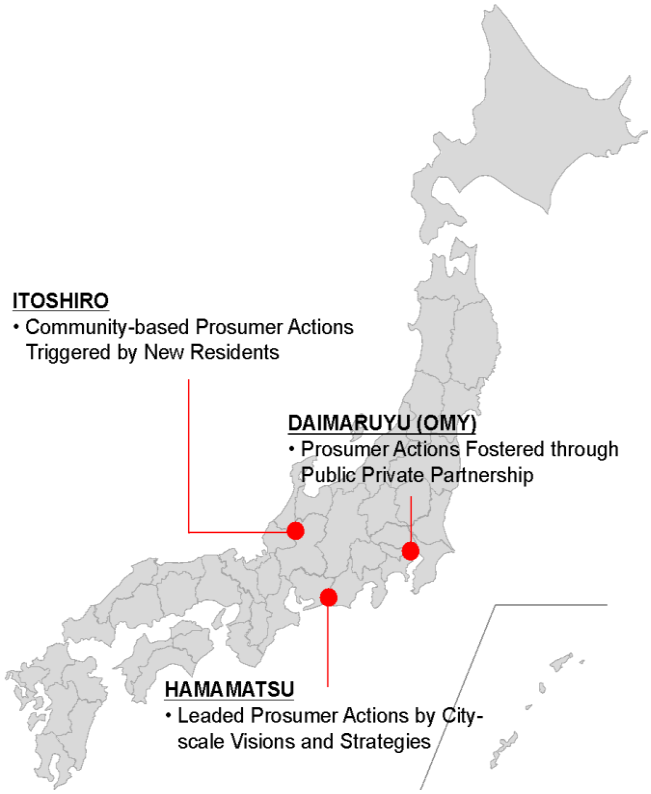

Fig. 1: Three prosumer cases of Daimaruyu (OMY), Hamamatsu and Itoshiro

2 Case of Daimaruyu (OMY): Prosumer Actions Fostered through Public Private Partnership

Otemachi-Marunouchi-Yurakucho, named Daimaruyu (OMY), is Japan's oldest business center located around Tokyo Station of approximately 120 ha. In the district 280 thousand people work for different 4,300 business establishments. There 115 companies out of 2,550 have their head quarter office in the district, and 19 companies are listed 'Fortune Top 500'. Daimaruyu (OMY) can be a world's leading business center indeed (Fig.2). The environmental facts to be highlighted are that total CO_2 emission of the district is approximately 670,000 t-CO_2, that the district's solar panel installed at 13 buildings/facilities generates 1,100 kw, and that the district has approximately 16,000 m^2 of rooftop and wall greening. These simple fact imply the district has high awareness of environmental issues including energy.

The history as a business district of Daimaruyu dates back to the late 19th century, just after the Meiji Restoration, when the land around the district was appropriated to the private sector mainly Mitsubishi group companies. Series of events around the district, such as operation of Tokyo Station in 1914 accelerated the development of this leading business district. During the history, innovative actions have been always introduced to the district including those related to prosumers.

Fig.2: Daimaruyu (OMY) District: A lively street of Marunouchi Nakadori

2.1 The Earliest Prosumer Actions in Daimaruyu (OMY): District Heating and Cooling (DHC)

In the early 1970s the environmental problems, particularly air pollution, became more serious in the district, the companies located there discussed the way to solve it, then District Heating and Cooling (DHC) system, which was first introduced at Japan World Exposition, Osaka 1970, was considered to the district. Marunouchi Heat Supply Co., Ltd. was established in 1973, initiated by Mitasubishi group companies as well as companies in the district, to operate DHC system, firstly in Otemachi area as the third case in Japan and the second in Tokyo. Since operation, as environmental awareness grew, the DHC service area has extended up to whole Daimaruyu (OMY) district covering 78.9 ha with 6 main plants and 15 sub-plants installed in the network of stream, hot water and cold water piping, and the total serviced floor covers as large as 5.36 million m^2 at present (Fig.3). Even now new plants and are being built in the district. Naturally the DHC introduced to the district is the biggest system in Japan.[2]

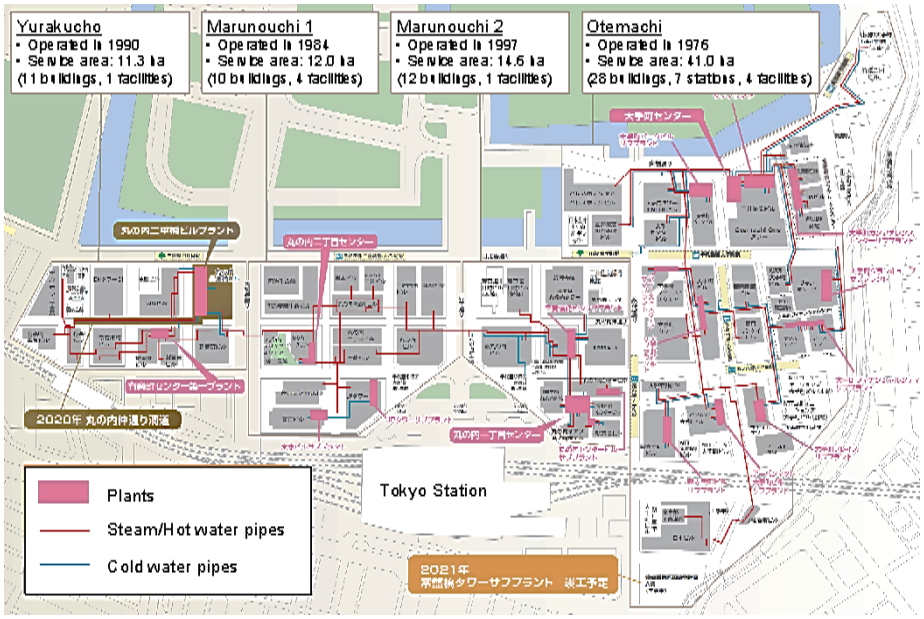

Fig.3: DHC system in Daimaruyu (OMY) (Source: Marunouchi Heat Supply Co., Ltd.)

[2] Marunouchi Heat Supply Co., Ltd. available at https://www.marunetu.co.jp (last visited 1 August 2021).

Their recent interest action includes 'Energy Machizukuri Action 2050' that plans to enforce business continuity capacity for the companies in the districts and to decarbonize energy consumed in the districts by introducing urban microgrid. This urban microgrid, by making full use of the DHC network and proactively introducing decarbonized energy, will improve the environmental value of the district in ordinary times and to construct a framework for self-sufficient energy production in emergency times. Through these series of actions proposed in the plan, they try to become a leading district in terms of prosumer actions in the energy sector and creation of the sustainable society in the general term.

2.2 Partnerships for Consumer Actions Through Redevelopment Process

Due to globalization in the 1970s and 1980s, on the other hand, there was increasing necessity for redeveloping Daimaruyu (OMY) into a business district of the global standard. Tokyo Metropolitan Government, then in 1986, designated the district as Redevelopment Area and prepared the redevelopment policy. At the district, then in 1988, the companies as well as the local government of Chiyoda City Government, Tokyo Metropolitan Government, East Japan Railway Company established Otemachi Marunouchi Yurakucho District Redevelopment Project Council, as a platform of partnership, to discuss practical city development plans based on the government's policies for city planning. Since then, different organizations were set up to address different issues. The Ecozzeria Association operates '3x3 Lab Future', Morning University of Marunouchi, and OMY Area Management Association (Ligare) supports water sprinkling, eco kids exploring party and other activities (Fig.4).[3] Public private partnership promoted by these organizations encouraged comprehensive area management in Daimaruyu (OMY).

The OMY Sustainability Vision in 2013, followed by the OMY Environmental Vision in 2007, has set 9 fields of more comprehensive actions covering enhancement of creativity, public space, innovation management, business continuity district, energy management, bioregion, eco mobility, reuse reduce recycle and area management (Fig.5). The actions for energy management includes not only DHC related issues but more comprehensive energy issues through diversified technologies. All these actions will be carried out by diversified organizations like those illustrated in Fig.4 naturally, that is, supported by public private partnership.

[3] Council for Area Development and Management of Otemachi, Marunouchi, and Yurakucho available at https://www.tokyo-omy-council.jp (last visited 1 August 2021).

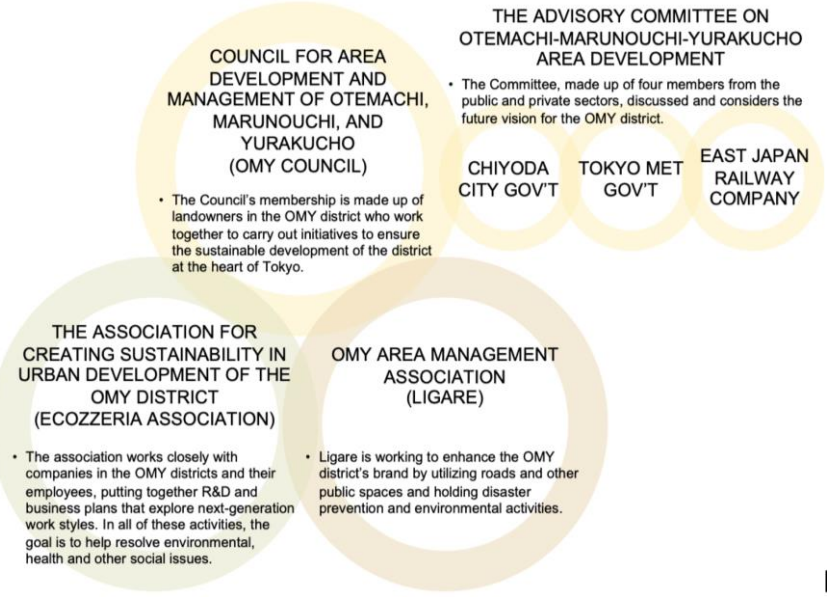

Fig.4: Partnerships for area management of the district (Source: The Council for Area Development and Management of Otemachi, Marunouchi, and Yurakucho)

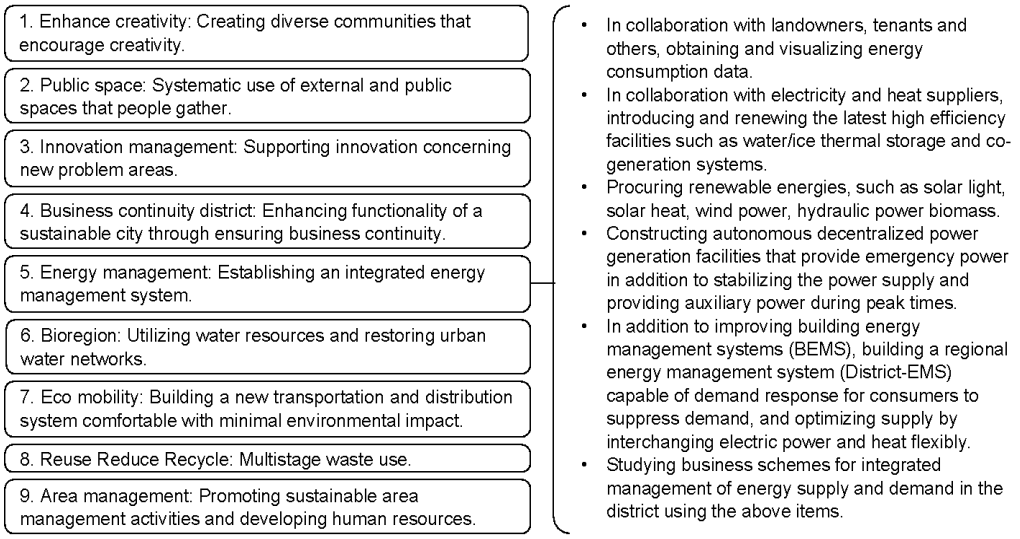

Fig.5: Comprehensive actions under the OMY Sustainability Vision (Source: The OMY Sustainability Vision Creation Committee, 2013)[4]

2.3 Toward Comprehensive Prosumer Actions

Prosumer actions in Japan's leading business district Daimaruyu (OMY) launched by Mitsubishi group has now developed the area from District Heating and Cooling toward urban microgrid presented at Energy Machizukuri Action 2050, and these actions are supported by public private partnership cultivated

[4] OMY Sustainability Vision Creation Committee, *The OMY Sustainability Vision* (2013) available at https://www.ecozzeria.jp/pdf/about/sustainability_vision_ E.pdf (last visited 8 August 2021).

since redevelopment in the 1980s and area management at present. Now the district can be the best practice as a prosumer in an environmental term, thus these actions introduced in this section would lead it to an economical and social as well as environmental prosumer.

3 Case of Hamamatsu City: Leaded Prosumer Actions by City-scale Visions and Strategies

3.1 Outline of the City

Hamamatsu City of Shizuoka prefecture is a government ordinance-designated city, located between Tokyo and Osaka along the Pacific coast, with 1,558km^2 and a population of approximately 800,000 (2020). The population is on a downward trend from its peak in 2018 as Fig.6. The aging rate, over 65 years old population group, is 27.0% and it is a slightly less than Japan's total rate as 28.4% (2021). However, the ratio is expected to be increased same as other cities in Japan. Hamamatsu City is called as 'a miniature of Japan' because of the diversity of natural and social environment that includes urban, suburb, rural, mountainous and hilly areas within the city (Fig.7).

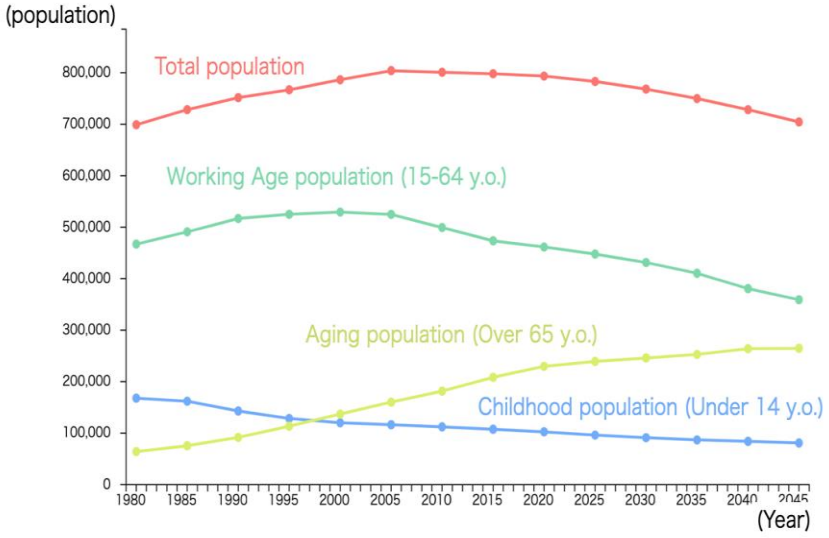

Fig.6: Population Trend in Hamamatsu (Source: RESAS)[5]

[5] Regional Economy Society Analyzing System (RESAS) available at https://resas.go.jp/ (last visited 8 August 2021).

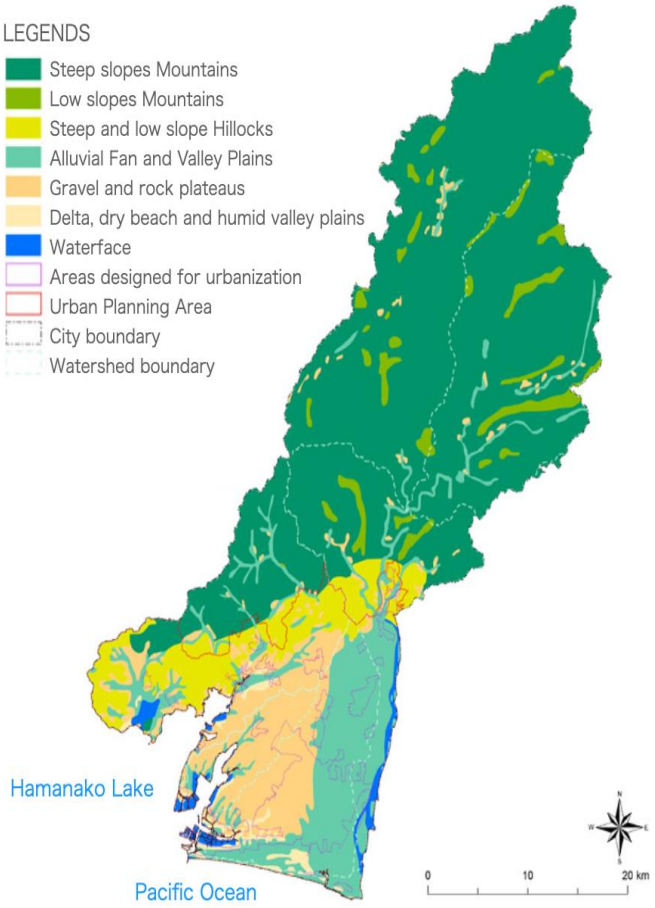

Fig.7: Geographic Features (Source: Hamamatsu City, 2011)[6]

3.2 Historical background

Historically the city was developed as Tokai Industrial Area along the Pacific Ocean Industrial Belt since postwar, 1945. Addition to the Japan Railway (JR) of Hamamatsu station which built in 1888, the first Railway of Bullet train (*Shinkansen*) of Japan runs the city with Hamamatsu station in 1964. Since Hamamatsu interchange on the expressway between Tokyo and Nagoya, was developed in 1969, the city became one of the hub city of transportation.

The city has developed with primary and secondary industries including global companies such as *Suzuki* Motor Cooperation, *Yamaha* Motor and Music Japan Cooperation, and *Kawai* Musical Instruments Mfg. Co. Ltd. The number of active small and medium enterprises and venture companies are also one of the characteristics of Hamamatsu.

[6] Hamamatsu City, *Rural Environmental Plan* (2011).

3.3 Progress as Prosumer in Hamamatsu

Setting the Energy Vision by Government Initiatives

As Fig.7 showed, Hamamatsu city has abundant natural resources for energy from sea to mountain. The city has the longest record of duration of sunshine in Japan, continuous strong wind from Pacific Ocean, approximately 7,500 canals and rivers with irrigation systems, and approximately 70% of mountain and hillock areas within the city. After Japan Great East Earthquake in 2011, Hamamatsu city had started discussions for the sustainability of energy. The government focused the result of dependency on electric power in the city. It was 35.5% at Industrial section, 0.02% at non-industrial section, 45.5% at Offices/ Shops/ Hospitals/ etc. and 70.8% at household. If compared with National level, dependency on electricity is higher at industrial section and households (Figure.8). Based on the examination of local resources and condition of higher dependency of electricity, the government established the policy as 'Hamamatsu Energy Vision' in 2013.

The 'Hamamatsu Energy Vision' policy enhanced the following four directions. Through the projects, the city set the goal as 20.3% of self-sufficiency of electric power in 2030 from 4.3% in 2011.[7]

1) Changing to Renewable Energy: Installing Solar, Wind and Biomass energy generation plants and system. Especially large-scale solar power plants by private sectors were strongly invited.
2) Promoting Energy Conservation: Subsidizing for installing and restoring energy saving devices of shops, factories, farmers and households in order to shift to new business and new life style.
3) Introduction of Energy Management System: Subsidizing for installing Home Energy Management System (HEMS, Fig.9), Building Energy Management System (BEMS), Factory Energy Management System (FEMS), and Community Energy Management System (CEMS) at several levels. 20 public building install BEMS.
4) Creating New Environmental Energy Industries: Subsidizing for creating new businesses such as development of new eco-friendly technology and products and starting new businesses.

[7] Hamamatsu City, *Energy Vision in 2013* (2013).

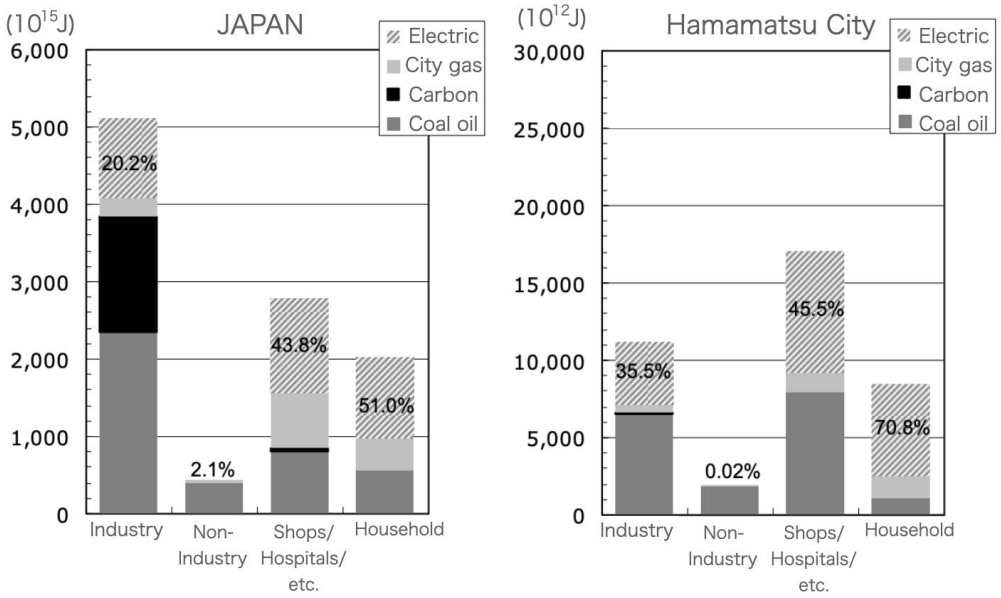

Fig.8: Power dependency of Japan and Hamamatsu city in 2007

(Source: Hamamatsu City, 2013)

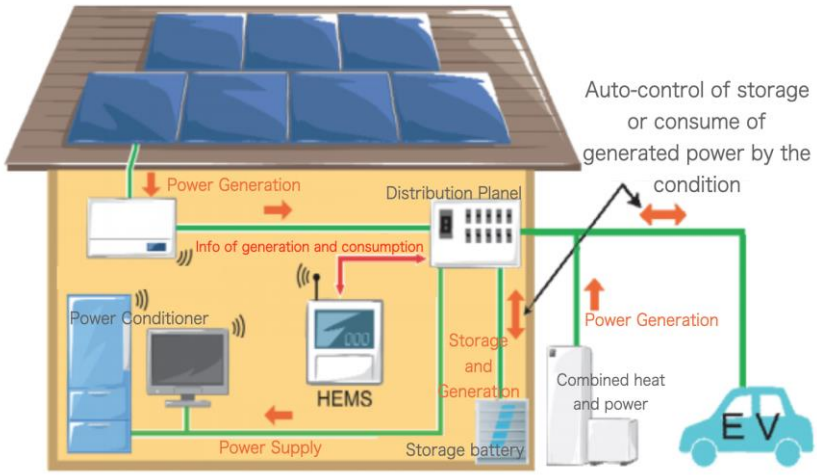

Fig.9: Model image of Home Energy Management System

(Source: Hamamatsu City, 2021)

Connecting with Sustainable City Vision

In 2014, promoting renewable energy was accelerated at 'Hamamatsu Future Vision' as the comprehensive plan, the highest plan in the city. In the plan, the First Promotion Plan was formulated with a planning period for ten years from 2015 to 2024. Under the First Promotion Plan, indicators and targets have been set in several sectoral areas: industry and economy: childrearing and education; safety, security and comfort; environmental and energy; health and welfare; culture and lifelong learning and local government and urban management. It can be said the

shifting to the referable energy created the common image of the sustainable city including several sectors as Fig.11 shows.[8]

In 2014 became the memorable year for Hamamatsu. By the collective actions with government and companies, the city recorded the highest number of solar panels, and highest volume of the solar energy generation in Japan.

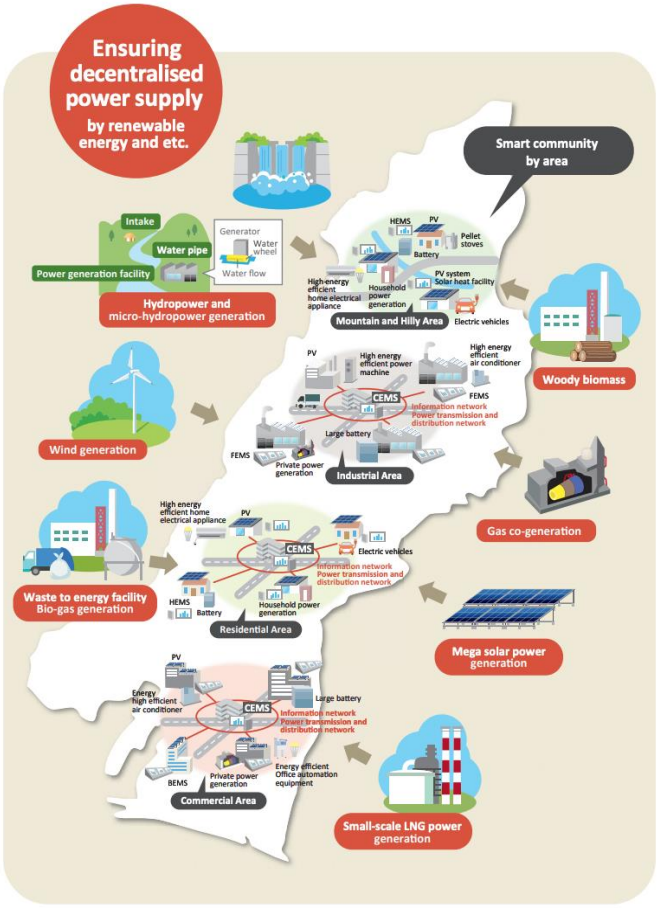

Fig.10: Image of Hamamatsu Vision (Source: Hamamatsu City and IGES, 2019)[9]

Fig.11: Mega solar plants next to Hamanako Lake (left) and Railway (right)

[8] Hamamatsu City, *Hamamatsu City Future Vision* (2014).

[9] Hamamatsu City and Hamamatsu City and Institute for Global Environmental Strategies (IGES), 'Hamamatsu, a creative city built on civil collaboration, shining into the future' *Hamamatsu Voluntary Local Review*, (2019).

Establishment of Local Power Producer and Supplier

By the reform vision of energy system at the national level including full liberalization of energy retails, Hamamatsu City organized internal consultations and decided to establish a local Power Producer and Supplier (PPS) as 'Hamamatsu Energy Co., Ltd.' with nine companies and the city in October 2018. This was the first local PPS financed by local government among the government ordinance-designed city in Japan.

The company aimed 1) Local production and consumption of renewable energy, 2) Maximizing the local resources, 3) Revitalize local economy, 4) Fostering awareness of energy-saving and protecting the environment, and 5) Developing a resilient and low-carbon society without energy concerns. In order to develop an economy which circulates within the city and focuses on local consumption and production, they set the targets of energy self-sufficiency rate to be at about 80%.[10]

Achievement of Self-sufficiency by renewable energy

Through the city-scale implementation of projects, the city recorded the 14.9% of self-sufficiency by the local renewable energy in 2018. If it includes large-scale hydroelectric power generation by dams in mountain areas, the ratio becomes 60.6%. By the result, in 2021, the city newly set the aim to achieve 100% self-sufficiency including dams by 2050 as Table 1 shows.[11]

Reviewing the detail records since 2011 and 2018 in Table 1, it is cleared that there was outstanding progress of solar photoelectric generation. Based on the collaborative strategy with local government and companies with Hamamatsu Energy Co., Ltd., large scale solar panels were developed around the Areas Designed for Urbanization and Hamanako lake side. In order to achieve the 100% of Renewable anergy, it can be said Hamamatsu city is facing the next stage to create the diversity with another renewable energy resources.

Table 1: Toward 100% of self-supply by Renewable Energy (RE) (Source: Hamamatsu, 2021)

	2011	2018	2030	2050
Consumed energy (MWh)	5,158,00	4,996,000	4,700,000	4,500,000
Total generation of RE (MWh)	155,000	699,000	1,370,000	2,215,000
Solar	51,000	578,000	720,000	800,000
Wind	52,000	52,000	517,000	1,200,000
Biomass	52,000	70,000	122,000	200,000
Small scale -Water	0.0	0.0	11,000	15,000
Combinated heat and power system by natural gas	66,000	46,000	70,000	100,000
Self-supply	4.3%	14.9%	30.6%	51.4%
Total generation of RE including dam		3,028,797	3,700,401	4,545,241
Self-supply including dam		60.6%	78.7%	101.0%

[10] ibid.

[11] Hamamatsu City, *Revision of Energy Vision in 2021* (2021).

3.4 Toward Prosumer with Diversity

The policy and projects for renewable energy was set clearly as one of the essential task in the comprehensive plan, and became the engine for creating smart city vision with steady achievement of the self-sufficiency of renewable energy since 2013. Especially support by local government for the solar photoelectric generation plants attracted large to medium scale companies for the installation and management with subsidize. It can be noted that prosumer in energy was done by implementation of the local government with collaboration with local companies.

Based on the first stage by the mega-scale development, Hamamatsu is challenging to set the platform including several stakeholders such as small scale companies, NGOs and residents for promoting another resources such as wind, biomass and small-scale hydroelectric generation with the continuous vision of the city.

4 Case of Itoshiro: Community-based Prosumer Actions Triggered by New Residents

4.1 Outline of Itoshiro

Itoshiro is a remote, mountainous village in north-western Gifu Prefecture, located deep in the heart of the main island of Japan. Itoshiro is a super-aging village with a population of about 250, half of whem are 65 years old or older. It is a typical mountainous area, and the declining population, declining birthrate and aging population are serious problems (Fig.12, Fig.13). The climate is very cold in winter with an altitude of 700m so that Itoshiro is hit by heavy snow (3-4m high) every year. Itoshiro is distinguished as the ‘open-minded’ area, because it is located at the foot of Mt. *Hakusan*, which has been the object of worship since ancient times and has been crowded with many worshipers. The main industries are construction, agriculture and tourism.

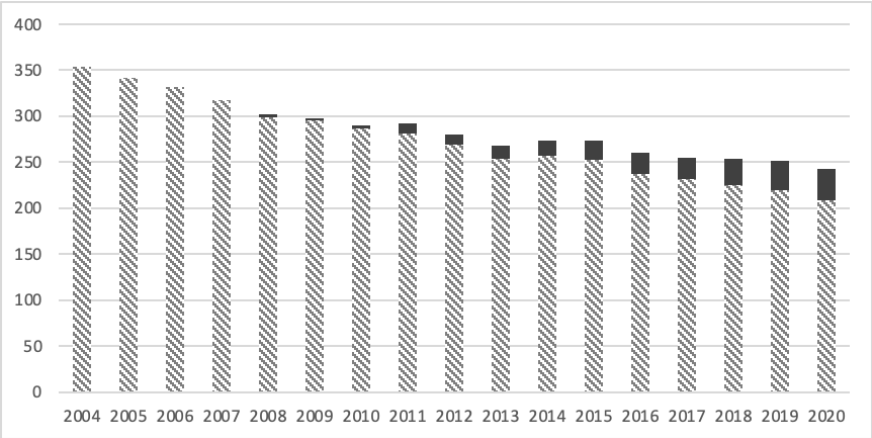

Fig.12: Population trend in Itoshiro (‘black’ are new residents)

(By courtesy of Mr. Akihide Hirano)

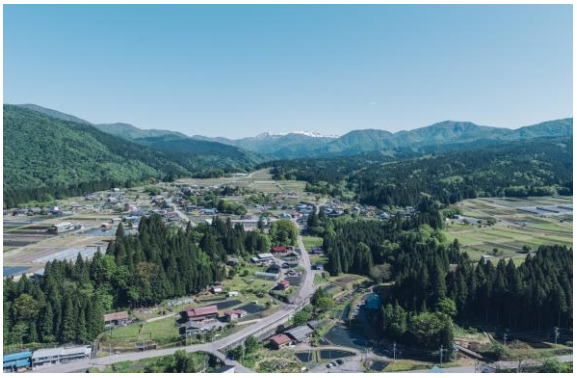

Fig.13: Panoramic view of Itoshiro (By courtesy of Itoshiro Yohinten)[12]

4.2 Historical background

As mentioned above, Itoshiro had prospered as a base for visiting Mt. Hakusan since 1300 years ago, but it declined due to the separation of Shinto and Buddhism and the abolition of Buddha by the Meiji Restoration in the 19th century. In 1924, with the aim of modernizing the village, the Itoshiro Hydropower Utilization Association introduced small hydroelectric power systems and began working on industrial rationalization. However, small hydropower was unstable, and in 1955, residents funded the construction of transmission lines in order to provide a stable supply of electricity from a major electric power company (Hokuriku Electric Power Company). At the same time, residents abolished small hydropower.

After the war, Japan enjoyed an era of high economic growth, but the population continued to decline from small villages such as Itoshiro to metropolitan areas. Aiming for regional revitalization, Itoshiro promoted tourism development. They developed the Itoshiro Ski Resort in 1972, developed a campsite in 1975, and developed accommodation facilities in 1996. However, the outflow of population could not be stopped, and there was no choice but to seek regional revitalization in a way that is not tourism development.

4.3 Prosumer in Itoshiro

There are two projects as a prosumer in Itoshiro. One is an energy prosumer and another is a retail prosumer as below.

Micro hydro power plant

The unstable Middle East situation has caused crude oil prices to soar since around 2000, placing a heavy financial burden on Japan, which imports energy from overseas, especially in the mountainous villages. Therefore, from around this time, the possibility of micro hydro power systems utilizing the steep topography of Japan was being explored. Mr. Komamiya, who was conducting research on small hydropower in Gifu prefecture, was looking for a place in the prefecture where a demonstration

[12] Itoshiro Yohinten, available at https://itoshiro.org/ (last visited 1 August 2021).

experiment could be conducted. Few areas agreed with Mr. Komamiya's proposal, but the residents of Itoshiro accepted Mr. Komamiya's proposal. Because the residents of Itoshiro had a sense of crisis in serious repopulation.

In the fall of 2007, a micro hydro power project started. Since all the amateurs had no knowledge of power generation systems, a period of trial and error continued for a while, but in December 2008, the spiral turbine was put into operation, and the small hydro power project finally got on track (Fig.14 left). In March 2011, a new micro hydro power systems with water turbine was put into operation (Fig.14 right). Utilizing this electricity, they operated an agricultural product processing

Fig.14: Micro hydro power systems with spiral turbine (left picture) and with water turbine (right picture)

factory, created employment in the area, and produced an economic effect by selling processed products. Residents have come to understand the significance of micro hydro power projects. In 2014, all households in Itoshiro established a union and invested to develop a larger power plant, and in June 2016, a new power plant was put into operation. The amount of electricity generated exceeds the amount of electricity used in Itoshiro, and revenue from selling electricity to major electric power company is distributed to residents.

Itoshiro clothing store (*Itoshiro Yohinten*)

Mr. Hirano, who was involved in the micro hydro power project with Mr. Komamiya, had worked for a foreign-affiliated consulting company in Tokyo, but wanted to return to his hometown, Gifu Prefecture. Mr. Hirano continued to visit Itoshiro for several years in the wake of the micro hydro power project, and finally moved to Itoshiro with his family in 2011. As Mr. Hirano continued to be involved in Itoshiro, he was fascinated by the richness of nature and culture of Itoshiro and wanted to pass it on to future generations. The project that he and his wife launched is the Itoshiro clothing store.

The Itoshiro clothing store opened in 2012 after renovating an old folk house (Fig.15). The concept of the store is ‘making clothes from soil’. Mr. Hirano says that clothes are familiar to us, but we don't know what materials they use or how they are made. Clothes making is a typical example of the division of labor in production due to modernization. Itoshiro's elders have the knowledge to make clothes with local materials and techniques suitable for the area. Mr. Hirano and his wife carefully

listened to the tacit knowledge from the elders and applied it to modern clothing making. In addition to selling clothes, they carry out various activities such as holding workshops for processing from materials to clothes, publishing making books of traditional clothes, disseminating information as Youtuber, etc.

Fig.15: Itoshiro clothing store (*Itoshiro Yohinten*)
Exterior (left) and Interior (right)

4.4 The impact on Itoshiro

As we saw in the previous section, we introduced the projects as a prosumer in Itoshiro, and the impact on Itoshiro can be summarized in the following three points.

Citizenship

Since Itoshiro is a small village, the ties between the residents are very strong. The ties helped to get an agreement on a new micro hydro power project. The micro hydro power project was initially a small challenge with a limited number of members, but by steadily accumulating results, a relationship of trust between outsiders and local residents involved in the project was built. The introduction of the micro hydro power project created a bright atmosphere throughout the village of Itoshiro and changed the mindset of the residents. Despair for the future of the village turned into hope, and the residents became positively involved in community development.

Economic effect

Residents have been able to earn stable cash income due to the success of the micro hydro power plants they have invested in. In addition, Itoshiro's micro hydro power project has become famous as a successful model of energy self-sufficiency and is visited by many visitors every year. The economic effect of so-called ‘inspection tourism’ on Itoshiro is great. Furthermore, the processing of agricultural products, which started at the same time as the operation of the power plant, has created new jobs and improved the profits of farmers.

Increase in migrants

The project as a new prosumer has helped attract new migrants to Itoshiro, where the population continues to decline. In particular, the nuclear accident following the Great East Japan Earthquake in March 2011 urged young families to reconsider their way of life. Itoshiro, self-sufficient village in energy and clothes,

looks attractive to them. Local residents warmly welcome such migrants, who bring new ideas to the village. The increase in migration of young families has contributed to the realization of Itoshiro's vision of 'leaving Itoshiro Elementary School in the future'.

5 Conclusion: Prosumer Actions and Partnerships in Japan

Though three cases of Daimaruyu (OMY), Hamamatsu and Itoshiro, we intend to enhance the fact that the prosumer actions are essence of sustainable development even though in the different scales and contexts. Furthermore, focusing on the concept of 'Prosumer' may lead the intersectoral collaboration within and between the cities and villages (Fig.16).

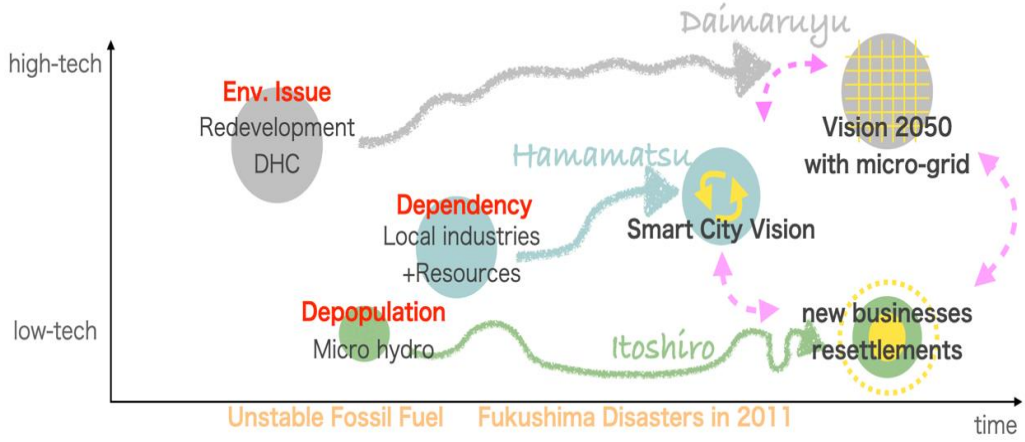

Fig. 16: Process of Prosumers and new Partnerships by three case studies

It means Prosumer actions can be a trigger for various actions. Itoshiro's micro hydro power project triggered 'inspection tourism' as the case became more popular, and the tourism indeed had economical impact to the village. In Daimaruyu (OMY) and Hamamatsu, *adhoc* prosumer project was developed plan-based successive actions, seen in the OMY Sustainability Vision and the municipal comprehensive plan in Hamamatsu both of which cover various fields of actions.

These actions should be supported by partnership. The case of Daimaruyu is clear in this sense. Public private partnerships of OMY Council, the Advisory Committee, Ecozzeria Association, Ligare and other organizations work for area management including prosumer actions. In Hamamatsu, the local government tackles prosumer actions in the energy sector collaboratively with the local companies. The case of Itoshiro is suggestive in that series of actions are rooted in their citizenship often triggered by new residents, always leading to innovative actions. Japan's emerging prosumer actions, started from the energy sector, will potentially contribute to comprehensive sustainable development in the diversified context.

Promoting 'Prosumerism' Through Energy Communities. The Greek Legal Framework*

Vassiliki Koumpli

Abstract: Energy from renewable sources has greatly promoted 'prosumer' ideology, which has become a trend in the energy sector. Technologies are already in place and it is full reality today that the energy consumers are able to produce, consume and share a part or all of their needed energy from renewable sources. This can also be done on a collective basis, through the Energy Communities. Greece provided for the establishment and operation of the Energy Communities by Law 4513/2018, which constitutes an integrated institutional intervention supporting social economy in the energy sector. Purpose of the paper is to succinctly analyse this new piece and afford an early assessment of the new institution in its role towards promoting clean energy production and strengthening the decentralized growth model.

Keywords: Energy Communities, Prosumerism, Energy Self-production

1 Introduction

Energy from renewable sources has greatly promoted 'prosumer' ideology, which has become a trend in the energy sector. Technologies are already in place and it is full reality today that energy consumers are able to produce, consume and share a part or all of their needed energy from renewable sources. This can also be done on a collective basis, through the energy communities (hereafter: EC). Greece provided for the establishment and operation of the energy communities by Law 4513/2018 (hereafter: ECL), which constitutes an integrated institutional intervention supporting social economy in the energy sector. Purpose of the paper is the succinct illustration of this relatively new piece of legislation and an early assessment of the new institution in its role towards promoting clean energy production and strengthening the decentralized growth model. After this introduction (I), the analysis will focus on the underpinnings (II) and the content (III) of EC regulation in Greece, and it will end with some concluding remarks (IV).

* *This paper was drafted and submitted in June 2021. Further amendments of the legal regime which may have taken place after that date are not included in the text.*

2 Underpinnings of Energy Communities Regulation

2.1 The General Legal Landscape

Art 12 of the Hellenic Constitution safeguards the right of association as follows: '1. Greeks shall have the right to form nonprofit associations and unions, in compliance with the law, which, however, may never subject the exercise of this right to prior permission. 2. An association may not be dissolved for violation of the law or of a substantial provision of its statutes, except by court judgment. 3. The provisions of the preceding paragraph shall apply, as the case may be, to unions of persons not constituting an association. 4. Agricultural and urban cooperatives of all types shall be self-governed according to the provisions of the law and of their statutes; they shall be under the protection and supervision of the State which is obliged to provide for their development. 5. Establishment by law of compulsory cooperatives serving purposes of common benefit or public interest or common exploitation of farming areas or other wealth producing sources shall be permitted, on condition however that the equal treatment of all participants shall be assured'. By virtue of this constitutional provision, all cooperatives shall enjoy autonomy and self-governance provided that they act in accordance with the law and their statutes. Therefore, even though the ordinary legislator may introduce conditions for their establishment, organization and function, such conditions should not interfere with their administration and function.[1] The State shall supervise and protect them, also by introducing supporting measures for their growth.

At ordinary legislation level, Law 4430/2016 on social and solidarity economy[2] constitutes the general legal framework governing all social solidarity economy actors, including cooperatives falling within its scope of application. In addition, numerous special laws govern different cooperative types, eg agricultural cooperatives are governed by Law 4384/2016, civil cooperatives are governed by Law 1667/1986 etc. In this legal framework, EC constitute an additional type of civil cooperative governed by special legislation, while general Law 1667/1986 applies only complementarily.

2.2 The Necessity of Energy Communities Legislation

ECL was enacted in 2018 after taking into account the Proposal for a directive of the European Parliament and of the Council on the promotion of the use of energy from renewable sources COM(2016)767 and the Proposal for a directive of the European Parliament and of the Council on common rules for the internal market in electricity COM(2016)864. Its purpose is to address energy poverty and to enable transition to green energy. On the one hand, energy poverty appears to be a crucial problem in Greece, since the decrease in incomes during the last decade in comparison with energy price volatility and the limited thermal efficiency of most

[1] S. Kintis, *Cooperative Law* (Athens: Ant. N. Sakkoulas, 2004), 69.

[2] The term 'social and solidary economy' refers to entrepreneurship acting mostly in the interests of its members and not based on profit, in a framework of democratic function. It conceives entrepreneurship as a tool for social development and prosperity.

buildings have contributed to the inability of a part of the population to fully cover energy consumption needs. On the other hand, meeting the requirements for the transition to green energy can be significantly enabled by the active engagement of citizens, municipalities and local businesses in the energy sector. Alongside these goals, given that numerous Greek islands are not connected to the mainland infrastructure and still heavily rely on fossil fuels, ECL also aims at specifically enhancing the island regions energy autonomy based on renewable energy.[3] The necessity of promulgating a distinctive legislative instrument regulating this new type cooperative is, thus, justified by the economic, social and environmental importance of its purpose and the peculiarities of the energy sector.

3 Content of Energy Communities Regulation

The content of the main ECL provisions is as follows:

3.1 Concept of Energy Communities

Art 1 ECL defines EC as a type of civil cooperative[4] aiming exclusively at (a) promoting social and solidary economy and the innovation in the energy sector; (b) addressing energy poverty; (c) promoting energy sustainability; (d) the production, storage, self-consumption, distribution and supply of energy; (e) enhancing energy sufficiency and security in island municipalities; as well as (f) improving end-use energy efficiency at local and regional level. Such objectives shall be achieved through their activity in the fields of Renewable Energy Sources (hereafter: RES), High Efficiency Combined Power and Heat (hereafter: HECPH), rational use of energy, energy efficiency, sustainable transport, demand management and energy production, distribution and supply.

3.2 Members of Energy Communities

Art 2 ECL contains provisions on the EC membership. In general, individuals, private law legal entities and public law legal entities, including local authorities, can become members of an EC. An EC can be formed with five, three or two members depending on their membership basis and the area of their location. Specifically, it is provided that the minimum number of members of an EC may be: (a) five, when the members are public law legal entities, except for local authorities, or private law entities or individuals, b) three, when the members are public law or private law legal entities or individuals, as long as at least two are local authorities, (c) two, when the members are only first level local authorities of island regions of the country with less than 3.100 habitants according to the latest census. Moreover, at least 51% of EC members must be related with the region where its seat is located. In case of individuals, the relationship shall be

[3] Explanatory report to draft law 'Energy Communities and other provisions', 14 November 2017, 1-2.

[4] Art 1 of Law 1667/1986 defines civil cooperatives as voluntary unions of persons with an economic goal, aiming – especially through the collaboration of their members – at the economic, social, cultural development of their members and the enhancement of their standards of living in a joint enterprise, excluding activities in the agriculture sector.

demonstrated by (a) ownership rights or by a right to use (usufruct) of immovable property within the region of the EC, or (b) by being residents of the area, being officially registered in the particular municipality. Similar provisions apply to the legal entities EC members, the seat of which is required to be located within the region of the EC in order that the relation is demonstrated.

3.2 Capital of Energy Communities

Art 3 ECL provides that the members shall contribute to the EC capital with one mandatory cooperative share, but they can also acquire one or more voluntary cooperative shares, which cannot surpass the 20% of the total cooperative capital. This cap is higher reaching up to the 40% of the total cooperative capital when the local authorities acquire voluntary shares. In case of first level local authorities of islands with less than 3.100 habitants, the cap rises to 50% of the cooperative capital. Each member can participate in the general assembly with one vote, irrespectively of the shares that it contributes to the EC.

3.4 Activities of Energy Communities

The particular activities that an EC can undertake are exhaustively stipulated in the ECL and are divided in mandatory activities and optional activities, according to Art 4 ECL.

Mandatory activities, ie activities among which an EC must undertake at least one, are as follows: (a) production, storage, self-consumption or sale of electrical or thermal or cooling energy from RES or HECPH or hybrid plants located within the region where the EC is located or within a neighbouring region in case of an EC located in the Attica region; (b) management, such as collection, transport, processing, storage or disposal, of raw material for the production of electrical, thermal or cooling energy from biomass or bioliquids or biogas or through energy utilization of the biodegradable fraction of urban waste; (c) supply of energy products, appliances and installations, with the aim of reducing energy consumption and use of conventional fuels as well as improving energy efficiency; (d) supply of electric vehicles, and generally of vehicles using alternative fuels; (e) distribution of electricity within the region where it is located; (f) supply of electricity or natural gas to final customers within the region where it is located; (g) production, distribution and supply of thermal or cooling energy within the region where it is located; (h) demand management to reduce the end-use of electricity and representation of producers and consumers in the electricity market; (i) network development, management and operation of alternative fuel infrastructures or management of sustainable modes of transport within the region where it is located; (j) installation and operation of desalination plants using RES within the region where it is located; (k) provision of energy services.

Optional activities that an EC may undertake are as follows: (a) raising funds to invest in RES or HECPH or energy efficiency improvement interventions within the region where it is located; (b) preparation of studies for the utilisation of RES or

HECPH or energy efficiency improvement interventions or provision of technical support in these fields; (c) managing or participating in programs funded by national or EU funds in relation to its objectives; (d) providing advice on the management or participation of its members in programs funded by national or EU funds in relation to its objectives; (e) information, training and awareness raising at local and regional level on energy sustainability issues; (f) actions to support vulnerable consumers and to address energy poverty of citizens living below the poverty line within the region where it is located, such as energy supply or offsetting, energy upgrading of housing buildings or other actions that reduce energy consumption in such buildings.

3.5 Distribution of Surplus of Energy Communities

According to Art 6 ECL, at least 10% from the surplus of each year is withheld for the formation of the regular reserve. Withholding is not mandatory when the reserve amount is at least equal to the amount of EC capital. Surpluses of the year are not distributed to members, but remain in the EC in the form of reserves which can only be allocated for the promotion of its objectives by virtue of decision of the general assembly of its members. In case of EC which consist of local authorities only, as well as in case of EC in which local authorities participate as members in island regions with less than 3.100 habitants, the surplus may by allocated for local collective activities related to the energy sector, such as the supply of raw materials, fuels and water. In case of EC which consist of at least 15 members – or 10 members in island regions with less than 3.100 habitants – and 51% of the members are individuals, the rest of the surplus, after the 10% deduction for the regular reserve, can be distributed to members.

It appears that ECL introduces two distinctive systems in surplus distribution, resulting in implicitly dividing EC into two categories, the not-for-profit EC and the for-profit EC. In both cases, at least 10% of the surplus shall be allocated to the EC regular reserve. In case of not-for-profit EC, the rest of the surplus cannot be distributed to members, being allocated to other reserves based on the general assembly decision in order to promote EC goals or to local collective activities associated with the energy sector. In case of for-profit EC, the rest of the surplus can be distributed to members on certain conditions.[5]

3.6 Energy Communities Unions

Art 10 ECL provides for the formation of EC unions as well as of the Energy Cooperatives Federation of Greece. EC unions consist of at least five EC located within the same region and aim at the coordination and promotion of the activities of their members. EC unions may form the Energy Cooperatives Federation of

[5] I. Douvitsa, 'The New Law on Energy Communities in Greece' *Cooperativismo e Economía Social (CES)*, 33, 41-42 (2017-2018); H. Böll Stiftung et al ed, *Building Energy Communities. Energy in the Hands of Citizens* (Thessaloniki: Papergraph, 2019), 29-30.

Greece for the coordination and the overall representation of the whole national energy cooperative movement.

3.7 Dissolution of Energy Communities

In accordance with Art 9 ECL, an EC may be dissolved if the required number of members or the locality criteria are no longer fulfilled and the appropriate adjustments have not taken place within a three-month period. Dissolution may also occur either in case of expiration of the specific duration that may be stipulated by its statute or after a general assembly decision or in case of bankruptcy of the EC. Dissolution is followed by liquidation. After the members' shares are redeemed, the distribution of the remainder depends on the way in which the surpluses have been distributed. In case of EC the surplus of which is not subject to distribution, the remainder shall not be allocated to the members, but to associations, unions or other non-profit entities which undertake activities in the energy or environmental sectors within the EC region. In case of EC the surplus of which can be distributed to their members, the rest of the funds are distributed to the members according to their contributions to the cooperative capital.

3.8 Financial Incentives and Support Measures for Energy Communities

Art 10 ECL provides for several financial incentives and support measures for EC. Among others, in case of construction of RES or HECPH units EC are granted the right to be exempt from the competition regime, along with their prioritizing in administrative processes and the requirement to provide lower guarantees for registration. Moreover, EC are exempt from the obligation to pay the annual fee for holding a power generation license for RES, HECPH and hybrid plants. Mention should be also made of Ministerial Decision ΥΠΕΝ/ΔΑΠΕΕΚ/15084/382/05.03.2019, which is the legal instrument stipulating the details for the installation of RES plants by self-producers through regular or virtual net-metering schemes as well as by EC through virtual net-metering schemes. Under this regime, in case of such schemes the network charges (ie for the transmission and the distribution network) and the Special Duty of Greenhouse Gas Emissions Reduction (ETMEAR) are not imposed on the electricity that is instantaneously self-consumed. On the other hand, the public service levy (ΥΚΟ) is still imposed on the total electricity consumption, including self-consumed electricity.

4 Concluding Remarks

ECL can be considered a pioneering legal instrument, given that Greece was one of the first member states to introduce an integrated institutional framework for EC and their involvement in the energy market, even before the enactment of the

relevant EU framework, ie Directive (EU) 2018/2001[6] and Directive (EU) 2019/944.[7] The establishment of this unique and rather original institution is deemed to be an important step towards the democratization of the energy sector,[8] given that the energy market is managed and controlled at local level and consumers play an important role. Moreover, EC are expected to contribute towards the use of more green energy and the lowering of energy consumption.[9] At the same time, it has been proposed that the ECL should be reformed to introduce, among others, a simplified licensing process and the development and management of EC distribution networks.[10] There could also be important to address competition law concerns due to the dual role of EC as both energy producers and distributors in their region.[11] Moreover, in view of the transposition of the above mentioned directives in the Greek legal order it might be important to reconsider or clarify certain provisions (eg concerning the distinction between EC and renewable energy communities etc.).

As an overall assessment, ECL introduces certain features that are expected to enable EC to be established and gradually play an important role in the energy sector. Some of them are the requirement of minimum number of members between 2 and 5 – by contrast with the 15-member requirement for ordinary civil cooperatives – as well as the express provision of the participation of local authorities and the special provisions about less populated islands and the optional activity in favour of vulnerable groups.[12]

There is no doubt that the evolution of technology is expected to offer advantages to EC. Its high cost, however, requires constant investments and support. In this respect, the participation of local authorities in EC may enable their privileged and low rate financing while state support remains of great importance. Given its recent enactment, the Greek ECL framework is yet to be tested, so it remains to be seen how it will be applied within the next years and whether it will successfully fulfil its goals.

[6] Directive (EU) 2018/2001 of the European Parliament and of the Council of 11 December 2018 on the promotion of the use of energy from renewable sources (Text with EEA relevance) [2018] OJ L 328/2018, 82–209.

[7] Directive (EU) 2019/944 of the European Parliament and of the Council of 5 June 2019 on common rules for the internal market for electricity and amending Directive 2012/27/EU (Text with EEA relevance) [2019] OJ L 158/2019, 125–199.

[8] T. Koutsopoulou, 'Energy communities in Greece. Legal framework and growth perspective' *Energy and Law*, 72, 83 (2017).

[9] M. Fefes, *Energy communities* (Athens: Nomiki Bibliothiki, 2020), 118.

[10] T. Koutsopoulou, n 8 above, 83.

[11] A. Nellas, 'Energy communities under Law 4312/2018: arising implementation issues and challenges' *Energy and Law*, 43, 56 (2017).

[12] I. Douvitsa, n 5 above, 55.

Protection Tools in Energy Market Disputes: Alternative Tools in Italy and France

Martina Lorenzotti

Abstract: In such a complex and particularly competitive market as the energy market, protection tools have been made available. These tools are capable of guaranteeing, even in rather quick times, protection of the rights and interests of the figures who work there: however, the legitimacy to act is not extended to all figures operating in the energy market, but it varies according to the protection tool required. Among the tools, almost exclusive protagonists are the complaint and the conciliation service, both characterized by minimal costs and a procedure that, in time, appears decidedly contained. The concept of prevention is also interesting in the energy market: indeed, particular importance is assigned to the assistance phase of the final customer-consumer. Furthermore, the paper contains an analysis of the France figure of *le médiateur national de l'énergie*, comparable to the conciliation service of the Italian legal system.

Keywords: Energy Market, Consumer Protection, Alternative Dispute Resolution

1 Consumer, Energy Market and Protection

Energy[1] must be considered as an essential asset.

At the heart of modern society today there's the consumer[2] to the point that the term citizen is sometimes accompanied, if not replaced, by the term consumer.

The place where a consumer can operate is the market,[3] that is also the space - even in a figurative sense - in which relations are established between economic

[1] R. Federici, 'Concetto giuridico di energia', in E. Picozza and S.M. Sambri eds, *Il Diritto dell'energia* (Padova: Cedam, 2015), 12-15; Id, 'Diritto dell'ambiente e diritto dell'energia. Discipline trasversali e ordinamenti giuridici' 4 *Rivista Giuridica AmbienteDiritto.it,* 3-6 (2019).

[2] Indeed, At first the figure of the consumer finds space in the European panorama, in particular it is outlined in the 1968 Brussels Convention, specifically in Art 13, such as 'the person' who concludes contracts for a different use from his professional activity. Only in the 1990s the concept of consumerism will develop in Italy and so the related discipline. In the Italian legal system, the consumer is considered as a person who acts for purposes unrelated to his own business, commercial, craft or professional activity (Art 3, no 1, letter *a*, Codice del consumo, decreto legislativo 6 September 2005 no 206); in the opposite case, it's not possible to speak of a consumer but of a professional.

S. Mirate, 'La tutela del cittadino utente consumatore: profili pubblici' *Responsabilità civile e previdenza,* 40, 41-44 (2020); M. Granieri, 'Contratti dei consumatori: verso una stabilizzazione degli strumenti di tutela?' *Danno e responsabilità,* 917, 917-921 (1998); M. Durovic, 'Bright Future for EU Consumer Law' 8 *Journal of European Consumer and Market Law,* 217, 217-218 (2019).

For an interesting analysis about the difference between consumer, end user and prosumer, M.R. Maugeri, 'Elementi di criticità nell'equiparazione, da parte dell'AEEGSI, dei "prosumer" ai "consumatori" e ai "clienti finali"' *La Nuova Giurisprudenza Civile Commentata*, 406, 406-410 (2015).

[3] Therefore, the market can be understood in a broad sense, yet over the years there has been an ever-greater specialization of some sectors, in particular, the energy market has assumed greater importance and, consequently, the particular figure of the energy consumer.

R.J. Pierce Jr., 'Environmental Regulation, Energy, and Market Entry' 15 *Duke Environmental Law & Policy Forum*, 167, 169-174 (2005); A. Cardoso and A. Cunha, 'The Internal Energy Market' 9 *Journal of Energy & Natural Resources Law,* 290, 292-296 (1991)*;* H. Biebl, 'Energy Subsidies, Market Distortion, and a Free Market Alternative' 46 *University of Michigan Journal of Law Reform Online,* 43, 44-46 (2012); Fre. Fucci and Fra. Fucci,

operators and where exchanges take place: in a broad context such as post-liberalization[4] energy market, consumer protection tools emerge.

From this open market perspective, the final consumer can be seen as the '*contraente debole*'[5] of the situation in the face of negotiations with large companies

'Bersani Decree Opens Italian Energy Market' 8 *International Financial Law Review,* 27, 27 ss. (1999); D.B. Spence, 'Regulation and the New Politics of (Energy) Market Entry' 95 *Notre Dame Law Review,* 327, 329-332 (2019); A.J. Black, 'European Law and Public Utility Open Access' 1 *Florida Journal of International Law*, 147, 147-148 (1995)*;* M. Jaś-Nowopolska, 'The Influence of the Energy Charter Treaty on the European Energy Market' 4 *International Comparative Jurisprudence,* 77, 82 (2018).
European Parliament and Council Regulation (EU) 2019/943 of 5 June 2019 on the internal market for electricity [2019] OJ L158; Z. Brocka Balbi and M. Barra, 'Mercato interno dell'energia elettrica e servizi pubblici: la tutela dei piccoli clienti finali in Italia' *Diritto del Commercio Internazionale,* 763, 765-768 (2007).
Furthermore, in the energy market any price changes can lead to significant consequences for society; M.T. Costa and N. Alonso-Borrego, 'La formació dels preus en els mercats energètics' *Revista Econòmica de Catalunya,* 16, 17 (2012), *'la pràctica totalitat de les activitats estan vinculades al consum energètic, fet que converteix l'energia en un bé essencial i escàs per a la societat, raó per la qual tota incidència que afecti el subministrament d'energia o els seus preus té conseqüències rellevants en l'economia. Diversos factors com el grau de dependència energètica del pais, estructura productiva o la fase del cicle econòmic en determinen la importància de l'impacte'.* Interesting, P. De Ladoucette et al, *La suppression des tarifs réglementés de vente d'électricité: pertinence et modalités* (Paris: Altermind, 2017), 17-21.
In addition to this it is relevant to point out that the main underlying purpose is to guarantee a more competitive and more sustainable energy market; G. Bellantuono, 'Contract Law, Regulation and Competition in Energy Markets' 2 *Competition And Regulation In Network Industries*, 159, 161-188 (2009); European Parliament and Council Regulation (EU) 2019/943, recast, *considerando* no 2, 'the internal market for electricity, which has been progressively implemented since 1999, aims to deliver a real choice for all consumers in the Union new business opportunities and more cross-border trade, so as to achieve efficiency gains, competitive prices and higher standards of service, and to contribute to security of supply and sustainability. The internal market for electricity has increased competition, in particular at the wholesale level, and cross-zonal trade. It remains the foundation of an efficient energy market'.

[4] Since 1 July 2007, the European Union, whose competence (Art 4, letter *i*, Trattato sul Funzionamento dell'Unione Europea) in energy matters is concurrent with the competence of the member States, introduced the liberalization of energy in Europe and the consequent possibility for all customers, including domestic ones, to freely choose their electricity and gas supplier; in this context, it assumes relevance the elimination of obstacles that could arise (see, Parlamento europeo, 'Mercato Interno dell'Energia, Note sintetiche sull'Unione europea', [2017] available at https://www.europarl.europa.eu/RegData/etudes/fiches_techniques /2013/050702/04A_FT(2013)050702_IT.pdf (last visited 21 August 2021), *'la rimozione di numerosi ostacoli e barriere commerciali, il ravvicinamento delle politiche fiscali e dei prezzi e misure concernenti norme e standard, nonché disposizioni in materia di ambiente e di sicurezza. L'obiettivo è garantire un mercato funzionante che assicuri equità d'accesso e un elevato livello di tutela dei consumatori, nonché livelli adeguati di interconnessione e capacità di generazione'*).
For further information on the process of liberalization, see AGCM, Autorità Garante della Concorrenza e del Mercato, 'Vademecum, La liberalizzazione dell'energia e del gas, dalla maggior tutela del mercato libero: scegliere consapevolmente', (1) available at https://www.agcm.it/pubblicazioni/2018-09_Mercato_Libero_Energia_Gas.pdf (last visited 21 August 2021), '*la completa liberalizzazione del mercato dell'energia, infatti, se adeguatamente sfruttata dai consumatori che sapranno scegliere consapevolmente inducendo una vera competizione fra le diverse imprese, manterrà i prezzi di energia elettrica e gas naturale aderenti ai costi, trasferendo alla clientela finale gli sconti che le imprese venditrici ottengono comprando energia e gas nei mercati all'ingrosso, e limiterà molte inefficienze dei servizi derivanti dall'esercizio del potere del mercato nella vendita detenuto da alcune imprese';* M. Giachetti Fantini, 'La liberalizzazione del mercato dell'energia elettrica e del gas naturale: il caso italiano nel panorama europeo' *ApertaContrada, Riflessioni su società, diritto, economia,* 3-7 (2017); C. Lemaire, *Énergie et concurrence: recherches sur les mutations juridiques induites par la libéralisation des secteurs de l'électricité et du gaz naturel* (Aix-en-Provence: Presses Universitaires d'Aix-Marseille*,* 2003), 5-9; S.M. Goldberg, 'Security of Supply in the Context of European Energy Market Liberalisation - A Brief Overview' 4 *International Business Law Journal*, 433, 440-445 (2011); A. Colavecchio, *La liberalizzazione del settore elettrico nel quadro del diritto comunitario: alla ricerca di un giusto bilanciamento fra regole di concorrenza ed esigenze di servizio pubblico* (Bari: Cacucci Editore, 2000), 51-58; D. Iacovelli, 'Liberalizzazioni e obblighi di servizio pubblico nel mercato dell'energia' *Amministrare, Rivista quadrimestrale dell'Istituto per la Scienza dell'Amministrazione pubblica*, 187, 190-195 (2009).

[5] M. Bartl, 'The Affordability of Energy: How Much Protection for the Vulnerable Consumers?' 33 *Journal of Consumer Policy*, 225, 231-235 (2010).

and suppliers, therefore the protection[6] in favor of the single consumer assumes particular importance. Among the first interventions on consumer protection, the Maastricht Treaty, which entered into force on November 1, 1993, should be mentioned, who dedicates an entire title - the eleventh - to consumer protection: specifically, Art 129 A indicates the tools[7] through which the Community implements its contribution in order to guarantee a high level of protection.

In addition, the protection of the final customer is also provided for by Art 1, c. 2, of the decreto legge 18 June 2007 no 73, which indicates the customer's right of withdrawal from the stipulated contract as an instrument of protection according to established ways,[8] guaranteeing particular protection to the electricity sector.[9]

Ultimately, it is possible to report the provision of various protection tools in favor of the end customers, prosumers[10] and operators in general in the energy market: the alternative system of disputes in the energy sector assumes relevance not only in the Italian legal system, but also in all countries[11] belonging to the EU.[12]

2 Protection Tools: (Assistance), Complaint, Conciliation

The regulatory context of the energy sector is very broad and for this reason it must be considered in its complexity. This complexity also involves, but not limited to, the single final consumer who could be in the market, precisely because of his position, the contractually 'weak' part in the face of more dominant operators. For these and other reasons, various protection instruments have been arranged in favor of the various figures operating in the energy market.

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[6] The attention paid to the risks of price instability is interesting; compare, European Parliament and Council Regulation (EU) 2019/943, recast, Chapter II, General rules for the electricity market, Art 3 'Principles regarding the operation of electricity markets', letter *o*, 'in order to allow market participants to be protected against price volatility risks on a market basis, and mitigate uncertainty on future returns on investment, long-term hedging products shall be tradable on exchanges in a transparent manner and long-term electricity supply contracts shall be negotiable over the counter, subject to compliance with Union competition law'. Moreover, insights into energy prices, L. Flatley et al, 'Analysing the Potential Economic Value of Energy Storage' *IEB Working* Paper, 7-11 (2016); F. Nan et al, 'The forecasting accuracy of electricity price formation models' *International Journal of Energy and Statistics,* 12-16 (2014); A. Escribano et al, 'Modelling Electricity Prices: International Evidence' 73 *Oxford Bulletin of Economics and Statistics,* 622, 623-627 (2011); S.K. Aggarwal et al, 'Electricity price forecasting in deregulated markets: A review and evaluation' 31 *International Journal of Electrical Power & Energy Systems,* 13, 17-21 (2009).

[7] See the Art 129 A, the instruments through which the Community intends to guarantee the '*conseguimento di un livello elevato di protezione dei consumatori'*, in particular '*mediante: a) misure adottate in applicazione dell'articolo 100 A nel quadro della realizzazione del mercato interno; b) azioni specifiche di sostegno e di integrazione della politica svolta dagli Stati membri al fine di tutelare la salute, la sicurezza e gli interessi economici dei consumatori e di garantire loro un'informazione adeguata'.*

[8] Art 1, comma 2, decreto legge 18 June 2007 no 73.

[9] M. Giachetti Fantini, 'L'assetto dei servizi di tutela e dei mercati retail nel settore dell'energia elettrica e del gas naturale alla luce delle novità in materia contenute nel disegno di legge annuale per il mercato e la concorrenza A.S. n. 2085' *ApertaContrada, Riflessioni su società, diritto, economia,* 6 (2016), *'l'art. 1, co. 2, del d.l. n. 73 del 2007, convertito con modificazioni nella l. n. 125 del 2007, ha previsto l'istituzione del c.d. "servizio di maggior tutela" nel settore dell'energia elettrica'.*

[10] For the definition of prosumer, M.R. Maugeri, n 2 above, 406.

[11] J. Handrlica, 'An Independent Regulatory Authority for the Energy Sector: Approaches to the energy sector regulation in a comparative perspective' 12 *ILSA Quarterly*, 16, 16-22 (2004).

[12] In particular, A. Prontera, 'L'europeizzazione della politica energetica in Francia e Italia' *Stato e mercato, Rivista quadrimestrale*, 111, 120-142 (2008).

First of all, the particular importance destined to the assistance phase of the final customer-consumer is noted: in the energy market, the concept of prevention is interesting, to the point that assistance could be considered a relevant precautionary phase.

The Autorità di Regolazione per Energia, Reti e Ambienti (ARERA) established in 2009 a desk dedicated to the consumer, in order to share information and guarantee possible assistance in three sectors: electricity, gas and water system. This service[13] can be requested by all consumers, without any distinction between domestic consumer - whose use of the product is for domestic purposes - and non-domestic consumers - whose use is outside the domestic one and therefore could be for commercial, industrial uses - and by prosumers, those who at the same time assume the quality of both consumer and producer; finally, the Authority dedicates a Help Desk service guaranteeing qualified assistance only to associations representing domestic and non-domestic customers. Assistance represents an important moment: first of all it can be useful in order to transmit all useful information to the consumer, so as to ensure maximum transparency,[14] moreover, it represents a crucial moment because it also allows to communicate the rights of consumers and any dispute management tools.

Although assistance is a truly significant phase, it cannot be considered as a real tool for the protection of disputes, fulfilling instead an incisive role in preventing them. Indeed, among the protection tools, almost exclusive protagonists are the complaint and the conciliation service, both characterized by minimal costs and by a procedure that, in time, appears decidedly contained.

2.1 The Complaint: Legitimate Subjects and Procedural Characteristics

Complaints represent an effective protection tool, essentially consists of a report whose object can be limited, by way of example, to any inefficiencies in the provision of services, to untrue amounts in the bill, to a lack of invoicing, so extensive that the complaint tool is considered valid as a report of various problems. The complaint must include certain elements, including the indications of the complainant and the manager, the subject of the complaint and, in cases of particular urgency, the reasons

[13] Autorità di Regolazione per Energia, Reti e Ambiente, 'Lo Sportello per il consumatore Energia e Ambiente', available at https://www.arera.it/it/ callcenter.htm (last visited 21 August 2021), lists the various services - Contact Center, Conciliation Service, SMART Service, Complaints Service and Reporting Service - providing their description.
Resolution GOP 28/08 for the establishment by the Authority for Electricity and Gas of the Office for the consumer of energy; Resolution 286/2014/R/com as supplemented and amended by resolution 605/2014/E/com on the regulation of the management and handling of complaints by the Service. Furthermore, a recent Resolution 537/2020/E/TLR of 15 December 2020 on the extension of the protection system for the treatment of complaints and resolution of extra-judgment of disputes in the district heating and district cooling sector.

[14] In the Risoluzione del Parlamento europeo of 19 June 2008 about 'Verso una Carta europea dei diritti dei consumatori di energia', available at https://www.europarl.europa.eu/sides/getDoc.do?pubRef=-//EP//TEXT+TA+ P6-TA-2008-0306+0+DOC+XML+V0//IT&language=IT (last visited 21 August 2021), the issue of transparency finds ample space: in relation to european electricity and gas prices, in relation to the criteria to be used in the calculation of energy consumption, in relation to the information provided to users. Transparency is a cardinal principle.

underlying the urgency; specific documentation must be attached to the complaint, including the documents suitable for establishing the claim and, except in cases of urgency, a copy of the complaint previously sent to the manager.

This tool is made available pursuant to the resolution 188/2012/E/com[15] by operators against an operator of a transmission, transport, storage, LNG or distribution system, by producers in the event of a dispute pursuant to Art 14, c. 2, letter *f-ter*, decreto legislativo 29 December 2003 no 387 entitled '*questioni attinenti il collegamento degli impianti alla rete elettrica'* and finally by prosumer. However, the customer is excluded from the legitimizing subjects.

The complaint, before the activation of the specific procedure at the competent Authority, requires the preliminary presentation directly to the manager of reference, who will be called to respond within forty-five calendar days of receipt of the complaint, and, only subsequently can the Authority be referred. This preliminary phase is essential in order to be able to lodge a complaint at the ARERA; however, in the case of exception in which forty-five calendar days have passed and the manager has not sent a response or the same should be unsatisfactory, the complaint can be forwarded directly to the Authority.

Furthermore, there is a case in which it is possible at the same time to send the complaint to both the manager and the Authority without waiting for the forty-five days necessary to obtain a response from the manager, and that is in the presence of particular urgency or when the complaint is specific situations which, if not interrupted, could cause serious irreparable damage - in such circumstances, it will be necessary to indicate the specific reasons for danger and damage in the complaint form.

Essentially, the complaint represents the beginning of a procedure: indeed, the Authority, once the complaint is received, will notify the parties of the initiation of the procedure. The proceedings tend to have a short duration, indeed a proceeding initiated with a complaint presented by a manufacturer pursuant to Art 14 of decreto legislativo 29 December 2003 no 387 as described above must be completed within six months from the date of receipt of the complaint, while the deadline for concluding a proceeding initiated with a complaint presented by an operator as described above or by a prosumer is two months from the same moment as above - this term may however undergo variations in the event that, for example, it should be necessary to find further details regarding the situation proposed with a complaint or for needs related to the preliminary phase of the procedure itself.

The procedure is considered concluded when the Authority issues a resolution: in the event that the complaint is accepted, a deadline will also be established within which the manager will have to implement the provisions of the Authority, otherwise it will be subject to a penalty according to the Art 2, c. 20, letter *c*,[16] legge 14 November 1995 no 481.

[15] Resolution 18 May 2012 188/2012/E/com, 'Approvazione della disciplina per la trattazione dei reclami presentati da operatori contro un gestore di un sistema di trasmissione, di trasporto, di stoccaggio, di un sistema GNL o di distribuzione (articolo 44, commi 1 e 2, del d. lgs. 1 giugno 2011, n. 93)'.

[16] Art 2, comma 20, letter *c*, legge 14 November 1995 no 481 establishes non-pecuniary administrative sanctions, unless the fact constitutes a crime.

In conclusion, the complaint tool appears to be effective and efficient, not in terms of procedural convenience, but also in terms of duration.

2.2 The Conciliation Service: Legitimized Subjects and Procedural Characteristics

The Conciliation Service[17] appears to be of particular interest, the legitimacy of which, unlike what has been set up for the complaint, also belongs to the final customers of electricity and gas, as well as to prosumers.

This service represents the first useful moment in order to undertake the attempt at conciliation - mandatory - as a necessary prerequisite for being able, subsequently, to take legal action. The attempt at conciliation, unlike what has been established for the energy sector, is not mandatory in the water sector, indeed it constitutes a free choice of legitimacy and not also a necessary condition for subsequently referring to the ordinary judicial procedure.

The service appears to be a more streamlined and rapid procedure than an ordinary dispute resolution procedure and it is necessary, in this context, to mention the entry into force of the decreto legislativo 6 August 2015 no 130 in implementation of the directive 2013/11/EU on alternative[18] resolution of consumer disputes, as amended by Regulation (EC) no 2006/2004 on cooperation between the national authorities responsible for enforcing consumer protection legislation and the directive 2009/22/CE about injunctions to protect consumers' interests. The change in the consumer code is due to decreto legislativo 6 August 2015 no 130 to which reference is made, specifically, by adding an entire title - title II-*bis* - aimed at out-of-court dispute resolution for consumers.

Of particular interest is the provision of the conciliation service for free and online[19] as a further element that allows greater accessibility to the service, as well as an obvious opportunity[20] under various profiles, also related to the absence of

[17] Resolution 260/2012/E/com of 21 June 2012 on the establishment of the energy customer conciliation service and subsequent amendments with resolutions 475/2012/E/com, 93/2013/E/com, 605/2014/E/com and 620/2015/E/com.

[18] P.J. Baker, 'ADR Assists Energy Industry Restructuring' 54 *Dispute Resolution Journal*, 8, 10-15 (1999); B. Le Bars, 'Recent Developments in International Energy Dispute Arbitration' 32 *Journal of International Arbitration*, 543, 545-549 (2015); G. Wagner, 'The Dispute Resolution Market' 62 *Buffalo Law Review*, 1085, 1090-1158 (2014). Furthermore, N. Creutzfeldt and C. Gill, 'The Impact and Legitimacy of Ombudsman and ADR Schemes in the UK' *The Foundation for Law, Justice and Society*, 1, (2014), 'To improve access to justice for consumers in the European single market, an EU Directive on consumer Alternative Dispute Resolution (ADR) (2013/11/EU) was introduced in May 2013, and will come into force in every EU member state by July 2015'.

[19] Autorità di Regolazione per Energia, Reti e Ambiente, 'Il Servizio Conciliazione', available at https://www.arera.it/it/consumatori/conciliazione.htm (last visited 21 August 2021), reads the following: '*il Servizio Conciliazione, gestito da Acquirente Unico per conto dell'Autorità, è gratuito e si svolge on line, in conformità con la normativa europea sull'energia e sulla risoluzione alternativa delle controversie (ADR - Alternative Dispute Resolution*)'.

[20] G. Calabrò, 'Associazioni dei consumatori e autorità alleate nella tutela del consumatore' *CNCU Venti anni al fianco dei Consumatori, Edizione Speciale Quaderno Informativo*, Ministero dello Sviluppo Economico, 14 (2019), '*i sistemi di "conciliazione" paritetica preventiva (sia quelli tradizionali "ADR", sia quelli on line "ODR" da potenziare e sviluppare) rimangono strumenti essenziali per evitare l'intasamento del contenzioso giudiziale ed offrire opportunità di tutela al consumatore con meccanismi sempre più efficienti, qualificati, professionali, a "basso costo" (in virtù delle spese effettivamente sostenute)*'.

logistical obstacles, which has led to important results so far.[21] From a regulatory point of view, however, reference must be made to the Regulation (EU) no 524/2013 in the field of online dispute resolution for consumers so-called 'Online Dispute Resolution' (ODR)[22] dedicated to disputes resulting from the online stipulation of contracts.

Recital 8 of the aforementioned regulation highlights the effectiveness of ODR both in economic terms and in terms of timing: they represent, indeed, fast and low-cost solutions.

Furthermore, it is also noted that the outcome of the Conciliation Service activity, if positive, leads to the formation of an enforceable title that can be used and asserted in the appropriate offices in the event of non-compliance; otherwise, on the other hand, when at the end of the conciliation procedure it is not possible to formulate an agreement, there will be the possibility of taking legal action, having satisfied the preliminary condition of experimentation of compulsory conciliation.

As already mentioned, the right act with the Conciliation Service also belongs to the end customer - the case of the complaint is different, in which direct legitimacy is excluded - and it is precisely the end customer's activity that activates the procedure by registering on the online platform mentioned.

The protection of the interest of the end customer can take place either personally - indeed, the customer can personally participate in the conciliation procedure - that through a third delegate, also a member of a consumer or trade association.[23] From this it can be deduced that the interest of the end customer is

[21] Interesting, P. Praderi, 'Conciliazione delle controversie: il ruolo delle associazioni dei consumatori' *Consumatori, Diritti e Mercato*, 107 (2009), '*in vent'anni la conciliazione paritaria ha prodotto oltre 100.000 conciliazioni con un provvedimento rivelatosi rapido, efficace, gratuito o poco oneroso per il consumatore e l'utente, e ha prodotto oltre 20 procedure negoziate fra associazioni dei consumatori e grandi aziende o associazioni di aziende*', '*la "conciliazione paritaria" è un particolare modello di ADR (Alternative Dispute Resolution) che prevede la costituzione di una commissione di conciliazione formata pariteticamente da un esponente delle associazioni dei consumatori che rappresenta il consumatore e uno dell'impresa. non è prevista la presenza di un terzo che svolga il ruolo di mediatore o di arbitro perché la risoluzione della controversia nasce esclusivamente dal contraddittorio fra le parti*'. See, C. Vaccà, 'La "negoziazione paritetica"' *I contratti*, 965 (2011), '*l'art. 2 d.lgs. 4 marzo 2010, n. 28 opera un riferimento alla «negoziazione volontaria e paritetica», inedito nomen attribuito alla "conciliazione paritetica", originale figura progressivamente delineatasi nell'esperienza delle associazioni dei consumatori*'.

[22] See, C. Vaccà, 'Il punto su ODR, online dispute resolution' *I Contratti*, 1072-1076 (2009); A.J. Schmitz, 'Addressing the Class Claim Conundrum with Online Dispute Resolution' 2 *Journal of Dispute Resolution*, 361, 365-368 (2020).

[23] At this point, it is necessary to comment on the role of consumer and user associations: all 3, letter *b*, Codice del consumo, after having described the figure of the consumer - which, as mentioned, a person acting for purposes unrelated to a business activity, commercial, craft or professional activity possibly carried out - consumer and user associations are defined as those social formations whose sole statutory purpose is the protection of their rights and interests; in confirmation of the protection role of associations, Art 139 Codice del consumo on the subject of legitimacy to act, falling under title II, entitled '*Accesso alla giustizia*': the associations included in the list referred to in Art 137 are legitimate to act to protect the interests of consumers and users in general.
The associations also play a central role in reporting any critical issues: in particular, the reporting activities carried out regarding the application of the code of commercial conduct for the sale of electricity to eligible final customers pursuant to the resolution 105/2006. Indeed, in the premise of '*codice di condotta commerciale per la vendita di energia elettrica e di gas naturale*', '*documento per la consultazione emanato nell'ambito del procedimento avviato con deliberazione 18 Marzo 2008-ARG/com 34/08*', 2 (2010), it is possible to read that '*il presente documento per la consultazione formula una serie di proposte volte all'adozione di un unico Codice di condotta commerciale in esito agli interventi di modifica ed integrazione al Codice di condotta commerciale per la vendita di gas naturale ai clienti finali di cui alla deliberazione 22 luglio 2004 n. 126/04 e al Codice di condotta*

central, also confirmed by the speed with which the process is required to conclude: in general, it has a maximum term of ninety days from the date of submission of the request for conciliation, a term which however may be subject to extension in particular cases or upon reasoned request by the parties.

It is reported the following data to understand the practical scope of this service: 8.5 million euros obtained or saved through the ARERA Conciliation Service in 2019[24] in resolution of disputes with water, electricity and gas sellers - in 2018,[25] the amount was around 4.4 million euros - and an increase in the number of applications,[26] thus passing from 11 thousand to over 16 thousand.

Thus, it is possible to affirm that the extrajudicial remedies turn out to be really efficient and able to guarantee the effectiveness of the safeguards. On this subject, the French case is very interesting: indeed, France[27] devotes ample space to ADR, in particular mediation[28] represents an efficient alternative to judicial action both in economic terms and in terms of time - a mediation procedure requires a shorter resolution time than a judicial action - and does not preclude the possibility, in the event of a negative outcome, of being able to take legal action. In particular, the legal

commerciale per la vendita di energia elettrica ai clienti idonei finali di cui alla deliberazione 30 maggio 2006, n. 105/06. L'introduzione di un Codice di condotta commerciale unico persegue il fine di risolvere le criticità riscontrate e segnalate, sia dai clienti e dalle Associazioni rappresentative degli interessi dei medesimi sia dagli esercenti, circa l'applicazione dei Codici di condotta commerciale menzionati, tenendo inoltre conto dell'evoluzione del mercato della vendita al dettaglio dell'energia elettrica e del gas naturale'.

For further information, the lists of consumer and user associations divided by years are published on the website of the Ministry of Economic Development, Directorate General for the Market, Competition, Consumer Protection and Technical Regulations; the associations must be registered on the list pursuant to Art 137 Codice del consumo, titled '*Elenco delle associazioni dei consumatori e degli utenti rappresentative a livello nazionale*' available at https:// www.mise.gov.it/index.php/it/?option=com_content&view=article&id=2019301 (last visited 21 August 2021).

See, F. Rizzo, 'Associazioni dei consumatori e accesso alla giustizia' in G. Villanacci ed, *Manuale di diritto del consumo* (Napoli: Edizioni Scientifiche Italiane, 2007), 390-399; S. Mirate, 'La legittimazione a ricorrere delle associazioni di consumatori tra "generalità" e "specialità"' *Giornale di diritto amministrativo*, 524-528 (2020).

[24] Autorità di regolazione per Energia, Reti e Ambiente, 'Energia e ambiente: nel 2019 recuperati oltre 8,5 milioni di euro a favore dei consumatori con il Servizio Conciliazione' (2020) available at https://www.arera.it/it/com_stampa/ 20/200221.htm (last visited 21 August 2021).

[25] Autorità di Regolazione per Energia, Reti e Ambiente, 'Energia: nel 2018 4,4 milioni di euro recuperati dai consumatori con il Servizio Conciliazione' (2019) available at https://www.arera.it/it/com_stampa/19/190312.htm (last visited 21 August 2021).

[26] Autorità di Regolazione per Energia e Ambiente, n 24 above.

[27] P. Blanchard, 'Grands Projets Dans Le Secteur De L'Energie' 4 *International Business Law Journal*, 443, 452-456 (2000).

[28] See, 'Médiation de la consommation, Commission d'évaluation et de contrôle de la médiation de la consommation - CECMC', available at https:// www.economie.gouv.fr/mediation-conso (last visited 21 August 2021), '*la médiation de la consommation désigne un processus de règlement extrajudiciaire des litiges, par lequel un consommateur et un professionnel tentent de parvenir à un accord pour résoudre à l'amiable un litige qui les oppose, avec l'aide d'un tiers, le médiateur. A défaut d'accord amiable entre les parties, le médiateur leur propose une solution pour régler le litige. Il s'agit donc d'une alternative à l'action judiciaire souvent longue et coûteuse. Le consommateur garde néanmoins la possibilité de saisir le juge si la médiation n'aboutit pas';* M.F. Chabot, 'Raisons et des manières d'integrer la mediation dans le systeme de justice civile' 40 *Les Cahiers de Droit,* 91, 93-97 (1999).

In Italy, F. Ferro-Luzzi, 'La mediazione: un'opportunità per le associazioni dei consumatori' *Analisi Giuridica dell'Economia, Studi e discussioni sul diritto dell'impresa*, 42-46 (2011).

basis lies in the transposition[29] in 2015 of the directive 2013/11/EU[30] on the subject of out-of-court resolution of consumer disputes.

From a procedural point of view, mediation can only be started on the initiative of the consumer and requires a preliminary request for resolution of the dispute addressed to the interested party or customer service: this step is preparatory, without mediation it will be inadmissible.[31] Once the dispute has been examined and its admissibility status checked,[32] the request is submitted to the attention of the ombudsman; should it not pass the admissibility check, the consumer will be promptly informed.[33] The cross-examination between the parties is indispensable, to the point that it could lead to an amicable agreement[34] between the parties; otherwise, if it is not possible to reach an agreement between the parties, it will be up to the mediator to issue a resolution, which, however, will not be binding between the parties. However, the possibility of taking legal action will remain with the parties if the outcome of the mediation should be unsatisfactory.

In addition. In Europe, there is also talk of the figure of the energy mediator, as an example of '*organismo indipendente di composizione extragiudiziale delle controversie*':[35] between the various countries[36] peculiar is the role played by the energy mediator in France.

In France the energy ombudsman is called *le médiateur national de l'énergie*, which can be compared to the Italian conciliation service offered by the Energy Authority: *le médiateur national de l'énergie* is an independent public authority established with the l. 2006/1537 relating to the energy sector. This figure is entrusted with the competence of resolving disputes and informing consumers of their rights; in this regard, pursuant to Art 7 of the aforementioned law, it should be

[29] Specifically, European Parliament and Council Directive 2013/11/EU of 21 May 2013 on alternative dispute resolution for consumer disputes [2013] OJ L165 and amending Regulation (EC) no 2006/2004 and Directive 2009/22/EC (Directive on consumer ADR) on injunctions for the protection of consumers' interests [2009] OJ L110 referred to has been implemented in the Country through the Ordinance no 2015-1033 of 20 August 2015 relating to the out-of-court settlement of consumer disputes, and, finally, the Decree no 2015-1607 of 7 December 2015 relating to the conditions for the appointment of business mediators.

[30] A. Biard, 'Impact of Directive 2013/11/EU on Consumer ADR Quality: Evidence from France and the UK' 42 *Journal of Consumer Policy*, 109, 111-115 (2019).

[31] 'Médiation de la consommation, Commission d'évaluation et de contrôle de la médiation de la consommation - CECMC', n 28 above, *'le consommateur ne peut toutefois saisir le médiateur qu'à la condition d'avoir préalablement fait une démarche par écrit directement auprès du professionnel concerné ou de son service pour tenter de résoudre son litige. Si cette démarche n'est pas effectuée, la demande de médiation sera irrecevable'*.

[32] The analysis times are particularly fast, on the subject, 'Le médiateur national de l'énergie, The mediation process', available at https://www.energie-mediateur.fr/en/the-energy-ombudsman/presentation/the-mediation-process/ (last visited 21 August 2021), it is possible to read that 'the analysis determining if a case is admissible is carried out within 48 hours after the file is received'.

[33] ibid, 'if the dispute is not admissible, the consumer is informed of it within a maximum period of 3 weeks'.

[34] ibid, 'the ombudsman may encourage operators to submit a solution proposal within a period set by the ombudsman. If the solution is deemed fair and is approved by all parties, the ombudsman issues an 'amicable agreement', by which he takes note of the fact that the dispute has ended'.

[35] Website Your Europe, 'Reclami e risoluzione delle controversie', available at https://europa.eu/youreurope/citizens/consumers/energy-supply/complaints-dispute-resolution/index_it.htm (last visited 21 August 2021).

[36] To the website of European Commission, Energy, Alternative dispute resolution, available at https://ec.europa.eu/energy/topics/markets-and-consumers/ energy-consumer-rights/protecting-energy-consumers/alternative-dispute-resolution_en?redir=1 (last visited 21 August 2021), the various competent bodies in alternative dispute resolution are listed.

noted that '*après l'article 43 de la loi no 2000-108 du 10 février 2000 précitée, il est inséré un article 43-1 ainsi rédigé: «Art. 43-1. - Il est institué un médiateur national de l'énergie chargé de recommander des solutions aux litiges entre les consommateurs et les fournisseurs d'électricité ou de gaz naturel et de participer à l'information des consommateurs d'électricité ou de gaz naturel sur leurs droits* [...]»'. His office has a duration of six years, it is not renewable and not even revocable,[37] has legal personality and financial autonomy[38] and, moreover, the activities it is called upon to carry out and the related procedures are governed by Artt L. 122-1 to L. 122-5 and by R. 122-1 to R. 122-12 of the energy code. Among the fundamental principles to be respected in order to carry out an efficient mediation also in compliance with the rights of the consumer are those of transparency of the activity, the impartiality towards the object of the dispute and the impartiality of the parties to the dispute of the mediator.[39]

Ultimately, alternative dispute resolution systems are appreciated in France as well as in other member states for their effectiveness and speed.[40]

3 Conclusions: Assistance and Protection of the Role of Active Economic Agent on the Market

In conclusion, it is important to consider the energy market in its complexity and reflect that various protection[41] tools have been made available to the various market operators.

Not only that: the European panorama offers, in addition to the classic tools for resolving disputes and alternative tools, also assistance that develops as a remedy even of a preventive nature, indeed it can also be conceived as an alternative system

[37] Pursuant to Art 7 of legge 7 December 2006 no 1537, '[...] *il est saisi directement et gratuitement par le consommateur ou son mandataire. Il formule sa recommandation dans un délai fixé par voie réglementaire et motive sa réponse. La saisine suspend la prescription des actions en matière civile et pénale pendant ce délai. Le médiateur est nommé pour six ans par le ministre chargé de l'énergie et le ministre chargé de la consommation. Son mandat n'est ni renouvelable, ni révocable* [...]'.

[38] Pursuant to Art 7 of legge 7 December 2006 no 1537, n 37 above, it is possible to read that '[...] *le médiateur dispose de la personnalité morale et de l'autonomie financière* [...]'.

[39] More information, on the website *Centre Européen des Consommateurs France,* 'Les principes de la médiation', available at https://www.europe-consommateurs.eu/fr/resoudre-votre-probleme/autres-alternatives/mediation /les-principes-de-la-mediation/ (last visited 21 August 2021), *'l'Union Européenne avait par ailleurs émis des recommandations (recommandation 98/257/CE et communication du 2001/161) pour fixer les grands principes qui doivent garantir aux consommateurs une médiation efficace et de qualitè, principes qui ont été confirmés et complétés dans les textes actuels: indépendance et impartialité du médiateur, trasparence de la procédure, efficacité (incluant la gratuité ou le faible coût de la procédure), légalité de la procédure, contradictoire, volontariat des parties à la procédure, principe de représentation*'.

[40] Art 3, no 13, European Parliament and Council Directive 2009/72/EC of 13 July 2009, concerning common rules for the internal market in electricity [2009] OJ L2111 and repealing Directive 2003/54/EC (Text with EEA relevance), *'Les États membres veillent à mettre en place un mécanisme indépendant, comme un médiateur de l'énergie ou un organisme de consommateurs, de façon à assurer un traitement efficace des plaintes et le règlement extrajudiciaire des litiges*'.
Recital 51, European Parliament and Council Directive 2009/73/EC of 13 July 2009 concerning common rules for the internal market in natural gas [2009] OJ L2111 and repealing Directive 2003/55/EC (Text with EEA relevance), *'Des moyens de règlement des litiges efficaces et accessibles à tous les consommateurs sont la garantie d'une meilleure, protection des consommateurs. Les États membres devraient mettre en place des procédures rapides et efficaces pour le traitement des plaintes'*.

[41] C. Solinas, 'La tutela del consumatore nei contratti di fornitura di energia elettrica' *Contratto e impresa,* 436-441 (2015).

to the same alternative resolution tools; the heart of this phase is certainly the sharing of information: it is from inaccurate or missing information that disputes can arise. By implementing this, it is possible to prevent disputes. Obviously, the "information assistance" will be more effective if guaranteed not only in a preliminary phase, but also in the execution of the contract. Probably, assistance is a particularly significant cultural step forward: only in this way will it be possible to guarantee the good management of the relationship with the customer and an exponential increase in awareness of legal rules.

The question of total and concrete accessibility to assistance at the moment remains an open question (this also in consideration of the presence of the new technologies and knowledge in use that do not always move at the same speed).

In addition to this, the system has paid particular attention to researching tools[42] able to respond to user needs quickly and with minimal costs; at the same time also indispensable the various harmonization measures implemented and crucial the cooperation[43] between States, Authorities.

Finally, although the energy consumer falls within the macro definition entrusted to the figure of the consumer generally understood, it is inevitably distinguished by peculiar characteristics, in particular it should be noted that the consumer in the energy market it is not only the end user of goods and services, but also an actor in economic processes and so is in a position to be able to change the trend of the market itself with its own choices.[44]

The energy consumer therefore plays an active role, also capable of influencing the market trend, a role as an economic agent,[45] to which the protection guaranteed by EU policies extends, mainly aimed at rationalizing and strengthening the effectiveness of the safeguards.

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[42] The collective protection tools are also compatible with the protection requirements. Indeed, in order to guarantee assistance to the needs of individuals, it is possible to resort to a form of collective protection, the so-called class action, which allows multiple consumers to join the legal action initiated by another person, starting from the assumption of the homogeneity of the positions of the individuals such as to obtain a judicial decision common to all the parties involved. Ultimately, the class action represents the appropriate tool in order to protect in the same way the needs that show themselves to be identical or similar, so as to avoid differentiated treatments of the same situations and the same treatments in different situations, also implicitly guaranteeing the possibility of avoiding a judicial overload of requests by bringing together those that have common features. Even in the case of the energy consumer, it is possible to take advantage of the class action tool, which is also an incentive from the procedural-economic aspect: just think that through a single question - able to bring together multiple requests - a single judicial decision is issued and not as many decisions as requests.
See, E. Minervini, 'Contratti dei consumatori e tutela collettiva nel codice del consumo' *Contratto e impresa,* 639-661 (2006); S. Chiarloni, 'Per la chiarezza di idee in tema di tutele collettive dei consumatori' *Rivista di diritto processuale,* 570-590 (2007).

[43] A. Colavecchio, 'La cooperazione internazionale tra i Regolatori dell'energia (ICER, ECRB, MEDREG, OCSE): verso uno statuto "globale" del consumatore energetico?', in G. Napolitano and A. Zoppini, *Annuario di Diritto dell'energia 2015. La tutela dei consumatori energetici* (Bologna: Il Mulino, 2015), 74-95; P. Rott, 'Consumers and services of general interest: Is EC consumer law the future?' 30 *Journal of Consumer Policy*, 49, 51-54 (2007).

[44] C. Solinas, n 41 above, 439, *'il consumatore nel mercato dell'energia elettrica, viceversa, viene in considerazione innanzitutto quale destinatario dei beni e servizi commercializzati che, attraverso le proprie scelte, alimenta il mercato e seleziona le offerte migliori; a prescindere, quindi, dalla sua veste giuridica formale e dallo scopo per il quale stipula il contratto di fornitura. Ed è in questo senso che la tutela del consumatore di energia elettrica da parte della legislazione comunitaria ha in primo luogo il significato di tutela di un ruolo economico'.*

[45] ibid, 437, *'l'analisi delle prime normative organiche e dei testi comunitari in materia di disciplina dell'energia, infatti, mostra una concezione del «consumatore di energia» più direttamente propulsiva del suo ruolo di agente economico in grado di consentire, con le proprie scelte, un ottimale funzionamento del mercato energetico*'.

The Legal Form of Energy Communities in Union Regulations

Maria Francesca Lucente

Abstract: The essay, from a comparative point of view, proposes an examination of the legal form that the energy community, as conceived by the European legislator, can assume compatibly with the European Union (EU) regulatory framework and the individual member countries. Among the various possible cases, the figure of the energy cooperative is particularly prominent, which, due to its peculiarities, such as its open character and the prevalent mutualistic purpose, is better close to what is prefigured by the relevant EU law. In the analysis to guide us as the only common thread, it will be precisely the awareness of the need to always look at the purpose for which the Energy Communities were conceived, that is to offer its members environmental and social benefits in a specific territory, promoting local development. that responds more and more to the canons of sustainability.

Keywords: Energy Community, Protection, Energy Cooperation, Legal Form, Sustainability

1 Introduction

In order to promote in the European energy context the widest dissemination of the innovative subject of energy decentralization, such as the energy community, it deserves to pause and conduct a survey on the legal form that the energy community, as conceived by the European legislature, can take in practice compatible with the Italian regulatory framework.

This examination, which, from a comparative point of view, will not be able to disregard what has happened in terms of regulation in other EU member states, will start from the definitions contained in the two EU Directives 2001/2018 and 944/2019, which, however, are limited to identifying only the criteria suitable for defining the legal status of these subjects. In fact, precisely from the aforementioned definitions, it would appear that such entities can be configured as an aggregation of natural and legal persons, with the possibility of also including local entities, which carry out their activities within a specific territory and, with the main purpose of offering its members or the territory in which it operates, environmental or social benefit. As will be seen in the in-depth analysis, which will see light in the remainder of this discussion, energy communities, as decentralized energy projects and based on renewable sources, can promote sustainable energy production and consumption practices; as consumer empowerment initiatives and community-driven, they can play a key role in social innovation as they reflect a fundamental change in consumer behavior, which from a mere user traditionally passive, is becoming an energy prosumer, co-owner of renewable energy facilities and participant in the community energy.

2 The Energy Community in the Conception of the European Legislator

From European Union law it emerges that each energy community must correspond to a collective body under private law and as such is configured as an autonomous legal entity under private law, and that it pursues a primary purpose corresponding to the provision to its members, as well as to the population in which it operates, not of financial profits, but of environmental, economic or social benefits; therefore, each energy community must be a non-profit organization, without, however, being precluded from a limited division of profits among the members of these communities, provided that this does not constitute the prevailing social purpose and priority.[1]

However, as we shall see more clearly, the energy community, whose membership must conform to the rules laid down by European Union law for energy community of citizens (CEC) and renewable energy community (CER), is called upon to carry out at least one energy business activity, always in compliance with the differentiated Union rules provided for CECs and CERs. The energy communities, as also conceived, must have an open structure for both incoming and outgoing for its members, as well as having to be characterized by the impossibility of being controlled internally by public administrations or externally by anyone.[2] In addition to the peculiarities already mentioned, CERs must have their own internal democratic structure, for their multifaceted promotion and public facilitation, as well as for a possible presence among their members of public bodies, whose participation must however be promoted and facilitated by public authorities.[3] But more will be said about these particular characteristics in the following section.

In particular on this point, it emerges in the opinion of a part of the doctrine,[4] that Directive 2019/944/EU, if framed in the 'Clean Energy Package', with which it was intended to provide more organizational solutions to active consumers and, in particular, prosumers, does not prevent it from being transposed into our legal system so as to expressly extend the scope of application of the CECs also to non-electric energy companies. Indeed, such a legislative intervention would have the benefit of bringing within the scope of the entity, as the energy community of citizens, what the entity itself can do, that is, operate any energy company.[5] Therefore, it would be desirable that the CECs and the Italian CERs can exercise the same energy companies, with the clarification that the CECs will have to exercise at

[1] On this topic see G.B. Zorzoli, 'La comunità energetica in Italia con la giusta fusione delle due normative', (1) available at https://www.qualenergia.it/ articoli/la-comunita-energetica-in-italia-con-la-giusta-fusione-delle-due-normative/(last visited 30 April 2021); see also C. Checchi, 'Il futuro delle comunità energetiche' *Newsletter del GME*, 1, 27-28 (2019).

[2] E. Cusa, 'Sviluppo sostenibile, cittadinanza attiva e comunità energetica' *Orizzonti del Diritto Commerciale*, 71, 75-78 (2020).

[3] European Parliament and Council Directive 2018/2001/UE of 11 December 2018 on the promotion of the use of energy from renewable sources [2018] OJ L 328/82, Art 22, para 4 let h.

[4] On this point see, E. Cusa, 'La cooperazione energetica tra tutela dei consumatori ed economia sociale di mercato' *Giurisprudenza commerciale*, 1, 3-8 (2017).

[5] A. Savaresi, 'The Rise of Community Energy from Grassroots to Mainstream: The Role of Law and Policy', 31 *Journal of Environmental Law*, 487, 505-507 (2019).

least one activity involving electricity and CERs will have to at least produce energy from renewable sources with their plants.[6]

3 The Legal Form of the Energy Community in Italy

On the basis of what can be deduced, recalling the 'Recital' n. 44 of Directive 944/2019 EU, the energy communities could be distinguished into two categories, namely: those composed of individuals and private legal entities and those in which local authorities can also participate.[7] While, as regards the first case, it would be agreeable to refer energy communities, as constituted, to the legal form of recognized associations, or cooperatives, or, more generally, to non-profit entities, the second case would be more problematic, where a local public body also participates in the community. Here, it would pose the problem of identifying the type of subjects recognized by the legal system, to which this 'mixed aggregation' between public and private, given that only private entities can acquire the status of manager of the energy distribution system.

In the opinion of a part of the doctrine[8] to arrive at a plausible solution, it would be appropriate to always consider the purpose for which the Energy Communities were conceived, namely, to offer its members environmental and social benefits within a specific territory, without prevailing profit. In view of this, the possibility of setting up joint stock companies should be ruled out, leaning more towards the implementation of associations. That said, the analysis will focus on the possible contractual models, under which the energy communities, which in Italy are the subject of a patchy and uneven discipline, can be established, without disregarding the constraints arising from European law.

In particular, the energy communities under Italian law could be considered compatible with the model of the contract of a cooperative society, as regulated in art. 2511 of Civil Code, if it is true that the relevant entity is free not to pursue the lucrative purpose and can have as members individuals, public or private law entities, consumers and entrepreneurs; in addition, it can be configured as a constitutive contract also of a cooperative benefit society, for the same reasons stated in the previous point, as well as that of the cooperative community society, for now regulated only in some regional laws. In addition to the contractual models mentioned above, it can be considered compatible as a constitutive contract of an energy community in Italy also the contract of association (recognized or not recognized), necessarily non-profit; in fact, the entity resulting from this contract has a structure suitable to allow both the entry and exit of the members of the

[6] On this matter see, C. Bevilacqua, 'Le comunità energetiche tra governance e sviluppo locale', (3) available at https://www.amministrazioneincammino. luiss.it/2020/05/13/le-comunita-energetiche-tra-governance-e-sviluppo-locale /(last visited 30 April 2021); F. Fracchia, 'Sviluppo sostenibile ed energie rinnovabili', in F. Cortese and F. Guella eds, *La regolamentazione della produzione di energie rinnovabili nella prospettiva dello sviluppo sostenibile,* (Padova: Cedam, 2013), 13-17.

[7] In this regard we can recall, L. Picardi, 'Strutture e principi di governance' in G. Guizzi ed, *La governance delle società pubbliche nel d.lgs. n. 175/2016*, (Milano: Giuffrè, 2017), 17, 21-25; V. Donativi, *Le società a partecipazione pubblica* (Assago: Milanofiori, 2016), 11; P. Pettiti, ' Art. 3: Tipi di società in cui è ammessa la partecipazione pubblica', in G. Meo and A. Nuzzo eds, *Testo unico sulle società pubbliche, Commento al d.lgs. 19 agosto 2016, n. 175* (Bari: Cacucci Editore, 2016), 51-55.

[8] C. Bevilacqua, n 6 above, 3-6.

community, both the exercise of energy business activities, and the pursuit of a solidarity purpose in favor of the territory and the population in which the energy community operates.

Indeed, the energy community could also be established through a contract of association attributable to the qualification of entity of the Third Sector, if its activity is subsumed in the 'interventions and services aimed at protecting and improving the conditions of the environment and the prudent and rational use of natural resources, excluding the activity, habitually exercised, the collection and recycling of urban waste, special and hazardous', pursuant to art. 5, first paragraph, letter e), decreto legislativo no 117/2017.

Finally, of particular interest are also the foundation contract and the social enterprise contract. With regard to the first, it should be stated that the foundation contract should be understood as a rule in the form of the foundation of participation, in order to ensure the open and participatory character of the energy community, although it is considered necessary to make some adjustments to those that would be necessary to establish an energy community in the form of an association.

As for the social enterprise contract, it is of particular relevance provided that the relevant entity pursues 'civic, solidarity and social benefit purposes', pursuant to art. 2, first paragraph, decreto legislativo no 112/2017 or alternatively, has at least thirty percent of its workers belonging to the categories of disadvantaged persons referred to in art. 2, fourth paragraph, decreto legislativo no 112/ 2017, or carries out on a stable and main basis energy enterprises subsumed in the activity of general interest referred to in art. 2, first paragraph, letter e), decreto legislativo no 112/2017. The provision recalled so textually reads: 'interventions and services aimed at safeguarding and improving the conditions of the environment and the prudent and rational use of natural resources, with the exclusion of the activity, habitually exercised, of collection and recycling of urban, special and dangerous waste'.

In fact, the social enterprise cannot be controlled by public administrations, it cannot pursue the lucrative purpose if in foundational or associative form and, if in corporate form, the distribution of profits is strongly limited. It follows that the eventual lucrative purpose of the energy community, even if constituted in the form of a lucrative company, would certainly be pursued in a secondary and non prevalent manner.

4 The Open Character of Energy Communities and the Prevalent Mutual Purpose

It is now well known that, according to the aforementioned EU regulations, energy communities must be configured as organizations that are completely open both in terms of entry and exit.[9] On this point, it is worth recalling the idea of the European legislator, according to which competitive energy markets can only be

[9] On this matter see, E.Cusa, *Sviluppo sostenibile* n 2 above, 82-84; E.Cusa, *La cooperazione energetica* n 4 above, 15-16.

achieved by guaranteeing the freedom of the consumer to change his supplier, seller or reseller of energy or his aggregator of energy services. If this is true, it is believed in doctrine that the member of the community who is not using any supply or aggregation service may not be recognized *ad nutum* withdrawal, when he simply chooses his own supplier or aggregator, since in that case there is no change of provider of the relevant service.[10] Given this, if one wishes to guarantee the right of entry, it will then be sufficient to foresee the duty of the administrative body to admit into the community those interested in purchasing the goods or energy services produced by the same.

With regard to the right of exit that the member of the entity wishes to recognize by statute in the event that he or she wishes to change his or her energy supplier or energy services aggregator, it will be sufficient to provide for a cause for withdrawal from the entity corresponding to the occurrence of this situation.[11] The exercise of the related right of withdrawal could, however, be jeopardized by the business continuity of the energy community in two ways, that is, by making the community lose the liquidity needed to pay the withdrawing party the liquidation fee, or by making the community lose the ability to carry out an economic activity, no longer having a sufficient number of members interested in its production.[12] Another peculiarity characterizing the energy community model is that of the pursuit, through their constitution, of a prevalent mutual purpose.

From the EU regulations on energy communities it can be deduced that they must have as members at least domestic energy consumers, must sell energy and/or energy services to their members and may be multi-sectoral.

It is indeed precisely the reaction to the selfish interests of domestic consumers that guarantees the success of energy communities with a mutual purpose.[13] In essence, only if these consumers can have an economic benefit, which must come from the fact that domestic consumers pay for energy consumed at a price as close as possible to the cost of production, and consisting in establishing mutual exchanges with their community, the same will have a growth and consolidation as a constant and efficient energy project union. In addition, the consumers themselves should enjoy additional economic benefits in mutual exchange, especially if they are members of a CER, for all reasonable tax treatment.[14]

In order to ensure both the active participation of members and the economic sustainability of the co-managed company, it will be essential in the context of an energy community, to provide a framework for the participation of members not only in the organization of the company but also in mutual exchanges.

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[10] U. Barelli, 'I limiti alle energie rinnovabili con particolare riferimento alla tutela della biodiversità' *Rivista Giuridica dell'Ambiente*, 1, 6-10 (2014).

[11] M. Grippo and F. Manca, *Manuale breve di diritto dell'energia*, (Padova: Cedam, 2008), 45.

[12] A. Maestroni and M. De Focatis, *Politica energetica, regolazione e mercato. Il nuovo diritto dell'energia tra libertà e limitazioni concorrenziali e ambientali*, (Milano: Giuffrè, 2012), 29.

[13] M. Marletta, 'Il quadro giuridico europeo sulle energie rinnovabili', in G. Strozzi and R. Mastroianni eds, *Diritto dell'Unione Europea* (Torino: Giappichelli, 2014), 465.

[14] E. Cusa, *Le forme di impresa privata diverse dalle società lucrative tra aiuti di Stato e Costituzioni economiche europee* (Torino: Giappichelli, 2013), 40.

The pursuit of the mutual purpose by the energy community, however, does not guarantee that the related energy services will be offered primarily to consumer members. In fact, it is good to consider the possibility that the energy produced by the community is purchased mainly by third parties at economic conditions, however, worse than those applied to the same members of the community in the sale of goods and services produced by the community itself. Then, by virtue of what has been said, the energy community in a future scenario could be configured as an entity that pursues primarily a mutual purpose and accessory ally a purpose not only altruistic but also solidarity.[15]

By virtue of the purposes imposed on CECs and RECs by Directive 2018/2001/EU and Directive 2019/944/EU, the optimal contractual models for pursuing them appear to be that of the cooperative society, hopefully with an internal organization governed by the domestic consumer members, if a mutualistic purpose is to be pursued, possibly with accessory altruistic aims, the cooperative being the typical organization in the world for carrying out mutual and solidarity-based enterprises, without however excluding that where the energy community comes to be configured as an entity that pursues only an altruistic aim, it can also take on the legal form of an association or foundation.

However, as will be seen better in the following, it would be preferable to constitute the energy community under Italian law always in the form of a cooperative, when it also pursues an altruistic purpose, in view of the fact that the civil law of associations and foundations was designed for organizations normally exercising non-economic activities, while the energy community must still be configured as 'enterprise'. Therefore, the energy community, if it were in the form of an association or foundation, could be subject to rules that are not suitable for adequately protecting the various interests involved in the exercise of its economic activities and, in particular, the interests of its creditors.[16]

5 Energy Cooperation as an Instrument for the Protection of Energy Consumers

Having said this, as has already emerged, in identifying the legal form of the energy community, in accordance with the rules of our legal system, two contractual cases have been particularly highlighted and which should be examined in depth. In the first place, we will start with an examination of the network contract figure, to arrive, then, to endorse, in the end, the juridical characteristics of another figure, the cooperative society which, for its characteristics, better resembles what has been foreseen in this work.

The network contract, recently introduced in our legal system, is characterized by the communion of purpose among the contracting parties and, where it is plurilateral, the legislator expressly recalls the discipline of the plurilateral contract with communion of purpose, to which is connected the general principle of

[15] On this topic see V. Blummer et al, 'Conflict handling in renewable energy cooperatives (RECs): organizational effects and member well-being', 88 *Annals of Public and Cooperative Economics*, 179, 181-182 (2017).

[16] C. Bellantuono, 'Le reti di imprese nel settore dell'energia' *Mercato Concorrenza Regole*, 299, 301-303 (2013).

preservation of the same to safeguard its stability. So that, in case one of the parties to the contract should fail (for example, due to the withdrawal of one of the companies), the network contract will remain valid and effective for the other parties.[17] The reference regulatory framework specifies that the network contract can be stipulated by 'more entrepreneurs', therefore, the contracting parties must be entrepreneurs regardless of their respective nature (therefore, also individual enterprises, companies and public entrepreneurs, also non-commercial, are included).

Therefore, public bodies whose exclusive or main purpose is a business activity that is not necessarily commercial can be part of the network, as well as non-profit companies. As far as participation in the network is concerned, the contract has an open structure, characterized by the possibility of new entries in the network and will therefore necessarily have to foresee the criteria for the adhesion of new subjects, without prejudice to compliance with the subjective requirements indicated above. On the basis of what has been explained, it can be asserted that where the energy community assumes the legal form of the network contract, it would preclude ordinary consumers, physical persons, from participating in the community, given that a limitation characterizing the network contract is constituted by the fact that only 'entrepreneurial' subjects can participate in the network, whether physical persons or bodies, except in cases where the exception is expressly provided for by special laws.

Following the analysis of the network contract figure, it is worth highlighting how the most tested and applied legal form of the energy community in Europe, that is the form of the energy cooperative, which occurs when the legal entity pursues its mutual purpose through exchanges having as their object the sale of energy to members, in addition to any other related services, has proved to be of particular interest. This business model is among the forms of energy cooperation, able to balance the interests involved in the long-term operation of energy companies, and therefore should be preferred by the regulator.[18]

The cooperative is a multi-personal contract, onerous and with a common purpose. Cooperatives with prevalent mutuality are defined as those legal persons that carry out their activity mainly in favor of members, consumers, users of goods or services; they make use, mainly, of the working services of members as well as of goods or services provided by members. The consumer, in this case, is transformed into a (self-)producer of goods and/or services he needs; therefore, the cooperative allows the consumer to protect his economic interests without any intermediation. The consumer member can be anyone in the abstract, and therefore also a natural person or an entrepreneur; the latter distinction is useful, for example, if you want to promote organizational models aimed only at buyers of energy for domestic use or only small entrepreneurs, oriented to the pursuit of a consortium purpose. Of course, in the presence of only consumer members who are entrepreneurs, the energy cooperative will pursue, at the same time, a mutual purpose and a consortium purpose, the latter being a species of the former.

[17] M. Grippo and F. Manca, n 11 above, 45.

[18] E. Cusa, n 4 above, 7.

The cooperative, if it only buys energy to sell it to its members, will usually need less investment than the cooperative that also produces energy. However, in both cases, the investments will be crucial in the start-up phase of the company, either to build (or buy or rent) the production facilities or to implement the company/corporate organization; the latter, in fact, must be able to manage a significant amount of final customers such as to allow, at first, to support the company costs in the start-up phase and, in a second time, to make profits.

The establishment of a new energy cooperative may represent the last and most stable stage of collaboration between consumers and/or producers of energy. In fact, following an order of increasing organizational complexity, consumers and/or energy producers, before establishing a cooperative, can go through the following three intermediate models: the collective purchasing group between domestic users, or between entrepreneurs or between aspiring energy producers; the network contract between entrepreneurs, possibly to exchange only technological innovation and good practices (as it already happens among some work cooperatives in the field of energy services); the consortium contract according to art. 2602 of Civil Code, such as the one currently established between a significant number of cooperative credit banks, aimed at offering energy services not only to these banks, but also to the customers, partners and employees of these banks.

In particular, the cooperative with the sale of energy to members as its main mutual purpose is relevant, since this company, among the forms of energy cooperation, could be the one with the most significant impact on the national energy market.[19] In fact, the Authority for Electricity, Gas and Water, thanks to energy cooperation, can simultaneously pursue two of the main tasks assigned to it by its founding law: 'to ensure the promotion of competition and efficiency' in the energy sectors and, at the same time, to promote 'the protection of the interests of users and consumers'.

However, in order for this to happen, it is necessary for the legislator and the Authority for Electricity, Gas and the Water System to rethink the rules to safeguard users in the energy sectors. This rethinking is more urgent than ever, to the extent that forms of energy cooperation are realized, both by joining consumers and producers, and by joining subjects who are simultaneously consumers and producers of energy. The desired rethinking of the regulator, aimed at promoting the growth of energy cooperatives, should allow the above authority to regulate energy markets, not limiting itself to protecting the weaker consumer through a series of mandatory rules applicable to exchange contracts having as their object the sale of energy and not assuming the existence of private operators in the energy sector substantially corresponding only to corporations operating non-small companies .

In fact, the energy consumer can be effectively protected by devising an adequate discipline of energy operators, whose very governance and purpose contribute to guaranteeing that consumer. In other words, in the energy sector, a discipline should be established that is truly proportional not only to the size of the regulated

[19] F. Spinicci and P.A. Mori, 'Le cooperative di utenza in Italia e in Europa' *Euricse Research Report* 1, 35-38 (2011).

company, but also to the legal form of the private company, effectively promoting those forms (such as the cooperative) that are more consistent with the principles of the Italian and European economic constitutions.

Energy cooperatives can contribute, at the same time, to the pursuit of all the above-mentioned community objectives, since the owners of these enterprises are not interested in the maximum financial return on their investment, but rather in reducing their energy consumption, working in the energy sector and paying less for the energy consumed. Moreover, the cooperative, being democratically controlled, can become one of the private actors most capable of involving consumers in the realization, in Europe, of sustainable development.

Sustainable development certainly constitutes the principle, now also a juridical one, suitable for balancing development (necessarily achievable by consuming energy) and nature protection. But, then, in regulating energy and the environment, the European Union and its member states should remember that the cooperative could help public authorities to pursue sustainable development thanks to the convinced participation of European citizens. In fact, this form of entrepreneurship could facilitate, at the same time, widespread private investment in renewable energies and a conscious adhesion (also cultural) of European citizens to the community's energy and environmental objectives.

In short, then, energy cooperatives could be one of the pillars for achieving one of the objectives of the community energy policy outlined in article 194 of the Treaty on the Functioning of the European Union, 'taking into account the need to preserve and improve the environment: promoting energy saving, energy efficiency and the development of new and renewable energies'.

The active participation of citizens in the objective of achieving a social market economy could lead to further profitable collaborations between energy cooperatives and local authorities,[20] as is already happening in some pioneering projects in Italy and Europe.[21] Among these projects, it is interesting to point out that of the so-called community cooperatives, born in some Italian regions, whose mutual production of electrical goods and services can constitute the source of a series of economic advantages for the community of reference of such a cooperative. Thus, in the near future, in Italy, as is already the case in portions of the French and English territories, thanks to energy cooperatives, citizens will be able to actively participate in the energy planning of their community.

6 A Deeper Look on the Energy Community in UK, France, Germany, and Finland

In energy cooperatives, as we have already discussed, the members are the users of a service who join together to satisfy their needs in a mutual way. That said, it is

[20] E.C. Tortia, 'L'impresa come bene comune. Il caso della accumulazione e uso delle risorse comuni nelle imprese cooperative', in L.Sacconi and S. Ottone eds, *Beni comuni e cooperazione* (Bologna: Il Mulino, 2015), 301.
[21] K. Kotilainen, 'Energy Prosumer's Role in the Sustainable Energy System' in W. Leal Filho et al eds, *Affordable and Clean Energy. Encyclopedia of the UN Sustainable Development Goals* (Cham: Springer Nature, 2020), 3-7.

now worthwhile to take a comparative look at what happens in the field of user cooperatives in other countries[22].

By way of example, we can include the cooperatives that exist in the United Kingdom, which, in turn, does not have specific legislation on the subject; these fall within the category of mutuals, as defined by 'Ica': '*an autonomous association of people who voluntarily join together to satisfy their economic, social and cultural needs and aspirations through the creation of a jointly owned and democratically controlled society*'.

In the English regulatory context, cooperatives are registered under the Industrial and Provident Societies Act of 1965; they have legal personality and limited liability. 'Energy4all' (a not for profit company) is an example of a company owned by renewable energy cooperatives in the UK and was founded by the Baywind Energy Coop: whose mission is to promote these renewable energy cooperatives owned by the same members of the community in which they are established; all profits made are reinvested in the projects it carries out and the electricity produced is sold under contract and delivered into the distribution network. Among the largest Energy4all cooperatives are the '*Westmill Wind Farm in Oxfordshire and Core'*, whose aim is to support communities that want to create businesses to produce electricity in a sustainable way.

Having said this, it should be pointed out that Great Britain seems to lack a real market for balancing services as the National Grid Electricity Transmission, formerly the National Grid Company, buys primary regulation, secondary regulation and tertiary regulation services through tenders and bilateral agreements.

In the market for balancing services, aggregators of responsive loads and distributed generation systems are admitted. Participating in this market are, principally, large industrial and commercial sites, equipped with programmable generators and driven by diesel engines, equipped with interruptible working processes, equipped with large cogeneration, refrigeration, air conditioning and lighting systems. Aggregators, in their operations in the market for balancing services, are not required to be authorized or to inform the supplier of the consumer or the owner of the facilities in general; aggregators tend to have direct contact with consumers and owners who are only required to inform the supplier if they participate in a Demand Response program.

The effective participation of responsive load aggregators in Demand Response programs and in the market for balancing services is hindered by two factors. The first factor is the fragmentation of the market for balancing services, which provides for different technologies and characteristics of the various services, while the second factor is precisely the regulatory framework of reference and the procedural and operational requirements; this is because both the regulatory framework and the requirements are considered inadequate and a major reform is awaited.

In Germany, cooperatives are governed by a specific law, the Genossenschaftsgesetz (cooperative act). In this law, the cooperative is considered

[22] K. Cseres, 'The active energy consumer in EU law' 9 *European Journal of Risk Regulation*, 227, 231-234 (2018).

as a form of company whose purpose is the economic support of its members. A number of classification schemes are assumed, including:

-Energie-verbraucher-genossenschaften (energy consumer cooperatives): creation of these cooperatives on the initiative of the users and are mainly involved in the sale and distribution of electricity and gas to end consumers;

-Energie-produktions-genossenschaften (energy production cooperatives): members produce and distribute energy and the income from this activity is shared among the members;

Energie-Erzeuger-Verbraucher-Genossenschaften (energy producer-consumer cooperatives): integrated organizations through which a community pursues self-sufficiency in energy supply; this category includes the so-called Bioenergiedörfer (bioenergy villages), i.e. bioenergy villages/countries that seek to meet their electricity or heat needs through biomass;

-Energie-dienstleistungsgenossenschaften (energy service cooperatives): energy service cooperatives that may include consulting, but also purchasing and sales functions.

In France, cooperatives are governed by a law dated 10 September 1947; they are defined as partnerships or companies with variable capital whose purpose is to sell to their members consumer goods purchased or produced by the cooperative itself or in collaboration with others. A typical case is 'Enercoop Scic': the cooperative buys the electricity produced by its members using renewable sources and then feeds it into the public distribution network; the primary purpose is to promote the production of electricity from renewable sources and to spread responsible behavior among consumers with regard to energy consumption.

In short, it emerges that the French regulatory framework allows independent aggregators to enter into contracts directly with residential consumers, without the need for agreements with their suppliers. Already for many years, large industrial customers have been participating in the market for balancing services; the same is true for aggregation of residential customers, especially thanks to interesting pilot projects carried out from 2003 to 2007.

In 2013, France established the mechanism called '*Notification d'echanges de blocs d'effacement'*; this is a 'block exchange notification' demand response mechanism that allows consumers to participate in the electricity market through load shedding for the purpose of reducing peaks in electricity demand without the need to enter into bilateral contracts with the dispatching user. Thanks to this mechanism, as of January 2017 users with cut or reduction capacity of at least 100kW can participate directly in the intraday market in addition to the day-ahead market, thus becoming demand response aggregators; below this threshold, participation is indirect and takes place through an aggregator. On the contrary, the provision of the secondary reserve regulation service requires the signing of a bilateral contract between consumers, aggregators and producers.

With regard to the capacity mechanism, the rules allow aggregators not to have to sign contracts with suppliers; at the same time, there is a payment from the aggregator to the supplier and the dispatching user for the costs of supplying the

supplied electricity. A limitation to aggregation stems from the fact that in balancing programs it is not possible to aggregate both irresponsive load and generation within the same offer. Another obstacle to demand aggregation is the lack of a maximum number of service activations during a day or year, and many sources of flexibility, such as electric heating which would have great potential, are excluded from the market as they can only provide secondary reserve during peak hours. Another issue is the pre-qualification done at the performance level that can be guaranteed by the aggregator, so each aggregator must meet all the technical requirements typically required of large generators.

Finally, shifting now the attention to Finland, it emerges that it has set up several initiatives and projects to enable the aggregation of responsive loads and activate Demand Response programs in a wide context, including also the residential sector, with a special focus on the management and smart operation of smart grids and distribution infrastructure, active resources, market integration and new business models. Other initiatives and projects are aimed at defining flexibility requirements for the planning and operation of integrated electricity and gas markets, also because there is a significant presence of thermal loads in Finland.

At the moment in Finland there are no incentive policies in place such that electric distribution system operators have utility and interest in implementing Demand Response programs. In addition, in the national regulatory framework, the role of the aggregator in controlling flexibility is unclear and incentives are only available for operating costs when they do not exceed 1% of permitted revenues. Aggregation of generation facilities, possibly distributed, is a fairly common activity. The only market open to independent aggregators is the primary reserve market, while other markets require agreements with the dispatch user. There is currently a pilot project to introduce independent aggregators to the tertiary reserve regulation services market.

7 Conclusions

That the energy community, in the form of a cooperative, can become an effective means in the hands of consumers organized among themselves not only to become protagonists in the energy sector, but also to receive adequate protection (including economic) mainly thanks to the union of their forces, seems to be demonstrated by the fact that the cooperation in question is promoted by international organizations, is significantly growing quantitatively in some parts of the world and is even pointed out by some scholars as the most modern form of energy business in the economy of tomorrow.

It should also be pointed out[23] that a network of energy cooperatives can allow them to operate effectively in the increasingly competitive and regulated energy market, while remaining small or medium-sized enterprises and maintaining their territorial roots. It is precisely the territorial rooting of consumer energy cooperatives, together with their belonging to a common consortium, that should

[23] M. Marletta, n 13 above, 465; E.Cusa, n 4 above, 9.

avoid useless competition among cooperatives and facilitate the outsourcing or sharing of some phases of their respective enterprises.

The desired promotional scenario consists precisely in making the business models corresponding to energy cooperatives known, as well as leading to their more favorable treatment.[24] In other words, by promoting aggregations among energy consumers, it will be possible to contribute to the realization and implementation, in this economic sector, not only of a healthy horizontal subsidiarity, but also of a development that is more democratic, more sustainable and certainly more suitable for the use of renewable energy sources.

[24] G.B. Zorzoli, n 1 above; on this topic, see also G. Bologna, 'Verso una scienza della sostenibilità' *Equilibri,* 75 (2004); P. Brambilla, 'Produzione di energia da fonti rinnovabili e tutela delle aree protette: le nuove frontiere del bilanciamento degli interessi' *Rivista Giuridica dell'Ambiente*, 408, 410-413 (2013).

The Notion of Consumer: Comparative Legal Profiles

Maria Paola Mantovani

Abstract: Consumer law attends the growing diffusion of logic based on a collaborative economy. Emblematic of this process is the prosumer that the sharing economy has placed next to the consumer and the professional. Arising from this is the idea of carrying out a renewed reflection on the notion of consumer and prosumer in both domestic and French contexts.

Keywords: Private Comparative Law, Sharing economy, Consumer, Prosumer

1 Consumer Law and new Bargaining Methods

The switch from the national sphere to the European one has represented one of the main driving factors for the emergence of consumer legislation,[1] whose core is founded on the adoption of a system of rules inspired by the protection of consumer rights and interests. Protection of consumers represents one of the areas that have been lent greater impetus at European level, thanks to the adoption of a specific regulatory framework.[2]

The process of European integration has led to an expansion in the centres of legal production and, more generally, in the circle of regulatory sources, since we must currently talk of a system of sources marked by the presence of different regulatory levels (State-based, European and international)[3]. This has facilitated a broadening of market operations and economic exchanges, a contribution to which

[1] P. Perlingieri, 'Normativa comunitaria, rapporti economici e interpretazione' *Rivista giuridica del Molise e del Sannio*, 298 (1993); E. Caterini, 'Politica dei consumi e diritto dei contratti. Il paradigma del principio "generale" di sicurezza' *Rassegna di diritto civile*, 627 (2006); P. Nebbia, 'La politica comunitaria di tutela dei consumatori nell'ottica del mercato interno' *Obbligazioni e contratti*, 738 (2007).

[2] L. Nivarra, 'Rimedi: un nuovo ordine del discorso civilistico' *Europa e diritto privato*, 583 (2015), which, with specific regard to consumer contracts, excludes the remedial character of withdrawal 'highlighting, conversely, the nature of substantial rules that pursues the objective of incentivising access to some contractual types (and, therefore, to some markets or segments thereof) via a strategy witnessing the combination, pursuant to an undoubtedly rational design, of a strengthening of the communication flow and a weakening ("for a fixed term", given that, upon the expiry of a period that varies depending on when the consumer has been informed of the existence of the right of withdrawal, his right to enforce it falls away) of the contractual bond (or, if you prefer, with one part of the legal theory, watering down of its consolidation process)'.

[3] 'In the current terminology, the expression "European law", again in the sense of European Union law, seems destined not only to supplant the more prosaic (Eurocratic) expression of Community law, made in any event obsolete by the Treaty of Lisbon, but also to represent, compared to the latter, a quality step ahead, which corresponds to a transcendence of the functionalist phase of economic integration, towards a constitutional phase of regulatory integration', (L. Moccia, 'Comparazione giuridica, diritto e giurista europeo: un punto di vista globale' *Rivista trimestrale di diritto e procedura civile*, 767 [2011]). G.A. Benacchio, *Diritto privato della Comunità Europea. Fonti, modelli e regole* (Padova: Cedam, 2nd ed, 2001), 276.

has undoubtedly come from the phenomenon of globalisation,[4] though some prefer to speak of 'planetarisation',[5] of market economy.[6]

The contract-market pairing represents the cornerstone the regulation of consumer protection has drawn its origin from, and the study of new economic models cannot accordingly be tackled in a correct form unless we move from an analysis of the set of rules governing consumers.

In the current historical manual, a different perspective arises within which the market and the economic initiative come to be structured, that of the transnational markets, which operate within a global market economy. Arising from this is the advent of new bargaining methods founded on the exchange, offer and purchase of goods and services from and between subjects devoid of a professional nature.[7]

Emblematic in this sense is the energy market,[8] as a market sector in which goods and services can be self-produced, one dominated by the presence of a new figure, the prosumer, who operates without professional intermediaries, and actively participates in the so-called collaborative or sharing economy,[9] as a phenomenon delineating the offer and purchase of goods and services from and between subjects devoid of a professional nature.

We can consider the prosumer a consumer who is also a producer of goods or provider of services.[10] The innovative impact intrinsically lies in the possibility, for non-professional subjects, of acting on the market as economic actors.

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[4] G. Iudica, 'Globalizzazione e diritto' *Contratto e impresa*, 867 (2008); G. Alpa, 'La c.d. giuridificazione delle logiche dell'economia di mercato' *Rivista trimestrale di diritto e procedura civile*, 725 (1999).

[5] E. Fazzalari, '"Mondializzazione", politica e diritto' *Rivista trimestrale di diritto e procedura civile*, 681 (2000).

[6] N. Scannicchio, 'Il diritto privato europeo nel sistema delle fonti. I presupposti per la formazione del diritto privato europeo', in N. Lipari ed, *Trattato di diritto privato europeo* (Padova: Cedam, 2nd ed, 2003), I, 47; S. Pagliantini, *Nuovi profili del diritto dei contratti* (Torino: Giappichelli, 2014); C. Camardi, *Certezza e incertezza nel diritto privato contemporaneo* (Torino: Giappichelli, 2017).

[7] A. Quarta, 'Il diritto dei consumatori. Prestatori di servizi e prosumers ai tempi della peer economy: primi spunti' *Europa e diritto privato*, 667 (2017).

[8] In order to facilitate a process of ecological transition and energy efficiency that represents one of the priorities in the political agenda both nationally and worldwide, it is seemingly significant that among the Missions indicated in the National Recovery and Resilience Plan (PNRR), Mission 2 (Green Revolution and Ecological Transition) makes specific reference to investment and research programs for renewable sources, thereby facilitating energy efficiency and the redevelopment of buildings. (On the issue, A. Muratori, 'Il PNRR italiano all'esame della Commissione europea: le novità della "versione Draghi"' *Ambiente e sviluppo*, 417 [2021]). We should mention at European level that on 30 November 2016 the Commission presented the 'Clean energy for all Europeans' package, known as 'Clean Energy Package', which includes several regulatory measures in five essential sectors of European energy policy. The objective of the program is to set up an altogether new European system preserving the level of competitiveness and production of the entire Union, in the face of the changes imposed on markets by the transition towards clean energy. In other terms, the European Union shall have to adopt an integrated energy system at continental level enabling energy flows to freely transit between Member States, which is founded on competition and on the optimal use of resources, and, above all, implements a sustainable economy.

[9] G. Smorto, 'Verso la disciplina giuridica della sharing economy' *Mercato, concorrenza, regole*, 245 (2015). D. Di Sabato and A. Lepore, *Sharing economy. Profili giuridici* (Napoli: Edizioni Scientifiche Italiane, 2018).

[10] A. Toffler, *The Third Way* (New York: Morrow, 1980). M. Maugeri, 'Elementi di criticità nell'equiparazione, da parte dell'AEEGSI, dei "prosumer" ai "consumatori" e ai "clienti finali"' *La nuova giurisprudenza civile commentata*, 406 (2015), remarks that outside legal jargon the expression prosumer indicates in any event a consumer who is in turn producer/professional or a consumer who contributes to the production. While the figure is well known in the IT sector and in the musical market, jurists are no doubt scarcely familiar with it.

We can identify the most problematic legal issues in this regard in the different characteristics of the consumerist system,[11] marked by an uneven bargaining,[12] in which control over the contractual balance is, first of all, a control over the synallagmatic relationship, in accordance with principles of rationality and equity, essential elements for the existence of a fair exchange,[13] compared to the phenomenon of collaborative economy that seems far removed from the logic of an asymmetrical bargaining.

The mandatory nature of consumerist provisions operates as a result of the need to ensure a specific system of protections in favour of the weak contracting party, with a view to eliminating the informational asymmetries between professionals and consumers and thereby allowing the conclusion of contracts between parties sufficiently aware of advantages and risks and accordingly capable of expressing a consent based on a correct assessment of the convenience of the contractual transaction.[14]

In a different form, the model of collaborative economy is the expression of a logic of exchange characterised by a basically levelled position between the subjects, given that reference is made to a consumer who is simultaneously producer or professional, or to a consumer who contributes to the production side.

From an exegetical viewpoint, it is clear that the very possibility of offering and purchasing products and services from non-professional subjects threatens the basic premise of consumerist protection, namely, the existence of an imbalance between the parties,[15] embodied in an informational and contractual, and not just economic, asymmetry between consumer and professional.

In the so-called peer economy or economy between equals, the relationship is presumed to be fully horizontal, not governed 'by hierarchical relations, and, therefore, the dimension of consumption once again expresses a relationship between equals, eschewing that principle of uneven law that, by enjoining the ascertainment of factual disparities, had contributed to establishing the consumerist system'.[16]

Specifically as regards the latter aspect, even within the scope of collaborative economy, however, we must necessarily take into account the positions of greater or lesser contractual force of the subjects who are the protagonists of the economy market.

That imposes on us a duty to verify, in the first place, the nature of the parties to the performance, lavishing special attention on the one that provides the service.

[11] Lastly, S. Pagliantini, 'In memoriam del consumatore medio' *Europa e diritto privato*, 1 (2021).

[12] Generally, as an example out of many, V. Roppo, 'Giustizia contrattuale e libertà economiche: verso una revisione della teoria del contratto?' *Rivista critica del diritto privato*, 599 (2007); F. Galgano, 'Libertà contrattuale e giustizia del contratto' *Contratto e impresa/ Europa*, 509 (2005); A. Zoppini, 'Il contratto asimmetrico tra parte generale, contratti di impresa e disciplina della concorrenza' *Rivista di diritto civile*, I, 515 (2008).

[13] G. Vettori, 'Giustizia e rimedi nel diritto europeo dei contratti'*Europa e diritto privato*, 53 (2006).

[14] S. Patti, 'Il contratto tra "autonomie de la volonté" e moderno "zwingendes Vertragsrecht"' *Rivista trimestrale di diritto e procedura civile*, 369 (2015).

[15] A. Quarta, n 7 above, 667.

[16] ibid.

Add to it the fact that the sharing economy is a sector dominated by production and consumption, which must be implemented in the most rational, balanced and efficient manner possible.[17]

The role of consumer legislation currently denotes signs of mobility and dynamism, which are not only translated into novel terms – just think of the contracting party who expresses all his potential both as producer and as user of the service[18] –, but also impact on the contractual dynamics.

The contribution aims, from that viewpoint, to carry out a reflection on the notion of consumer[19] within the Italian and French context, marked by a solid tradition in the consumerist field, and on the figure of the prosumer, starting from the idea that the notions do not simply deal with a definitional issue, since there is always a need to conduct an analysis on the manner in which the bargaining took place to ascertain whether, concretely speaking, the application of a specific regulatory body could be deemed to exist.

2 The Notion of Consumer

It is clear nowadays that 'to operate for the protection of the consumer does not only mean to restore to the non-professional counterparties of the business an institutional role of protagonists in every market sector. It means, even prior to that, to guarantee to them all forms of protection a consumer is entitled to as "person", according to the unequivocal rationale behind art. 2 of the Italian Constitution'.[20]

In that sense, the consumer does not eclipse the person, conferring on it, instead, a peculiar declination as subject who taps into the market to satisfy his own needs.[21] The quality of consumer confers on the person a position and a specific role, and acts as ineluctable prerequisite for the application of a structured regime of protections.[22]

[17] G. Napolitano, 'La tutela dei consumatori e la regolazione pubblica del mercato elettrico', in E. Bruti Liberati and F. Donati eds, *Il nuovo diritto dell'energia tra regolazione e concorrenza* (Torino: Giappichelli, 2007), 245.

[18] It seems possible to state that even within the folds of consumer law a trend is developing, corroborated by the recent case law of the highest court (Cassation 14257/2020), which is grounded on the value of the principle of self-responsibility of the consumer.

[19] M. Intravaia, 'Il restyling della nozione di consumatore' *La nuova giurisprudenza civile commentata*, I, 385 (2016).

[20] M. Bessone, 'La disciplina delle attività d'impresa e le norme costituzionali a tutela della persona-consumatore' *Giustizia civile*, II, 417 (1981).

[21] A. Nicolussi, 'I consumatori negli anni Settanta del diritto privato. Una retrospettiva problematica' *Europa e diritto privato*, 906 (2007). (In the first sense, the consumer becomes a deliberately neutral objective element, a pawn within a context of organicistic regulation of the market in which the presumed maximisation of global wealth tyrannises any other viewpoint. To the extent, instead, that the market yields to the idea of so-called economic constitution understood as 'legal determination of an economic order complying with certain prescriptive principles laid down in the Constitution', the need arises for a 'legal order that implements the principle of man's pre- eminence over the economic matter').

[22] Let me refer to M.P. Mantovani, *La vendita dei beni di consumo* (Napoli: Edizioni Scientifiche Italiane, 2009), 45.

In the legislative interventions that have succeeded each other over time, the concept of consumer status[23] has been construed as instrument having a promotional function, as it acknowledges in favour of a peculiar category of subjects, that of consumers, a specific system of protections, in order to overcome a position of substantial weakness, heralding negative effects for both the legal-patrimonial sphere of the individual and the entire economic and exchange system.[24]

Historically, the notion of consumer[25] has been constructed by relying on the conceptions of State, market and society,[26] and thus, to understand it properly we must refer to various economic, sociological and legal disciplines.[27]

The market is the place of production, work and exchange of goods and services where a plurality of subjects with different and sometimes conflicting interests, such as the entrepreneur, the professional, the user and the consumer, operate.

From a regulatory viewpoint, the definition of consumer[28] could be discerned in the Consumer Code[29] that has forged a dual formulation, one of general character, in Art 3, para 1, letter a), [30] and the other, specific, governed by Art 18, para 1, letter a), dedicated to protection in the event of commercial practices, advertisement and other commercial communications.[31] The regulatory framework[32] is mainly characterised by a restrictive-negative connotation,[33] revolving around the notion of consumer-natural person who acts outside any professional or entrepreneurial activity he carries out.

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[23] P. Perlingieri, *Il diritto civile nella legalità costituzionale secondo il sistema italo – comunitario delle fonti* (Napoli: Edizioni Scientifiche Italiane, 3rd ed, 2006), 511. P. Rescigno, 'Status I) Teoria generale' *Enciclopedia giuridica* (Roma: Treccani, 1993), XXX, 1; Id, 'Situazioni e status nell'esperienza del diritto' *Rivista di diritto civile*, I, 213 (1973); G. Alpa, *Status e capacità* (Bari: Laterza, 1993). There are those who consider status a specific subjective situation. Along these lines: A. Iannelli, *Stato della persona e atti dello stato civile* (Camerino-Napoli: Edizioni Scientifiche Italiane, 1983), 58; F. Prosperi, 'Rilevanza della persona e nozione di status' Rassegna di diritto civile, 810 (1997).

[24] G. Chiné, 'Il consumatore', in N. Lipari ed, *Trattato di diritto privato europeo* (Padova: Cedam, 2nd ed, 2003), I, 469.

[25] F. Macario, 'Dalla tutela del contraente debole alla nozione giuridica di consumatore nella giurisprudenza comune, europea e costituzionale' *Obbligazioni e contratti*, 872 (2006).

[26] H.W. Mickilitz, 'Il consumatore: mercatizzato, frammentato, costituzionalizzato' *Rivista trimestrale di diritto e procedura civile*, 859 (2016).

[27] G. Chiné, n 24 above, 435.

[28] L. Rossi Carleo, *Diritto dei consumi: soggetti, atto, attività, enforcement* (Torino: Giappichelli, 2015), 35.

[29] G. Alpa, 'I diritti dei consumatori e il «Codice del consumo» nell'esperienza italiana, Sei voci sul «Codice del consumo» italiano' *Contratto e impresa/ Europa*, 4 (2006).

[30] Art 3, para 1, letter a) of the Consumer Code: 'For the purposes of this code: a) consumer or user means: the natural person who acts for purposes unrelated to the entrepreneurial or professional activity he might carry out'.

[31] Art 18, para 1, letter a) of the Consumer Code: 'For the purposes of this title, "consumer" means: any natural person who, in the commercial practices regulated by this title, acts for purposes that do not fall within the scope of his commercial, industrial, crafts-related or professional activity'.

[32] On the notion of consumer, when implementing Directive 93/13, Greece, Spain and the Netherlands have expanded the definition of consumer until it eventually came to comprise legal persons and small professionals as well. England, in turn, considers the small entrepreneur, too, a consumer (business consumer), and in 2006, by means of the Consumer Credit Act, extended the provisions of consumer credit law even to bodies bereft of legal personality (such as body corporates and partnerships).

[33] G. Chinè, n 24 above, 435; V. Zeno-Zencovich, 'Consumatore (tutela del). Aggiornamento' *Enciclopedia giuridica* (Roma: Treccani, 2000), 1.

Only contracts concluded for purposes unrelated to any entrepreneurial, commercial, artisanal or professional activity undertaken, and deployed in order to fulfil private consumption needs, may benefit from consumerist regulations. However, ascertaining when we can speak of personal purposes and how they can be distinguished from professional ones is no straightforward operation, as we must prioritise an objective interpretation, pursuant to the content, the subject matter and the circumstances under which the contract has been concluded.

According to the orientation of the Court of Justice,[34] the protection offered to consumers may not be extended to those subjects who act for mixed purposes, that is, for purposes that are simultaneously personal and relating to the professional activity, unless the latter, those linked to the professional activity, are so limited as to be irrelevant. Put it differently, one part of legal theory believes that legal protection may be extended to those who have concluded mixed contracts, provided that the personal activity is the prevalent one.[35]

At European level, case law,[36] repeatedly called upon to decide on the issue relating to the qualification of consumer, has intervened, recently as well,[37] to ascertain whether a subject who initially used a service for purposes exclusively traceable to the private life could lose the initial qualification of consumer if he uses the same service for professional purposes, as the question revolves around the mutability of the consumer status.[38]

It is worth noting that recital no 18 of the directive on alternative dispute resolution (directive 2013/11/EU),[39] despite confirmation of the interpretative line that revolves around the definition of 'consumer' as a natural person acting for purposes extrinsic to any commercial, industrial, crafts-related or professional activity, specifies that 'if the contract is concluded for purposes partly internal and partly external to the person's commercial activity (dual purpose contracts) and the purpose of the transaction is limited in such a manner that it does not prevail within the general context of the supply, such a person should likewise be deemed a consumer'.

The aforementioned regulatory scenario arises where a natural person purchases some good that is then used for both personal and professional reasons. This is further proof that there is a tendency to include in the regime of consumerist protections also those professionals who, in the light of an analysis to be conducted

[34] Case C- 464/01 *Gruber* v *Bay Wa A G* [2005], ECR I-00439.

[35] E. Minervini, *Dei contratti del consumatore in generale* (Torino: Giappichelli, 2006), 31.

[36] Case C-89/91 *Shearson Lehmann Hutton Inc.* v *TVB Treuhandgesellschaft für Vermögensverwaltung und Beteiligungen mbH* [1993], ECR I-00139; Case C-269/95 *Francesco Benincasa* v *Dentalkit Srl* [1997], ECR I-03767; Case C-464/01, n 34 above; Case C-110/14 *Horațiu Ovidiu Costea* v *SC Volksbank România SA* (EU Court [Fourth Chamber], 3 September 2015).

[37] Case C-498/16 *Maximilian Schrems* v *Facebook Ireland Limited* (EU Court [Third Chamber], 25 January 2018).

[38] E. Guerinoni, *I contratti del consumatore. Principi e regole* (Torino: Giappichelli, 2011), 15, points out that the notion of consumer lacks certain contents and that 'the vagueness characterising it stems from its sociological and economic genesis more than from its legal one'.

[39] European Parliament and Council Directive (EU) 11/2013 of 21 May 2013 on alternative dispute resolution with regard to consumers-ADR directive [2013] OJ L165/63.

in a concrete form, acted for purposes falling outside the professional activity performed.

3 *Le consommateur* in France

The French legal experience with the 1978 *Loi Scrivener* first and the *Code de la Consommation* subsequently,[40] has introduced a specific system of consumer protection, attesting to the central role played in the French legal model by the consumer protection policy.[41]

The essential lines of the French regulatory system refer to the structure of a contractual relationship between two categories of subjects, *professionnels* and *consommateurs*.

We must observe that one of the difficulties experienced by French law regards the determination of the subjective scope of application of consumer protection regulations, in view of the lack of a legal definition of *consommateur*. In France, the consumer is a variable notion associated with a diversified variety of characteristic acts and behaviours,[42] and we can thus aver that '*n'existerait pas un consommateur mais des consommateurs*'.[43]

The notion of consumer has long been derived thanks to the pronouncements made on a doctrinal level[44] and the contribution by binding judicial precedents that have operated as supplement to the (missing) legislative data.

French case law has consolidated a restrictive approach with regard to the notion of consumer, in line with European case law.

Thanks to the adoption of the criterion of direct relationship, in lieu of the one relating to professional proficiency, since 1995[45] the Cour de Cassation has arrived at a more restrictive conception of consumer. In the first place, a relevant aspect is that the consumer acts to fulfil personal needs, ie for other than professional purposes. We should furthermore stress that where the contract presents a direct relationship with the professional activity, consumer law may not be applied. That is the route the highest Court has taken to eventually assert, in a systematic fashion,

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[40] Code de la consommation, 26 July 1993, J.O. 27 July 1993, 10538. A. Sinay-Cytermann, 'Protection ou surprotection du consommateur?' *La Semaine juridique*, 51 (1994).

[41] N. Sauphanor, *L'influence de droit de la consommation sur le système juridique* (Paris: LGDJ, 2000).

[42] L. Landy, 'Le consommateur européen: une notion éclatée', in F. Osman ed, *Vers un code européen de la consommation. Actes et débats de colloque* (Bruxelles: Bruylant, 1998), 57; A. Sinay-Cytermann, n 40 above, 51; G. Raymond, 'Définir le consommateur' *Contr., conc. consomm.*, 3 (2004); G. Paisant, 'À la recherche du consommateur. Pour en finir avec l'actuelle confusion née de l'application du critère du «rapport direct»'*La Semaine juridique*, 549 (2003); J.P. Pizzio, 'Le droit de la consommation à l'aube du XXI siècle. Bilan et perspectives', in C. Albiges et al, *Études de droit de la consommation, Liber amicorum Jean Calais - Auloy* (Paris: Dalloz, 2004), 878 ; D. Mazeaud, 'Droit commun du contrat et droit de la consommation. Nouvelles frontiéres?', ibid, 710; Y. Picod and H. Davo, *Droit de la consommation* (Paris: Armand Colin, 2005).

[43] J. Mel, 'La notion de consommateur européen' *Petites affiches*, 5 (2006), (*Il n'existerait pas un consommateur mais des consommateurs*).

[44] J. Calais-Auloy and F. Steinmetz, *Droit de la consummation*, Paris, Dalloz, 6th ed, 2003, 6. With regard to the energy market in France, T. Urlacher, La nature juridique de l'énergie, *Dalloz*, 599 (2019), remarks that in the civil code energy is considered a product, Art 1245-2 of the French Code Civil.

[45] Cour de Cassation, 24 January 1995, no 92/18.227, *Dalloz*, 327 (1995), note by G. Paisant.

that a consumer is a non-professional subject,[46] as it is all too obvious that consumer law has been conceived to protect consumers to the exclusion of other categories of subjects.

It follows that it is not in the field of consumer law that a professional can find adequate protection, but only by relying on the ordinary law of contract.[47]

Despite the general application stability of the consumerist system, legal theory had long highlighted the opportunity of adopting a legal definition of consumer,[48] one capable of ensuring greater legal security, stressing the danger lurking in a broad conception that tends to make the frontiers of consumer law shifty, with evident implications in terms of lowering the level of protection to a contracting party who finds himself in asymmetrical conditions vis-à-vis his professional interlocutor.

Thanks to the directive of 25 October 2011 no 2011/83/EU,[49] transposed into French law by Law no 2014-344 of 17 March 2014, the so-called Loi Hamon, a specific definition of consumer has been introduced into the *Code de la Consommation*.[50] This definition was then broadened by ordinance no. 2016-301 of 14 March 2016 relating to the legislative part of the *Code de la Consommation*.

At a systematic level, the *Code de la Consommation* includes a general definition of consumer according to which a consumer is the natural person who acts for purposes that go beyond the framework of the activity carried out, more precisely, commercial, industrial, crafts-related or charitable activity, and one centred on the notion of consumer-vendor, destined to be integrated with Artt 121-99 to Law no 121-103 of the *Code de la Consommation*.

It is therefore convenient to distinguish between consumer vendor and consumer purchaser, bearing in mind, in practice, the specificities of the power relationship in the contractual ties between a purchaser-professional and a specific vendor.

The notion of consumer, whose source is legal, cannot but confirm what was already known, namely, that natural persons could be qualified as consumers.

Part of case law[51] and legal theory,[52] however, has shown itself favourably inclined to recognise the application of consumer regulations to '*personnes*

[46] L. Landy, n 42 above, 57.

[47] G. Paisant, 'À la recherche du consommateur, Droit commun du contrat et droit de la consommation. Nouvelles frontiéres?', in C. Albiges et al, n 42 above, 710.

[48] J. Calais-Auloy et al, *Droit de la consommation* (Paris: Dalloz, 8th ed, 2010), 13.

[49] G. Paisant, 'La directive du 25 octobre 2011 relative aux droits des consommateurs' *JCP G.*, 62 (2012).

[50] E. Gicquiaud, 'Le consommateur-vendeur', *Dalloz*, 559 (2014).

[51] Cour de Cassation, 15 March 2005, no 02/13.285, *Recueil Dalloz*, 1948 (2005), note by A. Boujeka, and *RTDciv* , 393 (2005), note by J. Mestre and B. Fages, relies on the idea that the distinct notion of non- professional, used by the French legislator, does not exclude the '*personnes morales*' from the protection against unfair clauses; J. Calais-Auloy, 'Une personne morale peut-elle bénéficier de la protection contre les clauses abusives?' *Revue Lamy droit civil*, 5 (2005).

[52] G. Raymond, *Droit de la consommation* (Paris: LexisNexis, 2nd ed, 2011), according to whom the '*personnes morales*' who find themselves acting for purposes unrelated to the professional activity and are in need of special protection must look at the regime of protections in the ordinary law of contract rather than in consumer law.

morales'[53] as well, relying on the fact that such extensive effect stems from an expansion of the notion of non-professional, as it possible to assimilate a '*personne morale*' who has concluded a contract to fulfil a need lying beyond the framework of the activity performed, and who is thus devoid of general and technical skills, to the notion of non-professional.[54]

Indeed, alongside the consumer, the *Code de la Consommation* has established the category of '*non-professionnel*'[55] for all those subjects who act in pursuit of purposes falling outside the scope of the commercial or professional activity undertaken, to whom, however, the protection regime contained in the Code de la Consommation cannot be applied, being limited to those protection provisions that expressly legitimise the extensive effect, as in the regulations pertaining to unfair contractual clauses, unlike, for instance, consumer credit regulations .[56]

4 The Figure of Prosumer and Collaborative Economy

Currently, new forms of collaborative economy, relating to sharing models in self-production and energy consumption, have been successfully tried out.

The new bargaining paradigms found in collaborative economy evolve, in particular, in the dimension of horizontal relationships, so-called peer to peer, of which the prosumer is a key player.[57]

From this viewpoint, the relationship is established between non-professional service provider-user and materialises in a relationship between equals, which gives birth to the term peer economy.

By the expression 'collaborative economy' we refer to a model of production of goods or services by private subjects,[58] whose activities can be developed and facilitated by collaboration platforms that create an open market for the temporary use of goods or services.

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[53] The textual amendment has not curbed the effort of case law to stretch the notion of consumer, revolving in particular on replacing the notion of consumer with that of '*non-professionnel*' and specifying that the consumer cannot be a legal person, Cour de Cassation, 2 April, 2009, no 08/11.231, *Dalloz*, 32 (2009). Cour de Cassation, 4 February 2016, no 14/29.347, *Petites affiches*, 9 (2016), note by G. Paisant. In Cour d' Appel de Paris, 3 July 1998, no 97/15750, *Recueil Dalloz*, 249 (1999), case law has pronounced itself, for the first time, by admitting an extension of the consumer protection regime, whereby '*une personne physique ou morale qui, sans expérience particulière dans le domaine où elle contracte, agit pour la satisfaction de ses besoins personnels et utilise dans ce seul but le produit ou le service acquis*'.

[54] Cour de Cassation, 23 June 2011, no. 10/30.645, *courdecassation.fr*.

[55] *Non-professionnel* means: *toute personne morale qui n'agit pas à des fins professionnelles. Professionnel: toute personne physique ou morale, publique ou privée, qui agit à des fins entrant dans le cadre de son activité commerciale, industrielle, artisanale, libérale ou agricole, y compris lorsqu'elle agit au nom ou pour le compte d'un autre profession*.

[56] We must observe the proliferation of multiple regulatory statutes in the texts of the numerous codes, think for instance of home sales, which refers to the purchaser of the product, or in consumer credit regulations, where reference is made to the borrower.

[57] The expression prosumer was coined by Toffler, even though it originated in a context radically different from that of the energy market, A. Toffler, n 10 above.

[58] Comunicazione della Commissione al Parlamento europeo, al Consiglio, al Comitato economico e sociale europeo e al Comitato delle regioni (COM/2016/0356 final), 'Un'agenda europea per l'economia collaborativa, 2 giugno 2016'.

The phenomenon of collaborative economy, as we have seen, is dominated by the figure of the prosumer, which sharing economy has placed side by side with the profiles of consumer and professional.[59]

The very concept of prosumer[60] sketches one of the essential profiles of collaborative economy, indicating them as consumers who develop an entrepreneurial ability, as they can become producers of goods or providers of services.

This new system of organisation of relationships sees the prosumer as an active player in the dynamics of production and exchange of goods and services. By the term prosumer[61] we identify a category of non-professional subjects who provide services, and each player is simultaneously producer and consumer.

The definition of 'prosumer' seems to diverge from that of 'consumer', generally accepted at supra-national and domestic level, according to which the consumer is 'any natural person who acts for purposes that fall outside the scope of his commercial, industrial, artisanal or professional activity'. It should moreover be noted that the 'prosumer' might also be other than a natural person (reference is made to the subject), and that an additional distinguishing element lies in the fact that he operates as professional/producer.

In the domestic legal system, the prosumer[62] has received a legal orientation in the sector of self-production of electricity, thanks to the definition conferred on it by the Italian Regulatory Authority for Electricity, Gas and Water (AEEGSI), which considers the prosumer as 'the subject who is simultaneously producer and end-user of electricity'.[63]

[59] E. Gabrielli, 'Il consumatore e il professionista', in P. Rescigno and E. Gabrielli eds, *Trattato dei contratti* (Torino: UTET, 2005), I, 5; L. Delli Priscoli, 'La tutela del consumatore fra accertamento della non professionalità del suo agire, tutela della concorrenza e affidamento della controparte' *Contratto e impresa*, 1533 (2007). M. Maugeri, 'Smart contracts, smart grids e smart meters: i nuovi orizzonti nel mercato dell'energia e la tutela del consumatore/prosumer' *Studi senesi*, 85 (2020).

[60] M. Maugeri, 'Elementi' n 10 above, 406.

[61] The expression prosumer represents the crasis of the terms producer and consumer, and introduces a new subject who operates in the production, use and exchange of goods and services. Put it in a nutshell, he is a consumer who is in turn producer and/or professional or a consumer who contributes to the production. According to M. Meli, 'Autoconsumo di energia rinnovabile e nuove forme di *energy sharing*' *Le nuove leggi civili commentate*, 630 (2020), Toffler coined the expression prosumer, which for the author is a crasis of the terms producer and consumer. Others, however, believe that the expression should be understood as crasis of professional and consumer, (S.J. Cole, 'The Prosumer and the Project Studio: The Battle for distinction in the Field of Music Recording' *Sociology*, 451 [2011]).

[62] A. Quarta, n 7 above, 667. F. Bertelli, 'L'armonizzazione massima della direttiva 2019/771/UE e le sorti del principio di maggior tutela del consumatore' *Europa e diritto privato*, 553 (2019).

[63] This definition is found in Annex A to resolution no. 188/2012/ E/com of 18.05.2012, as amended and supplemented by resolution no. 59/2014/E/com of 20.02.2014 and resolution no. 605/2014/E/com of 11.12.2014, and in Annex A to resolution no. 188 286/2014/R/com.

We could imagine this new economic player[64] as a kind of consumer-actor[65] who plays a central and active role in the choice and acquisition of goods and services.[66]

At the level of supra-national sources, we must recall EU directive 2018/2001 on promoting the use of energy from renewable sources, whose underlying rationale is to facilitate the adoption by Member States of an economy attentive to renewable energies, thanks also to citizens placing value on forms of collaborative aggregation for production and consumption in the energy sector.

More specifically, Art. 21 of EU directive 2001/2018 lays down the legislative regulation of the prosumer,[67] defined as self-consumer of renewable energy. Significant in that sense is the preservation for such figures of rights and obligations as end-consumers, a sentence intentionally present to envisage an extension of the set of protections in favour of such subjects as well in those instances where contractual balances are tilted towards one of the parties.

Art 42-*bis*[68] (under Law no 8/2020) has partially implemented the directive at domestic level, thanks to the introduction of mechanisms for sharing the self-production and consumption of energy.

This leads to broadening the range of possibilities within which self-production and consumption can materialise, given the shift from an exclusively individual dimension to collective forms of self- consumption. The subjects taking part in the initiative are deemed producers, despite the fact that they do not actually own the production plants, as they hold them on some other ground while being at the same time consumers.[69]

Of further relevance to the discourse is EU directive 2019/944 on the common rules for the internal electricity market, where the possibility of producing, consuming, accumulating and selling self-produced energy is incentivised. One of the regulatory innovations lies in the fact that it expressly acknowledged the active customer or prosumer (in accordance with Art 15, chapter III of EU directive 2019/944, significantly headed 'Consumer empowerment and protection').

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64 M. Flumian, *Citizen as prosumers: the next frontier of service innovation* (Ontario: Institute on Governance, 2009).

65 C. Fuchs et al, 'The psychological effects of empowerment strategies on consumers' product demand' 74 *Journal of Marketing*, 65-79 (2010).

66 M. De Pamphilis, 'I contratti di consumo tra esigenze di armonizzazione e nuovi modelli negoziali' *Archivio giuridico Filippo Serafini*, 411 (2019).

67 Directive 2018/2001 defines the notion of self-consumer of sources of renewable energy singled out Art 21 of the directive. Art 21, para 2, letter d) of the directive expressly lays down that Member States are in any event bound to ensure to such figures the preservation of their 'rights and obligations as end-consumers', being a sentence intentionally introduced in order to ward off the danger of any erroneous interpretation of the global system of protections the European Union intends to acknowledge in favour of this category.

68 Through Art 42-*bis*, decreto legge 30 December 2019 no 162, so-called 'a thousand extensions', converted into legge 28 February 2020 no 8 has regulated in our legal system the institutions of collective self-consumption from renewable energy sources and has introduced in our system two new figures, termed "collective self-consumption" and 'energy communities' (Renewable Energy Communities – REC), stipulated by European legislation on promotion of the use of renewable energy sources.

69 Likewise relevant is Directive 2019/944 on common rules for the internal energy market that amends Directive 2012/27/EU. The new regulatory package enables entirely new forms of interaction between purely passive consumers and new 'prosumers'.

The 'prosumer' differs from the 'consumer', even though we can detect points of convergence in relation to contracts for promiscuous use, where there is an exclusion of consumer protection for those subjects who act for a mixture of personal and professional purposes, unless the latter are so limited as to prove marginal.

The issue of contracts for promiscuous use has raised a debate also at the level of legal theory, in which there was no lack of voices in favour of recognising the application of consumer regulations where the purpose behind the purchase does not fall mainly within the professional or entrepreneurial activity conducted by the consumer.[70] Put it differently, the case law of the Court of Justice[71] has excluded the application of consumer law to contracts for promiscuous use, that is, for a good partly destined to a professional use and partly to one unrelated to the professional activity, unless the professional use is so marginal that it plays a negligible role in the global context of the transaction.

These remarks should induce in us a reflection on the existence of a shifting borderline concerning the figure of the prosumer as well,[72] since we cannot exclude beforehand an extension of the protective regime of consumer legislation, conditional on the verification of the individual contractual transaction.

We should nevertheless highlight that the energy prosumer or consumer is a player in the economic activity, whereas the consumer is deemed a recipient of the professional's economic and entrepreneurial activity.

Another aspect emerging within the folds of the discourse is the central role played by regulatory activity[73] in the energy sector,[74] which has long been directing attention to the development of further tools available to the end-customer to

[70] E. Gabrielli, 'Sulla nozione di consumatore' *Rivista trimestrale di diritto e procedura civile*, 1149 (2003); R. Calvo, 'I contratti del consumatore', in F. Galgano ed, *Trattato di diritto commerciale e di diritto pubblico dell'economia* (Padova: Cedam, 2005), 295.

[71] Case C-464/01, n 34 above. The case in question concerned an agricultural entrepreneur who had purchased tiles intended to cover the roof of a building used for residential purposes as well as a shelter for the animals with a surface area of approximately 40% of the total. This is deemed sufficient to prevent the acquisition of the consumer status.

[72] A.M. Benedetti, 'Lo scambio dei ruoli ovvero l'utente che produce energia: la regolazione convenzionale dello "scambio sul posto"', in G. Napolitano and A. Zoppini eds, *Annuario di Diritto dell'Energia. Regole e mercato delle energie rinnovabili* (Bologna: Il Mulino, 2013), 189.

[73] The State has switched from being 'entrepreneur' to being 'regulator'. Essentially, within the folds of the discourse, it is the exercise of regulatory powers by the authorities that is capable of laying down the rules of conduct individual economic operators must comply with in their relationships with users, thereby inevitably impacting on the rules governing individual agreements. It is in this scenario that the first independent regulatory Authorities make their appearance. (M. Orlandi, 'Autonomia privata e autorità indipendenti', in G. Gitti ed, *L'autonomia privata e le autorità indipendenti* [Bologna: Il Mulino, 2006], 75; L. Di Bona, *Potere normativo delle autorità indipendenti e contratto. Modelli di eteronomia negoziale nei settori dell'energia elettrica e del gas* [Napoli: Edizioni Scientifiche Italiane, 2008], 86; G. Di Gaspare, *Diritto dell'economia e dinamiche istituzionali* [Padova: Cedam, 2017]; T. Favaro, *Regolare "la transizione energetica": Stato, mercato, innovazione* [Padova: Cedam, 2020], 65).

[74] Autorità di Regolazione per Energia Reti e Ambiente (ARERA). For E. Tedesco, 'Regolazione dell'economia e integrazione del contratto. Il rapporto tra le Autorità di regolazione e l'autonomia privata', *I contratti*, 231 (2021), 'the regulation aims to correct two different market failures: the existence of a natural monopoly, due to the presence of a limited number of networks, owned by individual private operators; and the informational asymmetries, which do not permit an efficient allocation of energy resources'.

operate in the market, not only in a capacity as producer (*prosumer*) but also as subject capable of providing ancillary services to the system.[75]

Generally speaking, consumer legislation,[76] historically tasked with ensuring protection for the contractually weak subject *vis-à-vis* the professional counterparty, opens up to new application perspectives and is sensitive to the emergence of scenarios.[77]

Nowadays we speak of post-modern consumer[78], as paradigm of a new contractual model and a new way of understanding the relationship between businesses and the market.

In the light of the picture that has been outlined, to borrow the words of Micklitz, the markets appear fragmented, and each market segment has its own system or rules; in a similar vein, the consumer is 'fragmented' since in each of these markets he receives a differentiated protection .[79]

It is thus ostensibly necessary to remark that each sectoral discipline, think for instance of consumer codification or of the energy sector, which knows new forms of peer-to-peer exchange between prosumers, simultaneously producers and consumers of energy,[80] must be read and interpreted against the backdrop of a unified systematic logic.

If, on the one hand, the emergence of new economic dynamics and new contractual models has seemingly fuelled the debate on a potential extension of the notion of consumer, on the other hand it must not make us forget the impact that the creation of different sub-systems might have on the general system. It follows that 'the moment we speak of secondary rights as sub-systems, we implicitly acknowledge that the contingent and peculiar situation that characterises the exception is transcended: something that finds confirmation in the plurality of sources a secondary right consists of for it to be such, i.e., once again, system '.[81]

[75] P. Schlesinger, 'Il "nuovo" diritto dell'economia', in G. Gitti ed, n 73 above, 53.

[76] J.L. Bergel, 'À la recherche de concepts émergents en droit' *Dalloz*, 1568 (2012).

[77] E. Gabrielli, 'Sulla nozione', n 70 above, 1149.

[78] G. Capilli ed, *I contratti del consumatore* (Torino: GIappichelli, 2021), 1.

[79] H.W. Micklitz, 'Il consumatore: mercatizzato, frammentato, costituzionalizzato' *Rivista trimestrale di diritto e procedura civile*, 859 (2016).

[80] V. Cappelli, 'Il mercato dell'energia alla prova della sharing economy' *La nuova giurisprudenza civile commentata*, 1398 (2020).

[81] C. Castronovo, 'Diritto privato generale e diritti secondi. La ripresa di un tema' *Europa e diritto privato*, 397 (2006).

Renewable Energy Communities: Danish and Italian Experiences by Comparison

Silvia Montecchiari and Karina Zabrodina

Abstract: The contribution explores, in a comparative perspective, examples of organizational forms that have fostered the development of renewable energy communities taking into account two experiences: the energy communities established in the islands of Denmark and the model of the Italian energy community Magliano Alpi. In both case-studies, the model used was based on the non-profit logic, however, while in Denmark the organisational form experienced has been that of consumer owned cooperative; in the Italian example the model of the non recognised association was preferred. In this perspective, the study aims to determine the factors enabling the development of energy communities and assess the elements of success of models implemented locally in Europe. The results of this research are intended to demonstrate that, although none of the renewable energy communities tested in Denmark and Italy has a specifically implemented legal framework, except for occasional legislative interventions, many of the successful tools and methodologies used in these communities are comparable and therefore replicable in the transposition of the Directive (EU) 2018/2001.

Keywords: Decentralization, Aggregation, Active Citizens, Consumer Owned Models, Social Enterprise

1 Introduction

To date, multiple barriers concerning the development of renewable energy communities have been analysed in order to identify factors that are slowing down or even preventing the energy transition. In particular, the focus was on the analysis of some macro-categories of legal, economic, cultural, social and administrative obstacles.[1] It has thus been demonstrated that the lack of a solid regulatory discipline and economic incentives in some cases,[2] the lack of social consensus[3] and a clear understanding of the benefits that may accrue in others, as well as the absence of a driving force of bottom-up initiatives and cooperative models between

[1] In this sense, L. Ruggeri ed, *Needs and Barriers of Prosumerism in the Energy Transition Era* (Madrid: Dykinson, 2021), 17-183.

[2] On the different incentives as a key for the development of community ownership models (e.g. local income and regeneration, planning permissions, lower energy costs and reliable supply, ethical and environmental commitment) and on the legal barriers which might slow down such development, G. Walker, 'What are the Barriers and Incentives for Community-owned Means of Energy Production and Use?' 36 *Energy Policy*, 4401, 4401-4405 (2008).

[3] See, in particular, J.C. Rogers et al, 'Public Perceptions of Opportunities for Community-based Renewable Energy Projects' 36 *Energy Policy*, 4217, 4217-4226 (2008); C.R. Warren and M. McFadyen, 'Does Community Ownership Affect Public Attitudes to Wind Energy? A Case Study from South-west Scotland' 27 *Land Use Policy*, 204, 204-213 (2010); E. Heaslip et al, 'Assessing Good-Practice Frameworks for the Development of Sustainable Energy Communities in Europe: Lessons from Denmark and Ireland' 4 *Journal of Sustainable Development of Energy, Water and Environment Systems*, 307, 307-319 (2016).

public and private,[4] determined the resistance of local residents creating a social gap between citizens and key stakeholders.

Therefore, if on the one hand the analysis of major obstacles is certainly an important starting point for the transposition of the Directive (EU) 2018/2001,[5] on the other hand it is rather useful for the same purpose to focus on factors that have instead influenced the development of successful cases of renewable energy communities.

In this regard, the recent doctrine identified the involvement of final energy consumers through appropriate forms of aggregation one of the key factors for the development of community energy solutions.[6] It follows that, in line with the goals of the Directive (EU) 2018/2001 is of primary importance for each Member State to be able to promote the process of decentralisation of the energy system and to accompany with specific support policies the evolution of the role of citizens, who are no longer to be considered as passive users of services but as active actors, able to catalyse and direct autonomously skills, opportunities and resources of the territory towards its regeneration. Energy decentralisation requires in fact, first and foremost, the mobilisation of citizens through specific aggregation models and the creation of new levels of cooperation between private and public bodies.

In this perspective, therefore, it is worthwhile to pay particular attention to the comparative analysis of those forms of organization and management of renewable energy communities that have found in the cooperation between public and private its driving force and have revealed a great ability to ensure the aggregation and active participation of citizens.

2 Samsø Renewable Energy Island: an Example of Danish Success of Consumer Owned Cooperative Model

Denmark is known to be one of the greatest examples of political and social commitment towards the reduction of greenhouse gases.[7] A solid policy of economic incentives[8] accompanied by the adoption of models of consumer owned

[4] On the necessity of the change of the public's role, from that of passive service receivers to active service producers, C. Büscher and P. Sumpf, '"Trust" and "Confidence" as Socio-technical Problems in the Transformation of Energy Systems' 5 *Energy, Sustainability and Society*, 1, 1-13 (2015); K.J. Cseres, 'The active energy consumer in EU law' 9 *European Journal of Risk Regulation*, 227, 227-244 (2018).

[5] European Parliament and Council Directive (EU) 2018/2001 of 11 December 2018 on the promotion of the use of energy from renewable sources [2018] OJ L328/82.

[6] In order to exploit the potential of this success factor, however, the traditional concept of energy discipline as a set of rules aimed exclusively at the major players in the energy market must be overcome, and on the contrary, must be transformed into a strategic instrument, able to reconcile local peculiarities with the needs of a uniform discipline at national level. See, L. Ruggeri, 'Legislative Policies and Jurisprudence on Climate Change: New Tools for Removing the Barriers to New Forms of Energy Consumption', in L. Ruggeri ed, n 1 above, 98, 98-99.

[7] Consider, for example, the ambitious national target of meeting at least 70% of energy demand through the use of renewable energy by 2030 and of becoming a low-emission and fossil-fuel free society by 2050. See, The Energy Strategy 2050 of 2011 available at https://www.iea.org/ (last visited 12 June 2021) and the Danish Climate Agreement for Energy and Industry 2020 of 22 June 2020 available at https://fm.dk/media/18085/klimaaftale-for-energi-og-industri-mv-2020.pdf (last visited 14 June 2021).

[8] On the Danish renewable energy policies, incentives and premiums, A. Rønne and F. Gerhardt Nielsen, 'Consumer (Co-)Ownership in Renewables in Denmark', in J. Lowitzsch ed, *Energy Transition. Financing Consumer Co-ownership in Renewables* (Switzerland: Palgrave Macmillan, 2019), 229-234.

cooperatives as the main organizational forms of renewable energy communities[9] have mutually encouraged over the years the development of 'combined top-down and bottom-up approach'[10] where an important contribution towards the energy transition has been offered by all stakeholders: citizens, the State, local authorities, business and scientific communities. This shows that some factors, often considered as the main barriers, may, on the contrary, be strategic instruments when they are able to reconcile local peculiarities with the needs of a unified discipline at national level. This premise fully reflects the experience of certain island regions in Denmark.

In particular, Samsø Island is one of the first island localities that has undertaken since the 90s the path towards the creation of an entire energy self-sufficient island.[11] Currently, Samsø covers 100% of electricity needs thanks to the production of renewable energy through wind farms, while 75% of the energy needs for heating is covered by the production of solar energy and biomass energy.[12] Nevertheless, around 84 million kWh are intended for export.

[9] See, J. McBryan, 'Denmark Energy Policy: Success in Achieving Energy Independence and Establishing an International Wind Industry' 20 *University of Florida Journal of Law and Public Policy*, 329, 329-346 (2009); J. Lipp, 'Lessons for Effective Renewable Electricity Policy from Denmark, Germany and the United Kingdom' 35 *Energy Policy*, 5481, 5481-5495 (2007). On this point, see also the Energy Policies of IEA Countries – Denmark 2017 Review, 29, available at http://www.iea.org/ (last visited 17 June 2021) that identifies among the key characteristics of the Danish energy policy the broad and sustained political support, the holistic approach to energy planning, the stakeholder engagement and informed decision making system, the strong international co-operation.

[10] Although, as highlighted by M. Mendonça et al, 'Stability, Participation and Transparency in Renewable Energy Policy: Lessons from Denmark and the United States' 27 *Policy and Society*, 379, 379-398 (2009), the Danish energy success experiences are mainly rooted in bottom-up initiatives, E. Heaslip et al, n 3 above, 309, point out, however, that this approach has actually been decisive for the creation of the combined approach that has fostered the increased development of renewable energy communities: '[...] SEC development in Denmark was originally driven from the "bottom up", being with enthusiasts influencing the political process. This forced the government to provide incentives to encourage development of the renewable energy sector. As a result, a combined "top down" and "bottom up" approach (which is still favoured by the EU today) was created'.

[11] In 1997 Samø won the national call promoted by the Ministry of Environment and Energy to finance projects for the creation of the 'Renewable Energy Islands'. The goal of the financed project was in particular to cover the energy needs in terms of electricity, heating and transport through the production of energy from renewable sources and should have been achieved within 10 years. See, P.J. Jørgensen et al, 'Samsø – a Renewable Energy Island. 10 years of Development and Evaluation' (2007) available at http://arkiv.energiinstituttet.dk/101/ (last visited 8 June 2021).
The legislative background which encouraged this initiative can be found in Energy 21: The Danish Government's Action Plan for Energy launched in 1996 by the Danish Ministry of Environment and Energy. With great foresight, the makers of the Action Plan had intuited the strategic value of the management of energy resources for the success of Denmark's society and economy. And to this end, they paid particular attention to the need to ensure the democratisation of the energy sector, which should be more consumer-oriented, and to the principles of self-sufficiency, security and energy efficiency. As noted by J. McBryan, n 7 above, 335, 'Energy 21 was the culmination of several decades of broad political and public consensus on energy policy. Public concern over local and global environmental damage, in conjunction with extensive technical analyses conducted by the Danish Energy Agency, provided a consistent and logical approach to creating adaptable energy policy'. On this topic, see also N.I. Meyer, 'Learning from Wind Energy Policy in the EU: Lessons from Denmark, Sweden and Spain' 17 *European Environment*, 347, 347-362 (2007).

[12] In particular, 'the island's electricity is produced by 11 land-based wind-turbines, as for heating, the island counts three straw-based district heating systems and one district heating plant combining wood chips and solar energy. In addition to that, 300 houses have invested in individual renewable energy heating systems'. More information is available at https://www.renewables-networking.eu/documents/DK-Samso.pdf (last visited 21 June 2021).

Despite such national and even more international success, Samsø Island is currently engaged in the realization of the further goal: to become a fossil-fuel free island through intelligent use of energy.[13]

One of the main factors that favoured the transformation of Samsø into a cutting-edge island is undoubtedly the active involvement of local stakeholders in the project. The consortium type organizational structure immediately allowed the development and coordination of a network of consumer owned cooperatives created in the island territory in order to meet the different needs related to financing, purchase, installation of facilities and renewable energy production.[14]

In particular, a strongly participatory approach of the Municipality of Samsø, the Environment Office and the local cooperative Samsø Wind Energy favoured the creation of a wind turbine shares pre-sale which involved since the initial phase about 430 shareholders. This involvement was the result of an accurate zone planning conducted by Samsø Municipality aimed at identifying the areas to be reserved for wind farms, through a constant dialogue with residents and taking into account environmental issues such as the visual impact of the windmills.[15]

Subsequently, in order to compensate for the fossil fuel consumption in the transport sector, the cooperation between the Samsø Commercial council, Samsø Farmers' Association, Samsø Municipality and Samsø Energy and Environment Office allowed the establishment of the first municipal energy company, Samsø Offshore Wind Co. The choice of the organizational model derived from the intent to ensure on the one hand that the community of Samsø was actually the recipient of concessions and financing within the project and on the other hand to ensure the involvement of the main local actors in the property of offshore wind turbines. In fact, among the 10 wind turbines installed, 5 are owned by the municipality; 3 are owned by private external investors; the other 2 are owned by some local cooperatives.

The creation of such an organisational network which facilitated the participation of all local residents in the self-consumption of renewable energy produced by plants themselves financed and owned received a strong boost through the support and collaboration of multiple public and private entities located in the territory.

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[13] Samø Version 2.0 Project is funded by Danish Parliament's energy Agreement and it 'calls for becoming totally independent of fossil-based energy in 2030. This means that aspects of transportation and infrastructure need to switch to electricity or biogas. Our goal is that we end up with a zero-energy account, where we don't need to export renewable energy to compensate for our own use of fossil fuels'. More information about the project is available at https://energiakademiet.dk/en/uafhaengig-af-fossile-braendsler/ (last visited 18 June 2021).

[14] In 2000, 11 onshore turbines were installed in the island, 9 of which are owned by multiple local farmers, while the remaining two belong to the local cooperative Samø Wind Energy. For this purpose, and in order to ease the implementation and secure broad public support, the energy Island project created an ownership scheme which would give all island citizens the chance to invest in the forthcoming wind turbines. This ownership scheme was adopted by the Samø Wind Energy cooperative and was precisely based on the idea of reserving shares to the general public. In this way, the owners of lands where the wind turbines would have been sited agreed to allocate that land and, at the same time, they covered the general public demand for shares. In addition, these landowners and future wind turbine owners signed an agreement to establish a fund to further other forms for renewable energy. See, P.J. Jørgensen et al, n 8 above, 21.

[15] A further factor, of economic nature, strengthened public acceptance for the construction of the plant: an agreement was concluded with which a fixed price for the production of electricity, more convenient than that of the market, was guaranteed.

An active contribution over the years to the transformation of the island, has been offered by Samsø energy and Environment Office and the Samsø Energy Company, as local organizations with functions of consulting support, promotion and awareness towards renewable energy issues.[16] A strong cooperative spirit has also been shown by the Danish Energy Authority, which, together with the above-mentioned local organisations, was in charge of the studies and preliminary investigations of technical and environmental feasibility related to the installation of wind turbines in the territory of Samsø.[17] Finally, thanks to the profit derived from the production and export of energy with renewable plants, in 2007 was found the Samsø Energy Academy which still covers an important socio-economic role for the territory.[18] In fact, the latter actively promotes local sustainable tourism and is engaged in sharing and spreading the exemplary experience of a successful island. At the same time, the Academy is an important centre for local citizens to meet, discuss and develop new ideas for local development

3 Suitable Legal Models and Clauses for Energy Communities According to the Danish and Italian law

From the analysis of the main actors who played a strategic role in the implementation of the project 'Samsø - Renewable Energy Island' is particularly interesting to highlight, from the legal point of view, the use through a reticular structure of different forms of organization of public and private nature. The municipal[19] institution for the creation of the Samsø Offshore Wind Co, the associative form for the promotion of the Samsø Energy Academy as well as the consumer owned cooperatives[20] aimed at involving residents.

[16] As has been remarked, both organizations 'have managed to mobilise the local population during innumerable public meetings and information campaigns, often combining project-specific technical knowledge with more general information tailored to the needs of the local community'. Moreover, it is precisely this approach, which is characterised by raising awareness among local residents in search of their acceptance and collaboration in the development of the project, explains 'the general absence of major protests and conflicts in the project period, and a good amount of local participation resulting in substantial investments made by the local community'. K. Sperling, 'How does a pioneer community energy project succeed in practice? The case of the Samsø Renewable Energy Island' 71 *Renewable and Sustainable Energy Reviews*, 884, 889 (2017).

[17] The Danish Energy Authority also provided funding of up to 30% of the total investment for owners who have joined the conversion of old plants in those of renewable energy production. And, for the benefit of the most vulnerable groups, such as the elderly, the Authority financed up to 50% of the total investment in energy efficiency interventions.

[18] More information is available at https://energiakademiet.dk/en (last visited 14 June 2021).

[19] Municipal ownership is one of the legal models that has been used for several years in all European countries for the promotion of renewable energy production. In Denmark, in particular, municipalities are allowed to participate as public utility companies in activities connected to the provision of electricity by the Electricity Supply Act no 516 of 2012. Such activity has to be carried out through a separate company just like in the case of Samsø Offshore Wind Co specifically created for generating electricity from wind turbines. According to the Danish law, the Municipality can choose between Public or Private Limited Liability Company, but in both cases the use of profits is limited to fund activities related only to the purpose of the company. See, J. Roberts et al, *Community Power: Model Legal Frameworks for Citizen-owned Renewable Energy* (London: ClientEarth, 2014), 25-26.

[20] According to the Executive Order on the Act on Certain Undertakings no 559 of 210 a cooperative is an undertaking whose object is to promote the common interests of the participants through their involvement in the business activities as buyers or suppliers and whose return can either be distributed among the participants in proportion to their shares or be retained in the undertaking.

The use of the multiplicity of aggregative models results from the impossibility for individual natural or legal persons to own directly and exclusively wind farms. The Danish law,[21] on the contrary, imposes on the promoters of energy projects, in addition to the obligation to offer at least 20% of the ownership of energy production facilities to local residents, the creation of an autonomous and separate body, e.g. I/S (General Partnership) or K/S (Limited Partnership), which may subsequently be participated by cooperatives, municipal partners or community foundations.[22]

Both models share the possibility of being participated by both natural and legal persons, do not require a minimum capital for the establishment, enjoy preferential taxation and are regulated by the Act on Certain Commercial Undertakings. At the same time, however, they differ on the point of responsibility. In fact, while the Limited Partnership limits the liability of the members to the value of the share capital; the General Partnership entails the unlimited, joint and several, personal liability of the participants, which can however be mitigated by the provision in the statute of specific clauses that prohibit the members to contract personally the debts for and on behalf of the Partnership.

The Partnership models are therefore the example of greater aggregating agents between local residents and the main stakeholders who with great foresight have been able to grasp the potential of the Danish regulatory framework by reconciling local peculiarities with the need for a uniform national energy discipline.

On closer inspection, although these models are in line with the Directive (EU) 2018/2001 in terms of the autonomy of the legal entity, however, unlike it remain implicitly anchored in the logic of capital.[23] In fact, wishing to identify similar legal forms in the Italian legal system, these are models that identify respectively, with

[21] Since 2009, the Promotion of Renewable Energy Act no 1392 of 27 December 2008 requires wind energy project promoters to offer at least 20% ownership of energy production utilities to local residents if the size of the turbines to be built exceeds the 25 meters. With the recent reform of the Energy Act, the same obligation has been extended also towards those who start planning of the construction of windmills in near-shore areas. Such a reserve scheme of part of the shares to the inhabitants allows the active involvement of citizens in renewable energy projects by strengthening awareness of the benefits and gaining greater consensus of public opinion. On the part of the promoters, instead, this scheme, in addition to sharing the costs of the project, is an opportunity to obtain incentives, funding and price supplements behind the demonstration of involving local citizens for over 30%.
On the different community benefit schemes that can be used to reduce and compensate for the environmental impacts of the wind energy projects and to meet the challenges of acceptance of further developments of wind turbines, see A. Rønne, 'Opposition to Wind Farms and the Possible Responses of the Legal System', in L. Barrera-Hernández et al eds, *Sharing the Costs and Benefits of Energy and Resource Activity: Legal Change and Impact on Communities* (Oxford: Oxford University Press, 2016), 173-190.

[22] Part 1, Section 2(1) and (2) of the Executive Order on the Act on Certain Undertakings no 559 of 2010 establishes that 'for the purpose of the Act, a partnership shall mean an undertaking in which all participants are jointly and severally liable for the liabilities of the undertaking', while 'a limited partnership shall mean an undertaking in which [...] the limited partners, have limited liability for the debts and obligations of the undertaking'. On this topic, see M. Gancheva et al, *Models of Local Energy Partnership and the Role of Local Energy Communities in Energy Transition in Europe* (Belgium: European committee of the Regions, 2018), 16-17. For other Danish examples of consumer co-ownership through a Partnership model, A. Rønne and F. Gerhardt Nielsen, n 8 above, 236-237.

[23] Art 2, para 16) of the European Parliament and Council Directive (EU) 2018/2001 in addition to the requirement of autonomy and separateness of the legal entity - energy community, also provides that the same, rather than targeting financial profits pursues the main goal of providing environmental, economic or social benefits to its members and, more broadly, to the community in which it operates.

the *Società in nome collettivo* and *Società in accomandita semplice* that fall outside the strictly non-profit objectives set by the European Legislator.[24] Nevertheless, while the first one entails, as does the Danish law, the unlimited, joint and several, liability of all members with the risk of discouraging the involvement of citizens; the second, does not meet one of the main requirements for the establishment of the energy community: the effective control of the community by citizens. The adoption of the model of *Società in accomandita semplice*, in fact, involves the division of members into two categories, *accomandatari* and *accomandanti*, reserving only the first administrative and management powers.

In the Danish experience, therefore, although there is no specific legal model for the creation of energy communities, it has however been possible to adapt the patrimonial logic of the Partnership models to the need to ensure the democratic ownership of wind farms and to build to a single common goal the interest to make the island sustainable and self-sufficient. In this sense, the specific incentive legislative policies operated, that not only have at the time been accepted by the bylaws of Danish energy communities but, on closer examination, can be even found to date in the structure of the Directive (EU) 2018/2001 and, in reference to Italy, in the recent European Delegation Law 2019-2020.[25]

Beyond the choice of a specific model to be adopted, clearly to be preferably oriented towards non-profit models, the transposition of Directive must necessarily take into account two profiles: the 'roots' of the energy community in the territory in which it operates on the one hand, and the need to preserve landscape of that territory on the other, as an expression of the national and cultural identity which is safeguard in several Constitutional Charters of the Member State as well as in several International Conventions for the Protection of cultural heritage.

In relation to the first question, the provision of the para 16), Art 2 of the Directive whereby the renewable energy community is an autonomous legal entity controlled by its 'shareholders or members who are located in the proximity of the renewable energy projects' represents an explicit territoriality clause not entirely dissimilar from the obligation under Danish law for wind farm promoters to offer part of the shares to local residents.[26] As to the Italian legal system, instead, it is curious to note that, although there are no similar national provisions, the requirement of anchoring to the territory has emerged in some recent regional legislative interventions related to the new organizational forms of 'community cooperatives' although the latter do not have a national discipline to date yet.[27]

With regard to the second profile, it should be noted that the protection of the landscape is clearly an important limit for the energy transition as it enjoys strong

[24] These are models of societies of persons governed in the Italian legal system by Arts 2291-2324 of the Civil Code.

[25] Legge 22 April 2021 no 53.

[26] An obligation which, moreover, if not fulfilled, entails the interruption of public funding and the additional incentives that the Danish law reserves for the development of energy communities. See, n 21 above.

[27] By way of example, legge della Regione Umbria 11 April 2019 no 2 and legge della Regione Lazio 3 March 2021 no 1. On the community cooperatives, widely, P.A. Mori and J. Sforzi, *Imprese di comunità* (Bologna: il Mulino, 2019).

public support.[28] It is precisely this reasoning that is at the basis of the Danish law, that provides for the possibility of compensating for the loss of property value that is suffered from time to time by local residents in the proximity of sites assigned for wind farms. Such a solution, although certainly costly in terms of public expenditure, has nevertheless enabled the necessary support to be obtained from local citizens, whose lack it is one of the main obstacles to the creation of energy communities.

A different solution, instead, has been advocated in the Italian law that provides for the expected transposition of the Directive. In fact, the need for a specific discipline aimed at regulating the identification of suitable areas for the installation of renewable energy production plants has been pointed out. The regulation should pay special attention to the balance of interests and, in particular, to the respect of the protection of cultural heritage and the landscape, as well as agricultural and forestry areas, favouring to this end the use of built-up areas, such as industrial sheds and parking lots, and areas that cannot be used for other purposes. Nevertheless, the choice of areas should take into account the characteristics and availability of renewable resources, grid infrastructure and electricity demand, as well as the dislocation of demand.

Based on these considerations, it seems interesting at this point to verify, also in view of the expected transposition of the Directive (EU) 2018/2001, if the Danish and Italian legislation offer further legal solutions for the development and growth of new energy communities more in line with the objectives of the European legislation or if it is appropriate to integrate and/or provide for internal implementation of different tools.

4 The Experience of Magliano Alpi Energy Community: From the Decreto Legge 'Milleproroghe' to the 'Energy city Hall'

In this perspective, it seems useful to investigate the first energy communities established as a result of Directive (EU) 2018/2001 partially transposed by the Italian legal system. The energy community of Magliano Alpi is the first example of association between energy producers and consumers, aimed at meeting their energy needs through their own production, using renewable sources.

The Energy City Hall is the outcome of a pilot project encouraged by the transposition of Art 22 of the European Directive 2018/2001 carried out by Art 42-*bis* of decreto legge 30 December 2019 no 162[29] which offered a first Italian legal framework of reference.

This temporary regulation allows to start the legal constitution of the energy communities even before the final transposition of the Directive.[30] Coordinator and

[28] In a different perspective, however, it may prove to be one of the aims to which assign the profits that the energy communities are potentially able to generate, effectively balancing in this way the different interests, such as the protection and sustainability of the environment on the one hand and the protection of the landscape on the other.

[29] Converted by legge 28 February 2020 no 8, which contains urgent provisions on the extension of legislative deadlines, the organization of public administrations, as well as technological innovation.

[30] In truth there are already experiments made possible by regional regulations that have acted as a forerunner. For example, AESS, Enea and the University of Bologna present the project of neighborhood energy community,

prosumer of the Energy Community is the Municipality of Magliano Alpi, which purchased in May 2020 a photovoltaic system of 20 kwp and devoted it not only to the self-consumption, but also to the sharing of the energy produced in excess and not consumed by the Municipality.[31]

The process that brought the result to completion was launched in January 2020 and since its formation has been able to count seven members, who joined by means of an expression of interest. Currently the Energy Community sees among its members the users of the City Hall, the library, the gym and public schools, together with four families and two companies that first gave their membership. The photovoltaic system is installed on the roof of the City Hall and also powers an EV charging station, which can be used free of charge with the health card by citizens.

The Energy Community of Magliano Alpi, although small in size, appears to be an example of success that deserves to be analyzed with a view to the future transposition of Directive, both by verifying its consistency with the current legislative background of reference and the other enabling legal factors that contributed to the formation of the first Italian energy community after the partial adoption of the RED II Directive.

It should be said, partially anticipating the results of the analysis, that the community 'Energy City Hall' appears to be consistent with the provision referred to in Art 42-*bis* in the three essential requirements prescribed. To constitute an energy community - unlike collective self-consumption -[32] Art 42-*bis* fully in line with the RED II Directive requires the following conditions: a) to establish a legal entity; b) to pursue the main objective of providing environmental, social, economic benefits; c) to open the participation to all consumers.

According to the first requirement, the Energy City hall is presented as a legal entity identified in an unrecognized association. It is the form of collective organization governed by Art 18 of the Italian Civil Code that has no legal personality and is characterized by the aim of pursuing an ideal interest.

In this perspective, the choice of the associative form seems to satisfy also the teleological requirement prescribed by Art 42-*bis*, para 2, letter c). The purpose of social formation in fact is also identified by the RED II Directive in providing environmental, economic and social benefits to its shareholders, members or local

as well as the project of collective self-consumption realized in Alexandria, both available on the website www.rinnovabili.it (last visited 18 June 2021). In general, for a look at some early experiments, L. Tavazzi and P. Parma, 'Lo sviluppo delle Energy Community in Italia e le implicazioni strategiche per il Sistema Paese' 22 *City Life Magazine,* 12, 12-20 (2016); C. Candalise and G. Ruggeri, 'Quale ruolo per i cittadini nella transizione verso le rinnovabili? Le comunità energetiche italiane: esperienze e prospettive' *Gazzetta Ambiente*, 117, 117-131 (2017).

[31] Resolution of the Council no 87 of 4 December 2020 available at the following link: http://www.comune.maglianoalpi.cn.it/portals/1322/SiscomArchivio/9/ DGC-2020-00087CostituzioneComunitEnergetica.pdf (last visited 14 June 2021).

[32] Although it is necessary to postpone the discussion of the institute of collective self-consumption, it is sufficient in this context to refer to the definition that within Art 21 of the Directive (EU) 2018/2001 was offered and transposed by the Italian Legislator. For collective self-consumption it refers to two or more auto-energy consumers who act collectively in the production, storage, sale of energy and are located in the same building or condominium. For an analysis of the regulatory difference between the two figures in the Italian legal system as a result of partial transposition, see E. Ferrero, 'Le comunità energetiche: ritorno a un futuro sostenibile' *Ambiente e sviluppo*, 677, 677-681 (2020).

area in which it operates. This particular function is one of the reasons that justified the adoption of the associative model, which is the legal entity introduced into the Italian legal system and used by practice for activities carried out for the exclusive purposes of social utility.[33]

Art 4 of the constituent act of the Energy City Hall and Art 3 of the statute of the association confirm this constraint of purpose, specifying, in coherence with the legislative data (para 2, letter b) that the participation in the activity of the energy community can not constitute the main activity of the associates.[34] So, although the activity carried out is intended to produce value being and exchange of a legal asset such as energy - susceptible to economic evaluation -[35] any profit deriving from the activity is intended to strengthen the membership fund and therefore to feed the activity by buying new infrastructure or financing new energy communities.[36]

Even in the silence of the statute, but in perfect coherence with the legal form and nature of this peculiar social formation, any profit would also be usable in social welfare projects such as urban regeneration programs, realization of green areas, in line with some experiences in other countries with a high level of solidarity.[37]

The form of the not recognized association in addition to ensuring the pursuit of a common purpose of social utility between the contractors, also allows it to meet the third regulatory requirement of the energy communities. The structure of the association as a multi-subjective contract open to the accession of third parties allows both public bodies and private citizens, including small and medium enterprises, a membership later than the moment of the founding of the energy

[33] The legal model of the association in the strict sense is distinguished by other forms of contractual relations with a common purpose such as society, cooperatives, consortia on the purpose of the activity carried out in common by the members. In Italian doctrine, some define the purpose of altruistic association as opposed to the selfish purpose of society; however, it has been sensibly objected that many associations are born to achieve an advantage for the associates. The aime of the association, however, are frequently defined as ideals or more generally, non-economic, in this sense F. Galgano, 'Delle associazioni non riconosciute e dei comitati', in A. Scialoja and G. Branca eds, *Commentario al Codice Civile* (Bologna-Roma: Zanichelli, 1976), 61; M.V. De Giorgi, 'Associazioni riconosciute' *Enciclopedia giuridica* (Roma: Treccani, 1988), III, 4-5. So synthetically while for the associations the purpose is mainly altruistic, used and intended for effects also of social utility; the purpose is exhausted in the division of profits for lucrative companies - mutualistic for cooperatives. Moreover, the exclusion of the economic advantage as an aim of the association is confirmed by the same legislative provision Art 24 of the Civil Code (recognized associations), Art 37 of the Civil Code (unrecognized associations) where it states that 'the members who have withdrawn or have been excluded or who in any case have ceased to belong to the association, cannot repeat the contributions, nor have any right on the assets of the association': in this sense M. Santaroni, 'Associazione' *Digesto delle discipline privatistiche*, *Sez. civile* (Torino: Utet, 1987), I, 485-500.

[34] It is possible to consult both acts, in http://www.comune.maglianoalpi.cn.it/ Home/Pagine-del-Comune?ID=8417 (last visited 18 June 2021).

[35] On the economic value of the different types of energy R. Pardolesi, 'Energia' *Digesto delle discipline privatistiche, Sez. civile* (Torino: Utet, 1991), VII, 444-450.

[36] The fact that the association cannot achieve economic objectives does not, however, mean, for the prevailing doctrine, that it cannot pursue an economic activity in such a way that it is the figure of the association, and not of society, where it is legally pursued, by the pursuit of an economic activity, an ideal purpose in nature. On this point see G. Baralis, 'Enti non profit: profili civilistici' *Rivista del Notariato*, I, 1091, 1091-1100 (1999). See also A. Fusaro, *L'associazione non riconosciuta - modelli normativi ed esperienze atipiche* (Padova: Cedam, 1991), where there are further in doctrine and jurisprudence. With reference to the latter in particular see Corte di Cassazione 16 February 2004 no 2912 *Archivio Civile,* 1004-1465 (2004), where it has been stated that the ideological purpose of the association does not exclude ex se the possibility of carrying out business activity.

[37] In this sense see M. Meli, 'Autoconsumo di energia rinnovabile e nuove forme di energy sharing' *Nuove leggi civili commentate*, III, 630, 630-639 (2020).

community. For this purpose, it is sufficient to pay for the benefit of the institution the annual membership fee of 25 euro and maintain its point of connection to the electricity grid.[38]

However, the Art 42-*bis*, para 4, letter d), to become a member of an energy community requires that the members are subjected to the same secondary processing cabin of the municipal building, essentially by limiting the sharing of energy in the mechanism of exchange on the spot.

This territorial limit seems to constitute a regulatory constraint dictated by the experimental nature of the legislative provision and the current level of development of the available energy infrastructure. But it makes the Italian provisional framework partially different from the text of RED II that does not lay down territorial limits of the energy communities. The European source rather suggests introducing instruments to prevent users from being somehow discriminated against by the participation of the Energy community even for a territorial factor.[39]

There is also another limit in the Italian framework. With reference to interested parties who wish to access in the energy community as producers Art 42-*bis,* para 4, letter a) prescribes that they should be only owners of plants that do not have a power exceeding 200 kW and that have entered into operation after 1 March 2020, i.e. the date of entry into force of the law of conservation of the decree-law.

Once again, the reason for this time limit, ignored by the Directive RED II, must be found in the provisional and experimental nature of the transposition carried out by the 'Milleproroghe' decree-law. Moreover, it is to be seen in conjunction with the need to encourage the purchase of renewable energy sources after the entry into force of the legislation that ensures high-tech infrastructure appropriate to the storage and sharing system advocated by the Directive (EU) 2018/2001.

5 The Enabling Factors of the Energy Communities in Italy: A brief Itinerary among Top-down and Bottom-up Legal Models

From these first steps it is possible to deduce that, as well as the reference discipline, also the energy community 'Energy City Hall' is an effective legal entity, but to be enhanced. The energy community of Magliano Alpi in fact, appears to respond to the latter of the law both from a teleological and participatory point of view, but it can certainly provide useful indications also with a view to its strengthening.

The main object of concern is the chosen legal form. The non recognized association is characterized by the absence of legal personality and perfect asset autonomy. For this reason, it does not appear the most appropriate legal model since energy communities will not be delimited by the territorial scope of the secondary processing cabin and will take on - according to the intention of the Directive (EU) 2018/2001 - extended territorial boundaries, including several members. In other

[38] Art 42-*bis,* para 4, letter b), decreto legge 30 December 2019 no 162.

[39] This partial discrepancy is highlighted by M. Meli, n 37 above, 635.

words, if this legal entity seems to be compatible with the activities of a restricted energy community at an experimental stage, it does not appear to be a viable model for those social formations intended to replace large-scale energy distribution.

Before proceeding to the proposal phase of the present elaboration it is therefore necessary to focus the instances that founded the choice fallen into the unrecognized association in order to understand which, in phase of transposition, may be proposed as an organizational model responding not only the needs present in genetic phase of the energy community, but also to those that characterize its full activity.

The choice of legal status is dictated, in the first instance, by Art 42-*bis* that expresses in paras 2 and 3 in the sense that citizens can 'associate' and risks in such a way to identify the energy community in an association.[40] But, it must be said that the domestic legislator would make a big mistake whether he meant the form of the association as the only one attributable to the energy community. Indeed, the doctrine[41] and the Danish experience have pointed out, the associative organization is not the only one model compatible with no-profit aim of the energy communities to provide environmental benefits, economic or social at the community level to its shareholders or members or to the local areas in which it operates rather than financial profits (para 3, letter c).

In the Italian legal system, there is a whole special legislative sector that regulates the 'Third Sector' and is preordained to discipline the conduct of economic activities for non-profit purposes. Moreover, it is possible to individualize an adequate legal model also in the rule of limited-liability companies, which are characterized by the pursuit of business, the mission between economic profits and social benefits and would be usable for energy communities.[42]

In this systematic perspective,[43] the term 'association' used by the legislator must be understood as a summary concept of a series of models characterized by a community of purpose[44] and a plurality of contractors[45] working for a common

[40] So literally to para 3: 'the final customers associate themselves according to paragraph 2 in compliance with the following conditions [...]'.

[41] M. Meli, n 37 above, 365.

[42] With reference to the applicability of this figure to the emergency communities, see M. Meli, n 37 above, 363. In general, it re-assesses the difference between associations and companies G. Ponzanelli, 'Enti con scopo di lucro' *Digesto delle discipline privatistiche, Sez. civile* (Torino: Utet, 1991), VII, 468-470.

[43] About the systematic and axiological nature of interpretation see P. Perlingieri, 'L'interpretazione della legge come sistematica ed assiologica. Il brocardo in claris non fit interpretatio, il ruolo dell'art. 12 delle disp. prel. c.c. e la nuova scuola dell'esegesi' *Rassegna di diritto civil*e, 990, 990-995 (1985). Id, *Il diritto civile nella legalità costituzionale nel sistema italo-europeo delle fonti* (Napoli: Edizioni Scientifiche Italiane, 2020), I, 561 and 581.

[44] To identify the value of this concept it seems necessary to refer to the notions of interest and individual purpose. The first indicates the relationship, normally determined, existing between a subject, which is headed by a need, and the good suitable to satisfy the latter. The second, instead, constitutes 'the satisfaction of the need, proper to the owner of the interest that the good (object of the interest itself) and suitable to achieve'. In this sense P.G. Jaeger, *L'interesse sociale* (Milano: Giuffrè, 1964), 2-3.

[45] In the category of plurateral contract as a general category are made to fit extremely legal transaction: a) society, see *Relazione al codice civile* (Roma: La libreria dello Stato, 1943), no 602, 383 where analyzing Art 1321 it makes reference to a companies and contracts in which 'the services of the parties are directed to the

purpose, and not as a typical and exhaustive model chosen by the legislator; also because such a constraint would constitute a limit incompatible with the spirit and the text of the RED II Directive. More than in fidelity to the text of the law, the reason for the choice made by the Municipality of Magliano Alpi is to be found in the discipline of the unrecognized association in the Civil Code.

The unrecognized association is governed by Arts 18-36 of the Civil Code and, as without any legal personality and perfect patrimonial autonomy, it is a model exempt from formalities for its constitution. This aspect differentiates the not recognized association by all the other plurilateral[46] contracts in communion of purpose[47] present in the italian legal system. The recognized association, as well as

achievement on purpose' (Arts 1420, 1446, 1459 and 1466); b) the consortium, see among others T. Ascarelli, *Teoria della concorrenza e dei beni immateriali: istituzioni di diritto industriale* (Milano: Giuffrè, 1960); c) stock union, see T. Ascarelli, 'La liceità dei sindacati azionari' *Rivista diritto commerciale*, II, 256, 256-260 (1931), and more recently Id, 'In tema di sindacati azionari' *Banca, borsa e titoli di credito*, II, 550, 550-558 (1958), now in Id, *Problemi giuridici* (Milano: Giuffrè, 1949), 333 and to date also in Id, *Studi in tema di contratti* (Milano: Giuffrè, 1952), 97, where the contractual division is 'understood as a plurilateral finding contract'; see also V. Barbero, *Sistema istituzionale del diritto privato Italiano* (Torino: Utet, 1955), II, 945; A. Cicu, *La divisione ereditaria* (Milano: Giuffrè, 1947), 47; G. Branca, 'Comunione' in A. Scialoja and G. Branca eds, *Commentario al Codice Civile* (Bologna-Roma: Zanichelli, 1951), 281; V. Gazzarra, 'Divisione della cosa comune' *Enciclopedia del diritto* (Milano: Giuffrè, 1962), XIII, 422; with different orientation, denying both 'the affinity between the contract of division and the contract of company or association' and the applicability to such contract of Art 1420, see G. Ferri, *Delle società* (Bologna-Roma: Zanichelli, 1981), V, 15, reference 1; e) association, see T. Ascarelli, 'Il contratto plurilaterale', in Id, *Saggi giuridici* (Milano: Giuffrè, 1949), 259, 259-270; now in Id, *Studi in tema di contratti* (Milano: Giuffrè, 1952), 97, 97-108 and more recently F. Galgano, 'Delle associazioni non riconosciute e dei comitati' in A. Scialoja and G. Branca eds, *Commentario al Codice Civile* (Bologna-Roma: Zanichelli, 1967), 27: G. Ferri, 'Le società', in F. Vassalli eds, *Trattato di diritto civile* (Torino: Utet, 1971), X, 1-10.
Other authors, instead, deny the contractual nature to the association: F. Messineo, 'La struttura della società e del contratto plurilaterale' *Rivista diritto civile*, 65, 65-77 (1942); Id, 'Contratto plurilaterale' *Enciclopedia del diritto* (Milano: Giuffrè, 1962), X, 161, where the contractual nature of the association is referred only to the text contained in Art 16 of the Civil Code. The Author attributes, in fact, to the use of the word 'act (constitutive)' and not contract, the meaning of 'an implicit repudiation of the contract scheme'. On position similar to those of the author just quoted see F. Ferrara, *Le persone giuridiche* (Torino: Utet, 1956), 227. Although it gives a contractual natur to the society, it seems to be oriented in the sense of negation for the association V. Arangio-Ruiz, *La società in diritto romano* (Napoli: Jovene, 6th ed, 2006), 77-78; f) the relation of 'agrarian association' in this sense see A. Carlo, *Il contratto plurilaterale associativo* (Napoli: Jovene, 1961) 304; F. Galgano, n 33 above, 18, where the doctrinal qualification of these and other contractual relationships as associative or with a common purpose is considered 'legally relevant', in this sense see also G. Ferri, 'Contratto plurilaterale' *Novissimo Digesto Italiano* (Torino: Utet, 1959), IV, 680-681; M. Ghedini, 'Associazione in partecipazione' *Enciclopedia del diritto* (Milano: Giuffrè, 1960), III, 851; g) the collective game and bet (poker, bingo, totocalcio, etc.), considered by many jurists to be a multi-party contract see T. Ascarelli, 'Contratto plurilaterale e totalizzatore' *Rivista di diritto commerciale*, I, 169, 170-171 (1949); A. Fedele, 'Natura giuridica del concorso SI.S.A.L.' *Foro italiano*, I, 684, 684-688 (1948); L. Buttaro, 'Del giuoco e della scommessa', in A. Scialoja and G. Branca eds, *Commentario al Codice Civile* (Bologna-Roma: Zanichelli, 1959), 100; E. Valsecchi, 'Il giuoco e la scommessa', in A. Cicu and F. Messineo eds, *Trattato di diritto civile e commerciale* (Milano: Giuffrè, 1954), XXXVII, tomo II, 117; h) assignment of the contract, in respect of which some have adduced a plurilateral structure F. Carresi, *La cessione del contratto* (Milano: Giuffrè, 1950), 61; M. Andreoli, *La cessione del contratto* (Padova: Cedam, 1951), 52: G. Mirabelli, *Dei contratti in generale* (Torino: Utet, 1958), 329-330; *contra* F. Messineo, *Manuale di diritto civile e commerciale* (Milano: Giuffrè, 1959), III, 666-667, that brings the relationship within the different category of the plurilateral store.

[46] For an overview of the doctrine of the plurilateral contract it is right to postpone, from now, to T. Ascarelli, 'Il contratto plurilaterale', n 45 above, 259; Id, 'La liceità dei sindacati azionari', n 45 above, 258-256; Id, 'In tema di voto con azioni date in pegno e sindacati azionari' *Foro italiano*, I, 20, 20-35 (1937). A comparison with G. Auletta, *Il contratto di società commerciale* (Milano: Giuffrè, 1937), 22-25, and recently Id, *Scritti giuridici* (Milano: Giuffrè, 2001), I. For the opposite, see F. Messineo, 'Il negozio giuridico plurilaterale' (already present in *Rivista di diritto civile*, 1942, 65) and recently in Id, *Studi di diritto delle società* (Milano: Giuffrè, 2nd ed, 1958).

[47] It should be pointed out that the aim of the community must be understood in a narrow sense because, otherwise, it would end up indicating also generic economic cooperation, a phenomenon which is also present in exchange contracts. In this sense see G. Ferri, 'Contratto plurilaterale', n 45 above, 680 and T. Ascarelli, 'Occhio

public limited companies, cooperatives and consortia are legal entities for whose valid constitution the law requires the public deed. Each of these, in fact, constitutes a legal person with perfect patrimonial autonomy and is therefore a center of imputation of rights and obligations totally distinct from its members.

This means that the creditors of the recognized association, companies or cooperatives can compete, although with a different system, only on the assets of the latter without affecting the assets of the president or members of the governing council acting on his behalf. This benefit for the members balances with a high formality for its valid constitution. In fact, the solemnity of the constituent act drawn up in the form of the authentic instrument guarantees third parties of its content and in these cases meets the requirements of certainty of the act, so that it is easier to inform third parties who enter in relation to the constituent event and to prove its content.

The unrecognized association operates differently, because it is validly constituted with the subscription of a constitutive act also in the form of private writing and registered to the revenue agency for tax purposes only.[48]

Not to case the practice sees the not recognized association employed for actives of social character devoid of meaningful legal traffics because it has the merit to exempt the promoters from economic burdens for its valid constitution without that to this is accompanied a risk asset for members acting on behalf of the institution who would otherwise be directly liable with their assets.

Declined within the energy communities, the lack of the legal personality and autonomous patrimonial asset does not appear to be a choice suited to the widespread of energy communities, with the energy traffic and the complexity of economic relations that would result. The legal form under consideration, exposing promoters to a high capital risk, rather than encouraging the aggregation of citizens in the exchange of energy, could discourage the formation of widespread, numerous and complex energy communities.

In the present case, this aspect is neutralized because the capital risk falls within the assets of the Municipality, which is the promoter and coordinator of the Energy City Hall, and therefore on a public body that cannot physiologically fail and it is not subject to the practical disadvantages that the same legal form would produce for private citizens. In the silence of the legislator and in the total cultural disorientation that characterizes this phase of energy transition certainly the fact that the Italian legal system has had to regime the model of the not recognized association thanks to the flexibility of the organizational figure and the absence of the economic burdensome for the sponsoring body has profitably contributed in the phase of experimentation to the birth of these new types of social aggregations.

However, in the view of the RED II, the constitution does not necessarily have to follow a top-down procedure as in the case of Magliano Alpi where the initiative was led by a local institution. It is conceivable and desirable that the promoters of the

ai concetti!' *Rivista di diritto commerciale*, I, 72, 72-83 (1951), (now, in Id, *Studi in tema di contratti*, n 45 above, 176). Without a principle of collaboration moreover according to P.G. Jaeger, n 44 above, 126, no contract could ever be concluded or implemented.

[48] See Art 148 of Testo Unico delle imposte sul reddito.

energy communities would be the citizens themselves, with bottom-up mechanisms. To encourage this perspective, it is necessary to identify more structured organizational models, which guarantee private promoters and third parties who enter into a relationship with the energy community, but which are also in line with the ideal spirit of these specific forms of social aggregations.[49]

6 The Transposition of the Directive (EU) 2018/2001: Mutual Lessons Learned from the Danish and Italian approach

From the comparison with the Danish experience it is possible at this point to envisage effective instruments to encourage during the transposition of the Directive by both Italian and Danish legislators.

In their diversity, both legal cultures have had a long tradition of the cooperative movement which, thanks also to the multiple impulses of the European Union,[50] has been accompanied in recent years by the emergence of new forms of organization characterized by the ability to reconcile economic activity with social aims.[51] The social enterprise, although after the initial enthusiasm in fact did not have the expected success, neither in Italian nor in Danish law,[52] is presented as a rather flexible legal model with many features necessary to meet the requirements for the establishment of energy communities.

Its peculiar configuration, as legislative 'qualification' that can generally be acquired by any legal entity,[53] allows the promoters of the energy project to choose

[49] For a difference between top-down and bottom-up mechanisms in the formation of the energy communities C. Candelise and G. Ruggeri, 'Status and Evolution of the Community Energy Sector in Italy' 13 *Energies*, 1888, 1892-1893 (2020).

[50] European Commission, *Social Business Initiative. Creating a favourable climate for social enterprises, key stakeholders in the social economy and innovation*, Brussels, COM (2011) 682 final available at https://www.fi-compass.eu/ (last visited 18 June 2021). See, also, European Commission, Employment Social Affairs and Inclusion, *A map of Social enterprises and their eco-systems in Europe* (Luxembourg: Publications Office of the European Union, 2015), 9-100; C. Borzaga et al, *Social Enterprises and their ecosystems in Europe. Comparative synthesis report* (Luxembourg: Publications Office of the European Union, 2020), 25-148.

[51] The social enterprise model was welcomed in Denmark in 2014 with the adoption of the Act on Registered Social Enterprises no 148 and even earlier in Italy with the decreto legislativo 24 March 2006 no 155, last revised with the decreto legislativo 3 July 2017 no 112 on the occasion of the reform of the Third sector.

[52] Among the main causes of the failure of dissemination of this model in Denmark it could be mentioned the difficult access to markets, the lack of know-how and resources as well as the absence of the specific fiscal incentives. See, European Commission, *A map of social enterprises and their eco-systems in Europe. Country report: Denmark* (Luxembourg: Publications Office of the European Union, 2014), 1-32; L. Hulgård and L. Chodorkoff, *Social enterprises and their ecosystems in Europe. Country report: Denmark* (Luxembourg: Publications Office of the European Union, 2019), 15-64. For the Italian references, see V. Bancone, 'Il ruolo dell'impresa sociale ai tempi della crisi economica' *Il Foro napoletano*, 309, 309-323 (2016); A. Fici, 'La nuova impresa sociale' in Id ed, *La riforma del Terzo settore e dell'impresa sociale* (Napoli: Editoriale Scientifica, 2018), 343, 343-360; M. Musella, 'La riforma dell'impresa sociale: un'opportunità per lo sviluppo', ibid, 361, 361-376; G. Benedetto, 'Impresa sociale: il giano bifronte della riforma', in M. Schirripa ed, *Il Terzo settore e la Stella del no profit* (Napoli: Edizioni Scientifiche Italiane, 2019), 369, 369-392.

[53] The Danish Act on the Registered Social Enterprises does not restrict the choice of legal model for establishment of the social enterprise. Therefore, to date, more than 14 different legal forms are being used in Denmark, including partnership, cooperative with limited liability, association, foundation, voluntary association, sole proprietor, private limited company and others. Similar discipline is provided for by Italian law which expressly includes the possibility to adopt the legal form of cooperatives, private companies, associations etc.

among multiple models, including that of the cooperative or limited liability company, while ensuring the non-profit and the social purpose of the activity carried out.[54] In Italy, for example, the social enterprise is legally counted among the entities of the Third sector, a circumstance that allows it to enjoy tax benefits and economic incentives as well as to activate collaborative co-programming and co-planning with local authorities on the basis of shared resources and competences.[55]

In this perspective, the exclusively non-profit logic of social enterprises allows us to imagine an additional benefit that they are able to generate for the local territory in which they operate. In fact, the renewable energy communities established through these non-profit forms not only contribute to energy self-sufficiency, and therefore to savings in bills, but also take on the role of an alternative financing instrument for economic, social and cultural regeneration of the local territories. For this purpose, the Danish legislation reserves the specific allocation of profits resulting from the activity of the undertaking which, far from being redistributed between its members, must be reinvested in the promotion of the statutory activity or may be donated to other social enterprises operating in the territory as well as charities or non-profit organizations. In Italy, in addition to the allocation of any profits and surpluses to the performance of statutory activities or to increase of assets, the law provides for the possibility for the Third sector entities, and therefore also for social enterprises, to set up assets for a specific business[56] with the possibility of financing through this instrument local promotion and development activities other than statutory ones.

Following these considerations, it is now possible to note that both Danish and Italian national regulations, thanks also to the constant and dynamic evolution of European policies, offer different legal models for the constitution of energy communities, models which, moreover, have the potential to ensure the aggregation and active participation of citizens. In this perspective, social enterprises are in many aspects in line with the goals of the energy communities, especially if set up in the form of a cooperative.[57] These are organisations which, unlike corporate models, are not subject to claims of a capital nature and pursue the opposite non-profit purpose. While, compared to non-recognised associations, they have a solid

[54] Given the flexibility of the choice of the legal model to be adopted for the establishment of the social enterprise, both laws, Danish and Italian, lay down specific conditions to be able to take on the qualification of the social enterprise and enjoy the benefits that this qualification entails. The activity carried out by the undertaking must pursue the social purpose and consist in the permanent and principal pursuit of an activity of a general interest, non-profit making which has a significant social value and is capable of actively involving citizens through accountable and transparent management models. Nevertheless, the redistribution of the company's profits is not possible under any circumstances, rather they must necessarily be reinvested in the company's statutory activities or in other social activities. Finally, both laws guarantee the independence of the social undertaking from public bodies which, although they may participate in the undertaking, cannot exercise control that would affect the private nature and autonomy of the undertaking. For a comparative overview of the disciplines on social enterprise adopted by the Member States of the European Union, see A. Fici, 'Recognition and Legal Forms of Social Enterprise in Europe: A Critical Analysis from a Comparative Law Perspective' 27 *European Business Law Review*, 639, 639-667 (2016).

[55] In this way, Art 55 of the decreto legislativo 3 luglio 2017 no 117, the so-called Third sector code.

[56] Art 10 of the Italian Third sector code.

[57] In addition to a highly participatory and democratic governance, in terms of responsibility, cooperatives are characterized by their perfect financial autonomy, which means that only the cooperative and its assets are responsible for social obligations.

structure with guarantees with respect to third party claims. In addition, their open, voluntary and participatory organisational form is potentially appropriate to ensure one of the fundamental aspects of energy communities: the effective control of the community by the citizens and the ownership of the plants producing energy from renewable sources that belong and are developed by the community.

It is therefore hoped that the transposition of the Directive (EU) 2018/2001 takes into account the potential of the existing legal instruments and at the same time provides for specific measures to implement them in order to create a more aware and sustainably oriented culture towards community-type energy solutions. In particular, it seems strategic to encourage, by strengthening the existing economic incentives, the establishment of social enterprises, in the form of cooperatives, which offer a legal structure appropriate to the energy communities in a landscape in which these social formations are called to pursue ideal goals but also to become the main legal reality of energy production, distribution and storage.

The Energy Authorities: Nature and Powers in Italy, Great Britain and France

Elena Napolitano

Abstract: Energy production has traditionally a substantial impact on the environment and this opens the way to the enhancement of sustainable development.

When dealing with renewable energies, the discourse becomes complicated since they are compatible with the protection of some environmental matrices but, at the same time, aggressive toward others.

Balancing these interests is entrusted to the administrative authority called to exercise this power.

In the energy sector, with greater intensity than that of the environment, we are witnessing a form of Europeanisation of the same administrative functions (those of regulation), due to the close interplay with the market and competition.

This work, starting from the *Adunanza Plenaria* of the *Consiglio di Stato* no 9/2019, aims to investigate the nature and functions of Energy Regulatory Authorities and energy service operators in various countries such as Italy, France and Great Britain.

Keywords: Energy Regulatory Authorities, Electricity Market, Renewable Energies

1 Introduction

First of all, the question suggests a reflection on the market and the private economic initiative, which, contextualized in the socio-normative system, represent ideologically emblematic notion with solid juridical value.[1]

For a long time, competition law was *built* around the idea that the legal asset to be protected was the freedom of economic initiative. The consumer's well-being represented a reflection of a market detached from the anti-competitive behaviour of market businesses.[2]

On this point, the doctrine has been in part, and in part continues to be, divided.

There wasn't lack of those authoritatively highlighting that the historical development of the market, in its many facets, required an ethical and juridical direction of economic life.

[1] P. Perlingieri, 'Mercato, solidarietà e diritti umani' *Rassegna di diritto civile*, 84-117 (1995).

[2] A. Catricalà, 'Prefazione', in G. Cassano et al eds, *Concorrenza, Mercato e diritto dei consumatori* (Milano: Utet giuridica, 2018), VII.

There are many perspectives: 'from the vision of the market as a guarantee but at the same time denial of freedom, as a place of personal merit and of opportunities for luck and risk, as a factor of subjectivity and as a factor of homologation, as a network of cooperation and as a conflictual arena'.[3]

The market, therefore, can be considered free as it becomes a place to guarantee the broadest 'autonomy of the individuals participating in the exchange in their price and competition struggle'.[4]

This, however, turns into market freedom, such as creating friction between the antagonists, sometimes relegating personal dignity to a simple exchange value and exposing the weak subjects to marginality and therefore into an instrument of indebtedness of social relations.

However, the institutionalization of the market requires the hiring of an external guarantor, be it the law or the moral.

It is up to the 'good law' to regulate society which doesn't simplistically translate into the pursuit of wealth and its distribution but also into promoting a society with greater chances of a free and dignified life for all.

It's well known that consumer protection is linked to concrete circumstances and actual bargaining methods.

Suppose it is true that the rule of the consumer cannot be separated from that of person and citizen. In this case, it is equally valid that the relative protection cannot be considered abstract and general but must be evaluated concerning the different markets and the different needs to be met.

And precisely in the light of this, between the beginning and the end of the 90s, we are a period of profound transformations placed in the context of the integration and economic and social development of Member countries of the European Union.

These transformations relating, mainly, to the legal regulation of economic activities, have pursued as a central objective the so-called 'Economic Liberalism'. It is understood as a free competition between economic operators and equal opportunities of access to the market, which should guarantee the optimization of the offer of the goods produced and, therefore, achieve greater general well-being.

In pursuit of this objective, the innovations that have occurred have also involved a complex of activities that have traditionally been characterized by the extensive public intervention (communications, post, energy, transport).

The nature of general economic interest and the nature of a natural monopoly of such activities have, in fact, traditionally justified their reliance on public or only formally private operators.

Since 1974, our legislator, along with French, American and British experience lines, has created some Administrations with a high degree of autonomy, commonly referred to as Independent Administrative Authorities.

[3] P. Perlingieri, n 1 above, 240.

[4] M. Weber, *Economia e Società*, (Roma: Donzelli, 2011), I, 77.

They have organizational, purposeful and functional characteristics to make one genus particular,[5] but a very heterogeneous legal nature. This term indicates Authorities, public bodies and monochromatic bodies, with or without legal personalities, which, although not homogeneous with each other, however, have the common denominator of particular independence from political, bureaucratic and economic power. The recognition of such a position of independence stems from the need to give these entities a position of tertiary and neutrality in the exercise of regulation and protection of interests of constitutional importance in socially relevant sectors.[6]

A peculiarity familiar to the Independent Administrative Authorities is that they are holders of powers having a substantially protective character: they are not delegated to the direct administrative management of the areas of competence nor to a function of mere control, aimed at verifying the activities of other subjects, as they are also given a general power of direction as well as of information, solicitation and, albeit within certain limits, of repression and the imposition of sanctions.[7]

Ultimately, their institutional task is to create rules of conduct for operators and monitor their observance, maintaining a position of equidistance from the interests at stake.[8]

This work focuses on the Electricity Market Authorities in a comparative perspective and its evolution from the monopoly regime to (partial) liberalization by examining the essential legislative interventions in the sector. In this evolutionary process, as we shall see, of particular interest is the decreto legislativo no 79/99, which introduces the new regulation of the electricity market.

This decreto represents the first attempt, albeit in compliance with rules that guarantee the satisfaction of objective needs linked to the nature of the activity as a public service.

In this context, the sentence of *Consiglio di Stato*, in *Adunanza Plenaria*, no 9/2019[9] is placed, and it represents, as far as we know, an overview of the powers and competencies attributed by the law to the *Gestore della Rete* (today GSE) and the *Autorità di Regolazione per Energia Reti e Ambiente* (today ARERA). It, entering into the substantial dispute that arose concerning the methods for determining energy prices, formulates a *legal* clarification that lends itself to being invoked (and criticized) well beyond the *hortus conclusus* of the concrete case.

2 Adunanza Plenaria no 9/2019

A typical action of *condictio indebiti* inspires the occasion (for an amount of approximately € 45 million) late action by *Enel Produzioni S.p.A.* against the GSE and

[5] S. Cassese, 'Introduzione', in Id and C. Franchini eds, *I garanti delle regole* (Bologna: Il Mulino, 1996), 11.

[6] C. Franchini, 'Le Autorità Amministrative Indipendenti' *Rivista Trimestrale di diritto pubblico*, 549, 559 (1998).

[7] M. Stifano, 'L'Autorità per l'energia:modelli organizzativi e prospettive future' *Rivista Energia*, 10, 12 (1995).

[8] G. Vesparini, 'Le funzioni delle autorità amministrative indipendenti' *Diritto della banca e del mercato finanziario*, 415, 425 (1990).

[9] Consiglio di Stato - Adunanza Plenaria 3 September 2019 no 9, *Ambiente e sviluppo*, 750, 752 (2019).

the ARERA, which resulted from a different calculation of the total energy amount of the so-called share of the obligation paid for the five years 2003-2008.

The belated proposition of the request for repayment of the debt found its causa petendi in the sentence of the Tar Lombardia,[10] relating to the regime of reimbursement of charges that the manufacturing companies were required to pay on the years 2001 and 2002.

In the judgement above, the administrative authority stated that the difference principle according to which is relevant, to correctly determine the share of the obligation, is the energy produced and fed into the grid, after deducting that consumed by the plant in the production process energy.

Hence, Enel's interest in supporting its right to a higher reimbursement corresponding to the amount paid as an obligatory share.

The mandatory fee, introduced by art 11 of decreto legislativo of 16 March 1999 no 79[11] (implementing directive 96/92/EC, containing standard rules for the electricity market) in order to encourage the use of renewable energy (so-called *green energy*), energy saving, the reduction of anhydride emissions carbon dioxide and the use of national energy resources, is that part of electricity produced from renewable sources, calculated as a percentage about the quantity of electricity produced in the year from a non-renewable sources, that each producer or importer of energy has (precisely) the obligation to feed into the national electricity system, if necessary also by purchasing the quota or related rights from other producers or the GSE.

The problem that arose concerned the pumping plants of the hydroelectric system, which consume more energy than they produce (about 30% less than then consumed) and nevertheless are necessary for the system as they help the emergency needs of the network electric.

In Enel's prospect, the partially undue nature of the amount paid in the form of green certificates[12] (certificates that the Operator cancels according to the corresponding quota compulsory calculated on the energy production of the previous year) came from a different method of calculating the energy produced by the plant. The energy-based on which the required quota is determined in the application of a percentage coefficient.

[10] Tribunale amministrativo regionale Lombardia - Milano 19 July 2006 no 1437 available at https://pluris-cedam.utetgiuridica.it/main.html (last visited 11 September 2021).

[11] G. Avanzini, 'Il sistema elettrico in Italia', in E. Ferrari ed, *I servizi a rete in Europa* (Milano: Cortina Raffaello, 2000), 325; F. Di Porto, 'Il Decreto Bersani (d.lgs. n. 79/99). Profili pro-concorrenziali della riforma del mercato elettrico' *Concorrenza e mercato*, 407 (2000).

[12] The *Certificato Verde* was modified and redesigned several times, mainly with legge no 244/2007 and legge no 99/2009. It was suppressed by the aforementioned decreto legislativo no 28/2011 (implementing directive no 2009/28/EC, on the promotion of the use of energy from renewable sources), which, by reforming the incentive system for electricity from renewable sources, provided other, that the market system based on CV was gradually replaced by a system of the feed-in tariff type. Accordingly, for renewable source plants that entered into operation after 31 December 2012, access to the GC incentive mechanism was precluded (Art 25, para 1, decreto legislativo no 28/2011); moreover, starting from 2013, the progressive reduction of the mandatory quota for the purchase of GCs was envisaged, up to its complete zeroing for the year 2015 (Art 25, para 3, Decreto legislativo no 28/2011). The alternative incentive mechanism to CVs is the so-called 'All inclusive rate'. It is reserved for IAFR qualified facilities.

According to the applicant, the bases for calculating the energy should have been related only to that produced and fed into the grid by the plant, and not instead to that share-part of the energy consumed by the same plant in the production process and, therefore, not placed on the network.

The *Consiglio di Stato*, in the plenary session, thus had the opportunity to examine the question (preliminary) concerning the legal nature (provisional or joint) of the GSE's assessment documents regarding, in fact, compliance with the '*quota d'obbligo*' in terms of renewable energy and provided a *dual* solution.

With more significant explanatory effort, the question of law devolved to the *Assemblea Plenaria* can be 'maximized' in these terms: if, concerning the introduction into the national electricity system of quotas of renewable energy by producers or importers of energy non-renewable sources, the verification procedure regarding compliance with so-called annual mandatory quota, attributed to GSE by Art 11, para 5, decreto legislativo no 79/1999,[13] constitutes: 1) the explication of an administrative power which ends with an authoritative measure of assessment about compliance or not with the mandatory quota, with the consequent position of legitimate interest in the hands of the recipients and submission to the rules of the appeals of the administrative acts, as well as the respective terms of forfeiture; alternatively, 2) the implementation of a control procedure, with an acknowledgement value of a technical nature, which ends with a final act of ascertaining whether or not the obligation under the law is respected, operating on an equal footing of the relationship mandatory, and subject to the dispute within the ten-year limitation period.

3 (...) Continue

It is hardly necessary to remember that GSE was born as an effect of the liberalization of the electricity sector introduced by decreto legislativo no 79/1999, which provided for the establishment, by Enel S.p.A., of a company to which to confer the management of the national transmission grid and the exercise of the transmission and dispatch of electricity. In its original configuration, the company had, in fact, the name of *Gestore della Rete di Trasmissione Nazionale* (GRTN). Following the unification, by Terna S.p.A., of the ownership and management of the electricity grid (provided for by Art 1-*ter*, para 1, decreto legislativo no 239/2003, converted into legge no 290/2003, and implemented with the decreto del Presidente del Consiglio dei Ministri of 11 May 2004), the name has changed to that of GSE and the institutional objectives have also changed of the company, which has since assumed a central role in the promotion, incentive and development of renewable sources in Italy.

The GSE, which has the *Ministero dell'Economia e delle Finanze* (MEF) as its sole shareholder, is, in turn, the parent company of the companies GME, *Acquirente Unico* (AU) and *Ricerca sul Sistema Energetico* (RSE), wholly-owned. Over time, there has been a growing expansion and diversification of the tasks assigned to the GSE. So

[13] S. Quadri, *Energia sostenibile. Diritto internazionale, dell'unione europea e interno* (Torino: Giappichelli, 2012), *passim*.

that, from the exercise of electricity transmission and dispatching activities, the company's primary function has gradually become that of promoting sustainable development through the recognition of qualifications and the provision of incentives in the field of energy from renewable sources and energy efficiency.

After this necessary clarification, it must be said that according to the *Plenaria*, the acts with which the GSE ascertains the non-fulfilment, by the obliged subjects (producers and importers of energy from non-renewable sources), of the quota above the obligation, with a consequent burden of appeal within the forfeiture period of sixty days. The acts by which the GSE ascertains compliance with the same obligation quota are equal, with a consequent application of the ten-year limitation period if the producer/importer of energy intends to obtain the refund of any sums paid in excess to fulfil this legal obligation.

Starting from the personal profile, the *Plenaria* highlighted in this ruling that the GSE could not be qualified as a legal person under private law, considering that its form is a joint-stock company wholly controlled by the 'public hand'.

The Ministry of Economy and Finance wholly owns and the control of financial management is exercised by the Court of Auditors, under Art 12, legge no 259/1958.

On the objective level, however, the judges of *Consiglio di Stato* represented that the social statute of the GSE showed the exercise of a series of functions of a public nature relating to the electricity sector, 'and in particular the activities of a regulatory, verification and certification nature relating to the electricity sector'[14] according to Art 3, paras 12 and 13, and referred to in Art 11, para 3, of decreto legislativo no 79/1999, 'as well as related activities' pursuant to decreto legislativo no 387/2003, on the promotion of electricity produced from renewable energy sources in the internal electricity market, 'included activities of a regulatory nature and other related competencies, right and powers'.[15]

These characteristics led the *Adunanza Plenaria* to believe that the GSE falls 'in the group of private entities performing public functions', given that 'while formally assuming the role of a capital company governed by private law, it is nonetheless a subject endowed by law with functions. These functions related to the diffusion of energy from renewable sources to the control and management of energy flow from this source and to the fulfilment of the obligations imposed by law on operators in the energy sector'.

After the *Plenaria* focused on the functions performed by the GSE in the preeminent interest of the community, in the gradual reduction of carbon dioxide in the atmosphere, considering that this control activity is the expression of an administrative function.

The control power exercised by the GSE is considered to be entirely respectful of the above mentioned principle of legality - according to which 'a subject, even private, can issue administrative measures only in the cases provided for by law'.

[14] Consiglio di Stato - Adunanza Plenaria, no 9/2019, n 9, above, para 5.

[15] ibid 17.

Art 11, decreto legislativo no 79/1999, in addition to identifying the subjects obliged to fulfil the mandatory quota (para 1), entrusts the Minister of Economic Development, in agreement with the Minister of the Environment, the task of dictating directives for the concrete implementation of the legislative provision relating to the mandatory quota itself (para 5).

It is precisely in coherence with the primary legal source that - observed the *Plenaria* - '[...] a detailed discipline of the methods of exercising this control was introduced, through an authentic and own administrative procedure, entrusted to the holder of the power of control' (precisely the GSE).

The merit of having regulated the activity of verifying the fulfillment of the mandatory quota (which is divided into an initial phase, a preliminary investigation and a final determination phase) is to be divided into an initiative phase, a preliminary investigation and a final determination phase) is to be attributed to the ministerial directives first issued with the decreto ministeriale of 11 November 1999 and then updated by the ministerial decree of 24 October 2005, subsequently replaced by the ministerial decree of 18 December 2008.

Following this reconstruction, the *Adunanza Plenaria* held that the administrative-authoritative nature of the control activity entrusted to the GSE becomes explicit only when such verification power results in a negative assessment.

This administrative activity is preliminary to the adoption of a sanctioning measure which, due to the nature of the interests involved, is closely linked to the requirements of legal certainty and stability of GSE prevision; prevision that ascertains the non-fulfilment of the economic operator for the legal obligation: the pecuniary sanction for non-fulfilment, on ARERA, is applied by placing the assessment carried out by the GSE as the basis of the remedial measure.

Hence, the need to challenge the GSE provision within the deadline of 60 days.

The positive ascertainment deeds of the GSE with the fulfilment of the share of the obligation, on the other hand, would represent acts of a collaborative nature; acts which remain intact and operable, therefore, within the traditional prescription terms.[16]

4 GSE

The health emergency due to the pandemic caused by the Covid-19 virus has exacerbated the need to act on two fronts: on the one hand, on the promotion of economic investments and on the encouragement of business initiatives aimed at countering the post-pandemic economic crisis; on the other hand, to protect the environment and the climate, favouring the so-called *ecological transition* and so-called 'energy transition'.

This last complex formula unites the promotion of both the rational use and saving of energy, the so-called 'energy efficiency' and the production of energy from

[16] A. Colavecchio, 'Energie rinnovabili e atti di verifica sul rispetto della quota d'obbligo' *Giornale di diritto amministrativo*, 90, 91 (2020).

sources that do not impact the environment and climate, or in any case less impact than "use of fossil fuels, and in particular of the so-called 'renewable sources'.[17]

The ecological transition and the planet's sustainability were the central themes at the G20 held in Naples on 22nd July 2021.

The Minister of Ecologic Transition,[18] Prof. Roberto Cingolani, opened the work of the G20 delegations by inviting the international community towards more competitive objectives, also taking into account that due to the current health emergency, some summits have been postponed, including COP 15 of the Convention on Biological Diversity and the adoption of the 'global framework' on the objectives to be achieved by 2030, and the COP 30 on climate itself (of which Italy is co-organizer with the United Kingdom) to be held at the end of this year in Glasgow.

In 2030, with 6 million electric vehicles in circulation, a limited increase of the need for power (between 7 and 10 TWh/an equal to approximately +3% of current needs) and, without other measures, a solid increased pressure on distribution networks, in terms of some points and of committed power.

In this scenario, the simplifications decree[19] must also be contextualized which intervenes in an incisive way on the control power of the Energy Services Manager in the sector of incentives for renewable sources.

With the precise objective of promoting long-term investments in this sector, the legislator intended to link the powers of the GSE to the general discipline on self-protection (in particular Art 21, legge no 241/1990).[20] An intervention that would have been superfluous if the jurisprudence had not convincingly sponsored a configuration of these powers that is entirely free from the guarantees that the general law on administrative procedure recognized private individuals in respect of the acts of withdrawal of the PA.

It is still early to say whether the new legislation will lead to a more radical rethinking of the doctrine and jurisprudence on the nature of the Manager's powers. However, it is foreseeable that the first applications of the new discipline would suffer from the stickiness of the previous guidelines, as a result of which the

[17] C. Vivani, 'La transizione ecologica fra semplificazione e riorganizzazione amministrativa', *Giurisprudenza Italiana*, 1242, 1264 (2021).

[18] The Ministry of Ecological Transition is the government body responsible for the implementation of environmental policy. The decreto legge no 22/2021, converted with amendments into legge no 55/2021, renamed the Ministry of the environment and the protection of the territory and the sea, in turn established in 1986, with functions relating to protection of biodiversity, ecosystems and marine-coastal heritage, land and water protection, policies to combat climate change and global warming, sustainable development, energy efficiency and circular economy, integrated waste cycle management, remediation of sites of national interest (SIN), environmental assessment of strategic works, a contrast to atmospheric-acoustic-electromagnetic pollution and the risks deriving from chemical products and genetically modified organisms. The Ministry also plays a role in guiding and supervising the Higher Institute for Environmental Protection and Research (ISPRA) activities and national parks and marine protected areas. It promotes good environmental practices, sustainable mobility and urban regeneration according to sustainability criteria. It deals with the promotion of environmental education in schools.

[19] Decreto legge 16 July 2020 no 76, containing 'Urgent measures for simplification and digital innovation', then converted with amendments by legge 11 September 2020 no 120.

[20] M. Protto, 'La riscrittura dei poteri di controllo del GSE nell'ambito dell'autotutela' *Giurisprudenza Italiana*, 1273, 1274 (2021).

objective of the reform doesn't seem achievable with the immediacy desired by the legislator.

Of course, the synergy between the GSE and the department for the Regional Affairs and Autonomies of the Prime Minister's Office last month (June 2021) is of great importance.

The Memorandum of Understanding, signed by the company's President that has a primary role in the energy transition scenario, will support the Department of Palazzo Chigi in the activities it has implemented for the diffusion of energy production from renewable energy sources, energy efficiency and sustainable mobility.

In these areas, the collaboration will ensure the optimal integration of the European Structural and Investment Funds, with incentives managed by the Manager.

In this regard, it is necessary to mention another recent ruling of the *Adunanza Plenaria* of the *Consiglio di Stat*o on incentives for renewable sources and the structure of GSE's administrative procedure, aimed at recognizing them. This procedure, if it concerns an increased incentive rate in addition to the basic one, must be understood as having multiple objects, divisible in its legal effects. In the same way, the forfeiture that may be ordered as a result of a control procedure that has ascertained the existence of a significant violation according to Art 42, decreto legislativo no. 28 of 2011. The *Adunanza Plenaria* thus expresses itself on the nature of the power exercised by GSE when it orders the forfeiture of an operator of the previously granted benefits. According to the Assembly, the forfeiture is to be understood as an institution that differs both from the exercise of self-protection, to whose genus, it can in any case be traced back, as from the administrative sanction. In conformity with the majority jurisprudential orientation, such an indication appears, however contradicted by the amendments recently made by the legislator to Art 42, para 3, of decreto legislativo no. 28/2011.

5 ARERA

The independent authorities in public utility services constitute a particular type of independent Authority, which can be defined as regulatory or sectoral government,[21] deputy to the care and management of particular markets or economic sectors.

The establishment of special sector authorities (so-called Authority) represented the indispensable promise of public services'privatization and liberalization processes. The Art 1 *bis* of the decreto legislativo of 31 May 1994 no 332, conv. in legge 30 July 1994 no 474 provided that the divestments of state and public entities shareholdings in companies operating in the transport, telecommunications, energy sources and other public services sectors were 'subject to the creation of

[21] G. Pericu, 'Brevi riflessioni sul ruolo istituzionale delle autorità amministrative indipendenti' *Diritto amministrativo*, 1, 2 (1996).

independent bodies for tariff regulation and controlled the quality of services of significant public interest'.

About this prevision, the legge 14 November 1995 no 481, which, while dictating general rules for the regulation of public utility services, foreshadowed the establishment of regulatory authorities for the electricity and gas sector and the telecommunications sector.

The Regulatory Authority for Energy, which is entrusted with regulatory and control functions in the sector, has the task of pursuing the purposes indicated by the instituting law (Art 1) with which it is intended to guarantee: promotion of competition and efficiency in the electricity, natural gas, water services, their dissemination and use homogeneously throughout the national territory, through the definition of a specific and transparent tariff system, able to harmonize the economic objectives financial statements of merchants with general objectives; the promotion of the protection of the interests of users and consumers. ARERA also carries out consultative and reporting activities to the Government and Parliament but contributes to the revenues of regulated operators; promotes the rational use of energy, with particular reference to the spread of energy efficiency and the adoption of measures for sustainable development; carries out monitoring, surveillance and control activities also in collaboration with the *Guardia di Finanza* and other bodies, including the Cassa for energy and environmental services (CSEA), the Energy Services Manager (GSE), on service quality, safety, access to networks, tariffs, incentives for renewable and similar sources.

For the performance of its institutional functions, the Authority is vested with considerable powers attributable to four fundamental categories.

In the first place, advisory powers and proposals with which the Authority provides the Government and Parliament with elements of knowledge and evaluation in order, on the one hand, to the legislative and regulatory discipline of the market and, on the other, the regulation of the service. Second, the power to adopt general regulatory or administrative acts in cases where the Authority regulates the tariffs and quality levels of the service or issues the directives for accounting and administrative separation between the various diverse electric activities.

Thirdly, powers of control are exercised through individual administrative acts, including sanctions.

Finally, the adoption of judicial acts is expected, where the Authority is called upon to perform arbitration and conciliatory functions.

In the contest of the reform carried out by the legislative decree, the function that we could define as typical of the Authority is that of tariff determination; the other functions of general user guarantee or regulation of the sector are exercised in collaboration with the Ministry of Industry and with other electrical subjects.[22]

On the international level, ARERA participates in the work of the Agency for the coordination of energy regulators (ACER) and is a founding member of Council of

[22] L. Cici, 'L'Autorità per l'energia elettrica e il gas' *Rassegna giuridica dell'energia elettrica*, 731, 734 (1998).

European Energy Regulators (CEER). He is the leading promoter of the association of Mediterranean energy regulators (MEGREG), of which he holds the permanent vice-presidency, and plays a primary role in the Energy Community Regulatory Board (ECRB). He also ensures support for the International Confederation of Energy Regulators (ICER). In April 2014, he promoted the launch of the European Water Regulators (WARED), a network for cooperation between regulators of the water sector that has held the presidency since 2015.

The decreto legislativo no 79/1999 didn't cause a change in the overall system introduced by legge no 481/1995.

5.1 The Relationship between ARERA and Antitrust Authority

The guarantee of correct functioning of the electricity market lies with the sector regulatory Authority and the Competition and Market Authority established with the legge of 10 October 1990 no 287, scarcely considered in the liberalization decree.

Therefore, the functions of ARERA may occasionally coincide with the scope of intervention of the Antitrust - as indeed was foreseen in the law establishing the latter, other independent bodies operating at the time - hence some conflicts of jurisdiction are configurable between the two bodies. It's possible, however, to locate the borders between the two areas from intervention. Generally speaking, it can be said that the Authority of regulation combines efficiency and economy of service with requests of operators and recipients, pursuing the optimal balance point between supply and demand, mainly for the qualitative aspects for the specific service. Therefore, the Authority enters into a relationship between different and complementary subjects (users and operators) to reconcile the respective needs of the economy and the efficiency of the service.

Antitrust instead intervenes between subjects of the same nature (the merchants-entrepreneurs) to find a balance in the degree of presence on the market that each of them occupies, with coincidence of interests, in a given sector. This statement is reflected in Art 1, para 1 of legge no 287/1990, according to which 'the provisions of this law apply to agreements, abuses of dominant position and concentrations of businesses'.

Therefore, the consumer-user's interest and satisfaction do not enter directly into Antitrust's sphere of evaluation, even if this will ultimately be the main beneficiary of the effects of competition conducted according to the rules of fairness.

Even if the criteria that move the respective interventions remain distinguishable, the lack of operational connection between the two bodies remains.

The sector Authority must operate in such a way that the energy market becomes more competitive, but must not, in principle, supervise the application of the competition rules, having to limit itself to report to the 'Antitrust Authority for competition and the market the existence of hypotheses of violation of the provisions of law 10 October 1990, no 287' (Art 2, para 33).

On the other hand, the interest in the affirmation of a competitive market also belongs to the Antitrust Authority - called in fact to express a 'mandatory opinion on the definition of concessions, service contracts and other instruments for regulating the operation of services national' (Art 2, para 34, legge no 431/1995) - as well as the methods of competition and comparison between companies cannot leave the regulatory Authority indifferent, which, at least in one case, 'checks that the conditions and methods of access, for the operators the services however established, are implemented in compliance with the principles of competition' (Art 2, para 12, letter c) legge no 431/1995).

6 The Repercussions of Liberalization

The liberalisation and integration of electricity markets in the European Union have progressed in the 25 years that separate us from the first directive on the subject (1996/92/EC).

However, progress has not always been uniform, both in terms of the results achieved by the individual Member States and the degree of openness in the various stages of the supply chain.

It is undisputed that the retail market is the weakest link in the chain.

The asymmetry between the degree of restructuring of the wholesale and retail markets also derives from structural elements that make the competitive revolution less simple.

Tendentially, competition should be a good thing for large consumers because the costs of transactions are lower and the market management more balanced.

The focus has always been on the regulation of retail markets, and therefore on consumer protection methods and the need not to differ too much from the textbook model of restructuring.

However, it is necessary to acknowledge the technological progress and the spread of smartphones, intelligent applications and smart technologies (and, increasingly, smart meters), transaction costs have significantly decreased even for small consumers.

Some countries have embraced solutions for real-time pricing, even for small consumers, while control over consumption choices can be exercised more efficiently and with greater awareness. The exact availability and accessibility of information are bound to increase in perspective, further helping to reduce transaction costs.

It is probably also in light of these developments that the European Commission has placed a new emphasis, on the liberalisation of retail markets in most recent documents, with particular attention to overcoming residual price regulations or other public intrusions into consumers' freedom of choice.

This emphasis was already reflected in the Communication on the Energy Union (EC 2015a) and was also the subject of an ad hoc communication (EC 2015b).

From the Commission's point of view, the full competitive opening of retail markets - and the overcoming of antiquated and paternalistic consumer protection schemes - is not only a good in itself, but is also instrumental in achieving full market integration, avoiding that those forms of balkanisation unhinged from the European target model at the wholesale level are reproduced at the retail level under the predominantly national nature of these markets.

With directive (UE) 2019/944, relating to standard rules for the international electricity market, directive 2009/72/EC was repealed.

This new measure encourages integrated, competitive, fair and transparent electricity markets in the UE.

To this end, it dictates the rules for the generation, transmission, supply and storage of electricity and the aspects related to consumer protection.

This directive also establishes the rules on the retail electricity markets. At the same time, the regulation (EU) 2019/943, adopted in parallel, mainly contains the rules on the wholesale market and the management of networks.

6.1 Great Britain

British consumers, similar to Italian ones, enjoy a free market in terms of electricity.

However, this sometimes leads to negative externalities, which lead to interventions by the authorities in charge. The British Antitrust Authority (CMA) has repeatedly intervened to request a 'price cap' on the most expensive offers, waiting for the market to work better. A proposal that has not gone unnoticed in Italy, grappling with the eternal controversy over when to necessarily abandon the administered tariffs for families and small businesses, the so-called enhanced protection service.

In England, not so long ago, the energy regulator OFGEM launched an investigation by the guarantor on the large utilities that alone control about 90% of the energy market (the so-called 'big six'[23]), without any split between ownership and generation and distribution activities.

First of all, it should be noted that the British Electricity Authority was established as a central british authority in 1948, following the Electricity Act of 1947.

The BEA (which included a central authority and 14 area councils) was responsible for generating, transmitting and selling electricity to the area's electrical panels and maintaining an efficient and cost-effective electricity supply system.

Following the 1954 Electricity Reorganization Act, the BEA was replaced on 1 April 1955 by the Central Electricity Authority (CEA) for England and Wales. With the Electricity Act of 1957, the Central Electricity Authority was dissolved and the CEGB established.

[23] SSE, Iberdrola, Centrica, RWE, E.ON and Edf.

The UK electricity market was founded on the split of the latter authority (CEGB) into four companies in the 1990s and its generation (or upstream) business was transferred to three-generation companies (PowerGen; British Energy and National Power). It's broadcasting activities to the National Grid Company.

OFGEN is an independent energy regulatory authority.

The latter's commitment is primarily to protect consumers, ensuring they are treated fairly and benefit from a cleaner environment.

GEMA is the UK's Gas and Electricity Market Authority.

Like ARERA, it determines policy strategy and priorities, making decisions on various regulatory issues, including price control and enforcement.

Finally, it should be noted that the conservative government of the United Kingdom, in order to get closer to the goal of producing almost all its electricity from low carbon sources in 2030, has entered into an agreement (partnership Sector Deal for Offshore Wind) with the wind industry to ensure that 30% of Britain's electricity will be produced by offshore wind.

6.2 France

Unlike many other European countries, France only started liberalising the electricity market in 2010, with a two-decade delay.

The reason for the delay can be found both in the defence of the 'national champions', such as the Electricitè de France (Edf) whose capital is mainly state-owned, both in the protection of consumers, who are better protected by a market-linked to regulated sales tariffs. The reluctance to liberalise has led to strong tensions between France and the European Commission; tensions that were mitigated after the entry into force of the Nouvelle Organization du Marchè de Electricitè.

However, the incumbent operator is the only one who can propose both the regulated tariff and the offers on the free market.

The latter differs from the former only by a premium or discount, and in reality, limited. The structure of the regulated tariff consists of two part: the first, with includes a charge for the use of the transport and distribution networks, which doesn't depend on the supplier but only on the type of customer, and the second relating to the supply, which varies according to the type of customer and is established by the regulator based on the costs of regulated access to nuclear power, the security of supply and the profit of the supplier.

However, on the latter, the suppliers can create downward or upward differentials concerning the regulated tariff.

Despite the coexistence of tariff and market offers, according to data released by the Commission de Regulation de Energie, there are currently more than 160 electricity suppliers, including local distribution companies.

The CRE, the French Energy Regulatory Commission, was created on 24 March 2000. Its role is to ensure that France's electricity and gas markets function smoothly to benefit end consumers and in line with energy policy objectives.

7 Conclusive Remarks

How emerged from this albeit brief examination[24] of the Independent Administrative Authorities, the Member State of the European Union have already started liberalisation and privatisation on the electricity market some decades ago, aside from any delays.

Following this, '*tout devient droit privé*'.[25]

Many national and local public services have been transformed into private activities which tend to be subject to the principle of competition and negotiation modules have replaced administrative measures, thus giving greater importance to the equal dimension of *jus civil*. All this has produced new paradigms, such as 'public user contracts':[26] a concept that constitutes a summary expression of relationship where the supply to the mass of consumers -under a monopoly or competition regime - relates to goods or services 'essential for human life'.

With the growing impact of European law on public services with the new period of liberalisation, the privatisation framing of user relations has gradually acquired the significance of the importance of more intense and complete protection of position of users, achieved through the submission of powers of negotiation autonomy to penetrating forms of hetero regulation and control.[27]

As authoritatively argued in the doctrine, it would be necessary to question whether the service contract and the service charter can be counted among the sources of heteronomous integration of contracts, in light of the relativity rule of the contract (Art 1372 of the Italian Civil Code).[28]

According to Art 1339 Civil Code, it should be remembered that eterointegrative interventions can affect individual user relationships only through derogation from legal provisions as long as they have content that can be derogated from private autonomy and, certainly, not mandatory.

To all this, the protective purpose of the consumer/person requires that the right to derogate from dispositive (or imperative) rules operated unidirectionally from a functional point of view, necessarily having to be exercised in favor of the disadvantaged part of the relationship.[29]

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[24] P. Perlingieri, 'L'incidenza dell'interesse pubblico sulla negoziazione privata' *Rassegna Diritto Civile*, 933 (1986).

[25] N. Irti, 'La gestione dell'Enel e il diritto privato' *Giustizia Civile,* II, 261 (1986).

[26] G. Caparezza Figlia, 'I rapporti di utenza dei servizi pubblici tra autonomia negoziale e sussidiarietà orizzontale' *Rassegna Diritto Civile*, 440 (2017).

[27] G. Caparezza Figlia, 'Concorrenza e contratto nei mercati dei servizi pubblici locali' *Rivista di Diritto dell'Impresa*, 69 (2012).

[28] P. Rescigno, 'Contratto (in generale)' *Enciclopedia Giuridica* (Roma: Treccani, 1988), IX, 21.

[29] M. Angelone, 'Poteri regolatori dell'Aeeg e integrazione dei contratti di somministrazione di energia elettrica' *Rassegna di Diritto Civile,* 909, 910 (2012).

The Energy Policy in Kazakhstan

Meruyert Narenova

Abstract: The energy sector transformation in Kazakhstan is influenced by many factors such as liberalization of energy market, green technologies development, digitalization and others. These factors impact leads to changes of the consumers role and values, and developing a new business model in the energy sector with its transition from product-oriented one towards the service, client-oriented model. In the country the transformation directions are collided with the global trends on achieving the UN millennium goals and the international agreements on climate changes, and pursue the sustainable development, the poverty reduction and the improvement of the quality of life of Kazakhstani citizens**.**

Keywords: Energy Market, Transition, Green Economy

1 Towards Green Economy

Nowadays the energy sector development undergo the significant transformations caused by the influence of a wide range of different factors and affecting the energy power systems of most countries. Among them are:

– Technological advancement leading to rapid expansion of renewable energy (RE). This trend has been intensively accelerating since the beginning of the XXI century, and major development of RE sources primarily involved the solar and wind ones. Thus, according to IRENA in 2019 world production capacity of RE increased on 8%, or 174 GW. Most growth concerns solar photovoltaic panels (PV) (56 %), wind (25%) and hydroenergy (12%) of total RE volume increase. Obviously that investments in RE also have been rising. In 2018 total investments in RE reached $280 bln., where leaders are China, USA and Japan.

– Due to new technological approaches in power generation and grids, as a consequence customers become not only consumers, but also energy producers (Prosumers), their roles and values have changed. Smart grid technologies create conditions for transmission of energy in both ways. In some countries, for example, in Germany it is expected that the number of local energy producers interconnected to the general power grid will quadruple in the long run, in addition to each 20th consumer currently already supplying electricity to the network. The United States has already adopted 2 Renewable Portfolio Standards (RPS) in 29 out of 50 states.[1] At the same time, it is generally known that the wind and the solar power plants are unstable as it concerns their generating capacities dependent on the weather conditions and the time of the day.

[1] A Practical Guide to Digitalization for the Power Industry. White Paper. Siemens. June 2018.

– Structural changes in the energy market, its decentralization. In the conventional energy systems, the electricity is generated by a relatively small number of large sources (thermal, nuclear and hydroelectric power plants), from which the energy is transmitted and distributed through the power grids to a large number of consumers, while with the development of renewables, the number of generating sources increases exponentially;

–Growing environmental concerns shift consumers' preferences and consumption modes towards the eco-friendly and zero-carbon neutrality. As an example, growth of the electric cars consumption would be the key drive and the significant force in transition to the sustainable energy worldwide in the midterm and the long run.

Pursuing the sustainable development path for the nation, Kazakhstan built up the legislative framework of transition to green economy, including the Law on Support for the Use of Renewable Energy (2009), the Concept for the Transition to Green Economy (2013), the Environmental Code (2020) and others. The adopted Strategy Kazakhstan 2050: A New Political Course of the Established State ("Strategy 2050") creates clear guidelines for building a sustainable and efficient economic model based on the country's transition to a green development path.[2]

By adopting these documents, Kazakhstan became the first country in Central Asia to create institutional policy measures and sustain paths to green economy. Currently Government of Kazakhstan elaborate the Low-Carbon Development Concept until 2050 along with a National project for the development of the electric power industry, and the country's energy balance until 2035.[3]

The country's transition to green economy includes three main stages: (i)Phase I 2013-2020; (ii) Phase II 2020-2030 and (iii)Phase III 2030 – 2050, as illustrated on Figure 1 below.

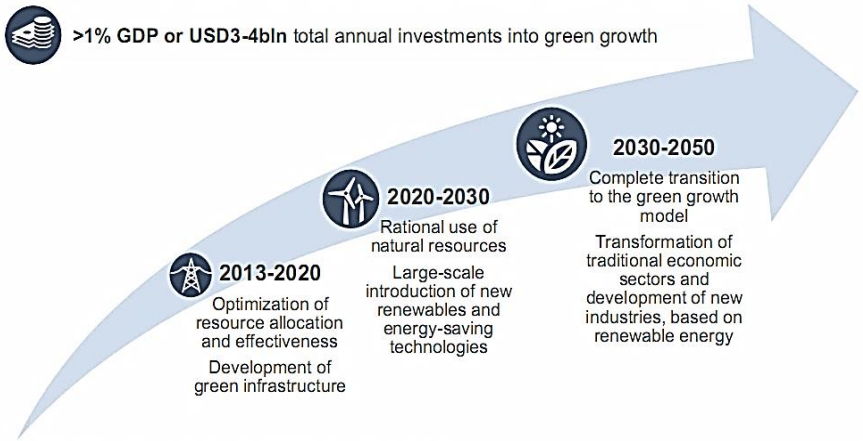

Figure 1. Timeline of Kazakhstan's Transition to Green Economy (2013-2050)

Source: Ministry of Energy of the RK, Samruk-Kazyna

[2] Concept for transition of the Republic of Kazakhstan to Green Economy. Astana, 2013, available at https://minenergy.kz (last visited 18 June 2021).

[3]Available at https://akorda.kz/en/the-head-of-state-held-a-meeting-on-the-development-of-the-electric-power-industry-2641630 (last visited 18 June 2021).

Kazakhstan strives to develop the inclusive green growth, which relies not only on the efficient use of natural resources and environmental protection, but mostly on the well-balanced and sustainable long-term growth. To achieve this goal, it is required to tackle some issues hindering the sustainable development of the country, among them structural imbalance of national economy based on commodity exports, a range of the socioeconomic and environmental problems.

Adoption of the green growth in Kazakhstan requires the elimination of some obstacles such as heavily subsidized conventional energy sources; low electricity prices; shortage of long-term investments, outdated technologies, lack of experience and knowledge in RE; insufficient awareness among main actors of the energy market.

2 The Energy Policy Measures in Kazakhstan

Recently strategic issues of development of energy industry have been discussed on the meeting under President of Kazakhstan K. Toqaev and it was emphasized that 'ensuring energy security is one of the main tasks. The rate of energy consumption in Kazakhstan is growing from year to year. However, the new energy sources that are being launched do not match the growth rate. In fact, the country's development directly depends on the stability of the energy sector'.[4]

The implementation of green technologies is expected to improve energy efficiency in Kazakhstan's economy by 40-60% and reduce water consumption by 50%. In addition, transition to a green growth model will create more than 500,000 new jobs in traditional and new industries, while improving living conditions and providing a high quality of life for the entire population of the country.[5]

Kazakhstan's transition strategy to green economy focuses on the following directions, which are demonstrated on the Figure 2.

Figure 2 Target Areas on Transition to Green Economy in Kazakhstan (2013-2050)

[4] Available at https://akorda.kz/en/the-head-of-state-held-a-meeting-on-the-development-of-the-electric-power-industry-2641630 (last visited 18 June 2021).

[5] Green Economy Concept, 2013.

Source: Ministry of Energy of the RK, Samruk-Kazyna

In Kazakhstan transition to green economy growth was launched by adoption of the Energy Conservation and Energy Efficiency policy, which comprises a wide range of measures at different levels of the governance, aiming the significant reduction of the energy consumption and saving, and sets priorities and standards, improvement of the infrastructure as well as other targets, facilitating the energy efficiency policy implementation.

The starting point for transition is considered the Law of the RK 'On Supporting the Use of Renewable Energy Sources' of 2009, which defines the basic measures to support RE, including set of the economic and technical instruments.

It was also stipulated that KEGOC[6]& all regional distribution companies have to buy electricity from RES in order to recoup the technological losses in their networks at the indicated prices. In addition, RES were exempted from payment for the electricity transmission and the priority status were given to them for dispatching services.

In 2009-2013 the institutional and legislative framework for RE was elaborated further with the implementation of measures to attract investors, conducting studies on RE potential and clarification of their development targets as well as the defining of the minimum level of the technical requirements for the grid connection.

Thus, investors have a guaranteed purchase of the generated electricity from RE over 15 years at the fixed tariffs annually adjusted to the inflation rate. The exemptions also cover payment for the imbalances created and the maintenance of the electricity daily schedule. Special attention was paid to support the development of the small- scaled capacities through the net consumption mechanism.

The consistent measures on elaboration the legislative framework for RE brought the first achievements. In 2014 total capacities of RES reached 2,000 MW in the country and this sector has shown high development rates. The stimulus package for investors attracted many companies from worldwide. For example, for the next few years almost one third, namely 128 projects with total capacity of 2,803 MW out of several hundreds with total capacity of 8,000 MW were granted the right to sell electricity at the fixed tariffs and the auction prices.[7]

Relying on the experience of 65 countries that have implemented auctions to select RE projects since 2016, in 2017 Kazakhstan adopted the Amendment to the Law of the RK 'On Supporting the Use of RES', which stipulated the transition from the fixed tariff mechanism to the auction trading as a tool for non-discriminatory and competitive selection.

These measures demonstrated obvious advantages, thus according to the results of auctions in 2018-2019, in total there were 1, 205 MW power capacities traded and 18 auctions held for 1201 MW capacities with participation of 150 companies representing 12 countries (Kazakhstan, China, Russia, Turkey, Germany, France,

[6] KEGOC is Kazakhstan Electricity Grid Operating Company (KEGOC), Joint-stock company.

[7] Available at https://minenergy.kz (last visited 18 June 2021).

Bulgaria, Italy, The Netherlands, UAE, Malaysia and Spain), see Figure 3 on tariff reduction on auctions held. in 2017 the Amendment

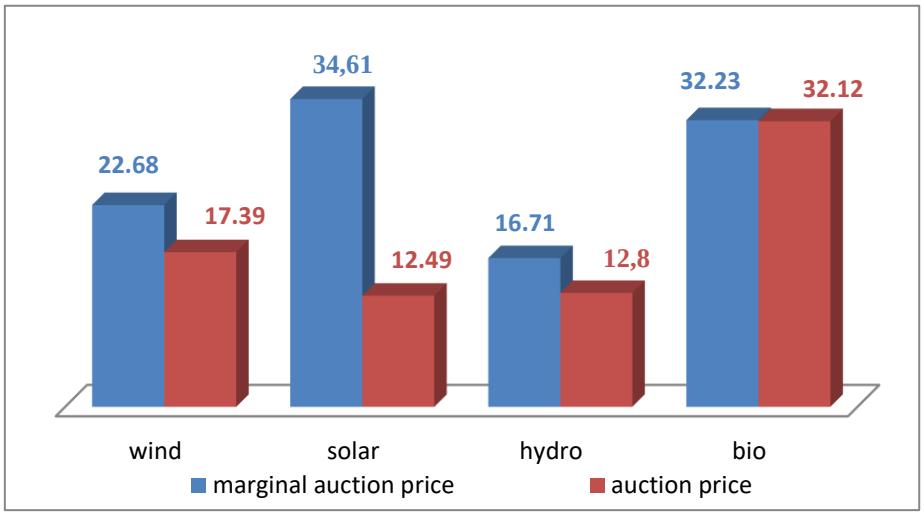

Figure 3 Tariff Reduction, Tenge/kWh

Source: https://mineconom.kz

In 2020 the marginal auction prices for the RE were established as for:

- Wind – 21,69 Tenge/kWh (without VAT);
- Solar– 16,97 Tenge/ kWh (without VAT);
- Hydro – 15,48 Tenge kWh (without VAT);
- Bio – 32,15 Tenge/ kWh (without VAT).

Though a wide range of measures were implemented to strengthen the RE development in Kazakhstan, the primary investments and technology still remain high and costly. This causes the expensive wholesale price of electricity as 7–8 tenge/kWh, while the average price of RE is around 34 tenge/kWh. It means that RE still is not affordable for the most of industrial and residential consumers.

3 Challenges Ahead

Since 2020, when the whole planet suffers from COVID-2019, Kazakhstan has tackled with that decease as well as other countries. Obviously, the critical situation revealed a lot of problems, including the energy market as the energy is a basic commodity to be consumed by everybody nowadays.

In response to that challenge, the government of Kazakhstan undertaken a range of measures to help citizens living in poverty to secure their basic needs. COVID crisis is a multifaceted issue to be properly managed by the national and local authorities. The pandemic changed the life style and consumption mode of the energy of all, without anu exclusion. It is obvious that during the crisis cutting the

supply of the energy becomes equal to disruption of essential basic goods and creates threats for citizens.

The concept of energy poverty could be applied to the local context indirectly as the insufficiency of the national legislation as well as the limitation of verified data make some distorting influence on the conclusions. Nevertheless, the current state of energy poverty in Kazakhstan could be assessed on the basis of the following estimation:

'10% household income expenditure on energy metric to data for Kazakhstan, resulted in 28% of surveyed households being energy poor, with the majority (68%) located in rural areas. … there are still issues of energy affordability in many households due to combination of income inequality, high heating demand and buildings inefficiencies'.[8]

During the pandemic the measures to support vulnerable (low income) groups of citizens in Kazakhstan included the various instruments such as a ban of energy cuts, social monthly payment of 42,500 tenge on 3 months, monthly utilities payment of 15,000 tenge on 3 months, extension (on the request) of payments for housing and other utilities (water, heating, sewage) on 3 months and even longer period, if local authorities could finance these expenses, abolition of interest for late payments, food baskets (in case of energy shortage) and some others.

The pandemic has shown that comprehensive guaranteeing measures are in the top agenda in the country and it is a big challenge, as Kazakhstan pursues the liberalization of the energy sector. Transition to the green economy has to build a model for the management of basic services that will facilitate the tackling energy poverty and guarantee the right to energy for each citizen.

4 Conclusions

– The energy market needs to be restructured and measures on diminishing the price distortion are required. For example, prices on energy for industrial sector and public entities differ up to 400%, consequently it leads to no incentives for lean energy consumption by some categories of consumers. Dominance of the limited numbers of companies (3) in the wholesale market of Kazakhstan disturb the fair price establishing and create barriers on the market entry;

– Energy efficiency and energy intensity of the economy should be improved significantly by modernization of production capacities and cutting edge technologies throughout the national economy sectors. Thus, renewable physical, or natural capital is to be build;

– Social policy with fair principles targeting 'energy poverty' is to be implemented in order to benefit vulnerable groups of population. The proper steps are to be undertaken to develop human and social capital. Increase of new 'green mentality' is to be perceived as an acute need by each citizen of Kazakhstan.

[8] A. Kerimray et al, 'Household Energy Consumption and Energy Poverty in Kazakhstan' First Quarter *IAEE Energy Forum*, 31, 33 (2017), available at https://iaee.org. (last visited 18 June 2021).

Prosumerism in America's Final Arctic, Frontier-Moving Forward

Arthur Nash

Abstract: Alaska is America's only arctic state, and as the 'Last Frontier' many inhabited parts do not tie into traditional electrical grids. It is also the region that is experiencing climate change effects in a quicker manner. While isolated, diesel/wind and solar hybrid microgrids provide power to many enclave communities, many Alaskan prosumers live on homesteads, at hunting lodges, and in cabins where it has not been cost effective to tie into existing grids, or where utilities cannot provide power per access. Thus individual residents have experimented for over a half century with various solar arrays viable for three quarters of the year, micro hydro power that is available seasonally near streams draining to coastal area, intermittent wind resources blowing across much of Alaska's 55,000 km of coastline, and woody biomass available year-round in most areas. A variety of prosumer solutions utilizing local fuels/resource generation for heat and power are examined.

Keywords: Prosumer, Power Grid, Energy Generation, Alaska

1 Introduction

Alaska is America's only arctic state. It has features which defy most of the rest of the United States: harsh climate zones, terminus end of supply lines, stranded energy resources, dispersed population, centralized economies, high energy costs, fragmented electric grids, and vulnerable energy supply chains with a relative lack of intertie distribution power lines. There have been two driving factors behind prosumerism. One is the merging between energy producers and consumers who now engage in personal electrical generation as well as consumption. The other has been a rapidly changing climate where mean temperatures are rising generally twice as fast as the rest of America. The other reason is tied to the lack of infrastructure in Alaska's 1.7 million square kilometers occupied by not quite three quarters of a million residents. And with a concentration of 40% of those residents living in the 4.4 thousand square kilometers of urban Anchorage, many residents who live outside the main population center have had to generate their own energy for heating and power at times in cooperation with others.

There are over 200 microgrids[1] powering rural enclaves in communities with as little as several dozen residents to rural hub communities of several thousand occupants. In some cases, multiple microgrids are managed by a co-op utility. The majority of the energy usage at this scale is for space heating with residual electrical production utilized for water and waste facilities, as well as small commercial community centers, and schools. Such microgrids may produce more power than locally needed, yet many residents whose property is outside of a

[1] E. Martinsen, 'Alaska's Rural Energy Microgrids Offer a Prototype for Powering the World' *Alaska Dispatch News*, 28 September 2016.

village or too far off the limited road transportation system are not able to access the power due to a lack of interties and transfer stations. Some residents live remotely year around on agricultural homesteads, cabins and lodges[2] while others live in homes located just a kilometer off of a trunk road or a state highway where it may cost too much to justify new powerlines. In addition, there are types of seasonal summer work which attract miners, researchers, fish processors, as well as sawmills. They need reliable freezing and power for industrial processing and renowned hunting/fishing operations.

Thus in the last half century many Alaskan prosumers have taken advantage of improvements in solar battery storage, wind turbine technology, hydro micro-turbines and wood gas generators to utilize local fuels in cogenerating power with diesel generators in nanogrid configurations (combined output <30kW) out of shear isolation and necessity rather than concerns over carbon emissions and a changing climate. Nonetheless, these pioneers have meted out workable cost effective prosumer systems in some of the world's harshest inhabited conditions where there is an extensive need for heat and power in the winter yet an inordinate solar gain supply over local demand in the summer (except for refrigeration needs in the commercial fish processing and shipping industries). A compilation of conditions, costs, successes and failures of seven dozen funded prosumer projects from the first half of the 1980's were documented.[3]

What type of grid options are there for Alaskan prosumers for extensive lighting use and heating while conducting winter activities (and for electrical power per sawmill equipment, refrigeration or machinery in the summer)? In estimating the needed energy prosumers look at a couple of factors. It is helpful from an investment point of view to think through the functions of the energy needed, the best types of fuels for those functions, an inventory and of implements obtainable, and then realistically locating sites on dedicated property that will provide exposure to the elements driving the power generating implements.

Calculations accounting for not just average usage but also for peak loads are crucial. Another factor about location to keep in sight of is any zoning restricting the chosen power generating implements or required permits that must be procured. Some cities in Alaska occur in unincorporated regions so that if the municipality doesn't have zoning and permit rules, there is no higher jurisdiction to be aware of other than the state agencies themselves. It is important to know levels of production that state regulators are required per various inputs, inspections or licensing that prosumers must comply to.

One of the attractive features allowing Alaskan prosumers to experiment with various residential power production is the stance of the Regulatory Commission of Alaska that independently-owned electric systems with retail sales of less than five megawatts of power are exempt from utility regulations. For small, residential

[2] State of Alaska Department of Administration, 'Alaska Kids' Corner- Homesteading' available at https://alaska.gov/kids/learn/homesteading.htm (last visited 27 December 2021).

[3] State of Alaska Department of Community & Regional Affairs, 'Frontier Energy- Appropriate Technology in Alaska, 1979-1984' *The Alaska Group*, December 1984.

producers they most often will not fall under any federal requirements. The non-governmental entity that will be involved with prosumers who are connected to the electrical grid will be the operations department of the local utility provider. To use the grid as storage per se for residential power, most all utilities will want to have assurances that a proper transfer switch has been installed at the home (and that it has been inspected by a qualified electrician).

For prosumers who do not have grid access, the core of variable with power generating technologies such as photovoltaic solar or wind is battery storage. Solar produces when the sun shines, wind when gusts are present, and thus both of these sources need storage to deliver the power when needed. Batteries can have a cumbersome footprint and their longevity tends to rely on some type of continual input and output as well as regular maintenance. There are, however, promising technological breakthroughs in easing the storage burden, such as bidirectional smart battery converters which help to shift charging an electrical load. Lithium ion batteries and power walls now allow the prosumer to store up to 5kW, which allows extending solar power throughout the night as well as wind power during calm days/nights. For storing captured heat from flat plate or evacuated tube solar panels, a tank of fluid with a circulating pump often is the easiest storage of energy. In a case of one interior Alaskan prosumer, a large box containing radiator fin tubing and sand was buried in dirt in conjunction with a four meter diameter parabolic solar dish; hot fluid continually circulates through the tubing to store heat soil under the foundation.

Biomass has historically been considered a carbon neutral source for generating electricity or heat. While the BTUs from combusting biomass in wood stoves or boilers does not directly charge batteries, Gasification Experimental Kits (GEK) allows for combined heat and power (CHP). The world's only commercial grid tie GEK (30kW) is manufactured by All Labs and currently installed in Terni, Italy[4]. Simply, a container of uniformed wood feedstock drops into a fluked auger thus submitting the material into a cyclonic reactor to undergo anaerobic pyrolysis. A small four cylinder engine turns a radiator cooled electrical generator thus producing 110v, 220v or three phase power.

An older version of a non-grid tie in 20kW GEK was employed in southeast Alaska where it was procured to help a prosumer run his sawmill. Wood findings and sawdust were used as feedstock so that electrical power could then run the millworks. In this case it was abandoned as the labor to come up with the right sized feedstock and fill the hopper was not cost effective. Also, the sawmill was located on an island off the Pacific coast where there is high humidity which highlights an important point for wood based power generation: the energy you are able to capture is going to directly depend on the dryness of the wood. For reducing condensation in the gasification process or in burning logs for space heat in a dwelling, it is optimal to have moisture levels below 20%.

One of Alaska's most notable prosumer entrepreneurs in the hospitality industry has utilized low grade geothermal water (around 50 C degrees) at an off grid resort to run a reverse refrigeration cycle system from which 300kW of

[4] 'Local Carbon Network: Terni, Umbria- Italy launch' *All Powers Lab News*, 8 December 2008.

power can be produced. The electricity is used to power a restaurant, lodging rooms, a year round controlled environment vegetable growing operation as well as operate coolers for the year round ice hotel.[5] In this case the cost of extending existing powerlines from the utility was high and with utilizing private investment and grants the power plant was built. In a sense, this prosumer is utilizing nuclear energy as geothermal waters are warmed from subsurface radionuclide decay in the hot springs' subsurface rocks.

20kW GEK cyclonic reactor
clean out during typical maintenance
(photo credit: Karen Petersen)

A veteran energy entrepreneur sought to help a western coastal Alaskan village take advantage of its wind resource. Eventually, the technologies and concept of using wind to lead ahead of diesel generators in co-generational power production was shared with three other villages to create the Chaninik Wind Group,[6] a consortium of four Yup'ik Eskimo villages. As of late, residential scale thermal stoves are in homes in one of the villages and hooked up so that excess energy from the wind turbines during moments of high supply and low demand can be diverted to this type of heat storage.

Another prosumer in southcentral Alaska purchased mountainous, 160 acre (former) homestead and utilized his experience of three decades as a hydrologist to create a 300 kW power system that can supply up to power for up to 300 homes[7] depending on the season and water run off. A spillway was created to cull off some of the water from the creek and route it through a half meter in diameter pipe

[5] 'Healing Waters', *Chena Hot Springs Resort* available at https:// chenahotsprings.com /healing-waters/ (last visited 27 December 2021).

[6] 'Alaska Village's Advanced Microgrid Cuts Costs' *Journal Record,* 10 November 2017.

[7] A. DeMarbon, 'An Anchorage man spent more than a decade planning and building a micro-hydropower project in his backyard' *Anchorage Daily News*, 15 February 2016.

which then dumps it nearly half a kilometer away into a powerhouse, which is smartgrid controlled. Over a dozen permits were procured and fulfilled to assure fish habitat and water quality were not diminished.

Finally, one prosumer from northwest Alaska has designed an integrated power plant that is mobile and that has been built by university students as they learned content in college industrial process classes.[8] This mobile unit, which utilizes a construction lighting cart, allows for power from solar panels mounted on the trailer's sides, a roll up wind turbine mast that replaces the factory stadium light, and side cable for a micro hydro turbine. After stripping out the diesel generator, a mobile 12 volt battery bank is wired with a series of charge controllers and power inverters inside the carriage. The 3kW power production unit can be easily transported from building to building behind a pickup, ATV or snow machine. The standard tires can be replaced with tundra tires or even skis for off-road relocation. This unique unit can be set up permanently to a structure or mobile for on-the-go power.

Ellanna Mobile Power Cart at rest
(Photo credit: Dayne Ellanna)

2 Conclusion

Being noncontiguous from the rest of the United States and not sharing a national power grid with Canada, Alaska has given rise to many proconsumer innovators out of necessity and extreme conditions. Though the state is littered with community scale microgrids serving villages of a under a hundred to several thousand residents, these systems don't reach out to the many residents not living or working in rural villages.

Thus there have been many instances in utilizing local, stranded energy resources. Heat and electrical generation are often mostly in need and these can be met with limited solar, wind, hydro and even biomass resources. New battery

[8] A. Nash, 'Dayne Ellanna's Camp Energy' available at https://www.youtube.com/watch?v=_fFOYJ8btm0&t=921s (last visited 27 December 2021).

innovations and storage methods are improving ways residents can provide for themselves and illustrate to others in remote rural areas what can be utilized. The state's official slogan, coined for the 1967 Centennial, was "North to the Future" and it aptly applied not only to the rush of population to build the Trans-Alaskan Pipeline in the 1970's but also to the masses of energy prosumers who followed in inhabiting Alaska, America's Last Frontier.

The Production of Energy from Renewable Sources: Which Tax Regime?

Salvatore Antonello Parente

Abstract: Among the policies of sustainable government of the territory, the production of energy from renewable sources, governed by market laws, is one of the modern intervention tools to limit the phenomena of damage to the balance of the ecosystem.

In the framework of energy policies, this peculiar production activity, which is to be traced back to the practices of mass prosuming, raises many critical issues regarding the tax treatment reserved for the generation and sale of energy produced.

The study, through the reconstruction of the requirements of the case, qualifies the activity carried out and, on the basis of its legal nature, identifies the correct taxation regime.

Keywords: Energy Sustainability, Territorial Policies, Renewable Energies, Tax Regime

1 Sustainable Land Management Policies: Mass Prosuming Practices and Energy Production from Renewable Sources

Among the policies of sustainable territorial governance, the production of energy from renewable sources, governed by market laws, is one of the modern intervention tools aimed at limiting damage to the equilibrium of the ecosystem.[1]

In an attempt to remedy the imbalances in the environmental and energy sectors produced by the excesses of the global economy, contemporary legal systems have progressively moved towards the adoption of models of a different nature, in line with environmental sustainability policies.

Within these coordinates, a strategic position is increasingly taken by energy taxation, which, supported by a widespread cultural orientation, can make it possible to prevent, eliminate or reduce activities that damage the ecosystem.

[1] P. Carnevale, 'Le fonti rinnovabili di energia per lo sviluppo delle città. Il ruolo dei Comuni, degli enti pubblici e delle imprese' *Nuova rassegna di legislazione, dottrina e giurisprudenza*, 736, 736-741 (1994); P.L. Stein, 'Sostenibilità ambientale. Dalla retorica alla realtà: alcune iniziative per un'energia pulita' *Rivista giuridica dell'ambiente*, 847, 847-863 (2002); F. Mazza, 'Fonti rinnovabili e risparmio energetico. Sviluppo sostenibile e fonti di energia alternativa' *Diritto e giurisprudenza agraria, alimentare e dell'ambiente*, 379, 379-380 (2011); S. Amorosino, 'Impianti di energia rinnovabile e tutela dell'ambiente e del passaggio' *Rivista giuridica dell'ambiente*, 753, 753-767 (2011); M. Cocconi, 'Programmazione e regolazione dell'energia elettrica da fonte rinnovabile' *Il diritto dell'economia*, 131, 131-173 (2014); C. Mari, 'Il ruolo del privato nei procedimenti per le energie rinnovabili: uno strumento per lo sviluppo sostenibile?' 16 *federalismi.it*, 1, 1-24 (2019); E. Cusa, 'Sviluppo sostenibile, cittadinanza attiva e comunità energetiche' *Orizzonti del diritto commerciale*, 71, 71-126 (2020); S. Moratti, 'Green Deal Europeo: nuove prospettive per la fiscalità dell'energia nelle politiche di gestione dei rischi climatici' *Rivista di diritto finanziario e scienza delle finanze*, 439, 439-462 (2020).

The 'renewable energy source',[2] identified by Art 2, decreto legislativo 29 December 2003 no 387, are solar, wind, hydroelectric, geothermal from wave motion, tidal or biomass energy, landfill gas, residual gas, purification processes and biogas.

The 'future of energy' seems to be characterised by the progressive substitution of new ecological sources for traditional fossil fuels, which are being depleted, with the main aim of achieving cost savings and pursuing environmental sustainability objectives.

The EU directives on the promotion of the use of energy from renewable sources (2009/28/EC of 23 April 2009 and 2018/2001/EU of 11 December 2018) also set ambitious objectives, consisting in the implementation of clean technologies to promote, in the long term, the production of energy in a completely decarbonised manner, with a consequent zero climate impact.

In fact, over the last few decades, thanks in part to the action of domestic[3] and EU[4] institutions, the imbalances caused by the excessive use of highly polluting fossil fuels, which are in the process of being depleted, together with particular sensitivity to environmental issues, have formed the basis for implementing a genuine 'ecological transition',[5] with satisfactory results in terms of energy obtained from renewable sources.

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[2] Corte di Cassazione 6 September 2004 no 17933, *Diritto e pratica tributaria*, 1636 (2004); Corte di Cassazione 4 November 2008 no 26441, *CED Cassazione*; Corte di Cassazione 10 April 2009 no 8674, *CED Cassazione*; Corte di Cassazione 28 April 2010 no 10134, *CED Cassazione*; Corte di Cassazione 9 November 2011 no 23317, *CED Cassazione*; Corte di Cassazione 31 March 2011 no 7372, *CED Cassazione*.

[3] Decreto legislativo 29 December 2003 no 387; decreto ministeriale 19 February 2007 of the Ministry of Economic Development, which establishes the criteria and procedures for encouraging the production of electricity through the photovoltaic conversion of solar energy, in implementation of the Art 7, decreto legislativo no 387/2003; Art 1, para 423, legge 23 December 2005 no 266; Art 2-*quater*, para 11, decreto legge 10 January 2006 no 2, converted by the legge 11 March 2006 no 81; Art. 1, para 369, legge 27 December 2006 no 296; Art 1, para 178, legge 24 December 2007 no 244.

[4] White Paper 'Energy for the future: Renewable energy sources' [COM (97) 599, November 1997]; Directive 2001/77/EC of the European Parliament and of the Council of 27 September 2001 on the promotion of electricity produced from renewable energy sources in the internal electricity market [2001] OJ L283/33; Directive 2002/91/EC of the European Parliament and of the Council of 16 December 2002 on the energy performance of buildings [2002] OJ L1/65; Directive 2003/30/EC of the European Parliament and of the Council of 8 May 2003 on the promotion of the use of biofuels or other renewable fuels for transport [2003] OJ L123/42; Directive 2003/54/EC of the European Parliament and of the Council of 26 June 2003 concerning common rules for the internal market in electricity [2003] OJ L176/37; European Commission's Biomass Action Plan of December 2005 [COM (2005) 628 final]; 'EU Strategy for Sustainable Development' of December 2005 [COM (2005) 628 final]; EU Strategy for Biofuels of February 2006 [COM (2006) 34 final]; Green Paper 'A European Strategy for Sustainable, Competitive and Secure Energy' of March 2006; Action Plan on Energy Efficiency [COM (2006) 545 final]; Communication from the Commission to the Council and the European Parliament on a Community Strategy for Sustainable Development [COM (2006) 545 final]; Communication from the Commission to the European Council and the European Parliament of 10 January 2007 entitled 'An Energy Policy for Europe' [COM (2007) 1 final]; Directive 2009/28/EC of the European Parliament and of the Council of 23 April 2009 on the promotion of the use of renewable energy sources and amending and subsequently repealing Directives 2001/77/EC and 2003/30/EC [2009] OJ L140/16. On the topic, comp. F. Tundo, 'Il regime tributario delle attività di produzione e commercializzazione di energia elettrica svolte da imprenditori agricoli' *Bollettino tributario d'informazioni*, 823, 823, fn 4 (2010); S. Quadri, 'L'evoluzione della politica energetica comunitaria con particolare riferimento al settore dell'energia rinnovabile' *Rivista Italiana di Diritto Pubblico Comunitario*, 839, 839-855 (2011).

[5] A. Canepa, 'Corte di giustizia e interventi nel settore energia: recenti pronunce in materia di rinnovabili, sostegno alla produzione termica di energia, tassazione e gas naturale (settembre 2014 - marzo 2015)' *Rivista Italiana di Diritto Pubblico Comunitario*, 997, 997-1004 (2015).

Nevertheless, in the energy policy framework, this peculiar production activity, which is to be traced back to the practices of mass prosuming, raises a number of critical issues regarding the tax treatment reserved to the generation and sale of the energy produced,[6] which cannot disregard the correct qualification of the legal nature of the activity carried out.

In the dialectic between the use of energy sources and the impoverishment of environmental values suffered by the community, is required a method of analysis based on a global approach to the phenomenon and on a remedial dynamic that cannot exclude tax leverage.

Due to the complexity of the subject, therefore, the reflection on theoretical models of analysis requires an investigative development not limited to the traditional schemes of elaboration of energy issues, but oriented to enhance the new perspectives of investigation opened by the emerging forms of taxation.

This methodological framework makes us aware of the need to examine the new legal issues related to energy taxation also from a fiscal point of view and to dwell on pervasive structures with profiles that are sometimes unpublished and not sufficiently explored.

2 The Use of Renewable Energy Sources in the Agricultural Sector: The Cases that Contribute to Generating Agricultural Income

Although there are still barriers and resistances to the diffusion of clean energy sources, linked to endogenous factors and to the contents of the legal system, the tax legislator, in a favourable perspective, has encouraged and enhanced the diffusion of renewable energy sources in the agricultural sector,[7] by including among related agricultural activities[8] - capable of generating farm income (Art 32, decreto del Presidente della Repubblica 22 December 1986 no 917)[9] - the production and sale,

[6] A. Dodero, 'Applicazione «interpretativa» della disciplina fiscale per le fonti di energia rinnovabile' *Corriere tributario*, 3665, 3665-3670 (2009).

[7] T. Babuscio, 'Agricoltura non alimentare: le nuove opportunità per gli imprenditori agricoli' *Diritto e giurisprudenza agraria, alimentare e dell'ambiente*, 149, 149-155 (2006); F. Noferi, 'Efficienza energetica, fonti rinnovabili, certificati verdi: conferme e novità nella Finanziaria 2008' *Ambiente & Sviluppo*, 153, 153-154 (2008); G. Marchianò, 'Regolazione dell'energia elettrica da fonte rinnovabile in particolare nei terreni agricoli' 4 *Ambientediritto.it*, 96, 96-137 (2020).

[8] G.P. Tosoni, 'Società agricola, attività connesse, produzione di energia: aspetti fiscali' *Rivista di diritto agrario*, 470, 470-471 (2009), which, recalling the decreto ministeriale of 11 July 2007, identifies four conditions necessary for an activity to be considered 'connected' to agricultural activity, so as to be included in 'agricultural income'. In particular, the products purchased, which are among those indicated in the decreto ministeriale, as well as belonging to the same production sector as those obtained from the fund, must undergo, within the farm, a processing suitable to represent a manipulation process without being prevalent compared to those derived from the fund.

[9] A. Fantozzi, *Corso di Diritto Tributario* (Torino: Utet, 2004), 399-400; F. Picciaredda, *La nozione di reddito agrario* (Milano: Giuffrè, 2004), 241; P. Russo, G. Fransoni and L. Castaldi, *Istituzioni di diritto tributario* (Milano: Giuffré, 2014), 293; G. Gaffuri, *Diritto tributario. Parte generale e parte speciale* (Vicenza: Wolters Kluwer - Cedam, 2016), 397-398; M. Basilavecchia, *Corso di diritto tributario* (Torino: Giappichelli, 2017), 150-151; A.F. Uricchio, *Percorsi di diritto tributario* (Bari: Cacucci, 2017), 126; G. Marongiu and A. Marcheselli, *Lezioni di diritto tributario* (Torino: Giappichelli, 2018), 221-222; A. Carinci and T. Tassani, *Manuale di diritto tributario* (Torino: Giappichelli, 2020), 138-139; G. Melis, *Manuale di diritto tributario* (Torino: Giappichelli, 2020), 632-633; A.F. Uricchio, *Manuale di diritto tributario* (Bari: Cacucci, 2020), 169-170.

by farmers, of electricity and heat deriving from renewable agro-forestry and photovoltaic sources, of fuels obtained from plant production coming mainly from the land and of chemical products deriving mainly from agricultural products coming from the same land.[10]

The forms of renewable energy - relevant to agriculture and a source of agrarian income - can therefore be divided into four different *species*: electricity; caloric energy; fuels; chemicals. While electricity and caloric energy, obtained mainly from agricultural activity, can derive from agro-forestry resources (of an agricultural and zootechnical nature) or from photovoltaic sources, the production of energy from wind or water resources (the latter deriving from the exploitation of waterfalls) cannot be attributed to the agricultural sector.[11]

In the tax field, therefore, an 'absolute' presumption is established, which, although operating in the presence of specific requirements, is the source of many uncertainties in terms of hermeneutics, since it is necessary to clarify the correct qualification of the activities in question and the relationship with the related agricultural activities under Art 2135, para 3, Civil Code, objectively commercial activities, the proceeds of which are included in agricultural income as they derive from activities carried out by the same person who carries out one of the main agricultural activities and are internally consistent with the latter.[12]

The notion of agricultural enterprise provided by the Civil Code has no place in the tax field,[13] which lacks an autonomous discipline, focusing exclusively on the land and on the exercise of the agricultural activities carried out on it.[14]

In the context of the situations that contribute to generating agricultural income, it is not only the land that is relevant, as it is necessary, from a subjective point of view, that the relative activities are carried out by an agricultural entrepreneur, namely someone who carries out one of the activities referred to in Art 2135 of the Civil Code, and, from an objective point of view, that precise qualitative and quantitative parameters are respected.[15]

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[10] B. Nichetti, 'Il trattamento tributario della produzione energetica da fonti rinnovabili realizzata da imprenditori agricoli nell'interpretazione dell'Agenzia delle entrate' *Bollettino tributario d'informazioni*, 672, 672-673 (2010).

[11] G.P. Tosoni, n 8 above, 471.

[12] F. Tundo, n 4 above, 823-824, according to which related agricultural activities are functional 'to the development of the main agricultural activity at different stages of production in order to maximise its results and supplement its income, thus enabling the farmer to achieve the best possible profit from traditional agricultural activities'.

[13] S. Sammartino, 'Considerazioni sul trattamento fiscale dell'impresa agricola' *Rivista di diritto agrario*, 593, 593-610 (1978); A. Fantozzi, *Imprenditore e impresa nelle imposte sui redditi e nell'Iva* (Milano: Giuffrè, 1982), 167; A. Fantozzi, 'Imprenditore agricolo - II) Diritto tributario' *Enciclopedia giuridica* (Roma: Treccani, 1990), XVI, 1-10; S. Pansieri, 'I redditi fondiari', in G. Falsitta, *Manuale di diritto tributario. Parte speciale* (Padova: Cedam, 2002), 111; P. Boria, 'La disciplina tributaria dell'agricoltura' *Rivista di diritto tributario*, 317, 317-332 (2003); S. Muleo, 'Materia agraria ed imposizione reddituale: spunti critici' *Rivista di diritto finanziario e scienza delle finanze*, 538, 538-587 (2003); M. Cardillo, 'Le attività qualificate fiscalmente redditi agrari' *Diritto e giurisprudenza agraria, alimentare e dell'ambiente*, 541, 541-545 (2012).

[14] F. Tundo, n 4 above, 825, fn 14.

[15] M. Cardillo, n 13 above, 545.

3 Agroforestry Renewable Sources and the Determination of Taxable Income

As regards the objective scope, the expression 'renewable agro-forestry sources' refers to biomass, namely the biodegradable part of products, waste and residues from agriculture, forestry and related industries, as well as the biodegradable part of industrial and municipal waste.[16]

From a technical point of view, the use of biomass in agriculture for energy purposes takes place through an 'anaerobic digestion' plant, which uses the gas obtained from the fermentation of products and waste to activate the turbines for the production of electricity.[17]

Therefore, are of an agricultural nature, capable of generating agricultural income, all the activities of exploitation of waste produced by agricultural and livestock farms, including the use of biomass for the production of biogas, where carried out by an individual farmer, a simple company and a non-commercial entit.[18]

Photovoltaic sources mean modules or panels capable of converting solar energy into electricity; fuels identify different products deriving from plant production, such as bioethanol, biodiesel, biogas fuel and other similar fuels; finally, chemical products deriving from agricultural products indicate biopolymers and bioplastics obtained from starch and starch mixtures.

The production of electricity from photovoltaic sources, for tax purposes, is attributed to the agricultural activities referred to Art 2135, para 3 of the Civil Code, due to its instrumental nature with respect to the exercise of the activities normally carried out by the farmer.[19]

In these cases, the taxable income, which is an expression of the ability to pay, is made up of the part of the average ordinary income of the land deriving from the working capital and the organisational work used in the exercise of these activities and within the limits of the potential of the land. It is determined on a cadastral basis, rather than analytically, through the application of valuation rates established for each quality and class according to the rules of the cadastral law.

Any contributions received by the farmer by way of incentive tariffs for the production of electricity from photovoltaic sources or income from the sale of green certificates[20] constitute income elements absorbed by the income determined by the land register.

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[16] F.P. Amoruso, 'Liquami zootecnici e biomasse agricole: rifiuti o sottoprodotti?' *Diritto e giurisprudenza agraria, alimentare e dell'ambiente*, 411, 411-415 (2010).

[17] Circolare Agenzia delle Entrate 6 July 2009 no 32/E, available at https://www.agenziaentrate.gov.it/portale/documents/20143/300575/Circolare+32+del+06+07+2009_circ+n+32E+del+6+luglio+2009.pdf/128026ca-f427-25b0-49bc-6716dc0b24de (last visited 15 June 2021).

[18] M. Cardillo, n 13 above, 544.

[19] ibid 544.

[20] 'Green certificates' are bonds issued by the 'Gestore del Sistema Elettrico' (GSE) to clean energy producers, namely operators whose equipment is qualified as 'plants powered by renewable sources'. This documentation certifies the quantity and quality of energy produced. From a tax point of view, the sale of green certificates is relevant for both indirect and direct taxation. In the first case, the transaction is taxable for VAT purposes at the ordinary rate. On the other hand, for the purposes of direct taxation, where the farmer has an agricultural

This is explained by the fact that the principle of ordinariness which governs the quantification of income from land includes any condition which can be attributed to the normal performance of land activities, with the exception of those expressly regulated by the legislature.[21]

This is without prejudice to the taxpayer's right to opt for the determination of income in the ordinary way, according to the procedures and terms provided for decreto del Presidente della Repubblica 10 November 1997 no 442.

4 The Functional Relationship between Taxable Cases and Essential Agricultural Activities: The Criterion of Prevalence and the Connection between the Activity and the Land

In the present case, there is a connection *ope legis*, justified by the functional relationship between the aforesaid cases and the essential agricultural activities (Art 2135, para 1, Civil Code) and by the criterion of prevalence, which is an expression of the 'potentiality of the land', since it is necessary that the renewable energy sources come mainly from the land.

This parameter, aimed at avoiding the application of the favourable tax regime to activities without a significant relationship with the agricultural enterprise, in the presence of agricultural products belonging to the same category of goods, assumes a quantitative nature, so that what is used in carrying out the activity aimed at generating clean energy must be prevalent, quantitatively, compared to the assets acquired from third parties.

If the comparison is made between assets of a different nature, it is necessary to use an economic parameter, which considers that the criterion of prevalence is met when the value of the company's own products is greater than the cost incurred for the purchase of third-party products.[22]

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income, the income deriving from the sale of green certificates constitutes an income element absorbed by the income determined by the land register, without generating income components that can be taxed independently; where the agrarian limits are exceeded, the income deriving from the sale of green certificates generates capital gains, producing business income. On the legal nature and tax regime of 'green certificates', comp. A. Battaglia, 'Nasce il mercato dei certificati verdi' *Giornale di diritto amministrativo*, 455, 455-459 (2000); G. Silvestrini, '"Certificati Verdi": i nuovi obiettivi per la promozione dell'energia da fonti rinnovabili' *Gazzetta ambiente*, 3, 3-7 (2001); S. Arnaldo, 'Profili Iva delle cessioni di certificati verdi' *Bollettino tributario d'informazioni*, 751, 751-755 (2004); R. Tappi, 'I certificati verdi: meccanismo di funzionamento e profili giuridici' *Rassegna giuridica dell'energia elettrica*, 165, 165-175 (2006); F. Pernazza, 'I certificati verdi: un nuovo "bene giuridico"?' *Rassegna giuridica dell'energia elettrica*, 177, 177-202 (2006); S. Guarnieri, 'ENEL, ed i Certificati Verdi' *Rassegna giuridica dell'energia elettrica*, 259, 259-268 (2006); M. Panella, 'L'incentivazione dell'energia elettrica con i Certificati Verdi e la procedura di qualificazione degli impianti di produzione' *Rassegna giuridica dell'energia elettrica*, 147, 147-164 (2006); V. Colcelli, 'La natura giuridica dei certificati verdi' *Rivista giuridica dell'ambiente*, 179, 179-204 (2012); A.A. Ferrario, 'Certificati verdi. Osservazioni in merito alla disciplina giuridica e tributaria' *Bollettino tributario d'informazioni*, 999, 999-1002 (2013); P. Barabino, 'La "fiscalità" dei certificati verdi tra natura e forme di circolazione' *Rivista trimestrale di diritto tributario*, 767, 767-795 (2013); M. Bagnoli, 'Aspetti contabili e fiscali dei certificati "verdi" e "bianchi" in agricoltura' *Corriere tributario*, 4006, 4006-4012 (2015).

[21] M. Bagnoli and I. De Leonardis, 'È attività connessa la produzione di energia rinnovabile da parte delle imprese agricole' *Corriere tributario*, 2868, 2873 (2009).

[22] Circolare Agenzia delle Entrate 14 May 2002 no 44/E, *Corriere tributario*, 2741 (2002); Circolare Agenzia delle Entrate 15 November 2004 no 44/E, *Corriere tributario*, 3648 (2004).

In the presence of assets that cannot be economically valued, administrative practice[23] has measured the 'prevalence' on the basis of the quantity of energy developed, namely by comparing the energy derived from the company's own products with that from products purchased from third parties.

A further exception is found in the production of electricity and heat from photovoltaic sources: in this case, since it is necessary to use specific plants that convert solar radiation into clean energy without any use of production from the farm, the connection between the activity carried out and the farm, far from being inspired by 'classical criteria', is based on economic and dimensional elements capable of revealing a functional link with the agricultural enterprise.[24]

This gives rise to an atypical situation within the group of connected agricultural activities, since an evaluation parameter is valued that is not part of the civil law system, through a differentiation based on the overall nominal power of the energy produced.[25]

The exemption, set at 200 kW of power, expresses a situation of presumptive connection in the presence of an essential agricultural activity aimed at the market and not limited only to personal or family needs: within the limits of this parameter the existence of a connection between the activity and the fund is recognised, without any further conditions being necessary.

On the other hand, for higher power plants, the connection operates only in the presence of specific alternative requirements: the turnover deriving from the exercise of the agricultural activity greater than that realised through the production and sale of photovoltaic energy exceeding the limits of the 200 kW franchise, regardless of the incentives provided for the production of photovoltaic energy; the production of photovoltaic energy through the use of architecturally integrated or partially integrated systems, built on existing farm structures; the proof provided by the entrepreneur of the possession or the management, in the exercise of the agricultural activity, of at least 1 hectare of land for every 10 Kw of power exceeding the franchise of 200 Kw, within the maximum limit of 1 MW per company.[26]

5 The Declination of 'Business Income' in the Agricultural Sector

The income deriving from the production and sale of renewable energy produced by means of plants exceeding these requirements constitutes, for the part in excess, business income, the amount of which is determined by applying the rules governing this category of income, namely by comparing the positive and negative components resulting from the income statement of the balance sheet and by making the increases and decreases provided for by the tax legislation.[27]

[23] Circolare Agenzia delle Entrate, 6 July 2009, no 32/E, n 17 above.

[24] M. Bagnoli and I. De Leonardis, n 21 above, 2870.

[25] Nota Ministero per le politiche agricole e forestali 27 July 2008 prot. no 3896, available at https://www.politicheagricole.it/ (last visited 15 June 2021).

[26] M. Bagnoli and I. De Leonardis, n 21 above, 2871-2872.

[27] M. Cardillo, n 13 above, 542.

In fact, the tax legislator has classified as business income certain income deriving from the agricultural sector, deeming the relevant activities to be of a commercial nature by reason of the very nature of the activity carried out or following the application of a quantitative criterion represented by the exceeding of the limits provided for by Art 32 of decreto del Presidente della Repubblica 22 December 1986 no 917.[28]

In the case of ordinary partnerships, which are precluded from carrying on commercial activities, exceeding the limits of the link with the land means that it is necessary to convert the partnership into a commercial company, precluding the possibility of benefiting from the regime of taxation on a cadastral basis, in the same way as for agricultural companies, for which, in the absence of the exclusive exercise of agricultural activities referred to Art 2135 of the Civil Code, it is not even possible to determine the cadastral amount of income deriving from the activity carried on within the limits of agrarian activity.[29]

As regards the subjective scope, the scheme applies when the taxpayer is a natural person, a simple company or a non-commercial entity carrying out such activities on a professional basis.

In the presence of an agricultural company, pursuant to Art 2, decreto legislativo 29 March 2004 no 99, constituted as a partnership, limited liability company or cooperative company, it is possible, by means of a special option, to determine on a cadastral basis, rather than on an actual basis, the income deriving from the agricultural activities carried out within the limits indicated by Art 32, decreto del Presidente della Repubblica 22 December 1986 no 917 (Tuir).

In particular, these are companies that carry out, on an exclusive basis, essential and connected agricultural activities pursuant to Art 2135 of the Civil Code, whose business name (for partnerships) or company name (for corporations) contains the words 'agricultural company'.[30]

The scheme outlined, going beyond the general provisions relating to the taxation of income deriving from the performance of related agricultural activities, the tax classification of which is subject to the adoption of the ministerial decree provided for Art 32, para 2, letter c), decreto del Presidente della Repubblica 22 December 1986 no 917, constitutes a derogation from the rules on business income, to which, in the absence of an express regulatory provision, it would have been necessary to attract the income deriving from the production and sale of electricity by agricultural enterprises.[31]

In this context, in the framework of energy policies, the attribution of such income to farm income can have beneficial effects depending on the underlying value system, although gradual in terms of effectiveness, being truly decisive in preserving environmental matrices and non-renewable resources.

[28] ibid 545.

[29] M. Bagnoli and I. De Leonardis, n 21 above, 2873.

[30] G.P. Tosoni, n 8 above, 467.

[31] F. Tundo, n 4 above, 826.

Energy Communities as Cooperatives in Italy and Japan: Can a Workers' Cooperative be an Energy Community?

Federico Pascucci

Abstract: The essay examines in a general way the legislation on energy communities and cooperatives in Italy and Japan, focusing mainly on workers' cooperatives and their obligations towards those particular types of workers who also play the role of members, to try answering the question whether it is possible or not to establish an energy community in the form of a workers' cooperative.

Keywords: Energy Community, Cooperative, Labour Market, Working Member, Worker

1 Energy Transition and Energy Communities

The neoliberal paradigm and the socio-economic model it proposes, which is aimed at maximizing profit 'costs what costs', has led to deep imbalances not only in the global social fabric, with an increase in inequalities and poverty, but also at the ecosystem level. As has rightly been noted, 'global warming, climate change, biodiversity loss, environmental and social injustices that push new hordes of "climate migrants" to leave the lands of origin, put before us a deep rethinking of the way governments, businesses, financial systems and individuals interact with our planet'.[1]

One of the ways to overcome this situation is a major change in the energy market, both replacing fossil energy sources - exhaustible and polluting - with renewable ones - everlasting and clean -, and transforming the role of the energy user from simple 'consumer' to 'prosumer', namely a subject which, having its own energy production plant, participates in the different stages of the production process.

Moreover, when it comes to prosumer it does not necessarily mean the individual natural person. The role in question can be also covered by an energy community, which is 'a coalition of users that, by voluntarily entering into a contract, collaborate with the goal of producing, consuming and managing energy through one or more local energy installations'.[2] More analytically, if it's true that directive 2018/2001/UE and directive 2019/944/UE state two different typologies of community - the 'renewable energy community' (from now on REC) the first directive and the 'citizen energy community' (from now on CEC) the second one - it is not less true that these ones are linked by the key features of pursuing a mutual purpose in favour of their own members and/or an altruistic aim in favour of the

[1] F. Barroco et al eds, *Le comunità energetiche in Italia* (6) available at www.enea.it (last visited 9 September 2021). Cfr. on the issue also M. Meli, 'Autoconsumo di energia rinnovabile e nuove forme di energysharing' *Nuove leggi civili commentate*, 630, 633 (2020), which stresses as before to environmental concerns, EU focuses its attention on the overly dependence on the outside of its energy needs.

[2] F. Barroco et al eds, n 1 above, 6.

land or the population in which the community works and not having as main - let alone the only - goal the pursuit of subjective profit.[3]

The benefits that the community provides to its members and/or the territory must be of environmental, economic or social type. According to some authors[4] said benefits do not must be provided in an unique way, mostly because the environmental and economical benefits look alternate to the social ones, as looks alternate the recipients of those benefits: namely the community's members or the territory.

However, in the text of the rule, it does not appear to be any grip that allows a disjunctive - thus alternative - reading about benefits and recipiers. On the contrary, this narrow interpretation sounds opposite to the very *ratio* of energy community's creation. The community, in fact, can be considered *ex se* as a bearer of economic and environmental benefits[5], precisely because it uses renewable energy sources. So, it would be incongruous if the community could not join these benefits to the social ones in favour both of its members and the local area in which it acts, also seen the close contact that must be between the territory and the members of the community itself.

Again, energy communities must be founded on the 'open and voluntary' participation of their members, which can be divided into three categories:[6] 1) domestic consumers, namely physical persons that buy energy for their own domestic consumption (including small entrepreneurs); 2) local authorities, consisting of all local and economic public bodies (including municipalities, provinces and so on); 3) private developers.[7]

Even subjects different from the three categories seen before may be members of a CEC, while inside a REC one can find only subjects coming from these three categories. Also, just to maintain the non-profit character of the communities, their control by large energy undertakings in an exclusive or simply principal way is not allowed.[8]

The main differences between renewable energy communities and citizen energy ones, beside the typology of member subjects, are given by the principle of 'autonomy', namely the impossibility of external control, and the principle of 'proximity', that is the physical proximity of community members in the same territory where its facilities are located. These two principles in fact concern only RECs and not CECs.[9] Another difference is given by energy activities, since CECs can exercise activities having as object electricity produced from any source, while RECs

[3] See E. Cusa, 'Il diritto dell'Unione europea sulle comunità energetiche e il suo recepimento in Italia' *Rivista Trimestrale di Diritto dell'Economia*, 287, 290 (2020). See also F. Barroco et al eds, n 1 above, 12. For M. Meli, n 1 above, nulla invece autorizzerebbe ad escludere che gli scopi di cui è portatrice la comunità energetica non possano essere raggiunti anche con la creazione di un ente con scopo lucrativo.

[4] M. Meli, n 1 above, 646.

[5] ibid 646.

[6] Cfr. for this division E. Cusa, n 3 above, 294-295.

[7] Moreover the word 'private' does not seem to exempt private entities also under public control. See ibid, 295.

[8] ibid, 295. According to F. Barroco et al eds, n 1 above, 12, such subjects could never participate as members of the community, but they could be able to lend in its favour supply and/or infrastructure services.

[9] E. Cusa, n 3 above, 303 ss. See also F. Barroco et al eds, n1 above, 12.

can produce any type of energy provided that it comes only from renewable sources.[10] It is from this latter characteristic that seems to follow the obligation provided by EU rule (cfr Art 22, para 2 of directive 2018/2001) for member States to promote and facilitate RECs and not CECs.

In any case, the energy communities - CECs or RECs it doesn't matter - have the role of energy entrepreneurs. So it is their duty to ensure at least the cost-effectiveness of their activities. This means that energy communities can also offer additional services to the main activities of production, distribution, storage, and so on, of the energy. Nor EU law precludes communities from 'to carry out other economic activities, even if the latter were not connected or instrumental to their characterising energy undertakings',[11] with the result that they may also carry out economic activities different from the strictly energetic ones which, nevertheless, must always be their hallmark.

As to the legal types that the energy communities could assume in our Country, particularly relevant are the types of cooperative society *ex* Artt 2511 and following of the Civil Code, given that the body is free not to pursue the profit-making purpose and may have as its members natural persons, entrepreneurs, public/private law entities and consumers, or the social company's form as ruled by decreto legislativo 3 July 2017 no 112.[12]

2 The Cooperative Society and the Mutual Purpose

The legal basis for the regulation of cooperatives in Italy is normally found in Art 45[13] of the Constitution, which, with a formula not quite clear, establishes the recognition by the Republic of 'the social role of mutual cooperation and without the purpose of private speculation'. Formulation that is not quite clear because the Fundamental Charter does not give a definition of what should be considered 'cooperation', nor it clears the link that must exist between the 'social function' on one side and the 'mutuality' and the lack of 'private speculation' on the other side, leaving the question as to whether there can be cooperation without mutual interest and for profit,[14] or if the mutuality and the lack of profit were intrinsic and

[10] E. Cusa, n 3 above, 297. According to this author, CERs could manage energy from fossil fuels, but could not produce energy from them. Cfr. also F. Barroco et al eds, n 1 above, 12.

[11] E. Cusa, n 3 above, 301.

[12] ibid 319-321, without forgetting the forms of the association - recognized or not -and of the foundation. See also M. Meli, n 1 above, 647, according to which there is also the possibility of so-called benefit society, namely profit-making companies that have also decided to pursue common benefit goals. And this is also the reason for which an energy community could well be achieved through a lucrative body.

[13] For a comment on this article see A. Nigro, 'art. 45', in G. Branca ed, *Commentario della Costituzione. Rapporti economici* (Bologna-Roma: Zanichelli, 1980), III, 1-50.

[14] This is the idea of G. Oppo, 'L'essenza della società cooperativa e gli studi recenti' *Rivista di Diritto Civile*, I, 369, 402-403 (1959), for which mutuality would only be a *species* of the cooperative's *genus*, so there may well be cooperatives that pursue profit-making objectives.

qualifying characteristics not only of the constitutional protection, but properly of the entire cooperative phenomenon considered *ex se*.[15]

The doubt seems clarified today by decreto legislativo 17 January 2003 no 6, which reformed the rules of corporations and cooperative societies inside the Civil Code.

More specifically, the reform introduced the definition of cooperatives as companies with 'variable capital and mutual purpose' (Art 2511 of Civil Code), with the consequence that the fundamental element of the cooperative seems definitively and precisely identified in the mutuality, that must today characterize every type of cooperative society.

But the introduction of a distinction within the same cooperative phenomenon between 'with prevalent mutuality' or 'protected' cooperatives and 'with not prevalent mutuality' or 'different'ones, seems to have reopened the diatribe on the possibility of having the cooperation also in presence of an aim of profit and without mutuality. Actually, as pointed by the doctrine, this difference occurs however within a substantially unitary phenomenon, provided that even 'different' cooperatives are and remain mutual societies and, for this reason, subject to the general rules applicable to all cooperatives (nameli variability of capital, 'open door' principle, equality of vote and so on).[16]

So a cooperative is characterized always by internal mutuality (prevalent or not), intended as the purpose of the cooperative to provide directly to its members goods, services and job opportunities on more favourable terms than they would obtain from the market, and the so called external mutuality, that is a purpose that transcends the immediate interests of the members 'and is directly related to goals that concern the public interest'. It is this purpose that gives to the cooperative a very special connotation.[17]

Moreover, the concept of mutuality, especially the internal one, is understood in a rather broad sense, with the consequence that in order to have a cooperative it is not at all necessary that the entire activity is carried out only with and for the members, but it is enough that this type of activity is carried out predominantly. Indeed it can be said that the so-called 'pure' mutuality, while being the basic model

[15] Cfr. on the point A. Nigro, n 13 above, 27. The author says that, in the absence of the characteristics laid down in the Constitution, there would be no unprotected or at least facilitated cooperation. Simply there would be no cooperation at all.

[16] See A. Bassi, 'L'impresa societaria con scopo mutualistico', in V. Buonocore ed, *Manuale di diritto commerciale* (Torino: Giappichelli, 5th ed, 2004), 376, and Id, 'Società cooperative', in G. Presti ed, *Società cooperative* (Milano: Giuffré, 2006), 6, according to which the social function of the cooperative, achieved through mutuality, is an internal requirement of the phenomenon that also applies with regard to the distinction between constitutionally recognised cooperation and different or to not prevalent mutuality one.

[17] Cfr. L.F. Paolucci, 'Definizione e aspetti caratterizzanti', in Id ed, *Le società cooperative* (Torino: UTET, 2012), 9 . For the author the evidence that even different cooperative societies also pursue a mutual aim, even if external, is given by the rule of Art 2545-*decies*. This article in fact stated that in the event of their being converted into profit-making companies,the actual value of the assets must be allocated to mutual funds. Not to mention the fact that it is precisely the external mutuality that justifies the definition of the cooperative as 'other enterprise'.

of cooperative,[18] still remains a model of difficult implementation, significantly reductive and adopted in practice only in marginal cases.[19]

In addition this model will bring a paradox. In fact, pure mutuality cooperatives do not operate with third parties and therefore cannot make profits. So it would make no sense for them to adopt non-profit clauses. But the outcome (and now comes the paradox) is that pure mutuality cooperatives, by not adopting said clauses, will lose fiscal benefits.[20]

So the predominant model seems to be that of 'imperfect' mutuality, intended as 'compromise between mutual and capitalist principles', where the cooperative can exercise its activity even for the benefit of third parties (but still mainly in favour of its members if it wishes to continue enjoying tax benefits), because it has always been held that the right pursuit of the mutual purpose cannot be said to be irreconcilable with an activity freely exercised also in favour of non-members.[21]

Actually, in some respects it is precisely the possibility of exchanging and supplying goods and services also to third parties which may constitute an advantage for the whole of society and become a tool of 'external' mutuality. Naturally this activity in favour of non-members must not end up totally eliminating any mutual purpose. The price to pay will be in fact the transformation of the cooperative into an exclusively speculative society.[22]

In this issue, however, an important clarification must be made. The so-called 'prevalence' of mutuality is not given by the mere number of economic relations between members and cooperatives, but by their total economic value. This means that a cooperative which act principally with its members, but in which the few economic operations carried out with third parties exceed the 50% of its operations' economic total value, could not define itself marked by mutuality - at least not by the 'prevalent' one - and loses fiscal benefits.[23]

It follows that the vast majority of cooperatives will be the ones marked by 'prevalent mutuality' on one side, namely the ones where the social activity is mainly - but not solely - carried out in favour of the members, the work used is mainly the one provided by the members, or are predominantly utilized the contributions of goods and services given by members (Art 2512 Civil Code), and the 'different' cooperatives on the other side.

As for these last ones, their model should be considered as residual,[24] not supported by fiscal incentives and characterized both by the possibility of carrying out gainful activities and, most of all, by the marginal and/or occasional relationship between them and their members. Furthermore, even these types of cooperatives must maintain some of the functional requirements of mutualism - such as the *per*

[18] See A. Bassi, n 16 above, 16, according to which the exclusive mutuality cooperative is not subject to the prevalent mutuality one's statute.

[19] Again ibid 378.

[20] ibid 17.

[21] L.F. Paolucci, n 17 above, 10-11.

[22] ibid 12.

[23] S. Laforgia, *La cooperazione e il socio-lavoratore* (Milano: Giuffrè, 2009), 33.

[24] A. Bassi, n 16 above, 19.

capita vote and not by quotas, the principle of the 'open door' and so on - and respect, however attenuated, mutuality.

3 The Types of Cooperative Society, the Workers' Cooperative in Particular and the Figure of the Worker Member

With the cooperative the aim is to eliminate the 'speculative' intermediary, whether in the acquisition of goods and services, or in the access to credit, or in the production and distribution of goods and services, or in the transfer of employment, as to directly ensure that interested parties meet their needs. [25]

According to the speculator 'eliminated' and therefore to the relations between the members and the cooperative, we can have consumer cooperatives (the cooperative provides the members with the goods and services required), production ones (the cooperative produces and/or distributes the goods produced by the members to third parties), credit ones (the cooperative exercises the credit in favor of the members), service ones (the cooperative makes use, in the exercise of its activities, of the goods and services provided by its members).

In any case, in cooperative societies a real reversal between objectives and constraints that characterize the profit-making enterprise takes place. More specifically, the profit, which is the objective of capitalist enterprise, in cooperative society becomes efficiency condition, while elements that for the enterprise are configured as external constraints (employment, protection and enhancement of professionalism, achievement of better living conditions, fair economic exchanges), for the cooperative become all goals to achieve.[26]

A particular type of cooperative, that finds its origin directly in the mutual aid societies of 1800, is the workers' one (also called production and labour cooperative), where the society employs directly the work of the associates and finds and manages the occasions of such work. On the issue, it has rightly been said that the workers' cooperative is perfectly suited to the constitutional definition provided by Art 45 of Italian Constitution about social function, because it is structured in such a way as - and pursues the goal - to remove directly and immediately those economic and social obstacles to the implementation of the principle of substantial equality, by allowing access to the labour market which would otherwise be inaccessible.[27]

Now the problem is that, what should work perfectly on paper, in reality presents many issues. The major risk is that capitalist logic penetrates within the cooperative and ends up taking precedence over the mechanisms of mutuality. In other words in the workers' cooperative you end up exacerbating the question of the institutional co-responsibility of workers in the economic policy choices of the society. Choices

[25] Cfr. L. Ferluga, *La tutela del socio lavoratore tra profili lavoristici e societari* (Milano: Giuffrè, 2005), 22, according to which with the cooperative the members remove directly the speculative intermediary collectively replacing him.

[26] Cfr. M. Biagi, *Cooperative e rapporti di lavoro* (Milano: Franco Angeli Editore, 1983), 27. For the same opinion see L. Ferluga, n 25 above, 22, and S. Laforgia, n 23 above, 22-24.

[27] S. Laforgia, n 23 above, 22-24.

that could even lead to the sacrifice of the performed work's remuneration, with a clear extremization of the conflict of interests that has always distinguished work and capital.[28]

This paradox can be summed up in the expression according to which the working member should be 'entrepreneur of himself'. The mutualistic nature of the cooperative in fact allows him to take part on one side in the company's management, and, on the other one, compels him to take on the risk of undertaking. Direct consequence of this paradox would be the total confluence of the employment relationship of the member within the associative contract and the following exclusion of paid employment's protective discipline.[29] But looking at the issue from another angle, one cannot miss that, analyzing carefully cooperative enterprise's reality, the assumption of the worker member as an entrepreneur of himself can hold only in small cooperatives, where each individual member can really 'weigh' his vote in the assembly according to the principle 'a head, a vote'. But inside medium or large cooperatives, it seems objectively difficult that the single member may have a voice in the management of the company and thus take part in the risk, so that its activity within the social structure is limited to the provision of work only, no more and no less than any person providing his work *ex* Art 2094 of Italian Civil Code.[30]

The work of cooperative member thus places itself in a gray zone, in which the uncertainties and doubts on how to qualify such work, in the past, reflected themselves even in the doctrinal and jurisprudential debate. There was in fact a division between those who argued the incompatibility between the discipline of 'classical' employment and the one of the member, that necessarily had to be traced back to the association contract (so called monistic thesis),[31] and those who, on the other side, supported the perfect coexistence of two contractual cases that tied the member to the cooperative (the associative one and the working one), and did not pose an alternative, but were, if any, functional to each other (dualistic thesis).[32]

Now, if the monistic thesis had the advantage of not flattening uncritically the relationship of the worker member with the cooperative on the normal employment relationship, thus evaluating the undoubted profiles of specialties, the same, however, fell into the opposite problem, that is to absolutely reject the compatibility - and then the mixture - between association relationship and employment one, thus demonstrating 'to not grasp the essence of the phenomenon where typically corporate aspects are mixed with legally relevant situations which are specific to paid employment'.[33]

[28] ibid 24-25.

[29] L. Ferluga, n 25 above, 37.

[30] On the issue see G. Bonfante, 'Cooperazione e imprese cooperative' *Digesto delle discipline privatistiche*, *Sezione civile* (Torino:Utet, 1989), 147 and L. Ferluga, n 25 above, 37, 76.

[31] See for all A. Vallebona, 'Il lavoro in cooperativa' *Rivista italiana diritto del lavoro*, I, 293, 293-294 (1991). In jurisprudence see for all Corte di Cassazione-Sezioni unite 28 December 1989 no 5813, *Giustizia Civile*, I, 1537 (1990).

[32] M. Biagi, n 26 above, 148, to which *adde* S. Laforgia, n 23 above, 68-70.

[33] L. Ferluga, n 25 above, 79.

So it cannot be denied that to the worker member shall be granted at least the minimum levels of protection provided for the employed person, since, as the Italian Supreme Court has repeatedly stated, 'even one who works for a common profit, like any other employer, is engaged with his own person in the execution of the work'.[34] All without considering that its performance takes place in the labour market, given that the worker member is associated also - if not only - to obtain an employment which tends to be stable and offers a higher income, namely better conditions than those normally offered by that market.

The reform of the worker member operated by legge 3 April 2001 no 142 made its own the dualistic vision of the relationship that binds him to the cooperative. In fact Art 1, para 3 stated that the worker member at the time of his accession, or at a time after the establishment of the association, puts in place a 'further' working relationship. This means that in parallel and in close connection with the associative relationship, between the cooperative and its worker member also arises a special employment relationship which proves instrumental to the implementation of the mutual purpose.

In practice, although they are distinct, the associative relationship and the employment one concur to realize the role of cooperation. The social relationship may also exist in the absence - only temporary - of the employment one, but it must be integrated sooner or later by the latter, so that the mutual purpose is realized.[35]

Between the two relationships a link is established that cannot be split. The associative relationship without an employment one could never reach the mutual end pursued by the cooperative. But on the other hand, a working relationship without the social one would by no means be defined as 'special', but it would be a pure and simple employment relationship.

Moreover this link can be set as 'functional link of unilateral interdependence'[36], as the one which is found in ancillary contracts. In fact if it is true that the associative contract is an essential prerequisite for becoming a worker member - otherwise you would have a simple employee - and its fate causes cascading effects on the employment contract, the reverse is not true. Said in other words, to the cessation of the associative relationship also the employment one falls and the reintegration is not possible, while the contract of employment can well cease without that the associative relationship fails, and the events of the first affect the second only to the extent that these events would become relevant according to legal provisions or to private autonomy as fixed within the company's statute or regulation *ex* Art 6 legge 142/2001.

From the point of view of respective obligations, on one hand the cooperative takes on the obligation to provide working conditions better than those offered by

[34] See Corte di Cassazione-Sezioni unite 30 October 1998 no 10906, *Il Foro italiano*, I, 912 (2000), and recently Corte di Cassazione-Sezioni Unite 20 November 2017 no 27436 available at https://www.altalex.com /documents/news/2017/11/22/licenziamento-socio-lavoratore (last visited 15 September 2021).

[35] S. Laforgia, op. cit., p. 75, according to which this would imply a necessary existence between the social relationship and the employment one, determined precisely by the instrumentality of the second with respect to the first. Instrumentality that confers the working relationship of the member his 'speciality'.

[36] L. Ferluga, n 25 above, 99.

the market, or to provide simply job opportunities, if these were not, while on the other hand the member bears the obligation to contract - that is to conclude the employment contract - when the working opportunity presents itself (immediately upon entering the cooperative as a member, or in a different moment).

To the worker member must also be applied all occupational health and safety provisions and all the rights provided by legge 20 May 1970 no 300 (so called *Statuto dei Lavoratori*, from now on *Statuto*) with the exception of Art 18. He/she may exercise trade union rights subject to membership *status* and is entitled to financial treatment which is proportionate to the quantity and quality of work done and in any case not less than the minimum required by collective bargaining.

As far as not directly established by law, the working relationship between the member and the cooperative finds its discipline in the regulation provided by Art 6 of legge 142/2001, in which the collective agreement applicable to the employed member must also be specified.

Naturally the greatest problems emerge at the time of the termination of the employment relationship. In fact the functional connection of the last one with the associative relationship could produce doubts about the protection of the member unlawfully excluded from the social structure and/or dismissed.

On the issue Art 5, para 2 of legge 142/2001 helps to make a little clarity, stating that withdrawal or exclusion from society according to the legal or statutory rules brings *ex lege* the end of the employment relationship. If, to this rule, we attach the one of Art 2, para 1 on the inapplicability of art. 18 and therefore also of - however only possible - reintegration it can already be said that the specialty of work in the cooperative does not allow its continuation where there have been serious breaches of the obligations arising from the association contract. In such cases the member has demonstrated that he/she doesn't possess the essential requirements to be part of the cooperative and therefore shows indifference or even adversity to the pursuit of the mutual purpose. Its re-entry into the association would then be a logical contradiction even before a legal one.

The same can be said in the event that the disciplinary conduct of the worker within the contract of employment is considered, through the statute of the cooperative or directly by law, as a breach of membership obligations. In such cases, the worker should demonstrate the illegality of the exclusion order, ask first the reconstitution of the associative relationship and then the protection against unlawful dismissal which, in the new text of art. 18 of *Statuto* as issued by the reform of legge 28 June 2012 no 92, may not even mean the reinstatement of the worker, but only indemnity protection.[37]

The framework, already complicated enough, has become even more difficult to read with the entry into force of decreto legislativo 4 March 2015 no 23 (so called Jobs Act), that has reformed the rules on the protection of dismissals and also applies, from March 2015, to worker members.The lack of coordination between this last act and the discipline contained in Art 2 law 142/2001 could in fact lead to

[37] See Corte di Cassazione-Sezione lavoro 15 gennaio 2020 n. 707 available at https://www.altalex.com (last visited 21 August 2021).

a different path from that seen above. Practically, if Art 2 refers only to the discipline of Art 18 of the *Statuto*, it could happen that a worker member expelled from the company, but subject only to the rules of the Jobs Act, could be reintegrated even if it has not challenged the exclusion decision. And this could lead to unjustified unequal treatment between worker members penalised for the same behaviour, but subject to different disciplines.

But that should not be the case. In fact Art 2 was intended, *ratione temporis*, to prevent any hypothesis of reintegration in the event of exclusion from the cooperative of the worker member. A systematic and teleological interpretation would therefore suggest that, in the reference to Art 18 of the *Statuto*, the reintegration provided for in Art 3, para 2 of Jobs Act is also implied.

Different assessment instead should be done when there is a cause of dismissal that doesn't affect the continuation of the associative relationship. This may be due to the member's default in the employment relationship (so called subjective reasons), which don't affect the associative one (ie, they are not considered by law, by the statute or by the regulation of cooperative as failure to comply with the obligations of association), or for matters that have nothing to do with the proper conduct of the related relationships, but with causes affecting the functioning of the cooperative, its organisation or market situations (so called objective reasons). In such cases, in fact, the unilateral functional link between the associative contract and the employment one does not automatically entail that, on termination of the employment relationship, the status of the cooperative's member is also lost.

4 Energy Communities and (Agricultural and Workers') Cooperatives in Japan

In Japan the use of renewable energy has experienced a strong development, especially in the photovoltaic sector, after 2012, also due to the great earthquake of 2011 and the ensuing nuclear disaster at the Fukushima power station. In addition to the classic use of panels on the roofs of houses, the Rising Sun Country has seen the construction of large installations by private companies often in collaboration with local authorities which provided the place to build the energy plant.[38]

As evidenced,[39] energy communities offer both investment opportunities and job ones, helping to revitalise local communities, especially if small, making them less dependent or completely independent from the energy produced by large power plants based on the centralized model.

Energy communities play a key role in the decentralisation of renewable energy use and it has been necessary to ask ourselves what was the best legal form to create

[38] Y. Yamamoto, 'The role of community energy in renewable energy use and development' 1 *Renewable Energy and Environmental Sustainability*, 1 (2016).

[39] A. Schreuer and D. Weismeier-Sammer, 'Energy cooperatives and local ownership in the field of renewable energy technologies: A literature review' 30-35 available at https://base.socioeco.org/docs/schreuer-ea-2010-literature-review-energy-cooperatives.pdf (last visited 27 August 2021). See also Y. Maruyama et al, 'The rise of community wind power in Japan: Enhanced acceptance through social innovation' 35 *Energy policy*, 2761, 2761-2769 (2007).

them in Japan too. If, however, the answer on paper seems obvious in favour of the cooperative form, in the Land of the Rising Sun things seem not to be so simple.[40]

For an energy community in the form of a cooperative to succeed, a lot of elements are needed: a close correlation between it and local economic activities, common management of (equally) common resources, an information system involving the community, and an aim that is not devoted only to maximizing profit.[41]

Now, the point is that, often, self-management of common resources brings with it the risk of their abuse while the cooperative model itself may - as we saw before - not exclude the conflict between the interest of one or more members and the interest of the entire cooperative. Beside this, it must be added that, in Japan, energy communities in cooperative form usually take the shape of a business cooperative, more oriented on trading than focused on community interests, and that there is no unitary - each type of cooperative has its own discipline - legislation regulating the cooperative model.[42] Aggregating all these elements you can understand why in Japan this model is little known and therefore little used in the renewable energy sector.[43]

Still, one cannot forget that among all forms of cooperative, in Japan the workers' cooperative did not yet have its own discipline of reference. A gap, this one, that has been filled only in recent times with the approval of the Worker Cooperatives Act (from now on WCA), promulgated on 11 December 2020.

Paradigmatic of the particular situation experienced by cooperatives in this Country can be the history of agricultural cooperatives' legislation, one of the first and most important forms of cooperative to be regulated in Japan.[44] The first regulatory act of cooperatives - agricultural one included - was the Industrial Cooperative Law of 1900, which placed the latter under the virtually all-powerful control of the government, according to the top-down bureaucratic approach of the time. The law was all-embracing and regulated virtually every aspect of the cooperative's life, on which the executive had in practice always and however the last word (it could in fact allow his birth, suspend it, extinguish it, operate controls and so on). But above all the law foresaw the model of multipurpose cooperative. In other words, the law of 1900, which was created primarily to favour agricultural cooperatives and farmers in rural areas against large landowners, covered also the credit cooperatives and the consumer ones born in urban areas.[45]

The disaster of WWII brought to a general reform of the cooperative system and to the birth of separate legislations by type of cooperative. The Agricultural

[40] Y. Yamamoto, n 38 above, 1.

[41] ibid 2-3.

[42] For example see about Japanese agricultural cooperatives A. Kurimoto, 'Agricoltural Cooperatives in Japan: An Institutional Approach' 32 *Journal of Rural Cooperation*, 111, 111-128 (2004). About the missing of a common legal framework on cooperatives as a brake on their development in non-regulated sectors, see N. Coca, 'Can a new legal framework for worker coops address growing inequality in Japan?' available at https://www.equaltimes.org. (last visited 31 August 2021).

[43] Y. Yamamoto, n 38 above, 3.

[44] Agricultural cooperatives were born in Japan at the end of the 19th century. See A. Kurimoto, 'Agricultural Cooperatives in Japan: An Institutional Approach' 32 *Journal of Rural Cooperation*, 111, 116 (2004).

[45] ibid.

Cooperative Law aimed to democratize the process of training and management of agricultural cooperatives by eliminating the strict government control, but with poor results. The preferred model continued to be the multipurpose one, and the formation of only one cooperative per area was authorised. In 1954 the Central Union of Agricultural Co-ops (CUAC) was set up as the leading body in the agricultural cooperatives sector, while state interference did not disappear, simply assuming the form of promotional measures and/or assistance.[46] As a result, agricultural cooperatives have continued to maintain, and indeed to develop, according to the multipurpose model, also the financial sector in agriculture, managing the credit system of access to government funds through low interest loans.[47]

The multipurpose model has thus brought some agricultural cooperatives to play a crucial role in some areas, ending up embracing and managing a range of economic and social services that is as broad as possible. Such cooperatives in fact provide 'farming inputs and markets to the agricultural product'. Also, a cooperative of this level is also 'a thrift and credit organization, an insurance agency, a center for consumer supplies; it provides medical services, and hospital care in some places: it has extension and field services for farmers, and a community center for cultural activities'.[48]

Still, the classic model of cooperative, which should be based on the 'open door' principle, in Japan, also thanks to the cultural background, ends up being supplanted by a closed system. The members of agricultural cooperatives are usually represented by legal persons or families of small owners who follow each other from generation to generation. Sometimes the farmers themselves prefer to be users of the cooperative and enjoy its services from outside rather than being part of it. On one hand, this system has allowed the community model's victory, in which the cooperative is transformed into a real community organisation which meets a wide range of needs, against the functionalist model. On the other hand, the downside is the institution's management difficulties, because mechanisms for the involvement of new non-agricultural members, who have entered as a result of the urbanisation of agricultural areas, are missing.[49]

Moreover the change of the global economic paradigm that has seen the progressive withdrawal of the State from the economy does not seem to have touched the Japanese multipurpose model of cooperative, despite the urgent need to remedy the structural imbalances of cooperatives, especially regarding their financial functions and their dependence on government.[50]

From this point of view, workers' cooperatives (*rodosha [seisan] kyodo kumiai*, from now on contract in '*rokyo*')[51] were no exception. Indeed, without specific

[46] ibid 118.

[47] ibid 121.

[48] A.F. Laidlaw, *Co-operatives in the Year 2000* (London: International Co-operative Alliance 1980), 66.

[49] A. Kurimoto, n 44 above, 124.

[50] ibid, 127.

[51] The name *rokyo* comes from the use - typical in Japanese common language - to contract the complete expression. Another example of this use can be found in the consumer cooperatives' name (*seikatsu kyodo*

discipline, *rokyos* were forced to register not as cooperatives, but as non-profit organisations or as small or medium-sized enterprises. And this despite their presence and growing importance in many sectors of the economy such as elderly care, childcare, and various support services for people with disabilities[52], cleaning services, management of public facilities, sustainable farming, small-scale forestry and last - but not least - even renewable energies. In the end, every time labour finished to control the capital in Japan, the workers found that they were forced to 'pour their new wine into bottles old and poorly shaped for their intended purpose', given the dry alternative between the non-profit organization or the joint stock corporation, that is a classic corporate formula where capital controls labour.[53]

WCA's introduction should put an end to this problem and provide a significant incentive for the creation of new worker's cooperatives. The new legislation, which consists of 171 articles, crystallizes and therefore lays at the foundation of all the worker's cooperatives characteristics[54] already present in the main operating experiences in the Japanese panorama, which in turn refer to the European model of worker's cooperatives, taken as example.[55]

It is therefore clear from the text of the law that workers' cooperatives in Japan cannot be profit-making and that they must conclude an employment contract with their members (in practice cooperatives are obliged to seek for - and/or provide members with - employment opportunities).

The WCA also expressly established the 'open door' principle, with the obligation for the cooperative to respect the right of anyone to be part of it or to leave it. It is also interesting to note that if the door to become a member is open, the door to becoming an investor is not the same, as only members may invest in the cooperative and not external entities.

Still, *rokyos* will have to act respecting the opinions and the directives of their own members, who must be involved in the businesses operated by the cooperative. If this certainly leads to an increasing democracy in the management of the *rokyo*, on the other hand it could aggravate the classic problem present in the workers' cooperative of the conflict of interests between the community of members and the interest of the individual partner. Besides this, it is not understood if the *rokyo* has a kind of monopoly on the work of its own members, in the sense that they can only accept job offers provided by the cooperative.

Among the principles crystallized by the WCA is also that of 'one head, one vote', namely the one according to which the vote of each member is equal to the vote of each other regardless of the amount invested in the *rokyo*. However this principle

kumiai, restricted in '*seikyo*'). R.C. Marshall, 'Japan's Worker Co-operative Movement into the 21st Century'12 *Anthropology Faculty and Staff Publications*, 1 (2006).

[52] See about the increasing demand of human resources in these fields The Japan Institute for Labour Policy and Training, *Labor Situation in Japan and Its Analysis: General Overview 2015/2016* (Tokyo, 2016), 15.

[53] R.C. Marshall, n 51 above, 8.

[54] The main rules identified by the WCA according to which cooperatives must operate are available at https://www.dinf.ne.jp/d/0/494.html (last visited 6 September 2021).

[55] See as examples the Japan Workers' Co-operative Union (JWCU) or the Women's Workers Collectives (*Ninjin*), characterized by a democratic management of the cooperative group and the lack of profit. It is interesting to note that the JWCU took as its model just the League of Italian Cooperatives. R.C. Marshall, n 51 above, 5, 9.

is not limitless. The law states that the majority of the voting rights must be held by the members who conclude an employment contract with the cooperative. This mechanism ensures that the leadership of the *rokyo* is entrusted to those who are more interested in its proper management, namely the members who have concluded an employment contract, but can generate an issue. The disposition seems in fact to admit the presence also of associates that have not stipulated a contract of job with the *rokyo*, when instead one of the legal requirements for the existence of the workers' cooperative is the obligation for it to enter into an employment contract with all its members.

Lastly, the *rokyos* are characterized by the simplicity with which the members of the cooperative can invest in business, being commercial investment transactions directly authorised by the WCA, where, on the other hand, other cooperatives - as for the *seikyos*, namely the consumer cooperatives - need government permission.

5 Short Conclusions

If, therefore, as we have seen above, the energy communities can take the form of a cooperative society both in Italy and in Japan, one might ask if, among the various forms that a cooperative can take, the one of workers' cooperative would be the best suited to achieve the goals that the energy community pursues.

The answer, to the one who writes, seems to be negative, at least for the 'pure' model of workers' cooperative in the Italian scenario[56]. If energy communities must have at least domestic energy consumers as members, they will have to sell to them energy or energy services and assume, in the association agreement, the related obligation. And as we can see, this obligation does not seem to be compatible with the exclusive obligation of the pure working cooperative, which is to provide its members not with services but with opportunities for employment.

There is no denying the possibility for an energy community in the form of a cooperative to provide work, but this can hardly happen through the figure of the worker member, but through the normal employment contract pursuant to Art 2094 of Italian Civil Code.

It follows from these considerations that an energy community with mutual purpose will probably find its incarnation in a consumer cooperative *ex* Art 2512, para 1, no 1 of Civil Code or yet in a mixed cooperative as ruled by Art. 2513, para 2 of Civil Code.

A different scenario could instead be expected in Japan. In this Country in fact the culture of cooperatives is more tending towards the multipurpose model, where the company pursues multiple mutual purposes, and thus is obliged to its members to a range of services that go beyond the simple search and offer of job

[56] Of the same advice is E. Cusa, n 1 above, 324-325.

opportunities. And among these services there can also be production, distribution and sale to members of energy from renewable sources.

it is indeed true that the lack of a legal framework to regulate the phenomenon of *rokyos* was a major obstacle to their spread, but it is also true that the recent enactment of the WCA should provide a significant incentive for the development of new workers' cooperatives, also thanks to the lack of government authorization for commercial investments. An element this one that for other cooperative models, however, may constitute a significant bureaucratic obstacle.

It only remains to be seen how the legislation will be applied once the two-year implementation period has expired (namely around December 2022).

The Cooperative Entity as Prosumer in Spain. The Cooperative of Energy and the Cooperativized Energy. A New Challenge?

"I don't know what the future holds,
but I know who holds the future in their hands".
(Iliad, Homer)

Manuel Ignacio Feliu Rey

Abstract: This contribution focuses on the cooperatives as necessary partners in training, informing and disseminating the sustainability in the domain of services, in particular, in prosumer energy services (self-consumption of energy by cooperatives and their partners).

Keywords: Sustainability, Prosumer of energy services, Self-consumption of energy

1 Introduction and Objectives

There is a strong interrelation between sustainability, energy, and cooperative movement. The EU Directives (2018/844 - 2019/944), among other, establishes a new paradigm in the framework of green energy, clean energy and sustainability and energy.

This paradigm, in turn, implies great challenges and, in my opinion, one of these challenges is the clear acceptance of the concept of the European prosumer of energy.

The expression 'prosumer of energy' encompasses some of the traditional legal institutions such as: the natural person; the family; a collective of people without personality; community of goods; situation of shared house (co-living); co-ownership and, of course, the cooperative society in general meaning and, more especially, the cooperative society of energy.[1]

EU Directive 2019/944 is very clear: in its Preamble, it states that the consumers have an essential role to play in achieving the flexibility necessary to adapt the electricity system to variable and distributed renewable electricity generation: All consumers should be able to benefit from directly participating in the market.[2] This

[1] I. Campos et al, 'Regulatory challenges and opportunities for collective renewable energy prosumers in the EU', 138 *Energy Police*, (2020), say that the literature dedicated to the theme of collective prosumerism has focused on such notions as community energy, solar installations of communities, and clean energy communities and argues that 'The variety of concepts is likely to increase, as different business models, governance arrangements and technology solutions are adopted by prosumers'.

[2] The Spanish government's ecological vice-presidency has published an expression of interest related to Local Energy Communities with the aim of 'multiplying' cooperatives in the sector and promoting a proactive role for citizens in the energy transition and democratization of the energy system. In fact, the Spanish government wants to follow in German example: Germany has at least 1,750 local energy communities and cooperatives,

means that the consumers should be able to consume, to store and to sell self-generated electricity to the market and to participate in all electricity markets by providing flexibility to the system, for instance through energy storage, such as storage by electric vehicles, through demand response or through energy efficiency schemes.

This aim or desideratum implies a very hard work for a long term, because it means to change the known economic parameters and to be aware of—and push forward—the deep change in human behavior.

Indeed, the consumers have been given an opportunity to generate electricity and consume, store or sell this self-generated electricity to the market. To this end, the Directive uses and regulates the expression 'citizen energy community': the most representative example of a community activity is the cooperative entity.[3]

2 Citizen Energy Community in the 2019/944 EU Directive: The Clear Recognition of the Cooperative Entities such as Energy Actors

The EU Directive (2019/944) aims to recognize at the Union level certain categories of citizen energy initiatives as 'citizen energy communities', in order to provide them with an normative framework, fair treatment, and a well-defined catalogue of rights and obligations. These ideas are very well connected to the cooperative's principles of the International Cooperative Alliance and is in line with the Commission of the European Communities in its Communication to the Council of December 18, 1989:

'A company belongs to the social economy if its productive activity is based on specific organizational techniques… which are based on the principles of solidarity and participation among its members […], as well as on the values of autonomy and citizenship. In general, these companies adopt the legal form of cooperative, mutual or association'.

In fact, these cooperative principles and these structural elements of the cooperative entity (free access (to ingress) and free exit (to abandon) for 'partners'; democratic participation of the cooperative members; equal distribution of profits, benefits and debts between the partners; right to be informed, etc.) are implicitly described in the EU Directive 2019/944:

'Household customers should be allowed to participate voluntarily in community energy initiatives as well as to leave them, without losing access to the network

while Spain has only 33. In other words, Germany has 53 times more local energy communities than Spain. In this sense, the Spanish government will use European funds to multiply the number of energy cooperatives and reduce the impact of the big electricity companies. More about this initiative, see https://www.infolibre.es/noticias/economia/2021/02/06/el_gobierno_empleara_los_fondos_europeos_para_multiplicar_las_cooperativas_energia_hacer_frente_las_grandes_energeticas_116326_1011.html (last visited 5 July 2021).

[3] See C.E. Falcón-Pérez, 'Las cooperativas energéticas verdes como alternativa al sector eléctrico español: una oportunidad de cambio' 104 *Actualidad Jurídica Ambiental*, 50, (2020): 'renewable energy cooperatives—traditional in Europe, and just emerging in our country—are dedicated to promote active participation in the electricity sector; They offer an opportunity for change for the energy consumers, bearing in mind the values of these organisations in which social cohesion prevails, promoting democratic and transparent participation, encouraging the use of clean energy with responsible consumption in order to alleviate problems of a social, economic and environmental nature'.

operated by the community energy initiative or losing their rights as consumers. Access to a citizen energy community's network should be granted on fair and cost-reflective terms. Citizen energy communities are considered to be a category of cooperation of citizens or local actors that should be subject to recognition and protection under Union law. The provisions on citizen energy communities do not preclude the existence of other citizen initiatives such as those stemming from private law agreements. It should therefore be possible for Member States to provide that citizen energy communities take any form of entity, for example that of an association, a cooperative, a partnership, a non-profit organization or a small or medium-sized enterprise, provided that the entity is entitled to exercise rights and be subject to obligations in its own name'.

However, this recognition of the cooperative entities as a specific type of the ambiguous categorization named by the Directive as 'citizen energy community', could provoke some inefficiencies,[4] which are exposed briefly in what follows. Before doing that, however, it is also important to address the role of sustainability and its modern consideration as international cooperative principle.

3 Sustainability and its Modern Consideration as International Cooperative Principle

Obviously, the human impact on nature, on the ecosystem and on the use of natural resources cannot be denied or ignored. Furthermore, denying such evidence is an act of irresponsibility. Indeed, the General Assembly of the United Nations proclaimed 2012 as the International Year of the Cooperatives precisely with the motto 'Cooperatives help build a better world', focusing on their contribution to economic and social development, especially in the reduction of poverty, creation of jobs and social integration. Indeed, the cooperatives have a lot to say about how to make these goals real[5] and it is not an accident that the terms 'Cooperatives' and 'Sustainability' are so strongly interrelated. In this sense, numerous international reports on Sustainability have emphasized the awareness (as an object) and cooperatives (as a subject) to reach it. Further example of this relation is the recent European Directive 2019/944, and previous timid attempt to introduce these ideas (energy communities, renewable energy communities) by the Directive 2018/2001.

[4] I. Campos et al, n 1 above, say that: 'Collective self-consumption laws are not enough to provide a robust legal framework for RECs. Given the complexity of needs (e.g. demand-side management schemes, organisational structures), challenges (e.g. costs of equipment, as well as batteries and grid charges) and opportunities (e.g. new business models involving aggregators and third parties), RECs require a specific legal framework... new laws should account for innovation and experimentation, integrating provisions for a periodic evaluation and monitoring of RECs, to ensure future improvements of the legislation'. It's also important -in their opinion- 'to prevent the exclusion of more vulnerable communities and lower in-come families'. Finally, 'once legal barriers are overcome, financial, technological and organisational barriers need to be addressed, through policies that help communities develop new business models, as well as affordable and accessible demand side management schemes'. C.E. Falcón-Pérez, n 3 above, 88, announces that 'the main barriers faced by cooperative societies are: adaptation to the environment in which they operate, as it is not a universal organisational model, problems in accessing large sums of capital, and slow decision-making.'

[5] M.I. Feliu Rey and Mª. D. Sanchez-Galera, 'La cooperativa como motor de sostenibilidad en el ámbito del turismo', in L. Mezzasoma and M.J. Reyes López, *Turismo y sostenibilidad* (Cizur Menor: Aranzadi Thomson Reuters, 2018), 41-78.

In any case, the truth is that one of the most important cooperatives principles is to maintain, to protect and to preserve the sustainability. In other words, if at the first time the cooperative principles responded to the idea of solidarity in business and commercial management, over time it has been incorporated as a new cooperative principle, or better yet, as a development of the principle of cooperative solidarity, that is, the sustainability criterion. That means that the cooperatives and their 'cooperative members' assume a clear commitment with the environmental sustainability (although not only with the environment). Cooperative values relate to the ethical behavior that cooperatives are committed to. That is to say, the cooperatives not only are focused on the needs and desires of their members, but also—according to the criteria approved by these members—work to achieve and maintain the sustainable development of their communities. Cooperatives are organizations that seek the benefits for their members, and they assume their responsibility with the community in which they are based by ensuring that the sustained development of these communities is carried out in all of its different facets (economically, socially and culturally)[6]. The Directive 2019/944 is aware of it by affirming that 'the internal market for electricity aims to contribute to security of supply and sustainability'; 'This Directive aims to ensure a smooth transition towards a sustainable low-carbon energy system'; 'Member States shall ensure that electricity undertakings operate in accordance with a view to achieving a competitive, secure and environmentally sustainable market for electricity', and so, 'promoting a competitive, flexible, secure and environmentally sustainable internal market for electricity'.

Thus the concern for sustainability is very explicit: the energy must be sustainable. In this regard, the cooperative acquires a great relevance and increases its own importance, because it turns the cooperative into the agent of energy.[7]

4 Difficulties in the Roadmap for Effective Harmonization in Spain

Until now it is clear that the main keywords of this paper are three: sustainability, energy and cooperative (coherently with the EU Directive 2019/944). In this sense, could be reasonable to ask ourselves if this coherence will be maintained when the European Directive will be transposed by the Spanish legislator into the national legal framework. In my opinion, the main issue is not so much to examine the specific Spanish law transposing the European law (for example, the Spanish Law n. 7/2021, May 20, '*de cambio climático y trasposición energética*' (on climate change and energetic transposition), which is complemented by an important and massive normative package, most of it promulgated during the covid pandemic -and what this suppose because the paralysis of the Spanish parliament)[8] but, on the contrary,

[6] ibid.

[7] I. Campos et al, n 1 above: 'Considering that cooperatives are the most common legal form used by collective prosumer initiatives […], the number of energy cooperatives provided an indicator for selecting these countries, based on the market integration of collective RE prosumers… REScoop.eu's (a network of cooperatives in Europe) provide with the map of energy communities (REScoop.eu; 2019) and include 31 members from Belgium, 156 from France, 21 from Spain and 44 from Italy'.

[8] The aforementioned Spanish law of 2021 has its immediate mass origin in the Proposition of law of 2019, no. 122/000017, XIII legislature published in the BOCG July 16, 2019, No. 48-1. This proposition consisted of 147

the question is whether the Spanish legislator has considered to update those national laws that are interconnected with 'sustainability', 'energy' and —most importantly— 'cooperatives'. In this regard, some ideas have to be explained in what follows.

4.1 Sustainable Development as a Spanish Constitutional Principle

It's important to underline that in the Spanish *Magna Carta* (1978) the constitutional principle of sustainable development is a guiding principle of the socio-economic policy (art. 45 of the Spanish Constitution), and the mandate to the public powers to promote, through adequate legislation, cooperative societies (Art 129, 2º of the Constitution) as pointed out by authorized voices.[9] This mandate has been developed (in the cooperative sector) by the national Spanish cooperative law 27/1999, 16 of July, later partially updated.[10]

4.2 Constitutional Framework on the Internal Territorial Legislative Distribution: Energy and Cooperatives

The Spanish constitutional framework on energy and cooperatives is a little bit confusing if we look at the regional distribution of the legislative competences about cooperative and energy. In fact and according to the constitutional design and their own regional Statute de autonomy, different Spanish regions (*comunidades autonómas*) have legislative power—although this power again is specific to each region—on a very wide catalog of issues.[11]

This means that there is a subsidiary range of the Spanish National Cooperative Law (dated in 1999, but recently modified) in reference to each specifical regional cooperative law (there are more than 17 regional cooperative laws).[12] This situation (constitutionally permitted) introduces some inefficiencies in the legal and economic design of cooperatives.

Some of these inefficacies are manifested, for example, (i) on the legal concept of the 'cooperative', (ii) on the requirements of constitution (that differ depending on

articles, structured in six titles, an additional provision, a transitory provision, a derogatory provision and thirteen final provisions.

[9] T. Parejo-Navajas, 'A Legal Approach to the Improvement of Energy Efficency Measures for the Existing Building Stock in the United States Based on the European Experience' 5 *Seattle Journal of Environmental Law*, 341 (2015). Mª.J. Morillas Jarillo and M.I. Feliu Rey, *Curso de Cooperativas* (Madrid: Editorial Tecnos, 3rd ed, 2018).

[10] In this regard, it's important to underline the very debatable 'Law on Sustainable Economy' and the 'Law of Social Economy', them both published on March 2011, under the Spanish Presidency of EU (Ley 2/2011, de 4 de marzo, de Economía Sostenible, published BOE nº 55, 5th march of 2011, and Ley 5/2011, 29th march, de Economia Social, BOE n 76, 30 march of 2011). M.I. Feliu Rey, 'Claroscuros de la Ley 5/2011 de Economía Social' 1 *Anuario de derecho de fundaciones*, 117-152 (2011).

[11] The Spanish Constitution (CE) designs a distribution of legislative competences between the State and the different regions (*Comunidades Autónomas*) of Spain. It is mainly regulated in articles 148 and 149 CE (Title VIII of *Magna Carta*). In this way, certain matters are exclusively attributed to the State, while other matters are powers that can be assumed by the different Autonomous Communities through their corresponding Statutes of Autonomy.

[12] Mª.J. Morillas Jarillo and M.I. Feliu Rey, n 9 above.

the region), or (iii) those related to the most recent evolution of this legal concept and its categories.

In fact, the so-called '*micro-cooperativa*' (micro-cooperative) has been developed only in some of the Spanish regions. The *micro-cooperativa* represents a notable reduction in the number of partners (two partners are sufficient). This implies the family profile (and of course its consequential fiduciary nature), and the very dynamic and agile process of its constitution (e-constitution). Precisely when this new institution is analyzed in depth (*micro-cooperativa*), some authors[13] wondered if the next step will be the 'one-person cooperative' (*cooperativa unipersonal*). These authors announced that 'we think that they are the tip of the iceberg of what yet to come'.[14]

Nevertheless, if the Spanish legislative panorama is not clear enough because of the differences in the regional distribution of competences on cooperatives, the energy legislative scene is not less confusing, at least (but not only) because of the same reasons. The Spanish Royal Decree-Law 15/2018 [15] on urgent measures for the energy transition and consumer protection, published under the protection of Art 149.1, Art 13, Art 14 and Art 25 of the Spanish Constitution, is a good example: this Royal Decree-Law was promulgated because the National Parliament has legislative powers in matters of bases and coordination of the general planning of economic activity and bases of the mining-energy regime by Art 149.1.13º and Art 25 of the Constitution. This is important because the Spanish Constitutional Court has explained that the bases of the electricity sector are

'the ordering of the supply of electricity and gas, the rights and obligations of the parties involved, among the that there is the obligation of the commercialization companies to supply electricity and gas, the right to demand payment for the supply and to adopt measures with respect to consumers who are in a situation of non-payment', since all this 'directly affects the configuration of the content of the legal regime of one of the subjects that intervene in the electricity and gas sector, as it directly affects their obligations and rights, and also concerns the guarantee of supply' (STC 62/2016, of March 17).

In other words, this Royal Decree-Law is adapted to the doctrine of the Constitutional Court in relation to the scope of the basic rules in the matters of energy, respecting at the same time the competences that, where appropriate, are attributed to the Autonomous Communities by their respective Statutes of Autonomy. Precisely in the matter of self-consumption, Royal Decree-Law 15/2018 modifies the regulations in force until then (Artt. 9, 64, 66, 67 of the Electricity Sector Law 24/2013, of December 26) to adapt to the commandments of the Constitutional Court regarding self-consumption registration, empowering the Autonomous Communities to create and manage the corresponding territorial self-consumption registries.

But this law (RD-L 15/2018) was declared partially unconstitutional by the Spanish Constitutional Court (*Tribunal Constitucional*) in its resolution n. 134/2020, September 23, which resolves the unconstitutionality appeal 4178-20191, filed by

[13] ibid.

[14] ibid, 143.

[15] The cited sentence of the Constitutional Court was officially published at BOE October 6, of 2018.

the Basque Government. The main reason of this partial declaration of unconstitutionality was that the state cannot decide to whom, how and when the thermal social bonus is paid.[16]

What I mean is that when there is a distribution of competences like the one briefly exposed, legislative problems grow exponentially. And this risk grows when the concepts of 'consumption', 'energy' and 'cooperatives' are mixed together.

The reason of this complex situation is provoked by the concurrence of some causes, such as the absence of a clear constitutional design; the evolution of the market of energy and it very complex criteria for the distribution the different branches of energies;[17] etc.

This is why from the Spanish perspective it is very difficult to achieve the goal of the European harmonization on energy. The question is whether the Spanish legal panorama on energy self-consumption has been taken into account, because the cooperatives are, at the same time, subject and object of this activity. In other words, according to the aforementioned European directives (2018/844; 2019/944) the cooperative entities are not only consumers, but also producers of energy, that is they are the so-called energy-prosumers.[18]

4.3 Some Unresolved Questions and Considerations about the Cooperatives of Energy in Spain

It is important to underline that the 'Cooperative of Energy'[19] as such is not defined in the national Cooperative Law.[20] What does exist is the classification of the cooperatives into 'consumer cooperative' and 'producer cooperative'.

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[16] A.I. Mendoza Losana, 'El Estado no puede decidir a quién, cómo y cuándo se paga el bono social térmico' available at https://alhaurindelatorre.es /images/omic_durante_covid-19/El_Estado_no_puede_decidir_a_quien_como_y_ cuando_se_paga_el_bono_social_termico.pdf (last visited 5 July 2021).

[17] Precisely, nowadays there are two Spanish regions which had published, in use of their constitutional legal competences, a specific rule (even if this regional rule has a different normative range) about Energy Cooperatives.

[18] C.E. Falcón-Pérez, n 3 above, 84 reminds us that 'the cooperative in our country has demonstrated its success in the supply of electricity, since these organisations were created to cover the needs of their members, which private companies are not usually interested in satisfying from the economic point of view. Thus, at the end of the 19th century, Spanish citizens living in rural areas and far from the city saw the need to bring electricity supply closer to their homes, as it was profitable for private companies to supply electricity only in urban areas, given the number of residents […]. Renewable energy cooperatives are born with a totally different purpose than the aforementioned energy cooperatives, since the objective now is not to bring electricity supply to rural areas, but to contribute to the energy transition by supplying 100% green energy'. In this sense ibid uses the definition that describes the renewable energy cooperatives in terms of organizations that empower its members to own and control the renewable energy locally, and at the same time produce social benefits for the local communities.

[19] For more information on the origin and evolution of electric cooperatives, see V. Mª. Arnáez Arce, 'La comercialización de energía eléctrica a través de cooperativas de consumo' *Boletín de la Asociación Internacional de Derecho Cooperativo*, 197, 211-219 (2011), E. Jaio Gabiola et al, 'El bono social y las cooperativas energéticas verdes: situación y perspectivas' *Revesco*, 165, 171 (2016).

[20] However, there are some Spanish regional cooperative laws on energy cooperative. This is the case of Valencia (*Decreto Legislativo 2/2015 de 15 mayo del Consell, por el que aprueba el texto refundido de la Ley de Cooperativas del la Comunitat Valenciana, 'DOCV' no 7529, de 20 de mayo de 2015*) and Castilla La Mancha (*Ley 11/2010, 4 noviembre, de Cooperativas de Castilla-La Mancha*, BOE no 37, 12 february 2011). But these laws do not address the self-consumption cooperative, but rather focus on the distribution energy cooperatives.

Needless to say that this categorization is really obsolete. In fact, the 'mixed cooperative' (also known as—in different Spanish regions— as 'integral cooperative' or 'polyvalent cooperative') is the one whose corporate purpose meets the purposes of various kinds of cooperatives. This reminds us again, in the XXI century, not only that the cooperative is a relevant factor in the social economy and the sustainable economy, but also, that cooperative movement is not born from theory but from practice. And precisely because of that, cooperative movement is a dynamic phenomenon of transformation of the world, which, in turn, allows itself to be transformed by it. We can continue to speak of 'cooperative movement' if we accept that it is a dynamic, living phenomenon, in perpetual motion .[21]

In view of above, several questions arise: How will the EU intention to harmonize the European frame law of energy self-consume will impact the Spain and its cooperatives? Does the rebirth of energy cooperatives suggest to change the regulation of the European cooperative? Must the domestic and regional cooperatives of Energy in Europe have the same treatment? These are just a few questions out of many.

One thing is true: the Spanish national law of self-consumption hasn't been backed by the necessary and coherent modification of the cooperative legal framework. It looks like the Spanish Parliament forgot to introduce (or announce) the harmonization among the main goals (national transposition of the EU Directive) and one of the most important tools to achieve it: the energy cooperative.

Maybe the reason of this absence is that the phenomenon represented by the energy cooperative is a very complex one.

In any case, this situation reminds us of the declaration made by the European Commissioner responsible for Climate Action and Energy (Mr. Arias Cañete) in the Spanish Parliament on 5th February 2018, during the parliamentary discussion of the Spanish *Real Decreto- Ley* 15/2018[22]. The European Commissioner said:

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[21] J. Azurmendi, *El hombre cooperativo* (Otalora: Editorial Caja laboral Popular, 1984).

[22] The Royal Decree-Law 15/2018 modified, among other things, the Spanish Law of 2013 on the Electricity Sector, which regulated the self-consumption of electricity. The Preamble (IV) of this Law of 2018 underlined that the commitment to an energy transition is essential and urgent and renewable electricity self-consumption is an essential element to ensure that the consumer can obtain cleaner and cheaper energy. The truth is that in Spain self-consumption activity has barely begun its deployment due to a series of existing regulatory barriers, which hinder, discourage or make this activity economically unviable. This prevents consumers-producers, and society as a whole, from benefiting from the advantages that this activity could bring in terms of lower network needs, greater energy independence and lower greenhouse gas emissions. In this way, the introduction of renewable self-consumption would allow to reduce the energy bill for consumers, who install it, immediately and, additionally, it would detract energy demand in the wholesale market, thus contributing to a containment and reduction of prices in the wholesale electrical energy market and to an improvement of the environmental conditions. It should be noted that Title II of this Royal Decree-Law reflects the content of the Proposal of Law on self-consumption presented by most of the political groups in Congress [(*Proposición de Ley de medidas para el fomento del autoconsumo eléctrico nº 122/000241 (XII Legislatura) Proposiciones de Ley 21 de mayo de 2018*. Before it was proposed a *Proposición de Ley de medidas para el fomento del autoconsumo eléctrico nº 122/000017, publicado en el BOCG de 9 de septiembre de 2016*)], introducing three fundamental principles of this activity: i) the right to self-consume electricity without charges; ii) the right to shared self-consumption by one or more consumers to take advantage of economies of scale; and iii) the principle of administrative and technical simplification, especially for small power installations. In short, the development of self-consumption would allow the immediate availability of cheaper alternatives for consumer electricity supply, operating as an insurance against the high prices of electricity that are being registered in the future markets.

'I believe that in the end we will regulate self-consumption so that it is applied uniformly throughout the European Union. Now it is not regulated, and each member country does something different… the smartest thing is to make decisions at the European level, because the decisions that are taken in isolation break the market'.[23]

Time has passed and self-consumption of energy has been regulated, but the real uniformity of criteria in the EU, or rather, in the different Member States, has not yet been achieved. It is sufficient to consider the possible dysfunctions in transposing the 2018 and 2019 directives in each Member State national legal frameworks, as well as their further development by the regions of each Member State (as already pointed out in the previous sections).

In this regard, we can refer to the opinion of Mrs. Farran Poca (member of the Governing Council of *Som Energía Coop*.)[24] who was called in as an expert before the Commission of the Congress of Deputies of Ecological Transition and demographic challenge, (XIV legislature, 2020, no 33). She said that:

'In Spain, when we opened up shared self-consumption, we set a limit of 500 meters as a limit of distribution. We have put a limit of 100 kilowatts to connect at low voltage, which is nothing. Why have we put these limits? Let's remove this limitation of 500 meters. France permits 20 km. Let these projects be somewhat larger, three, five, ten megawatts, connected at medium voltage. Therefore, a very important issue is the issue of prices for using the grid. Why do we not do the same as we are doing with roads: can anyone imagine that road transport is worth the same whether it is 3,000 kilometers or 20 kilometers? Well, why is this not the case for network use? Who is the owner of the network? Exactly the same as the owner of the large energy production infrastructures, and then they ask why the people of the municipalities do not want these macro plants and they tell us that they are selfish, and they tell us many other things. Well, no, they are not selfish, they are not. They are fed up of seeing things go over their heads, and, as an example, I go back a hundred years. In the industrialization of Catalonia, when Mr Pearson set up the "Canadenca", he saw that there were some fantastic reservoirs in the Pyrenees, with public water catchments, to bring electricity to Barcelona. Do you know what happened to the inhabitants of "El Pallars Jussá" and "El Pallars Sobirá", which were the places through which the river that carried these waters flowed? They did not even have electricity until twenty years later. Well, that cannot happen again. People still have memory. Therefore, if we intend to make an energy transition that does not take into account the social component, the distribution component, the

[23] *Diario de Sesiones del Congreso de Diputados. Comisión para el estudio del cambio Climático. 5 febrero de 2018. XII legislatura, nº 423, p. 14 y 20-21).* This Spanish Official Parliamentary Register records the words of the European Commissioner, who said that 'the problem of self-consumption is that it was not regulated in the European Union, among other reasons because there was no assumption of lowering the cost of renewables that encourages individuals to massively tackle self-production of energy. For the first time it is regulated in this reform, in the energy market design regulations, and it is done in such a way that consumers have the right to produce, store and sell their energy, to connect to the grid, to simplify administrative procedures and no longer be forced to pay excessive costs. That will require delegated or implementing acts by the Commission to determine which are excessive and which are not'.

[24] In Spain, Som Energy has recently become relevant due to the number of members it groups together (REScoop.eu, *The energy transition to energy democracy* [2019] available at https://www.rescoop.eu/toolbox/the-energy-transition-to-energy-democracy [last visited 5 July 2021]).

component of this new economic model that society is calling for, forgive me, but I think it is quite uncertain that this can happen, and even more so at the speed we need'.[25]

In short, there are numerous legal, technical, economic, environmental and sociological difficulties that must be successfully dealt with. Among the sociological difficulties, we would like to highlight a very important one: Will the energetic and ecological transition in Spain take into account the will, the sensitivity and the interest of the so-called 'empty Spain' (*España vacía*)? Because at the moment, the municipalities and rural areas do not want the mega renewable energy plants that are currently being installed. I wonder if, perhaps, the 'proximity' cooperative could be an alternative solution.

Time and the future will tell us, once again, that, 'if we want everything to stay as it is, everything has to change', or rather confirm that the change pursued did not involve any novelty. Hope may well lie once again in the ethical principles rooted in cooperatives[26] and in how they have been able to develop them in the most serious critical situations, experienced over more than two centuries.

To conclude this paper, let us remember that, as organizations based on certain principles and values, co-operatives are intrinsically a form of sustainable and participatory enterprise. Co-operatives are well placed to contribute to the triple set of economic, social and environmental objectives of sustainable development and to their governance agenda. That is so because they are enterprises committed to the economic progress of their members, while at the same time addressing their socio-cultural interests and protecting the environment. Moreover, we should not forget that the ultimate objective is to enable the Co-operative Principles, most notably the Fifth, Sixth and Seventh Principles.

Principle Five concerns education, training, and information: co-operatives provide education and training to members, elected representatives, managers, and employees to enable them to contribute effectively to the development of their co-operatives. They also inform the public of the nature and benefits of co-operation. Principle Six establishes the co-operation between co-operatives: Co-operatives should serve their members as effectively as possible and strengthen the co-operative movement by working together through local, national, regional and international structures. Principle seven focuses on the Community Co-operatives work for the sustainable development of their communities, through policies approved by their members. And to this end —and this is interesting!— all co-operatives have a specific resource for this purpose: the 'education and promotion funds' (EFF). As it is pointed out elsewhere,[27] 'the purpose of this Fund is not

[25] *Diario de Sesiones del Senado. Comisión de Transición Ecológica (8 de marzo de 2021, Año 2018, XIV legislatura, nº 155 p. 44 a 53).*

[26] J. Jasiński et al, 'Determinants of Energy Cooperatives' Development in Rural Areas—Evidence from Poland' 14 *Energies* 319, (2021); L. Horstink et al,'Collective Renewable Energy Prosumers and the Promises of the Energy Union: Taking Stock', 13 *Energies*, 421 (2020); A. Schneiders and D. Shipworth, 'Energy Cooperatives: A Missing Piece of the Peer-to-Peer Energy Regulation Puzzle?' *University College London (UCL) Energy Institute*, (2018); M. Bacigalupo Saggese, 'La distribución de competencias entre el estado y las comunidades autónomas en materia de energías renovables' *REAF*, 286-329 (2010).

[27] Mª.J. Morillas Jarillo and M.I. Feliu Rey, n 9 above.

economic, but is intended for carrying out activities, as its name suggests, for education and promotion, not necessarily of the cooperative's members. Its *raison d'être* is therefore linked to cooperative principles'.

However, the economic impact is multiplied: not only in energy but, even more importantly, in raising awareness of the importance of proper sustainable energy education.

After all, the planet and its resources belong to everyone and it is our legacy to preserve and pass it on to future generations.

The Digitalization of the Energy Sector: The New Frontier of the Smart Contract. Comparison between Disciplines

Camilla Sbicca

Abstract: The exploitation of energy from renewable sources and digitalization are two of the primary objectives for the future of the European Union, which aims both to implement policies to promote the use of energy from renewable sources and to fully exploit the opportunities provided by the new technologies. The research will aim to analyse, from a legal point of view, the compatibility between the new technologies that could operate in the energy sector, such as blockchain and smart contracts, and the solution proposed by the European Union through Directive (EU) 2018/2001 -RED II- and Directive (EU) 2019/944 -IEM-, on the subject of sustainability. The aim is, moreover, to understand whether a complete digitisation of the energy sector is actually able to take into account the principles of protection provided by the Italian legal system for contractual parties. A parallel examination of the main existing initiatives in the global landscape will also be carried out to understand what are the criteria for regulating the new contractual paradigm.

Keywords: Smart Contracts, Blockchain, Algorithm, Self Execution of Contract, Contract Formation

1 The Digitalization of the Energy Sector

It has long been known that one of the most important projects, developed by the European Union, aims to take significant action in the energy sector, either through a regulatory plan or through economic investments. The growing threats posed by climate change, the slow pace of progress in energy efficiency sector, as well as the need for greater transparency for consumers, convinced the European Union to implement an energy transition program in order to achieve 'climate neutrality'[1] and to increase the share of renewable energy sources used. Moved by the push of the goals supported by the United Nations through the 'Agenda 2030'[2] project, to promote the consumption and the use of sustainable energy, the European Union has considered it necessary to implement awareness-raising policies towards consumers to allow them to make conscious choices on the matter of sustainability. On the other hand, however, the will by the European Union itself is not lacking to

[1] The European Union aims to become the world's first continent to achieve climate neutrality by the year 2050, where climate neutrality means the possibility of zero greenhouse gas emissions in order to have a zero climate impact.

[2] Communication from the Commission to the European Parliament, the Council, the European Economic and Social Committee and the Committee of the Regions 'Next steps for a sustainable European future', COM(2016)739/F1, Strasbourg, 22 November 2016 available at https://ec.europa.eu/transparency/regdoc/rep/ 1/2016/EN/COM-2016-739-F1-EN-MAIN.PDF (last visited 19 January 2021).

bet also in the digitization sector, not only for the improvement in terms of speed and convenience of all those procedures that can also be managed through the use of computer technologies, but also because investing in this sector will make it possible to respond positively to many of the challenges proposed by the EU for our society, how precisely, improving energy efficiency and sustainability.[3]

The two sectors, energy and technology, seem to be linked within the scope of the Directives (EU) 2018/2001, so-called RED II, and 2019/944, so-called IEM, which has as their subject the promotion of the use of energy from renewable sources and the use of common rules for the internal market for electricity. In particular, the (EU) IEM Directive focuses on the issues of transparency of the energy market and savings for consumers;[4] these are concepts that can translate into achievable goals through the use of that technology, which is the blockchain, which has the concepts of transparency, safety, speed and savings as its founding core. The (EU) RED II Directive, on the other hand, focuses on the sale of renewable energy and in particular focuses on 'contracts with pre-determined conditions'. The (EU) RED II Directive itself defines 'peer-to-peer trading' as the 'sale of renewable energy between market participants by means of a contract with pre-determined conditions governing the automated execution and settlement of the transaction, either directly between market participants or indirectly through a certified third-party market participant, such as an aggregator'.[5] From the analysis of the above-mentioned Directive, therefore, a specific will on the part of European Union, which would seem to be not to stop at the simple use of technology to speed up activities, but to link the concept of 'automation' to that contractual context which will then be inserted and use in the context of the future energy community.[6] Not only, thus, the use of technology will be notified in the replacement of the old meter with intelligent metering systems (smart meters), which would allow, for instance, to balance the demand and supply of renewable energy or to monitor the trend of the same to reduce costs, but it can also be seen in the use of those contracts 'with pre-determineted conditions governing the automated execution and settlement of the transaction' which would allow the sale of self-produced electricity. The type of contracts referred to above seems to have been identified in the figure of the smart contract which, together with the blockchain, will therefore constitute an essential part of the new energy community as it has been brought forward by the European Union. In order to fully understand the proposed energy management solution, above all, it will be necessary to examine the functioning of the blockchain and smart contract at the computer livel, since this analysis will also be useful to assess

[3] Communication from the Commission to the European Parliament, the Council, the European Economic and Social Committee and the Committee of the Regions 'Digitising European Industry', COM/2016/0180, Brussels, 19 April 2016 available at https://eur-lex.europa.eu/legal-content/EN/TXT/PDF/?uri=CELEX:52016DC0180&from=EN (last visited 19 January 2021).

[4] See European Parliament and Council Directive (EU) 2019/944 of 5 June 2019 on common rules for the internal market for electricity and amending Directive 2012/27/EU [2019] OJ L158/125, at Recital 56.

[5] European Parliament and Council Directive (EU) 2018/2001of 11 December 2018 on the promotion of the use of energy from renewable sources [2018] OJ L328/82.

[6] On algorithmic bargaining see S. Aceto di Capriglia, 'Contrattazione algoritmica. Problemi di profilazione e prospettive operazionali. L'esperienza "pilota" statunitense' *Federalismi.it*, 2 October 2019, 23-24.

whether the technological systems just mentioned can be included in the legal schemes that already exist.

The blockchain is one of the 'distributed ledger technologies' (DLT), and it is possible to imagine it as a 'chain of blocks' containing any type of information. The subject participating in the blockchain, that is, insert information within the structure, which will form part of a block; when the block reaches its maximum capacity, the system 'seals' it through the use of cryptography,[7] which summarizes all the information of the single block in a code and prevents modification of the data contained within it.[8] This block 'closing' mechanism then allows the system to add a new one to the chaim, which contains the summary code of the previous block. This ensures the safety of the technology in question, since if one of the blocks in the chain were hacked with, that is, its data were altered, its summary code would change and the next block, which contains the original version of the previous one, would not recognise the new code, with the consequence that the system will automatically exclude the modified copy.

The structure of its technology, also based on decentralization,[9] sharing[10] and cryptography, allows to achieve the purpose for which it was created, that is to build a system that allows two parties to make, between themselves, online payments without going through a financial institution, which traditionally guarantees the fairness of the transaction. In fact, in the case of the energy communities, it is believed to be useful for the management of transactions between 'prosumers'[11] and consumers, who will be able to use the smart contract institution for the stipulation of a contract.

The smart contract, on the other hand, must be considered a technology in the making and, therefore, the definition follows its transformation. In the first meaning used by Nick Szabo,[12] it was defined as a computerized transaction protocol that executes the term of a contract. This first meaning represented the starting point for the analysis of this tool which, being born earlier than the blockchain, could be used without necessarily recalling any Distributed Ledger Technology,[13] such as the blockchain, and also did not even raise any doubts on the joint use of the two

[7] On the blockchain system see S. Nakamoto, 'A Peer-to-Peer Electronic Cash System' available at https://bitcoin.org/bitcoin.pdf (last visited 18 January 2021); A. Wright and P. De Filippi, 'Decentralized Blockchain Technology and the Rise of Lex Cryptographia' available at https://ssrn.com/abstract=2580664 (last visited 20 February 2021); F. Faini, 'Blockchain e diritto: la "catena del valore" tra documenti informatici, smart contracts e data protection' *Responsabilità Civile e Previdenza*, 297 (2020).

[8] To encrypt data is used the 'hash function', which allows you to transform an information into a code, but it doesn't allow you to trace the information from the alphanumeric code. On this point see. S. Velocci, 'Blockchain: che cos'è, come funziona e a cosa serve' available at https://www.start2impact.it/blog/programmazione/blockchain-2/ (last visited 18 January 2021).

[9] 'Decentralization' means that the blockchain is not contained in a single computer, because there are endless copies of the chain of blocks on many computers around the world.

[10] This means that copies of the chain can be downloaded from anyone who owns a computer.

[11] On the concept of 'prosumers', see M. Maugeri, 'Elementi di criticità nell'equiparazione da parte dell'AEEGSI, dei "prosumer" ai "consumatori" e ai "clienti finali"' *La nuova giurisprudenza civile commentata*, II, 406, 406-407 (2015).

[12] N. Szabo, 'Formalizing and Securing Relationships on Public Networks' 2 *First Monday*, available at https://doi.org/10.5210/fm.v2i9.548 (last visited 18 January 2021).

[13] On DLT see UK Government Office for Science, 'Distributed Ledger Technology: beyond blockchain' available at https://assets.publishing.service.gov.uk/(last visited 23 March 2021).

technologies. Subsequently, the development of the two computer tools has made that a more current definition of the smart contract was deepened and raised obvious problems regarding the analysis of a regulation useful for examining this tool.

To date, it is possible to state that the smart contract represents the translation into computer language of the will of the parties, who, with this tool, define the rules that characterize the contractual relationship.[14] The machine, then, reads the code, that is the set of rules written in technical language, validates it (in the sense that it actually analyzes whether the parts have the goods for which they have agreed) and executes it. At I.T. level, the smart contract startup procedure is no longer revocable and therefore, from that moment on, the implementation of the agreement will no longer depend on the will of the contractor. This tool operates according to the 'if-then' logic, which means that it performs an operation if, and when, certain conditions are satisfied. The use of smart contract, therefore, excludes the possibility of a default because, for this tool, it is technically impossible to voluntarily violate the pre definited conditions since it is based on the rigidity of the technology.[15]

These instruments are particularly useful in certain sectors, such as insurance or banking. For example, the French insurance company 'AXA' uses the blockchain platform - and consequently smart contracts - to reimburse the flights of its customers in case of flight delays.[16] Basically, the company has developed a system that allows the passenger,[17] after having taken out a policy through smart contract, to be automatically compensated in case of flight delay. The energy sector, however, is considered to be another of the potential sectors concerned and in fact several projects have already been implemented: for example, the 'Enerchain'[18] project that aims at the peer-to-peer exchange of energy between users.[19]

From the above it emerges that are different types of smart contracts, in the sense that this tool could have the function of simple machine that performs a service

[14] D. Di Sabato, 'Gli smart contracts: robot che gestiscono il rischio contrattuale' *Contratto e impresa*, 378, 387 (2017); V. Pasquino, 'Smart contracts: caratteristiche, vantaggi e problematiche' *Diritto & Processo*, 239, 245 (2017).

[15] P. Cuccuru, 'Blockchain ed automazione contrattuale. Riflessioni sugli smart contract' *Nuova giurisprudenza civile commentata*, 107, 108-120 (2017).

[16] See S. Wang et al, 'Blockchain-enabled smart contracts: architecture, applications, and future trends' available at https://link.springer.com/ content/pdf/10.1007/s12083-021-01127-0.pdf (last visited 18 January 2021).

[17] It would thus be evident that the tourist-traveller is a legal entity and as such a bearer of complex interests. Between who has taken care to carefully analyze the protection of the tourist-consumer see A. Flamini, *Viaggi organizzati e tutela del consumatore* (Napoli: Edizioni Scientifiche Italiane, 2009); S. Pollastrelli, 'La tutela del turista e la conflittualità nel settore del turismo', in Vv Aa, *Studi in memoria di Maria Luisa Corbino* (Milano: Giuffrè, 1999), 637-662; S. Giova and M. Ziccardi, 'La tutela del viaggiatore nella nuova direttiva sui pacchetti turistici', in E. Caterini et al eds, *Scritti in onore di Vito Rizzo* (Napoli: Edizioni Scientifiche Italiane, 2007), 835.

[18] The aim of the project is to transform the electricity system into a 'distributed network', in which millions of nodes represented by production plants, storage systems, domestic photovoltaic systems and micro-gardens interact directly through safe exchanges, transparent and without the need for intermediaries. The possibility, enabled by the blockchain, to carry out direct trading without the involvement of third parties, allows obtaining a reduction in the purchase costs of electricity that in the future will benefit customers.

[19] A comparative analysis of the various projects developed in the energy sector shows that the most widely used blockchain platforms are Ethereum, Tendermint and Hyperledger Fabric. One of the central issues to be considered is the identification of licenses to use blockchain platforms. For example, the Ethereum and Tendermint platforms make their software available to users on the basis of open source licenses. On this theme see E. Bruti Liberati et al, *Il teleriscaldamento, la #blockchain e i contratti intelligenti* (Padova: Cedam, 2019), 67-75.

following the choice of settings by the user and the following start (consider, for example, of an intelligent thermostat that regulates the temperature inside a house according to default settings which, when a specific situation occurs, it is able to automatically execute the request);[20] or it can be used in other situations involving a transaction, as is the case of energy communities where the smart contract is used for the management and execution of the sale of renewable energy between Prosumer and consumer.[21] It should be noted, however, that both the notion used to define the 'peer-to-peer trading' by the RED II Directive, which refers to the 'contract with pre-determinated conditions governing the automated execution and settlement of the transaction', and the 'automated' association of this type of contract with the figure of the smart contract, as well as the term itself 'smart contract' suggests that the latter is, in effect, a contract. With regard to this, nevertheless, it will be necessary to analyse whether, and why, the contract and smart contract are really comparable.

2 Blockchain, Smart Contracts and Sustainable Energy in the International Scenario

If on the one hand blockchain and smart contracts are considered technologies of huge impact and usefulness, on the other hand they ignite the debate on the consequences they can have in the management of contractual relationships. This possibile negative impact does not seem to scare, however, that reality that has actually included blockchain and smart contracts in their daily lives. Therefore, this has been made possible also because these tools have been analyzed and explained from the legal perspective. The new contractual model seems to take from especially in the United States, where doctrine and jurisprudence[22] have considered that the smart contract, inserted in a blockchain, despite having an electronic nature, if characterized by specific requirements, can be qualified as a legally binding contract for the parties. This is the solution adopted by the Brooklyn neighborhood in the state of New York, which has started the energy project 'Brooklyn Microgrid', a system based on the 'Exergy' platform, through which the Prosumers, who generate energy through their own renewable resources, can negotiate energy with consumers.

On this point, however, it should be specified that in the United States the applicability and interpretation of contracts shall be determined at State level; therefore, any conclusion concerning smart contracts must also be analyzed in relation to the reality that states may adopt different points of view.

[20] On this point see M. Maugeri, 'Autonomia e costruzione dello spazio digitale', in P. Perlingieri et al, *Il trattamento algoritmico dei dati tra etica, diritto ed economia* (Napoli: Edizioni Scientifiche Italiane, 2020), 151-176.

[21] G. Finocchiaro and C. Bomprezzi, 'Legal analysis of the use of the blockchain technology for the formation of smart legal contracts' 2 *Medialaws - Law and Policy of the Media in a Comparative Perspective*, 111, 115-119 (2020).

[22] Tennessee enacted Senate Bill 1662 in March 2018; New York State enacted Senate Bill S4142; Arizona enacted HB 2417, amending the Arizona Electronic Transaction Act into law in March of 2017; Nevada enacted Senate Bill 398 in June 2017, amending Nevada's Uniform Electronic Transaction Act; California enacted SB838, amending the California Corporation code.

In order to this, it should also be noted that attribution of the qualification of 'contract' to the 'smart contract' is also made possible by the distinction made by the doctrine[23] between the 'smart legal contract' and the 'smart code contract'. The 'smart code contract' can be described simply as an algorithm, a set of instructions, which verifies the existence of assumptions and conditions, collects data and manages to execute what has been previously arranged by the parties.[24] The smart legal contract, on the other hand, when it meets the requirements of US law, is considered suitable to assume, in some States, the qualification of a contract and to be distinguished from other cases, such as 'agreement'.[25]

As developed, the smart contract, when included in a blockchain, refers to the topic of economic transaction concluded and\or executed independently by electronic instruments connected to each other without, however, there being any human interference.[26] Therefore, precisely because on the basis of US law a 'contract', to be considered mandatory, requires first of all more subjects, each of which must have the ability to bargain,[27] the first question that must be put in place is whether it is possible to consider an electronic tool as an entity capable of determining legal effets, to qualify it as part of the contract. In this regard, the algorithms, software or, more generally, the computers used to put in place a contract are considered by the US jurisprudence as 'electronic agents', that is, as a computer program, an electronic medium or another automated media, also capable in initiating an action without a subject being able to review it.[28] Awarding the status of an 'electronic agent' would therefore not negatively affect the correctness of commercial transactions, nor on the formation of contractual relationship or the performance of the obligations arising from the contract itself, since US law expressly provides that a person may be bound from actions of an agent.[29]

On this point, the principles of the Federal law 'Electronic signatures in Global and National Commerce Act', E-Sign Act, enacted to ensure the validity of contracts concluded electronically and the recognition of electronic signatures must be taken into consideration. A contract relating to a transaction in or affecting 'inter-state' or foreign commerce may not be denied legal effect, validity, or enforceability solely because its formation, creation, or delivery involved the action of one or more electronic agents; all this is true, however, so long as the action of any such electronic

[23] C.D. Clack et al, 'Smart contract Templates: foundations, design landscape and research directions', available at https://arxiv.org/abs/160800771 (last visited 24 January 2021); I. Çiftçi and K. Aksel, 'Smart contracts (code vs. Contract): an overview of blockchain technology and legal implications of smart contracts from a turkish law perspective', available at https://www.cliffordchance.com/content/dam/cliffordchance/PDFDocuments/december2017-client-briefing-smart-contracts-(code-vs.-contract).pdf (last visited 15 March 2021).

[24] I. Çiftçi and K. Aksel, n 23 above.

[25] S.D. Levi and A. Lipton, 'An Introduction to Smart Contracts and Their Potential and Inherent Limitations', available at https://corpgov.law.harvard.edu/ 2018/05/26/an-introduction-to-smart-contracts-and-their-potential-and-inherent-limitations/ (last visited 16 March 2021).

[26] F. di Ciommo, 'Smart contract e (non-)diritto. Il caso dei mercati finanziari' *Nuovo Diritto Civile*, 257, 259 (2019).

[27] The US Restatement (Second) of Contracts of 1981.

[28] See Uniform Electronic Transactions Act 1999, § 2 (6); American Law Institute, *Restatement of the Law Third, Agency* (Philadelphia: American Law Institute, 2020), 12.

[29] On this point see F. Longobucco, 'Smart contract e "contratto giusto": dalla soggettività giuridica delle macchine all'oggettivazione del fatto-contratto. Il ruolo dell'interprete' *Federalismi.it*, 106-116 (2021).

agent is legally attributable to the person to be bound.[30] This perspective also seems confirmed by the state law UETA, Uniform Electronic Transactions Act that, alongside the E-Sign Act, denies that lack of human intention prevents the formation of the contract, since, according to this legislation, the subject's intention lies in the programming and use of the machine itself,[31] when machinery is involved.

The resolution of this problem does not clarify, however, the question whether the interaction of one or more electronic agents results in a real contract, as required by US law. The central point of the problem is, therefore, the fact that an agreement to be qualified as a real contract, and therefore in order to distinguish itself from other circumstances, it also requires the requirements of mutual consent[32] and of consideration.

With regard to mutual consent, we wonder if the smart contract is, like a real contract, characterised by an offer and acceptance; in particular, these, which can be assessed as expressions of the parties's willingness to conclude the negotiating relationship according to specific terms and conditions.[33] In the present case, that is relating to the creation of a smart contract, a part of the agreement, by including in the blockchain the conditions of its will, it will constitute an offer for the consumer belonging to the same distributed ledger technology, and the receiver, will accept the proposal of the proposer,[34] by signing the transaction with a private key. Even if there is an offer and an acceptance, the use of smart contracts may raise doubts as to whether the contracting parties have expressed a 'mutual consent', since the latter would be manifested by means of a 'code' issued by an electronic device. The question then arises as to whether the 'code' inserted into a software is a suitable means to translate the terms of an agreement. On this point, as previously analysed, by the study of the principles included in the ''E-Sign Act' and 'UETA' laws, it follows that if contracts are concluded by an electronic agent, the actions of the computer are attributed to the person or legal entity bound by the same agent.

In the final analysis, the US legislation requires that the 'contract' is characterized by the so-called 'consideration', that is, from an exchange of fees. This means that the economic operation, in order to be qualified as a real contract, must have as its object a benefit that can be assessed from the point of view of assets.[35] Relating to this, and with reference to the smart contracts included in the blockchain, this requirement could be said satisfied when the two systems will be used for the management and the execution of a transaction. In the context being examined, that relating to an energy community based on blockchain and smart contracts, in which the Prosumer sells energy to the consumer, this requirement can be satisfied, but, generally, the presence of the 'consideration' in the contract should be assessed on a case-by-case basis.

[30] On this point see the United States Code, § 7001.

[31] See Uniform Electronic Transactions Act, at Section 14.

[32] P. Fava, *Il contratto* (Milano: Giuffrè, 2nd ed, 2012), 161-171.

[33] R.S. Summers et al, *Contract and Related Obligation: Theory, Doctrine and Practice* (Saint Paul, Minnesota: West Academic Publishing, 4th ed, 2001), 403.

[34] See S.D. Levi and A. Lipton, n 25 above; I. Çiftçi and K. Aksel, n 23 above.

[35] E. Peel and G.H. Treitel, *The Law of Contract* (London: Sweet & Maxwell, 14th ed, 2015), 74-75.

So, in conclusion, smart contracts, in the US experience, may not generally be regarded as contracts, but may be if they meet the requirements of the legislation. Therefore, only through an analysis of the essential elements required by law and by examining the specific case in which this tool is being used, could it be qualified as a real contract.

The solution of using blockchain and smart contracts in order to achieve sustainability goals and greater use of renewable energy, has been used by the State of New York which, in the Brooklyn district neighborhood, has created an energy community completely built on the basis of renewable energy, called 'Brooklyn Microgrid'. The latter is based on the installation of distribution networks that allow you to connect buildings that have photovoltaic panels with those that, instead, only wish to purchase solar energy. The Brooklyn Microgrid provides, therefore, a local energy market where members of the community can sell energy with their neighbors; in particular, the Prosumer will be able to share the energy surpluses it has produced through its own photovoltaic panel, with other consumers. In this sense, the relationship between the nodes of the energy community network is considered 'au pair', since it enables participants, namely consumers and Prosumers, to actively exchange energy in real time within their community and facilitating the generation and consumption of renewable energy.[36]

The key features of the Brooklyn Microgrid project, at an IT level, are based on two aspects: ensuring total security in the transactions carried out and ensuring full transparency for consumers, who can instantly check whether the use of the energy produced comes from renewable sources.

The achievement of these two objectives is supported by the fact that the infrastructure used by the energy community Brooklyn Microgrid is the blockchain platform.[37] Community members first install smart meters,[38] which are able to trace the energy that is generated and used; Prosumers and consumers then access the blockchain through an application, and through smart contracts, define the rules governing the negotiating relationship for the sale of renewable energy. The blockchain will then effectively analyse whether the parties have the goods for which they have agreed, will display real time electricity prices thanks to the smart meter and will crystallize the relationship underlying the smart contract by recording the transaction occurred.[39] All transactions of the participants in the energy community will thus be entered in chronological order in the blockchain platform, which can be assimilated to an extremely safe and, above all, not corruptible register. In this system, technology is not only a means of reducing costs and the speed of transactions, but also becomes a social promotion tool, as smart meters are also capable of analyzing energy data, quantify the use of the latter by

[36] E. Mengelkamp et al, 'Designing microgrid energy markets: A case study: The Brooklyn Microgrid' 210 *Applied Energy*, 870, 875-876 (2018).

[37] T. Favaro, 'Può la tecnologia regolare? Blockchain e "scambio tra pari" di energia rinnovabile' *Rivista della regolazione dei mercati*, 294, 305 (2019); M. Del Fungo, 'Blockchain ed energy sharing: una rivoluzione nel campo dell'energia?' available at https://www.altalex.com/documents/news/2018/07/12/blockchain-ed-energy-sharing (last visited 27 February 2021).

[38] A. De Luca et al, *The European Union renewable energy transition* (Padova: Cedam, 2019).

[39] E. Mengelkamp et al, n 36 above, 874.

members of the energy community and transform the produced units into 'energy tokens', called tokens.[40] By way of example, it may be decided, therefore, to assign a higher number of tokens to those who produce socially useful services for the energy community, or the platform could provide tokens, as an incentive to those who carry out eco-sustainable actions.

3 The Problem of Compatibility of Smart Contracts with the Italian Legal Framework

The difficulties relating to the legal qualification of smart contracts have highlighted the need to regulate this instrument in the Italian legal system. The usefulness provided by this technology, especially when used in conjunction with the blockchain, and its speed of propagation, have drawn the attention of the Italian legislature, which, given the urgency, has intervened to ensure legislation on the subject, earning Italy the distinction of being one of the first countries in Europe to provide a regulation referring to smart contracts and blockchain[41] technologies.

Through the decreto legge 14 December 2018 no 135, converted with modifications by the legge 12 February 2019 no 12, the notions of 'distributed ledger technologies' and smart contract have been introduced into the Italian legal system . The central point of legge 12 February 2019 no 12 is Art 8-*ter* which defines DLTs as information technologies and protocols that used a shared, distributed, replicable, simultaneously, accessible, architecturally, decentralised register on a cryptographic basis, such as to allow the recording, validation, updating and storage of data both in the clear and further protected by the encryption verificable by each participant, not alterable and not modifiable.

The legislation then defines the smart contract as 'un programma per elaboratore che opera su tecnologie basate su registri distribuiti e la cui esecuzione vincola automaticamente due o più parti sulla base di effetti predefiniti dalle stesse'.

From the practical point of view, the first problem which emerges from the comparison between the original concept of smart contract, as theorized by its author,[42] and the legislation in question, is based on the computer components;[43] it must, however, be specified that, from a legal point of view, the question which has

[40] On legal issues related to the token see J. Stark, 'The Two Topics in Law and Blockchain' available at https://www.coindesk.com/the-two-topics-in-law-blockchain (last visited 19 March 2021); F. Antonacchio, 'Utility token: ancora incertezza sul trattamento IVA' *Il fisco*, 2031, 2031-2037 (2020).

[41] M. Nicotra, 'L'Italia prova a normare gli smart contract, ecco come: pro e contro' available at https://www.agendadigitale.eu/documenti/litalia-prova-a-normare-gli-smart-contract-ecco-come-pro-e-contro/ (last visited 2 March 2021).

[42] N. Szabo, n 12 above: 'The basic idea behind smart contracts is that many kinds of contractual clauses (such as collateral, bonding, delineation of property rights, etc.) can be embedded in the hardware and software we deal with, in such a way as to make breach of contract expensive (if desired, sometimes prohibitively so) for the breacher'.

[43] M. Manente, 'L. 12/2019 – smart contract e tecnologie basate su registri distribuiti – prime note' *Consiglio Nazionale del Notariato* available at https://www.notariato.it/it/content/studio-12019-di-legge-122019-%E2%80% 93-smart-contract-e-tecnologie-basate-su-registri-distribuiti-%E2%80%93 (last visited 10 March 2021).

not yet been resolved concerns the qualification profile of the instrument indicated, whether it falls within the contractual category or not.

As to this last question, the above-mentioned legislation seems to raise some doubts since Art 8-*ter*, in its second paragraph, specifies that such instrument, in the presence of the prerequisites for the computer identification of the parties, satisfied the requirement of written form.[44] The reference to the form, in fact, could lead one to think that the object of the discipline is a new mode of expression of the contractual will, in the opinion of some comparable to a computer document.[45]

The content of the rule in question would seems, however, to confirm a merely executive function of the smart contract as a modality which affects the execution of the contractual relationship, thus entrusting the executive phase of the negotiation, with effects pre-defined by the parties, to a computer programme which creates an automatic bond for the parties involved in the agreement.

From the analysis just described it appears, therefore, that it is only the performance of the relationship that is automated and entrusted to an electronic instrument, which removes from the parties the choice as to how to manage the performance itself, but does not eliminate the will of the parties with respect to the agreement; the latter, therefore, could arise at the same time as the launch of the contract program as it could precede it.[46]

In the latter hypothesis, the parties would conclude the agreement by means of the methods of perfection contained in the Civil Code[47] and concerning, in particular, the methods of concluding a contract in general. In this case, the smart contract would become part of the contractual regulation and in particular in the execution phase of the performance of the relationship, which finds its source in the contract concluded. The situation would be different if the parties were to insert the clauses relating to the contractual regulations directly into the smart contract; in this case, the smart contract would take on the role of a suitable means for concluding the agreement. By containing the contractual regulations, the smart contract would also take on the additional function of a means of executing the service, or services, linked to the negotiation relationship. The creator[48] of smart contracts, in order to understand how they work, has compared these instruments to automatic goods distributors, whose methods of concluding the agreement, as well as the automated

[44] As regards the requirement of form as an element of the contract see P. Perlingieri, *Manuale di diritto civile* (Napoli: Edizioni Scientifiche Italiane, 10th ed, 2021), 506-507; D. Valentino, *Obblighi di informazione, contenuto e forma negoziale* (Napoli: Edizioni Scientifiche Italiane, 1999), 156-170; on the electronic document and written form see F. Delfini, 'Documento informatico e firme elettroniche', in D. Valentino ed, *Manuale di diritto dell'informatica* (Napoli: Edizioni Scientifiche Italiane, 2016), 187-191.

[45] D. Di Sabato, 'Tecnologie basate su registri distribuiti e smart contract' in D. Valentino et al eds, *Commentario del codice civile - Dei singoli contratti* (Milano: Utet giuridica, 2020), III, 337-352.

[46] On the agreement of the contract see F. Scutiero, 'Smart contract e sistema di diritto, un connubio tutto da definire' *Il Foro napoletano*, 113, 127-128 (2019).

[47] On the modes of formation of the contract see G. Perlingieri and F. Lazzarelli, 'Il contratto telematico' in D. Valentino ed, *Manuale* n 44 above, 281-286; A.C. Nazzaro 'Riflessioni sulla conclusione del contratto telematico' *Informatica e diritto*, 7, 11-27(2010).

[48] N. Szabo, n 12 above.

performance of the services, in reality, represent cases already dealt with, from a legal point of view,[49] in the Italian legal system.

Compared to vending machines, smart contracts obviously represent a much more evolved mechanism since they remove from the parties the choice of how to manage the execution of the relationship, which becomes automated. The parallelism between the contract concluded by means of vending machines and the smart contracts could, however, provide a useful solution to the problem related to the qualification of the latter.

The contract concluded by means of automatic vending machines can be considered a transaction stipulated by means of an instrument which, following the insertion of a coin by the user, mechanically carries out a performance. The setting up of the machine with the goods, the indication of the price and the placing of the goods in a place accessible to the public is qualified as an offer to the public under Art 1336 of the Civil Code.[50]

The distributor, in fact, would issue a contractual proposal with the essential elements, the identity of the contracting parties being irrelevant for the proposer. In such a case, the contract is deemed to have been concluded at the time when the user of the service makes the payment and thus manifests the will to accept the offer. The intention, in automatic distribution contracts, allows the obligation to arise even if it is not expressed by verbal declaration. In such a case, the agreement exists, but it is formed through a different mechanism from that provided for in the Civil Code which, instead, refers to the exchange of negotiated declarations.

With the smart contracts which are developed on the blockchain protocol, the machine, although in some cases it is also constitutes a means of perfecting the negotiation, in all cases in which it is used, it verifies whether the event-condition[51] has come true and thus manages the execution of the obligatory relationship or underlying obligatory relationship. Basically, it is a system which operates either in the formation or in execution of the negotiating relationship, or only in execution of this, and one of its functions seem to be liked to the ascertainment of certain future and uncertain events set out in the regulation; the occurrence of the latter, the smart contract replaces the will of the parts determining an automatism of effectiveness. Think, for example, the use of the smart contract for copyright management, in which the machine would control the download of digital content and automatically

[49] D. Di Sabato, n 14 above, 391.

[50] The traditional approach with respect to vending contracts has held that the basis of the automated economic transaction would, in any case, be an agreement between the parties. The preparation of the machine with the goods, the indication of the price, therefore, would seem to qualify as an offer to the public pursuant to Art 1336 of the Civil Code since the distributor issues a contractual proposal with a complete content covering all the essential elements. The will to conclude the contract would be expressed through conduct, as a vehicle for manifesting the will equivalent to a verbal declaration. This construction is not shared by the doctrine (R. Sacco and G. De Nova, *Il contratto* [Torino: Utet 4th ed, 2016], 253-260, which disavows the need to construct a fiction of agreement, resorting to the figure of tacit declaration. This approach admits the possibility that the contractual relationship may be formed even if the absence of a contract. With regard to the debate which has been held in the doctrine concerning the 'contracts without agreement', see N. Irti, 'Scambi senza accordo' *Rivista trimestrale di diritto e procedura civile*, 347, 347-364 (1998); G. Oppo, 'Disumanizzazione del contratto?' *Rivista di diritto civile*, I, 525, 529 (1998); D. Valentino, 'La conclusione del contratto: alcune riflessioni' *Rivista di diritto privato*, 497, 497-517 (2019).

[51] See P. Perlingieri, *Manuale di diritto civile*, n 44 above, 615-618.

could pay the amount due to the author. Or, highlighting the subject of this paper, consider the hypothesis that the smart contract is used in an energy contract[52] where the failure to pay a single 'bill' determines the block of the meter. In such a case the effect of the resolution of the relationship must necessarily be contained in the contractual regulations, however the automatism of operation of the resolution is only entrusted to an algorithm without any possibility of invention of the parties.

In essence, the smart contract transposes the contractual will into code. It therefore represents levels of operability concerning both the content of the regulation and the legal effects regulated by the clauses included in the content[53] of the regulation. The fundamental thing is automatic enforceability. It seems evident, therefore, that is impossible to subsume the performance of a task based on *intuitu personae*[54] within a smart contract.[55]

Lastly, therefore, if one considers a contractual regulation which involves the smart contract instrument, the condition must be analyzed, as regard to its effectiveness, as a future and uncertain event, on the fulfilment of which the parties make the legal effects of the transaction itself depend.[56] The smart contract will autonomously verify whether the event-condition has come true or not; in this respect, a syllogism seem to be realised with vending machines which operate, as previously stated, as a real offer to the public where the execution takes place without the direct consent of the distributor and purchaser. The same circumstance would seem to apply to smart contracts, where the contracting party receives the service in question through an automated mechanism. In the condition referred to, there must be the mathematical ascertainability of the event set as a condition precisely because some services would seem difficult to confer on a machine or an algorithm. One thinks of a delivery service which is the subject of a smart contract; in such a case, the responsibility profiles of the actual delivery carried out in the hands of the recipient would seem difficult to validate by a machine.

4 Conclusions

The smart contract is summarised, therefore, in an IFTTT scheme (if this than that), that is a binary choice, simple but conditional to an event (this) which is linked to an hypothetical period (if) from which a cause (that) derives.

It is thus confirmed that the case of smart contracts can be divided into two categories: those with legal content and those without. A case belonging to the first

[52] The contract of administration provided for in Art 1559 of the Civil Code specifies that one party undertakes, in return for a price, to perform, for the benefit of the other, periodic or continuous service of things. For a detailed analysis of this contract see P. Perlingieri, *Manuale di diritto civile*, n 44 above, 685-687.

[53] On the distinction between object and content see P. Perlingieri, *Manuale di diritto civile*, n 44 above, 498-506.

[54] On relations based on '*intuitus personae*' see P. Perlingieri, *Manuale di diritto civile*, n 44 above, 87-88; on this concept connected to the instrument of smart contracts see M. Chierici, 'Gli smart contract: profili giuridici con una struttura informatica' available at https://www.salvijuribus.it/gli-smart-contract-profili-giuridici-con-una-struttura-informatica/ (last visited 5 April 2021).

[55] There are areas in which smart contracts work effectively such as baking and insurance see F. Di Ciommo, n 26 above.

[56] On the different types of conditions see P. Perlingieri, *Manuale di diritto civile*, n 44 above, 615-618.

type may include a transfer against the fulfilment of a condition (eg a payment, the crediting of a transfer). In the other hypothesis (eg automation of the temperature control in a building) there is no contract due to the absence of the requirements for its validity.

Ultimately, the smart contract would seem to represent a technology that could, in some cases, not present problems from a legal point of view. This, however, does not exclude the need to address the issue of the legal qualification of this instrument.[57] Therefore, in order not to completely deny its use, one could support the attempt to bring the smart contracts used in a contractual relationship within the general discipline of the contract and consider them as one of the different ways of implementing the negotiation activity.[58]

On the point, however, and with reference to the technical characteristics of the smart contract, the question arises as to whether or not this instrument is suitable for containing the particular set of interests which characterises a legal transaction, or whether or not this medium, which has the capacity to contain an indefinite number of clauses translated into computer language,[59] is suitable for defining the interests concretely pursued by the parties in the way they have outlined the settlement.[60] In some circumstances, in fact, it may emerge that the parties need to include in the string to be encoded also that information which is not necessary for the computerised execution of the smart contract, but which is essential for the legal qualification of the agreement; likewise, the parties may need to supplement the smart contract with an additional document. The addition of an external 'input', or a possible document, raises a problem linked to the peculiarities of this case, since one cannot forget that the technology used to encode smart contracts is the blockchain, which has the characteristic of being sealed closure; this means that it is impossible for a program written on this system to obtain data not present between the blocks of the chain.

Thus, situations could arise in which certain 'inputs', which allow the system to execute what has been established by the parties, need to be activated by the parties themselves or by a third party agent, called an 'oracle',[61] which is inserted between the blockchain (and therefore the smart contracts) and the real world. It is therefore clear that if the information is inserted into the smart contract platform by a subject, party or third party - and this by carrying out an external activity with respect to the strict content of the smart contract - such insertions would be capable of modifying the smart contract, with respect to the original formulation, thus making the guarantee given by the system and referring to the impossibility of a data being false

[57] C. Amato, 'La 'computerizzazione' del contratto (smart, data oriented, computable e self-driving contracts. Una panoramica)' *Europa e diritto privato,* 1260, 1293 (2020).

[58] D. Di Sabato, n 14 above.

[59] T. Pellegrini, 'Prestazioni auto-esecutive. Smart contract e dintorni' *Comparazione e diritto civile*, 843, 850-852 (2019).

[60] A. Alpini, 'L'impatto delle nuove tecnologie sul diritto' *Comparazione e diritto civile*, available at http://www.comparazionedirittocivile.it/prova/files/ albini_impatto.pdf (last visited 2 April 2021).

[61] G. Ciatto et al, 'From Agents to Blockchain: Stairway to Integration' *Applied Journal*, available at https://www.mdpi.com/2076-3417/10/21/7460.

or tampered[62] with lapse, with the obvious consequence of the loss of the profile of concrete security which should characterise the smart contracts.

Without then underestimating the problem referring to the parties to the agreement and not addressed by the legislation which has governed smart contracts[63] to date, insofar as, if there were to be hypotheses in which the agreement were to be stipulated between a professional and a consumer, one would necessary have to deal with the concrete compatibility between this instrument and the content of the contract which, being automated, could from the outset also take on the characteristic of an unbalanced contract with respect to the rights and obligations arising from it.[64] This is a situation that could arise with reference to the relationship between Prosumer and consumer within the energy community, as envisaged by the European Union.

[62] N. Gentile, 'Gli oracoli negli smart contract, cosa sono e a cosa servono' available at https://www.agendadigitale.eu/documenti/gli-oracoli-negli-smart-contract-cosa-sono-e-a-cosa-servono/ (last visited 4 April 2021), which specifies the problem becomes huge when it comes to using DLT systems and in particular smart contract to make traceable food supply.

[63] See decreto legge 14 December 2018 no 135, converted with modifications by the legge 12 febbraio 2019 no 12.

[64] For an in-depth and exhaustive investigation on the protection of the contractor with less contractual power see V. Rizzo, *Condizioni generali del contratto e predisposizione normativa* (Napoli: Edizioni Scientifiche Italiane, 1983), 103; V. Rizzo, *Trasparenza e "contratti del consumatore"* (Napoli: Edizioni Scientifiche Italiane, 2002), 107.

Green Hydrogen: The Leading Resource in the Energy Transition Stage

Francesca Letizia Tasselli

Abstract: Hydrogen is a clean and low-polluting fuel, it has a considerable calorific value and is mainly used for energy production. The so-called green hydrogen is obtained by water electrolysis using renewable sources of energy - mostly solar energy -, thus having a lower impact in terms of environmental issues. The production of green hydrogen is met with increasing popularity. Indeed, the forecast data show that in a few years it will be elected as one of the major sources of clean energy production, in compliance with the objectives of the UN 2030 Agenda. The gathered scientific evidence points towards the opportunity of winning the open challenge of decarbonisation.

This article analyses the various types of hydrogen production and focuses on European Union and national legislation, as well as government interventions aimed at boosting its protection, production, and consumption. In particular, the article analyses the evolution of the regulatory framework in the EU, Italy, France, Germany and the Netherlands.

Keywords: Hydrogen, Green Economy, Renovable Energy

1 International Regulatory Interventions

Global warming - as a consequence of the increase in energy consumption and CO2 emissions - could exceed the current 2°C threshold and even reach 4°C in 2100.[1] This has led to the definition of new guidelines at global level aimed at achieving a decarbonised and more sustainable economy. For years, institutions around the world have been working to outline new policies and issue guidelines capable of initiating the process of energy transition and the decarbonisation of the economy. In the aftermath of the Kyoto Protocol on climate which entered into force in 2005, the 2030 Agenda for Sustainable Development and the Paris Climate Agreement, both signed in 2015, the 'problem' of global warming has been the focus of increasing attention. Moreover, alternative solutions to tackle global warming have been and are being investigated, among which hydrogen[2] is increasingly gaining momentum. Indeed, hydrogen is more efficient than fossil fuels,[3] since it does not

[1] Copernicus Climate Change Service available at https://climate.copernicus.eu (last visited 20 march 2021).

[2] Hydrogen is the generic name of the monohydrogen atom, it is the first item of the Periodic Table of Elements and is identified with the letter 'H'. It takes its name from the Greek 'hydor geinomai'. It is a colourless, odourless, highly flammable gas, as well as the lightest and most abundant chemical element in the entire universe, constituting 75% of 'matter'. However, in its pure state, it represents merely 1% of the earth's atmosphere. On our planet, it can be found exclusively in combination with other elements such as organic compounds, fossil fuels, minerals, biological molecules, and - especially - water.

[3] In its gaseous state, it is an excellent fuel, having the highest combustion energy in the universe, that is 2.6 Joules per kg, higher than methane.

generate dangerous by-products during combustion. It is a flexible energy vector[4]ideal for decarbonisation, hence a most interesting fuel for the future replacement of other non-renewable and highly polluting energy sources. The possibility of using hydrogen to produce 'clean' energy is a concrete and desirable one, because its combustion does not generate any carbon dioxide (CO2) nor any consequent direct climate-altering emissions.[5] This gas burns in the air according to a simple reaction, that is hydrogen + oxygen = water and heat, with water as the only reaction product. The 'Hydrogen Strategy for a Climate-Neutral Europe' and the various national interventions are progressing towards the Green Revolution objectives.[6]

2 Green Hydrogen

Green hydrogen is the real revolution in the age of energy transition.

The outlook for the future is to exploit water electrolysis[7] with electrolysers powered by renewable energy sources, such as photovoltaic and wind.[8] The hydrogen obtained is a 'green hydrogen',[9] because the extraction process does not release any emissions harmful to the environment.[10] This is the only production and conversion free of carbon dioxide emissions, having merely water and heat as by-

[4] Hydrogen is defined as an energy vector, since it is not a primary energy source - such as solar, wind, nuclear, biomass, natural gas, crude oil, wood, wave motions, or geothermal energy which can be used upon collection. An energy vector is a compound or substance deriving from a previous source and capable of conveying energy from one form to another. Electricity (obtained from a solar or hydroelectric plant), petroleum products (obtained from crude oil) are examples of energy vectors. Hydrogen would be the means to transport energy from primary or secondary sources.

[5] M. Della Pietra et al, 'I "colori" dell'idrogeno nella transizione energetica' *Energia ambiente e innovazione*, 92, 92-95 (2020).

[6] L.I. Parada and A. Enriquez, 'The role of hydrogen in meeting the EU objectives', (2021) available at https://www.financierworldwide.com/the-role-of-hydrogen-in-meeting-the-eu-objectives (last visited 01 april 2021)

[7] Hydrogen can be extracted both from fossil sources and renewable sources – be it fossil fuel, biomass or water – using various energy sources, among which nuclear power (4). Currently, the extraction processes are mainly two: 1) 'steam reforming' and 2) 'electrolysis'. These processes, though to a varying degree, generate climate-altering emissions, which lead to the classification of hydrogen by colours (5). We speak of 'Gray Hydrogen', 'Black Hydrogen', 'Brown Hydrogen', 'Blue Hydrogen', 'Violet Hydrogen', 'Green Hydrogen'. 1) 'Steam reforming' processes obtain gray hydrogen from natural gases, generally methane, black hydrogen from the gasification of coal, brown hydrogen from the gasification of lignite, and blue hydrogen from the reforming of natural gases, as for gray hydrogen. The difference between the extraction of gray and blue hydrogen lies in the fact the CO2 emissions generated to extract blue hydrogen are captured rather than being released in the atmosphere; 2) 'Water electrolysis', or the decomposition of the water molecule into oxygen and gaseous hydrogen through the passage of electricity, produces violet hydrogen by feeding the electrolysers with nuclear power and green hydrogen by powering the electrolysers with energy from renewable energy sources (RES) such as solar and wind energy.

[8] The hydrogen obtained from water electrolysis accounts only for a tiny percentage, ranging from 1% to 5%.

[9] P. Nikolaidis and A. Poullikkas, 'A comparative overview of hydrogen production processes' 67 *Renewable and sustainable energy reviews*, 597, 597-611 (2017).

[10] The current percentage of hydrogen extracted by reforming processes varies from 95% to 99%, with most of the world's hydrogen production being gray, black, and brown hydrogen. Reforming processes are generally privileged since they are extremely cost-effective. However, they heavily impact the eco-system, contributing to increasing the heat balance of the earth.

products.[11] Green hydrogen is not only a clean choice, but also a most interesting one. The implementation of a power grid fed by RES is both non-pollutant and virtually inexhaustible, considering the possibility of using the production of hydrogen as a means of balancing the network itself. [12] [13]

State of the art: The off-grid coupling between electrolysers and renewable sources is less convenient and more difficult to manage than traditional methods. Today, producing hydrogen from water electrolysis still costs twice as much as producing hydrogen from methane. So far, although the cost of renewable energies – such as solar and wind – is progressively decreasing, the cost of producing electrolysers is quite steady. If the costs of electrolysers were to decrease, producing green hydrogen would become far more competitive, with an estimated drop in price exceeding 70% over the next 10 years.[14]

Production costs have already dropped by about 40% in North America and Europe in the past five years. If this trend continues, renewable hydrogen could be produced for as little as € 0.6 - € 1.36 / kg in most world countries before 2050, thus becoming competitive with current natural gas prices and cheaper than hydrogen extracted with "steam reforming" processes. In the future, clean hydrogen could be pivotal in reducing global greenhouse gas emissions from fossil fuels by up to 34%, while keeping industrial costs to a manageable size.[15] [16] Indeed, green hydrogen produced in large plants thanks to low-cost renewable energy resources may already be competitive in comparison to blue hydrogen. It is foreseeable that as electrolysers prices decrease and their production increases, green hydrogen will be more economical than blue hydrogen in many countries by 2030 and even cheaper than other green alternatives before 2040.

One of the main issues relating to the production of green hydrogen is the impossibility of seasonally accumulating the electricity produced from renewable energy resources. Indeed, they are intermittent sources (i.e. solar and wind) that cannot be stored and, consequently, cannot maintain grid feeding stable. To overcome this problem, water requires immediate transformation, while the hydrogen obtained should be stored and made available to be converted into electricity - from a fuel cell or turbine - according to needs, as a sort of by-product for the energy sector. The first step of transitioning to green hydrogen is the creation

[11] R. Carbone et al, 'A Case-Study Plant for a SustainableRedevelopment of Buildings Based on Storage and Reconversion of HydrogenGenerated by Using Solar Energy' 6 *Archistor*, 596, 596-615 (2020).

[12] M. Della Pietra et al, n 5 above.

[13] M. Moreno-Benito et al, 'Towards a sustainable hydrogen economy: Optimisation-based framework for hydrogen infrastructure development' 102 *Computers and chemical engineering*, 110, 110-127 (2017).

[14] International Renewable Energy Agency (IRENA), 'Green hydrogen cost reduction: Scaling up electrolysers to meet the 1.5C climate goa' (2020) available at www.irena.org (last visited april 2021).

[15] BloombergNEF, 'Hydrogen Economy Outlook, Key messages' (2020) available at https://data.bloomberglp.com/professional/sites/24/BNEF-Hydrogen-Economy-OutlookKey-Messages-30-Mar-2020.pdf (last visited 30 march 2021).

[16] Snam website available at https://www.snam.it/it/transizione_energetica /idrogeno/idrogeno/ (last visited march 2021).

of an integrated energy system that provides for the combustion of a hydrogen-methane mixture.[17]

The time has come to focus on green hydrogen, on renewable energy sources, and on innovative technologies by means of those targeted policies and Green Projects that are gaining popularity throughout the world. Appropriate policies and projects would strongly encourage a widespread use of hydrogen were they to implement production costs and sales prices reductions. [18] [19]

3 The European Union

In 2019, with the Clean Energy Package for All Europeans, the EU updated its energy policy[20] framework in order to facilitate the transition from fossil fuels to cleaner energy and to deliver on the commitments of the Paris Agreement for greenhouse gas emission reduction.[21] This package was a milestone towards the implementation of the Energy Union strategy issued in 2015. EU climate related interventions led to the designing of *ad hoc* strategies and to the adoption of the Green Deal, that is a 1,000 billion euro investment plan, making Europe a world leader in the sustainable and efficient circular economy and in clean technologies by achieving carbon neutrality by 2050. The EU aims to become the first climate-neutral continent and to this aim, it is seeking to outdo the -40% emissions target set by the Paris Agreement. It also wishes to further reduce emissions to at least 55%, compared to 1990, by 2030. The EU wants to transform its energy system (responsible for 75% of the EU's greenhouse gas emissions) into an economy with net zero emissions[22], all in close connection with the individual states that are required to draw up specific national plans.[23]

[17] Statement by Dr. A. Piebalgs, Former Commissioner for Energy and for Development, Professor – FSR Florence school regulation, in 2nd ACER webinar available at https://www.energy-community.org/events/2021/03/HYDROGEN _WEB2.html (last visited 4 march 2021).

[18] International Energy Agency (IEA), 'The Future of Hydrogen, Seizing today's opportunities' (2019) available at https://www.iea.org/reports/the-future-of-hydrogen (last visited april 2021).

[19] E. Pursiheimo et al, 'Inter-sectoral effects of high renewable energy share in global energy system' 136 *Renewable Energy*, 1119, 1119-1129 (2019).

[20] The EU (15) is a leader in the fight against climate change. It has, in fact, signed various international agreements and joined numerous programs in order to comply with the Paris Agreement, which provides for the reduction of greenhouse gas emissions by at least 40 % by 2030 compared to 1990 levels (16). As such, the EU has adopted numerous ambitious regulatory and policy interventions both within states and in cooperation with international partners. As early as 2009, the European Commission issued the 'Renewable Energy Directive' COM/2009/28, aiming at satisfying 20% of energy thanks to renewable sources by 2020. In 2018, the revision of the 'Renewable Energy Directive' COM/2018/2001 raised this target by 32%, while aiming at reducing greenhouse gas emissions by 40% in comparison to 1990, and improving energy efficiency by 32.5%.

[21] European Commission website availble at https://ec.europa.eu/energy/ topics/energy-strategy/clean-energy-all-europeans_en (last visited 4 march 2021).

[22] 2050 long-term strategy European Commission website availble at https://ec.europa.eu/clima/policies/strategies/2050_en (last visited 9 march 2021).

[23] The Green Deal provides for: the European Climate Law with the objective of reaching carbon neutrality by 2050; the European Climate Pact in order to engage citizens and all social actors; the 2030 climate & energy framework to further reduce the net green house gases emissions by - at least - 55% by 2030, European Commissione website availble at https://ec.europa.eu/clima/policies/eu-climate-action_en (last visited april 2021).

Hydrogen is a pivotal opportunity if the objectives of the Green Deal and the energy transition are to be reached. Though renewable electricity will have largely contributed to decarbonise EU energy consumption by 2050, decarbonisation cannot be achieved by renewable energy only. Hydrogen would bridge this gap. The challenge and priority for Europe is to develop green hydrogen which - despite being carbon-free and causing minor climate disturbance - is currently not economically competitive with respect to traditional gray hydrogen. The EU '2050 long-term strategy' COM/2018/773 expects to achieve Carbon Neutrality by 2050, by increasing energy efficiency, sustaining the renewable electricity generation, and creating awareness in the end-users. The expected outcome would be a significant drop in oil and coal consumption, a reduction of natural gas imports, and an increase in the consumption of biomethane and hydrogen produced in the EU. It goes without saying that strong industrial innovation and technological adaptations are instrumental to enable industrial applications. The Energy Union features 5 dimensions: decarbonisation - including renewable energies-, energy efficiency, internal energy market, security of supply and research, innovation and competitiveness. The long-term strategy tends to drastically reduce the utilisation of non-green fuels. This reduction will be offset by an increase in green gases, including hydrogen.

In order to achieve the fundamental objectives of the Green Deal - namely a clean planet, a stronger economy, and a connected efficient energy sector -, two strategies have been outlined: 'Powering a climate-neutral economy: A EU strategy for Energy System Integration' COM/2020/301 and 'A hydrogen strategy for a climate-neutral Europe'.[24] The first strategy is aiming at integrating the energy system, while the latter promotes renewable hydrogen, biofuels, and sustainable biogas.[25] The reference framework for the transition to green energy is based on 3 crucial points: 1) a more circular energy system, centred on energy efficiency; 2) a greater direct electrification of the end use sectors; and 3) the promotion of clean fuels in difficult electrification sectors.

Less than 2% of EU's current energy consumption is represented by hydrogen, 96% of which is produced from natural gas through steam reforming with consequent CO2 emissions released in the atmosphere. Green hydrogen would play a key role in decarbonisation. Long-term and large-scale storage would help the flexibility of the energy system, balancing the supply and demand of electricity in isolated or autonomous regions of the EU or for specific uses and premises concentrated in a city or a small area. Green hydrogen is an important element in the EU strategy for energy system integration.[26]

The 'A hydrogen strategy for a climate neutral Europe' COM/2020/301, presented on 8 July 2020, elected hydrogen as an absolutely pivotal for achieving the European climate neutrality target set for 2050, being such a versatile element.

[24] European Commission website availble at https://ec.europa.eu/energy /sites/ener/files/energy_system_integration_strategy_.pdf (last visited march 2021).

[25] European Commission website availble at https://ec.europa.eu/energy /sites/ener/files/hydrogen_strategy.pdf (last visited march 2021).

[26] European Commission website availble at https://ec.europa.eu/energy /topics/energy-system-integration/hydrogen_en#eu-hydrogen-strategy (last visited 7 march 2021).

The strategy has a twofold objective: on the one hand it aims to extend the use of the vector in replacing fossil fuels; on the other hand it aims to decarbonise their production. In fact, in the long term a transition is foreseen by using low-carbon hydrogen to be gradually replaced by extremely high percentages of renewable hydrogen. The use of gray hydrogen is completely excluded.

The EU's strategy defines a roadmap into three legs to guide the gradual development of power lines dedicated to hydrogen.[27] - First phase (2020-2024): The EU should decarbonise the current hydrogen production and replace it with at least one million tons of renewable hydrogen, while installing a minimum of 6 GW electrolysers. Strengthening the production of electrolysers, large ones included (up to 100MW) is essential. Moreover, this phase should be facilitated by an adequate regulatory framework, especially in terms of state aid. - Second phase (2025-2030): Green hydrogen is expected to become a substantial part of the European energy system with a minimum of 10 million tons of renewable hydrogen produced by 2030 and 40 GW of electrolysers installed (to which an additional 40 GW electrolysers are to be installed outside the territory of the European Union). At this stage, hydrogen may already have a market sufficient to develop industrial demand, such as the steel industry demand, expand its use in heavy transport and balance renewable-based electricity systems, even by implementing class clusters and autonomous regional ecosystems (the so-called Hydrogen Valleys). - Third phase (2030-2050): Green hydrogen technologies should be mature enough for large-scale development, contributing substantially to the decarbonisation of the EU by 2050. In this phase, the generation of electricity from renewable sources is expected to grow substantially, particularly because by 2050 about a quarter of said sources could be used to produce renewable hydrogen. Cumulative investments in renewable hydrogen in the EU could reach 180-470 billion Euros by 2050 and likely 3-18 billion Euros in low-carbon hydrogen.

Concurrently to the presentation of the EU Hydrogen Investment Plan, to help its implementation, the EU's Clean Hydrogen Alliance[28] [29] was launched. The alliance was signed by industry leaders, civil society, national and regional Ministers, and the European Investment Bank with the scope of reaching widespread hydrogen technologies by 2030 and building investments to achieve large-scale production of clean hydrogen, as well as supporting demand in the EU. The alliance represents both the willingness of the EU to establish its global leadership in this sector and the tool to support the EU's commitment to full decarbonisation by 2050.

Moreover, an informal group of experts, called Hydrogen Energy Network (HyENet), has been set up. The representatives of the relevant Ministries have come together to support the national authorities responsible for energy policy in the EU

[27] M. Gandiglio and D. Ferrero, 'La decarbonizzazione del settore energetico attraverso l'uso dell'idrogeno' *Equilibri, Rivista per lo sviluppo sostenibile*, 419, 419-427 (2019).

[28] European Commission website available at https://ec.europa.eu/docsroom /documents/43526 (last visited 4 march 2021).

[29] Statement by Dr. J. Chatzimarkakis, current Secretary General of Hydrogen Europe, in 2nd ACER webinar available at https://www.energy-community.org/events/2021/03/HYDROGEN_WEB2.html (last visited 4 march 2021).

Member States to develop the opportunities offered by hydrogen as an energy carrier.

HyENet is an informal platform for exchanging information, sharing good practices, experiences and the most recent developments. The reference document for the construction of the European backbone of the hydrogen distribution network (European Hydrogen Backbone - EHB) was developed and made available on this platform. The European Hydrogen Backbone is expected to extend for 6,800 km by 2030, connecting the European hydrogen valleys and to further expand, reaching by 2040 an overall length of at least 23,000 km, for a total investment estimated between 27 and 64 billion Euros.[30]

In a further effort to meet the climate and energy objectives by 2030, the EU Energy Union Governance Regulation 2018/1999 – as per the Clean Energy Package for All Europeans adopted in 2019 – provided for EU member states to define 'Integrated National Energy and Climate Plans' (PNIEC)[31] based on common models and rules for planning, reporting and monitoring. The national strategic plans are also connected to the EU hydrogen strategy and would support the growth in demand for hydrogen expected over the next few years. Indeed, this energy would appear to grow steadily up to represent from 18% to 24% of the energy mix by 2050, both globally and at European level.

The plans cover the 5 dimensions of the Energy Union: decarbonization (reduction of greenhouse gases and renewable sources), energy security, energy efficiency, internal energy market, research, innovation and competitiveness.[32] Moreover, they are diversified into 'National Renewable Energy Action Plans' based on the resources available and energy markets specific to each State and in compliance with the objectives of the Renewable Energy Directive.[33]

The economic crisis triggered by the Covid-19 pandemic, when many activities scaled down or completely stopped operations, CO2 emissions are expected to decrease by about 8%. However, the Covid-19 emergency has shown that a lockdown on its own cannot achieve climate decarbonisation, but structural and supranational interventions are needed. Alongside the Green Deal, which provides for the allocation of 1000 billion Euros, the EU is intervening in support of national economies with the 'Recovery Fund', where additional huge subsidies are allotted

[30] European Hydrogen Backbone -EHB elaborated by the main european managers about transport and storage networks gas: Enagás-Spagna, Energinet-Danimarca, Fluxys-Belgium, Gasunie-Olanda, GRTgaz-Francia, NET4GAS Repub.Ceca, OGE-USA, ONTRAS-Germania, Snam-Italia, Swedegas-Svezia, Teréga-Francia available at https://www.miur.gov.it/documents/20182/ 2312362/Prime.indicazioniSIRI.pdf/a91b6eae-49cb-4fff-72cd-361e9fe5f36c? version=1.0&t=1605009647833 (last visited april 2021).

[31] European Commission website availble at https://ec.europa.eu/clima/ policies/strategies/progress/governance_en (last visited march 2021).

[32] Under the Governance Regulation, EU Member States were to submit their 2021-2030 NECPs drafts by 31st December 2018 to the Commission, who would analyse them. A general assessment was followed by specific country recommendations, which were issued in June 2019. Taking these recommendations into account, Member States were required to file their final NECPs by 31 December 2019 and to provide a follow-up report every two years. Within the framework of the State of Energy Union Report, the Commission is monitoring progress.

[33] European Commission website availble at https://ec.europa.eu/energy/topics/ renewable-energy/national-renewable-energy-action-plans-2020_en (last visited march 2021)

to the programmed climate objectives. Hence, the EU has coupled energy transition with economic recovery.[34]

National Strategies about Hydrogen. As previously stated, the EU Regulation of the European Parliament (EU) 2018/1999 on the governance of the Energy Union - signed as part of the Clean Energy package for all Europeans adopted in 2019 - in order to achieve the planned 2030 climate and energy objectives, required EU Member States to draw up a ten-year Integrated National Energy and Climate Plan (NECP) for the period from 2021 to 2030.[35]

The drafted PNECs were to be submitted to the Commission by 31 December 2018 for assessment,[36] following which the Commission issued their recommendations to each State. Having amended their NECPs drafts on the basis of the Commission's recommendations, the Member States submitted their final PNECs by 31 December 2019. In September 2020, the Commission announced 'An EU-wide Assessment of National Energy and Climate Plans'[37] complementary to the 'Fifth Report on the State of the Energy Union'. Regulation (EU) 2018/1999 requires Member States to submit a two-year progress report in relation to the relevant NECP projects to allow the Commission to monitor the progress of the EU as a whole in terms of meeting the 2050 objectives and community and national strategies.

The 'Fifth Report on the State of the Energy Union', published on 14 October 2020, examines the objectives and progress of the Energy Union and verifies the EU meets its long-term undertakings relating to climate change of Europe as expressed within the five dimensions of the energy union. The Fifth Report is the first stage of the Energy Union since the adoption of the European Green Deal. The report provides guidance on the rapid implementation of NECPs and on how investments and reforms in the energy sector can stimulate the EU's economic recovery even in the wake of the lockdown crisis. Furthermore, it highlights how the Next Generation EU Recovery Plan can support the Member States thanks to a series of financing programs, in particular by subsidising the energy sector. This report is accompanied by a wide range of reports and annexes, including annex on energy subsidies, annex on the internal energy market, clean energy competitiveness report, energy prices and costs report, progress report on energy efficiency, progress report on renewable sources, including the Assessment of the 27 different National Energy & Climate Plans (NECPS). The latter analyses the commitment of each EU country toward the 2030 energy and climate objectives and the relevant policies.[38]

[34] Statement by Dr. C. Marcantonini, from ARERA, CEER, in 1nd ACER webinar available at https://www.energy-community.org/events/2021/02/HYDROGEN_ WEB1.html (last visited 1 march 2021).

[35] M. Alverà, Rivoluzione idrogeno. la piccola molecola che può salvare il mondo (Firenze: Mondadori Electa, 2020).

[36] COM / 2019/285 available at https://eur-lex.europa.eu/legal-content/EN /TXT/?qid=1565713062913&uri=CELEX:52019DC0285 (last visited april 2021).

[37] COM / 2020/564 available at https://eur-lex.europa.eu/legal-content/EN/ TXT/?qid=1600339518571&uri=COM%3A2020%3A564%3AFIN (last visited april 2021).

[38] I. Allegranti, 'ECPE Questionnaire: The Results on an European Perspective' in L. Ruggeri ed., *Needs and Barriers of Prosumerism in the Energy Transition Era* (Madrid: Dikinson SL, 2021), 12-16.

4 Analyses of some EU Countries

In the light of the EU legislation and the *ad hoc* Plans signed by the EU Member states, hydrogen is clearly going to be a fundamental asset in the near future. Therefore, the legislative situation and concrete interventions adopted by some Member States are analysed. Italy, France, Germany, and the Netherlands have been selected because, though aimed at the same results, they have envisioned highly different interventions.

4.1 Italy

Italy is viewed as one of the eligible candidates to become a EU centre for hydrogen, a leading country in the sector as shown by the 128 projects financed by the European Commission in the period 2008-2017, involving over 80 Italian beneficiaries and funds in excess of 90 Millions billions of Euros. However, adequate regulatory and financial policy interventions are required.

At the national level, the first legislative intervention relating to the production and distribution of hydrogen was the Ministerial Decree of 31 August 2006,[39] which addressed hydrogen as an industrial chemical agent - produced on a larger scale from fossil sources - and introduced severe restrictions on its storage facilities. No reference was made to the production of zero emission electrolysis hydrogen production, nor to the latest technological developments. Following the intensification of global attention and international agreements in favour of climate protection, the Italian Government transposed the European Directive 2014/94 /EU of the European Parliament and Council of 22 October 2014 (advocating an appropriate construction of an infrastructure for alternative fuels) in Legislative Decree no. 257 of 16 December 2016.[40] In order to reduce dependence on oil and mitigate the environmental impact in the transport sector, the decree establishes the minimum requirements for the construction of an infrastructure for alternative fuels, including charging points for electric vehicles and refuelling points for liquefied natural gas, compressed hydrogen and liquefied petroleum, as provided for by article 3[41] of the National Strategic Framework.

[39] 'Approval of the technical regulation for fire prevention, designing, construction and management of hydrogen distribution stations' available at https:// www.gazzettaufficiale.it/eli/id/2006/09/13/06A08346/sg#:~:text=Il%20presente%20decreto%20ha%20per,distribuzione%20di%20idrogeno%20per%20autotrazione (last visited march 2021).

[40] Gazzetta Ufficiale website available at https://www.gazzettaufficiale.it/atto/serie_generale/caricaDettaglioAtto/originario?atto.dataPubblicazioneGazzetta=2017-01-13&atto.codiceRedazionale=17G00005&elenco30giorni=true (last visited march 2021).

[41] Gazzetta Ufficiale website available at https://www.gazzettaufficiale.it/atto/serie_generale/caricaArticolo?art.progressivo=0&art.idArticolo=3&art.versione=1&art.codiceRedazionale=17G00005&art.dataPubblicazioneGazzetta=2017-01-13&art.idGruppo=2&art.idSottoArticolo1=10&art.idSottoArticolo=1&art.flagTipoArticolo=0. The National Strategic Framework for the development of alternative fuels and related infrastructure in the transport sector, referred to in Annex III, provides for the following elements: a) an assessment of the current state of the alternative fuel market in the transport sector and its possible future developments. The assessment takes into account possible simultaneous and/or combined use of alternative fuels, as well as cross-border continuity; b) the national objectives for the infrastructure construction, in compliance with the minimum requirements referred to in Art 4 (electricity supply for transport), Art 5 (hydrogen supply for road transport), Art 6 (natural

A few months after the Law Decree 257/2016 entered into force, the Inter-ministerial Decree of 10 November 2017[42] updated the National Energy Strategy (SEN) adopted in 2013, namely a planning and guidance document for the energy sector. The energy policy objectives envisaged by the SEN are: 1) to improve the country's competitiveness through a longer-term energy transition (2030-2050); 2) to tackle environmental issues and reach the 2030 decarbonisation objectives – as outlined at European level - in a sustainable way and in full synergy with the National Strategy for Sustainable Development. At the national level, the proposed scenario envisages the safe phase out of Italian coal-fired thermoelectric plants by 2030; 3) to continuously improve safety and flexibility of systems and infrastructures. The Integrated 2021-2030 National Energy and Climate Plan not only exceeded the objectives outlined in the SEN, but it represented its programmatic document.

The Italian legislator, retracing his steps, intervened by repealing the aforementioned Decreto ministeriale of 31 August 2006, replacing it with the Decreto ministeriale of 23 October 2018 'Fire Prevention Technical Rule for the Design, Construction and Operation of Hydrogen Distribution Systems for Automotive'. The latter, also due to the collaboration of various actors, overcomes most of the most significant procedural obstacles of the previous Decree by introducing an innovative approach where perspective analyses are supported by an adequate risk analysis.[43] [44]

Over 2019, the growing international interest in hydrogen as a possible ally for decarbonisation prompted the Italian Ministry of Economic Development (MISE) to convene the 'Hydrogen Table', with the aim of defining guidelines, priorities, competitiveness and technologies and encouraging the development of projects in the national supply chain by analyzing: 1) legislative and regulatory aspects; 2) storage and power-to-gas production; 3) transport.[45]

In compliance with the European guidelines and in implementation of the EU Regulation 2018/1912, in 2018, Italy sent the first draft of the PNIEC to the European Commission, which became definitive on 21 January 2020. The 2030 Integrated National plan for Energy and Climate 2030 is a fundamental tool that marks a relevant shift in Italy's energy and environmental policy towards

gas supply for transportation), and Art 7 (liquefied petroleum gas supply for transportation). These national objectives may be reviewed on the basis of an assessment of the national, regional or EU demand, while ensuring compliance with the minimum infrastructure requirements indicated above, with the procedures referred to in paragraph 3; c) an evaluation of the need for refueling points of liquefied natural gas-LNG in ports outside the TEN-T core network; d) an assessment of the need to install electricity supply systems in airports for stationary aircrafts. 2. With this decree the National Strategic Framework is adopted, as per annex III, divided into the following sections: a) supply of electricity for transport; b) supply of hydrogen for road transport; c) supply of natural gas for transportation and other uses; d) supply of liquefied petroleum gas - LPG for transportation.

[42] Gazzetta Ufficiale website available at https://www.gazzettaufficiale.it/ eli/id/2017/12/11/17A08269/SG (last visited march 2021).

[43] Gazzetta Ufficiale website available at https://www.gazzettaufficiale.it/eli/id/ 2018/11/05/18A07049/sg (last visited march 2021).

[44] V. Cigolotti et al, 'National Policy Paper - Italy' (2019) available at https://www.hylaw.eu/sites/default/files/2019-03/HyLAW_National%20policy %20Paper%20IT_eng.pdf (last visited march 2021).

[45] MISE (Ministero Sviluppo Economico) website available at https:// www.mise.gov.it/ (last visited april 2021).

decarbonisation. The PNIEC – jointly drawn by the Ministry of the Environment and Land and Sea Protection and the Ministry of Infrastructure and Transport – incorporates both the innovations contained in the Climate Decree no. 111 of 14 October 2019 and the Green New Deal additional investments provided for in the 2020 budget law. The plan is structured along 5 lines of action to be developed in an integrated manner: from decarbonisation and renewable sources to energy efficiency and security, passing through the development of the internal energy market, interconnections, development and sustainable mobility of research, innovation and competitiveness. Furthermore, for each sector, it specifies the measures to be implemented to ensure a fully environmental, social, and economic sustainable energy transition throughout the entire Italian territory.[46]

Among the most recent interventions, undergoing the final drawing, we can list the "National Hydrogen Strategy - SNI preliminary guidelines.

The guidelines for the National Strategy on Hydrogen – as developed by MISE taking into account the observations of the interested stakeholders - are aimed at identifying the areas of intervention that are best suited to develop and implement the use of hydrogen and the sectors that would most benefit from it. It is believed that hydrogen could be competitive over a short time, due to local production and use, by converting existing plants and creating new technological sectors (in particular fuel cell electrolysers and components). These lines have the mission of giving Italy a true industrial policy that is completely oriented towards Green issues, to accelerate the achievement of the objectives set by the PNIEC which favour a competitive energy transition. The final scope would be to make the country a leader in the hydrogen sector, both at EU and international level.[47] In view of the current Covid-19 pandemic and the consequent economic crisis, the EU Recovery Fund has allotted several million Euros to Italy. As early as the summer of 2020, the Italian government has begun working at a plan for the best possible apportioning of money among the various sectors that need strengthening. Out of a total 209 billion Euros, 69.80 (the largest portion) will be assigned to the green revolution and ecological transition.

The Italian National Re-launch and Resilience Plan focuses primarily on hydrogen. In particular, the Ministry of Economic Development intends to promote green hydrogen and identify those production and transport models necessary to satisfy a demand of about 2% by 2030 (corresponding to approximately 0.7 Mtons/year). Primarily, a hydrogen supply chain needs to be developed, starting from the production of electrolysers of different sizes and types to meet the various market needs at very reasonable prices.

The Italian Hydrogen Strategy concentrates on the following sectors: transport (heavy vehicles, railways), industry (chemicals, oil refining and steel) up to domestic consumption. Three actions have been identified to develop the production of green hydrogen in the 2021-2030 decades, which are based on theoretical models of

[46] MISE (Ministero Sviluppo Economico) website available at https:// www.mise.gov.it/images/stories/documenti/PNIEC_finale_17012020.pdf (last visited febrary 2021).

[47] MISE (Ministero Sviluppo Economico) website available at https:// www.mise.gov.it/ (last visited febrary 2021).

production and transport. More specifically, they are: 1) Production totally on-site. RES electricity is used to power the hydrogen electrolysers on-site and consumption is calculated per km to minimize transport costs, thus creating 'hydrogen valleys'; 2) On-site production with electricity transport. RES electricity is produced in areas with high availability of natural resources and transported through the electricity grid to the green hydrogen electrolysis plants; 3) Centralised production with hydrogen transport. The RES and electrolysers plants are located in areas with a high availability of natural resources (ie wind or sunlight). The green hydrogen is produced on site and then transported to the point of consumption through a dedicated facility, using the existing gas network, or stored and transported in tanks.

To kick-start the development of the hydrogen market, Italy plans to install approximately 5 GW of electrolysis capacity by 2030, for which 10 billion Euros of investments will be needed between 2020 and 2030, in addition to the investments for the diffusion of renewable sources. In particular, between 5 and 7 billion will be needed for the production of hydrogen, while 2-3 billion will be spent for hydrogen distribution and consumption structures (hydrogen trains and heavy vehicles, refuelling stations) and about 1 billion will be invested in research and development. Domestic production of green hydrogen could be integrated with imports – Italy's geographic position suggests that the country could also serve as a hub for hydrogen trade - or with other low-carbon forms of hydrogen, such as blue hydrogen.

4.2 France

France has drawn up the '*Plan de Déploiement de l'hydrogène pour la Transition énergétique*'. This is a nation with a large number of nuclear power plants, consequently it has chosen to focus on decarbonised hydrogen to be used in the industrial sector. The country has designed a strategy to be implemented in the 2020-2022 period and continuously monitored and updated until 2030. France aims at reaching a first a target of 10% of green hydrogen, expected to increase to 20-40% by 2028. As planned and programmed in the recovery fund, the state is committed to an initial 2 billion Euros progressively increasing to a total of 7 billion Euros of public funding. Pending the ruling of the EU on whether nuclear power can be considered a source of Green energy, France will heavily concentrate on the production of Purple hydrogen, that is hydrogen obtained by electrolysis using electricity from nuclear power plants. The French strategy sets three objectives: 1) to generate a significant decarbonised hydrogen production – equal to 6.5 GW per electrolysis – by installing enough electrolysers to effectively impact the economy; 2) to develop clean mobility, especially regarding heavy vehicles. In a first phase, land transport – commercial vehicles, buses, and trains – of passengers and goods will be converted into hydrogen powered transport whereas, in the second phase, pilot projects will be developed with particular regard to ships powered by hydrogen and a decarbonised hydrogen aircraft, the prototype of which could enter service in 2030. Finally, in the third phase, a green hydrogen power grid is envisioned, having the objective of reducing CO2 emissions to 6 Mt by 2030; 3) to develop an industrial sector that would have the skills to ensure technological

mastery and would generate between 50,000 and 150,000 direct and indirect jobs in France.

4.3 Germany

Germany is heading towards cooperation with both the North Sea and Baltic countries and with Southern European states to become the main supplier of green hydrogen technologies on the world market. The country is betting on creating the first P2G electrolysis power plants. As part of the German 2020/2021 re-launch plan, out of the 130 billion Euros available, 50 billion Euros will be allocated to the energy transition and sustainability, and 9 billion Euros to green hydrogen and to develop partnerships with other countries. By 2030, the German 'national demand for hydrogen' is expected to be about 90-110 TWh, while today it stands at 55 TWh, of which only 7% is 'green'.

The German government aims at using green hydrogen by supporting the growth of the EU global market, even through the production of low-carbon (blue) hydrogen. This is the reason why it is committed to build green hydrogen plants for a total production of hydrogen up to 5GW (production of 14 TWh), including the required generation of on-shore and off-shore energy. Furthermore, Germany will intensify the development of infrastructures for the transport of hydrogen, the use of the appropriate technologies for the chemical transformation of this vector, as well as favouring the interconnection between researches for key technologies - such as electrolysis and bio-based processes for the production of hydrogen, methane pyrolysis ('turquoise hydrogen'), artificial photosynthesis, and fuel cells.

4.4 The Netherlands

The Netherlands are called the hydrogen valley in Europe, as the state is planning to create the largest green hydrogen plant in the world. The facility is expected to start operating in 2030 and produce 800,000 tons of hydrogen per year and the energy required will be produced by an offshore wind power plant located in the North Sea. This off-shore plant will initially supply around 3-4 GW, with a projection of 10 GW. The National Climate Agreement of the Netherlands has the ambition to increase electrolysis to around 500 MW of installed capacity by 2025 and to 3/4 GW of installed capacity by 2030. Holland plans to increase its global trade by exporting hydrogen. Indeed, it is putting itself forward as an energy hub, also in consideration of its position on the North Sea and in consideration of the number of ports, extensive gas network and storage capacity it has. The goal of the Dutch government is to develop the hydrogen supply chain through a political agenda based on four pillars: legislation and regulation, sustainability of final consumption, support and accompanying policy, reduction of green hydrogen costs.

5 Conclusions

The now practically univocal objective of the United Nations and individual countries is the decarbonisation of the production processes of energy sources by

transitioning from non-renewable and highly polluting sources to renewable and clean energy sources (RES). An eco-sustainable future and a transition process from non-renewable and highly polluting sources to renewable and clean energy sources (RES) is possible only through rapid interventions, alternative solutions, good practices, targeted legislation, and economic incentives.

Green Hydrogen is the leading resource in the energy transition stage. The EU, its individual Member States and other nations worldwide are designing and implementing highly exciting projects related to the use of hydrogen as a clean source of energy. National plans, strategies, and ad hoc legislation are required to create and promote both facilities and infrastructures dedicated to the production of this energy vector. However, the current main issue is the production costs of electrolysers, which need to be reduced if this magnificent and fully green energy source is to gain competitiveness in economic terms.[48]

The EU has set as a priority to reach Carbon Neutrality by 2050, as well as replacing all traditional fossil fuels. This is why green hydrogen production is being encouraged and several strategies outlined.

To date, H2 represents merely 2% of energy consumption, of which a tiny 4% is green hydrogen. The 'A hydrogen strategy for a climate-neutral Europe' envisions a three-phase transition from blue to green H2:

Time Lapse	Installed GW electrolysers
1st Phase 2020 - 2024	6 GW
2nd Phase 2025 - 2030	40 GW
3rd Phase 2030 - 2050	Carbon Neutrality

The EU plans to invest between 180 and 470 billions of Euros in order to achieve the objectives set out in the '2050 long-term strategy'.

The 4 EU Member States hereby analysed show some variances both in terms of investments and national intervention plans aimed at reaching the 2030 objectives.

[48] N. Armaroli, 'La transizione energetica' *Memorie e Rendiconti di Chimica, Fisica, Matematica e Scienze naturali,* 251, 251-260 (2020)

2030	Installed GW electrolysers	Investments expressed in billions of Euros
Italy	5 GW	10
France	6,5 GW	9
Germany	5 GW	9
The Netherlands	3-4 GW	10

Italy - the central pearl of the Mediterranean – should let this tremendous opportunity slip by. Quite the contrary, it should start working on blue hydrogen and implement green hydrogen in the shortest time possible, thus filling the gap with countries such as France and Germany. The era of the energy transition has begun and 'hydrogen has gained an unprecedented momentum. The world should not miss this unique opportunity to make hydrogen a relevant part of our clean and secure energy future'.[49]

[49] Statement by Dr. Dottor Fatih Birol, current executive director of the International Energy Agency (IEA).

Part III

National Surveys

Introduction to the ECPE Questionnaire

Federico Pascucci

In this third part of the volume we will offer the results of a questionnaire on energy regulation, and prosumerism in particular, in various countries which are not covered by the studies presented in the first one.

More specifically, the focus has been on those countries where, on the one hand, economic development is greater, on the other hand the problem of pollution and the need for an energy transition towards renewable and clean energy forms is even greater. Truly it is not a case if the paradigmatic examples of this situation are identified in the biggest nations covered by the survey, namely India, China, United States, but also Brazil and Argentina, that alone also represent countries with the highest CO2 emissions and more in general of greenhouse gases due to the massive use of fossil fuels.

It is not by chance that among the countries considered, the American continent, and Latin America in particular, has the 'lion' part. In America there are some of the largest developing countries which make systematic use of depleted and polluting sources to support their economic growth. A problem, this one, which goes hand in hand with the environmental issue and the preservation of the ecosystem, due that in America we have - among others things - the Amazon River basin and its forest, the 'green lung of the world' and a treasure chest of biodiversity unique in the entire global landscape.

Moreover, the replies to the questionnaires show a rather varied legal landscape. If some countries, especially the federal ones, put the energy question even within their constitutional charters, the argument of self-consumption of energy and the incentive to prosumerism still seems to be at the embryonic stage.

Above all, it seems to emerge, as a fact that can halt the development of renewable sources and the role of the prosumer, the fragmentation of competences in energy matters, very often scattered between various subjects, both public and private, in a sometimes extremely complex framework.

Nevertheless, an element which seems to be constant in the answers is the presence of incentives, sometimes timid, sometimes definitely more incisive, for the self-consumption of energy, prosumers and energy communities, which shows in any case the arising favour for such phenomena and for the energy transition towards the de-carbonification in general.

For the convenience of the reader, the text of the Questionnaire will be reproduced below.

Questionnaire

1. Provide an overview of the energy regulatory framework in your country. What is the main legal source of energy policy? What are the additional sources?

1.1. Define briefly the existing legal and financial measures in your country in order to promote the use of energy from renewable sources and to facilitate the energy transition. In particular, are there any incentives, economic and tax benefits?

1.2. Have the Directive (EU) 2018/2001 and the Directive (EU) 2019/944 been transposed in your country? Which are the legislative instruments that have transposed the Directives?

1.2.1. Provide a short description of the main changes on energy policies introduced with the transposition of the Directive (EU) 2018/2001 (e.g. adoption of the specific support schemes for energy from renewable sources; adoption of regulations and codes for the enforcement of administrative procedures; particular rules for the creation of the community energies, etc.) and of the Directive (EU) 2019/944 (e.g. rules on the generation, transmission, distribution and supply of electricity; specific rules on the protection of the consumers; provisions on the creation of citizen energy communities, etc.).

1.3. In case the Directives have not been transposed into national law, indicate (if existing) drafts of the law under discussion for the future transposition and eventual websites where they can be found.

2. What are the main policies of the development of prosumerism, self-consumption and renewable energy communities?

2.1. Provide some examples (if known) of best practices of prosumerism, self-consumption or energy communities experienced in your country (indicate link of the related websites where they can be viewed).

2.2. Provide some examples (if existing) of case law/leading cases in the field of prosumerism and energy communities.

Argentina

José Horacio De Jesús Grando

The answers that will be given shall apply to the national level; this clarification is important, given that the Argentine Republic is a Federal State. Reference is made to the provincial level only in the absence of national regulations, eg, in the case of Community Generation, within the scope of Distributed Generation. Notwithstanding this, the Province of Corrientes (where the UNNE Faculty of Law is located) has adopted Argentine Law 27.191, entitled 'National Promotion Scheme for the use of Renewable Energy Sources for the production of Electricity', through Provincial Law 6.445/2018. Likewise, it has adopted Argentine Law 27.424, entitled 'Scheme for the Promotion of the Distributed Generation of Renewable Energy as part of the Public Electricity Grid', by means of Provincial Law 6.503/2019. In both cases, the author participated in the drafting of the provincial regulations in his capacity as Head of Legal Affairs of the Provincial Energy Secretariat.

Currently, Jose Horacio de Jesus Grando is Vice-President of a public limited company with majority state participation called Energía Correntina Sociedad Anónima -ENCOR SA-, which is building 6 photovoltaic plants with all the Electric Cooperatives of the Province, for a total of 1.6 MW.

Alba Esther De Bianchetti

Alba E. de Bianchetti heads the accredited project entitled 'Sustainable Development Goals and Climate Change. Law and Governance in the implementation of Public Policies', which sees her work on six of the seventeen goals, one of them being Goal No. 7, namely 'Affordable and Clean Energy'.

This clarification is necessary in order to justify the environment-oriented, holistic view of renewable energies underlying the following answers.

Questionnaire Argentina:

1 Provide an overview of the electricity regulatory framework of your country. What are the main legal grounds underpinning the energy policy? What additional grounds are there?

1.a Reference is made to EU Directive 2019/944

The Argentine Republic, which is a Federal State, operates within an electricity regulatory framework based on the National Constitution; specifically, Art 42 establishes that:

- Consumers and users of goods and services are entitled, as part of the consumer relationship, to the protection of their health, safety and economic interests; to adequate, truthful information; to freedom of choice; and to a fair, dignified treatment.

The authorities shall provide for the protection of these rights, consumer education, the defence of competition against all forms of market distortion, the monitoring of natural and legal monopolies, the monitoring of the quality and efficiency of public services, and the establishment of consumer and user associations.

The law shall establish effective procedures for the prevention and resolution of disputes and the setting up of regulatory frameworks for public services under national jurisdiction, providing for the necessary participation of consumers' and users' associations and the provinces concerned in the supervisory bodies.

As far as National Law is concerned, Argentine Law 24.065 (Official Journal of 16 January 1992),[1] as complemented by Argentine Law 15.336 (Official Journal of 22 September 1960),[2] which has the same scope and authority of application (Art 85 of Argentine Law 24.065), is what provides for the electricity regulatory framework.

This legal regulatory framework is complemented by the regulations of Argentine Law 24.065, as approved by Decree 1398/1992,[3] by Decree 186/1995[4] and by what have come to be known as 'The Procedures'. This set of resolutions regulates the functioning of the electricity market (as issued from Resolution 61/92[5] to date) and constitutes a whole appendix of regulations in itself. The Argentine Wholesale Electricity Market Clearing Company (*Compañía Administradora del Mercado Mayorista Eléctrico* S.A., CAMMESA) has an updated compilation of 'The Procedures', which can be downloaded from the website www.cammesa.com.ar. It should be

[1] Available at http://servicios.infoleg.gob.ar/infolegInternet/anexos/0-4999/ 464/texact.htm (last visited 24 november 2021).

[2] Available at http://servicios.infoleg.gob.ar/infolegInternet/anexos/25000-29 999/28195/texact.htm (last visited 24 november 2021).

[3] Available at http://servicios.infoleg.gob.ar/infolegInternet/anexos/5000-99 99/9802/texact.htm (last visited 24 november 2021).

[4] Available at http://servicios.infoleg.gob.ar/infolegInternet/anexos/5000-99 99/9802/texact.htm (last visited 24 november 2021).

[5] Available at http://servicios.infoleg.gob.ar/infolegInternet/anexos/15000-19 999/19333/norma.htm (last visited 24 november 2021).

borne in mind that Argentine Law 24.065 is complemented or modified by 382 regulations.

Since Argentina is a Federal State, Art 35 of Argentine Law 15.536 draws a distinction between national and provincial electricity systems. In the electricity sector, public electricity distribution services are of a local (provincial) nature, while everything that concerns the National Interconnection System (power plants, transmission and distribution lines and networks linked to the National Interconnection Network) falls under federal jurisdiction. Without prejudice to this, the provinces were invited to adhere to the national scheme (in accordance with Art 98 of Argentine Law 24.065); most of them did so successively, though only partially in some cases, since some provinces only adhered to the rules of Chapter X of the Law, referring to the principles and regulations on tariffs.

Therefore, the various actors in the electricity market operate under national jurisdiction, as represented by the Argentine Ministry of Energy, the National Electricity Regulatory Body (*Ente Nacional Regulador de la Electricidad*, ENRE) and the company in charge of the national dispatch of loads (CAMMESA), on the one hand, and provincial jurisdiction, as represented by the authorities responsible for energy matters and the local regulatory bodies – albeit said jurisdictions sometimes overlap.

Before Argentine Law 24.065, the electricity industry tended to be concentrated in large companies, which carried out all activities (generation, transmission and distribution). On the contrary, the Law requires the division of the industry, both vertically and horizontally.

The vertical division implies the separation into 1) Generation, 2) Transmission and 3) Distribution (Art 31 of Argentine Law 24.065).

The horizontal division implies that the three branches are made up of more than one company. Even Distribution is made up of companies that fall under provincial jurisdictions.

Under Art 1, the Generation or production of electricity is considered, within the framework of Argentine Law no 24.065, as an activity of 'general interest', while Transmission and Distribution are considered as a public service. This is no minor detail, given that regulatory and intervention powers over activities defined as a public service are greater than those involving 'activities of general interest', as is the case of Generation. Consequently, characteristics such as generality, regularity, continuity and equality are typical of public services. In the specific area of energy generation, the regulatory frameworks resort to the encouragement and/or promotion technique, which involves public interventions that are less pronounced than those involving public services.

In accordance with Art 4 of Argentine Law 24.065, the actors in the electricity market are a) Generators or producers, b) Transmitters, c) Distributors, d) Large users.[6]

[6] M. J. Fonrouge, 'Lineamientos del régimen jurídico de la electricidad' available at http://www.cassagne.com.ar/publicaciones/Lineamientos_del_regimen_juridico_de_la_electricidad.pdf (last visited 24 november 2021).

a. Generators or producers

According to Artt 5 and 6 of Argentine Law 24.065, generators are owners or concessionaires of power plants that fully or partially supply their production to the transmission and/or distribution system under national jurisdiction, and may enter into energy supply contracts directly with distributors and large users. In the latter case, the contracts will be freely negotiated between the parties.

Similarly, the second part of Art 3 of Argentine Law 15.336 establishes that the activities of the electricity industry that are totally or partially intended to supply energy to a public service shall be considered to be of general interest, allocated to that service and framed within legal and regulatory standards that ensure its normal operation.

In the Generation activity, the principle of free supply and demand applies, so that regulation should only take place when the general interest is compromised.

All this is without prejudice to the fact that the generation activity, given its association with the provision of electricity distribution, must have rules that allow for the proper functioning of the public service. An example of this is Art 16 of Argentine Law 24.065:

'Generators, transmitters, distributors and users of electricity are obliged to operate and maintain their installations and equipment in a manner that does not pose any danger to public safety, and to comply with the regulations and resolutions issued by the authority for this purpose. Such installations and equipment shall be subject to periodic inspection, review and testing by the authority, which shall also have the power to order the suspension of service, the repair or replacement of installations and equipment, or any other measure designed to protect public safety'.

Similarly, Artt 17 and 19 provide for regulations regarding Generators.

b. Transmitters

According to Art 7 of Argentine Law 24.065, a Transmitter is the holder of a concession granted under this law who is responsible for the transmission and transformation of energy from the point of delivery by the Generator to the point of receipt by the Distributor or Large User, as the case may be.

In territories as large as Argentina, where the Generation of large electrical undertakings takes place far away from the large cities where the energy is consumed, Transmission is important. Likewise, given that generating machines can be shut down, either due to breakdowns or scheduled outages, it is important Transmission is interconnected and works in balance through the confluence of supply and demand. Interconnection makes it possible for the system (through CAMMESA) to make up for any shortfall through the transmission of another generator, say, in the event of the failure of a generator.

Annex 16 of the Procedures divides the transmission system into:

1) High voltage:

ART 2.- The activity of transmitting electrical energy between ELECTRIC REGIONS by means of the HIGH VOLTAGE ELECTRICITY TRANSMISSION SYSTEM, under the terms determined by the respective CONCESSION CONTRACT, is hereby designated as PUBLIC SERVICE OF HIGH VOLTAGE ELECTRICITY TRANSMISSION.

ART 3. A HIGH VOLTAGE ELECTRICITY TRANSMISSION SYSTEM is defined as the set of transmission facilities, with voltages equal to or higher than TWO HUNDRED AND TWENTY KILOVOLTS (220 kV), including compensation, transformation, switching, monitoring and communications facilities, both existing ones and those to be incorporated as a result of expansions carried out under the terms of the REGULATION ON ACCESS TO THE EXISTING CAPACITY AND EXPANSION OF THE ELECTRICITY TRANSMISSION devoted to the transmission of electricity between electric regions.

ART 4.- For the purposes of these Regulations, the following areas are identified as ELECTRIC REGIONS: GRAN BUENOS AIRES, LITORAL, BUENOS AIRES, CENTRO, CUYO, NORTHWEST ARGENTINA (NOA), NORTHEAST ARGENTINA (NEA), COMAHUE AND SOUTHERN PATAGONIA, whose delimitation shall be the responsibility of the ENERGY SECRETARIAT.

High Voltage transmission is operated by *Compañía de Trasporte de Energía Eléctrica de Alta Tensión* S.A. (TRANSENER), which has lines covering more than 12,000 km.

2) Trunk Distribution:

ART 5.- The activity of transmitting electricity by means of the ELECTRICITY TRANSMISSION SYSTEM BY TRUNK DISTRIBUTION, under the terms of the relevant CONCESSION AGREEMENT, is hereby denominated PUBLIC SERVICE OF ELECTRICITY TRANSMISSION BY TRUNK DISTRIBUTION.

ART 6. The ELECTRICITY TRANSMISSION SYSTEM BY TRUNK DISTRIBUTION is defined as the set of transmission facilities, with voltages equal to or higher than ONE HUNDRED THIRTY-TWO KILOVOLTS (132 kV) and lower than FOUR HUNDRED KILOVOLTS (400 kV), intended to electrically link, within the same ELECTRIC REGION, Generators, Distributors and Large Users, either with each other, with the HIGH VOLTAGE ELECTRICITY TRANSMISSION SYSTEM or with other ELECTRICITY TRANSMISSION SYSTEMS BY TRUNK DISTRIBUTION.

3) Independent Transmitter:

ART 8.- An INDEPENDENT TRANSMITTER is defined as the owner and operator of electricity transmission facilities who, under the conditions established by a technical licence granted by a TRANSMITTER, places such facilities at its disposal, without thereby acquiring the status of agent of the WHOLESALE ELECTRIC MARKET (*MERCADO ELECTRICO MAYORISTA*, MEM).

Regarding the users of the public service for Transmission and free access to the network, Annex 16 of the Procedures reads as follows:

ART 9.- USERS of the PUBLIC SERVICE OF ELECTRICITY TRANSMISSION are the Generators, Distributors and Large Users recognised as agents of the WHOLESALE ELECTRICITY MARKET. DIRECT USERS of a TRANSMITTER are those who are physically linked to its facilities. INDIRECT USERS of a TRANSMITTER are those who are electrically linked to it through the facilities of other MEM agents.

ART 13.- Owners of facilities connected to the PUBLIC SERVICE OF ELECTRICITY TRANSMISSION shall grant third parties free, indiscriminate access to the transmission capacity of their systems in exchange for the right to receive the remuneration determined by the ENERGY SECRETARIAT. To this end, the owner and the party requesting access to its facilities shall comply with the terms of these Regulations.

Art 22 of Argentine Law 24.065 requires Transmitters to grant third parties indiscriminate access to their systems' transmission capacity which is not committed to meeting the contracted demand, under the conditions agreed by the parties and in accordance with the terms of this law.

c. Distributors

Art 9 of Argentine Law 24.065 concerns Distributors, who are responsible for supplying end-users who do not have the power to contract their supply independently within their concession area.

Distributors must satisfy any demand for electricity services required of them under the terms of their concession contract (Art 21).

As for the main obligations of Distributors, the following can be named:

1) Supplying electricity to anyone requesting it within the area of the concession. This may be a new supply or the extension of an existing one.

2) Ensuring quality of service, both from a technical and commercial standpoint.

3) Having fair, reasonable tariffs, pursuant to Art 2, para d) and Art 40 of Argentine Law 24.065.

Distributor users can only purchase energy from Distributors within their jurisdictional concession area at the price defined in the corresponding tariff table. The power and energy prices included in the tariffs vary among Distributors, since Medium and Low Voltage distribution depends on each Provincial jurisdiction.

d. Large Users

Art 10 of Argentine Law 24.065 defines a Large User as someone who independently contracts their own electricity supply with the Generator and/or Distributor. The

Regulation shall establish the relevant power and energy modules and other technical parameters characterising them.

Annex 17 of the Procedures divides LARGE USERS into:

1) MAJOR LARGE USERS (*GRAN USUARIO MAYOR*, GUME)
2) MINOR LARGE USERS (*GRAN USUARIO MENOR*, LUME)
3) INDIVIDUAL LARGE USERS (*GRAN USUARIO PARTICULAR*, GUPA).

All Large Users (whatever their classification) are supplied through the networks of the Distribution Companies. In accordance with the Procedures, Distributors shall grant access to its distribution facilities to Large Users located in its concession area who have contracts with Generators. Distributors charge a toll for this provision.

1.b. MEM monitoring and operation

The MEM is monitored and operated by two bodies, namely 1) ENRE and 2) CAMMESA, all without prejudice to the role of the National Energy Secretariat, which issues regulations and administrative acts in accordance with the powers delegated by the Executive Power and those arising from Argentine Law 24.065.

1) National Electricity Regulatory Body (*Ente Nacional Regulador de la Electricidad* – ENRE).

This autarkic entity is established within the Energy Secretariat (Art 54); its main functions include a) enforcing the regulatory framework and monitoring the provision of services and compliance with the obligations set out in concession contracts under national jurisdiction; b) issuing regulations to which market agents must adhere; c) establishing the basis for calculating tariffs and approving tariff tables; d) authorising power line easements; e) organising and implementing the system of public hearings provided for in the Law; and f) authorising the construction and operation of new facilities (Art 56). In addition, it exercises a jurisdictional function, since disputes arising between electricity market agents must be submitted to the prior compulsory jurisdiction of the Body in accordance with Art 72 (without prejudice to subsequent judicial review).

2) Argentine Wholesale Electricity Market Clearing Company (*Compañía Administradora del Mercado Mayorista Eléctrico*, CAMMESA).

CAMMESA, on the other hand, is the company in charge of the national dispatch of loads referred to in Art 35 of Argentine Law no 24.065 (which is currently the Body

in Charge of Dispatch), which has been set up as a non-profit corporation and whose main function is to manage the MEM.

CAMMESA was established by National Decree 1192/1992:

'The Argentine Wholesale Electricity Market Clearing Company (CAMMESA) is hereby established for the purpose of complying with the provisions of Article 35 of Law 24.065'. CAMMESA is now the Body in Charge of Dispatch (*Organismo Encargado del Despacho*, OED).

Art 3 of the annex to the Decree in question sets out the functions of the company:

'The corporate purpose of the Company is the following:

I) Managing the Argentine Interconnection System (*Sistema Argentino de Interconexión*, SADI) in accordance with the provisions of Argentine Law 24.065 and its complementary and regulatory rules. To this end, it shall be responsible for (a) determining the technical and economic management of the SADI with a view to maximising system security and supply quality and minimising wholesale prices in the hourly energy market (Spot Market); (b) forecasting power needs and optimising their meeting in accordance with rules established from time to time by the Electricity Secretariat; supervising the operation of the forward market and managing the technical management of the contracts entered into in that market;.

II) Representations, Mandates and Commissions: the Company may act as agent of the various stakeholders of the MEM and/or fulfil the commissions entrusted to it by them in relation to the allocation of power and energy; satisfaction of the load requirements of distributors and organisation and management of the use of the transmission facilities of the Spot Market; collection and/or payment and/or accreditation of the transactions entered into between the various stakeholders of the MEM, including operations in which the Company acts on its own behalf. For these purposes, the Company may act as a trading agent for energy and power coming from imports and binational undertakings, calculate the economic transactions and produce the information necessary for the invoicing of the actions and operations carried out in the MEM's Spot Market.

III) Purchase and Sale of Energy: purchasing and selling electricity from or to foreign countries – and carrying out the resulting import/export operations – as well as energy generated by binational entities.

IV) Services and Consultancy: providing services related to the activities referred to in Paragraphs I, II and III and, in particular, providing consultancy services in the abovementioned areas. For the fulfilment of its corporate purpose (which shall not include the pursuit of profit but the objective of achieving the maximum reduction in the price of electricity and the fulfilment of its functions in accordance with Article 35 of Argentine Law No. 24. 065 and any regulatory, complementary and/or substitutive rules that may be issued), the Company may perform all operations and enter into all corresponding contracts, always taking care to ensure transparency and fairness in the decisions affecting the MEM, allowing and facilitating the

execution of contracts freely agreed between the parties in the Forward Market and meeting the demand for power and energy required based on the recognition of energy and power prices to be established in accordance with the guidelines of the legal and regulatory provisions affecting the activity of generation, distribution and transmission of electricity.

For all the above purposes, the Company shall have full legal capacity to acquire rights, incur obligations and carry out all operations not prohibited by law or by these bylaws'.

The term Load Dispatch refers to the physical system by which the electricity offered reaches its demanders through the transmission network, thus achieving real-time equality of supply and demand at economic prices.

The Dispatch is the body that, on ascertaining the increase in demand, decides which Generator will buy its load, thereby allowing it to enter the system and strike a balance.

In turn, this technical Dispatch is directly related to economic dispatch, since the latter will be based on a merit ranking that the company itself draws up on an hourly basis with the prices reported by each Generator. The first on the list will be the one offering the lowest price for its energy, while the last one will be the one with the highest price. This way, prices in the Wholesale Market are minimised.

This procedure determines the marginal cost of the system, which is equivalent to that of the most inefficient or costly generating machine in operation. Therefore, when CAMMESA detects a lack of energy or an imbalance within the system, it has to dispatch it or grant access to a generator to cover the increase in demand. This generator will be the one with the lowest cost in the merit ranking, but the most expensive of all the generators covering the increased demand at that time. Since the system is based on marginal costs, the last generator to enter, or be dispatched within a given time frame, will determine the energy price of all generators supplying the market in that time period. Therefore, the most efficient generator will obtain the profit it had determined in its price plus the difference between its price and the price of the last generator to enter the market.

In the spot market, the price of the energy produced is set according to the marginal price of the system. In other words, the price of the last machine to enter the market is considered in order to balance supply and demand, which, according to the marginalist theory, is the one that determines the price of the other machines.

Art 36 of Argentine Law 24.065 clearly states that the cost incurred by the community as a result of energy not supplied must be taken into account when determining the economic cost of the system.

In connection with economic dispatch, CAMMESA is in charge of the management of the invoicing, collection, payment and financial operation of market funds.

With regard to the administration of the MEM, the Company is responsible for supervising the operation of the forward market, which implies ensuring compliance with contracts and their authorisation based on the transport capacity of the networks linking the generator and the large user or distributor, planning power needs and optimising their implementation in accordance with the rules set by the National Energy Secretariat.

With regard to the contents of the second section, CAMMESA acts as the agent of the various players in the Wholesale Electricity Market with respect to the allocation of power and energy, the organisation and management of the use of transmission facilities in the spot market, and the marketing of energy and power coming from imports. The Argentine Interconnection System is physically linked to neighbouring countries and binational ventures; additionally, it manages the collection, payment or accreditation of transactions between MEM actors.

CAMMESA is a non-profit privately managed company with a public purpose. Its activities are nationally relevant and essential for the free circulation of electricity. Moreover, it is included in the terms of Art 12 of Argentine Law 15.336, so that provinces cannot impose any taxes or fees that may affect the constitution and fulfilment of the company's corporate purpose, as stated in the abovementioned article of the law.

In closing on the subject of the authorities of the Wholesale Electricity Market, one cannot fail to mention the importance of the National Energy Secretariat, whose main functions are to define policies for the sector and supervise their compliance, grant recognition to MEM agents, and resolve appeals lodged against ENRE's actions (all without prejudice to subsequent judicial proceedings).

1.2 Have Directive (EU) 2018/2001 and Directive (EU) 2019/944 been transposed in your country? Which legislative instruments have transposed the Directives?

1.2.a Renewable Energy Sources

MERCOSUR does not have a regulation similar to EU Directive 2018/2001. The most similar one would be:

'The Committee on Infrastructure, Transport, Energy Resources, Agriculture, Livestock and Fisheries of the MERCOSUR Parliament refers to the Plenary for consideration, at the 23rd Ordinary Session – to be held on 10 May in Montevideo, Uruguay –, of a report recommending the approval of the Proposal for a Recommendation on the harmonisation of the national programmes and legislations of Member States on the 'Promotion and Development of Renewable Energies'.

The Proposal is a Recommendation to the Common Market Council (*Consejo del Mercado Común*, CMC) concerning the depletion of fossil fuels in the near future and

the need for States to reconvert their energy matrixes, thereby developing new types of clean energy (…)'. [7]

At the national level, there have been a series of laws promoting renewable energies. Among them is Argentine Law 25.019[8], known as the 'National Wind and Solar Energy Scheme', which was passed in 1998. This law declared the generation of electricity from wind and solar energy to be of national interest, thus promoting research and the use of non-conventional or renewable energies, and included provisions for the promotion of this activity.[9]

2006 saw the enacting of Argentine Law 26.093, which establishes the promotion scheme for the sustainable production and use of biofuels in the territory of the Argentine Nation. The law establishes a National Advisory Commission whose functions are to promote and monitor the sustainable production and use of biofuels. The regulation defines biofuels as bioethanol, biodiesel and biogas, which are produced from raw materials of agricultural, agro-industrial or organic waste origin that meet the relevant quality requirements. It also establishes the proportion allowed for the blending of biofuels with fossil fuels. The National State has to consume a higher percentage of biofuels – or biofuels alone –, thus avoiding the use of traditional fossil fuels. The law establishes the promotion scheme and the relevant beneficiaries, as well as a system of infractions and penalties.[10]

Argentine Law 26.190, entitled 'National Promotion Regime for the use of Renewable Energy Sources for Electricity Production' was passed subsequently with the goal of achieving a renewable energy contribution of 8% to national electricity consumption within a period of 10 years (Art 13 establishes that the present scheme is complementary to the one established by Argentine Law 25.019). Argentine Law 26.190 includes the various types of non-fossil renewable energy sources (wind, solar, geothermal, tidal, hydro, biomass, landfill gas, sewage treatment plant gas, biogas for electricity production and hydroelectric plants of up to 30 MW) within its scope of application and establishes the objective (but not the obligation) of achieving a renewable energy contribution of 8% to national electricity consumption within 10 years of the law's entry into force.[11]

The regulatory and promotional institutes established in Argentine Law 26.190 did not manage to boost the renewable energy industry either. The Renewable Energy Trust Fund was not set up. The additional funding for renewable energy projects was thus not allocated.

[7] Available at https://www.parlamentomercosur.org/innovaportal/v/4114/ 1/parlasur/parlasur-propone-desarrollo-de-energias-renovables.html (last visited 24 november 2021).

[8] Available at http://servicios.infoleg.gob.ar/infolegInternet/anexos/50000-54 999/53790/texact.htm (last visited 24 november 2021).

[9] Available at http://servicios.infoleg.gob.ar/infolegInternet/anexos/50000-54 999/53790/norma.htm (last visited 24 november 2021).

[10] Available at http://servicios.infoleg.gob.ar/infolegInternet/anexos/115000-119999/116299/norma.htm (last visited 24 november 2021).

[11] Available at http://servicios.infoleg.gob.ar/infolegInternet/anexos/120000-124999/123565/norma.htm (last visited 24 november 2021).

It was with Argentine Law 27.191,[12] which modifies Argentine Law 26.190 and especially its regulation in accordance with Decree 531/2016[13], that the production of electricity from renewable sources experienced a quantitative leap, as it became a long-term State policy.[14]

Said law was called 'National Promotion Scheme for the use of Renewable Energy Sources for the Production of Electricity' and had the objective of achieving a renewable energy contribution of 8% to national electricity consumption within a period of 10 years.[15]

It stated that non-fossil renewable energy types suitable for use are wind, solar thermal, solar photovoltaic, geothermal, tidal, wave, ocean current, hydropower, biomass, landfill gas, sewage treatment plant gas, biogas and biofuel.[16] It went from containing a mere declaration or expectation, as was the case with Argentine Law 26.190, to setting a goal requiring the participation of all users. It also extended the original deadline of December 2016 by an additional year.

Additionally, Argentine Law 27.191 implemented the so-called 'Second Stage of the National Promotion Scheme for the Use of Renewable Energy Sources for Electricity Production' for the years 2018 to 2025. The ambitious objective of the scheme is to bring the contribution of renewable energy sources to twenty percent of national electricity consumption by 31 December 2025.

These obligations must be met gradually (Art 8 of Argentine Law 27.191) and according to the following schedule: a minimum of 8% of total electricity consumption by 31 December 2017; 12% by 31 December 2019; 16% by 31 December 2021; 18% by 31 December 2023; and 20% by 31 December 2025.

Although the Renewable Scheme covers all electricity users in the country, in practice, Large Users are the main obligors, as their failure to comply with the targets set by Art 8 will make them liable to a heavy fine (Art 11 of Argentine Law 27.191).

In order to comply with this legal mandate, Art 9 of the Renewable Scheme provides that Large Users may self-generate or contract the purchase of energy from different renewable sources. The regulation also establishes that the purchase of renewable energy may be made from the generator itself, through a distributor purchasing it from a generator on its behalf, from a trader or directly from CAMMESA.

[12]Available at http://servicios.infoleg.gob.ar/infolegInternet/anexos/250000-254999/253626/texact.htm (last visited 24 november 2021).

[13]Available at http://servicios.infoleg.gob.ar/infolegInternet/anexos/255000-259999/259883/texact.htm (last visited 24 november 2021).

[14] J. H. Grando et al, 'Renewable energy sources in argentina: legal, tax and public policy aspects' available at https://repositorio.unne.edu.ar/bitstream/handle /123456789/28129/RIUNNE_%20FDCSP_AC_Grando-Goldfarb-Medina.pdf?sequence=1&isAllowed=y (last visited 24 november 2021).

[15]Available at http://servicios.infoleg.gob.ar/infolegInternet/anexos/120000-124999/123565/norma.htm (last visited 24 november 2021).

[16]Available at http://servicios.infoleg.gob.ar/infolegInternet/anexos/250000-254999/253626/norma.htm (last visited 24 november 2021).

Given the obligation of Large Users with demands greater than 300 kW to purchase renewable energy (and the penalties for non-compliance – Art. 11 of Argentine Law 27.191), it is important to explain the ways in which this obligation may be met.

1) Jointly with CAMMESA.

Annex II, Art 9 of Decree 531/2016 specifies that such users can choose between: a) participation in the joint purchase mechanism carried out by CAMMESA, through public tenders; b) individual contracting of electricity through contracts between private parties (generators, traders); and c) self-generation or cogeneration of electricity from renewable sources.

With respect to PPAs (Power Purchase Agreements) between private parties, Resolution 281-E/2017[17] of the Argentine Ministry of Energy and Mining should be taken into account, as it assumes that if a Large Qualified User (*Gran Usuario Habilitado*, GUH) does not expressly state its will to be excluded from CAMMESA's joint purchase scheme, it will consequently be considered to be included in such scheme. In other words, the joint purchase scheme is established as the general rule or by default, while the PPA scheme is established as the exception that must be requested by the interested GUH. In this sense, Resolution 281 regulates the mechanism by which the GUHs may opt out of CAMMESA's joint purchase regime.

The main purpose of a PPA between private parties is to make available to the Large User a certain annual amount of energy during the term of the agreement, so that it may meet its consumption targets. For its part, the Large User must pay a price as consideration for the energy supplied by the Renewable Energy Generator. The first PPAs between private parties were signed at the end of 2017, and there are currently hundreds of them.

With a view to achieving the targets for the contribution of renewable energy sources established by Argentine Law 27.191, the contribution of all electricity users was established as a mandatory requirement; consequently, each subject is obliged to achieve the gradual and progressive incorporation of its own electricity consumption with energy from renewable sources, in accordance with a pre-established schedule.

However, special emphasis was initially placed on large users of the MEM and customers of distributors with a minimum power demand of 300 kW, as they 'must comply effectively and individually'; to this end, they may self-generate energy, purchase it from different renewable sources or participate in other mechanisms provided for in the legislation, such as the joint purchase mechanism or the tendering system.

To this end, the law expressly excluded the application of existing or future rules that may limit, prevent or prohibit the conclusion of supply contracts between generators and distributors and large users.

[17] Available at https://www.argentina.gob.ar/normativa/nacional/resoluci% C3%B3n-281-2017-278429 (last visited 24 november 2021).

With regard to the remaining demand – that which is less than 300 kW –, the law mandated the authority to provide the measures required for the incorporation into the MEM of the supply of electricity from renewable sources that would make it possible to achieve the objectives envisaged in the regulation in due time and form.

Lastly, the electricity dispatch priority set for electricity from intermittent renewable resources, which was equated to that received by hydroelectric plants, is worth highlighting.

As a first step to comply with Argentine Law 27.191, May 2016 saw the implementation of the RenovAr Programme, which consists of a series of open calls (both national and international) for investment projects in renewable energy and includes a set of tax benefits, specific financing mechanisms and regulatory and contractual changes in order to make the procurement of renewable energy operational.

The tax benefits contemplated in Argentine Law 27. 191 include the early refund of Value Added Tax (VAT), accelerated depreciation in income tax on investments in plant and equipment, exemption from Minimum Presumptive Income Tax, the possibility of cancelling Income Tax with previous losses for a period of up to 10 years, exemption from import duties on capital goods, parts, components and raw materials of goods that are not produced locally (or that are necessary for integration with locally manufactured goods), and the obtainment of a tax certificate applicable to the payment of national taxes for a value equivalent to 20% of the national component integrated in electromechanical installations. This benefit applies if 60% of electromechanical installations are made up of national components, excluding civil works, or a lower percentage – but not less than 30% – if the absence of national production is demonstrated.[18]

RenovAr's contractual architecture is based on a 20-year Power Purchase Agreement (PPA) between the company that is awarded the project and CAMMESA, ie, the organisation in charge of electricity dispatch, which acts on behalf of end users (Distributors and Large Users). Under this PPA, companies undertake the obligation to build, operate and maintain the facilities resulting from the award process. All the energy generated is sold to CAMMESA. The price paid depends on the award process, is fixed in dollars and includes an annual adjustment factor and an incentive factor, which declines over the term of the contract.

This is referred to as 'project finance',[19] meaning that the financing is not based on credit backing or assets, but on the technical, economic and financial performance of the project being financed. In other words, the repayment of capital and the servicing of interest and other financing costs depend solely on the project's ability to generate sufficient cash flow to cover the financing and a return for investors. Therefore, when the project is brought to the forefront, it is carefully

[18] J. C. Cueva and G. A. Viña, 'Regulating the production and use of electric energy from renewable sources: legal basis for its development' available at https:// udesa.edu.ar/revista/suplemento-de-energia-y-recursos-naturales/articulo/ regulacion-de-la-produccion-y-uso-de (last visited 24 november 2021).

[19] J. M. de Hoz (h) and M. Blanco, 'Finance and renewable energy project' available at https://udesa.edu.ar/revista/suplemento-de-energia-y-recursos-naturales/ articulo/project-finance-y-energias-renovables (last visited 24 november 2021).

analysed in terms of feasibility, financial viability, profitability and, above all, exposure to risk factors. In general, up to now, projects have tended to lean towards the 'non-recourse lending' modality.

In parallel to the PPA, companies adhere to the Trust Fund for the Development of Renewable Energies (*Fondo Fiduciario para el Desarrollo de Energías Renovables*, FODER), which was established by Argentine Law 27.191 and is regulated by Resolution of the Argentine Ministry of Energy and Mining 147-E/2016.[20] FODER is a public trust fund made up, among others, of contributions that the National Treasury must make annually (in its capacity as trustee) at the request of the authority responsible for applying this law in order to meet the established goals.

This fund also constitutes a financing tool for projects and a guarantee (through Treasury Bills) for the purchase contract with CAMMESA, which includes the right of purchase by the State or the right of sale by the generating company in the event of breach of contract.

In addition, support from multilateral organisations has been obtained. Early on, in 2017 and 2018, the World Bank was involved through a third level guarantee for a total of USD 480 million – all stages of this programme included. At the beginning of 2019, the Inter-American Development Bank (IDB), in its capacity as the implementing agency of the Green Climate Fund, joined the programme with a loan contract for USD 100 million channelled through the Domestic Trade and Investment Bank (*Banco de Inversión y Comercio Interior*, BICE) – the local development bank –, either directly or through financial institutions, to fund investments by Argentine SMEs in renewable energy projects based on specific technologies (biogas and biomass) and other energy efficiency projects. In this case, the BICE, in addition to being the executor of this programme, committed to co-finance it with an additional USD 60 million.

The implementation of long-term supply contracts with fixed prices arising from public tenders is a mechanism that is internationally acknowledged to reduce investors' risk to reasonable levels, although this may mean greater future expenses for the government counterpart in a context of decreasing prices when it comes to renewable energy technologies.

On the other hand, the financing of this type of projects in developing countries usually faces a number of difficulties, which the RenovAr Programme also sought to solve, on the one hand, by setting the supply contract tariffs in dollars and, on the other hand, by implementing the FODER as a financing and reciprocal guarantee mechanism.

Indeed, exchange rate uncertainty due to macroeconomic instability – particularly in such a long-term context – poses a high risk for projects that are usually financed in foreign currency, if their revenues are not also denominated in a hard currency.

At the time of the approval of Argentine Law 27.191, Argentina had an installed renewable energy capacity equivalent to less than 2% of the electricity matrix.

[20]Available at http://servicios.infoleg.gob.ar/infolegInternet/anexos/260000-264999/264230/norma.htm (last visited 24 november 2021).

Regulatory shortcomings and limited access to financing sources meant that only a few projects had been realised until then. Since 2015, hundreds of projects have been awarded and currently stand at around 10%. This implies that this trajectory must be sustained in order to meet the 20% target by 2025. The record supply of renewable energies was reached on 22 August 2021 with 24.72% – which is due to a drop in other energy sources such as hydroelectric (Yacyretá).

July 2021 saw the passing of Argentine Law 27.640, which approved the regulatory framework for biofuels, thus regulating all activities related to the production, storage, commercialisation and blending of biofuels; the law will remain in force until 2030 and may be extended for a further 5 years.

The implementing authority is the Energy Secretariat of the Argentine Ministry of Economy. The term 'biofuel' refers to bioethanol and biodiesel that meet the quality requirements established by the implementing authority and that are produced in plants installed in Argentina from national raw materials of agricultural, agro-industrial or organic waste origin.

The law makes it compulsory for all diesel or diesel oil fuel to be blended with biofuels accounting for at least 5% of the total volume.

Fuels classified as naphtha must include at least 12% biofuel.

Bioethanol can be either sugarcane-based or corn-based. The law establishes exemptions and a series of other rules that are not discussed in this summary. This law repeals previous regulations.

It is also worth mentioning that, by 2016, several provinces already had regulations governing the distributed generation of energy from renewable sources and the way in which this energy would be injected into the public network. This scenario will continue to evolve towards better regulations that will enable new styles of energy production and consumption.[21]

The law that has had the greatest impact on this issue is Argentine Law 27.424, which establishes the scheme for the promotion of the integration of the distributed generation of renewable energy into the public electricity network. This law establishes the policies and legal and contractual conditions for the generation of electricity from renewable sources for the purposes of self-consumption by users of the distribution network and the possible injection of surpluses into the network, with service providers having to facilitate such injection.[22]

This Law recognises the national importance of the distributed generation of electricity from renewable energy sources for the purposes of self-consumption and the injection of any surplus electricity into the distribution network, all under the technical guidelines established by the regulations in line with federal electricity planning; the goal is to promote energy efficiency, reduce losses in the interconnection system, and achieve the levels of environmental protection provided for in Art 41 of the National Constitution of Argentina and the protection

[21] Available at http://www.argentinagbc.org.ar/?articulos=seis-provincias-con-normativa-de-generacion-distribuida-de-energias-rebovables (last visited 24 november 2021).

[22] Available at http://servicios.infoleg.gob.ar/infolegInternet/anexos/305000-309999/305179/norma.htm (last visited 24 november 2021).

of users' rights in terms of equity, non-discrimination and free access to electricity transmission and distribution services and facilities.

By means of Argentine Law 6.428, the province of Corrientes, which is home to the Faculty of Law and Social and Political Sciences of the UNNE, established the scheme for the promotion of the integration of the distributed generation of renewable energy into the Public Electricity Network.[23]

Moreover, August 2019 saw the province adhere to Argentine Law 27.424 through Provincial Law no 6503.[24]

Let us not forget that although biofuels constitute a renewable energy source, they cause tensions from an environmental point of view: on the one hand, they compete with food production (both sugarcane and maize being food crops), thereby contributing to the advance of the agricultural frontier by causing deforestation and conflicts over land use – since extensive livestock farming and other crops are produced on the basis of soil resources. At the same time, although this kind of production makes the use of fossil fuels more flexible, said use should be controlled and managed rationally, so as not to increase its contribution to global climate change.

It should also be remembered that Argentina ratified the Paris Agreement of the Tokyo Protocol, thus committing to reducing its contribution to greenhouse gas emissions and redirecting production towards increasing proportions of non-polluting renewable energies.

1.2 If the Directives have not been transposed into national law, please indicate (if available) the draft laws under discussion for future transposition and, where appropriate, the websites where they can be consulted.

These new mixed subspecies of consumer-suppliers have not yet been accepted by the law, although initial progress has been made by the doctrine.

However, technological progress and the influence of the media will surely lead to the consolidation of these new figures; at the same time, their legal protection must be demanded.

2 What are the main policies for the development of prosumerism, self-consumption and renewable energy communities?

Some say Alvin Tofler was the first to combine the words 'producer' and 'consumer' back in the 1980s, thus inventing the term 'prosumer'. Today, this label has been enhanced and broadened by including the use that can be made of available technology. Every consumer is potentially a producer, or vice versa.

[23] Available at https://www.energiaestrategica.com/wp-content/uploads/ 2020/04/Ley6428.pdf (last visited 24 november 2021).

[24] Available at http://www.saij.gob.ar/6503-local-corrientes-regimen-fomento-generacion-distribuida-energia-renovable-integrada-red-electrica-publica-adhesion-provincial-ley-nacional-27424-lpw0006503-2019-08-29/123456789-0abc-defg-305-6000wvorpyel (last visited 24 november 2021).

Although prosumers are not yet as widespread in Argentina – since we have a higher percentage of passive consumers –, they do exist, and I believe our society can become prosumer-oriented more quickly than other regions.

The emergence of food consumers eager to know what they are eating and the need to protect the environment has led to an increase in the number of prosumers.

A Telam report states that the emergence of prosumers in Argentina was prompted by the application of Argentine Law no 27.424 on the distributed generation of renewable energy.[25]

The same applies to national government agencies.[26]

In 2017, Argentine Law 27.424[27] on Distributed Generation complemented the framework necessary to drive the transformation of the national electricity system.

Art 1 of the Law grants the Distributor's users the right to use renewable energy sources to generate their own energy for self-consumption purposes; any surplus can be injected into the electricity network in exchange for remuneration.[28] Moreover, it lays down the obligation of public distribution service providers to facilitate such injection by ensuring free access to the distribution network, without prejudice to the provinces' own powers.

The Law establishes a Trust Fund for the Development of Distributed Generation (*Fondo Fiduciario para el Desarrollo de la Generación Distribuida*, FODIS). This fund is set up as a financial administration trust fund to grant promotional benefits (Art 16). At the beginning of 2018, the Law was amended by Decree 986,[29] which established the target of incorporating 1,000 MW of installed distributed generation capacity by 2030. In addition, the Government Energy Secretariat (*Secretaria de Gobierno de Energía*, SGE) was designated as the Implementing Authority. At the end of 2018, Resolution 314 of the SGE was issued, thereby creating the RENUGER, ie, the National Registry of Renewable Energy Users-Generators.

The Law also establishes a system of promotional benefits, including a Tax Credit Certificate pursuant to Art 28.

The different categories established in the national regulations by the application authority of the scheme are as follows:

- Small User-Generators (*Usuarios-Generadores pequeños*, UGpe): User-Generators that install Low Voltage Distributed Generation Equipment with a power not exceeding THREE KILOWATTS (3 kW).

[25] Available at https://www.telam.com.ar/notas/201911/408468-crece-en-el-pais-el-numero-de-usuarios-que-generan-su-propia-energia-renovable.html (last visited 24 november 2021).

[26] Available at https://www.argentina.gob.ar/economia/energia/generacion-distribuida (last visited 24 november 2021).

[27] Available at http://servicios.infoleg.gob.ar/infolegInternet/anexos/250000-254999/253626/texact.htm (last visited 24 november 2021).

[28] N. Perkins and M. Guzian, 'Distributed generation: the next step in renewable energy' available at https://udesa.edu.ar/revista/revista-juridica-de-la-universidad-de-san-andres-nro-5/articulo/generacion-distribuida-el-0 (last visited 24 november 2021).

[29] Available at http://servicios.infoleg.gob.ar/infolegInternet/anexos/315000-319999/315993/norma.htm (last visited 24 november 2021).

- Medium User-Generators (*Usuarios-Generadores medianos*, UGme): User-Generators that install Low or Medium Voltage Distributed Generation Equipment with a power greater than THREE KILOWATTS (3 kW) and up to THREE HUNDRED KILOWATTS (300 kW).
- Larger User-Generators (*Usuarios-Generadores mayores*, UGma): User-Generators that install Low or Medium Voltage Distributed Generation Equipment with a power greater than THREE HUNDRED KILOWATTS (300 kW) and up to TWO MEGAWATTS (2 MW).

The city of Buenos Aires and the provinces are invited to adhere to the scheme of the Law.

2.1 Provide some examples (if known) of good practices of prosumerism, self-consumption or energy communities that have been tested in your country (provide the link to related websites).

This activity is recent. For example, there is a 'Handbook of Good Practices for Responsible Energy Use in Schools'.[30]

The first examples of prosumers are beginning to be identified.[31]

Companies related to the sector are beginning to use new language: for instance, they claim that electricity networks are moving towards a paradigm of distributed generation whereby renewable sources will play a greater role and self-consumption and prosumers will radically transform the sector.[32]

In this sense, it is interesting to note that the doctrine anticipates that Argentina's future energy transition will inevitably favour prosumers.[33]

Energy communities are not part of national law. However, some provinces, such as Cordoba, are carrying out several initiatives related to distributed generation, which have recently added this preliminary medium-scale model for communities. This model is based on a form of distributed generation that is community-based, renewable and connected to the province's public network, as an alternative to existing self-consumption systems.

In this sense, the Argentine Ministry of Public Services approved a resolution to produce grid-connected community distributed renewable energy as another alternative for self-generation and non-polluting energy consumption.

The resolution covers the technical, economic and administrative aspects required for participatory renewable generation, which will operate according to three points:

[30] Available at https://www.argentina.gob.ar/sites/default/files/guia_escuelas_ abril_2019_vf.pdf(last visited 24 november 2021).

[31] Available at https://www.infobae.com/sociedad/2020/05/10/pionero-de-la-energia-solar-fue-el-primer-prosumidor-de-la-argentina-y-cree-que-el-pais-puede-exportar-sol/(last visited 24 november 2021).

[32] Available at https://www.pwc.com.ar/es/publicaciones/eye-to-eye/future-in-sight/futuro-energia-electrica-prosumidores.html (last visited 24 november 2021).

[33] Available at https://www.actualidadjuridicaambiental.com/wp-content/uploads/2018/01/2018_01_08_Inevitable-transicion-energetica-Argentina.pdf (last visited 24 november 2021).

1. Several users (ie, commercial, industrial, public, non-governmental and/or domestic users) shall own, in whatever proportion they wish, one or several renewable energy generation sources: Wind generator; Water turbine; Solar farm; Biodiesel or biogas generator.
2. The energy generated at the most convenient location shall be transmitted through the public network to the place where it is consumed by the co-owners, whether it be a home, a municipality, an ice-cream parlour or a workshop.
3. Each user's energy bill shall include a credit in pesos for the energy generated.

2.2 Provide some examples (if any) of case law/leading cases in the field of prosumerism and energy communities.

Given the very recent nature of the laws on renewable energy, no specific rulings have been made so far.

However, one could mention the withdrawal of an injunction that had been filed to stop the installation of a solar park in the Province of La Rioja at the end of 2017, which entailed an investment of USD 40 million. The aim was for the province to charge for the use of solar energy.[34]

Similarly, in the city of Puerto Madryn, which is part of the province of Chubut, the City Council introduced a tax to be paid by companies that produce wind energy.[35] This tax was approved in January 2020 but was only added to the budget in November and approved unanimously.

Initially, the tax was to be equivalent to 4.5% of the turnover of the companies that produce this type of energy, but criticism from businessmen led to a change in the amount, which will now be defined by the surface area and not by the turnover of the companies in general. Complaints from the companies are currently being lodged with the National Energy Secretariat.

2.2.a PERMER Programme.

A programme was launched at the end of 1999 which tries to solve the problems related to access to energy on a national scale through the use of alternative sources – ie, photovoltaic energy. The programme is known as the Project for Renewable Energies in Rural Markets (*Proyecto de Energías Renovables en Mercados Rurales*, PERMER).[36]

[34] Available at https://www.losandes.com.ar/la-rioja-polemica-por-una-propuesta-de-cobrar-el-uso-del-sol-a-un-parque-de-energia-solar/ (last visited 24 november 2021).

[35] Available at https://eleconomista.com.ar/economia/la-camara-renovables-fustigo-impuesto-viento-puerto-madryn-n40775 (last visited 24 november 2021).

[36] M. Schmukler and S. Garrido, 'Renewable energies and rural electrification policies in argentina. an analysis of the socio-technical trends in the renewable energy in rural markets project (permer)' available at https://

The programme is presented as a complement to the electricity network model targeted at communities and rural areas that are isolated from energy supply.

The Argentine State signed an agreement with the World Bank for an IBRD loan. Both the nation and the provinces are involved in the implementation of the programme, which is carried out in the field and maintains the equipment installed.

So far there have been different stages, the last one being the planning of an extension of the programme; a third loan was requested from the World Bank, which was approved and granted in April 2015, for a total amount of USD 200,000,000 (World Bank, 2015); this sum that will enable the most ambitious part of the project to be launched, which entails the expansion of the scope by involving all provinces, thus increasing the number of users and diversifying the uses made of the energy produced.

In conclusion, from an environmental point of view, environmental education – and in this case, energy education – is an essential condition not only for a holistic educational experience based on human rights that is aimed at promoting sustainable development and ensuring the sustainability of future generations, but is also a fundamental tool for transforming the world and providing citizens with a solid environmental awareness based on the rational and efficient use of available energy resources, especially those that are renewable and non-polluting.

www.researchgate.net/publication/322159675_ENERGIAS_RENOVABLES_Y_POLITICAS_DE_ELECTRIFICACION_RURAL_EN_ARGENTINA_ANALISIS_DE_LA_TRAYECTORIA_SOCIO-TECNICA_DEL_PROYECTO_DE_ENERGIAS_RENOVABLES_EN_ MERCADOS_RURALES_PERMER (last visited 24 november 2021).

Brazil

Ari Rogério Ferra Júnior

1 Provide an overview of the energy regulatory framework in your country. What is the main legal source of energy policy? What are the additional sources?

In Brazil, the institutional model of the electricity sector is composed of different segments, such as the Ministry of Mines and Energy (MME), National Energy Policy Council (CNPE), Electric Sector Monitoring Committee (CMSE), National Electric Energy Agency (ANEEL), National Electric System Operator (ONS), Electric Energy Trading Chamber (CCEE), and Energy Research Company (EPE). For example:

- The Ministry of Mines and Energy (MME) is the main institutional agent in the electricity sector. Among the current competences are the promotion of the development and adoption of new technologies related to the energy sectors, national sustainability policies and economic, social and environmental development of electrical, energy and mineral resources.[1]

- The National Energy Policy Council (CNPE), chaired by the Minister of Mines and Energy, is responsible for advising the President of the Republic on the formulation of energy policies and guidelines.[2]

- The Electric Sector Monitoring Committee (CMSE), also chaired by the Minister of Mines and Energy, is responsible for permanently monitoring and evaluating the continuity and safety of the energy supply in the Brazilian territory. The CMSE is composed of four members of the MME and the following bodies: National Electric Energy Agency (ANEEL); National Petroleum Agency (ANP); Electric Energy Commercialization Chamber (CCEE); Energy Research Company (EPE); and National Electric System Operator (ONS). [3]

- The National Electric Energy Agency (ANEEL) is a federal autarchy with the function of regulating and inspecting the electricity sector, following the policy determined by the Ministry of Mines and Energy (MME). Among ANEEL's competences are: regulating the production, transmission, distribution and commercialization of electric energy; implementing federal government policies and guidelines relating to the exploitation of electric energy and the use of hydraulic potentials; definition of criteria and methodology for determining tariffs.[4]

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[1] See Art 1 of Annex I of Decree no. 9675, 2 January 2019 available at http:// www.planalto.gov.br/ccivil_03/_ato2019-2022/2019/decreto/D9675.htm (last visited 13 November 2021).

[2] See National Energy Policy Council (CNPE) available at https:/ /www.gov.br/mme/pt-br/assuntos/conselhos-e-comites/cnpe (last visited 13 November 2021).

[3] See Electric Sector Monitoring Committee (CMSE) available at https:// www.gov.br/mme/pt-br/assuntos/conselhos-e-comites/cmse (last visited 13 November 2021).

[4] See National Electric Energy Agency (ANEEL) available at https:// www.aneel.gov.br/competencias (last visited 13 November 2021).

- The National Electric System Operator (ONS) is an agency that coordinates and controls companies dedicated to the generation, transmission and distribution of electricity. The main role of the ONS is to supervise generation and transmission operations in the National Interconnected System (SIN).[5]

- The Electric Energy Trading Chamber (CCEE) is a civil association responsible for enabling energy purchase and sale activities throughout Brazil. CCEE is in charge of calculating and disclosing the settlement price of differences (PLD).[6]

- Finally, the Energy Research Company (EPE) aims to provide services in the area of studies and research intended to support the planning of the energy sector, through renewable energy sources and energy efficiency, but also including oil, natural gas and their derivatives.[7]

1.1 Define briefly the existing legal and financial measures in your country in order to promote the use of energy from renewable sources and to facilitate the energy transition. In particular, are there any incentives, economic and tax benefits?

The most important program is the 'Incentive Program for Alternative Sources of Electric Energy (PROINFA)', which aims to promote the presence of alternative energy sources with the aim of diversifying the country's energy matrix.

PROINFA was created by the federal government, Law no 10.438/02,[8] with the objective of increasing the participation of alternative sources of electric energy, precisely to decentralize the production that today belongs mainly to hydroelectric plants. Renewable energy sources such as small hydroelectric plants (PCHs), wind farms and biomass plants are encouraged to increase their participation in the national territory.

The biggest incentive currently is the electric energy compensation system (SCEE),[9] in which all active energy injected by a consumer unit with micro-generation or distributed mini-generation is transferred, through a free loan, to the local distributor and subsequently compensated with the active electricity consumption.[10]

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[5] See National Electric System Operator (ONS) available at http:// www.ons.org.br/paginas/sobre-o-ons/relaeamentos (last visited 13 November 2021).

[6] See Electric Energy Commercialization Chamber (CCEE) available at https:// www.ccee.org.br/portal/faces/pages_publico/onde-atuamos/com_quem_se_relaciona?_afrLoop=138649218780434&_adf.ctrl-state=cm1r20so1_1#!%40%40%3F_afrLoop%3D138649218780434%26_adf.ctrl-state%3Dcm1r20so1_5 (last visited 13 November 2021).

[7] See Energy Research Company (EPE) available at https://www.epe.gov.br /pt/publicacoes-dados-abertos/publicacoes/balanco-energetico-nacional-2021 (last visited 13 November 2021).

[8] Law no 10.438, 26 April 2002 available at http://www.planalto.gov.br/ ccivil_03/leis/2002/L10438.htm (last visited 13 November 2021).

[9] See Resolution no 482, 17 April 2012, amended by Resolution no 687, 24 November 2015, both issued by the National Electric Energy Agency (ANEEL).

[10] See Electric Power Compensation System available at https:// www.aneel.gov.br/home?p_p_id=101&p_p_lifecycle=0&p_p_state=maximized&p_p_mode=view&_101_struts_action=/asset_publisher/view_content&_101_returnToFullPageURL=/&_101_assetEntryId=15056099&_101_ty

Another relevant tax incentive is agreement no 101/97[11] of the National Council for Finance Policy (CONFAZ), which establishes 'ICMS exemption in operations with equipment and components for the use of the solar and wind energy that it specifies'. The tax on the circulation of goods and services (ICMS) is a state tax under the jurisdiction of the states and the Federal District, pursuant to Art 155, II, of the Brazilian Federal Constitution. In addition, the agreement no 16/15[12] establishes the 'exemption in internal operations related to the circulation of electric energy, subject to billing under the Electric Energy Compensation System referred to in Normative Resolution n. 482, of 2012, of the National Agency of Electric Energy – ANEEL'.

In addition to the ICMS tax exemption, Brazil also has Law n. 13.169/15 which reduced to zero the PIS/Pasep and Contribution to Social Security Financing (COFINS) rates, also Brazilian taxes, levied on offset energy.[13]

1.2 Have the Directive (EU) 2018/2001 and the Directive (EU) 2019/944 been transposed in your country? Which are the legislative instruments that have transposed the Directives?

Does not apply to Brazil.

1.2.1 Provide a short description of the main changes on energy policies introduced with the transposition of the Directive (EU) 2018/2001 (e.g. adoption of the specific support schemes for energy from renewable sources; adoption of regulations and codes for the enforcement of administrative procedures; particular rules for the creation of the community energies, etc.) and of the Directive (EU) 2019/944 (e.g. rules on the generation, transmission, distribution and supply of electricity; specific rules on the protection of the consumers; provisions on the creation of citizen energy communities, etc.).

Does not apply to Brazil.

pe=content&_101_groupId=656835&_101_urlTitle=sistema-de-compensacao-de-energia-eletrica&inheritRedirect=true (last visited 13 November 2021).

[11] See ICMS Agreement 101, 12 December 1997 available at https:// www.confaz.fazenda.gov.br/legislacao/convenios/1997/CV101_97 (last visited 13 November 2021).

[12] See ICMS Agreement 16, 22 April 2015 available at https://www.confaz.fazenda.gov.br/legislacao/convenios/2015/CV016_15 (last visited 13 November 2021).

[13] See Law n. 13.169, October 6, 2015. which provides in its: Art. 8 The rates of the Contribution to the PIS/Pasep and the Contribution to Social Security Financing - COFINS levied on active electricity are reduced to zero. supplied by the distributor to the consumer unit, in the amount corresponding to the sum of the active electric energy injected into the distribution network by the same consumer unit with the active energy credits originated in the consumer unit itself in the same month, in previous months or in another consumer unit of the same holder, under the terms of the Electric Energy Compensation System for micro-generation and distributed mini-generation, as per the regulation of the National Electric Energy Agency - ANEEL.

1.3 In case the Directives have not been transposed into national law, indicate (if existing) drafts of the law under discussion for the future transposition and eventual websites where they can be found.

Does not apply to Brazil.

2 What are the main policies of the development of prosumerism, self-consumption and renewable energy communities?

In Brazil, the Energy Research Company (EPE), created by Law no 10.847/04,[14] is an example of a policy for energy development, precisely because it is responsible for 'providing services in the area of studies and research aimed at subsidizing the planning of the sector energy, such as electricity, oil and natural gas and their derivatives, mineral coal, renewable energy sources and energy efficiency, among others'.

Among the competences of the EPE is the preparation and annual publication of the national energy balance, which represents a compilation of research and accounting related to the supply and consumption of energy in Brazil, including the activities of extraction of primary energy resources, their conversion into secondary forms, import and export, distribution and final use of energy.

In 2021, the report of the national energy balance (BEN) showed that Brazil obtained an amount of 51.6% from non-renewable sources (33.1% of oil and derivatives; 11.8% as a domestic supply of electricity) from natural gas; 4.9% from coal and coke; 1.3% from uranium and 1% from other non-renewable sources) and 48.4% from renewable energy sources (12.6% from hydraulics; 8, 9% from firewood and charcoal; 19.1% from sugarcane derivatives; 1.7% from wind; 0.3% from solar and 5.7% from other renewables).[15]

2.1 Provide some examples (if known) of best practices of prosumerism, self-consumption or energy communities experienced in your country (indicate link of the related websites where they can be viewed).

An example of prosumerism is distributed energy generation, that is, the production of electricity at or near the place of consumption, which is valid for several renewable energy sources (solar, wind and water).

In Brazil, in short, distributed generation is based on the principle of the prosumer, or consumer-generator who, after having discounted their own consumption, receives a credit to their account for the positive balance of energy that was generated, inserted into the grid and not used, in an energy compensation

[14] Law no 10.847, 15 March 2004 available at http://www.planalto.gov.br /ccivil_03/leis/2002/L10438.htm (last visited 13 November 2021).

[15] See Annual Energy Balance, 2021 available at https://www.epe.gov.br/sites-pt/publicacoes-dados-abertos/publicacoes/PublicacoesArquivos/publicacao-601/topico-596/BEN2021.pdf (last visited 13 November 2021).

system. Whenever the positive energy balance is counted, the consumer receives an energy credit (in kWh) in the energy bill and has up to 60 months to use it.

However, prosumers cannot trade the amount of excess energy generated by generation distributed among them, because the traditional electricity grid available is used as a backup to satisfy the necessary demands of prosumers, in cases of intermittent energy sources, such as solar energy, for example.

Currently, the legal definition of distributed generation is provided for in Art 14 of Decree Law n. 5.163/04:[16]

'Distributed generation is defined as the production of electricity from concessionaires, licensees or authorized agents, directly connected to the purchaser's electricity distribution system, except for: I - hydroelectric power plant with an installed capacity of more than 30 MW; and II - thermoelectric, including cogeneration, with energy efficiency below 75%'.

In addition to the definition set out in the aforementioned decree law, the Brazilian consumer, since 2012, with Normative Resolution no 482/2012 of the National Electric Energy Agency (ANEEL), later revised by Normative Resolution no 687/2015, is allowed to generate their own energy electricity through renewable sources or qualified cogeneration and also supply the surplus to the distribution network in your locality. This is what is understood as micro and mini distributed electric power generation. ANEEL defines this possibility as innovations that combine financial savings, socio-environmental awareness and self-sustainability.

ANEEL also defends that the incentives for distributed generation can generate potential benefits to the national electricity system, such as postponement of investment in expansion of transition and distribution systems, low environmental impact, reduction in network loading, minimization of losses and matrix diversification energy.

Among the main innovations introduced by the normative resolutions, in force as of 2016, there is the permission to use any renewable source, in addition to qualified cogeneration, such as 'distributed microgeneration generating central with installed power of up to 75 kilowatts (KW) and distributed mini-generation that with power above 75 kW and less than or equal to 5 MW, connected to the distribution network through installations of consumer units'.

In addition to the possibility of distributed micro and mini generation, when the amount of energy generated exceeds the demand consumed in the period (month), the consumer also purchases credits that can be used to reduce the bill in the following months. This type of credit was called 'remote self-consumption'.[17]

The resolution also innovated by creating the figure of 'shared generation', allowing interested parties to join a consortium or a cooperative, install a micro or

[16] Decree no 5.163, 30 July 2004 available at http://www.planalto.gov.br /ccivil_03/_ato2004-2006/2004/decreto/d5163.HTM (last visited 13 November 2021).

[17] 'An example is that of microgeneration by solar photovoltaic source: during the day, the "leftover" of the energy generated by the plant is transferred to the grid; at night, the network returns energy to the consumer unit and supplies additional needs. Therefore, the network works like a battery, storing the surplus until the consumer unit needs energy from the distributor'. Source: ANEEL.

mini distributed generation and use the energy generated to reduce the bills of the consortium members/cooperated.[18]

Briefly, at this time, the rules for distributed generation in Brazil are:

1. Basic rules defined by Resolution No. 482/2012, edited by Resolution no 687/2015;

2. Definition of installed power for micro (75 kW) and mini-generation (5 MW);

3. Right to credit for excess energy injected into the grid within 60 months;

4. Possibility of using the generation and distribution of credit accounts for condominiums;

5. Remote self-consumption where there is generation in one unit and consumption in another unit, as long as it belongs to the same owner;

6. Possibility of generation shared by a group of consumer units, provided that they result from a single generation unit.

Currently, consumers (prosumers) who use distributed micro and mini generation do not pay for the use of the electricity network (which in addition to the production tariff has tariff charges for the use of the distribution network), nor for all other charges that are charged to regulated market consumers (those who consume electricity from distributors).

This is because in Brazil, consumers who use distributed micro and mini generation enjoy some benefits, such as credits arising from the excess energy injected into the network being fully deducted from the energy bill, including the tariff instalments that do not correspond to power generation, such as transmission and distribution tariffs and sector charges.[19]

The approval of a Regulatory Framework for Distributed Energy Generation is currently being discussed in the National Congress, which may cause changes for producers, consumers and taxpayers, such as: establishing the legal framework for distributed micro-generation and mini-generation, the Electric Energy Compensation System (SCEE) and the Social Renewable Energy Program (PERS). [20]

Basically, the biggest change for prosumers, who use distributed generation, is the fact that the 'legal framework' determines that these same consumers (prosumers) must pay for the Distribution System Usage Tariff (TUSD) of 'wire B' (component of the Tariff for the Use of Distribution Systems, corresponding to the cost of the service provided by the distributor itself), which is responsible for

[18] See Distributed Generation, 'Distributed micro and mini generation' available at https://www.aneel.gov.br/geracao-distribuida (last visited 13 November 2021).

[19] See How the rate is composed. Available at: https://www.aneel.gov.br /conteudo-educativo/-/asset_publisher/vE6ahPFxsWHt/content/composicao-da-tarifa/654800?inheritRedirect=false (last visited 13 November 2021).

[20] Legal Framework for Distributed Generation, Bill (PL) no 5.829, 2019 available at https://www25.senado.leg.br/web/tividade/materias/-/materia/149862(last visited 13 November 2021).

remunerating the energy distributors. In this sense, credits generated by distributed generation systems are no longer deducted from this portion of the energy bill.[21]

The 'legal framework', however, if approved, will exempt distributed generation producers from paying the availability fee, which is charged by the energy concessionaire, in relation to the availability of the electricity network for consumers.

The aforementioned bill, however, guarantees the permanence of the current rules until 31 December 2045 for consumers who already have a distributed generation system until the publication of the law. It will guarantee exemption, in the same way, for those who request entry into distributed generation up to twelve months after its publication

For new consumers, the bill proposes a six-year transition, providing that they will start to pay, from 2023, the equivalent of 15% of the costs associated with the tariff components related to the remuneration of assets and distribution services and the cost of operating and maintaining the distribution service. The proposal is that the percentage, as provided for in Art 27 of the bill, gradually increases: 15% from 2023; 30% from 2024; 45% from 2025; 60% from 2026; 75% from 2027; 90% from 2028.

2.2 Provide some examples (if existing) of case law/leading cases in the field of prosumerism and energy communities.

Recently, the biggest controversy in Brazil involving prosumers was a decision by the Court of Auditors of the Union (TCU)[22] in 2020, determining the end of tariff differentiation for electricity[23], under the argument that subsidies offered to prosumers generate an increase in the bill of common consumers in the country, including those who do not use distributed generation.

In this decision, the TCU had determined that the National Electric Energy Agency (ANEEL), within 90 days, would present an action plan containing measures to be taken and deadlines for implementation, with a view to removing the tariff differentiation among electricity consumers. The accounting body concluded that there was a tariff differentiation based on the adhesion or not to the electric energy compensation system (SCEE), provided for in Resolution no 482/2012, amended by Resolution no 687/2015 of ANEEL. This difference, in fact, manifests itself basically

[21] See TUSD Wire B. available at https://www.aneel.gov.br/home?p_p_id=101&p_p_lifecycle=0&p_p_state=maximized&p_p_mode=view&_101_struts_action=%2Fasset_publisher%2Fview_content&_101_returnToFullPageURL=%2Farea.cfm%3FidArea%3D739&_101_assetEntryId=15057911&_101_type=content&_101_groupId=656835&_101_urlTitle=tusd-fio-b&inheritRedirect=true (last visited 13 November 2021).

[22] The Federal Court of Accounts (TCU) is an autonomous administrative body, responsible for the accounting, financial, budgetary, operational and patrimonial inspection of the country's public bodies and entities in terms of legality, legitimacy and economy. Available at https://portal.tcu.gov.br/en_us /english/inside-tcu/the-court/ (last visited 13 November 2021).

[23] See TCU determines the end of tariff differentiation for electricity, available at https://portal.tcu.gov.br/imprensa/noticias/tcu-determina-fim-de-diferenciacao-tarifaria-da-energia-eletrica.htm (last visited 13 November 2021).

because the transfer of distribution costs and charges in the electricity sector occur unequally to consumers, with encumbrance to those who did not adhere to the compensation system, to compensate those who did.

The accounting agency recommended that the National Electric Energy Agency (ANEEL) demonstrate, with greater transparency, how the energy tariff is composed, with respect to other electricity consumers, who bear the burdens generated by small distributed generation postage.

Indeed, the electricity compensation system (SCEE)[24] was structured based on tariff differentiation without a legal provision, thus configuring a cross subsidy of a regressive nature in terms of income distribution. Consequently, consumers of the electricity distribution service that have a distributed micro or mini-generation system benefit at the expense of other consumers.[25] The main issue, therefore, is the so-called remote self-consumption, electric energy compensation system (SCEE) that allows the amount of excess energy injected into the distribution network to be converted into credits to the prosumer.

Thus, annually, the amount of subsidy, represented by the unequal transfer of costs and charges from the electricity sector to consumers, rises as the number of consumers with access to small distributed generation systems and who adhere to the system increases. of electrical energy compensation.

For TCU, the system is becoming a vicious circle, as the adhesion of a prosumer leads to an increase in the tariff of other consumers, who bear the other costs of the network.

However, the decision of the Federal Court of Accounts that determined ANEEL to review the incentives for distributed generation facilities was suspended by determination of the administrative body itself, as the aforementioned bill no 5.829/2019 is being processed in the National Congress, which changes the distributed generation system and tariff differentiation, to promote greater legal certainty for prosumers, who are currently supported only by internal regulations, which have much less weight than a legal diploma.[26]

[24] Initially instituted by Resolution no 482, 17 April 2012, amended by Resolution no 687, 24 November 2015.

[25] According to figures from ANEEL, the subsidy represented, in 2018, around R$ 205 million; in 2019, around R$315 million, reaching up to R$55 billion by 2035.

[26] See TCU suspends decision that forced Aneel to review incentives to 'solar roofs', available at https://www.reuters.com/article/energia-solar-tcu-idBRKBN 2C22L5-OBRBS (last visited 13 November 2021).

Chile

Luciano Cruz Morandé

1 Provide an overview of the energy regulatory framework in your country. What is the main legal source of energy policy? What are the additional sources?

The electricity/power sector in Chile is highly regulated and has a well-established regulatory framework, which is mainly set forth by the General Law on Electrical Services,[1] with the purpose of regulating the generation, transmission and distribution of power supply. These activities are carried out by private entities while the government role is limited to the regulation, planning and coordination of the electrical system.

The main government authorities responsible for designing, regulating, implementing and enforcing the electricity policies and legislation are:

(i) the Ministry of Energy, which was established in 2010 and is the highest authority, responsible for elaborating and coordinating the national energy policy of Chile. The Ministry also sets the tariffs for regulated customers and grants definitive electricity concessions;

(ii) the National Energy Commission (Comisión Nacional de Energía or 'CNE'), which is a technical adviser state agency in charge of creating and coordinating the plans and policies for the proper operation and development of the energy industry; and

(iii) the Superintendence of Electricity and Fuels (Superintendencia de Electricidad y Combustibles or 'SEC'), which is the entity in charge of supervising the proper operation of the electric power, gas and fuel services, and the compliance of the legal, administrative and regulatory framework, for which is vested with the power to impose sanctions.

In addition, the electricity industry encompasses:

(i) the National Electricity Coordinator (Coordinador Eléctrico Nacional or 'CEN'), which operates the National Electricity System and ensures the safety of the power services, coordinates and guarantees the most economic operation of the electric system, and ensures open access to the transmission systems, as well as determining the marginal costs of electricity and the economic transfers between coordinated members of the Chilean electric system; and

(ii) the Experts Panel (Panel de Expertos), which is a permanent entity entitled to resolve conflicts arising between companies and the National Electricity Coordinator, and disputes between companies. The Experts Panel is composed of seven independent members, five of whom are engineers and economists while two are lawyers. These members are

[1] Ley General de Servicios Eléctricos.

chosen by the Chilean Antitrust Court, for a 6-year period and can be partially replaced every 3 years.

1.1 Define briefly the existing legal and financial measures in your country in order to promote the use of energy from renewable sources and to facilitate the energy transition. In particular, are there any incentives, economic and tax benefits?

A: In Chile, in general terms, there are no relevant tax[2] or economic incentives to promote the use of energy from renewable sources. Such kind of incentives have not been necessary due to the enormous renewable potential of the Country (more than 1,800,000 MW of wind, solar and hydro energy).

The main incentive, which has been proved a successful one, consists in the legal obligation included in the General Law on Electrical Services, for generation companies to generate a certain percentage of its electricity from renewable sources. The original goal set forth in 2008,[3] was a 10% of the total generation, but a few years later it was doubled to a 20%, to be achieved by 2025.

The law provides that generation companies that do not meet their corresponding annual quota with their own energy, may certify their compliance with injections of the surplus of other generation companies that have exceeded their own requirements. Otherwise, fines will apply.

The 20% goal has already been achieved 6 years in advance to the target date.

1.2 Have the Directive (EU) 2018/2001 and the Directive (EU) 2019/944 been transposed in your country? Which are the legislative instruments that have transposed the Directives?

A: Not applicable

1.2.1 Provide a short description of the main changes on energy policies introduced with the transposition of the Directive (EU) 2018/2001 (e.g. adoption of the specific support schemes for energy from renewable sources; adoption of regulations and codes for the enforcement of administrative procedures; particular rules for the creation of the community energies, etc.) and of the Directive (EU) 2019/944 (e.g. rules on the generation, transmission, distribution and supply of electricity; specific rules on the protection of the consumers; provisions on the creation of citizen energy communities, etc.).

[2] We can find some minor tax incentives for building companies that include solar thermal system in newly built residential properties (Law 20.365, 2009).

[3] Law 20.257.

A: Not applicable

1.3 In case the Directives have not been transposed into national law, indicate (if existing) drafts of the law under discussion for the future transposition and eventual websites where they can be found.

A: Not applicable

2 What are the main policies of the development of prosumerism, self-consumption and renewable energy communities?

A: The Law 20.571 dated 2014, amended the General Law on Electrical Services to grant domestic clients the right to generate their own energy, self-consume it, and inject their surplus into the grid. Such law was superseded in 2018 by Law 21.118, raising the nominal capacity of self-generation facilities regulated clients from 100kW to 300kW and including other improvements.

Surplus of energy injected to the grid, valued as established in the General Law on Electrical Services, will be deducted from the corresponding billing charges (all charges, not just the consumed energy tariff). Any excess which could not be deducted from the billing charges after a certain period, may, at the customer's discretion, be deducted from the charges for electricity supply corresponding to real estate or facilities owned by the same client, connected to the distribution networks of the same public distribution service concessionaire.

Not only individual customers, but also communities and joint properties can use this scheme.

2.1 Provide some examples (if known) of best practices of prosumerism, self-consumption or energy communities experienced in your country (indicate link of the related websites where they can be viewed).

A: In Chile, even though its enormous renewable potential, specially its solar one, prosumerism is still on an early stage[4] mainly due to its high cost. We have seen some development in public building (financed with fiscal resources) and also in the commercial sector (mainly through the ESCO model which allows financing options), but there is a lack of financial or tax support when it comes to the residential sector. As pointed out by some recent research[5] the Chilean regulatory framework has been insufficient to promote residential prosumerism.

Recently this year in February 2021, an Energy Efficiency Law was enacted (Law 21.305). Pursuant to such law, every five years, the Ministry of Energy, in

[4] Comision Nacional de Energia, 'Generación Distribuida - Instalaciones Inscritas' available at http://datos.energiaabierta.cl/ (last visited 15 Novemeber 2021).

[5] J. C. Osorio-Aravena et al, 'Identifying barriers and opportunities in the deployment of the residential photovoltaic prosumer segment in Chile' 69 *Sustainable Cities and Societies*, 102824 (2021).

collaboration with other ministries, must prepare a National Energy Efficiency Plan, which must include, at least, the following matters: residential energy efficiency; minimum standards and labeling of artifacts; energy efficiency in building and transportation; energy efficiency and smart cities; energy efficiency in the productive sectors and education and training in energy efficiency. The necessary regulations to implement the National Energy Efficiency Plan are still under development. In any case

2.2 Provide some examples (if existing) of case law/leading cases in the field of prosumerism and energy communities.

A: Presentación de PowerPoint (energia.gob.cl)

China

Yaru Li

1 Provide an overview of the energy regulatory framework in your country. What is the main legal source of energy policy? What are the additional sources?

The overall framework of China's modern energy regulatory system is composed of energy regulatory regulations and policy systems, energy regulatory agency systems, energy regulatory and supervisory systems, and energy regulatory performance evaluation systems. The content and scope of energy supervision are mainly: energy safety supervision, energy market supervision, energy conservation and energy efficiency supervision, energy structure supervision and energy environment supervision.

The Energy Bureau of the National Development and Reform Commission is currently the core organization dealing with energy issues. It consists of the General Division, the Petroleum and Natural Gas Division, the Coal Division, the Electric Power Division, and the New Energy Division, plus the National Petroleum Reserve Office directly under the National Development and Reform Commission. Currently, energy-related management, development, and research functions are scattered among the National Development and Reform Commission, the Ministry of Land and Resources, the Ministry of Water Resources, the State Electricity Regulatory Commission, the State Environmental Protection Administration, the Ministry of Science and Technology, the Chinese Academy of Engineering and other relevant departments. The division of functions between the various departments is not clear. Even within the National Development and Reform Commission, energy conservation is not within the jurisdiction of the Bureau of Energy, but is under the responsibility of the Department of Comprehensive Utilization of Environment and Resources.

China's energy laws and regulations include: 1. Natural resource laws 2. Coal laws and regulations 3. Electricity laws and regulations 4. Oil and natural gas laws and regulations 5. Nuclear power laws and regulations 6. Energy conservation and renewable energy laws and regulations 7. Environmental protection laws. There are also major energy related laws, regulations and normative documents.

1.1 Define briefly the existing legal and financial measures in your country in order to promote the use of energy from renewable sources and to facilitate the energy transition. In particular, are there any incentives, economic and tax benefits?

1.1.a Comprehensively promote the reform of energy consumption patterns

(1) Implement dual control of energy consumption.

Implement a dual control system for total energy consumption and intensity, set energy consumption total and intensity control targets according to the administrative regions of provinces, autonomous regions, and municipalities directly under the Central Government, and supervise and assess local governments at all levels.

(2) Improve energy-saving laws, regulations and standard systems.

Amend and implement the 'Energy Conservation Law', establish and improve energy-saving systems in key areas such as industry, construction, transportation, and public institutions, and improve supporting legal systems such as energy-saving supervision, energy efficiency labeling, energy-saving review of fixed asset investment projects, and energy-saving management of key energy-consuming units.

(3) Improve energy-saving and low-carbon incentive policies

Implement corporate income tax and value-added tax preferential policies that promote energy conservation.

(4) Improve energy efficiency in key areas.

Actively optimize the industrial structure, vigorously develop low-energy-consumption advanced manufacturing, high-tech industries, and modern service industries, and promote the intelligent and clean transformation of traditional industries.

(5) Promote the clean energy consumption of the terminal.

Implement coal consumption reduction substitution and integrated management of loose coal, promote clean and efficient coal-fired boilers, and promote the use of natural gas, electricity and renewable energy to replace low-efficiency and high-polluting coal.

Formulate financial and price support policies to actively promote clean heating in winter in the northern region.

Promote the use of electricity to replace coal and oil in the field of end-use energy, and promote new energy use methods such as new energy vehicles, heat pumps, and electric furnaces.

Strengthen the construction and interconnection of natural gas infrastructure, and promote the efficient use of natural gas in areas such as urban gas, industrial fuels, gas-fired power generation, and transportation.

Vigorously promote the energy supply mode of natural gas combined heat, power and cold, promote the development of distributed renewable energy, and promote multi-energy synergy and comprehensive cascade utilization of energy in the field of end-use energy.

1.1.b Supporting energy development in rural and impoverished areas

Accelerate the improvement of rural energy infrastructure and implement rural power grid transformation and upgrading; implement photovoltaic poverty alleviation projects, strengthen financial investment and policy support, and support the development of clean energy such as biomass energy, wind energy, solar energy, and small hydro-power in poverty-stricken areas.

1.1.c Comprehensively deepen the reform of the energy system

(1) Build an effective and competitive energy market.

Vigorously cultivate diversified market players, break monopolies, relax access, encourage competition, build a unified, open, and orderly competitive energy market system, strive to remove market barriers, and improve the efficiency and fairness of energy resource allocation.

(2) Improve the mechanism for determining energy prices mainly by the market.

Steadily liberalize prices in competitive areas and competitive links, promote prices to reflect market supply and demand, and guide resource allocation; strict government pricing cost supervision and review, and promote scientific and reasonable pricing.

(3) Improve the energy legal system.

Persist in the integration of energy legislation with reform and development, and timely revise and abolish laws and regulations that do not meet the requirements of reform and development; promote energy management in accordance with the law, and promote the construction of a government under the rule of law.

1.1.d Strengthen international energy cooperation in an all-round way

1. Continue to deepen the opening up of the energy sector:

Substantially relax foreign investment access; fully implement the pre-access national treatment plus negative list management system, and continue to reduce foreign investment access restrictions in the energy sector; the restrictions on foreign investment in coal, oil and gas, electric power (except nuclear power), new energy and other fields will be completely removed.

2. Focus on promoting energy cooperation in the joint construction of the “Belt and Road” initiative.

1.2 Have the Directive (EU) 2018/2001 and the Directive (EU) 2019/944 been transposed in your country? Which are the legislative instruments that have transposed the Directives?

NA

1.2.1 Provide a short description of the main changes on energy policies introduced with the transposition of the Directive (EU) 2018/2001 (e.g. adoption of the specific support schemes for energy from renewable sources; adoption of regulations and codes for the enforcement of administrative procedures; particular rules for the creation of the community energies, etc.) and of the Directive (EU) 2019/944 (e.g. rules on the generation, transmission, distribution and supply of electricity; specific rules on the protection of the consumers; provisions on the creation of citizen energy communities, etc.).

NA

1.3 In case the Directives have not been transposed into national law, indicate (if existing) drafts of the law under discussion for the future transposition and eventual websites where they can be found.

'Energy Law of the People's Republic of China (Draft for Solicitation of Comments)'《中华人民共和国能源法（征求意见稿）》

http://www.nea.gov.cn/2020-04/10/c_138963212.htm

2 What are the main policies of the development of prosumerism, self-consumption and renewable energy communities?

According to the 'White Paper on "China's Energy Development in the New Era"' (see http://www.gov.cn/zhengce/2020-12/21/content_5571916.htm for details), China's energy development in the new era implements the new energy security strategy of 'Four Revolutions, One Cooperation': Promote the energy consumption revolution and curb unreasonable energy consumption; Promote the energy supply revolution and establish a diversified supply system; Promote energy technology revolution and promote industrial upgrading; Promote the energy system revolution and open up the fast lane of energy development; Strengthen international cooperation in an all-round way to achieve energy security under open conditions.

The concept of energy policy in the new era includes: Insist on putting people as the center; Adhere to the clean and low-carbon orientation; Adhere to the core position of innovation; Persist in promoting development through reform; Persist in building a community with a shared future for mankind.

2.1 Provide some examples (if known) of best practices of prosumerism, self-consumption or energy communities experienced in your country (indicate link of the related websites where they can be viewed).

Zhangjiakou Renewable Energy Demonstration Zone, Hebei Province.

https://baike.baidu.com/item/%E6%B2%B3%E5%8C%97%E7%9C%81%E5%BC%A0%E5%AE%B6%E5%8F%A3%E5%8F%AF%E5%86%8D%E7%94%9F%E8%83%BD%E6%BA%90%E7%A4%BA%E8%8C%83%E5%8C%BA/20351973

2.2 Provide some examples (if existing) of case law/leading cases in the field of prosumerism and energy communities.

NA

Colombia

Cristian Arrieta Morales, Ricardo Andrés Cano Andrade and Riccardo Perona

1 Provide an overview of the energy regulatory framework in your country. What is the main legal source of energy policy? What are the additional sources?

In Colombia, the energy market is a fully regulated sector. In fact, based on Colombia's 1991 Constitution, public interest issues such as health care, education or private property, have a new background regulation within the understanding of the Colombian State as a welfare state (*estado social de derecho*). Art 365 of the Constitution establishes that public services are a key part of the state's social obligations. Thereby, the State has the duty to provide efficient public services, for which it shall provide ruling and surveillance. Art 366 of the Constitution considers that welfare and quality of life are social purposes of the State, thereby abandoning a perspective that only privileges economic gains in order to guarantee services like energy or water for homeless communities.

The institutions involved in the energy issues are the Presidency, the Ministry of Mines and Energy, the Superintendence of Domiciliary Public Services, the Superintendence of Industries and Commerce and the CREG (Regulatory Commission on Energy and Gas).

Ley 142 of 1994 established the legal framework for the domiciliary public service in Colombia. To implement such regulation, the CREG was created by *Ley* 143 of 1994, which regulates energy generation, interconnection, transmission, distribution and trade.

Additional sources of specific regulation have then been adopted by the CREG, namely:

- CREG Resolution 024 of 2015, which regulates the self-generation of energy in big scale;
- CREG Resolution 030 of 2018, which regulates the self-generation of energy in small scale and its distribution;
- CREG Resolution 038 of 2018, which regulates the integration between the self-generation of energy on a big and small scale.

1.1 Define briefly the existing legal and financial measures in your country in order to promote the use of energy from renewable sources and to facilitate the energy transition. In particular, are there any incentives, economic and tax benefits?

In the past few years, the Colombian government has made visible its interest in promoting the use of renewable sources of energy to help a clean and green transition to be less dependent on energy from traditional sources. Mainly, these efforts have been materialized in the expedition of *Ley* 1715 of 2014, which

promotes the use of non-conventional sources of energy, encourages investments in this field and promotes the research and development in the field of clean energies.

The key value of this normative act is that it transforms the matters at hand in public issues, forcing the State to make clear and substantial investments in this line of action. For example, it creates a Non-conventional and Reasonable Manage Energy Fund, created to bankroll reasonable energy programs in *municipios* and *departamentos*.

Other efforts made by the institutions are aimed at a progressive substitution of Non-Interconnected Zones (ZNI), which are zones with no easy access to traditional sources of energy and that depend on Diesel. These zones are substituted by a program of wind energy funded by the State.

On a national scale, the government promotes a program of reasonable and efficient use of energy, called PROURE, funded by the Ministry of Mines and Energy, the Ministry of Environment and Sustainable Development and the Ministry of Treasury, with the intention of providing small entrepreneurs and small *municipios* with technical and financial incentives and competences to develop campaigns to promote a more reasonable use of energy.

2 What are the main policies of the development of prosumerism, self-consumption and renewable energy communities?

Since the expedition of CREG Resolution 030 of 2018, anyone in Colombia can produce and sell energy created by non-traditional sources, such as solar or wind energy.

However, since energy market in Colombia is fully regulated, all the transactions must be realized through the National Interconnected System (SIN), created by Art 11 of *Ley* 143 of 1994 and comprehensive of different interconnected elements such as energy plants, equipment, transmission and interconnection networks, regional networks, distribution networks and homeland users.

The *Ley* describes the figure of the *autogenerador* – literally 'self-generator' – of energy, thus creating a legal concept close to the one of prosumer. According to the law, in order to be considered an *autogenerador* a subject shall produce energy both for its own purposes and to be distributed. More precisely, the law and the CREG Resolution 030 of 2018 make the following distinction:

- small-scale self-generators (*Autogeneradores a Pequeña Escala*, AGPE), referring to those who have the capacity to produce energy equal to or lower than 1.000 kW;
- big-scale self-generators (*Autogeneradores a Gran Escala*), referring to those natural or legal persons whose capacity of production is higher of 1.000 kW;
- distributed generators (*generadores distribuidos*), referring to those legal persons that produce energy nearby consume centers, are connected to the local distribution system and have an installed potency equal or lower to 0,1MW.

2.1 Provide some examples (if known) of best practices of prosumerism, self-consumption or energy communities experienced in your country (indicate link of the related websites where they can be viewed).

Best practices in prosumerism can be found in the northern region of Colombia, given its potential to take advantage of wind and solar energy. Some initiatives in this field can be mentioned:

Solar Green: http://www.solargreen.com.co/energia_solar_ barranquilla.html

Solartex: https://www.solartex.co/paneles-solares/barranquilla/

Solar Costa: https://solarcosta.com.co/

Solenergy: https://solenergysoluciones.com/

Energia Social: http://energiasocial.com/

Among several private initiatives that may be mentioned, an example is that of the Universidad del Norte's new building, called Casa Estudio Alfredo Correa, which has a LEED certification and utilizes self-produced energy and water.

2.2 Provide some examples (if existing) of case law/leading cases in the field of prosumerism and energy communities.

Since the issues related to prosumerism constitute a newly regulated field in Colombia, the main judgements that can be considered relevant to the matter have been concerned mainly with the protection of human dignity as connected to the human right to a minimum vital use of water or electric energy.

However, it seems quite relevant to mention that the CREG Resolution 080 of 2019 establishes a regulation to prevent abusive market behaviour of agents that participate in activities related to electric energy.

Also, Judgement C-263/2013 of the Constitutional Court should be mentioned, as it states that the CREG has the jurisdiction to rule on the matters related to prosumerism and the activities related to the reasonable use and management of renewable sources. Moreover, Judgements C-075/06, C-150/03, C-1120/05 and SU-2010/08 mark a trend of ruling holding that the State is entitled to correct the market imperfections concerning the efficient provision of energy services so as to promote the welfare state.

Cuba

Jané Manso Lache

1 Provide an overview of the regulatory framework for energy in your country. What is the main legal source of energy policy? What are the additional sources?

Energy's regulatory framework in Cuba is formed by a set of rules, among which, we find in first place, the Constitution of the Republic of Cuba,[1] establishing the basis of the economic, political and social system. It is also controlled by Law no 1287/1975, of 2 January 1975, known as the 'Electric Law of Cuba' and its Regulation,[2] as well to lower hierarchy provisions that complement it, namely: Decree-Law 70/1983 of 9 June 1983, 'Regarding the National Energy Commission'[3] and Decree no 115/1983 of 20 July 1983, 'About Energy Technical Areas and Energy State Inspection',[4] created to support the National Commission of Energy.

The new Constitution, recently modified in 2019, makes express reference towards Republic of Cuba builds international relations in the exercise of its sovereignty and internationalist principles, promoting the protection and conservation of the environment and the confrontation of climate change on the basis of recognition of common, but differentiated responsibilities; the establishment of a fair and equitable international economic order and the eradication of irrational patterns of production and consumption (Art 16, Inc. F). Consequently, it also recognizes the right to a healthy environment, emphasizes the role of the State in its protection and close linking to the tutelage of the environment with sustainable economic and social development, in order to ensure well-being and safety of current and future generations (Art 75).

On the other hand, the Electric Law of Cuba, Law no 1287/1975, did not include regulations regarding renewable energies or energy efficiency, focusing on aspects related to the provision of service, for which introduced obligations, duties and prohibitions for users, both state and private, regarding bill payments, among other provisions of similar nature.

Subsequently, Decree-Law 70/1983 of 9 June 1983, created the National Energy Commission, attached to the Council of Ministers, having the function of proposing to the Government the national energy policy, including specific recommendations

[1] Constitution of the Republic of Cuba, proclaimed on April 10th, 2019. Published in Official Gazette no 5 Extraordinary of 10 April 2019 available at http://www.gacetaoficial.gob.cu/ (last visited 11 November 2021).

[2] Available at https://www.unionelectrica.cu/wp-content/uploads/2018/11/ ley-electrica.pdf. (last visited 11 November 2011).

[3] Published in the Official Gazette Extraordinary Edition, no 14, of 9 June 1983, Year LXXXI available at http://www2.eie.ucr.ac.cr/~jromero/sitio-TCU-oficial/normativa/archivos/leyes_centroam/creacion_comision_nacional_energia.pdf. (last visited 11 November 2021).

[4] Published in Official Gazette Ordinary Edition, no 54 of 20 July 1983, Year LXXXI available at https://digitalrepository.unm.edu/cgi/viewcontent.cgi?article=1013&context=la_energy_policies (last visited 11 November 2021).

and proposals regarding the rational use, saving, development and research of energy resources, in addition to directing the action program for these purposes.

Right after, Decree no 115/1983 of 20 July 1983, 'About Technical Energy and State Energy Inspection Areas', created to support the National Energy Commission, established - among other functions - the study and measuring proposals saving and the rationally use of energy, both in production processes and government run services, cooperative and private sectors, in addition to propose changes in industrial production methods to reduce the use of energy.

At least one mention deserves Law 81/1997 of 11 March 1997, 'The Environment Law',[5] dominant in this field within the Cuban legal system, currently in reform, having certain provisions which can be used in the context of mitigation (eg Artt 12, 114 and 118), although it does not directly address climate change.

Regarding energy resources, Chapter VII establishes that in attention to the use of these by any individual or company, it will be preferred, and whenever it is feasible, the use of renewable sources of energy and equipment, technologies and technical and organizational measures stimulating conservation and efficient use of energy (Art 125). At the same time, individuals or companies managing the energy use and its infrastructure, as well as for the transport, transformation, distribution, storage and final use of energy, are obliged not to cause damage to the soil, water or atmosphere and to use technologies that guarantee compliance with current environmental regulations (Art 126).

In addition, corresponding Ministries of Sugar Cane, Agriculture and Basic Industry, taking into account the opinion of the Ministry of Science, Technology and Environment and other competent organizations and agencies, will establish strategies for the use of biomass as a source of energy and other technological alternatives aimed at the efficient use of energy sources and the reduction of environmental pollution (Art 127).

Concerning legislation on renewable energies and energy efficiency, one more step was given in 2009 'in order to contribute to the policy of saving electricity' by approving the 'Technical regulation of energy efficiency for electrical energy´s final use equipments';[6] however, this provision did not establish an essential modification within the national legal framework, which only occurred with the promulgation of Decree-Law 345/2017 of 23 March 2017, 'About the development of renewable sources and the efficient use of energy'.[7]

The purpose of this regulation is to establish rules for the development of renewable sources and the efficient use of energy (Art 1); betting on the maximum participation of renewable energy sources in the National Electric System and

[5] Published in the Official Gazette of the Republic of Cuba Extraordinary Edition, no 7, 11 June 1997 available at https://www.oas.org/dsd/fida/laws/ legislation/cuba/cuba_81-97.pdf (last visited 11 November 2021).

[6] Act 136/2009 of the Ministry of Basic Industry. Published in Official Gazette no 20 Extraordinary of 2009 available at https://www.gacetaoficial.gob.cu/es/ resolucion-136-de-2009-de-ministerio-de-la-industria-basica (last visited 11 November 2021).

[7] Published in Ordinary Official Gazette no 95 of 28 November 2019 available at https://www.gacetaoficial.gob.cu/es/decreto-ley-345-de-2019-de-consejo-de-estado (last visited 11 November 2021).

increasing energy efficiency (Art 3). Likewise, the Decree-Law establishes as a main objective of national industry, the production of equipment, means and spare parts for the development of renewable energy sources and those destined to increase the efficiency in the use of electrical energy and fuels (Art 6).

To follow those purposes, Decree-Law 345/2017 dedicates an entire Section to regulate the use of incentives, tariff and tax benefits, both for individuals or companies, and also projected in the field of foreign investment, to which reference will be made later (Chapter I. Fifth Section).

On this point, it is important noting that Law 118/2014 of 29 March 2014, 'Foreign Investment Law', even before the entry into force of the forehead regulation, already established that foreign investment in the country is oriented 'to change the country's energy matrix through the use of renewable energy sources' (Art 3.1).

Furthermore, Decree-Law 345/2017 is complemented by a significant group of regulatory provisions issued in compliance with the Final Provisions of the Decree-Law itself, which have come to implement each of the aspects integrating the energy policy in this area and tariff and tax benefits.

Before the entry into force of Decree-Law 345/2017, 'About the development of renewable sources and the efficient use of energy' and its complementary provisions, the legal birthplace of energy policy in Cuba was Law no 1287/1975 of 2 January 1975 'Cuban Electric Law' and its Regulations, in addition to complementary provisions of lower hierarchy. Currently, the main legal sources for energy regulations have been enriched and complemented through Decree-Law 345/2017 and its complementary provisions, aimed at increasing energy efficiency and contribution of renewable energy sources, targeting to increase its participation within the electric power generation matrix, until reaching a proportion of no less than 24 percent in 2030. All of which is structured under the mantle of Cuban Constitution that -as already noted- recognizes the right to a healthy environment and the role of the State in its protection, as well as the importance of sustainable economic development; in tune also, legally speaking, with the international commitments assumed by the Cuban State under the United Nations Framework Convention on Climate Change (1994) and above all, under the Paris Agreement.

All of which is in line with the National Economic and Social Development Program to 2030,[8] which as part of the Strategic Axis of Natural Resources and Environment, has the purpose of fulfilling the constitutional mandate to ensure a healthy and balanced environment; as well as achieving the objectives of the National Economic and Social Development Program to 2030 and Sustainable Development Goals related to the environment. All of the above by the implementation of the National Environmental Strategy and the State Plan to confront climate change; the improvement of environmental quality in the country

[8] National Plan for Economic and Social Development until 2030 | Presidency and Government of the Republic of Cuba. Available in: National Plan for Economic and Social Development until 2030 | Presidency and Government of the Republic of Cuba.

and the disaster reduction for possible dangers of natural, technological and sanitary origin.

Indeed, this Program prioritizes energy efficiency and the development of renewable energy sources, which contributes, among other benefits, to reducing generation of greenhouse gases, mitigating climate change and promoting less carbon-intensive economic development. (Specific Objective 11); guaranteeing, in conditions of environmental sustainability, an adequate, reliable, diversified and modern energy supply that substantially increases the percentage of participation of renewable energy sources in the national energy matrix, essentially biomass, wind and photovoltaic (Infrastructure Axis. Objective Specific 7).

The rest of mentioned rules also complement the legal framework for energy regulation in Cuba, based on the systematicity and coherence of the legal system.

1.1 Define briefly the existing legal and financial measures in your country in order to promote the use of energy from renewable sources and to facilitate the energy transition. In particular, are there any incentives, economic and tax benefits?

Promoting the use of energy from renewable sources is part of the Economic Guidelines and Social Policy of Cuban Party and the Revolution for the period of 2016-2021,[9] which - among the objectives of energy policy- are committed to accelerating the fulfillment of the approved Program until 2030 for the development of renewable sources and the efficient use of energy;[10] as well as for conceiving new investments, constructive maintenance and capitalizable repairs focused on the efficient use of energy, by also implementing supervision procedures;[11] and projecting the educational system and the mass media in order to deepen the quality and comprehensiveness of the policy centered on saving, efficient and sustainable use of energy.[12]

Regarding maintenance, renovation and updating of tourist infrastructure, guidelines are committed to applying policies that guarantee its development and sustainability, focused to implement measures reducing the rate of water consumption and energy carriers, and to increase use of renewable energy sources and recycling of waste generated in the provision of tourist services, in harmony with the environment.[13]

Regarding the legal framework on renewable energies and energy efficiency, although there are references - as previously stated- both in Environment Law and in the Foreign Investment Law, as well as further Acts, the truth is that the main

[9] Guidelines of the Economic and Social Policy of the Party and the Revolution for the period 2016-202, approved by Agreement VIII-76 of 2017 of the National Assembly of People's Power available at http://www.granma.cu/file/ pdf/gaceta/Lineamientos%202016-2021%20Versi%C3%B3n%20Final.pdf (last visited 11 November 20221).

[10] ibid 204.

[11] ibid 206.

[12] ibid 208.

[13] ibid 215.

normative instrument aimed at promoting the energy transition in Cuba, under the mantle of the constitutional requirement, is the commented Decree-Law 345/2017, 'About the development of renewable sources and the efficient use of energy' and its complementary provisions, to which reference will be made in this section.

The objectives of this Decree-Law, also noted before, focus on the creation of a regime that promotes development of renewable sources and the efficient use of energy, with the purpose of: increasing participation of renewable sources of energy in electricity generation; progressively replace fossil fuels; diversify the structure of fossil fuels used in the generation of electricity; increase efficiency and energy savings; promoting investment, research and increasing energy efficiency, as well as production and use of energy from renewable sources, through the establishment of incentives and other instruments stimulating their development; expand production of equipment, means and spare parts by the national industry, for the use of renewable sources and energy efficiency; and establish a government work system including planning to fulfill the set objectives.

In particular, the forehead mentioned dedicates a Section to tariff and tax incentives and benefits (Chapter I, Fifth Section, Artt 8 to 12), promoting acquisition by natural and legal persons of equipment using renewable sources or others, allowing the efficient use of energy, who may avail themselves, if required, to bank credit, according current legislation (Art 8).

On the other hand, this is linked to foreign investment by establishing the use of renewable energy sources and the increase in energy efficiency, as a prioritized sector, which is why its benefits are given by total or partial exemptions, temporarily or permanently, as well as other tax benefits granted by a gradually ascending scale established in the law, in correspondence with the contribution they make to the national economy (Art 9).

In relation to tariffs, it also provides exemptions according to the rules established by the Ministry of Finance and Prices, for those legal entities that import raw materials, components, parts, pieces, equipment and accessories either for the execution of an investment process, or to manufacture equipment, devices and spare parts for the use of renewable energy sources (Art 10.1); and at the same time, it extends this possibility to imports centered on increasing energy efficiency, with exemptions and tariff discounts, when economically justified.

Finally, the Ministry of Finance and Prices also grants tax incentives to legal entities investing in equipment, rational and efficient means and use for renewable energy sources, when economically justified (Art 11).

As a final note, provisions of Artt 10 and 11 will not apply to foreign investment modalities having already the special treatment referred to in Art 9, precisely because it regulates incentives and exemptions in this sector (Art 12).

Now, references to which Decree-Law 345/2017 notes throughout its text, both in the section dedicated to incentives, benefits and tariff exemptions and later in its Final Provisions, has brought the enactment of a series of complementary norms that come to implement its provisions by the competent institutions, agencies and authorities.

Thus we find Instruction 6/2019 of 1 November 2019, of the Central Bank of Cuba,[14] which implements the Third Final Provision of Decree-Law 345/2017 granting credits by the President of Cuban Central Bank for the acquisition of equipment that use renewable energy sources, to natural people, according current regulations.

According to the Instruction, credits will be granted in Cuban pesos up to one hundred percent (100%) of the equipment´s value and on the bases and requirements established in Decree-Law no 289/2011 of 16 November 2011, 'About credits to individuals and other banking services' and Act no 99/2011 of 18 November 2011, of the Central Bank of Cuba. However, credits will be admitted only for solar water heaters and solar photovoltaic systems.

Act 141/2019 of 1 November 2019, from the Ministry of Internal Trade, implements the Second Final Provision of Decree-Law 345/2017, instructing its minister to establish the paths for commercializing renewable sources´ equipment and for the efficient use of energy. In this regard, this normative establishes the rules for wholesale and retail trade.

Furthermore, Act 123/2019 of Ministry of Energy and Mines, also dated 1 November 2019, expands regulations for the development of renewable energy sources, indicating obligations of superior business management organizations, government run business offices either provincial and local levels, as well as budgeted entities, which are in charge of planning and including in the economy plan, the execution, sustainability and control of the necessary actions, aimed precisely at increasing the use of these sources.

The prior indicates to Project Companies to compulsorily include within their design bases, the application of technologies that take advantage of renewable energy sources, which they must do, from the conceptual ideas of new investment projects.

Additional provisions refer to regulations for the acquisition by the Electricity Union of all electrical energy delivered to the National Electric System by independent producers generating from renewable sources. Independent producers are understood to be, for the purposes of the provisions, those energy producers that do not belong to the Electricity Union.

Specific regulations for the tourism sector are also introduced. In accordance with these, business systems and non-state forms management, dedicated to tourist activity must take care of technical and economic analysis corresponding to all their facilities and plan, according to their feasibility, the installation of renewable sources technologies such as: solar heaters, photovoltaic panels, solar pumps, air conditioning by absorption or with the use of cold water from the seabed and other.

The gradual introduction of electric vehicles is also promoted, especially in tourist, port, airport activities or in others where convenient. Batteries of these

[14] All complementary provisions referred to in this section appear in the same Official Gazette that publishes Decree-Law 345/2017.

vehicles are recharged from electrical energy generated with renewable sources or in the early hours of the morning with energy from the National Electric System.

All of it complemented by Act 124 from same institution and date, dedicated to 'Regulations to increase Energy Management, Efficiency and Conservation'; whose objective is to expand energy management, efficiency and conservation, as well as control of the implementation of Energy Management Systems in large consuming entities in all sectors of the national economy, to contribute to environmental sustainability and energy of the country; which is applied to state and non-state legal entities, to mercantile companies with one hundred percent (100%) Cuban capital and the modalities of foreign investment.

In compliance with this Act, the National Office for the Control of the Rational Use of Energy (ONURE) previously endorses the energy efficiency of household appliances, which are imported, produced or commercialized. The entities carrying out these operations, request from the ONURE the endorsement in correspondence with current legislation establishments.

Other provisions refer to the implementation of Energy Management Systems, based on the requirements established by the NC ISO 50001 standard and in particular for large consumer entities of energy carriers.

Recently, in compliance with the First Final Provision of Decree-Law 345/2017, the Minister of Energy and Mines issued Act 206/2021 of 15 July 2021,[15] in order to further promote development of renewable energy sources and increase their participation in the electric power generation matrix in the national territory, approved the importation by individuals of photovoltaic systems, their parts and pieces.

In addition, the Ministry of Finance and Prices released - as an incentive to import photovoltaic panels, their parts and pieces- Act 319/2021 of 21 July 2021,[16] in order to establish exemptions to individuals from paying customs duties for the importation of photovoltaic solar systems, their parts and fundamental pieces, when brought without commercial character, complying for such purposes with the provisions of the Minister of Energy and Mines.

2 What are the main policies of the development of prosumerism, self-consumption and renewable energy communities?

The main development policies of prosumerism, self-consumption and renewable energy communities are aimed at promoting and encouraging the production of energy by consumers, including the residential sector, using technologies taking advantage of renewable sources of energy for self-sufficiency

[15] Act 206/2021 of 15 July 2021, of the Minister of Energy and Mines. Published in the Official Gazette of the Republic of Cuba, no 67 Extraordinary, of 28 July 2021 available at https://www.gacetaoficial.gob.cu/es/resolucion-206-de-2021-de-ministry-of-energy-and-mines (last visited 11 November 2021).

[16] Act 319/2021, of 21 July 2021, of theMinistry of Finance and Prices. Published in the Official Gazette of the Republic of Cuba, no 67 Extraordinary, of 28 July 2021 available at https://www.gacetaoficial.gob.cu/es/resolucion-206-de-2021-de- ministry-of-energy-and-mines (last vissited 11 november 2021).

and the sale of surpluses to the National Electric System; as established by Decree-Law 345/2017 (Art 15). Also recently, as noted above, the importation of photovoltaic panels was approved, with payment exemptions (Resolutions 206/2021 and 319/2021, respectively).

This legal framework is also complemented by local development strategies (municipal and provincial) from a portfolio of projects that, according to their nature, may adopt any of the following modalities: economic-productive; sociocultural; environmental; institutional and research; regulations foresee a series of incentives for the management of local development project, among which is the application of a differentiated tax and price treatment, the latter by agreement between the parties, always by not generating subsidies.[17]

The owners of local development projects could be - in addition to state entities, self-employed workers, agricultural and non-agricultural cooperatives, mass and social organizations, institutions and legally recognized associative forms - other individuals or companies legally recognized.

In correspondence with the approved strategy to promote territorial development, the Ministry of Finance and Prices regulated the 'Procedure for budgetary financing of territorial development and the tax, financial, price and accounting treatment applicable to local development projects', by Act 114/2021,[18] establishing incentives such as exemption from payment of Customs Tax for importation of equipment and technology, related to investment processes, in accordance with the provisions of this Ministry for each local development project (Art 6); also the Ministry of Finance and Prices may, at the request of the provincial councils, exempt or subsidize payment of the taxes referred to in the Act, in correspondence with the characteristics and contribution of each project to the municipal and provincial development strategies (Art 4).

2.1 Provide some examples (if known) of best practices of prosumerism, self-consumption or energy communities experienced in your country (indicate link of the related websites where they can be viewed).

Right now just some local development projects are in the evaluation phase, the purpose of which is to promote energy production by consumers, based on the use of technologies taking advantage of renewable energy sources for self-sufficiency and the sale of surpluses to the National Electric System.

2.2 Provide some examples (if existing) of case law/leading cases in the field of prosumers and energy communities.

At the moment, there is no jurisprudence or outstanding cases to evidence.

[17] Decree 33/2021, "For the Strategic Management of Territorial Development". Published in Ordinary Official Gazette no 40 of 16 April 2021 available at Decree 33 of 2021 of the Council of Ministers | Official Gazette (gob.cu).

[18] Act 114/2021, 'Procedure for budgetary financing of territorial development and the tax, financial, price and accounting treatment applicable to local development projects' of 29 April 2021 of the Ministry of Finance and Prices. Published in Ordinary Official Gazette no 54 of 13 May 2021 available at Resolution 114 of 2021 of the Ministry of Finance and Prices | Official Gazette (gob.cu).

India

Sharmin Nisar Chougule

1 Provide an overview of the energy regulatory framework in your country. What is the main legal source of energy policy? What are the additional sources?

India's total installed capacity of energy stands at 386 GW[1] with 60.62% share of thermal, 25.59% share of Renewable Energy (RE),[2] 12.02% share of hydro, and 1.76% share of nuclear energy as of August 28, 2021. After the substantial and main share of Thermal Energy, Renewable Energy holds the 2nd sizable share in the ever burgeoning energy miscellany. Coal is the primary source of energy and is a dominant fuel for power generation in India. It accounts for 52.6% of India's electric generation in as on 31 July 2021.[3]

1.a Overview of the Energy Regulatory Framework and the main legal source of energy policy

The main source of law in India is its Constitution.[4] India follows a dualist approach,[5] Art 51 which is in the form of a judicially non-enforceable directive principle of state policy, aims at governance by 'promoting international peace and security; maintaining just and honourable relations between nations and fostering respect for international law and treaty obligations in the dealing of organized people with one another'. Art 51, along with Art 246 provides Parliament the competence of 'entering into treaties and agreements with foreign countries and implementing of treaties, agreements and conventions with foreign countries'. Further, Art 253 of the Constitution clarifies on the power of Parliament to make law for the implementation of international obligations and that it extends even to those matters that are otherwise within the legislative competence of states.

Indian Constitution provides for Electricity in the concurrent list.[6] The primary legislation of the Central Government governing the 'generation, transmission, distribution, trade and use of electricity' in India is the Electricity Act 2003 (EA

[1] All India Status, 'National Power Portal' available at https://npp.gov.in /dashBoard/cp-map-dashboard (last visited 28 October 2021).

[2] Wind Power, Small Hydro Power, Bio Power and Solar Power (Renewable Energy). As given on the National Power Portal, Hydro and Renewable Energy (As mentioned above) are taken as different categories.

[3] Ministry of Power (MoP), 'Power Sector at a Glance ALL INDIA' available at https://powermin.gov.in/en/content/power-sector-glance-all-india (last visited 28 October 2021).

[4] See Constitution of India available at https://legislative.gov.in/constitution-of-india (last visited 28 October 2021).

[5] ibid Art. 51, Art. 253, Art. 246 and List I in the Seventh Schedule, Entry 14. Also see, Entry 13 Union List - Parliament also has competence over participation in international conferences, associations and other bodies and implementing decisions made therein.

[6] ibid Entry 38 in List III of the seventh Schedule. The Central and State Legislatures both have concurrent powers to enact laws on this subject. In case if the laws enacted by the State ultra vires the Central laws or there is any repugnancy, the latter will prevail.

2003).[7] This legislation among other things, also provides for regulatory interventions for promotion of RE sources through 'determination of tariff, specifying renewable purchase obligation (RPO)s, facilitating grid connectivity and promotion of development of market'.[8] The EA 2003 also provides for a detailed framework of different administering authorities. The administration of the EA 2003 and Electricity Conservation Act[9] is looked into by the Ministry of Power (MoP). The MoP is primarily responsible for 'the development of electrical energy in India'. It is also responsible for 'the planning and formulation of the policies, investment related decisions as well as the monitoring of and the implementation of the power projects of the Government of India'.[10] It also is responsible for 'enacting and administering the legislations on the thermal and hydropower generation, transmission and distribution of electricity'.[11]

The Central Electricity Authority (CEA)[12] is a statutory organisation which has to exercise such functions and perform such duties as are assigned to it under the Electricity Act. It was constituted under section 3 of the erstwhile Electricity Supply Act 1948, which has been superseded by section 70 of the EA 2003.

Ministry of New and Renewable Energy (MNRE)[13] is a functionary of the Government of India and is largely responsible for all new and renewable energy related matters. As per the Government of India (Allocation of Business) Rules, 1961,[14] this Ministry is the delegatee on the subject matters of 'solar energy, biogas units, small hydel power, tidal energy, geothermal energy', and so on. MNRE is the current and last successor of the Commission for Additional Sources of Energy in the Department of Science & Technology in March 1981. As the name suggests, one of its aims is to supplement the sources of energy in order to meet the demand of energy. MNRE has further designated Solar Energy Corporation of India (SECI) and National Thermal Power Corporation (NTPC) to implement its schemes. SECI looks into the implementation and facilitation of these various schemes of renewable energy projects including the Jawaharlal Nehru Solar Mission (JNSM)[15] as well as

[7] Electricity Act, 2003, no 36 of 2003, Acts of Parliament (India) AVAILABLE AT https://powermin.gov.in/sites/default/files/uploads/The%20Electricity%20Act_2003.pdf (last visited 28 October 2021).

[8] ibid

[9] Electricity Conservation Act, 2001, no 52 of 2001, Acts of Parliament (India) available at https://www.indiacode.nic.in/handle/123456789/2003?view_type=browse&sam_handle=123456789/1362 (last visited 28 October 2021).

[10] Government of India, Ministry of Power, 'About the Ministry' available at https://powermin.gov.in/en/content/about-ministry (last visited 28 October 2021).

[11] ibid

[12] Central Electricity Authority, 'Functions' available at Functions - Central Electricity Authority (cea.nic.in) (last visited 28 October 2021).

[13] GoI, Ministry of New and Renewable Energy, 'What is the Ministry all about?' available at https://mnre.gov.in/the-ministry/what-does-the-ministry-do/ (last visited 28 October 2021).

[14] Cabinet Secretariat, Government of India (Allocation of Business) Rules, 1961 available at https://cabsec.nic.in/allocationofbusinessrules/completeaobrules/ (last visited 28 October 2021).

[15] Jawaharlal Nehru National Solar Mission, 'Towards Building SOLAR INDIA', SECI available at https://www.seci.co.in/upload/static/files/mission_document_ JNNSM(1).pdf (last visited 28 October 2021). Also see, Jawaharlal Nehru National Solar Mission (Phase I, II and III), International Energy Agency available at https://www.iea.org/policies/4916-jawaharlal-nehru-national-solar-mission-phase-i-ii-and-iii (last visited 28 October 2021).

Viable Gap Funding (VGF) for 'large scale grid-connected projects, solar park and ultra mega solar power projects scheme, grid-connected solar rooftop scheme, defence scheme and canal top scheme'.[16] One of the key bodies to provide financial assistance in renewable energy projects is the Indian Renewable Energy Development (IREDA), a Non-Banking Financial Institution (NBFI).

In terms of research objectives, amongst other authorities conducting research programs thereunder, National Institute of Wind Energy (NIWE) and National Institute of Bio-energy (NIBE), the MNRE's autonomous institutions - conduct national research in solar, wind and bio energy.

From the policy point of view, the GoI sets the National Tariff Policy[17] and National Electricity Policy.[18] In bringing in such policies, the GoI seeks consultation from the states and the Central Electric Authority. These policies at the federal level encourage energy from renewable sources. These also act as a guideline to the regulatory commissions set up at the central, state and Union Territory level viz., Central Electricity Regulatory Commission (CERC), the State Electricity Regulatory Commissions (SERC)s and the Joint Electricity Regulatory Commissions (JERC)s, respectively in making regulations for 'generation, distribution and transmission of electricity'. To give a brief jotting in this regard, the amendment of NTP of 2016[19] requires the SERCs to set aside a min. percentage of RPO from such sources considering the accessibility of such solar or non-solar power resources in the said region. Also, the impact on retail tariffs is to be taken into consideration and at preferential tariffs determined by the SERCs, the procurement is to be done by distribution companies (DISCOM).

The NTP policy is under revision and the Government is underway of making a draft National Electricity Policy, NEP 2021,[20] by a specially constituted expert committee. NEP 2021 will focus on 'optimum regulatory arrangements for the future, outline a template of some successful initiatives, set new medium-term objectives that build upon past achievements, and identify pathways to achieve these objectives'.

In order to further the production of energy via RE sources and to act in line with the concerns of 'climate, environment and macroeconomy', the Centre wanted to bring the National Renewable Energy Bill.[21] This legislation will provide for the

[16] 'Ministry of New and Renewable Energy Schemes launched by the Government to promote Solar Energy in the country available at https://pib.gov.in/ PressReleasePage.aspx?PRID=1514462 (last visited 28 October 2021).

[17] 'GoI, 'National Tariff Policy 2005' available at https://www.dhbvn.org.in /staticContent/actspolicies/nationaltariffpolicy.pdf (last visited 28 October 2021).

[18] GoI, 'National Electricity Policy 2005' available at https://powermin.gov.in /en/content/national-electricity-policy (last visited 28 October 2021).

[19] GoI, 'National Tariff Policy 2005 (revised in 2016)' available at tariff-policy-28.01.2016.pdf (wberc.gov.in) (last visited 28 October 2021).

[20] GoI, MoP, 'NEP 2021', available at https://powermin.gov.in /sites/default/files/webform/notices/Extension_of_date_for_submitting_comments_on_draft_NEP_2021_till_25_May%20_21.pdf (last visited 28 October 2021).

[21] MNRE, 'National Renewable Energy Bill' available at https://mnre.gov.in/img/documents/uploads/68b053c5a944493e813c24a93cb39263.pdf (last visited 28 October 2021).

production of clean energy in order to reduce dependence on fossil fuels, ensure security of supply and reduce recognised pollutants emissions keeping in mind the environmental as well as other factors like those of the social, economic point of view.

Particularly, in the case of solar energy, India's total 'RE installed capacity had reached over 89.63 GW (excluding hydro power above 25 MW) as on October 31, 2020. Also, the installed capacity of grid-connected solar power substantially increased from 25 MW in 2010-11 to approx. 36.32 GW as on October 31, 2020. According to a Press Release of the GoI, another 58.31 GW capacity of solar power is under installation or tendering process at present'.[22] On 14 June 2018, the MoP notified 'the long term trajectory of RPOs for solar as well as non solar for next three years from 2019 – 20 to 2021 – 22, reaching 21% of RPO by 2022, with solar being 10.50%'.[23]

Lastly, at National level, it can be sumed up that India including *inter alia* the above given framework, has in addition put in place many Schemes including those specifically covered under the National Action Plan on Climate Change (NAPCC).[24]

Internationally, India has a very influential position in the world economy given the fact that India is an emerging giant and a part of the G20 countries. With such an influential position comes the additional obligation of acting in a responsible and explicable manner. Therefore, apart from the above sources of energy policy, another source is the Energy Security and International Policy.

Recently, at the United Nations Climate Action Summit, India's Prime Minister Narendra Modi said that 'India's renewable energy target will be increased to 450 GW'. Reiterating India's commitment under Nationally Determined Contributions (NDCs) under Paris Agreement, Mr. Modi said that 'India has reduced its emission intensity by 21 per cent over 2005 levels. Our solar capacity has grown from 2.63 GigaWatts in 2014 to 36 GigaWatts in 2020. Our renewable energy capacity is the fourth largest in the world. It will reach 175 GigaWatts before 2022. And, we have an even more ambitious target now - 450 GigaWatts of renewable energy capacity by 2030'.[25] He also spoke about India's other global efforts like the International Solar Alliance which aims to generate solar energy through the use of technology, capacity building, innovation, R&D.

In the current decade of 2021-30, under its NDCs India intends to achieve 40% installed capacity of electrical power from 'non-fossil fuel-based energy resources'.

There are various Policies, Mechanisms and Schemes of the Government that are elaborated in the following answers.

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[22] Press Information Bureau (PIB), GoI, 'MNRE: YEAR END REVIEW-2020' available at https://www.pib.gov.in/PressReleseDetailm.aspx?PRID=1685046 (last visited 28 October 2021).

[23] MNRE, GoI available at https://rpo.gov.in/Home/Objective (last visited 28 October 2021).

[24] Ministry of Science and Technology, Department of Science and Technology, 'Climate Change Program' available at https://dst.gov.in/climate-change-programme (last visited 28 October 2021).

[25] Narendra Modi, 'PM's remarks at Climate Action Summit 2019 during 74th session of UNGA, September 23, 2019' available at https://www.narendramodi.in /pm-modi-s-remarks-at-summit-on-climate-change-546575 (last visited 28 October 2021).

1.1 Define briefly the existing legal and financial measures in your country in order to promote the use of energy from renewable sources and to facilitate the energy transition. In particular, are there any incentives, economic and tax benefits?

In its efforts to shape its energy mix, India uses several strategies and tools including subsidies in the form of fiscal incentives, regulated energy prices and other forms of government support. It might not be possible to give a single succinct view of all the existing legal and financial measures. However, following are some of the major initiatives of the Government in the RE Sector.

To provide for and recognise the status and rights of the prosumers and put them at par with the consumers, the MoP on December 31, 2020 notified the Electricity (Rights of Consumers) Rules, 2020.[26] Primarily, these rules envisage the distribution companies (also known as DISCOMS) to be more answerable and transparent towards the consumers. These rules also provide that the prosumers have the right to set up Renewable Energy (RE) generation unit including roof top solar photovoltaic (PV) systems – either by himself or through a service provider'. These Rules also provide for the gross metering, net-metering, net-billing and feed in tariff provisions. 'Net metering for loads up to 10 kW and for gross metering for loads above 10 kW'.[27] These Rules were amended in June 2021.[28] These amended rules now allow 'Net-metering to the prosumer for loads up to 500 kilowatts (kW) or up to the sanctioned load, whichever is lower, and gross metering for loads over 500 kW'. The amendment comes as a push to the prosumer culture and will act to the advantage of the MSME sector generally having installed capacity of more than 10kW.

In order to ensure an uninterrupted supply of electricity, the GoI, issued the 'Guidelines for Tariff Based Competitive Bidding Process for Procurement of Round-The Clock Power from Grid Connected Renewable Energy Power Projects'.[29] SECI is the nodal agency in this regard. The bundling arrangement under these guidelines will help to complement the Renewable Power with Coal Based Thermal Power Projects to address the problems of the sporadic wind and solar power supply and under-utilisation of the capacity of the infrastructure for transmission.

The MoP through its order dated 5 August 2020, under para 6.4(6) of the National Tariff Policy, 2016,[30] 'waived the inter-state transmission (ISTS) charges and losses on the transmission of electricity generated from power plants using solar and wind sources of energy, including solar-wind hybrid power plants with or without storage

[26] The Electricity (Rights of Consumers) Rules, 2020 available at https://pib.gov.in/PressReleasePage.aspx?PRID=1682384 (last visited 28 October 2021).

[27] ibid

[28] Electricity (Rights of Consumers) Amendment Rules, 2020 available at https://powermin.gov.in/sites/default/files/webform/notices/Electricity_Rights_of_Consumers_Amendment_Rule_2021.pdf (last visited 28 October 2021).

[29] MNRE, 'Guidelines for Tariff Based Competitive Bidding Process for Procurement of Round-The Clock Power from Grid Connected Renewable Energy Power Projects, complemented with Power from Coal Based Thermal Power Projects', avilable at https://mnre.gov.in/img/documents/uploads/file_f-1595577684752.pdf (last visited 28 October 2021).

[30] GoI, n 19 above.

commissioned (for sale to entities) till June 20, 2023'. Such extension until 2023 can have larger ramifications when the share of renewable energy in the ISTS increases. Certain other eligible Solar PV power plants, set up through competitive bidding (and complying with the stipulated criteria thereunder), including the aforementioned are also exempted from paying ISTS charges and losses on the transmission of electricity generated from them for a period of 25 years from the date of their commissioning.

To provide a 'must run status to all renewable energy power plants except biomass power plants with an installed capacity of 10MW and above and non-fossil fuel-based cogeneration plants and not be subjected to merit order despatch principles' The Central Electricity Regulatory Commission in its CERC (Terms and Conditions for Tariff Determination from Renewable Energy Sources) Regulations, 2017 has made certain provisions.[31]

Most of India lives in villages and centralised energy outlook is not feasible in India in the long run given the history so far. The GoI, therefore, is scouting for other options to facilitate 'the adoption of decentralized renewable energy', by predominantly focusing on industries and rural areas. A draft policy on 'developing and promoting decentralized renewable energy which can support rural livelihoods'[32] is also being developed by the MNRE. The most recent draft of the said policy, highlights R&D, ameliorates access to finance and other wherewithal, and trains the workforce.

Further, in order to provide electricity to all households, the GoI on 11 October 2017, launched the 'Saubhagya Scheme' also known as the 'Pradhan Mantri Sahaj Bijli Har Ghar Yojana'. This scheme was aimed at improving rural electrification, which is also connected to and has an impact on economic and social issues. This scheme provides for solar Photo-Voltaic (PV) based stand-alone systems for unelectrified households located in remote and inaccessible villages and habitations, where grid extension is not feasible or cost-effective. According to a Press Release of the MoP,[33] as on 31 March 2019, electrification of villages (of all willing households) under the said scheme was reported by the states.

One of the other ways to make rural India stronger is by making the standing of the farmer community strong. With the aim to provide financial and water security to farmers by promoting uptake of solar pumps to also further benefit the agricultural sector of the country. The GoI launched the 'Pradhan Mantri - Kisan Urja Suraksha evam Utthaan Mahabhiyan (PM-KUSUM)' in March 2019. It supports farmers to set up solar power generation capacity and sell it to the grid, and to reduce their dependence on diesel and kerosene.

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[31] CERC, 'The Central Electricity Regulatory Commission (Terms and Conditions for Tariff Determination from Renewable Energy Sources) Regulations', 2017 available at https://cercind.gov.in/2017/regulation/Noti131.pdf (last visited 28 October 2021).

[32] MNRE, 'Draft Policy Framework for developing and promoting Decentralized Renewable Energy (DRE) Livelihood Applications in Rural Areas – for comments of stakeholders' available at https://mnre.gov.in/img/documents/uploads/file_f-1603098738291.pdf (last visited 28 October 2021).

[33] PIB, MoP, 'Electrification of Villages', 2019 available at https://pib.gov.in /Pressreleaseshare.aspx?PRID=1592833 (last visited 28 October 2021).

'Current support for decentralized solar in FY 2020 however stands only at 26% of the total support provided for solar energy through DBTs'.[34] The scheme in its various components (A, B and C)[35] provides for setting up of decentralised grid, stand-alone water pumps and solarising of these pumps. Basis the first year of the PM-KUSUM scheme implementation and the findings therefrom, the MNRE on 13 November 2020 released an amendment as well as clarification to the PM-KUSUM Scheme.[36] This helped to address the various questions and concerns observed from its first year of implementation. Further, to install solar power plants on the pasture and marshy land of farmers, the GoI in its November 2020 amendment, has enlarged the gamut of Component A. Also, to support small farmers, the size of the solar plant less than 500 kW will also receive support under the scheme. Further, to allow more participation, the solar power plant within twelve months from date of issuance of Letter of Award will be commissioned by the Renewable Power Generator. Under the amended scheme, 33% of the service charges will be retained for 'nationwide information, education and communication activities', Central Financial Assistance will be made available to 'solar pumps to be set up and used by water user associations, farmer producer organisations, primary agriculture credit societies or for cluster based irrigation system with a capacity of higher than 7.5HP i.e., 5.6kW considering up to 5HP i.e., 3.73kW capacity for each individual in the group'.[37] The amendment also provides for an invitation and special subsidy for solar water pumps with 'Universal Solar Pump Controller (USPC)'. Certain other provisions of the amendment provide effective use of solar energy generated throughout the year by using USPC, which will not only run the water pump but also run other electric equipment like cold storage, battery charging, flour mill, etc. As per the official statement of MNRE 'Installation of USPC will increase the income of farmers, which is the aim of the PM-KUSUM scheme'. The statement said that 'now farmers will be provided solar panels and they will be able to use the generated solar power to meet the irrigation needs and sell the surplus solar power to DISCOMs at the pre-determined rate'.[38]

Another effort on the solar energy front is the 'RoofTop Solar Programme Phase-II'.[39] This scheme provides for 'accelerated deployment of solar rooftop systems with a target of 40 GW installed capacity by the year 2021-22'. For 4 GW of solar rooftop capacity in residential sector, this scheme provides financial incentive. For

[34] The International Institute for Sustainable Development and the Council on Energy, Environment and Water, 'Mapping India's Energy Subsidies 2021: Time for renewed support to clean energy' available at https://www.iisd.org /system/files/2021-07/mapping-india-energy-subsidies-2021.pdf (last visited 28 October 2021).

[35] MNRE, National Portal of India, 'Pradhan Mantri - Kisan Urja Suraksha evam Utthaan Mahabhiyan' available at https://www.india.gov.in/spotlight/pm-kusum-pradhan-mantri-kisan-urja-suraksha-evam-utthaan-mahabhiyan-scheme (last visited 28 October 2021).

[36] MNRE, 'Amendments/clarifications in the implementation Guidelines of Pradhan. Mantri Urja Suraksha evam Utthaan Mahabhiyaan (PM-KUSUM) Scheme' available at https://mnre.gov.in/img/documents/uploads/file_f-160526486 7409.pdf (last visited 28 October 2021).

[37] ibid

[38] MNRE, 'MNRE expands scope of PM-KUSUM Scheme' available at https:// pib.gov.in/PressReleaseIframePage.aspx?PRID=1672580 (last visited 28 October 2021).

[39] MNRE, 'Guidelines on implementation of Phase – II of Grid Connected Rooftop Solar Programme' available at https://mnre.gov.in/img/documents/uploads /7ccd3b4b3bb94a51af516e2ee4fdede3.pdf (last visited 28 October 2021).

an incremental attainment, there is also a provision to incentivise the DISCOMS. Use of 'domestically manufactured solar cells and modules have been mandated' for the residential sector has been mandated under this scheme. This will also act as a stimulant of adding to the 'solar cell and module manufacturing' in the country. In the Review of the Implementation of this Programme, it was stated that so far, the cumulative installed rooftop solar capacity of 4.32 GW is in place.[40]

India also knows how to make its wastes useful. The MNRE is implementing a 'Scheme to Support Promotion Of Biomass Based Cogeneration In Sugar Mills And Other Industries In The Country'. The aim of this scheme will be 'to generate energy from industrial, urban, and agricultural waste and thereby avert as well as fight pollution'.[41]

Last but not the least, one of the most important projects is the Green Energy Corridor (GEC) projects. This project facilitates 'evacuation and integration of the RE grid'. This Corridor which is a grid strengthening project which will help to synchronize RE from energy-rich areas to other parts of the country. Asian Development Bank whose one of the focus areas is the energy sector has through an arrangement with India granted a loan for the said GEC.

In terms of specific financial measures, it can be stated that overall, the total quantified subsidies for energy[42] since Financial Year (FY) 2016 has seen no change in real terms. As per a report of the 'International Institute for Sustainable Development and the Council on Energy', 'Among the total quantified subsidies in FY 2020, 81% of beneficiaries were consumers, 12% were producers, and the rest were both. Quantified renewable energy subsidies have doubled from INR 4,292 crore (USD 606 million) in FY 2014 to INR 8,577 crore (USD 1.2 billion) in FY 2020. However, when seen on YOY basis, these Quantified Renewable energy subsidies have stagnated in 2019 since peaking in 2017 from the high of INR 15,470 crore (USD 2.2 billion). In 2020, they stood at INR 8,577 crore (USD 1.2 billion) which is 45% lower than what was in 2017'.[43] The said stagnation has occurred notwithstanding the various 'new large subsidy programs' and because of the fact that there is a very unvarying dwindling of aid to 'grid-scale solar and wind as they achieved market parity'.[44] This report also notes that the RE subsidies are likely to bide around their present levels, with a probable paltry decrease to indicate curtailed investment and consumption.[45]

Renewable policies and incentives are established both at national and state level. The GoI has provided tax and fiscal incentives to electricity generated from specific

[40] MNRE, 'National Workshop on Review of Implementation of Rooftop Solar Phase II Programme 12th June 2021' available at https://solarrooftop.gov.in /notification/115_notification.pdf (last visited 28 October 2021).

[41] MNRE, 'Scheme to Support Promotion Of Biomass Based Cogeneration In Sugar Mills And Other Industries In The Country' available at https:// mnre.gov.in/img/documents/uploads/997d351fae16480dbb85065f47ad1c51.pdf (last visited 28 October 2021).

[42] This total quantified subsidy includes coal, O&G, T&D, Renewable Energy, EV Subsidies.

[43] The International Institute for Sustainable Development and the Council on Energy, Environment and Water, n 34 above.

[44] ibid

[45] ibid

energy sources as accelerated depreciation which allows for higher deductions towards deprecation in the early life time of an asset. This 'stood at INR 3,101 crore (USD 438 million) in the FY 2020'.[46]

Other major quantified subsidies in FY 2020 for renewable energy were[47]: 'Lower Goods and Services Tax as well as customs duty – wind power, at INR 1,132 crore (USD 160 million), Generation-based incentives for wind power, at INR 1,126 crore (USD 159 million), The off-grid and decentralized solar application scheme, at INR 460 crore (USD 65 million), Waiver of inter-state transmission system (ISTS) charges for solar and wind power, at INR 430 crore (USD 61 million)'[48]

In order to improve the Operational and Financial efficiency of the State-owned DISCOMS, the MoP in 2015, launched the 'UDAY (Ujwal Discom Assurance Yojana) Scheme for Operational and Financial Turnaround of Power Distribution Companies'.[49] It is noted that this scheme could not do more positives to the DISCOMS because of some inherent managerial and governance issues.[50] Although this might not be directly connected with RE. Nevertheless, stability in operations of DISCOMS will go a long way to support the RE adoption in the country.

Goods and Services Tax (GST) was implemented in 2017. The principal aim of the GST regime is to subsume the various consumption taxes under one heading, end the multiplicity system of taxation levied by both the centre and state governments and thereby reduce the complications of the indirect tax framework and simultaneous tax cascading. In making a RE power plant functional, various components and services are required and accordingly, GST is applicable to such goods and services. Consequently, after this new framework came into place, the cost of power projects were increased. The CERC has acknowledged GST imposition as a 'change in law event under generation and transmission project contracts, and accordingly awarded compensation to developers'.[51]

At state level, many of the Indian states have specific policies based on the source of energy for eg, wind and solar. This depends on the potentiality of such a source in a particular state. Through these policies, the governments of states 'grant various fiscal incentives such as exemption of electricity duty, exemption from cross-subsidy surcharge, exemption from payment of stamp duties and land registration charges and exemption from transmission and distribution charges for wheeling of power'.[52]

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[46] ibid

[47] ibid

[48] ibid

[49] MoP, 'UDAY' available at https://www.uday.gov.in/home.php(last visited 28 October 2021).

[50] S. Banerjee, 'Discom Distress' *Business Today*, 2021 available at https:// www.businesstoday.in/magazine/industry/story/discom-distress-300724-2021-07-07 (last visited 28 October 2021).

[51] CERC, 'Petition no 73' available at https://cercind.gov.in/2021/orders/73-MP-2020.pdf (last visited 28 October 2021).

[52] Forum of Regulators (FOR), 'Review of Status of Open Access in Distribution' available at http://www.forumofregulators.gov.in/Data/Reports/FOR%20Status %20of%20Open%20Access-13-01-2020.pdf (last visited 28 October 2021).

Before ending this segment on finance, I would also like to bring in reference to yet another thrust to the RE sector. According to Prime Minister Narendra Modi greater Foreign Direct Investment (FDI) will be a boost to the sector.[53] Looking at the GoI's focus on Aatmanirbhar Bharat as a strategy towards the recovery of economy and 'the allocation of INR 4,500 crore (USD 0.6 billion) to a National Programme on High Efficiency Solar PV Modules, as part of the Production-Linked Incentive Scheme' recently. Such forms of support from the GoI might assist in drawing more foreign investors FDI in RE, particularly here, solar.

Solar PV investment saw an increase between 2016 and 2018 after which it saw a decline. FDI in the RE sector was at 'US$ 9.83 billion between April 2000 and December 2020'. Under the 'Union Budget 2021- 22, US$ 42 billion has been allocated to India's renewable energy sector for a revamped, reforms-based and result-linked new power distribution sector scheme over the next five years'.[54]

1.2 Have the Directive (EU) 2018/2001 and the Directive (EU) 2019/944 been transposed in your country? Which are the legislative instruments that have transposed the Directives?

NA

1.2.1 Provide a short description of the main changes on energy policies introduced with the transposition of the Directive (EU) 2018/2001 (e.g. adoption of the specific support schemes for energy from renewable sources; adoption of regulations and codes for the enforcement of administrative procedures; particular rules for the creation of the community energies, etc.) and of the Directive (EU) 2019/944 (e.g. rules on the generation, transmission, distribution and supply of electricity; specific rules on the protection of the consumers; provisions on the creation of citizen energy communities, etc.).

NA

1.3 In case the Directives have not been transposed into national law, indicate (if existing) drafts of the law under discussion for the future transposition and eventual websites where they can be found.

NA

[53] N. Modi, 'India has Demonstrated that Sound Environmental Policies Can also be Sound Economics: PM' available at https://www.narendramodi.in/text-of-pm-s-address-at-the-3rd-re-invest-2020-552580 (last visited 28 October 2021). Also see, PIB, 'Prime Minister to inaugurate REINVEST- 2020 on 26 November 2020, In India during the last 6 years, over Rs 4.7 lakh crore were invested and India has become a favoured destination for investment in renewables: Shri R.K.Singh' available at ttps://pib.gov.in/PressReleasePage.aspx?PRID=1674019 (last visited 28 October 2021).

[54] India Brand Equity Foundation, 'Power Sector', 2021 available at https:// www.ibef.org/download/Power-March-2021.pdf (last visited 28 October 2021).

2 What are the main policies of the development of prosumerism, self-consumption and renewable energy communities?

Policymakers use such mechanisms to encourage the spread of RE technologies. Most commonly, these policies include renewable purchase obligations, feed-in tariffs, Renewable Energy Certificate (REC)s mechanism, reverse auctions, public benefit funds, and net-metering programs. For governments choosing among policy mechanisms, their particular needs and objectives will determine the most effective policy combination. The RE regulatory framework in India is still developing. The authorities in all key SERCs and CERC, the CEA, etc are bringing in place, or reconsidering, or revamping the RE regulatory framework. These efforts of the authorities that enable development of prosumers includes *inter alia* the policies of gross metering, net-metering, net-billing and feed-in tariffs.

2.a Electricity Rights of Consumers Rules 2020 and the Recent Amendment

As discussed in the answer to question 1.1, the Electricity Rights of Consumers Amendment Rules 2021[55] in rule 11, sub rule (4), makes provisions for Prosumers who avail net-billing or net feed-in arrangement, Electricity Regulatory Commissions (ERC) may introduce dynamic Time of the Day (TOD) tariffs which will create a framework to incentivise the Prosumers 'to install energy storage for utilization of stored solar energy by them or feeding into the grid during peak hours, thus helping the grid by participating in demand response of the DISCOMS'. Another provision to this rule 11 stipulates that 'in case of net-metering or net-billing or net feed-in arrangement, the distribution licensee may install a solar energy meter to measure the gross solar energy generated from the grid-interactive rooftop solar systems for RPO credit, if any'. Furthermore, 'ERCs may permit gross-metering for Prosumers who would like to sell all the generated solar energy to the distribution licensee instead of availing the net-metering, net-billing or net feed-in facility and the ERCs shall decide generic tariff for gross-metering as per tariff regulations'.[56]

2.b Electricity Act - Proposed amendment

The Electricity Bill of 2018,[57] which was first introduced as a draft in 2014, to start with provided for time-agnostic definition of 'Renewable Energy' and 'Renewable Energy Service Company'. This 2018 bill also provided for RPOs and Renewable Generation Obligations (RGO)s; decentralised distributed generation; smart grid and metering provisions. However, this bill lapsed upon the dissolution of the Lok Sabha. The present draft bill is that of 2020.[58] One of the major amendments proposed to the principal act is the power vested in the Central

[55] n 27, above.

[56] ibid

[57] Draft Electricity Bill, 2018 available at https://prsindia.org/files/bills_acts/bills_parliament/1970/Draft%20Electricity%20Bill%202018.pdf (last visited 28 October 2021).

[58] Draft Electricity Bill, 2020 available at https://prsindia.org/files/bills_acts/bills_parliament/1970/Draft_Electricity_Amendment_Bill_2020_for_comments.pdf (last visited 28 October 2021).

Government to 'prepare and notify a National Renewable Energy Policy' this will promote the RE sources of energy and fix the min. Purchase obligations from such sources. This draft bill also provides for 'Electricity Contract Enforcement Authority (ECEA) to deal with specified contract-related disputes in the energy sector'; Under Section 62, an amendment provides that 'Government subsidy will not be accounted for while determining the tariff. Such subsidy will be provided directly to consumers'. This bill also provides for a new concept of distribution 'sub-licensee'. This 'Distribution sublicensee can distribute electricity on its behalf in a particular area within its area of supply, with the permission of the appropriate State Commission'. Under section 14 amendment, the distribution sub-licensee will 'not be required to obtain any separate license from the appropriate State Commission'.

2.1 Provide some examples (if known) of best practices of prosumerism, self-consumption or energy communities experienced in your country (indicate link of the related websites where they can be viewed).

There is a tremendous potential of the use of Artificial Intelligence and Blockchain in the Energy Sector. Following are a few examples of how AI is used in the Energy Sector in India. Not all of the following examples particularly deal with prosumerism:

1) In New Delhi, the capital of India, Tata Power-DDL has in collaboration with the Government of National Capital Territory (NCT) and India Smart Grid Forum (ISGF) has launched the first live solar energy trading project. This project 'uses Power Ledger (an Australian Company's) blockchain-enabled technology to allow their prosumers (the customers who have generated electricity) to sell their excess energy by facilitating peer-to-peer (P2P) trading of electricity from over 2 MW of solar PV systems in the National Capital region'. This project allows the Consumers to choose their prosumer from whom they decide to purchase electricity. The Australian company's technology provides complete details of 'blockchain audit trail of energy transactions providing near-time settlement'.

This project enables development of an integrated ecosystem of grid-connected, distributed energy resources including EV Charging Stations and Battery Energy Storage Systems that can directly participate in the P2P marketplace.

According to TATA Power, this project is in line with the 'National Strategy on Blockchain, MEITY: P2P Energy Trading Project brings the revolutionary blockchain technology to the Indian Power Sector' and the 'International Solar Alliance'. This project will allow prosumers access to the energy trading market where they can sell their surplus energy in a dynamic pricing environment. Given this incentive to the prosumers, it will further increase the take up and use of such grid connected Rooftop PV among more and more people.

Further details on this project can be found in the link below:

https://www.tatapower-ddl.com/pr-details/199/1658486/tata-power-ddl-rolls-out-live-peer-to-peer-(p2p)-solar-energy-trading,-a-first-of-its-kind-pilot-project-in-delhi

2) Another example is Climate Connect. This company was the very first Indian company to 'develop price forecasting models for the power exchange market'. The company believes that Artificial Intelligence & Machine Learning will be the most important facilitator of the progression of human civilization to '100% renewables powered grid, at 100% reliability of supply, accessed as a fundamental human right'.

Climate Connect works at the 'intersection of energy, data science, software technology, and AI & ML, the team builds data platforms with AI & ML driven models and algorithms to provide analytics, forecasting, and automated decision making for customers in energy markets worldwide including India, China, Europe, and the USA'.

Details on Climate Connect can be found at:

https://www.climate-connect.com/;

3) Yet another interesting example is of the Avrio Energy Private Limited. This name is somewhat popular in the UK while in India, the co-founder Puneet Batra along with Ankit Chouhan, wishes to 'create a viable business venture which will make the future sustainable'. As understood from the data available on their start-up, their idea is to create a solution using technology (particularly, algorithms) which as a corrective step will help to make informed choices and thereby reduce electricity consumption. Further details on Avrio are available on the below links:

https://avrio.energy/about;

https://www.avrioenergy.com/about-us;

4) Prosumers Solar, a small-scale wholesaler in Pune, India sells Solar Panel, Solar Power Panel & Solar Edge Inverters and also provides a complete 'under one roof' facilities to set up solar solutions with on-grid systems to help consumers becoming prosumers. They have set up solar solutions in willing housing societies in Pune.

Details about their work are available on the below link:

https://www.facebook.com/prosumersolar/;

2.2 Provide some examples (if existing) of case law/leading cases in the field of prosumerism and energy communities.

All the energy related disputes are adjudicated by statutory regulatory bodies set up for this purpose. The nature of these bodies is quasi-judicial. In the power sector, independent electricity regulatory commissions have been established and empowered to adjudicate disputes at the central and state or union territory levels, ie, the Central Electricity Regulatory Commission, State Electricity Regulatory Commissions and Joint Electricity Regulatory Commission, respectively. They have the powers of a civil court to inquire or conduct proceedings in a matter under the EA 2003 and can impose a penalty for non-compliance with the direction of the Regulatory Commission. Regulatory Commissions also have the power to refer the parties to arbitration. An appeal can be made to the Appellate Tribunal for

Electricity (APTEL) from the decision of the regulatory commission. In certain cases, an appeal from the decisions of the APTEL also lies to the Supreme Court of India. In addition to the regulatory Commission/s, setting up of another agency ie, Electricity Contract Enforcement Authority (ECEA) is also in pipeline under the Electricity (Amendment) Bill 2020. According to the draft bill, ECEA's jurisdiction will specifically include adjudication 'upon matters regarding performance of obligations under a contract related to sale, purchase or transmission of electricity'.[59] Regulatory Commissions will continue to have the powers already vested in them to decide on the disputes tariff and the like. This is a major concern because most of the disputes are somewhat connected to tariff related issues. Under such circumstances, the exact responsibilities of these quasi-judicial authorities may appear vague and create problems in the long run. This might ultimately even result in the possibility of failure of this new arm ECEA when the system already in place has done no great wonders.

Although the dispute settlement framework is already in place as discussed above. However, the supreme judicial body viz., the Supreme Court of India has been given humongous powers under the Constitution of India to decide upon cases bringing in question the enforceability of fundamental rights. Art 21 of the Indian Constitution provides for Right to Life and many aspects of fundamental rights which are not verbally provided for in the text of Indian *grundnorm* are prayed for under Art 21. At times, there have been cases where Right to Clean Environment as a fundamental right was claimed under the said Article. The Supreme Court was approached in one such case – Hindustan Zinc v. Rajasthan Electricity Regulatory Commission (RERC).[60] The appeal was made by Hindustan Zinc which alongside other 16 petitioners filed a case previously in the Rajasthan High Court against the Rajasthan Electricity Regulatory Commission (RERC). The chief contention of the petitioners was that RERC lacked authority to pass RPO related orders or to charge surcharge because under the EA 2003 captive power plant and open access were de-licensed activities. Further, according to the petitioners, RPO under EA 2003 was allowed only on the 'total consumption in the area of the distribution licensee' and the interpretation was therefore that it applies only to the distribution licensees RPO. The Rajasthan High Court held that the word 'total consumption has been used in the EA 2003, and should be considered as total consumption in the area of distribution licensee in all modes'. The court also reiterated the objective of RE obligation which is the greater public interest. It noted that 'the constitution casts duty on the Regulatory Commission to protect and improve the natural environment. This duty according to the court can be imposed on captive power plant and open access as well'. The court therefore dismissed the appeal.

One of the petitioners, Hindustan Zinc, appealed in the Supreme court. The Supreme Court upheld the RPO regulations made by RERC and dismissed the appeal of the petitioner.

[59] ibid

[60] *Hindustan Zinc Ltd.* v *Rajasthan Electricity Regulatory Commission (RERC)*, Civil Appeal no 4417 of 2015 (Arising out of S.L.P.(C) No. 34063 of 2012) (India).

In majority of the cases where it appears to the Supreme Court that the appeal made to it is to be dismissed and the authority clearly lies with the Regulatory Commission to adjudicate upon such disputes, the court has dismissed the appeal, in some cases upheld the order and redirects such cases to regulatory commission. Given the constraint of space not all such cases can be detailed here however, Bangalore Electricity Supply Company Limited (BESCOM) Versus E.S. Solar Power Pvt. Ltd. & Ors.[61] is one such recent cases that can be considered in this regard.

There also have been instances where the Appellate Tribunal For Electricity has decided in favour of parties. For instance in Clearsky Solar Private Limited through its Authorised Signatory v. Karnataka Electricity Regulatory Commission Through its Secretary and Others;[62] Welspun Renewables Energy Private Limited v. Tamil Nadu Electricity Regulatory Commission, Through Secretary;[63] National Solar Energy Federation of India Limited v. Tamil Nadu Electricity Regulatory Commission;[64] M/s Ultratech Cement Ltd. v. Karnataka Electricity Regulatory Commission;[65] JSW Steel Limited v. Karnataka Electricity Regulatory Commission;[66] Tamil Nadu Spinning Mills Association v. Tamil Nadu Electricity Regulatory Commission & others.[67]

Although on paper there appears to be a very rosy picture of a prosumer conducive ecosystem, unfortunately, one needs to take a peek into the reality to get a better idea. The Central Government had set a 40 GW target of rooftop solar by 2022 maybe thinking that it is easily attainable. However, the cumulative installed rooftop solar capacity as on 12 June 2021 is only 4.32 GW which is nowhere close to the set target. There are always two sides of a coin.

On one hand, there are DISCOMS who have their own genuine concerns. DISCOMS strife against net metering majorly because it pays the prosumer for power generated at the same rate they pay to the DISCOM despite the fact that solar PV generates power at relatively lesser rate, even though the latter procures most of the power from thermal plants. The cost of such procurement is way more than solar. Another reason for the said friction is that the DISCOMS who are already struggling with losses do not want to lose their large consumption consumers by installing rooftop capacity as they are the ones who are financially better to pay the bills on time. DISCOMS discouraging consumers to become prosumers, is one of the principal reasons why the rooftop solar strategy is not taking off despite the substantial subsidising of the installations by the government.

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[61] *Bangalore Electricity Supply Company Limited (BESCOM)* v *E.S. Solar Power Pvt. Ltd. & Ors.*, Civil Appeal no 9273 of 2019 (India).

[62] *Clearsky Solar Private Limited through its Authorised Signatory* v *Karnataka Electricity Regulatory Commission Through its Secretary and Others*, Appeal no 160 of 2020 & Ia no 1019 of 2020 (India).

[63] *Welspun Renewables Energy Private Limited* v *Tamil Nadu Electricity Regulatory Commission*, Through Secretary Appeal no 118 of 2016 (India).

[64] *National Solar Energy Federation of India Limited* v *Tamil Nadu Electricity Regulatory Commission*, Appeal no 151 of 2016 (India).

[65] *M/s Ultratech Cement Ltd.* v *Karnataka Electricity Regulatory Commission*, Appeal no. 322 of 2016 (India).

[66] *JSW Steel Limited* v *Karnataka Electricity Regulatory Commission*, Appeal no 333 of 2016 (India).

[67] *Tamil Nadu Spinning Mills Association* v *Tamil Nadu Electricity Regulatory Commission & others*, Appeal no 191 of 2018 (India).

On the other hand there are prosumers, with poor understanding of PV performance, cost, and payback period. These prosumers are also confused on the specifications of net-metering. Furthermore, prosumers also face uncertainty in the selection of their project developer. They are misinformed at times of the services provided by the developer. Also, Electricity Regulatory Commissions of a state recommending certain developers will lead to prosumers thinking that those developers are approved or accredited by the Commissions, that's another constraint. Also, limited appeal and ambit of the net-metering program is a problem. Net-metering is appealing only to lower middle to upper class of the population, restricting its true potential burgeoning and reach. To add to this is the lack of awareness of Solar PV or the intricacies of metering mechanisms even those who have installed the system are not aware of the details. Furthermore, limited or lack of institutional capacity for synchronisation, accurate meter-reading and that of the program administrator can lead to additional issues.

Also, to sum it up there are genuine efforts like those mentioned in the answer to question 2.1. However, it is still to be seen how these limited but important efforts in a country with a more technophobic population than the tech savvy ones will work in the medium to long run.

Lithuania

Laura Rimsaite

1 Provide an overview of the energy regulatory framework in your country. What is the main legal source of energy policy? What are the additional sources?

Energy sector is regulated by laws, which are adopted by the Parliament, also the implementing regulations which are adopted by the Government, the Ministry of Energy and the National Energy Regulatory Council. There are several sectors which have a particular regulation: Electricity, Natural gas, Heat, Renewable Energy, Energy Efficiency, Oil and petroleum. Lithuania has drawn up a National Energy and Climate Action Plan for the period 2021–2030 in accordance with the requirements set out in the Governance of the Energy Union Regulation. The national plan contains the objectives, targets and measures implemented and planned in Lithuanian national legislation, international commitments, strategies and other planning documents.

The main strategic documents integrated into the National Plan are the National Energy Independence Strategy adopted in June 2018 and the National Strategy for the Climate Change Management Policy adopted in 2012 and updated in 2019 as well as the National Air Pollution Reduction Plan adopted in April 2019. The 2021-2030 National Progress Plan has been developed in parallel to the preparation of the National Plan. The aim of the National Progress Plan is to identify the main developments in the country over the next decade that will ensure social, economic, environmental and security progress. Main legal provisions are set out in the Law on Energy, also sector specific rules and regulating provisions are set out in the Law on Electricity, Law on Natural Gas, Law on Renewable Energy, Law on Heat Sector.

1.1 Define briefly the existing legal and financial measures in your country in order to promote the use of energy from renewable sources and to facilitate the energy transition. In particular, are there any incentives, economic and tax benefits?

In Lithuania, the development of RES in the electricity, transport and heat sectors is promoted through financial instruments (State budget allocations, Climate Change Programme funds, EU support funds, revenue from statistical energy transfer or joint projects, tax incentives) and non-financial instruments (obligations, informational and regulatory measures). The development of RES in the electricity sector aimed at a 45% RES share by 2030.

Gradual integration of renewable energy sources into the market is foreseen: the most cost-effective technologies must be developed, taking into account technology maturity and considering the trends in their near future development. The renewable energy promotion scheme must be designed based on market principles, with a minimum market distortion and ensuring a minimum financial burden on energy users as well as clarity and a non-discriminatory competitive environment.

Active participation of consumers is enhanced. Taking into consideration the increasing share of renewable energy sources in the total energy balance, the promotion of decentralized electricity generation, enabling consumers to use energy from renewable energy sources for their own needs and receive market-based compensation for the surplus energy supplied to the grid is ongoing it is also foreseen to introduce solutions to manage consumer behaviour and energy demand and supply.

Although Renewable energy source technologies are constantly improving and equipment costs are declining, power generated from Renewable energy source in the new installations is not yet able to compete in the market, so energy generation from Renewable energy source is being incentivised and this will continue up to a limit that is economically and technically acceptable for the country, with a view to active participation of producers of RES-Electricity at market conditions, or until the production of RES-Electricity reaches the market price. Currently Lithuania has approved a support scheme covering the following support measures:

- A price premium for RES-Electricity;
- Priority transmission of RES-Electricity;
- Exemption of electricity producers operating a power plant with a capacity below 500 kW from responsibility for balancing the produced electricity and/or reserving the power plant's generating capacity during the incentive period.
- The specified incentives are only applicable where a producer participates in a technology-neutral auction and, if successful, offers the lowest price premium. The winner of the auction enjoys support measures for a period of 12 years, and the price premium offered by it, or a part thereof, is paid as follows:
    - The price premium won at the auction, where the sum of the next day's hourly price on the exchange and the price premium won at the auction is lower than or equal to the maximum price set by the National Energy Regulatory Council;
    - A portion of the price premium won at the auction, calculated as the difference between the maximum price set by the National Energy Regulatory Council and the next day's hourly price on the exchange, which may not be higher than the price premium won at the auction where the sum of the next day's hourly price on the exchange and price premium won at the auction exceeds the maximum price set by the National Energy Regulatory Council.

The producer will not receive the price premium won at the auction in the following cases:

- If the next day's hourly price on the exchange is higher than or equal to the highest price;
- If the next day's hourly price on the exchange is less than or equal to zero for 6 hours or longer;

- If the producer actually generates the amount of electricity allocated in the auction.

The producer who has won the auction undertakes to produce the amount of electricity offered at the auction for a period of 12 years. Considering the 2025 electricity generation target of at least 5 TWh of electricity from RES, the amount of electricity produced from RES in 2018, which was 2.2 TWh, the 0.3 TWh amount to be auctioned during the auction launched on 2 September 2019, also taking into account the climatic conditions and the development of electricity consumers, the Lithuanian Government approved an timetable for 2020-2022, setting out the dates of the auction notice and the planned amounts of RES-Electricity to be distributed.

1.2 Have the Directive (EU) 2018/2001 and the Directive (EU) 2019/944 been transposed in your country? Which are the legislative instruments that have transposed the Directives?

The Directive 2018/2001 has been transposed by the Law on Energy, Law on Renewable Energy, Law on Electricity, the Law on Small and Medium – Sized Business Development.

The Directive (EU) 2019/944 has been transposed a month ago by the Law on Electricity, Law on Renewable Energy, Law on Energy. Also, some implementing Government decrees.

1.2.1 Provide a short description of the main changes on energy policies introduced with the transposition of the Directive (EU) 2018/2001 (e.g. adoption of the specific support schemes for energy from renewable sources; adoption of regulations and codes for the enforcement of administrative procedures; particular rules for the creation of the community energies, etc.) and of the Directive (EU) 2019/944 (e.g. rules on the generation, transmission, distribution and supply of electricity; specific rules on the protection of the consumers; provisions on the creation of citizen energy communities, etc.).

Lithuania in the strategic documents as well as in the legislative acts has set the priority national targets for the development of electricity markets for the period of 2021–2030:

- to adapt the electricity system to variable and distributed generation of electricity from renewable sources;
- to establish an electricity market system that rewards flexibility and innovation;
- to develop measures encouraging investment in the development of secure and competitive local energy production and in the development of measures to ensure the adequacy of the electricity system;

- to promote competitive price formation by enabling consumers to choose dynamic price agreements, allowing them to respond to price signals in real time and to manage their energy consumption;
- to coordinate national energy policies with the neighbouring Member States and exploit the potential of the integration of balancing markets and cross-border energy trading;
- to promote fair competition and easy access for energy suppliers in order to allow consumers to take advantage of the opportunities of a liberalised internal market in energy.

Current legislative provisions introduce financial support for prosumers. In particular recently adopted amendments to the national legislation sets up the promotion of active participation of electricity consumers in the market, and therefore a scheme for generating electricity was created in 2015. The target for 2030 is to have 30% of the producing consumers compared to the total number of electricity consumers. In order to ensure that the electricity generating scheme is available to all electricity consumers, the acquisition of the power plant is funded from European Union Structural Funds and the National Climate Change Program. As of 2019, prosumers received EUR 323 per kW in support. In total, it is planned to invest more than EUR 16 million from EU funds by 2023.

1.3 In case the Directives have not been transposed into national law, indicate (if existing) drafts of the law under discussion for the future transposition and eventual websites where they can be found.

The Directives have been transposed to national law.

2 What are the main policies of the development of prosumerism, self-consumption and renewable energy communities?

Lithuania plans to attain the target of 45% Renewable energy sources in final energy consumption by 2030. This will be achieved through the organisation of neutral auctions for the allocation of promotion quotas and the widespread deployment of small-scale renewable energy installations owned by private energy consumers and communities. Investment in smart energy systems, including transmission, distribution and storage infrastructure, and in increasing the required balancing capacity are envisaged to successfully integrate larger volumes of renewable energy and a large number of electricity generating customers.

Financial support for investment in low-capacity power plants preparations are underway for investment in individual low-capacity power plants, with priority being given to power plants built by renewable energy communities. Support will be granted through a tendering procedure from the revenues generated by implementing the agreements on statistical energy transfers between Lithuania and Luxembourg and/or other Member States.

Financing of energy generation from RES and storage solutions. It is planned to promote the use of RES by granting EU support in 2021–2027. EU support will be granted to the installation of low-power plants generating electricity from renewable sources which belong to prosumers, energy communities, businesses or individual energy consumers. The need for EU support funds, possible measures in this area of activity, the need for funds and the expected results are currently being assessed.

2.1 Provide some examples (if known) of best practices of prosumerism, self-consumption or energy communities experienced in your country (indicate link of the related websites where they can be viewed).

The most widely known example of prosumerism is photovoltaic power plants installed by individual households. At present, both natural and legal persons can become prosumers. Solar power plants can be installed at the place of consumption (eg on the roof), or can be installed or purchased remotely. Legislative provisions enabling the development of the energy communities have recently been adopted in the national laws. The total installed capacity of prosumers and remote prosumers is already 105.69 MW and is enough to ensure that 110 MWh of electricity are generated in the country per year. The state will strive to increase the installed capacity to 1 GW by 2025.

2.2 Provide some examples (if existing) of case law/leading cases in the field of prosumerism and energy communities.

Not applicable

Mexico

Esmeralda del Carmen Gutiérrez Barranco

1 Provide an overview of the energy regulatory framework in your country. What is the main legal source of energy policy? What are the additional sources?

The main legal source in Mexico is the Political Constitution of the United Mexican States. In Mexico, the constitutional framework of The industrial organization of the energy sector and the bases for its regulation is given mainly by what is established in the Political Constitution of the United Mexican States in Artt 25, 27 and 28, as well as the laws that are derived or connected to those provisions.

Structure of the legal framework of regulation. The following are the legal provisions that establish the details of the institutional arrangement of the regulated energy sector from an economic point of view:

- Regulatory Law of Constitutional Art 27 in the Oil Industry.
- Law of the Public Electric Power Service.
- Law of the Energy Regulatory Commission.
- Law for the Use of Renewable Energies and the Financing of the Energy Transition.

Additionally, the regulations derived from said laws must be taken into account, including those that establish the regulatory framework for certain activities or sectors (e.g. the Natural Gas Regulation, the LP Gas Regulation and the Regulation of the Public Service of Electricity).

Finally, it is important to mention the specific regulatory provisions issued by the Energy Regulatory Commission (CRE) which can take different forms: Directives, Methodologies, Contract Models, Model Agreements, Guidelines, Standards, etc. as well as the specific resolutions that settle controversies, impose sanctions or clarify the scope of other administrative provisions.

The following sections briefly describe the industrial organization of the regulated sectors and the institutional evolution that CRE has undergone over the last years, outlining its responsibilities and structure.

1.1 Briefly define the financial and legal measures in place in your country to promote the use of energy from renewable sources and to facilitate the energy transition. In particular, are there any economic incentives and tax benefits ?

In accordance with the LTE, the Strategy constitutes the guiding instrument of national policy in the medium and long run, in terms of clean energy obligations and sustainable energy use. Thus, through the goals of clean energy and energy efficiency, the Ministry of Energy (SENER) will promote that electricity generation

from clean energy sources reaches the levels established in the LGCC for the electricity industry, as established by the LTE . Likewise, SENER must promote energy efficiency in the country's electricity market.

The Strategy must contain: A long-term planning component for a period of 30 years. A medium-term planning component for a period of 15 years. A long-term planning component for a period of 30 years.

In this component, the 15-year clean energy and energy efficiency goals are indicated.

The Strategy constitutes the guiding instrument, from which the Special Energy Transition Program (PETE) and the National Program for the Sustainable Use of Energy (PRONASE) will be developed, as well as the Energy Efficiency Roadmap, the Energy Efficiency Program. Development of the National Electricity System (PRODESEN) and the RNT Expansion and Modernization Programs (PAMRNT).

- The PETE's objective is to implement the actions established in the Strategy for the Federal Public Administration itself, ensuring its economic viability (Article 34 of the LTE).

- The PRONASE is the instrument that will establish the actions, projects and activities derived from the Strategy, which allow reaching the energy efficiency goals in the short term (Art 35 of the LTE). The roadmap on this topic sets out the way forward to achieve the goals.

The updating of the prospective trajectories of the Strategy will undoubtedly serve as a reference to update the special programs of the energy sector established in the LTE, which must be developed during this Administration in accordance with the Planning Law, since the Secretary of Finance and Public Credit (SHCP) establish the calendars of the sectorial and special programs, which occurs after the publication of the National Development Plan 2019-2024.

Considering what is established in the LTE and its Regulations, the goals established by both the PETE and the PRONASE by 2024, must be in alignment and consistency with the updated prospective trajectories of electricity generation with clean energy and energy efficiency to achieve the goals in 2035 and 2050, respectively.

As tax instruments play an important role in policy of any country, so in this section we will analyze the environmental tax instruments that have been implemented in Mexico.

In the General Law of Ecological Balance and Environmental Protection (hereinafter LGEEPA) 32 is sanctioned in Art 21: The Federation, the States and the Federal District, within the scope of their respective competencies, will design, develop and apply instruments that incentivize the fulfillment of the policy objectives. The following will be sought: III.- Grant incentives to those who carry out actions for the protection, preservation or restoration of the ecological balance. Likewise, they must ensure that those who damage the environment, make improper use of natural resources or alter ecosystems, assume the respective costs.

Also, Art 22 bis stipulates which activities are a priority for the granting of the fiscal incentives established in accordance with the Federal Revenue Law. First of all it states: The investigation, incorporation or use of mechanisms, equipment and technologies that aim to avoid, reduce or control pollution or environmental deterioration, as well as the efficient use of natural resources and energy; secondly, research and incorporation of energy saving systems and the use of less polluting energy sources; third, saving and sustainable use and prevention of water pollution; fourth, the location and relocation of industrial, commercial and service facilities in environmentally suitable areas; fifth, the establishment, management and surveillance of protected natural areas, and finally, in general, those activities related to the preservation and restoration of the ecological balance and the protection of the environment.

In addition, the Law for the Use of Renewable Energies and the Financing the Energy Transition establishes in Art 27: 'The Fund for the Energy Transition and Sustainable Use of Energy is created (...)'. Likewise, with the purpose of strengthening the financing available for the energy transition, energy saving, clean technologies and the use of renewable energies, the technical committee referred to in this article may agree that, charged to the Fund, they will be used Non-recoverable resources for the granting of credit guarantees or other types of financial support for projects that comply with the purpose of the Strategy.

Its Art 25 adds: The Federal Executive, when sending to the Chamber of Deputies the draft Decree of Budget of Expenditures of the Federation for the corresponding Fiscal Year, will consolidate the resources of the public sector that it proposes to establish within the Strategy. The minimum amount of resources to be programmed for subsequent fiscal years will be updated every three years, considering, among others, the real growth of the economy and the real growth of programmable public sector spending, in accordance with the provisions established in the Expenditure Budget of the corresponding Federation. In the Expenditure Budget of the Federation for Fiscal Year 2009, three billion pesos will be allocated to the Fund for the Energy Transition and the Sustainable Use of Energy. Before 30 June 2009, the Ministry of Finance and Public Credit will consolidate the information on the provisions of public sector resources included in the Expenditure Budget of the Federation for Fiscal Year 2009, referred to in Art 24 of this Law. Based on said information, the minimum amount of resources to be programmed in subsequent fiscal years will be established. The aforementioned information will be sent to the Congress of the Union for information. In addition, for each of the fiscal years 2010 and 2011, the amount proposed in the draft Decree on Budget of Expenditures of the Federation for the Fund referred to in Art 27 of this Law will be three billion pesos. The above amount must be updated by the expected variation of the National Consumer Price Index between 2009 and the year that is budgeted.

Taxes. According to Art 34, Section XIII of the Income Tax Law (LISR), companies can obtain a 100% tax deduction for the purchase of machinery and equipment used in the generation of renewable sources or efficient electricity cogeneration: 'The maximum authorized percentages, in the case of fixed assets by type of good, are the following: XIII. 100% for machinery and equipment for the generation of energy

from renewable sources or from efficient electricity cogeneration systems. For the purposes of the preceding paragraph, renewable sources are those that by their nature or through proper use are considered inexhaustible, such as solar energy in all its forms; the eolic energy; the hydraulic energy, both kinetic and potential, of any natural or artificial body of water; the energy of the oceans in its various forms; geothermal energy, and energy from biomass or waste. Likewise, generation is considered to be the successive conversion of energy from renewable sources into other forms of energy. The provisions of this section will be applicable provided that the machinery and equipment are in operation or functioning for a minimum period of 5 years immediately following the year in which the deduction is made, except in the cases referred to in article 37 of this Law. Taxpayers who fail to comply with the minimum term established in this paragraph, must cover, where appropriate, the corresponding tax for the difference that results between the amount deducted according to this fraction and the amount that should have been deducted in each fiscal year in the terms of this article or article 35 of this Law, if the 100% deduction has not been applied. For these purposes, the taxpayer must submit supplementary returns for each of the corresponding exercises, at the latest within the month following the one in which the deadline established in this section is breached, and must cover the surcharges and the corresponding update, from the date the deduction was made and up to the last day the machinery and equipment was operated or operated'.

1.2 Have EU Directives 2018/2001 and 2019/944 been transposed in your country? What are the legislative instruments that have transposed the directives?

N/A

1.2.1 Provide a short description of the main changes in energy policies introduced with the implementation of the Directives (EU) 2018/2001 (e.g. adoption of specific support schemes for energy from renewable sources; adoption of regulations and codes for the application of administrative procedures; particular rules for the creation of energy communities, etc.) and for the directive (EU) 2019/944 (e.g. rules for the generation, transmission, distribution and supply of electricity; specific rules on the protection of consumers; provisions in the creation of citizen energy communities, etc.)

N/A

1.3 In the event that the Directives have not been transposed into national law, indicate (if there are) proposed laws under discussion for future implementation and internet sites where they can be found.

N/A

2 What are the main development policies of prosumerism, self-consumption and renewable energy communities?

There is nothing specific to be considered for this issue in Mexico.

2.1 Provide some (known) examples of the best practices of prosumerism, self-consumption or energy communities experienced in your country (indicate the link of related web pages where they can be viewed).

There is nothing specific to be considered for this issue in Mexico.

2.2 Provide some examples (if any) of a prominent case / legal case in the field of prosumerism and energy communities.

Annex jurisprudence by reiteration:

1. Supreme Court of Justice of the Nation. Digital registration: 2022285. Instance: Second Chamber. Subject: Constitutional, Administrative. Case: 2nd./J. 55/2020 (10th.). Ecological or cost efficient taxes. Parameters to analyze your addition to the principle of tax proportionality. Source: Federal Judicial Weekly Gazette. Book 79, October 2020, Volume I, page 469.

Facts: Legal entities filed an indirect appeal for constitutional protection against, among others, Artt 8 to 34 of the Zacatecas State Finance Law on the occasion of its entry into force, arguing that the taxes imposed violate the principle of tax proportionality.

Legal criterion: The Second Chamber of the Supreme Court of Justice of the Nation resolves that the ecological or efficient cost taxes provided for in the provisions, by virtue of the economic aspect that they tax, have specific parameters to analyze the arguments referring to the principle of tax proportionality.

Justification: Ecological taxes in the strict sense seek, among other things, the recognition of the expenses that must be made to remedy or at least alleviate the negative effects that originate a production process that pollutes or has an ecological impact whose author, instead of internalizing them and incorporating them into their expenditures, transfer the economic burden of repairing to the State. The aforementioned transfer of costs constitutes the economic benefit obtained by those who carry out a production process that pollutes, since such a pollutant should be responsible for these expenditures; However, the profits derived from the polluting process are not reduced by these expenses, since they are not internalized. Such recognition is inserted in the duty to contribute to public spending, enshrined in Art 31, section IV, of the Political Constitution of the United Mexican States, given that, whoever pollutes must pay in a reasonable proportion with respect to prevention or, accordingly, the repair of the probable effect caused or environmental deterioration and in a sufficient amount to correct the damage to the environment, which will be equivalent to the economic impact on public spending. Now, in relation to the principle of tax proportionality, the indications of taxable capacity, in the case of ecological taxes in the strict sense, are not evidenced with the mere possession or exchange of wealth, but with the use and economic benefit obtained from the

environmental goods. Therefore, for such taxes to respect the aforementioned principle of fiscal justice, it is necessary that the taxable event and base take into consideration the physical units on which it is certain that their consumption or, where appropriate, release into the environment, causes negative effects on the environment or ecological impacts. In other words, there must be a causal relationship between the tax budget and the physical units that determine environmental damage or deterioration (due to use of the environment, consumption of an environmental resource or energy source, production of polluting emissions, etc.) which is achieved by including in the tax base a reasonable incidence or relationship with respect to such physical units.

Appeal for constitutional protection of human rights, in review 1071/2018. Exploradora de Sombrerete, SA de CV and others. 6 February 2020. Five votes from the Ministers Alberto Pérez Dayán, Luis María Aguilar Morales, José Fernando Franco González Salas, Yasmín Esquivel Mossa and Javier Laynez Potisek; majority of four votes in relation to the criterion contained in this thesis. Dissident: Luis María Aguilar Morales. Speaker: José Fernando Franco González Salas. Secretary: Joel Isaac Rangel Agüeros.

Appeal for constitutional protection of human rights, in revision 140/2019. Plata Panamericana, SA de CV 22 April 2020. Five votes from the Ministers Alberto Pérez Dayán, Luis María Aguilar Morales, José Fernando Franco González Salas, Yasmín Esquivel Mossa and Javier Laynez Potisek; majority of four votes in relation to the criterion contained in this thesis. Dissident: Luis María Aguilar Morales. Speaker: José Fernando Franco González Salas. Secretary: Joel Isaac Rangel Agüeros.

Appeal for constitutional protection of human rights, in review 963/2018. Envases y Tapas Modelo, S. de RL de CV 22 April 2020. Five votes from the Ministers Alberto Pérez Dayán, Luis María Aguilar Morales, José Fernando Franco González Salas, Yasmín Esquivel Mossa and Javier Laynez Potisek; majority of four votes in relation to the criterion contained in this thesis; Minister José Fernando Franco González Salas voted against some considerations. Dissident: Luis María Aguilar Morales. Speaker: Javier Laynez Potisek. Secretary: Gabriela Guadalupe Flores de Quevedo.

Appeal for constitutional protection of human rights, in review 27/2019. Capstone Mining, SA de CV and others. 13 May 2020. Majority of four votes of the Ministers Alberto Pérez Dayán, José Fernando Franco González Salas, Yasmín Esquivel Mossa and Javier Laynez Potisek; Ministers Alberto Pérez Dayán and Javier Laynez Potisek stated that they would cast a concurring vote. Dissident: Luis María Aguilar Morales. Speaker: José Fernando Franco González Salas. Secretary: Joel Isaac Rangel Agüeros.

Appeal for constitutional protection of human rights, in review 1051/2018. Minera Real de Ángeles, SA de CV 20 May 2020. Majority of four votes of the Ministers Alberto Pérez Dayán, José Fernando Franco González Salas, Yasmín Esquivel Mossa and Javier Laynez Potisek; Alberto Pérez Dayán cast his vote with reservations. Dissident: Luis María Aguilar Morales. Speaker: José Fernando Franco González Salas. Secretary: Joel Isaac Rangel Agüeros.

Case decision 55/2020 (10th.). Approved by the Second Chamber of this High Court, in a private session on September 30, 2020. This thesis was published on Friday, 23 October 2020 at 10:33 a.m. in the Federal Judicial Weekly and, therefore, it is considered mandatory as of Monday, 26 October 2020, for the purposes provided in point seven of the Plenary General Agreement 16/2019.

United States

Luis Edoardo Quintero

1 Provide an overview of the energy regulatory framework in your country. What is the main legal source of energy policy? What are the additional sources?

In the upper level, the Wholesale sales and transmission of electricity across states is regulated by the Federal Energy Regulatory Commission (FERC), following the rules established by the The Federal Power Act (FPA). The FERC regulates the functioning of energy markets, while federal energy policies are established by the Department of Energy (DOE). Despite being designed as regulator and executor, these agencies often act in tandem. FERC has, for instance, intervened prices of inter state transactions for coal, nuclear and natural gas to make them more competitive, especially in states that have their own system of renewable energy subsidies, which might affect the viability of more traditional energy industries. Other important federal agencies include the North American Electric Reliability Corporation (NERC),[1] the Environmental Protection Agency (EPA), and the Commodity Futures Trading Commission (CFTC).

However, in the United States, federalism makes regulation very heterogeneous across states. Most of it is determined locally. In a context where negative externalities are critical and are not determined by state boundaries, this is a suboptimal situation. Local distribution and retail sales are regulated at the state level.[2] This is generally done by state public utility commissions. This state jurisdiction extends to local distribution and construction of generation and transmission facilities, as well as services that collect demand for energy (load serving entities). In some cases, this regulation even goes down to the municipality level. Some specific types of energy, like nuclear, are more strongly subject to federal oversight and regulation (in this case from the Nuclear Regulatory Commision (NRC)).

Regulatory agencies are very important in the United States, as most energy related activity is performed by the private sector. Still, many are directly controlled by large regional bodies called independent system operators or regional transmission organizations (ISO and RTO respectively). These are themselves monitored by FERC.

In recent governmental, both federal and state, efforts for implementing a robust renewable energy sector, the lack of coordination of the regulatory systems at different levels has proven unhelpful. In a federal administration in which the main focus of policy is support of traditional energy generation, federal policy has not supported, even hampered, renewable energy policy implementation. In more

[1] Actually a not for profit international regulatory authority that is regulated itself by FERC and Canadian agencies, and that annually assesses long term reliability of energy systems in the US and Canada.

[2] For example, the Electric Reliability Council of Texas (ERCOT) in Texas manages sales transmission, and distribution of energy, and is regulated by the Public Utility Commission of Texas.

recent years, federal interest in strengthening a more sustainable system has served the opposite role, as an obstruction of the local policies in some states that favor supporting local energy industries.

State wise, implementation of renewable portfolio standards has increased significantly. These standards determine the minimum thresholds for the share of renewable energies that local utility companies use to generate energy. 32 states have implemented these standards, and this is expected to grow should the Biden's administration infrastructure bill and associated incentives are passed into legislation. The standards have generated a market for renewable energy certificates or RECs. These certificates are given to energy producers as soon as they generate renewable energy and feed it into the grit. Then these credits can be used as Credit for their own future energy consumption or to be sold to other entities that require that are required to satisfy renewable portfolio standards in their own state. This policy acknowledges the interaction between states consumption and negative externality generation, and reduces to some extent the lack of coordination that state level policy suffers from in the rest of their regulatory framework.

1.1 Define briefly the existing legal and financial measures in your country in order to promote the use of energy from renewable sources and to facilitate the energy transition. In particular, are there any incentives, economic and tax benefits?

The sector of renewable energy has increased in importance, currently reaching around 21% of the total energy generation in the country. The US is undergoing a strong federal government initiative that may change significantly the way renewable energy works. Currently, renewable energy targets and measures suffer from the same type of on coordination in regulation that we mentioned before. Most of the renewable energy policy and Targets are determined state wise. However, despite lacking as specific Mandy, there are multiple federal government policies to incentivize sustainable energy. The main policies take the form of either production or capital investment tax credits for private investors that produce renewable energy, or invest in infrastructure that helps produce. These tax credits are a reduction of the tax liability. Some infrastructure projects like wind turbines and Solar farms are eligible for approximately 30% of tax credits, while geothermal infrastructure gets around 10%. The other main source of incentives or modifications to the depreciation schedule of capital, that allows accelerated depreciation for infrastructure producers (these have direct implications in reducing tax liabilities too).

1.2. Have the Directive (EU) 2018/2001 and the Directive (EU) 2019/944 been transposed in your country? Which are the legislative instruments that have transposed the Directives?

NA

1.2.1. Provide a short description of the main changes on energy policies introduced with the transposition of the Directive (EU) 2018/2001 (e.g. adoption of the specific support schemes for energy from renewable sources; adoption of regulations and codes for the enforcement of administrative procedures; particular rules for the creation of the community energies, etc.) and of the Directive (EU) 2019/944 (e.g. rules on the generation, transmission, distribution and supply of electricity; specific rules on the protection of the consumers; provisions on the creation of citizen energy communities, etc.).

NA

1.3. In case the Directives have not been transposed into national law, indicate (if existing) drafts of the law under discussion for the future transposition and eventual websites where they can be found.

NA

2 What are the main policies of the development of prosumerism, self-consumption and renewable energy communities?

The prosumer policy is also very by location, as is the general structure of US renewable energy policy and overall energy regulation policy. One of the most important policies related to prosumerism is the renewable energy certificates mentioned above. In many cases the issue with generating renewable energy is the difficulty in storage. These credits allow energy producers to feed the energy right into the grid and use these credits for their own consumption later on. If their supply sits there on demand, they can further set out these credits, although this is limited to firms or other consumers that are required to satisfy renewable portfolio standard.

In other states, net metering has been established as the main way in which customers that generate renewable energy on their properties can feed it into the grid. Utilities electric utility companies would calculate the net consumption by subtracting consumption from generation, the basic premise of prosumerism. In many states the positive credit can be sold directly to the utility company. 35 states and the District of Columbia have already developed mandatory net metering, although for only some utilities. Out of these, eight states have systems that regulate the compensation that this prosumer should receive.

Furthermore some states regulate defeat in tariffs that these prosumers receive, specifically to make them larger than tariffs given to producers that use more traditional energy sources, increasing the competitiveness of this sector. These policies, Vary by state. In some states more focused on traditional sectors, defeating terry skin is actually reversed, and traditional energy sources are guaranteed a minimum price, to offset the renewable energy incentives that might hurt traditional more polluting industries.

Finally in most states there exist voluntary programs in which firms can buy their energy directly from renewable sources. A lot of this is coming from small scale producers of solar energy, which might qualify as prosumers.

On the other hand we might highlight many obstacles that are present in the current system for prosumerism. One of them is the interpretation that prosumer sales of energy back to the grid are subject to FERC jurisdiction. This jurisdiction causes recordkeeping in filing requirements that are too burdensome for mini prosumers. In many cases it is the prosumer belief in the importance of renewable energy that offsets the myriad of administrative complications. This prevents prosumerism to be more widely established.

2.1 Provide some examples (if known) of best practices of prosumerism, self-consumption or energy communities experienced in your country (indicate link of the related websites where they can be viewed).

The basic condition for any of these prosumerism policies is the net metering. Best practices of net metering can be those in the states that have been qualified with an A by Freeing the Grid:[3] Arizona, California, Colorado, Connecticut, Delaware, Maryland, Massachusetts, New Hampshire, New Jersey, New York, Ohio, Oregon, Pennsylvania, Utah, Vermont, and West Virginia. Out of these, the most active in terms of energy generated and those that have shows better performance are:

- California:
    - https://www.cpuc.ca.gov/industries-and-topics/electrical-energy/demand-side-management/net-energy-metering
- New York:
    - http://www3.dps.ny.gov/W/PSCWeb.nsf/All/DCF68EFCA391AD6085257687006F396B?OpenDocument

Additional to net metering, there are the feed in tariffs programs. The Washington feed-in tariff has been particularly successful: http://www.energy.wsu.edu/RenewableEnergySystemIncentiveProgram.aspx .

This program compensates utility companies by renewable energy from generators, in most cases procedures. Descendants are transferred from the state to the utility bill company and then to the presume. The amounts change over time, but they have been instrumental in allowing utility companies to offset the costs that prosumers have in expanding their generation infrastructure.

[3] An annual report card from Vote Solar and the Interstate Renewable Energy Council (IREC) that rates all 50 states on two key clean energy policies: net metering and interconnection standards.

Part IV

A Voice from Society

The Regulatory Framework of the Energy Transition

Mariastella Diociaiuti

Abstract We cannot speak of energy transition if we do not at least briefly mention the rules that regulate it at National, European and International level. In this short writing, therefore, in sharing the intentions and purposes of improving the well-being of humanity, I have briefly indicated the basic rules and their content. I mentioned the role played by the association I represent, which always deals with current issues related to consumer protection.

A few days ago, the wonderful news of the Nobel Prize 2021 to Professor Giorgio Parisi for Physics came. In the interviews he has released, he strongly reveals the issues of respect for the environment and climate change and the need for immediate action to avoid the destruction of the planet.

The global covid 19 crisis has imposed the need to reinvent a new development paradigm based on sustainable models for a safe energy transition.

I believe that the rules are not lacking. The energetic transition sees all operators sensitive.

We hope that from the study and research phase you will pass to the facts, placing the CONSUMER.

The energy transition refers to the shift of the global energy sector from fossil-based energy production and consumption systems, including oil, natural gas and coal, to renewable energy sources such as hydrogen, wind and solar.

The increasing penetration of renewable energy into the energy supply mix, the initiation of electrification and the improvement of energy storage are all key drivers of the energy transition.

Keywords: Energy Consumer - Energy Transition - Consumer Protection

1 Normative Requirements

- Constitution: Art 1, para 2; Art 2; Art 3; Art 4; Art 5; Art 9; Art 10, para 1; Art 32, para 1; Art 33, para 1; Art 41; Art 71, para 2; Art. 114, paras 1 and 2; Art 117, para 1, para 2, letter s), para 3; Art 118;
- directive 2009/28/EC of 23 April 2009 of the European Parliament and of the Council on the Production of energy from renewable sources, the so-called 'Climate Package-Energy Horizon 20-20-20';
- directive 2010/31/EU on Energy performance of buildings. Buildings are responsible for 40% of the Union's overall energy consumption and the directive aims to make local authorities and public administrations

responsible for the promotion of near-zero energy buildings and the renovation of public administration buildings;

- decreto legislativo 3 March 2011 no 28 of the implementation in Italy of Directive 2009/28/EC of 23 April 2009;
- european directive 2014/94/EU of 22 October 2014 on the Creation of an infrastructure for alternative fuels (so-called 'DAFI /Directive Alternative Fuel Initiative');
- French law no 2015-992 of 17 August 2015 of the 'Energy transition for green growth', in the Official Gazette of 18 August 2015;
- Paris Agreement on Climate of 12 December 2015, COP 21 of the United Nations Framework Convention on Climate Change (UNFCCC);
- legge 4 November 2016 no 204 of Ratification and execution of the Paris Agreement linked to the United Nations Framework Convention on Climate Change, adopted in Paris on 12 December 2015;[1]
- decreto legislativo 16 December 2016 no 257[2] for the transposition in Italy of the European Directive 2014/94/EU;
- EU Directive 11 December 2018 no 2018/2001 on the promotion of the use of energy from renewable sources, so called 'Renewable Energy Directive (RED)';
- Executive Department State of California, Executive Order B-55-18 To Achieve Carbon Neutrality of 10 September 2018;
- The Green New Deal: European Commission 11 December .2019;
- The Next Generation EU (NGEU): European Council July 2010 better known in Italy with the informal names of Recovery Fund or Recovery Plan;
- On 13 July 2021, Italy's PNRR was definitely approved with the Council's Implementing Decision, which implemented the European Commission's proposal.

2 The French Law of Energy Transition and Green Growth[3]

The law 2015-992 of 17 August 2015 aims to raise awareness of energy, climate and problems related to air quality, and aims to increase green growth (development of 100,000 jobs in three years with an investment of 10 billion euros, reduce the energy bill, promote new clean and safe energies).

The law favors the circular economy and better waste management.

[1] See Gazzetta Ufficiale 10 November 2016 no 263.

[2] See Gazzetta Ufficiale 13 January 2017 no 10.

[3] On the subject, see the Introductory Report on the Legislative Proposal for a Law on Energy Transition, 6 available at https://www.senato.it/leg/18/BGT/ Schede/FascicoloSchedeDDL/ebook/52602.pdf (last visited 18 October 2021).

It also aims to strengthen the country's energy independence and economic competitiveness, with the target of protecting human health and the environment and fighting climate change. The law supports processes that emit less climate-altering and less polluting gases into the atmosphere, and proposes measures to stem the greenhouse effect. Its goals are also low carbon emissions and the reaching of emission reduction targets for 2030 and 2050.

The law points to reach France's energy independence, bringing renewable energy to 32% of final energy consumption by 2030 and decreasing the fossil part (minus 30% by 2030 compared to 2012).

In addition, French law defines principles and measures concerning the renovation of buildings, transport, the circular economy, renewable energy, new procedures and governance of the energy transition in the territories. The mechanisms to support the Energy Transition are financed by the Cassa Depositi e Prestiti.

Clean transport is urged, one in two vehicles is expected to be electric, in the case of state car fleets in use by public bodies. The introduction of a Carbon Tax is expected, with a cost of € 56.00 by 2020 and € 100.00 by 2030 per tonne of CO2 emitted.

Developing clean transport to improve air quality and protect health is one of the main objectives.

Measures have been envisaged to simplify and clarify procedures, to gain efficiency and competitiveness. A new bill followed in 2019 which includes eight articles, modifying some of the essential parts of the 2015 energy transition law.

Starting with the inclusion of the 'zero net emissions' target by 2050, which necessarily requires a greater quantitative effort to reduce national greenhouse gases. The text does not anticipate any measures for cutting CO2 but rather provides 'a loophole': it postpones the program to bring nuclear energy from the current 75% to 50% of the mix to 2035. That is 10 years more than requested by Hollande. And it replaces the election promise to shut down coal-fired power plants with an emission limit that won't go into effect until January 2022, which is shortly before Macron's mandate ends.

3 The Paris Climate Agreement [4]

The Paris Climate Agreement was signed on 12 december 2015. It is very important because it is the first climate agreement. It was approved by all 196 delegations of the 197 countries that are party to the framework convention on climate signed the Paris Agreement United Nations on climate change.

These are obligations to which each country will have to observe, regularly submitting its greenhouse gas reduction objectives to information and analysis grids commonly shared and understandable by all.

[4] ibid 7.

The long-term goal is to keep the global average temperature increase well below 2 degrees Celsius compared to the pre -industrial period, aiming for a maximum temperature increase of 1.5 ° C.

Reducing global CO2 emissions is also another objective.

All countries, in a legally binding form, must meet every five years to evaluate progress towards long-term goals and must inform each other and the public on the results achieved, so that they update and improve their contributions and in order to ensure maximum transparency and control.

The reduction targets of individual countries must be clear and measurable. Each subsequent goal must be set on the basis of the previous one and be as ambitious as possible.

Countries that have already set a reduction target until 2030 can confirm it for the period 2025-2030, without having to increase the reduction performance.

As stated in Article 6 of the Paris Climate Agreement, two types of emission reductions achieved abroad are allowed: those resulting from a mechanism governed by the Agreement and those resulting from bilateral and multilateral agreements.

Another element of the Agreement is to provide the poorest countries with continuous and more consistent international support for adaptation, thus putting an end to the distinction in principle between industrialized and developing countries. The reduction target of each country is quantified on the basis of its responsibility and variable capacities in the climate field. Developed countries plan not only to mobilize $ 100 billion a year by 2020, but also to extend this period to 2025. After that, a new target will be set.

The Paris climate agreement also recognizes the importance of addressing the losses and consequences of the negative effects of global warming and the need to cooperate all together, preparing for emergencies and insuring ourselves against risks.

Five years have passed since the signing of the agreement, and the countries have recently had to deal with the objectives set for the climate, even if the pandemic has certainly overshadowed the fight against climate change. According to the scientific community, world leaders are not keeping their commitments. Warming is not the same in all parts of the world: it is much more pronounced at the poles, less perceptible at the equator. Even just a hundredth of a degree more can destroy ecosystems, cause biodiversity loss, generate increasingly devastating weather phenomena.

4 Other Initiatives and Contextual Elements [5]

The high-level representatives of the Hydrogen Council, gathered in San Francisco for the Global Climate Action Summit, declared on 14 September 2018 in a plenary meeting: ‘We believe that hydrogen can play a key role in the transition to

[5] ibid 8.

clean energy and we are ready to work together with governments to help create the right technical, financial and legislative conditions to allow decarbonised hydrogen to take off '.

During the informal meeting of EU Energy Ministers held in Linz in Austria, on the initiative of the Austrian Presidency, from 17 to 18 September 2018, the Hydrogen Initiative, a policy document supporting the development of Sustainable hydrogen, was signed, also by Italy.

In this document, the signatories declare the common goal of maximizing the great potential of renewable hydrogen technology, for the decarbonisation of multiple sectors, for the energy system and for the long-term energy security of the EU.

The signatories of this declaration stress that in order to foster the potential of hydrogen for the supply of efficient, safe and clean energy for all users across Europe, research and innovation in the field of Hydrogen technology needs to be further intensified.

Politicians hired the report at the Paris climate talks in 2016, but the gap between science and politics has widened since then.

So the final question is political will.

At the current level of commitments the world is on course for a disastrous 3 ° C warming.

5 The European Framework [6]

The Climate - Energy Horizon 20-20-20 package is the first directive on the development of renewable energy in Italy.

Italy is committed to the European Union with the Winter Package adopted by the European Commission, which places Consumers at the center of the energy transition .

The European Commission states that we can transform this transition into a concrete opportunity also at an economic and industrial level, encouraging public and private investments to increase industrial competitiveness and at the same time limit the environmental and climate impact.

Local authorities and local independent energy companies will have to take action to implement the Energy Transition, in particular through support for Local energy communities, provisions that are included in the legislative package of the European Commission 'Clean Energy for all europeans' (so-called Winter Package) of 30 November 2016, which provides for fair agreement to consumers and state aid .

[6] ibid 10.

The EU Directive 11 December 2018, no 2018/2001 on the promotion of the use of energy from renewable sources, so called Renewable Energy Directive (RED), which must be implemented by the Member States, has been definitively approved.

A binding target is expected to be revised within 5 years to 2023.

By 2030, renewable energies must cover 32% of energy consumption at the level of the European Union. This new directive on renewables updates the regulatory framework of the European Union to 2030.

For the first time the role of citizens and communities in the adoption of renewable energy is explicitly recognized with a clear definition, at European level, of 'renewable energy community' and 'self-consumption'.

On the energy communities there are several examples in our Italian territory that gradually gain strength also in regulatory terms. Just think of the model of community cooperatives born in some small municipalities of Puglia, that the Puglia Region itself has taken as an example and model, regulating them in a regional law, or the recent regional law approved in Piedmont.

There are also changes in the directive for national incentive systems. The agreement reached will allow Europe to maintain its leading role in the fight against climate change provided for in the Paris Agreement. This directive complements the rest of the proposals for the 'clean energy for all Europeans' package.

This is a historic change.

'The directive recognizes the right of citizens and communities for energy to self-produce, self-consume, store renewable energies, and sell those in excess at a price equal, at least, to the market value, with the possibility that the remuneration is more high to take into account the added value that small producers offer to society and the environment.

The right of members of energy communities to exchange renewable energy is also recognized.

Until now, European Union legislation had referred to the rights of citizens, only as consumers (and not producers) of energy'.[7]

Furthermore, self-consumption will not be burdened by charges, which will only be introduced in 2026. Subsequently, the States of the Union will be able to impose them only under specific conditions.

The European Green Deal of 11 December 2019 marks the debut of a new EU growth strategy. It supports its transition to a fair and prosperous society, capable of reacting to the challenges related to climate change and environmental degradation by improving the quality of life of present and future generations.

The Next Generation EU (NGEU): European Council July 2010 better known in Italy with the informal names of Recovery Fund or Recovery Plan, is a fund approved in July 2020 by the European Council , in order to support the MemberStates affected by the COVID pandemic -19.

[7] ibid

The goal of the energy transition is on the first floor.

Europe responded to the 2019 Covid pandemic crisis with the Next GenerationEU (NGEU) (2020).

It is a program of unprecedented scope and ambition, which includes investments and reforms to accelerate the ecological and digital transition; improve the training of male and female workers; and achieve greater gender, territorial and generational equity.

At the European level, the goal is clear: to create a future with a cleaner planet and a more stable and stronger economy. Energy transformation sees hydrogen as one of the main beacons involved in examining the Road Map established by the European Commission to promote the diffusion of sustainable hydrogen in the Community economic system. The evidence that emerges from the Strategy is to create an integrated system between States also thanks to the establishment of the European Clean Hydrogen Alliance: an operational working table for the development of projects to increase the demand for sustainable hydrogen and create a close synergy between the various actors involved along the supply chain.

6 The National Framework[8]

The decreto legislativo 3 March 2011, no 28, implemented Directive 2009/28/EC of 23 April 2009 of the European Parliament and of the Council, also called the Climate - Energy Package (so-called Horizon 20-20-20) on the 'Promotion of the use of energy from renewable sources'.

With legge no 204/2016 of 'Ratification and execution of the Paris Agreement linked to the United Nations Framework Convention on Climate Change, adopted in Paris on 12 December 2015' the Italian Parliament formally ratified the Paris Agreement.

The decreto legislativo no 257 of 2017 ratified the European Directive 2014/94/EU of 22 October 2014 (so-called DAFI /Directive Alternative Fuel Initiative) on the 'Creation of an infrastructure for alternative fuels', thus regulating the measures necessary to ensuring the construction of infrastructure for alternative fuels and has included hydrogen among the alternative fuels.

Subsequently a National Energy Strategy (SEN) was presented on 10 November 2017 with the decreti ministeriali of the Ministry of Economic Development and the Ministry of Environment and Protection of the Territory and the Sea, which represents the Italian Government's ten-year plan to anticipate and manage the change in the energy system. This SEN 2017 followed the first SEN of the resigning Monti government.

'The document defines the national scenarios for 2030 and sets the development objectives in the renewable energy and transport sector, as well as the reduction of emissions and consumption in the residential, tertiary, industrial and transport

[8] ibid 11.

sectors, outlining specific lines of action: via from coal to 2025 and sets decarbonization targets for 2030'.[9]

7 National Recovery and Resilience Plan Mission 2 Energy Transition [10]

The energy transition is one of the pillars of the Green New Deal, the trillion-dollar plan euro to transform the European economy into a sustainable key, looking at the environment, decarbonisation, to growth, employment, to arrive at a more inclusive and just society and to a carbon neutral Europe in the middle of the century. At the same time, investment in this direction is at the heart of Next Generation EU, the Program to relaunch post growth risis, focusing on renewable sources, energy efficiency, the circular economy with a focus strongly on research, innovation and development .

7.1 PNRR - Mission 2: The Energy Transition in Italy

In Italy, the PNRR - National Recovery and Resilience Plan - is the programmatic document prepared by the government to access the funds allocated by the Next Generation EU Mission 2 'Green revolution and ecological transition'. This plan, with 59.47 billion euros, proposes the national action for ecological transition, and it is made up of 4 components with a well-defined distribution of resources:

- Circular economy and sustainable agriculture (M2C1)
- Renewable energy, hydrogen, grid and sustainable mobility (M2C2)
- Energy efficiency and building renovation (M2C3)
- Protection of the territory and water resource (M2C4)

The National Recovery and Resilience Plan, presented on 13 July 2021, is an extraordinary opportunity to accelerate the ecological transition and overcome barriers that have proved critical in the past. The Plan introduces advanced and integrated monitoring and analysis systems to improve the ability to prevent phenomena and impacts.

It increases investments aimed at making critical infrastructures, energy networks and all other infrastructures exposed to climatic and hydrogeological risks morerobust. The Plan also makes the Italian system more sustainable in the long term,through the progressive decarbonisation of all sectors.

This goal implies accelerating energy efficiency; increase the share of electricity produced from renewable sources, both with decentralized and centralized solutions (including innovative and offshore ones); develop more sustainable mobility; start the gradual decarbonisation of the industry, including the start of the adoption of hydrogen-based solutions, in line with the European Strategy.

[9] ibid

[10] See PNRR Government available at https://www.governo.it/sites/governo.it/ files/PNRR.pdf (last visited 18 October 2021).

Finally, full environmental sustainability is aimed at, which also concerns the improvement of waste management and the circular economy, the adoption of smart agriculture and bio-economy solutions, the defense of biodiversity and the strengthening of the management of natural resources. starting with the waterones.

The Government intends to develop technological and industrial leadership in the main transition chains (photovoltaic systems, turbines, hydrolysers, batteries) that are internationally competitive and make it possible to reduce dependence on imported technologies and create jobs and growth. The Plan strengthens research and development in the most innovative areas, starting with hydrogen.

In planning and implementing the transition, the government intends to ensure that it occurs in a fair and inclusive way, contributes to reducing the North-South divide, and is supported by adequate training policies. It wants to enhance the Italian supply chain in the agriculture and food sectors and improve citizens' knowledge of the challenges and opportunities offered by the transition. In particular, the Plan aims to encourage training, dissemination, and more generally the development of an environmental culture, which permeates all the behavior of the population.

The Government intends to request the maximum of RRF resources, equal to191.5 billion euros, divided into 68.9 billion euros in grants and 122.6 billion euros in loans. The first 70 per cent of the grants is already fixed by the official version of the RRF Regulation, while the remaining part will be definitively determined by 30 June 2022 based on the GDP trend of the Member States recorded in 2020-2021 according to official statistics. The amount of RRF loans to Italy was estimated on the basis of the maximum limit of 6.8 percent of gross national income in accordance with the Commission's task force .

Horizontal and enabling reforms are detailed in Part 2 of the document. The Sectoral ones are included in the discussion of the individual Missions in the following paragraphs of Part 2 and in the technical appendix.

For Italy, the Next Generation EU program does not represent an opportunity to achieve a Full ecological and digital transition. The energy transition is one of the pillars of the Green New Deal, the trillion euro plan to transform the European economy in a sustainable way, looking at the environment, decarbonisation,growth, employment, to arrive at a more sustainable society. inclusive is 'fair' and to a *carbon neutral* Europe in the middle of the century. At the same time,investments in this direction are at the heart of Next Generation EU, the Program to relaunch post-crisis growth, focusing on renewable sources, energy efficiency, the circular economy with a strong focus on research, innovation and development. In absolute terms, electricity produced from renewable sources represents the largest market share and growth in this sector is mainly driven by wind and solar photovoltaics.

I think the whole world is united in this common battle.

In Italy, studies, researches and in-depth analysis are also carried out by energy managers.

I believe if the goal is only profit and taking care of one's own particular interests, the turning point in the desired direction will be very complex and difficult. No less fraught with obstacles.

Do the numerous changes and the numerous legislative innovations impose a unification in a single text of these regulations that see strong competition between states, for the well-being of man or to reach the consensus of the electorate?

Covid 19 has brought other priorities to the fore, but it has also made possible emergency regulations that do not neglect the energy transition. Now only the will and commitment of all operators remains[11].

'The impact of the Covid-19 crisis on European energy systems is extraordinary.We are seeing renewable electricity levels that some people believed would cause systems to collapse, yet they are not - in fact they are coping well. The question is: what does this mean for the future?' Said Björn Ullbro,Wärtsilä Energy Business Vice President for Europe and Africa in their statement.[12]

Due to the Covid both the demand for energy and electricity has decreased. This was followed by an initial collapse in the prices of both oil and gas (actually in October 2021 it increased considerably, so much so that the Italian government intervened for a realignment). What is certain is that on the one hand the scenario that presents itself is a greater expansion of energy produced from renewable sources that are experiencing a period of competitiveness. Renewable energies are interesting both for the climate and for decarbonisation.

In short, Covid 19 urges the 'clean energy' economic recovery. But we are not seeing as much progress in transport and heating, which account for 80% of global energy consumption.

In fact, there are many elements that make this path still difficult: the demographic increase, the forecast of an increase in energy, the development of new countries, climate change, the use of traditional and fossil energies.

8 Conclusions

At the conclusion of this illustrative report of the international, community and national legislative evolution, it should be emphasized that Italy, having ratified the Paris Agreement and implemented the aforementioned European directives, is required to respect the internationally assumed obligations, and to act incompliance with adequate national legislation. Among the themes of the fourteenth edition of the 'Vincenzo Dona Award'[13], which was held in 2020, presented by the lawyer Massimiliano Dona, President of the National Consumers Union, the one of the energy transition was also dealt with.

Among the ones that spoke on the topic, it is important to mention Valerio Marra, commercial and trading manager of Acea, who reiterates that the pandemic has called for: energy transition, electric mobility, circular economy, energy efficiency, decarbonisation. The Recovery Found focuses on sustainability. The

[11] ibid

[12] See on the point A. El Jaouzi, 'Covid 19 e transizione energetica. Opportunità o illusione?' available at https://www.babilonmagazine.it/covid19-transizione-energetica-opportunita-illusione/ (last visited 18 October 2021).

[13] See National Consumer Union Dona Award Year 2020, available at https:// www.consumatori.it/comunicati-stampa/premio-dona-diretta-streaming-futuro -imprese-consumatori/ (last visited 18 October 2021).

concept of customer centricity is always imposed, which in turn requires digitization and innovation. The customer thus becomes an active consumer, becoming aware of his transparent, active and decisive role, oriented towards green and production.

Another influential voice is the one of Edison CEO Massimo Quaglini) which points out that the transition from the free to the protected market can be a reason for growth and improvement for the consumer.

Again, Ernesto Ciorra of Enel highlights, as well as his company, is projected to guide the consumer towards the energy transition where he also has a power of choice previously denied.

The intervention of Paolo Carnevale, managing director of Eni Progetti, also identifies environmental sustainability as one of the priority objectives to be achieved by trying to significantly reduce the carbon impact.

Finally, Arera, with its President Stefano Besseghini, underlines how they tried to guarantee services to all Italian citizens during the pandemic. Innovation and sustainability are the projects of the Authority.

From all these interventions it is clear that all companies have planned a huge transformation in their projects. In their vision the consumer becomes an active subject rather than a passive one. In other words, an actor and not a spectator. A long and difficult challenge indeed.

Wien, February 2022

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