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Energy Cooperatives in Selected Countries of the World

Legal and Economic Aspects

Edited by Aneta Suchoń and Tomasz Marzec

WYDAWNICTWO NAUKOWE UAM

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FOREWORD

The volume *Energy Cooperatives in Selected Countries of the World: Legal and Economic Aspects*, published by Adam Mickiewicz University in Poznań, Poland represents an important step towards a better understanding of the role cooperatives play in addressing global challenges related to energy production and distribution. Once again, the cooperative model—combining economic as well as social goals of its members and based on recognized cooperative principles and values—proves its adaptability and usefulness in diverse corners of the world.

The global reach of energy-related challenges and the search for effective solutions in transfer to renewable sources allows the authors to explore the legislative, economic, technical, as well as social aspects of this complex trend from broad geographic point of view. How related legislative environments develop, including from a historical-constitutional perspective and whether or why there are differences between the approaches adopted by countries are also questions that provide rich material for discussion and recommendations. European and European Union legal systems are the primary area of study, including Poland, Germany, Bulgaria, Spain, and Greece. Asia and South America, through studies of energy cooperatives in Taiwan and Brazil, respectively, are also represented. While there is no single definition or model of energy cooperative or "energy community", and no single legal solution, studies like those in the volume highlight the importance of challenges faced and bring us closer to jointly defined solutions.

The International Cooperative Research Group (ICRG) is the research and development (R&D) arm of the U.S. Overseas Cooperative Development Council (OCDC) which brings together U.S.-based cooperative development organizations. The ICRG carries out rigorous research programs in support of OCDC's overall mission to advance and improve cooperative development as a pathway to a more prosperous and inclusive future for all.

The argument for cooperatives goes beyond simply contributing to climate, energy, and environmental targets and those countries that can afford to make the switch from traditional to renewable energy. The idea of locally led community organized energy cooperatives has positive effects beyond energy independence.

A successful energy cooperative movement represents lower energy prices, combating energy poverty, and a grid that is more responsive to the needs and desires of the community. It also serves to create more jobs as community-led energy cooperatives tend to hire local firms, use local banks, and reinvest profits into their community. They maximize local value and contribute to a "circular economy" where investing in the energy cooperative leads to a cycle of social and economic well-being of the community. These positive effects are seen in all communities where they exist, demonstrating that cooperatives are a unifying and equalizing factor, accessible to all, regardless of the economic status of their community.

Studies conducted by the OCDC/ICRG under funding from the U.S. Agency for International Development (USAID) provide evidence of the U.S.'s track record with energy cooperatives. The study *What Difference Do Cooperatives Make (WDDCM)* found that cooperative members, including those in energy cooperatives, tend to be better off economically and have greater overall well-being than those who are not members. This was found to be true in the four countries studied, including Poland, Philippines, Kenya, and Peru. In the United States, National Rural Electric Cooperative Association (NRECA) International, a member of OCDC, reports that cooperatives power 56% of the nation's landmass serving 42 million people and 21.5 million businesses, homes, schools, and farms in 48 states. As businesses owned by members, energy cooperatives lead the way in searching for effective energy solutions, including renewables, and contribute to the communities in which they are located.

We are pleased to introduce this important work on energy cooperatives and hope that further research and uptake of the cooperative approach will follow in different parts of the world for the advancement of the cooperative movement.

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INTRODUCTION

In recent years, the social economy in general, the cooperative economy in particular, has attracted a renewed and strong interest of actors at all levels. This is not least due to the financial and ensuing economic crisis during the first decade of this century, as well as the growing awareness of the flaws in the economic and social policies which emerged during the COVID-19 pandemic. Indeed, the interest in the cooperative enterprise model and with it in cooperative law has increased considerably. A number of indicators attest to that. For example, more and more, cooperatives are being recognized in policy documents as significant actors in society; more and more, cooperative law at the national and regional levels is being aligned with the universally recognized cooperative principles of the International Cooperative Alliance; the 2021 biannual Report of the Secretary-General of the United Nations on Cooperatives in social development dedicates one out of three main chapters to cooperative law; among others, the 2023 Report links cooperatives and cooperative law to sustainable development; only thirteen years after the United Nations International Year of Cooperatives in 2012 there will be another such year in 2025. These are clear signs of recognition of the role cooperatives play beyond the financial and economic dimensions of our all lives.

Energy cooperatives, especially electricity cooperatives, are a result of this resurgent interest. While they are not a new phenomenon, the rationale for their rapid reemergence in many countries has changed as compared to that of the late nineteenth and early twentieth century. Then they were established in reaction to the slow progress public authorities were making in providing country-wide, financially affordable electricity for the majority of the people. This rationale continues to be valid for many parts of the world. In addition, financial affordability has become a world-wide problem and energy cooperatives are now determined to contribute to the energy transition, an essential aspect of sustainable development.

Today's energy cooperatives represent a new type of cooperative as they bring together elements that used to be kept separate: producers and consumers, public and private interests, members and other stakeholders with heterogeneous interests, social and professional backgrounds, etc. Obviously, this poses challenges for lawyers and it requires that law meet economics, an uneasy yet indispensable match at times. By discussing the practical and theoretical, economic

and legal aspects of energy cooperatives in many countries, the book edited by Aneta Suchoń and Tomasz Marzec takes this challenge up and it masters it well. The readers will join me in my judgment. Countries not covered by the book might look on the examples they find in this volume as models for solutions to some of their own energy problems.

Professor of the University of Helsinki Dr iur. Hagen Henrÿ

PREFACE AND ACKNOWLEDGEMENTS

Electric power is everywhere present in unlimited quantities and can drive the world's machinery without the need of coal, oil, gas, or any other of the common fuels.

— Nikola Tesla

Cooperatives can deliver a community, person owned energy network.

— Jeremy Rifkin at the ICA General Assembly in Geneva, November 2009

In principle, electricity is needed by everyone in both their private and professional lives, and any lack of supply poses a threat to how hospitals, the food market, households or farms, schools, businesses and many other entities function. Ensuring energy security and the use of renewable energy sources (RES) are of increasing importance. The latter is inexhaustible and has a positive impact on the environment. The challenges of RES energy can be solved to some extent by energy cooperatives. Cooperatives are an international movement, particularly relevant in times of globalization when socio-economic inequalities are emerging, and when often all that matters are profit-making economic activities.

When it comes to the activities of cooperatives, both people and values are important. Cooperatives bring people and their needs together, whether related to their professional activities or to their private lives (e.g. housing, electricity). As one of the leading French economists, Charles Gide, rightly stated: "A cooperative is a business, but if it is only a business, it is a bad business." The Cooperative Principles are therefore the guidelines by which these entities should operate. Cooperatives contribute to the sustainable development of society as a whole, improving the quality of life, protecting the environment, and reducing barriers to access to energy and other necessities of life (e.g. food). The importance of the International Cooperative Alliance (ICA), the US Overseas Cooperative Development Council and the International Cooperative Research Group for the expansion

of the idea of cooperatives worldwide and REScoop.eu (the European federation of citizen energy cooperatives) for the development of energy cooperatives in Europe and other cooperative organizations should be mentioned. The year 2025 is proclaimed the second International Year of Cooperatives, in accordance with the United Nations General Assembly resolution from November 2023.

This book is both theoretical and practical. It is the result of research by scientists from Brazil, Bulgaria, Germany, Greece, Poland, Spain and Taiwan, as well as the result of cooperation with organizations related to RES and cooperatives (Belgium, Poland, European Union, USA). I would like to express my gratitude to the researchers from universities in many countries of the world and to the representatives of the organizations for the texts included in this book. I would also like to thank the book's reviewers, Professor UKSW Dr hab. Mariusz Szyrski (Warsaw, Poland) and Professor of Takushoku University Dr Shinichi Okuda (Tokyo, Japan), as well as Professor of the University of Helsinki Dr iur. Hagen Henrÿ (Finland) and The Overseas Cooperative Development Council / The International Cooperative Research Group (OCDC/ICRG) (Washington, DC, USA) for their recommendation of this publication. I would like to thank the Faculty of Law and Administration of the Adam Mickiewicz University, Prof. Zmijewski Association for Efficiency, and the Alliance of Associations Polish Green Network for co-financing related to preparing and publishing this publication.

I hope that the book will inspire further scientific research on cooperatives operating in the energy market on the one hand, especially energy cooperatives, energy communities, and, on the other, that it will further disseminate the idea of cooperatives and RES energy worldwide, and in doing so, contribute to the creation of new cooperative entities.

Aneta Suchoń

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Chapter 1

INTRODUCTORY CONSIDERATIONS

Aneta Suchoń

Energy security,[1] improving power efficiency and reducing energy poverty[2] are global challenges. There is no doubt that, alongside water, the basis of life is food,[3] but energy is usually required to produce it (e.g. in the production of seeds, fertilizers, for livestock farming or in food processing).[4] Thus, maintaining continuity in the electricity supply is an indispensable condition for the existence and development of all societies.[5]

The literature points to the problem of energy globalization, highlighting that the pursuit of energy sources is the fundamental driving force of human history, and that energy is the basis for countries' economic growth and military power.[6] It is perceived as a potential driver of international conflicts, whether over political influence in major oil-producing countries, military control over narrow transport passages, or over rights to continental shelves.[7]

[1] U. Mc Carthy et al., Global food security – Issues, challenges and technological solutions, *Trends in Food Science & Technology*, 2018, vol. 77, pp. 11ff; The World Food Programme, Energy for Food Security Overview Enhancing people's food security with improved energy access, https://www.wfp.org/publications/energy-food-security [accessed 2.12.2022].

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For centuries, fossil fuels (coal, lignite) have been the main source of energy. However, the negative impact of coal mining on the natural environment, as well as the depletion of coal reserves, renders it necessary to accelerate the transition to renewable energy sources. Furthermore, the importance of the issue of stable energy supplies has grown in significance in connection with Russia's aggression against Ukraine.[8] The ongoing lack of or reduced supply of gas from Russian sources into many European countries has bolstered interest in energy sovereignty. It should be noted that the energy transformation in Europe is accelerating.

A response to global issues came in 2015 the form of the United Nations *Transforming our World: The 2030 Agenda for Sustainable Development*. This plan of action states that despite the development of technologies promoting energy efficiency, overall energy consumption will continue to rise. This growing demand is fuelled in part by commercial and domestic energy consumption, which is the second area of global use after transport, and as the COVID-19 pandemic and remote working solutions necessitated by it have shown, the provision of energy is essential for getting work done.[9] Objective 7 of the *2030 Agenda* commits to providing all citizens with access to sources of stable, sustainable and modern energy at an affordable price. At present, however, the most pressing issue is increasing energy prices, which not only have a negative impact on household budgets but also the economic activity of entrepreneurs. The high cost of energy highlights the pressing need to improve energy efficiency and develop renewable energy sources. Thus, it is necessary to replace gas with alternative energy sources and develop wind and photovoltaic technologies.

Problems related to the continuity of energy supplies and ever higher prices can be solved, at least to some extent, by energy cooperatives. Cooperatives are active in producing, providing and distributing energy. They also offer a successful model for rural electrification and can effectively harness locally available decentralized renewable energy.[10] Energy cooperatives have also proven to be supportive of technological innovation. These entities are increasingly being formed in countries as varied as Germany, Italy, Bangladesh, Bolivia, Cambodia, Germany,[11]

O. A. Olanrewaju, Sustainable energy transition for renewable and low carbon grid electricity generation and supply, *Frontiers in Energy Research*, 2022, no. 9, pp. 1–45; M. Zajączkowska, The Energy Union and European Union energy security, *Ekonomia i Prawo*, 2018, vol. 17(3), pp. 319–328, https://doi.org/10.12775/EiP.2018.023.

[8] See, e.g., J. Tollefson, What the war in Ukraine means for energy, climate and food, *Nature*, 2022, Apr, 604(7905), pp. 232–233, https://doi.org/10.1038/d41586-022-00969-9.

[9] *Transforming our World: The 2030 Agenda for Sustainable Development,* https://sustainabledevelopment.un.org/post2015/transformingourworld [accessed 5.11.2022].

[10] Ch.-W. Su et al., Does renewable energy redefine geopolitical risks? *Energy Policy*, 2021, vol. 158; Y. Wang et al., Geopolitical risk and the systemic risk in the commodity markets under the war in Ukraine, *Finance Research Letters*, 2022, vol. 49.

[11] B. Klagge, T. Meister, Energy cooperatives in Germany—an example of successful alternative economies? *Local Environment*, 2018, vol. 23(7), pp. 697–716.

Spain,[12] and France. There are more than 1,000 energy cooperatives in Germany.[13] In Argentina, energy cooperatives provide more than 10% of domestic energy production, serving 17% of domestic customers and 58% of rural customers.[14] "In Bolivia, an electricity cooperative is responsible for of 30% of the electricity distribution market, providing a service to more than 1 million people."[15] In Denmark, more than 23% of wind energy capacity is owned by energy cooperatives, and about 150,000 households are members of these entities.[16]

In some countries, the law provides a legal definition of energy cooperatives, which is also the case in Poland.[17] According to the Polish Act of 20 February 2015 on Renewable Energy Sources,[18] an energy cooperative is a cooperative within the meaning of the Act of 16 September 1982 on Cooperative Law or the Act of 4 October 2018 on Farmers' Cooperatives, whose objective is the generation of electricity or biogas, agricultural biogas, biomethane[19] or heat in renewable energy source installations, trading or storing them, carried out as part of activities conducted exclusively for the benefit of these cooperatives and their members.

Also worth mentioning are the electric cooperatives that operate in the US. These entities provide electricity to more than 42 million people and serve more than 21 million businesses, homes, schools and farms in 48 states. The US electric cooperative network is based on 831 distribution cooperatives, which were founded by and serve cooperative members in the community by providing

[12] I. Capellán-Pérez, Á. Campos-Celador, J. Terés-Zubiaga, Renewable energy cooperatives as an instrument towards the energy transition in Spain, *Energy Policy*, 2018, vol. 123, pp. 215–229; V. Pellicer-Sifres et al., Learning, transformative action, and grassroots innovation: Insights from the Spanish energy cooperative Som Energia, *Energy Research & Social Science*, 2018, vol. 42, pp. 100–111.

[13] Renewable energy cooperatives as gatekeepers or facilitators? Recent developments in Germany and a multidisciplinary research agenda; A. K. Akella et al., Economical and environmental impacts of renewable energy systems, *Renewable Energy*, 2009, vol. 34(2), pp. 390–396, https://doi.org/10.1016/j.renene.2008.05.002; O. Yildiz et al., Renewable energy cooperatives as gatekeepers or facilitators? Recent developments in Germany and a multidisciplinary research agenda, *Energy Research and Social Science*, 2015, vol. 6, pp. 59–73.

[14] International Labour Office Cooperatives Unit (COOP), *Providing clean energy and energy access through cooperatives, Green Jobs Program*, Geneva: ILO, 2013, pp. 9–16 https://www.uncclearn.org/wp-content/uploads/library/ilo55.pdf [accessed 11.12.2022].

[15] Ibid.

[16] *Cooperatives in energy market*, http://www.dogerlihukuk.com/en/wp-content/uploads/2015/12/COOPERATIVES-IN-ENERGY-MARKET.pdf [accessed 11.12.2022].

[17] M. Szyrski, Ruch spółdzielczy w energetyce. Nowe trendy w energetyce lokalnej, *Ruch Prawniczy, Ekonomiczny i Socjologiczny*, 2021, vol. 82(3); V.J. Schwanitz et al., The development of citizen-installed renewable energy capacities in former eastern bloc countries—The case of Poland, *Energies* 2022, vol. 15, pp. 2597, https://doi.org/10.3390/en15072597.

[18] Journal of Laws of the Republc of Poland [JL] 2022, item, 1378, 1383, 2370, 2687.

[19] According to the Polish Act of 20 February 2015 on Renewable Energy Sources biomethane, it is gas obtained from biogas, agricultural biogas or renewable hydrogen, subjected to a purification process, introduced into the gas network or transported in compressed or liquefied form by means of transport other than gas networks, or used to refuel motor vehicles without the need to transport it.

electricity and other services. Sixty-three generation and transmission cooperatives supply energy to distribution cooperatives in bulk through their own electricity generation facilities or through purchasing power on behalf of distribution members.[20] The National Rural Electric Cooperative Association in the USA is the national trade association, representing nearly 900 local electric cooperatives.[21]

Electrical energy cooperatives serve 12% of the population, and, additionally, own over 40% of the energy distribution network.[22] With this in mind, "a new $9.7 billion USDA programme created by Congress in 2023 as part of the Inflation Reduction Act will also help cooperatives build new clean energy systems by providing grants and loans for projects that include renewable energy, energy storage, carbon capture, nuclear power, and generation and transmission efficiency".[23]

The first cooperatives were established at the beginning of the nineteenth century. Most studies consider the first cooperative in the world to have been the Rochdale Society of Equitable Pioneers, founded in England in 1844. Around the same time, in many countries in the world, numerous similar pre-cooperative initiatives also emerged.[24] The precursor on Polish territory was Stanisław Staszic, the founder of the Hrubieszów Farmers' Rescue Society (Towarzystwo Rolniczego Ratowania się Wspólnie w Nieszczęściach) in 1816.[25]

It is worth emphasizing that the cooperative movement is international.[26] As early as 1895, the International Cooperative Alliance (ICA, French Alliance coopérative internationale, ACI, Spanish Alianza Cooperativa Internacional, ACI, German Internationaler Genossenschaftsbund, IGB) was founded, and had worldwide reach. The 3 million cooperatives in the world are acting together to build a bet-

[20] NRECA, *Electric Co-op Facts & Figures*, https://www.electric.coop/electric-cooperative-fact-sheet [accessed 11.12.2022].

[21] Economic Powerhouses: *The Economic Impacts of America's Electric Cooperatives*, https://www.electric.coop/wpcontent/uploads/2023/10/Strategen_Economic_Powerhouses_Final.pdf [accessed 11.12.2022].

[22] International Labour Office Cooperatives Unit (COOP), *Providing clean energy and energy access through cooperatives, Green Jobs Program*, Geneva: ILO, 2013: p. 10 https://www.uncclearn.org/wp-content/uploads/library/ilo5.pdf 5; J. A. Gill, *Renewable Energy Co-Op Will Empower & Enfranchise,* https://gisbarbados.gov.bb/blog/renewable-energy-co-op-will-empower-enfranchise// [accessed 7.12.2022].

[23] E. Kelly, *Co-op CEO to Congress: Grid Reliability Crucial Amid Energy Transition*, https://www.electric.coop/co-op-ceo-to-congress-grid-reliability-crucial-amid-energy-transition [accessed 11.12.2022].

[24] The literature emphasizes that the earliest forms of cooperation involving mutual assistance existed as early as in antiquity. Examples include Egyptian associations of leaseholders and craftsmen, Jewish shepherd's associations and Dead Sea communities, Greek associations of craftsmen, miners and fishermen, Roman carpentry colleges, blacksmiths, shoemakers, potters, doctors and musicians. See K. Boczar, *Spółdzielczość. Problematyka społeczna i ekonomiczna*, Warsaw, 1986, pp. 27–28; E. Pudełkiewicz, Spółdzielcze formy gospodarowania w Polsce i innych krajach Unii Europejskiej, *Zeszyty Naukowe SGGW, Polityki Europejskie, Finanse i Marketing*, 2009, no. 2(51), pp. 259–295.

[25] F. Stefczyk, *Początki i ogólne warunki rozwoju spółdzielczości w Polsce*, Krakow, 1925, pp. 9ff.

[26] A. Suchoń, *Prawna koncepcja spółdzielni rolniczych*, Poznan, 2016, pp. 10f.

ter world and represent at least 12% of the human population. The International Cooperative Alliance has 305 member organizations from 105 countries and acts as a forum for cooperation between cooperatives.[27]

The Statement on the Cooperative Identity of the International Co-operative Alliance adopted by the 31st Jubilee Congress at Manchester established a definition of a cooperative as: "an autonomous association of individuals who have united voluntarily in order to meet their common economic, social and cultural aspirations and needs through their jointly owned and democratically controlled enterprise".[28] They are essential for the operation of the cooperative principles of cooperativeness,[29] such as the following: *Voluntary and accessible membership* (membership of a co-operative is based on the principle of voluntariness and openness to all those who may benefit from it and who are prepared to assume the associated responsibilities); *Democratic membership control* (members of the cooperative actively participate in decision-making and they monitor the activity of the co-operative through their representatives elected democratically, according to the principle of one member—one vote); *Economic membership of members*—the members themselves determine the level of their membership shares and decide on the distribution of the surplus; *Concern for the local community*—cooperatives are obliged to take care of the development of the local community in which they operate.[30]

Cooperatives base their activities on the values of self-help, self-responsibility, democracy, equality, justice and solidarity. Members share the following ethical values: honesty, openness, social responsibility and concern for others.[31] As a rule, successful cooperatives seek to attract large numbers of new members. This is not to maximize the return on capital, but to ensure that the needs of the members are best met.[32]

As the literature rightly points out, although cooperative principles are "guidelines with which cooperatives put their values into practice", they are generally

[27] https://www.ica.coop/ [accessed 11.11.2023]. ICA tasks include developing business and partnership relations between its members, organizing a rich variety of regional and international events; providing support instruments and disseminating know-how; and facilitating training programs, events and publications developed in partnership with cooperative development, https://www.ica.coop/en/our-work/cooperative-mission [accessed 11.11.2023]. M. Zuba-Ciszewska, The role of the agricultural cooperative movement worldwide—economic comment, in *Legal and Economic Aspect of Associations of Agricultural Producers in the Selected Countries of the World*, ed. A. Suchoń, Poznań, 2020.

[28] See H. Hagen, *Guidelines for Cooperative Legislation*, International Labour Office, Geneva: ILO, 2012, pp. 14–130.

[29] *Deklaracja spółdzielczości* (The Statement of the Co-operative Identity), http://ozrss.promotion.org.pl/pliki/deklaracja_spoldzielczosci.pdf [accessed 2.12.2022].

[30] Ibid.

[31] *Kodeks dobrych praktyk* [online], Polish Milk Industry http://mleczarstwopolskie.pl/uploads/2010/kodeks_dobrych_praktyk.pdf [accessed 2.12.2022]. P. Zakrzewski, Zasady Międzynarodowego Związku Spółdzielczego*, Kwartalnik Prawa Prywatnego*, 2005, vol. 14, pp. 1f.

[32] K. Boczar, *Spółdzielczość*, pp. 19f.; A. Suchoń, *Legal Aspects of the Organisation and Operation of Agricultural Co-Operatives in Poland*, Poznan, 2019.

regarded as a kind of "cooperative decalogue."[33] They are not only the basis for activities engaged in by cooperatives around the world but also for the legislation on cooperatives adopted in many countries and for international regulations relating to their operations.[34] Cooperatives, including energy cooperatives, are also part of community energy, as this form meets the needs and expectations of citizens regarding energy sources, services and the involvement of local entities.[35]

According to 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),[36] community energy offers the possibility of direct participation in the production, consumption and allocation of energy. Community energy initiatives are primarily oriented towards providing members or shareholders with specific affordable types of energy, such as renewable energy, as opposed to traditional energy companies that prioritize making a profit. Citizen energy is also focused on building local alternatives to the centralized energy system that has long been dominated by large companies. The foundation of citizen energy is the direct involvement of citizens. As a democratic system, it ensures that all participants can produce and use energy in a cost-effective way.[37]

As mentioned previously, the activity of energy cooperatives is part of the renewable energy community. 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[38] defines a renewable energy community as a legal entity that, in accordance with the applicable national law, is based on open

[33] Deklaracja Spółdzielczej Tożsamości, *Monitor Spółdzielczy*, 1999, no. 1; A. Piechowski, *Edukacja i szkolenie w dziejach polskiej spółdzielczości*, http://problemyps.pl/pps20/PPS20spoldzielczosc.pdf [accessed 2.12.2022].

[34] A. Piechowski, Międzynarodowe Zasady i Wartości Spółdzielcze a praktyka działania spółdzielni, in *Odmienność podmiotów spółdzielczych od spółek prawa handlowego*, ed. K. Lachowski, Warsaw, 2006, p. 17f; I. MacPherson, *Co-operative Principles for the 21st Century*, Geneva, 1996, p. 10f. According to K. Pietrzykowski, the co-operative principles established by an international non-governmental organisation obviously do not have the value of norms of international law. They are therefore not formally binding on Polish co-operatives, including housing co-operatives. *De lege lata* they are of purely moral significance. On the other hand, the *de lege ferenda* to these principles should be included in the future Polish Co-operative Act; id., Pojęcie spółdzielni, in *System prawa prywatnego*, vol. 4: *Prawo rzeczowe*, ed. E. Gniewek, pp. 293f., SIP Legalis, 2012.

[35] M. Szyrski, *Rola samorządu terytorialnego w rozwoju odnawialnych źródeł energii (OZE). Analiza administracyjnoprawna*, Warsaw, 2017.

[36] Official Journal of the European Union [OJ EU] L 158/125, see P. Lissoń, Energetyka obywatelska jako nowy etap rozwoju prawa energetycznego, in *Współczesne funkcje państwa wobec gospodarki. Księga jubileuszowa Profesora Tadeusza Kocowskiego*, ed. K. Kiczka, T. Kocowski, Wroclaw, 2022, pp. 802f.

[37] *Energetyka obywatelska: Przewodnik dla samorządów*, https://wiecejnizenergia.pl/aktualnosci/energetyka-obywatelska-przewodnik-dla-samorzadow/; T. Meister, B. Schmid, I. Seidl et al. How municipalities support energy cooperatives: survey results from Germany and Switzerland, *Energy, Sustainability and Society*, 2020, no. 10, https://doi.org/10.1186/s13705-020-00248-3.

[38] OJ EU L 328, p. 82.

and voluntary participation, is independent and effectively controlled by shareholders or members located in close proximity to the renewable energy projects owned and developed by that legal entity. Its primary objective, rather than making profits, is to bring environmental, economic or social benefits to its shareholders, members or the local areas in which it operates (Article 2 point 16). Through increased investment in renewable energy by energy cooperatives, there will be a reduction in greenhouse gas emissions into the atmosphere.[39]

It is worth noting that energy cooperatives provide jobs for the inhabitants of rural areas and small towns. They therefore contribute to the development of civil society by providing opportunities for active participation in the labour market.[40] Combining a wide range of values, a cooperative pursues the key objectives of the European Union, in such areas as social policy and employment, regional development and agriculture. Cooperatives operate in the field of the economy, and it must be noted that social and economic changes, environmental degradation and civilization development present new challenges for the economy.[41]

At this juncture, some general issues related to rural areas should be indicated. These include problems related to public services, infrastructure, digital connectivity, employment, and electricity. However, there are also problems and limited access to gas supply networks or "municipal heating networks" networks. Therefore, it is important to invest in and develop the renewable energy sector. It is thanks to such energy that the energy situation and heating services will improve. At the same time, in rural areas there is a greater possibility of using some renewable energy sources and investments in this area, for example wind farms, photovoltaic panels or biogas plants. Rural areas will therefore offer copious opportunities in the future due to the available land, especially wasteland, good conditions for sunlight, wind, geothermal energy resources,[42] or for the construction of devices related to the use of hydrogen. The significant contribution of farmers

[39] A. Siudek, A. Klepacka, Impact of the RES microinstallations in single-family houses on carbon dioxide emission reduction, *Roczniki Naukowe Stowarzyszenia Ekonomistów Rolnictwa i Agrobiznesu*, 2018, no. 5, pp. 193–199; Haiyan Feng, The impact of renewable energy on carbon neutrality for the sustainable environment: role of green finance and technology innovations, *Frontiers in Environmental Science*, 2022, vol. 10, https://doi.org/10.3389/fenvs.2022.924857; B. Szetela et al., Renewable energy and CO_2 emissions in top natural resource rents depending countries: The role of governance, *Frontiers in Energy Research*, 2022, vol. 10, https://doi.org/ 10.3389/fenrg.2022.872941. (The authors argue that 1 percentage point increase in renewable energy consumption leads to 1.25% decrease in CO_2 emissions per capita.)

[40] A. Suchoń, Cooperatives as entities influencing the sustainable development of rural areas in European Union, *Indonesian Comparative Law Review*, 2022, vol. 4(2), pp. 81–99; J. Bijman, R. Muradian, A. Cechin, Agricultural cooperatives and value chain coordination, in *Value Chains, Inclusion and Endogenous Development: Contrasting Theories and Realities*, ed. B. Helmsing, S. Vellem, Milton Park, 2011.

[41] COGECA, *Development of Agricultural Cooperatives in the EU*, Brussels, 2014.

[42] *Geotermia w Polsce*, http://www.pga.org.pl/geotermia-zasoby-polskie.html [accessed 5.11.2022].

to achieving EU RES-related targets should be emphasized, as should the fact that agriculture produces more renewable energy than it consumes. Overall, producing energy from renewable sources constitutes an opportunity for rural areas to reduce energy poverty.

Currently, there is no monograph publication focusing on legal and economic factors that would provide a comprehensive overview of energy cooperatives in various countries worldwide or, more broadly, cooperatives operating in the energy market. However, it is worth noting publications that discuss energy cooperatives in some countries,[43] primarily Germany,[44] USA,[45] Denmark,[46] Poland,[47] Brazil[48] and Spain.[49] The present study attempts to fill this gap but only partially. The need for such a study is also justified by cognitive, social and economic aspects, as well as practical, legal and theoretical ones.

First, we should start with the cognitive reasons. Cooperatives have a rich history, and over the years, the legal, economic and social formula for how they are

[43] S. Soeiro, M. Ferreira Dias, Energy cooperatives in southern European countries: Are they relevant for sustainability targets? *Energy Reports*, 2020, vol. 6; B. Huybrechts, S. Mertens, The relevance of the cooperative model in the field of renewable energy, *Annals of Public and Cooperative Economics*, 2014, vol. 85(2), pp. 193–212; NFORSE-Europe, *Renewable-Energy Cooperatives Cases from Denmark, Germany, Poland & Turkey*, https://www.inforse.org/europe/pdfs/Pub_Renewable_Energy_Cooperatives_Cases_from_Denmark_Germany_Poland_Turkey_2022.pdf [accessed 5.10.2023].

[44] B. Klagge, T. Meister, Energy cooperatives in Germany – an example of successful alternative economies? *Local Environment,* 2018, vol. 23(7); J. Lowitzsch, F. Hanke, Renewable energy cooperatives, in *Energy Transition: Financing Consumer Co-Ownership in Renewables*, ed. J. Lowitzsch, Springer International Publishing, 2019; O. Yildiz, J. Radtke, Energy cooperatives as a form of workplace democracy? A theoretical assessment, *Economic Sociology_the European Electronic Newsletter*, 2015, vol. 16(3), pp. 17–24.

[45] A. B. Klass, G. Chan, Cooperative clean energy, *North Carolina Law Review*, 2021, vol. 100(1), pp. 1–88; G. Pacyniak, Greening the old new deal: strengthening rural electric cooperative supports and oversight to combat climate change, *Missouri Law Review*, 2020, vol. 85(2), pp. 409–494.

[46] *Cooperatives in energy market*, http://www.dogerlihukuk.com/en/wp-content/uploads/2015/12/COOPERATIVES-IN-ENERGY-MARKET.pdf; Cooperative Energy: Lessons from Denmark and Sweden", p. 26f., http://www.uk.coop/document/co-operative-energy-lessons-denmark-and-sweden; U. Kohl, Is the industrial turn killing Denmark's energy cooperatives? in *Conference Proceedings of the 20th STS Conference Graz 2022: Critical Issues in Science, Technology and Society Studies*, ed. G. Getzinger, F. Häller, Verlag der Technischen Universität Graz, 2022, https://doi.org/10.3217/978-3-85125-932-2-10.

[47] M. Szyrski, Ruch spółdzielczy w energetyce; D. Bierecki, Energy cooperatives in the system of Polish Cooperative Law, *Review of Institute of the Grand Duchy of Lithuania*, 2021, vol. 1; T. Marzec, Prawne perspektywy rozwoju spółdzielni energetycznych w Polsce, *Internetowy Kwartalnik Antymonopolowy i Regulacyjny*, 2021, no. 10(2); M. Błażejowska, W. Gostomczyk, Warunki tworzenia i stan rozwoju spółdzielni i klastrów energetycznych w Polsce na tle doświadczeń niemieckich, *Problemy Rolnictwa Światowego*, 2018, vol. 18(2).

[48] D. de B. Lima, *Cooperativas de Energia: guia de constituição de cooperativas de geração distribuída fotovoltaica*, Brasília, 2018.

[49] I. Capellán-Pérez, Á. Campos-Celador, J. Terés-Zubiaga, Renewable energy cooperatives as an instrument towards the energy transition in Spain, *Energy Policy*, 2018, vol. 123.

organized and operate has changed.[50] The issue of energy cooperatives, and more broadly, their operation on the energy market, is poorly dealt with in the literature, even though cooperatives are an important element of the market economy. Therefore, their interests must be protected and promoted. There should also be legal instruments encouraging the establishment of such cooperatives. These points alone encourage research into the legal principles of how these energy entities are organized and function.

Secondly, there are socio-economic reasons for undertaking this research. As already indicated, energy is essential for any society to function. Its impact on the development of agricultural markets, members, local communities, societies and poverty reduction is highlighted.[51] Renewable energy issues are not only important for Europe but for the whole world. As mentioned previously, the UN's *Transforming our World: the 2030 Agenda for Sustainable Development* states that despite the development of technologies promoting energy efficiency, energy consumption in OECD countries will increase. Commercial and residential energy consumption is the second area of global consumption after transport.[52] As already indicated, Objective 7 is to provide everyone with access to sources of stable, sustainable and modern energy at an affordable price. By 2030, there will be a significant increase in the share of renewable energy in the global energy mix. Within these next seven years, international cooperation will increase to facilitate access to clean energy research and technologies in the field of renewable energy, energy efficiency and advanced and cleaner fossil fuel technologies, and to promote investment in energy infrastructure and clean energy technologies.[53] Thus, it can be stated that action needs to be taken at the macro level. However, through the democratic principles by which they operate, cooperatives perfectly fit into the implementation of the goals of a renewable energy community at the local level. Energy cooperatives are becoming more and more important on the renewable energy market, for example, in the field of constructing biogas plants, establishing photovoltaic farms or constructing wind turbines.

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[50] S. Staszic, *Przestrogi dla Polski*, Warsaw, 1960; S. Wojciechowski, *Kooperacja w rozwoju historycznym*, Warsaw, 1923; A. Suchoń, Agricultural producers' cooperatives in the years 1920–2022—selected legal issues, *Studia Prawnicze KUL*, 2022, no. 4, pp. 65–83.

[51] J. Bijman, The changing nature of farmer collective action: introduction to the book, in *Cooperatives, Economic Democratization and Rural Development*, ed. J. Bijman, J. Schuurman, R. Muradian, Cheltenham, UK: Edward Elgar, 2016, pp. 1–22.

[52] *Transforming Our World: The 2030 Agenda for Sustainable Development*, https://sustainabledevelopment.un.org/post2015/transformingourworld [accessed 5.11.2022].

[53] https://www.unic.un.org.pl/files/164/Agenda%202030_pl_2016_ostateczna.pdf [accessed 5.12.2022]; J. Zhao, J. Wang, K. Dong, The role of green finance in eradicating energy poverty: ways to realize green economic recovery in the post-COVID-19 era, *Economic Change and Restruction*, 2022, https://doi.org/10.1007/s10644-022-09411-6.

The research is motivated by issues of energy security. This is becoming increasingly important at national, continental and global levels.[54] According to Article 3 of the Polish Act of 10 April 1997 on Energy Law, point 16, energy security is the state of the economy that makes it possible to meet current and future customer demand for fuels and energy in a technically and economically justified manner, while abiding by environmental protection requirements. It is a condition for the existence and constant development of societies.[55] In 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 it is indicated that "security" means both security of supply and provision of electricity, and technical safety (Article 2 point 58).[56] According to Article 194 of the Treaty on the Functioning of the European Union in the context of the establishment and functioning of the internal market and with regard for the need to preserve and improve the environment, Union policy on energy shall aim, in a spirit of solidarity between Member States, to: (a) ensure the functioning of the energy market; (b) ensure security of energy supply in the Union; (c) promote energy efficiency and energy saving and the development of new and renewable forms of energy; and (d) promote the interconnection of energy networks.[57]

Energy supply disruptions can be a source of significant financial loss and disruption to business and society. They can also cause potential harm to human health. Therefore, in energy policy, the need to protect the environment and reduce climate change should be considered. Energy security depends on many factors, including the diversification[58] of production capacity. The dispersion of energy sources and community energy may also contribute to increasing energy security, a fact of increasing importance. Russia's aggression against Ukraine, the risk of other countries being attacked, the negative impact of fossil resources on the environment, and the depletion of sources make it necessary to diversify and

[54] L. K. Chu et al., Energy security as new determinant of renewable energy: The role of economic complexity in top energy users, *Energy*, 2023, vol. 263, Part C; M. Taifouris, M. Martín, Towards energy security by promoting circular economy: A holistic approach, *Applied Energy* 2023, vol. 333; R. Marks-Bielska, S. Bielski, Wzrost roli rolnictwa w zapewnieniu bezpieczeństwa energetycznego kraju, *Wieś i Rolnictwo*, 2013, no. 4, pp. 149–160.

[55] *Bezpieczeństwo energetyczne podstawą rozwoju społeczeństwa*, https://www.gov.pl/web/polski-atom/bezpieczenstwo-energetyczne-podstawa-rozwoju-spoleczenstwa [accessed 5.09.2023].

[56] J. Faszcza, Rozwój zasady solidarności energetycznej w orzecznictwie Trybunału Sprawiedliwości, *Internetowy Kwartalnik Antymonopolowy i Regulacyjny*, 2020, no. 6, pp. 90–99; K. Zawodziński, Solidarność energetyczna jako ogólna zasada prawa Unii Europejskiej, *Internetowy Kwartalnik Antymonopolowy i Regulacyjny*, 2021, no. 5, pp. 33–44.

[57] M. Szyrski, Prawo energetyczne z uwzględnieniem odnawialnych źródeł energii, in *Instytucje materialnego prawa administracyjnego. Przegląd regulacji*, ed. I. Lipowicz, Warsaw, 2017.

[58] *X.* Li, Diversification and localization of energy systems for sustainable development and energy security, *Energy Policy,* 2005, vol. 33(17), pp. 2237–2243, https://doi.org/10.1016/j.enpol.2004.05.002.

increase the share of renewable energy. Problems with energy reveal the impact of political risk on the state of the energy market.[59]

The International Energy Agency (IEA) is an autonomous body which was established in November 1974 within the framework of the Organization for Economic Cooperation and Development (OECD) to put into practice an international energy programme. Since the founding of the IEA in 1974, the organization's mission has been to promote a secure, affordable and sustainable energy supply to support economic growth.[60]

Thirdly, there are environmental and climate-related reasons for carrying out this research. By investing in renewable energy, energy cooperatives contribute to improving the natural environment. For many years, the European Union has been focusing on implementing the EU's climate and energy policy framework. Energy strategy is thus linked to EU environmental policy, but also to agriculture, regional development and transport.

The current challenge is to implement the premises of the European Green Deal, which were presented by the European Commission on 11 December 2019.[61] These include promoting green finance and investing, more ambitious EU climate change goals, clean, affordable and secure energy, and developing circular economies. It also aims to implement the UN 2030 Agenda for Sustainable Development and is in line with the assumptions of the green economy idea.[62] The latter emphasizes that the economy should be low-carbon, resource-efficient and should serve "social inclusion". It is necessary to increase the efficiency of energy and resource use, as well as to prevent losses in biodiversity and ecosystem services.[63] Part of this comes under European Climate Law, which aims to achieve net zero greenhouse gas emissions by 2050.[64]

[59] Ch-W. Su et al., Does geopolitical risk strengthen or depress oil prices and financial liquidity? Evidence from Saudi Arabia, *Energy*, 2019, vol. 187.

[60] https://www.iea.org/ [accessed 5.12.2022].

[61] *The European Green Deal*, https://commission.europa.eu/strategy-and-policy/priorities-2019-2024/european-green-deal_en [accessed 5.12.2022].

[62] D. Pearce, A. Markandya, E. Barbiera in the report *Blueprint for a Green Economy*, https://www-unep-org.translate.goog/regions/asia-and-pacific/regional-initiatives/supporting-resource-efficiency/green-economy?_x_tr_sl=en&_x_tr_tl=pl&_x_tr_hl=pl&_x_tr_pto=schttps://www-unep-org.translate.goog/regions/asia-and-pacific/regional-initiatives/supporting-resource-efficiency/green-economy?_x_tr_sl=en&_x_tr_tl=pl&_x_tr_hl=pl&_x_tr_pto=sc [accessed 9.12.2022]; K. Zak, Green economy—w drodze do nowego globalnego standardu biznesowego, *Studia Ekonomiczne*, 2015, no. 226, pp. 256 ff.; B. Ryszewska, *Zielona gospodarka—teoretyczne podstawy koncepcji i pomiar jej wdrażania w Unii Europejs*kiej, Wroclaw: Uniwersytet Ekonomiczny we Wrocławiu, 2013; D. Pearce, A. Markandya, E. Barbier, *Blueprint for a Green Economy*, London, 1989.

[63] K. Górka, M. Łuszczyk, Zielona gospodarka i gospodarka oparta na wiedzy a rozwój trwały, *Optimum. Studia Ekonomiczne*, 2014, no. 3(69); P. Szyja, Rozwój zielonej gospodarki a kwestia bezpieczeństwa ekologicznego, *Europejskie Studia Społeczno-Gospodarcze*, 2013, no. 3.

[64] See Regulation of the European Parliament and of the Council (UE) 2021/1119 of 30 June 2021 establishing the framework for achieving climate neutrality and amending Regulations (EC) No. 401/2009 and (EU) 2018/1999 ("European Climate Law"), OJ L 243, 9.07.2021, pp. 1–17.

The Communication from the Commission to the European Parliament, the Council, the Economic and Social Committee and the Committee of the Regions EMPTY "Fit for 55": delivering the EU's 2030 Climate Target on the way to climate neutrality[65] underlined that energy consumption is responsible for 75% of emissions in the European Union. Therefore, the transformation of the energy system is crucial for achieving the ambitious climate goals that have been established. Consequently, the share of renewable energy sources in the energy mix of the European Union is set to increase from 32% to 40%.[66] It is proposed to update the Renewable Energy Directive and the Energy Efficiency Directive. Overall, the package can be considered as conducive to increasing the use of energy from renewable sources and also saving it. The Regulation of the European Parliament and of the Council (UE) 2021/1119 of 30 June 2021 establishing the framework for achieving climate neutrality and amending Regulations (EC) No. 401/2009 and (EU) 2018/1999 ('European Climate Law')[67] indicates in Article 2 that "Union-wide greenhouse gas emissions and removals regulated in Union law shall be balanced within the Union at the latest by 2050, thus reducing emissions to net zero by that date, and the Union shall aim to achieve negative emissions thereafter."

The aim of this book is to determine whether, and to what extent, legal regulations in selected countries of the world countries are conducive to the establishment and operation of energy cooperatives. The purpose is also to assess whether the cooperative is an effective instrument for the development of distributed energy and Citizen Energy Communities. The publication attempts to identify the ways and directions in which cooperatives might develop in energy markets around the world, as well as establishing the factors influencing this process. The book aims to help us to answer the following questions: Why are there differences between energy cooperatives in different countries? What kind of renewable energy investments are made by energy cooperatives and how are they financed? Is it more advantageous for an energy cooperative to invest in biogas plants, photo-

[65] The Communication from the Commission to the European Parliament, the Council, the Economic and Social Committee and the Committee of the Regions EMPTY, '*Fit for 55': delivering the EU's 2030 Climate Target on the way to climate neutrality*, https://eur-lex.europa.eu/legal-content/PL/TXT/?uri=CELEX%3A52021DC0550, https://eur-lex.europa.eu/legal-content/PL/TXT/?uri=CELEX%3A52021DC0550, https://www.eesc.europa.eu/sites/default/files/files/21_219_diversity_europe_news_september21.pdf [accessed 29.07.2022].

[66] The Communication from the Commission to the European Parliament, the Council, the Economic and Social Committee and the Committee of the Regions EMPTY, *„Gotowi na 55"*. See J. Ciechanowicz-McLean, Instrumenty prawne ochrony klimatu przed i w Europejskim Zielonym Ładzie, in *Prawne wyzwania związane z przystosowaniem się do zmian klimatu i ich łagodzeniem*, ed. M. Nyka, Gdansk, 2021, pp. 9f.; B. Rakoczy, Elastyczność zasady zrównoważonego rozwoju w kontekście adaptacji do zmian klimatu, in *Prawne wyzwania związane z przystosowaniem się do zmian klimatu i ich łagodzeniem*, ed. M. Nyka, Gdansk, 2021, pp. 21f.

[67] W. Gontarski, I. Parchimowicz-Gontarska, Suwerenność energetyczna na kanwie pakietu „Gotowi na 55". Część 1, *Europejski Przegląd Prawa i Stosunków Międzynarodowych*, 2022, no. 2/3, pp. 7–23.

voltaic farms, wind energy or hydropower? Finally, another issue is the legal title to land which is necessary for renewable energy cooperatives to carry out their investments.

The book consists of 15 chapters. The first presents an introductory discussion, while the next two concentrate on general issues in the field of energy communities. Chapter 4 refers to the interaction of municipalities and citizens in the energy transition, especially in Germany, and Chapter 5 discusses the constitutional provisions on cooperatives and the right to energy in several countries around the world. Chapters 6 to 12 refer to energy cooperatives in European countries, including Germany, Bulgaria, Greece, Spain and Poland. Chapter 13 and 14 consider energy cooperatives outside Europe, in Taiwan and Brazil. The book ends with a summary prepared by the authors.

The basic research method adopted was the dogmatic analysis of normative texts, which is a characteristic feature of a lawyer's work. The subject of the analysis was not only the general provisions of the law on cooperatives and individual types of cooperatives, in particular, energy cooperatives in many countries of the world, and civil energy communities, but also in the field of energy from renewable sources, energy law, environmental protection law, registers and permits, and contracts concluded by these entities. Issues related to support for the implementation of renewable energy investments from public funds, including the European Union, and tax regulations are also presented. The tasks and operating conditions of cooperatives often depend on the economic structure of the relevant society—its development and socio-economic situation.[68] The subject matter of the book also requires an analysis of the financial situation and efficiency of cooperatives, statistical data on regions and economic activity, which is why a socioeconomic approach was adopted. The methods of economic analysis used include ratio analysis, comparative analysis, and the graphic method.

[68] See K. Boczar, *Spółdzielczość*, p. 13ff.

Chapter 2

TO SOLVE A PROBLEM, IT MUST FIRST BE NAMED: A REGISTER OF REGULATORY BARRIERS TO ENERGY COMMUNITIES

Piotr Mikusek and Maciej M. Sokołowski

Introduction

Technology is one of the main tools for transforming the world around us. Changes effected through the implementation of new technologies affect entire societies, not only by improving or creating new fields of human activity, but also by comprehensively transforming the behavioral patterns of entire populations.[1] For example, the massive use of artificial lighting in homes, first through paraffin and later through electrification, led to a significant increase in the time available for professional or domestic activities or active leisure pursuits.[2] Therefore, every economic sector is subject to change due to the improvement of existing technologies and the implementation of new solutions. It is no different for the electricity sector.

At present, the process of energy transition is evident throughout the world, as a result of climate policies aimed at limiting the increase in the global average temperature.[3] One of the transformative elements that can help in the transition is distributed energy,[4] particularly driven by local communities. The regulatory policy of the European Union (EU) can serve as an example of such a trend, with undergoing process of substantial regulatory changes aimed at developing dispersed capacity.[5] Three acts are fundamental here: Regulation 2019/943 on the

[1] See B. Russell, T. Sluckin, *The Impact of Science on Society*, London, New York 2016.

[2] K. J. Gaston et al., Benefits and costs of artificial nighttime lighting of the environment, *Environmental Reviews*, 2015, vol. 23(1), pp. 14–23.

[3] International Renewable Energy Agency (IRENA), *World Energy Transitions Outlook: 1.5°C Pathway*, Abu Dhabi ,2021, p. 19.

[4] United Nations, *Transforming Our World: The 2030 Agenda for Sustainable Development*, New York 2015.

[5] R. Leal-Arcas, F. Lesniewska, F. Proedrou, Prosumers: New actors in EU energy security, *Netherlands Yearbook of International Law*, 2017, vol. 48, pp. 139–147; T. Marzec, Prawne perspektywy

internal market in electricity,[6] Directive 2019/944 on common rules for the internal market in electricity,[7] and Directive 2018/2001 on the promotion of the use of energy from renewable sources.[8] Each of these acts, within the scope of its operation, accentuates and sets a trend for the development of more citizen-driven electricity generation. Using the example of EU regulation relating to energy communities seems justified for three main reasons. Firstly, EU law recognizes various distributed energy institutions, including energy communities, in substantial detail. Secondly, due to the legal nature of the Directive, allowing member states to implement legal norms in a manner appropriate to the system in question, different approaches to energy communities can be observed.[9] Thirdly, EU regulations may serve as a kind of prototype that can be used by other legal systems to assess and analyse which ways of regulation foster the development of energy communities and which are obstacles. Therefore, in the search for universal legal solutions, examples of EU legislation are referred to in this text.

In this light, the main goal of the authors of this paper is to identify an exemplary list of regulatory barriers that may slow down the development of energy communities and to discuss in detail the already presented idea of a barrier register listing certain provisions (a "black list") that should be excluded from legal practice.[10] The discussion of these obstacles will be systemic in nature, independent of the particular legal system[11]; thus universal and applicable worldwide. With this in mind, this chapter presents energy communities as distributed energy sources, discusses the types of problems that an energy community can face, offers examples of regulatory barriers affecting the development of community energy, and provides a proposal for solving regulatory barriers with the help of a register.

rozwoju spółdzielni energetycznych w Polsce [Legal perspectives for the development of energy cooperatives in Poland], *Internetowy Kwartalnik Antymonopolowy i Regulacyjny* (iKAR) 2021, no. 10(2), pp. 24–40.

[6] See recital No. 23 Regulation (EU) 2019/943 of the European Parliament and of the Council of 5 June 2019 on the internal market in electricity (Official Journal of the European Union [OJ EU] L 2019 No. 158, p. 54).

[7] See recitals No. 18 and 43 Directive (EU) 2019/944 of the European Parliament and of the Council of 5 June 2019 on common rules for the internal market in electricity and amending Directive 2012/27/EU (OJ EU L. 2019 No. 158, p. 125) (EMD).

[8] See recitals No. 26, 50, 62, 67, 70–72 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 (OJ EU. L. 2018 No. 328, p. 82, as amended) (REDII).

[9] For more about the role of directives in EU law and their impact on Member States' legislation see G. Falkner et al., *Complying with Europe: EU Harmonisation and Soft Law in the Member States*, Cambridge, 2005.

[10] This idea was presented in the following paper: M. M. Sokołowski, Renewable and citizen energy communities in the European Union: how (not) to regulate community energy in national laws and policies, *Journal of Energy & Natural Resources Law*, 2020, vol. 38(3), pp. 289–304.

[11] For more on the impact of EU legislation on the regulations in non-EU countries see A.R. Young, The European Union as a global regulator? Context and comparison, *Journal of European Public Policy*, 2015, vol. 22(9), pp. 1233–1252.

Energy Communities in Distributed Generation

The existing paradigm of electricity generation, which can be simply called "centralized", is nowadays countered by the paradigm of distributed generation.[12] The term "distributed generation" encompasses electricity generation typically from zero- or low-carbon installations (although this is not a prerequisite) of small or medium generating capacity, located closer to the end user.[13] This approach offers an interesting alternative to the development of centralized energy for several reasons, including the possibility of reducing energy losses in distribution and transmission, better adaptation of the generation model to the needs of consumption, and the possibility of reducing the costs incurred for the supply of electricity.[14] Prosumerism, which represents the decentralization and democratization of the energy market, is a step not only towards improving the cost efficiency of market operation, but also towards increasing public participation in market supervision[15] and involving citizens interactively in the development of smart microgrids.[16] Furthermore, increasing the participation of local communities could help reduce the NIMBY effect,[17] resulting in a higher acceptance of energy investments (especially those on a bigger scale).[18] It is also important to recognize the potential of energy communities to improve the performance of energy tasks carried out by local authorities, for example in the lighting of roads and public places.[19]

In practice, the distributed generation model, as a way to realize the idea of local communities being actively involved in the electricity market, can take different forms. These are, for instance, prosumers, active consumers, virtual power

[12] E. A. Kremers, *Modelling and Simulation of Electrical Energy Systems Through a Complex Systems Approach Using Agent-Based Models*, Karlsruhe, 2013, p. 30.

[13] G. Allan et al., The economics of distributed energy generation: A literature review, *Renewable and Sustainable Energy Reviews*, 2015, vol. 42L, pp. 543.

[14] For more on the examples of the positive impact of distributed energy development see M. Houwing, R.R. Negenborn, B. de Schutter, Economic advantages of applying model predictive control to distributed energy resources: The case of micro-CHP systems, in *The 16th Mediterranean Conference on Control and Automation*, June 2008, pp. 1550–1555; M. F. Akorede, H. Hizam, E. Pouresmaeil, Distributed energy resources and benefits to the environment, *Renewable and Sustainable Energy Reviews*, 2010, vol. 14(2), pp. 724–734; E. González-Romera et al., Advantages of minimizing energy exchange instead of energy cost in prosumer microgrids, *Energies*, 2019, vol. 12(4), p. 719.

[15] B. van Veelen, D. van der Horst, What is energy democracy? Connecting social science energy research and political theory, *Energy Research & Social Science*, 2018, vol. 46, p. 25.

[16] S. Moroni, V. Antoniucci, A. Bisello, Energy sprawl, land taking and distributed generation: Towards a multi-layered density, *Energy Policy*, 2016, vol. 98, pp. 266–273.

[17] *Not In My Backyard*.

[18] See M. Richter, Business model innovation for sustainable energy: German utilities and renewable energy, *Energy Policy*, 2013, vol. 62, p. 1230.

[19] For more on the tasks of local authorities in the field of energy using the example of street lighting and public places see P. Lissoń, „Rekomunalizacja" zadań w sferze gospodarki komunalnej ["Recommunalisation" of tasks in the municipal economy sphere], *Ruch Prawniczy, Ekonomiczny i Socjologiczny*, 2017, vol. 79(3), pp. 142–144.

plants, closed systems, or energy cooperatives and energy communities. They are all interlinked, and do not constitute closed groups. A certain regulatory and organizational landscape allows for the creation of solutions tailored to their needs. These groups differ in the purpose of their electricity production and in terms of their formal and legal organization. In fact naming of individual distributed generation institutions depends on the adopted criterion of description. If we look at it from the perspective of where the generation is located, for example, we can distinguish between a prosumer and a virtual prosumer.[20] A prosumer produces energy in the place where it is consumed, usually from a PV installation,[21] while a virtual prosumer is characterized by the separation of the locations of energy production and consumption.[22] Here, energy communities intersect with prosumerism, as it is possible for them to be not only a community composed of prosumers, but also an energy community without prosumers, as well as prosumers outside the energy community. One should also note that community energy and energy communities are not identical terms. While community energy represents the whole landscape of distributed energy models,[23] energy communities are just one of many forms of possible distributed energy organizations.

Looking for a general and universal definition of the institution of an energy community, it should be pointed out that it is a community formed by a voluntary association of local stakeholders, aimed at meeting local energy needs.[24] These elements are also visible in existing regulatory frameworks, such as EU law concerning energy communities,[25] where—in EMD and RED II—two different, although structurally similar, forms of energy communities are specified: citizen energy communities (CEC) and renewable energy communities (REC).[26] In addition to legal characterization, other typologies relating to energy communities and focusing on specific elements of their functioning can be identified. This is because energy community development can be described both as a process of engaging

[20] The prosumer, as the name suggests, is a combination of a "producer" (pro-) and a "consumer" (-sumer) of energy, which is used for own use, see S. B. Jacobs, The energy prosumer, *Ecology Law Quarterly*, 2016, vol. 43(3), pp. 523–525.

[21] B. P. Koirala et al., Energetic communities for community energy: A review of key issues and trends shaping integrated community energy systems, *Renewable and Sustainable Energy Reviews*, 2016, vol. 56, p. 727.

[22] J. Z. Riveros, M. Kubli, S. Ulli-Beer, Prosumer communities as strategic allies for electric utilities: Exploring future decentralization trends in Switzerland, *Energy Research & Social Science*, 2019, vol. 57(11), p. 2.

[23] E. M. Gui, I. MacGill, Typology of future clean energy communities: An exploratory structure, opportunities, and challenges, *Energy Research & Social Science*, 2018, vol. 35, p. 95.

[24] See N. Šahović, P. P. da Silva, Community renewable energy-research perspectives. *Energy Procedia*, 2016, no. 106, pp. 46–58.

[25] For more on the development of EU legislation on energy communities see M. M. Sokołowski, European law on the energy communities: A long way to a direct legal framework, *European Energy and Environmental Law Review*, 2018, vol. 27(2).

[26] M. M. Sokołowski, Renewable and citizen energy communities.

the local community in energy issues, and as a tool for distributing the benefits of distributed generation realized by energy communities.[27] Different divisions and typologies may be created here, with the use of the following elements: production, investment, or participation.[28] The production-based typology refers to the type of energy generated. Under this division electricity is most popular; however, there are also communities focused on, for instance, community production of biogas, heat or cogeneration (heat and electricity).[29] The former are represented by biogenatives or biogenmunities (bio-coops), while the latter are cogenatives and cogenmunities (co-CHPs).[30] Depending on the source of energy, these forms could also be treated as REC, and depending on their ownership—as CEC.

The investment-based typology refers to the way in which the investment is financed and its ownership model. The following forms of energy community generation investment can be established:

- cooperatives—members of the local community buy shares in the project, thus financing it;
- community charities—charitable associations, in carrying out their activities, either provide access to energy through their own facilities and using their own sources, or supply energy to those in need using their own sources;
- development trusts—development funds representing renewable energy enterprises support the realization of investments and involve local communities in their participation;
- share-owned local community organizations—a commercial entity making an investment in renewable energy sources involves the local community in the implementation of the investment, for example by donating shares in the investment or by providing energy at preferential prices;
- public-private partnerships—local authorities enter into business partnerships with the local community or entrepreneurs to make investments.[31]

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[27] G. Walker, P. Devine-Wright, Community renewable energy: What should it mean? *Energy Policy*, 2008, vol. 36(2), pp. 497–500.

[28] For an exemplary approach to the possible distinctions of energy communities see S. Moroni et al., Energy communities in a distributed-energy scenario: four different kinds of community arrangements, in *International Conference on Smart and Sustainable Planning for Cities and Regions*, Cham, 2017, pp. 432.

[29] See M. Krzykowski, Wytwarzanie energii elektrycznej w technologii wysokosprawnej kogeneracji–zmiany legislacyjne w ciągu ostatnich lat [High-efficiency cogeneration—legislative changes in recent years], *Forum Prawnicze*, 2017, no. 1(39), p. 57.

[30] See M. M. Sokołowski, M. A. Rosen, CHP in cogenatives and cogenmunities (co-CHPs), in ed. M. M. Sokołowski, A. Visvizi, *Routledge Handbook of Energy Communities and Smart Cities*, London, New York, 2023, pp. 144–146.

[31] G. Walker, What are the barriers and incentives for community-owned means of energy production and use? *Energy Policy*, 2008, vol. 36(12), pp. 4401–4405; E. Caramizaru, A. Uihlein, *Energy Communities: An Overview of Energy and Social Innovation*, Luxembourg, 2020, p. 14.

It is impossible to determine clearly how prevalent the various types of energy market involvement are; this is mainly due to the variability of energy regulation in different regions of the world and the likelihood of energy communities forming under diverse forms. The attempt to capture the magnitude of energy communities is made more challenging by the fact that they are tailored to a specific local community rather than a single template that can be used in all circumstances. The legal form of participation, the actions to be taken and the manner of participation in the energy community will depend on the overarching specific objective to be achieved.[32] Even in the case of the EU CECs and RECs, the wide range of definitions provides a lot of freedom to tailor any given energy community to local needs. As a result, in many instances, a case study approach appears to be a helpful method for analysing the energy community.[33]

Types of Problems that Energy Communities Face

Energy communities confront a variety of challenges, regardless of their form.[34] We find four major kinds of impediments in the growth of the energy community that can hinder or even halt this type of electricity generation. These are barriers of the following nature:

- technological—linked to technical difficulties associated with the operation of the energy community,
- social—related to the local communities' fear of the impact the installations will have on the quality of life in a given area,
- economic—related to the profitability of running such an entity in terms of return on investment,
- regulatory—concerning the legal conditions which may negatively impact the development of the energy community.

In the literature, one can also find other categorizations of barriers to the development of energy communities or distributed energy in general—both of which

[32] M. J. Burke, J. C. Stephens, Energy democracy: Goals and policy instruments for sociotechnical transitions, *Energy Research & Social Science*, 2017, vol. 33, pp. 35–48.

[33] Such case studies referring to the energy community situation in a given country or analysing a certain energy community model are, among others, the following: M. M. Sokołowski, Models of energy, pp. 149–159; M. Moncecchi, S. Meneghello, M. Merlo, Energy sharing in renewable energy communities: The Italian case, in *55th International Universities Power Engineering Conference (UPEC)*, September 2020, pp. 1–6; A. Ambole et al., A review of energy communities in Sub-Saharan Africa as a transition pathway to energy democracy, *Sustainability*, 2021, vol. 13(4), p. 2128; D. Magnusson, J. Palm, Come together—the development of Swedish energy communities, *Sustainability*, 2019, vol. 11(4), p. 1056; L. F. van Summeren, A. J. Wieczorek, G. P. Verbong, The merits of becoming smart: How Flemish and Dutch energy communities mobilise digital technology to enhance their agency in the energy transition, *Energy Research & Social Science*, 2021, vol. 79, p. 102160.

[34] E. M. Gui, I. MacGill, Typology of future clean energy communities, pp. 94–107.

share many challenges.[35] There are also a number of studies focusing on a specific issue/barrier, such as high transaction costs,[36] lack of agenda in national policy relating to the development of such entities,[37] or favouring larger energy entities at the expense of small initiatives.[38]

Our analysis of individual barrier categories focuses on distributed generation using renewable energy and operating as an energy community (REC). Here, therefore, we return to the concept of RECs under EU law. Of course, this does not mean that distributed generation using renewable sources all over the world must meet the requirements defined in RED II, in order to be classified as energy communities. It is possible to imagine an energy community that owns, for example, a manufacturing facility, like in the agricultural sector. In such a case the requirement from RED II would not be fulfilled, and yet we would have a form of an energy community. However, RED II offers an interesting, easy-to-apply benchmark that can be used worldwide. Being aware of these differences, in the following part of the text, REC will denote communities fulfilling the requirements specified in RED II.[39]

To a lesser extent, the technology barriers refer to the lack of appropriate technologies that could underpin the operation of RECs at every stage of the system's operation—from feedstock supply through energy generation and distribution to energy use. However, the crisis on the semiconductor market shows the sensitivity of the renewable energy sector to delays in supply chains related to solar panels or batteries. Nevertheless, the technological barriers generally refer to the obligations that arise from the need to ensure grid operation.[40] If a REC is going to be connected to the national power system of a given country, it has to meet different technological requirements to ensure the security of that system's operation. However, these conditions should be tailored to the size of the installation. Moreover, technical help from grid operators should be offered to mitigate the problems related to, for instance, grid connection.

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[35] See A. Ali et al., Overview of current microgrid policies, incentives and barriers in the European Union, United States and China, *Sustainability*, 2017, vol. 9(7), p. 1146; C. Herbes et al., Responding to policy change: New business models for renewable energy cooperatives—Barriers perceived by cooperatives' members, *Energy Policy*, 2017, vol. 109, pp. 82–95.

[36] C. Nolden, Governing community energy—Feed-in tariffs and the development of community wind energy schemes in the United Kingdom and Germany, *Energy Policy*, 2013, vol. 63, pp. 543–552.

[37] T. Hoppe et al., Local governments supporting local energy initiatives: Lessons from the best practices of Saerbeck (Germany) and Lochem (The Netherlands), *Sustainability*, 2015, vol. 7(2), pp. 1900–1931.

[38] D. J. Hess, Electricity transformed: Neoliberalism and local energy in the United States, *Antipode*, 2011, vol. 43(4), pp. 1056–1077.

[39] See Article 22 RED II.

[40] See A. M. Pirbazari, *Predictive Analytics for Maintaining Power System Stability in Smart Energy Communities*, Stavanger, 2011; K. Schmietendorf, J. Peinke, O. Kamps, The impact of turbulent renewable energy production on power grid stability and quality, *The European Physical Journal B*, 2017, no. 90, Article 222, pp. 1–6.

With respect to social barriers related to RECs they can be divided into two main categories: those related to the acceptance of a nearby RES installation by the local community and those related to the willingness to participate in RECs. In the first case, social acceptance should be understood as active (expressing approval, being willing to participate in the process) and passive (not bothered) manner.[41] The lack of public acceptance of RES can negatively affect the implementation of the climate and energy policies of individual countries.[42] The lack of trust can contribute to the investment being slowed down or even blocked by the local community.[43] In the case of the willingness-to-participate analysis, the mere acceptance of RES investments in a particular area is not enough; additionally, the willingness of a certain group of participants to engage in the project is needed. The enthusiasm connected with the possibility of actively participating in the energy transformation may be an insufficiently encouraging factor, especially for those entities that will have to commit financial resources as early as the stage of investment planning. The financial benefits associated with REC activities may be a tool for creating this enthusiasm.[44]

In terms of economic barriers—aside from the obstacles related to acquiring the financing of investments by banks with preferential loans and credits—the development of energy communities is dependent not only on national regulations but also on the organizational model chosen for a specific REC.[45] RECs appear to be a hybrid of prosumers who generate power from renewable sources (for their own use) and energy companies that provide energy-related services (focusing on the matching of generation and consumption and the management of a given energy supply system).[46] While this aspect of market expansion appears to be justified from a social and technological standpoint (because of the possibility of synergies), it raises some basic economic issues. RECs, in contrast to individual prosumers, should take on more specialized responsibilities and expenditures associated with balancing and network operation. However, RECs are less equipped

[41] For more about the distinctions and methods for determining active and passive acceptance see P. Schweizer-Ries, Energy sustainable communities see Environmental psychological investigations, *Energy Policy*, 2008, vol. 36(11), pp. 4126–4135; D. Schumann, Public Acceptance, in *Carbon Capture, Storage and Use*, Cham, 2015, pp. 221–251.

[42] C. Bout et al., How is social acceptance reflected in national renewable energy plans? *Evidence from Three Wind-Rich Countries, Energies*, 2021, vol. 14(13), p. 3999.

[43] B. P. Koirala et al., Trust, awareness, and independence: Insights from a socio-psychological factor analysis of citizen knowledge and participation in community energy systems, *Energy Research & Social Science*, 2018, vol. 38, pp. 33–40.

[44] T. Bauwens, Analyzing the determinants of the size of investments by community renewable energy members: Findings and policy implications from Flanders, *Energy Policy*, 2019, vol. 129, p. 841.

[45] G. Walker, What are the barriers, pp. 4401–4405.

[46] S. Moroni et al., Energy communities in the transition to a low-carbon future: A taxonomic approach and some policy dilemmas, *Journal of Environmental Management*, 2019, vol. 236, p. 45.

to acquire the know-how and modern technologies to deal with the responsibilities in a highly regulated energy market, owing to their small scale. As a result, the economic investment risk on the REC side increases.[47]

Regulatory Barriers to Energy Communities

Under the notion of regulatory barriers, we can distinguish two divergent issues. One concerns those legal requirements which, due to their normative content, negatively affect an investor/participant willing to join an energy community development project.[48] The other stems from the fact that, due to the lack of adequate regulations, legal conditions do not allow for the acceleration of distributed generation development.[49] However, not all regulations that can be qualified as regulatory barriers in such a broad definition will negatively impact the functioning of the entire electricity system. The key issue is to maintain the balance between creating legal regulations that encourage the development of energy communities[50] within distributed generation and, at the same time, safeguarding other important objectives of the state's energy policy, such as ensuring energy security, energy market development, or consumer protection.[51]

However, regardless of the legal form which the energy community takes, the main challenge—created by legal regulations in the course of adopting the provisions enabling the operation of energy communities—is the need to shape their legal position in a certain way. Through favourable regulatory solutions, must encourage—or at the very least not discourage—individual entities to enter into such a structure. This is particularly important in view of the variety of obligations or administrative restrictions faced by entities wishing to operate in the energy sector.[52]

First of all, it is necessary to explain the concept of a "regulatory barrier". It is heavily intertwined with the theoretical question of the role that law plays

[47] For more on the risks of investing in renewables and how they affect investment decision-making see R. Wüstenhagen, E. Menichetti, Strategic choices for renewable energy investment: Conceptual framework and opportunities for further research, *Energy Policy* 2012, vol. 40, pp. 1–10.

[48] See M. M. Sokołowski, Discovering the new renewable legal order in Poland: with or without wind? *Energy Policy*, 2017, vol. 106, pp. 68–74.

[49] See K. Żmijewski, M. M. Sokołowski, The main frameworks of the National Programme for the Reduction of Emissions: Towards the national programme for low-emission economic development. The Public Board's Role, *Yearbook of Antitrust and Regulatory Studies*, 2011, vol. 4(4), pp. 23–40.

[50] Y. Parag, B. K. Sovacool, Electricity market design for the prosumer era, *Nature Energy*, 2016, vol. 1(4), pp. 1–6.

[51] G. E. Francés et al., RES and risk: Renewable energy's contribution to energy security: A portfolio-based approach, *Renewable and Sustainable Energy Reviews*, 2013, vol. 26, pp. 553f.

[52] C. Pîrlogea, Barriers to investment in energy from renewable sources*, Economia. Seria Management*, 2011, vol. 14(1), pp. 132–140.

in economics.[53] The situation would be different when considering "regulatory barriers" from the point of view of, for example, neoclassical economics, where legislation is supposed to compensate for the inefficiencies generated by deviations from competition norms.[54] Yet another viewpoint will arise from considering welfare economics, for example within the scope of Vilfred Pareto's concept of optimum, where legal solutions should take into account the social consensus on a given issue and fit into the framework of economic rationality.[55] The problem of determining the position from which a given observation will be carried out cannot be overlooked, either. Particular phenomena, considered from the point of view of particular stakeholders may appear as "barriers", whereas from the point of view of other stakeholders they may play a different role, for example supporting or protective.

Being aware of these issues, we consider a regulatory barrier to be the shape of legal regulations, which—through their introduction or lack thereof—negatively affect, or are likely to have a negative effect on the use of a given institution in socio-economic life, as intended by law. Not all the regulations that appear to be barriers from the point of view of a given stakeholder are, in fact, barriers. These regulations may protect the rights of individual members of the community or improve the functioning of economic turnover.[56] An example of such barriers may be the reporting obligations imposed on the listed entities. The preparation of for example a cyclical report requires resources and generates costs, and thus has a certain negative impact on a given listed company. However, equal access to information and building shareholder confidence compensates for this damage through increased opportunities to raise funds via stock exchange trading.

As a model example of a regulatory barrier to the development of energy communities, we might consider the need to obtain special permits from central regulatory authorities to enable such activities.[57] When combined with the administrative obligations associated with the investment process, the onerousness of which

[53] For more on the role of law (and lawlessness) in economics, see A. K. Dixit, *Lawlessness and Economics: Alternative Modes of Governance*, Princeton, 2004.

[54] D. Kennedy, The role of law in economic thought: essays on the fetishism of commodities, *The American University Law Review*, 1984, vol. 34, p. 960.

[55] J. Grabowski, in *System prawa administracyjnego* [System of Administrative Law], ed. R. Hauser, Z. K. Niewiadomski, A. Wróbel, vol. 8B: *Publiczne prawo gospodarcze* [Public Economic Law], Warsaw, 2013, p. 7.

[56] M. Sagoff, *The Economy of the Earth: Philosophy, Law, and the Environment*, Cambridge, 2007, p. 63.

[57] M. E. Biresselioglu et al., Legal provisions and market conditions for energy communities in Austria, Germany, Greece, Italy, Spain, and Turkey: A Comparative Assessment, *Sustainability*, 2021, vol. 13(20), p. 11212.

depends on the type and size of the generation source,[58] a blind spot is created. Entities planning their own generation source may be discouraged from being proactive in involving other local actors in the investment. Due to the investment risk and the length of the whole process, new entrants may be deterred as early as at the stage of investment feasibility analysis.[59] Another type of administrative impediment may be the spatial planning regulations restricting the use of certain areas for energy generation in local communities.[60] Local authorities should also take into account the aspects of optimizing the management of local energy when drawing up spatial plans, in order to improve the match between the potential local energy initiatives and the needs of the area.[61] Some of these may relate to energy production activities as such in a particular area, while others may exclude the use of a certain type of technology in a particular area, such as onshore turbines.[62] Another significant barrier may be the lack—or inadequate regulation—of the relationship between the energy community and the transmission or distribution system operator.[63]

The following is an illustrative list identifying the main categories of regulatory barriers (with examples) that may restrict the development of energy communities. This does not mean, of course, that the introduction of a given example or a similar constraint on the development of energy communities can, unequivocally, be considered unjustified. It is possible that in some cases a restriction may have a positive overall effect, but it will still retain its status as a barrier to the development of energy communities. Some categories may intersect with each other in scope.

[58] K. Księżopolski, Analiza—studium barier administracyjnych i proceduralnych w rozwoju OZE na terenach wiejskich i gminnych [Analysis—study of administrative and procedural barriers in the development of renewable energy sources in rural and communal areas], in *Pokonywanie barier administracyjnych w rozwoju mikroźródeł energii odnawialnej, jako podstawy energetyki obywatelskiej—doświadczenia w Polsce i w Unii Europejskiej* [Overcoming Administrative Barriers in the Development of Micro-Renewable Sources as the Basis for Civic Energy—Experiences in Poland and the European Union], ed. J. Buzek, K. Księżopolski, Grodno k. Międzyzdrojów, 2017, p. 39.

[59] J. J. Hain et al., Additional renewable energy growth through small-scale community orientated energy policies, *Energy Policy*, 2005, vol. 33(9), p. 1205.

[60] L. J. Bracken, H. A. Bulkeley, C. M. Maynard, Micro-hydro power in the UK: The role of communities in an emerging energy resource, *Energy Policy*, 2014, vol. 68, pp. 92–101.

[61] See T. Bańkowski, K. *Żmijewski, Analiza możliwości i zasadności wprowadzenia mechanizmów wsparcia gazowych mikroinstalacji kogeneracyjnych—Wsparcie Energetyki Rozproszonej—Energetyka Społeczna* [Analysis of the Possibility and Legitimacy of Introducing Support Mechanisms for Gaseous Micro-Cogeneration Installations—Support for Distributed Energy—Social Energy], Warsaw, 2012, pp. 24.

[62] R. B. Cruz, The politics of land use for distributed renewable energy generation, *Urban Affairs Review*, 2018, vol. 54(3), p. 535.

[63] D. Dragan, Legal barriers to the development of energy clusters in Poland, *European Energy and Environmental Law Review*, 2020, vol. 29(1), p. 18.

Table 2.1 The regulatory barriers

Type of barrier	Form of the barrier	Example of the barrier
For the organization of the energy community	relating to the legal form	no dedicated form of activity
		the requirement to operate under commercial law
	relating to the possibility of participation	exclusion of households from participation
		obligation to carry out an economic activity
	relating to the registration of the functioning of the energy community	a requirement to have at least 100 members
		the obligation to obtain additional approval from the central authority supervising the operation of the energy sector
	relating to property applied/held	an obligation to own generation installations with an installed capacity above 5 MW
		the introduction of requirements to own distribution networks
In relation to the services provided	exclusion of the provision of certain services	inability to use the power take-off response mechanism
		obligation to use an external energy trader
	imposing defined benefit obligations	the requirement of self-balancing within the community
		an obligation to create a specific number of electric car charging points per number of final customers in the energy community
	setting additional dedicated service charges	implementing additional energy balancing costs
		imposing increased network charges
As regards the support scheme	on entering the support scheme	the impossibility of treating generation sources in an energy community as a single hybrid installation
		forcing energy communities to compete with large generation sources
	operating in a support system	submission of a large number of reports
		no possibility to change the technical parameters of the installation during the period of the support scheme
Related to the realization of investments and functioning on the market	relating to the investment process for the construction of a generating installation	exclusion of biogas plants from use by energy communities
		the requirement to have ownership of the land on which the generating installation will be built
	relating to environmental requirements	the obligation to carry out an extensive environmental impact assessment even for small installations, e.g. photovoltaic
		no possibility to build installations in degraded areas, e.g. brownfields

Tab. 2.1 (*continued*)

Type of barrier	Form of the barrier	Example of the barrier
Related to the realization of investments and functioning on the market	on network security	long lead times for connecting generation installations to the grid
		requiring energy storage to ensure secure network operation
	relating to how energy is sold	an obligation to use only specific energy tariffs when trading within the energy community
		an obligation to use only qualified energy retailers to serve the energy community, e.g. the retailer with the highest number of energy sales contracts with individual community members

Source: the authors' own elaboration.

Creating a similar list in an expanded form could help public administrations to identify individual barriers.[64] This would, of course, require the participation of the different stakeholders in the process.[65] A good contribution towards this outcome could be the creation of a national strategy to promote energy communities in order to advance this concept. Such an initiative would create a platform for discussion between different stakeholders and identify the knotty issues which prevent the further development of such institutions. Such a knowledge base could be updated and changed as new energy tools emerge and legal and social changes occur in a country.

Register of Regulatory Barriers to Energy Communities

As already indicated, under the EU law one can see a number of actions taken to encourage local actors to participate in distributed generation.[66] Although these considerations relate directly to CEC, they also fully express the regulatory trend and growing importance of energy communities. CECs, and energy communities more broadly, are characterized as new types of actors in the energy market. The need to provide them with market access in such a way as not to infringe competition rules is stressed. Due to their specificity and a wide range of potential activities that can be performed by energy communities, there is a challenge consisting in the need to ensure the application of provisions designed for specialized energy companies to civil entities, which do not have such extensive competences in this

[64] See M. M. Sokołowski, Regulatory dilemma: between deregulation and overregulation, in *Prawo administracyjne wobec współczesnych wyzwań. Księga jubileuszowa dedykowana profesorowi Markowi Wierzbowskiemu* [Administrative Law Towards Contemporary Challenges. Jubilee book dedicated to Professor Marek Wierzbowski], ed. J. Jagielski, D. Kijowski, M. Grzywacz, Warsaw 2018, p. 591.

[65] M. M. Sokołowski, *Regulation in the European Electricity Sector*, London, New York, 2016, p. 210.

[66] See recital 46 of the EMD.

area. The development of energy communities is also linked to "information and communication technologies", which are meant to allow better management of such communities and adapt their functioning to the needs of individual members.[67]

Therefore, it seems desirable to create a list of regulatory barriers to which energy communities may be subjected. For the EU member states, the maintenance and updating of such a list may be one of the tools for the implementation of EU policies in the field of distributed energy. For other countries it may be a guide or a set of good practices that will enable a more effective development of energy communities. The catalogue of such barriers will depend not only on national energy legislation, but also on local economic conditions, but some of the problems faced by energy communities are universal and may occur in the vast majority of countries around the world.[68]

In creating such a register one can refer to existing benchmarks. For instance, the tools developed under EU Council Directive 93/13/EEC on the unfair terms in consumer contracts can be seen as a basic solution in this respect.[69] One way to protect consumers against the abuse of their weaker position is through registers of abusive clauses. The functioning of such registers can take different forms. Also, different legislations worldwide offer some possible solutions.

In the Belgian model, the types of prohibited clauses in consumer contracts are listed in the *Code de droit économique*.[70] These clauses are quite general, for example unilateral change of the date of dispatch of a product[71] or the absence of a reasonable term for the termination of a contract of indefinite duration.[72] In addition, the King may, by decree deliberated in the Council of Ministers, prescribe or prohibit the use of certain contract terms and make certain contract models mandatory.[73] Furthermore, the application of certain clauses may be limited to specific types of products or sectors. Belgian law also specifies prohibited clauses between entrepreneurs.[74] Such terms are divided into clearly unfair[75] and those deemed unfair until proven otherwise.[76] There is also a special committee which makes recommendations on any changes to the list of unfair terms.[77]

[67] Ibid.

[68] On legislative challenges concerning energy communities outside the European Union see M. M. Sokolowski, Renewable energy communities in the law of the EU, Australia, and New Zealand, *European Energy and Environmental Law Review*, 2019, vol. 28(2), pp. 38–46.

[69] Council Directive 93/13/EEC of 5 April 1993 on unfair terms in consumer contracts (OJ EU L. 1993 No. 95, p. 29, as amended).

[70] Article VI.83. 28 Fevrier 2013—Code de droit économique (29 mars 2013, p. 19975 as amended).

[71] 5° Code de droit économique.

[72] 18° Code de droit économique.

[73] Article VI.85. Code de droit économique.

[74] Article 91/1.-91/10.

[75] Article VI.91/4. Code de droit économique.

[76] Article VI.91/5. Code de droit économique.

[77] Article VI.91/9. Code de droit économique.

A different model has been adopted in Italy, where the legal framework for prohibited contract terms is regulated in the *Codice civile*[78] and in the *Codice del consumo*.[79] The Italian system provides for judicial and administrative protection against illicit clauses. Within the framework of judicial control, the violation of the *Codice del consumo* by including an abusive clause in the content has an effect only *in concreto*, between the parties to the dispute in relation to the contract in question. The Italian legal system does not provide a list of abusive clauses found by judicial decision.[80] As far as administrative protection is concerned, the dominant role is played by the *L'Autorità Garante della Concorrenza e del Mercato* (AGCM), which is a public administrative body, one of whose tasks is to protect consumers. Clause control can be carried out ex officio, at the request of the person or entity concerned,[81] and also by way of preventive control, where the trader requests that the clause it wants to use does not infringe consumer rights.[82] Importantly, however, a determination by AGCM that a clause is abusive does not have the effect of invalidating the clause, which can only be done by a court, but rather to put pressure on the trader not to use the clause and to inform consumers that they should avoid such clauses because of the risk that they may be considered abusive.[83] On its website, the AGCM publishes information on proceedings and clauses which have been declared prohibited[84]; moreover, the publication of a notice on the trader's website that a clause has been declared prohibited can also be ordered.[85]

Another example of the approach to the register of abusive clauses is found in the Polish legislation. The Polish regulations in this area are currently undergoing a transformation which clearly reflects the problems arising from the operation of the register of abusive clauses. The first model was based on a judicial review of contractual provisions in terms of their abusiveness. If a clause was

[78] Article 1341–1342 Codice civile (Regio Decreto 16 marzo 1942, n. 262 as amended). The Codice Civile uses the terminology "unfair clauses" (*clausole onerose*).

[79] Article 33–38 Codice del consumo (Norma dell'articolo 7 della legge 29 luglio 2003, n. 229, as amended).

[80] M. Ostrowska, Klauzule abuzywne i system ich kontroli w prawie włoskim. Analiza na przykładzie działalności ubezpieczeniowej [Abusive clauses and their control system in Italian law. Analysis based on the example of insurance activity], *Wiadomości Ubezpieczeniowe*, 2017, no. 1, pp. 64.

[81] Article 23(2) Delibera AGCM 1 aprile 2015, n.25411: "Reglamento sulle procedure istruttorie in materia di pubblicità ingannevole e comparativa, pratiche commerciali scorrette, violazione dei diritti dei consumatori nei contratti, violazione del divieto di discriminazioni, clausole vessatorie" [Regulation on preliminary procedures relating to misleading and comparative advertising, unfair commercial practices, violation of consumer rights in contracts, violation of the prohibition of discrimination, vexatious clauses] (G.U. del 23 aprile 2015, n. 94, as amended).

[82] Article 24(1) Delibera AGCM.

[83] M. Ostrowska, Klauzule abuzywne, p. 65.

[84] *Provvedimenti ed estratti* [Provisions and extracts], Autorita Garante Della Concorrenza E Del Marcato [Competition and Market Authority], https://www.agcm.it/competenze/tutela-del-consumatore/clausole-vessatorie/provvedimenti-ed-estratti [accessed 17.10.2021].

[85] Article 23(8) Delibera AGCM.

found to be abusive, a copy of the judgment was sent to the Prezes Urzędu Ochrony Konkurencji i Konsumenta (UOKiK), who published the clause in a special register.[86] The judgment was effective not only with respect to the specific business and the specific legal relationship, but also with respect to any other business applying the clause in question.[87] The model for maintaining the register was changed in April 2016.[88] The current model operates on the basis of administrative control[89] and it is the Prezes Urzędu Ochrony Konkurencji i Konsumenta that issues decisions declaring a provision prohibited and prohibiting its use.[90] These decisions are published in a database of decisions on the Office's website. The effect of the publication of a clause has also changed. The issuance of the final decision by the Prezes Urzędu Ochrony Konkurencji i Konsumenta does not only have effect with respect to the business applying the clause in question that is the subject of the action; it concerns all those consumers who have signed contracts with the business applying the clause in question.[91] The change in the model of protection from abusive clauses, and in particular the effect of entry in the register of abusive clauses, was accompanied by a change in the case law in this area. It moved away from the extended two-way validity: against other businesses and consumers, and the recognition of the extended one-way validity: against other consumers, but only for the business whose clause was entered in the register.[92]

The proposed models can create a certain basis for building a register of regulatory barriers relating to contracts offered to energy communities. The foundation of any energy community, without which it would be impossible to function, is the contract stipulating the cooperation within the energy community. The entity

[86] Article 479^{43} in conjuction with Article 479^{45} § 1 and 2 ustawy z 17 listopada 1964 r. Kodeks postępowania cywilnego [the Act of 17 November 1964, the Code of Civil Procedure] (Journal of Laws of the Republic of Poland [JL] 2014, item 101, as amended, to 2015, item 1595).

[87] T. Ereciński, in *Kodeks postępowania cywilnego. Komentarz*, ed. J. Gudowski, K. Weitz, T. Ereciński, vol. 3: *Postępowanie rozpoznawcze* [Code of Civil Procedure: Comment. Fact-finding Proceeding], 5th edn., Warsaw, 2016, Article 479(43).

[88] With the entry into force of part of the provisions of the revision offered by ustawa z 5 sierpnia 2015 r. o zmianie ustawy o ochronie konkurencji i konsumentów oraz niektórych innych ustaw [The Act of 5 August 2015 amending the Act on Competition and Consumer Protection and some other acts] (JL 2015, item 1634).

[89] The existing system of administrative control operates alongside the extinguished system of judicial control, which will be terminated with the completion of the last Articles 479^{36}–479^{45} Kodeksu postępowania cywilnego [Code of Civil Procedure] court proceedings initiated and not concluded as of 16 April 2016. However, this is to be done no later than 18 April 2026.

[90] Article 23b(1) of ustawa z 16 lutego 2007 r. o ochronie konkurencji i konsumentów [the Act on Competition and Consumer Protection] (JL 2021, item. 275).

[91] G. Karaszewski, in *Kodeks cywilny. Komentarz* aktualizowany [Civil Code: Updated comment], ed. J. Ciszewski, P. Nazaruk, Lex/el. 2021, Article 385(1).

[92] A. Turczyn, in *Kodeks postępowania cywilnego. Postępowanie procesowe. Komentarz aktualizowany* [Code of Civil Procedure: Litigation Procedure. Comment updated], ed. O. M. Piaskowska, Lex/el. 2021, Article 479(45).

constructing such an agreement faces a difficult task, as it will have to consider the rights and obligations of its parties that may act in different roles such as energy consumer, generator, distributor, seller, aggregator or energy storage manager. It is also possible that some energy community participants will play double or even multiple roles. This is actually a desirable phenomenon, as the more roles there are in a given energy community, the greater its flexibility and ability to balance energy consumption, and thus potentially greater community efficiency. To thicken the landscape of challenges, one should add the fact that the actors in the various roles, in principle, continue to be subject to the legal obligations attached to those roles, for example in the case of EU law in CECs, household customers do not lose their additional entitlements associated with this special status.[93]

But what should the *Barrier Register* contain? One component of the Barrier Register could be a positive segment: proposed model contracts or general clauses for ECs, containing the most important provisions. A database of such templates and general clauses implementing the necessary rights and obligations for each role could facilitate the design of subsequent contracts and the development of good practices for certain contractual clauses. The second—negative—element could be a register of abusive clauses, similar to those for consumer protection. In order to respect the principle of the freedom of contract, such a register could, for example, be limited to clauses relating to entities operating in the energy community and being, at the same time, energy consumers in households, possibly prosumers or micro-entrepreneurs. On the one hand, this would strengthen those who are in the weakest position and have less knowledge of how the energy market works; on the other hand, it would strengthen the positive incentives and confidence in energy community institutions. The status of such a register and the scope of its validity could be similar to current solutions for the register of abusive clauses. This means that, after the final ruling/decision of an administrative body, the clause in question would be entered into the register and be effective against all the participants in the energy community. An additional effect on the market participants' awareness could be achieved by a sanction imposed on the entity, using one of the clauses qualified for inclusion in the register. It seems justified not to extend the effectiveness of the final effect to other energy communities, as each community of this type may be very different in its specifics, despite certain similarities resulting from the general legal construction. In addition to the proposed listing of clauses that emerge in the practice of energy communities (*ex post* listing), consideration should also be given to allowing the potential barriers, as perceived by the regulators, to be listed on the register (*ex ante* listing). Such an action could be preventive in nature, limiting the use of legal constructions which the regulator discerns as not being justified by the regulations in force.[94]

[93] Article 16(1)(c) of the EMD.

[94] M. M. Sokołowski, Renewable and citizen energy communities, p. 292.

The negative segment of such a barrier register (i.e. the one referring to the list of abusive barriers) could be divided into two main parts. The first would relate to *external contracts*: those concluded between a given energy community and external entities operating in the energy sector, such as energy retailers, distribution system operators or energy storage operators. The rationale behind this part of the register would be to equalize the status of the newly formed energy community and the companies carrying out the activities necessary for the operation of the market in question. The second part would refer to documents and agreements that constitute the energy community, indicating which clauses are prohibited therein; thus, it would refer to *internal agreements* within the energy community. As already mentioned, the scope could be limited to, for example, household end-users and micro-entrepreneurs. This section of the register would include specific clauses that should be considered prohibited, and the source of their abusiveness would be a violation of civil law. The purpose of this section would be to protect the interests of participants with a weaker market position and, as a rule, less knowledge about the functioning of the energy market. Examples of such clauses could be contractual provisions limiting the possibility of leaving the community, preventing participation in the management of the community by its members, interfering with consumer rights or breaching information obligations under the regulations governing the energy sector, for example regarding the provision of information to end users about their energy consumption. To illustrate this discussion, we propose a sample register of abusive clauses.[95]

A fundamental issue to be resolved in setting up the register will be determining who is responsible for maintaining it. Two main possibilities emerge in this respect: (1) a central authority or (2) a local authority. Of these, the first one seems to be the most appropriate. Local authorities should themselves be able to participate in the energy community. A situation could arise where local authorities carry out activities in which they themselves are one of the stakeholders on an equal footing with other members of the energy community. There could also be a mixing of the sovereign nature of the authority with the equal role resulting from the provisions of the energy community's constitutive document. The central authority, on the other hand, could use the competences built up previously. Narrowing down the possibilities of choosing the appropriate authority, a specialized energy authority or a specialized antitrust authority seems to be the most appropriate. The argument in favour of an authority dealing with energy is the need to have specialized knowledge of the functioning of the energy market and the models of legal solutions adopted to meet its needs.

[95] Table 2 is only intended to illustrate the possible appearance and content of such a register of abusive clauses. The content of the clauses themselves and their abusiveness will derive from the specific legal orders and can vary significantly from country to country.

Table 2.2 A sample register of abusive clauses related to energy communities

No.	Date the clause was declared abusive	Claimant for a declaration that a clause is abusive	Entity in breach of the clause	Subject matter of the abusive clause	Text of the abusive clause
682	19.11.2022	Natural person Y	Energy community B	Fees for energy community management	The energy community manager reserves the right to make unilateral changes to the fees for the provision of energy community management service A in the event that the established fee rates do not reflect the actual costs incurred by the seller.
681	21.10.2022	Natural person Y	Electricity retailer	Energy sales in an energy community	The household final customer shall lose the rights connected with household energy consumption and shall be treated as a professional business entity.
680	9.8.2022	Energy community C	Distribution System Operator	Connection to the grid	An energy community may apply for connection to the electricity grid for new generation installations only if its installed capacity is expected to be no more than 1 MW.
679	7.8.2022	Natural person X	Energy community A	Energy community billing	Failure to object to the correctness of the billing of the balance of energy received and supplied to the grid within 7 days from the date of delivery of the billing shall be tantamount to acceptance thereof.

Source: the authors' own elaboration.

On the other hand, competition authorities have not only the best knowledge of consumer rights protection but also the experience gained in interpreting provisions of various civil contracts. Therefore, the most optimal solution in this respect seems to be the cooperation between these two bodies in the countries where they are present.[96] As examples of the previously mentioned countries, analysed in terms of abusive clauses, one should point out the cooperation between the Belgian *Commission de Régulation de l'Electricité et du Gaz* and *Autorité Belge de*

[96] In the case of the European Union Member States, all countries have such specialized bodies.

la Concurrence Belgian Competition Authority; the Italian *Autorità di Regolazione per Energia Reti e Ambiente and Autorità Garante Della Concorrenza e del Mercato*; and between the Polish Energy Regulatory Office and the Office of Competition and Consumer Protection.

As regards the positive part of the register, the one containing model contracts regulating the functioning of the energy community, the competence of the authority in charge of energy is more predominant. This stems from the fact that the preparation of individual solutions cannot be isolated from the practice of functioning of the market, especially a market as strongly regulated as the energy market. Conversely, in the area of prohibited clauses, the competition authority seems to have greater competence. It should be noted in passing that the protection against abusive clauses in the proposed barrier register does not fully overlap in scope with the protection under national consumer protection laws. This results from at least several differences. Firstly, from a broader postulated scope of protection resulting from the energy community's Barriers Register than in relation to the consumer only. Secondly, from the need to analyse matters not only of a civil law nature, but also to consider the rights and obligations resulting from the energy sector regulations. Therefore, the scope of this cooperation would depend on local circumstances, for example a standard could be adopted whereby the model contract regulating the energy community would be published by the energy authority after an opinion of the competition authority; the opposite would be true for abusive clauses. Such an approach would allow the exchange of experience and the diffusion of knowledge, building up the competences of both bodies.

Conclusion

Energy communities are in a difficult situation, which results from operation in a highly regulated market, among large professional players, and the need to use specialized technology. These issues are universal and recognized in various legislations, which include acts aimed at facilitating the creation and operation of energy communities, for example, the US Public Utility Regulatory Policies Act, and the activities of the Federal Energy Regulatory Commission[97] or the European Union RED II and EMD as well as other legal actions of the European Commission.[98]

Undoubtedly, the aim of lawyers and legal researchers should not only be to react responsively to changes in legislation, but also to indicate optimal solutions. This seems to be particularly relevant with regard to regulations govern-

[97] L. J. Chandler, Localizing energy independence: How PURPA and community power legislation can drive development of resilient and reliable local clean energy projects, *Public Land & Resources Law Review* 2021, vol. 44(1), pp. 200.

[98] M. M. Sokołowski, Renewable and citizen energy, pp. 289–290.

ing economic life, where, to a large extent, the possibility of conducting a given activity depends on ensuring an appropriate regulatory environment. Ludwig Wittgenstein assigned to philosophy the task of drawing of boundaries of what can be thought, and thus what cannot be thought,[99] which was to allow for the demarcation of the limit of cognition. A similar exercise, to a narrower extent, can be ascribed to regulators wishing to produce the best possible legal norms. From among the many possible alternatives, one must choose the means most conducive to achieving the goal,[100] as under the day-watchman's regulation.[101] However, every policymaker is in a state of permanent information gap, or—as indicated by Decision Theory—the difference between the information necessary to make a decision and the information available to the decision-maker at a given moment.[102] This stems from the impossibility of foreseeing all the consequences of decisions taken and the impact of solutions applied on economic life. This problem becomes evident when standardizing hitherto unprecedented or rarely occurring phenomena, especially if this standardization aims to encourage the public to take new initiatives. These incentives, in order to fulfil their purpose, must reduce, among other things, regulatory barriers to a given activity.

The solution proposed in this chapter can provide the basis for acting to reduce regulatory barriers related to energy communities. The creation of a strategic approach—one considering the viewpoints of different stakeholders—and the preparation of a register of abusive clauses, can have a twofold positive effect. Firstly, the basic elements that slow down the development of such institutions will be outlined. This will be done not from the arbitrary point of view of the public administration; instead, it will include the widest possible spectrum of potential participants in the energy community and their related entities. This way, it will be possible to avoid creating a structure which, although it fits from the regulatory side, will not be useful in practice. Secondly, activities undertaken in the creation of such risk databases will not only identify problematic areas but may also constitute an element of dialogue between the administration and stakeholders, as well as between the stakeholders themselves. This is important, since for the proper functioning of the energy community it is not enough to involve one type of entity (e.g. municipalities or households) but instead the cooperation of entities with different characteristics of participation in the energy market is required.

[99] L. Wittgenstein, *Tractatus logico-philosophicus*, London, 1922, p. 45.

[100] See M. M. Sokołowski, Balancing energy regulation: A day-watchman approach, in *Economic Freedom and Market Regulation: In Search of Proper Balance*, ed. R. Grzeszczak, Baden-Baden, 2020, pp. 167–186.

[101] See M. M. Sokołowski, Regulation in the COVID-19 pandemic and post-pandemic times: day-watchman tackling the novel coronavirus, *Transforming Government: People, Process and Policy*, 2020, vol. 15(2), pp. 206–218.

[102] For more on information gaps in Decision Theory see Y. Ben-Haim, *Info-Gap Decision Theory: Decisions Under Severe Uncertainty*, Amsterdam, 2006.

The implementation of the proposed solutions and the creation of a register of barriers, containing a list of abusive clauses, could be the starting point for further expansion and identifying new barriers to the development of renewable energy sources. As renewable energy sources become more widespread and new technologies and forms of their use emerge,[103] new barriers, as yet unknown, will also emerge. Their registration may be the first positive step towards their resolution. The potential fulfilment of the hopes placed in the register should, in principle, be easily quantifiable. This would be done by analysing the situation before and after the introduction of the register, in terms of the most important potential benefits resulting from the spread of energy communities in the areas concerned. These benefits could include decreasing energy losses in transmission and distribution, increasing waste heat utilization, as well as increasing the share of renewable energy sources in the local energy mix.[104]

Naturally, the implementation of the proposed Barrier Register in the legal system is not, for obvious reasons, a solution for all legal problems related to the operation of energy communities. It is more of a practical tool whose effectiveness will depend on that of the regulator's functioning and influence on the actors in the emerging market. It can ensure increased market transparency and clarify the framework in which the market operates, given its heavy regulation and the multi-faceted impact of the market on such a basic good as energy. In addition to the financial aspect, the legal force of the proposed register allowing the elimination of clauses violating competition and infringing the rights of smaller entities, may prove to be a key factor in popularizing this form of participation in the market among non-professional participants. These smaller participants may decide whether the idea of energy communities will fulfil the hopes associated with it, or whether it will become just a little-known organizational curiosity on the energy market.

[103] One of the most promising platforms for the development of energy communities could be concepts related to smart cities. For more about smart cities see M. D. Lytras, A. Visvizi, Who uses smart city services and what to make of it: Toward interdisciplinary smart cities research, *Sustainability*, 2018, vol. 10(6), p. 1998.

[104] S. Moroni, L. Tricarico, Distributed energy production in a polycentric scenario: Policy reforms and community management, *Journal of Environmental Planning and Management*, 2018, vol. 61(11), pp. 1983–1985.

Chapter 3

ESTABLISHMENT OF A REGULATORY FRAMEWORK FOR ENERGY COMMUNITIES—CERTAIN LEGAL CHALLENGES

Tomasz Długosz

Introduction

In 2015 the European Commission initiated a new EU energy policy that is aimed at launching a fundamental transformation of Europe's energy system and giving EU consumers—both households and business consumers—secure, sustainable, competitive, and affordable energy. The new policy is based on a strategic long-term vision of an Energy Union with citizens at its core, where citizens take ownership of the energy transition, benefit from new technologies to reduce their bills, participate actively in the market, and where vulnerable consumers are protected.[1] On 30 November 2016 the Commission published its "Winter Package" of legislative proposals to facilitate the transition to a "clean energy economy" and reform the design and operation of the European Union's electricity market. The objectives of the proposed measure were outlined in the Commission Communication of 30 November 2016 entitled "Clean Energy for All Europeans".[2] Formally, the achieving of the "Clean energy for all Europeans" policy objectives was announced in May 2019 but soon after that, the Commission announced a new growth strategy, "the European Green Deal", which covers all sectors of the economy and also focuses on ensuring clean, affordable and secure energy. It has been stressed that further decarbonizing the energy system is critical for reaching climate objectives that should be achieved in 2030 and 2050.[3]

[1] Communication from the Commission to the European Parliament, The Council, The European Economic and Social Committee, the Committee of The Regions and the European Investment Bank: *A Framework Strategy for a Resilient Energy Union with a Forward-Looking Climate Change Policy*, COM(2015)080 final, p. 2.

[2] Communication from the Commission to the European Parliament, The Council, The European Economic and Social Committee, the Committee of The Regions and the European Investment Bank: *Clean Energy for All Europeans*, COM(2016)860 final.

[3] Communication from the Commission to the European Parliament, The Council, The European Economic and Social Committee, the Committee of The Regions: *The European Green Deal*, COM(2019)640 final, pp. 6ff.

A collection of new regulations of the Energy law prepared within the so-called "Clean Energy for all Europeans" package is at the beginning of a larger process of Europe's green economy transition, which aims to put citizens at the centre of this transition and achieve the goal of climate neutrality for the European economy. The concept of an energy community is not new in Europe, but energy communities developed according to local and national socio-political and legal contexts. Citizen and collective initiatives gained increasing attention from the European Union (EU) for many reasons. First, Union institutions adopted a vision of an Energy Union with citizens at its core. In the Commission Communication of 2016 we find a clear announcement that making the shift from centralized conventional generation to decentralized, smart and interconnected markets will also make it easier for consumers to generate their own energy, store it, share it, consume it or sell it back to the market—directly or as energy cooperatives.[4] Second, the integration of renewables into the European internal energy market (IEM) has negatively impacted community energy projects. In particular, it is argued that national renewables support schemes have pushed community projects out of the market.[5] The new regulatory package which has been introduced under the policy of "Clean Energy for All Europeans" is very extensive, but it contains two EU directives that directly relate to energy communities. Directive number 2019/944 of the European Parliament and of the Council on common rules for the internal market in electricity, called "IEMD" for short,[6] introduced "citizen energy communities", further referred to as "CECs". In Directive number 2018/2001 of the European Parliament and of the Council on the promotion of the use of energy from renewable sources, subsequently referred to as "RED II",[7] we can find "renewable energy communities", henceforth called "RECs".

The abovementioned directives directly relevant to energy communities are complex and pose many challenges for the Member States. States must implement an appropriate organizational and functional model of energy communities and make proper legal frameworks for them. The directives adopt a single model of energy communities but differentiate between the regulatory frameworks for CECs and RECs. The burden of regulating energy communities falls on the Mem-

[4] Communication from the Commission to the European Parliament, The Council, The European Economic And Social Committee, the Committee of The Regions and the European Investment Bank: *Clean Energy For All Europeans*, COM(2016)860 final, p. 10.

[5] J. Roberts, Power to the people? Implications of the Clean Energy Package for the role of community ownership in Europe's energy transition, *Review of European, Comparative & International Environmental Law*, 2020, vol. 29(2), p. 244.

[6] 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, OJ L 158, 14.6.2019, pp. 125–199.

[7] 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, OJ L 328, 21.12.2018, pp. 82–209.

ber States but we can expect that the regulatory and adjustment freedom of the Member States will be time-limited. Nowadays, many details of regulation are left to national decision-makers but the functioning of competitive energy markets will force the EU to develop a regulatory framework for energy communities. In particular, it will be difficult to properly ensure energy communities have an accurate scope of rights and responsibilities and at the same time to avoid distortion of competition on the energy markets. In other words, it will be difficult to define the limits of the special treatment of energy communities at a national level, so the regulation of EU law will become more and more complex. We can even risk stating that we are moving toward keeping energy communities in the market although they are not typical market entities because they are targeted for non-commercial aims. As has been said, community energy initiatives, integrating open, democratic and non-commercial governance principles, have been growing over the years, but due to the increasing market integration of renewable energy sources and the development of new technologies, a risk materialized—namely that such energy communities would be locked out of the market. The RED II and IEMD directives require the Member States to put in place "enabling frameworks" for energy communities. It is hard to say exactly what this means. Surely the CECs and RECs must be treated fairly, as market participants, and should be ensured a level playing field in energy markets, but they should also be able to carry out their non-commercial functions. It is not just about promoting energy from renewable sources, which is part of the decarbonization of the economy (see Recital 23 of the RED II), because the new directives call for more bottom-up initiatives and making "community energy" and under this scheme, the idea of energy community is brought in (see Recital 43 of the IEMD). It appears that it is not just about tailoring legal regulations to the specifics of energy communities but also not burdening them with excessive regulation or even applying so-called positive discrimination to ensure that energy communities will become able to compete with other market participants and exercise their core functions.

The Member States must adhere to a large number of organizational and functional rules associated with energy communities and this will be difficult. For example, the members or shareholders of these new organizations must retain their rights and obligations as final customers or active customers and this leads to a problem of balancing the interests of the energy community and the interests of its members within the regulatory framework. Member States should establish enabling regulatory frameworks that allow energy communities to operate in all sectors of the energy sector. The regulation should cover both the external relations of energy communities with other market actors and internal relations within energy communities. In this context, we can mention that a sensitive issue will be to regulate the internal relationships of energy communities in a balanced way because these organizations combine the interests of many different groups.

The establishment of the energy community in law must be accompanied by far-reaching public oversight and regulatory liability. For example, if these organizations are to be open and voluntary organizations, far-reaching oversight over the internal relations of these organizations must be ensured. From the Polish point of view, it seems that it will be a serious challenge to embrace energy communities with the general regulation that currently in Polish law refers to profit-making companies, which at the present moment is focused on commercial entities. And, last but not least, it seems that the proper regulatory framework may require the Member States to introduce so-called compensatory measures (positive decimations) to ensure that energy communities operate on the energy markets on a level playing field. This is a risky claim, as the absence of distortion of competition is confirmed in the directives. However, we should draw attention to the provisions which highlight the substantial added value of energy communities and, in this context, encourage the adoption of measures that will allow energy communities to compete on an equal footing with other market participants (see Recital 70 of the RED II).

Defining Energy Communities

An energy community may be generally described as an energy initiative that is controlled, owned or managed by a geographic community or a community of interest and may include a variety of participating actors, such as citizens, local authorities, entrepreneurs and organizations under standard institutional and business models.[8] The RED II and IEMD directives serve different purposes: the former refers to electricity markets' role and responsibilities, while the latter is to support the deployment of renewables in the EU. However, in both Directives the model of energy community is the same. Both organizations (CECs and RECs) are supposed to be legal entities in accordance with the definitions contained in Article 2(11) of the IEMD and Article 2(16) of the RED II. This means that only a citizens' initiative that has the shape of a separate legal entity can qualify as a CEC or REC and benefit from enabling and favourable frameworks. This already creates a challenge, because in practice there are many different citizens' initiatives and there is a risk that poor regulation or an overly narrow definition will stop bottom-up initiatives.

Both kinds of organization rely on voluntary and widely available participation. In both, it must be ensured that effective control is exerted by members or shareholders of the energy community, who are individuals, local government

[8] See M. Krug. M. Rosaria Di Nucci, Citizens at the heart of the energy transition in Europe: opportunities and challenges for community wind farms in six European countries, *Renewable Energy Law and Policy Review*, 2020, vol. 9(4), p. 10, https://www.jstor.org/stable/26912434.

bodies, including municipalities, or small businesses. There are some differences because in the REC only individuals, small and medium-sized enterprises, and local bodies can be shareholders or members, and in the CEC membership is not restricted to these entities. For the final customers who are private undertakings, in addition, participation in the REC cannot constitute their primary commercial or professional activity (Article 22(1) of the RED II). CECs and RECs are designed to perform actions in different areas. The CEC is to operate in the area of electricity and the REC in the area of renewable energy use. RECs are rooted in place, while CECs are oriented around shared values rather than location. This is associated with the provision of Article 2(16) letter a of the RED II, which stipulates that RECs must be effectively controlled by shareholders or members that are located in the proximity of the renewable energy projects that are owned and developed by RECs. Both organizations must have for their primary purpose the provision of environmental, economic or social community benefits to its members or shareholders, or to the local areas where they operate, rather than the generation of financial profits. Both CECs and RECs are supposed to work this way (see Article 2(11) letter b of the IEMD and Article 2 (16) letter c of the RED II). All of the mentioned requirements are important because with their use the EU legislator distinguishes certain types of energy communities to guarantee them proper treatment by the Member States. CECs and RECs can take different legal forms and organizational structures, but they must fulfil the criteria set out in Article 2(11) of the IEMD and Article 2(16) of the RED II. The fulfilment of these criteria entails that the organization concerned has rights which are prescribed in Article 16 of the IEMD as regard CECs or in Article 22 of the RED II when it concerns RECs.

The burden of regulating energy communities falls on the Member States, which have broad regulatory freedom but must respect the organizational and functional properties of energy communities that are described in considerable detail in the directives. However, it is necessary to notice that energy communities come in various shapes and sizes and are already engaged in many energy-related activities. For this reason, it has been already argued by some scholars that the RED II does not address initiatives such as shared ownership schemes between communities and commercial project developers, investment cooperatives and crowdfunding.[9] Roberts righty points that it has always been difficult to define community energy and that this issue will not simply evaporate because energy communities are defined at the EU level.[10] On the other hand, directives recognize "certain" categories of citizen energy initiatives, as stated in recital 43 to the IEMD, and should not preclude the existence of other citizen initiatives which should also be treated as an expression of consumer empowerment. There is also a risk that energy community definitions will be defined around specific activi-

[9] See J. Roberts, who calls A. Savaresi—J. Roberts, Power to the people?, p. 239.

[10] Ibid., p. 243.

ties and that some consumer activities, above all collective self-consumption and energy sharing, which do not have to receive a specific organizational format, will be conflated with energy communities.

Roberts' opinion is that the potential conflation of the energy community and other activity-based concepts is problematic, for many reasons. First, energy communities narrowly defined around one activity will be prevented from exercising their full legal right. Second, if all collective activities must be organized as an REC (or alternatively as an CEC) innovation for new business models will be stunted, and commercial market actors will be incentivized to "fit" within the REC definition.[11] It should be added that the excessive focus on CECs and RECs or reserving certain activities to them may, paradoxically, dissuade the Member States from supporting other citizens' initiatives, such as energy clusters, and hinder consumer empowerment. At the same time, however, overly broad definitions are not good either, because these definitions provide eligibility to certain privileges and this can create distortions of market competition.[12] Besides, it is recognized that existing energy companies would like to use the definitions of energy communities for commercial purposes, although their aim is not to empower traditional market actors. Roberts astutely notes that if CECs and RECs are not sufficiently distinguished, it will be easier for companies to abuse beneficial treatment, eroding public support for energy communities.[13] Similarly, Jasiak stresses that energy communities may not be then used as vehicles for regulatory free-riding.[14]

Both Directives formulate sets of rights for energy communities, but CECs are focused on electricity, including electricity from renewables, and RECs are engaged in activities related to renewable sources, including electricity from such sources, renewable gas, heating and cooling. Following the directives, all the market rules on the roles and responsibilities applicable to CECs are also applicable to RECs, but at the same time, not all the provisions concerning RECs may be applied to CECs due to the stricter eligibility requirements for RECs.[15] In other words, CECs can benefit from the incentives and other rights specified for RECs if they fulfil all the requirements of the RED II Directive. On the other hand, it seems to be impossible for the Member States to implement the framework in such a way that all CECs are eligible for additional rights under the RED II Directive.[16] Both CECs and RECs have broad rights to engage in activities on the energy markets. For example, RECs have a right to participate in the production, consumption, storage,

[11] Ibid., p. 239.

[12] Ibid., p. 239.

[13] J. Roberts, What energy communities need from regulation, *European Energy Journal*, 2018, p. 21.

[14] M. Jasiak, Energy communities in the Clean Energy Package: Assessment of the adopted regulatory framework, *European Energy & Climate Journal*, 2020, vol. 9(1), p. 55.

[15] Ibid., p. 50.

[16] M. Jasiak thinks otherwise—ibid., p. 50.

sale and supply of energy to final customers, including peer-to-peer trading and energy sharing. They must be guaranteed access to all suitable energy markets, both directly or through aggregation in a non-discriminatory manner (Article 22(2) of the RED II). CECS are in a similar situation, but their rights apply to electricity. It is argued that for the rights of energy communities to be implemented, appropriate regulatory frameworks should be specially constructed for energy sharing and the collective self-consumption of renewables.[17] On the other hand, it is worth noting that both directives guarantee that final consumers (recipients) do not lose any of their rights because of their participation in an energy community (Article 16(1) letter c of the IEMD, Article 22(1) of the RED II). In this context, it can be concluded that it is necessary to ensure public supervision over relations within energy communities.

Both CECs and RECs may be economic and profit-seeking organizations, but they cannot be profit-seeking in that sense that their primary aim is to make a profit for their members or shareholders. Under the law, for its primary purpose a CEC has 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 (Article 2(11) letter c of the IEMD). The same applies to RECs (Article 2(16) letter c of the RED II). This means that if they make a profit, they should reinvest it for social, economic and environmental purposes within the energy community or territorial community, and only in the end can the profit be paid out to shareholders. It must be noted that the legal definitions do not prohibit RECs or CECs from providing a return on investment to its members. However, returns on investment and other financial benefits to members should be secondary to other general aims of the community.[18] Energy communities will not always have the profit-making character in the sense of the legal notion of an energy enterprise in Polish Energy Law. The Polish Energy Law is based on the concept of an energy enterprise which is engaged in a gainful activity (See Article 3(12) of the Polish Energy Law Act[19] in connection to Article 3 of the Polish Entrepreneurs Act).[20] If it is not possible to regard energy communities as energy enterprises in every case, we have a fundamental problem with how to ensure equality and non-discriminatory treatment between commercial energy companies governed by the Polish Energy Law and energy communities. Let's note that CECs and RECs are to be treated in a non-discriminatory and proportionate manner with regard to their activities,

[17] J. Roberts, What energy communities need, p. 24.

[18] *Energy Communities under the Clean Energy Package: Transposition Guidance*. RESCOOP.EU, ClientEarth, 2020; point 1.3.1.

[19] The Act of 10 April 1997—The Energy Law, Journal of Laws of the Republic of Poland [JL] 2003 no. 153, as amended.

[20] The Act of 6 March 2018 on entrepreneurs—Entrepreneurs Act, JL 2018 no. 646, as amended.

rights and obligations as generators, suppliers, distribution system operators, aggregation market participants (Article 16(3)(b) of IEMD; Article 22(4)(d) of RED II Directive). The right for energy communities to carry out different energy activities must be guaranteed in national law without regard to their commercial nature.

Regulatory Oversight

The above-described conditions must be ensured by far-reaching regulatory oversight of energy communities. Under Article 59(1) letter z of the IEMD Directive Member States, regulatory authorities (national regulatory authorities—NRAs for short) have a duty to monitor the removal of unjustified obstacles to and restrictions on the development of CECs. The Law does not mention RECs, but we must agree that it would not make sense to monitor CECs without also monitoring RECs. It is indicated in the subject literature that to effectively carry out monitoring duties, Member States should legislate or implement government registration and management systems for RECs and CECs to track their development and to impediments they face in accessing the market. Concerns have also been raised that the Member States should articulate relevant responsibilities for NRAs in legislation, including registration and coordination with different relevant authorities that need to oversee RECs and CECs.[21]

It must be noticed that administrative and regulatory oversight must concern not only the proper exercise of energy activities by energy communities and the compliance of such activities with the rights and obligations which come from the Law, but also adherence to the rules concerning the management of the energy communities and the preservation of the non-commercial nature and independence of these entities. Neither Directive specifically regulates the relationships that energy communities have with their investors or shareholders. However, both directives determine in a far-reaching way how members or shareholders participate in energy communities. There are only some crucial binding rules that determine the conditions for joining, participating in and leaving energy communities, and that are applicable if it is expected to make energy projects. According to the Directives, participation in energy communities is open and voluntary and these organizations are effectively controlled by shareholders or members (Article 2(16) letter a of RED II, Articles 2(11) letter a and 16(1) letter a of the IEMD). For CECs, "effective control" is based on the size of the participant and is assigned to natural persons, local authorities and small and micro-enterprises (Article 2(11) letter a of the IEMD). In the case of RECs, there are additional requirements: they

[21] *Energy Communities under the Clean Energy Package: Transposition Guidance*, RESCOOP.EU, ClientEarth, 2020, pp. 97ff.

must be "autonomous" and their shareholders or members are only natural persons, small and micro-enterprises or local authorities, including municipalities (Article 22(1) and Article 2(16) of RED II).

We should also recall that members of CECs and RECs should maintain their rights and obligations as final customers. All these principal requirements are very far-reaching, and it will be difficult for the Member States to meet all of them. Compliance with them must be monitored by the state authorities and this will not be easy. Beyond that, these internal requirements are also essential for achieving all the objectives of the energy communities because energy communities are an expression of the citizens' energy industry. Going forward, it appears that the NRAs should be competent in the monitoring of internal relations. It seems that there is no other option but to transfer these matters to NRAs as they have a leading role in market regulation and the best knowledge of market developments. They are much more specialized than common authorities and have a better understanding of the responsibilities of the various players in the energy markets. It seems that only NRAs can counterbalance the rights and interests of energy communities with other market players and members or shareholders of energy communities. However, it is important to be aware of the difficulties that monitoring will entail. For example, open access to energy communities does not mean that some membership conditions cannot be set, but these conditions must be objectively justified, they cannot be arbitrary. However, the problem is that we can have different energy communities. There can be communities that make some investments requiring significant financial contributions, communities that are based on the provision of energy services, on the sharing of energy within the community, on the aggregation of the demand of its members, etc. It is worth noting that the relationships within energy communities are extremely complex.

For both CECs and RECs, members or shareholders may remain in various relationships pertaining to services received from the community and services provided to the community, but also pertaining to services provided between members of the community in peer-to-peer relations. In such a complex situation it may be difficult to ensure the observance of otherwise obvious rules concerning open access and voluntary participation. We must balance the interests of energy community and other market participants, and the interests of members or shareholders of energy communities in the long term, taking into account the complexity of the objectives assigned to energy communities. From the perspective of the requirement of objective justification we can face, for example, a problem that initial investments made within energy communities may get some reasonable return on capital over time, so the question arises of what conditions for leaving an energy community should be established. It seems that the most appropriate solution is to grant supervisory competence over energy

communities to NRAs. On the other hand, the regulatory authority can also be insufficiently prepared to deal with cases pertaining to internal relationships in various kinds of energy communities, so it is advisable to ensure cooperation between various state authorities.

Enabling Frameworks

Both the RED II and IEMD require Member States to introduce enabling frameworks for energy communities which consist of many components and concern both legislative and regulatory matters (see Recital 43 of IEMD and Article 22(4) of RED II). In both cases, the objectives for implementing enabling frameworks differ slightly. For CECs the enabling framework aims to ensure that they have a level playing field to participate across the electricity market. Enabling frameworks under the RED II go further and provide more privileges to mitigate challenges that RECs face and to promote their development.[22] In other words, the IEMD states that CECs "should be allowed to operate on the market on a level playing field without distorting competition, and the rights and obligations applicable to the other electricity undertakings on the market should be applied to citizen energy communities in a non-discriminatory and proportionate manner" (Recital 46 of IEMD). RED II requires promoting and facilitating the development of renewable energy communities (Article 22(3) of the RED II) so initiatives of the Member States authorities should go further. In legal acts that compose the CEP we find provisions that indicate in a specific way what is accurate treatment or facilitation of regulation for energy communities. For example, the IEMD allows CECs to become a balancing responsible party, or to delegate this responsibility to a third party of their choice (Article 16(3) letter c of IEMD). In Regulation (EU) 2018/1999 Member States are encouraged to include objectives for renewable energy production by RECs in their 2030 climate and energy plans.[23]

A fundamental question is, however, how we should treat energy communities, considering that energy communities represent many values and benefits, facili-

[22] J. Roberts, Power to the people?, p. 240. For more see *ASSET Study on Energy Communities in the Clean Energy Package: Best Practices and Recommendations for Implementation*, Publications Office of the European Union, 2020, p. 13, https://op.europa.eu/en/publication-detail/-/publication/4b7d5144-91c9-11eb-b85c-01aa75ed71a1/language-en?WT.mc_id=Searchresult&WT.ria_c=37085&WT.ria_f=3608&WT.ria_ev=search [accessed 7.04.2023].

[23] See Annex I of Regulation (EU) 2018/1999 of the European Parliament and of the Council of 11 December 2018 on the Governance of the Energy Union and Climate Action, amending Regulations (EC) No. 663/2009 and (EC) No. 715/2009 of the European Parliament and of the Council, Directives 94/22/EC, 98/70/EC, 2009/31/EC, 2009/73/EC, 2010/31/EU, 2012/27/EU and 2013/30/EU of the European Parliament and of the Council, Council Directives 2009/119/EC and (EU) 2015/652 and repealing Regulation (EU) No. 525/2013 of the European Parliament and of the Council, OJ L 328, 21.12.2018, pp. 1–77.

tate the development of renewable energy sources, and bring social benefits. The concept of an energy community, notably in the form of CECs and RECs, aims to change the citizens' role from passive consumers to active participants, to contribute to the energy transition and to help the EU meet its 2050 climate and energy objectives.[24] Roberts points out in this context that there is a need to acknowledge the benefits that energy communities provide to the energy system,[25] and that energy communities require sufficient space to test innovative concepts and technologies.[26] If these organizations contribute to technical or even civilizational progress, what exactly does it mean to treat energy communities fairly, to establish a level playing field for them? Does this mean that we need to stop the policies directed to energy communities that would hinder the activities of these organizations in the marketplace, or maybe something more is required? Secondly, the issue is how to put energy communities on an equal footing with commercial entities and large players, and enable them to operate in energy markets on a level playing field. Let's note that energy communities must be seen as a new type of entity, due to their membership structure, governance requirements and purpose (Recital 46 of IEMD). Should we consider these circumstances in determining the market position of energy communities? These matters are extremely difficult to solve.

We can say that the starting point is to ensure all the rights that have been granted to energy communities in the Directives. Their provisions intend to make RECs and CECs active in all (almost) branches of the energy sector. In principle, energy communities must meet all the conditions and requirements that concern each of these activities. These conditions should be applied in a non-discriminatory and proportionate manner. On the other hand, however, it is argued that technical requirements will need to be revisited to ensure that energy communities can participate in various markets, and this includes both decentralized markets (e.g. markets for the procurement of local flexibility), and centralized markets (e.g. wholesale, balancing and ancillary service markets).[27] At the same time, however, the regulatory framework must embrace the rights and obligations of members or shareholders of energy communities. The enabling frameworks must contain all the elements which concern members or shareholders of energy communities. It was decided in both the RED II and the IEMD that participation in energy communities must also be open and voluntary. In both cases, the directives articulate the obligation for Member States to ensure that members or sharehold-

[24] For more about that see e.g. Ying Wu et al., Decentralized transactive energy community in edge grid with positive buildings and interactive electric vehicles, *International Journal of Electrical Power & Energy Systems*, 2022, vol. 135, https://doi.org/10.1016/j.ijepes.2021.107510.

[25] J. Roberts, What energy communities need, p. 25.

[26] Ibid., p. 26.

[27] Ibid., p. 23.

ers of energy communities do not lose their rights and obligations as household customers or active customers (Article 16(1) letter c of IEMD and Article 22(1) of RED II). For these reasons, it is stressed for example that enabling frameworks should ensure that distribution system operators (DSOs) cooperate with CECs to facilitate electricity transfers within the community and that they are handled properly with to registration and licensing procedures.[28] It can therefore be concluded that the enabling framework should embrace relationships between energy communities and other market participants and public authorities, but also relationships within energy communities and must even refer to relations between their members or shareholders and external entities. However, it can also be seen that NRAs are obliged to monitor the removal of unjustified obstacles to and restrictions on the development of CECs (Article 59(1) letter z of IEMD). In the case of RECs, it is explicitly stated that Member States shall carry out an assessment of the existing barriers to the development of RECs and remove unjustified regulatory and administrative barriers (Article 22(3) of RED II). As has already been mentioned, an enabling framework for RECs should also promote and facilitate the development of RECs (Article 22(4) of RED II). In this regard, J. Roberts emphasizes that support schemes for renewables need to be designed so that they do not exclude RECs.[29]

It can be said that elements that together constitute the enabling framework for CECs are much shorter than those of RECs. It is said in the literature that CECs should not receive special privileges and that the enabling frameworks for CECs must simply create a level playing field so they can participate across the market.[30] This is easier said than done, so what does it mean to create a playing field for energy communities? Is it just a matter of adapting legal regulations to the specifics of energy communities, not overburdening them with excessive regulation? Maybe, it is about designing legal and administrative frameworks for energy communities that allow them to perform each activity on the basis of well-defined rights and obligations. Or perhaps there is more if the goal is "to create a level playing field at retail level" (Recital 65 of IEMD). Should we take measures that offset the disadvantages relating to the specific characteristics of energy communities in terms of size, ownership structure, governing conditions and objectives? If not, why is this characteristic highlighted in Recital 46 of IEMD? Let us note that the aim is not only non-discriminatory treatment but creating fair, proportionate and just enabling frameworks for energy communities (Article 16(1) letter e of the IEMD, Article 22(4) letter d of the REDII). It is worth mentioning that a long time

[28] *Energy Communities under the Clean Energy Package: Transposition Guidance*. RESCOOP.EU, ClientEarth, 2020, p. 81.

[29] J. Roberts, What energy, p. 27.

[30] See *Energy Communities under the Clean Energy Package: Transposition Guidance*. RESCOOP.EU, ClientEarth, 2020, p. 63.

ago the Commission adopted the act on the promotion of co-operative societies in Europe. At that time, the Commission explained that such cooperatives do not need preferential treatment but legislation creating a more level playing field, in the sense that they are allowed to act free from restrictions and obligations, which are based on various national policy objectives, and to which the other forms of companies with which they compete in a modern market economy are not subject.[31]

On the other hand, there is the judgment of the EU Court of 8 September 2011 in Joined Cases C-78/08 to C-80/08 (*The Paint Graphos*), where it was decided that cooperative societies that have special non-commercial characteristics cannot, in principle, be regarded as being in a comparable factual and legal situation to that of commercial companies. As a result, the Member State was entitled to treat them in a particular way.[32] There is also the argument raised by many experts that special treatment of energy communities should reflect the value and benefits—including social benefits—that energy communities bring.[33] Some mention incorporating the specificities of community projects in support instruments and suggest that it is pivotal for the successful development of community energy projects.[34] After all, non-discrimination is a general principle of EU law, and this principle is not only limited to eliminating measures leading to unjustified treatment but also relies on some affirmative actions.[35] Is it true in the case of energy communities? It would be something completely new. There are some antidiscriminatory regulations in EU law, but they relate to matters of gender and employment, not to economic organizations.

At first sight, it appears that energy communities should be subject to similar responsibilities and regulatory provisions to those applicable to other market actors performing similar activities. Overall, however, it seems that in the case of CECs and RECs expectations go further. The European Commission stated that energy communities should be subject to similar responsibilities and regulatory provisions to those which market actors performing similar activities are subject to, but at the same time the Commission added that regulatory constraints related to access to activities (supply, aggregation, etc.) should be adapted to ensure the integration of energy communities in the energy landscape. It has been also

[31] Communication from the Commission to the Council and the European Parliament, the European Economic and Social Committee and the Committee of Regions on the promotion of co-operative societies in Europe, COM(2004)0018 final, p. 13.

[32] The Judgment of the Court of 8 September 2011 in Joined Cases C-78/08 to C-80/08, point 61.

[33] Roberts refers to the need for acknowledging the benefits that energy communities provide to the energy system—id., What energy, p. 25.

[34] M. Krug. M. Rosaria Di Nucci, Citizens at the heart of the energy transition in Europe, p. 23.

[35] A. Zawidzka-Łojek, M. Kulaj, Źródła prawa antydyskryminacyjnego Unii Europejskiej, in *Prawo antydyskryminacyjne Unii Europejskiej*, ed. A. Zawidzka-Łojek, A. Szczerba, 2nd edn., Warsaw, 2021, p. 60.

suggested that national authorities should consider revising their regulations concerning the responsibilities and conditions for fair and effective integration of small actors (not only energy communities) in the long term.[36] Therefore, it appears that the Member States are justified to take some measures that offset the disadvantages of energy communities in terms of their characteristics (size, governing condition, objectives). It seems to be justified in the light of the promotion of cooperative societies in Europe. This can even be treated as a task for the Member States because only they may put energy communities on an equal footing with commercial entities.

Conclusion

The CEP package guarantees energy communities a crucial role in Europe's clean energy transition. The directives call for more bottom-up initiatives and "energy democracy" and the energy communities play an important role in achieving these objectives. Technological progress and the decreasing costs of undertaking energy activities allow citizens to become active market participants, and they should be allowed to act individually and together through communities. The Member States have to undertake significant reforms to national legislation and regulation to ensure that the rights of energy communities are implemented, and, what is very important, that there will be an equal playing field in energy markets, for both commercial entities and energy communities. Transposition into national law will be critical to the valuable role of energy communities, because the relevant regulations of the CEP are relatively open to interpretation.[37] Member States are facing many challenges with CECs and RECs. They must properly define these organizations in their legislation, set the proper scope of their rights and responsibilities. There is a risk that that the energy community will be defined too narrowly, around specific activities, so the development of citizens' initiatives and activities will be hindered. There is also a risk that overly broad definitions

[36] This view is presented in *ASSET Study on Energy Communities in the Clean Energy Package: Best Practices and Recommendations for Implementation*, Publications Office of the European Union, 2020, p. 38, https://op.europa.eu/en/publication-detail/-/publication/4b7d5144-91c9-11eb-b85c-01aa75ed71a1/language-en?WT.mc_id=Searchresult&WT.ria_c=37085&WT.ria_f=3608&WT.ria_ev=search [accessed 7.04.2023].

[37] CEER (Council of European Energy Regulators) comes to the same conclusion in *Customers and Retail Markets and Distribution Systems Working Groups. Regulatory Aspects of Self-Consumption and Energy Communities*. CEER Report. Ref: C18-CRM9_DS7-05-03, 25 June 2019, p. 7, https://www.ceer.eu/documents/104400/6509669/C18-CRM9_DS7-05-03_Report+on+Regulatory+Aspects+of+Self-Consumption+and+%20Energy+Communities_final/8ee38e61-a802-bd6f-db27-4fb61aa6eb6a?version=1.1) [accessed 7.04.2023].

in national law will allow commercial operators to exploit solutions intended for the purposes of non-commercial energy communities.

The directives adopt a single model of energy community, although in practice there are many different citizens' initiatives. Existing energy communities must therefore be adapted to new conditions. However, at the same time, the directives differentiate regulatory frameworks for CECs and RECs. For CECs, the enabling framework aims to adapt regulations, mitigate regulatory and practical challenges and ensure that CECs have a level playing field to participate across the electricity market. For RECs, the enabling framework goes further and is to promote the development of energy communities for implementing the policy of renewable energy sources in Europe. For the Polish legislator, it is a challenge to ensure a sufficiently broad scope of rights and responsibilities for CECs and RECs in compliance with the Polish energy law, which is focused on regulating commercial energy companies. The regulatory challenges concern not only the external relations of energy communities but also internal relations within CECs and RECs.

It is necessary to ensure a far-reaching regulatory oversight over energy communities, extending to their internal affairs, and to balance the interests of energy communities and their members or shareholders. That regulatory oversight must concern not only the proper exercise of energy activities by energy communities and compliance with rights and obligations related thereto, but also adherence to the rules on the management of the energy communities concerning their non-commercial nature and the independence of these entities. The oversight must cover relations within energy communities that, due to the diversity of shareholders, may be very complex. It seems that NRAs should be responsible for monitoring these internal relationships although they will have to do that in cooperation with other authorities. A serious problem is what exactly is required in order to ensure that an enabling framework for energy communities is established by the Member States. This problem is difficult to resolve. It seems that it the possibility of implementing some offsetting measures cannot be ruled out, having regard to the role of energy communities in energy transition and promoting cooperative societies in Europe.

Chapter 4

LEGAL PERSPECTIVES ON THE INTERACTION OF MUNICIPALITIES AND CITIZENS IN THE GERMAN ENERGY TRANSITION[1]

Felix Lindschau, Thomas Schomerus,
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Citizens and municipalities must have greater benefit from the expansion of renewable energies if this is to increase their acceptance. Becoming financially involved is one aspect of the solution which is hindered by the existing legal framework in Germany. In the following, three such legal problems will be presented: The framework conditions for municipal economic activities, the involvement of local citizens in municipal energy projects, and the solar obligation as an option for action. To start with, these problems are classified with an overview of means for financial participation by municipalities and citizens.

Means for Financial Participation of Municipalities and Citizens in Renewable Energy Projects in Germany

There are numerous forms of such financial participation. Distinctions can be made:

- according to participants (municipalities, municipal companies, citizens) and shares (sole investment, co-investment/shared ownership),
- by resource (money, land, labour, without counter-performance),
- by object (participation in the powerplant or the company, participation in the product, e.g. reduced electricity tariff) and
- by type of provision (contract, gift/community benefit).

Particularly relevant from a municipal perspective are payments without direct compensation—special allowances and taxes, the provision of munici-

[1] This article has been developed within the research project "Benefits" funded by the BMWK (German Federal Ministry for Economic Affairs and Climate Action) under grant number 03EI5203.

pal (roof) space, and the support of collective citizen investments. Where municipalities hold shares in an energy supplier, they often operate with the help of their municipal utilities (*Stadtwerke*). This also applies to joint investments with citizens. In this context, the municipal utilities offer their customers or the citizens in their supply area various participation options in renewable energy plants, in particular equity investments (citizens' energy companies), subordinated loans, bearer bonds or—often together with local savings banks—savings bonds.[2]

Operators of wind energy and ground-mounted photovoltaic systems can offer municipalities subsidies of 0.2 ct/kWh (Renewable Energy Sources Act of 2021,[3] 6).[4] In addition, the municipality receives revenue from trade tax (*Gewerbesteuer*)[5] as well as municipal shares from turnover and income tax (*Einkommensteuer*). Both sets of problems are excluded here.

In the case of municipal land, the municipality may receive lease income if the land is let to plant operators. The question arises as to whether the municipality may give preferential treatment to citizens' energy companies (see below).

Often used legal forms for citizens' energy companies are the registered cooperative (*eingetragene Genossenschaft*, eG), the GmbH & Co KG (*Gesellschaft mit beschränkter Haftung & Compagnie Kommanditgesellschaft*) or—for small projects—the Civil Law Partnership (*Gesellschaft bürgerlichen Rechts*, GbR). GmbH & Co. KG and GbR are usually founded for individual projects, while citizens' energy cooperatives usually develop and operate several projects. In some cases, citizens' energy companies are initiated by municipalities or municipal energy supply companies. However, municipal participation in a citizens' energy company under company law must meet the requirements of municipal law and therefore is only possible to a limited extent (see below). Municipal law, which, in general,

[2] J. Kowallik, *Bürgerbeteiligung als Finanzierungsinstrument für (neue) Geschäftsfelder kommunaler Stadtwerke in der Energiewende*, Wiesbaden, 2022, p. 253, p. 271.

[3] Renewable Energy Sources Act (Erneuerbare-Energien-Gesetz) of 21 July 2014 (Federal Law Gazette I, p. 1066), as last amended by Article 11 of the Act of 16 July 2021 (Federal Law Gazette I, p. 3026).

[4] F. Sondershaus, Akzeptanz für Windenergie an Land: Der § 6 EEG 2021 und dessen Ausweitung auf Bestandsanlagen, *Zeitschrift für Neues Energierecht*, 2021, p. 350; K. Bau, W. Lehnert, J. Vollprecht, Die finanzielle Beteiligung von Gemeinden an Windenergieprojekten gemäß § 6 Abs. 1 Nr. 1 EEG 2021 aus kommunaler Sicht—Entstehungsgeschichte und allgemeine rechtliche Praxisfragen (Teil 1), *Kommunaljurist* [KommJur] 2021, p. 360; K. Bau, W. Lehnert, J. Vollprecht, Die finanzielle Beteiligung von Gemeinden an Windenergieprojekten gemäß § 6 Abs. 1 Nr. 1 EEG 2021 aus kommunaler Sicht—Entstehungsgeschichte und allgemeine rechtliche Praxisfragen (Teil 2), KommJur, 2021, p. 401.

[5] A. Saathoff, § 29, in *Gewerbesteuergesetz*, ed. M. Wendt, M. Suchanek, P. Möllmann, P. Heinemann, Cologne, 2022, paras. 19–33.

is regulated similarly in the 16 federal States (*Länder*) but quite different in detail, plays a role in any municipal economic activity.

To accelerate the energy transition, a solar mandate has been introduced in some places and in some *Länder*. In this case, citizen energy companies can offer to serve as providers if citizens cannot or do not want to fulfil their obligation to install a solar system (see below).

General Conditions for Municipal Economic Activities

The legal framework for municipal economic activities in the energy sector is based on municipal law. First of all, the prerequisites for permitting municipal activities will be listed. Then, the scope of the municipal supervisory authority's (*Aufsichtsbehörde*, mostly the county—*Landkreis*) examination will be discussed.

Preconditions for Municipal Activity in the Energy Sector

Municipal ordinances, municipal self-administration laws and municipal constitutions of the Länder define the legal framework for the municipality's economic activity in the energy sector. In principle, such economic activities are permissible under the so-called triad of barriers (*Schrankentrias*) which take a different shape in the various laws of the *Länder*. Some *Länder* laws provide privileges for individual activities in the field of renewable energies as an exception. The practical implementation for the municipalities will then be examined.

Prerequisites of the triad of barriers (*Schrankentrias*)

In regulating the economic activities of municipalities, *Länder* legislators are guided by the triad of restrictions set out in Section 67 of the German Municipal Code of 30 January 1935.[6] Accordingly, the municipal economic activity must be justified by a public purpose, the economic activity must be proportionate to the capacity and the needs of the municipality, and the economic purpose may not be better or more economically achieved by a private party (subsidiarity clause).

[6] German Municipal Code (*Deutsche Gemeindeordnung*) (DGO) of 30 January 1935 (Reich Law Gazette I, p. 49ff.).

Public purpose—In the case of municipal energy production, the public purpose is generally assumed.[7] If the municipality wishes to be active in the energy sector outside its municipal territory, the *Länder* laws lay down different requirements.

Need and capacity—The criterion of need and capacity, the so-called relationship clause (*Verhältnismäßigkeit*), is intended to ensure the economic activity is in reasonable proportion to the municipality's capacity and the anticipated need.[8] The criterion of foreseeable need (*voraussichtlicher Bedarf*) is intended to ensure that the scope and extent of economic activity correspond to current and expected future needs.[9]

The ability-to-pay criterion (*Zahlungsfähigkeit*) is intended to prevent municipalities from engaging in economic activities that exceed their administrative and/or financial capacity.[10] "Ability to pay" is an undefined legal term with scope for assessment which, in the absence of a legal definition, requires interpretation. The principles of municipal budget law can be used to define the term. For instance, the State of Mecklenburg-Western Pomerania has developed criteria for assessing the sustainability of municipal performance.[11]

Budgetary principles (*Haushaltsgrundsätze*)

Budgetary principles of the respective State laws require the municipalities to manage their budgets to ensure task fulfilment and efficiency. For the municipality operating in the energy sector, the imperative of economic efficiency and thriftiness, ensuring the fulfilment of tasks and the imperative of balancing the budget, as well as the prohibition of over-indebtedness, are of particular importance.

Criteria for determining capacity

In order to specify the concept of performance without falling back on the general budgetary principles, the Mecklenburg-Western Pomerania Ministry of the Inte-

[7] F. Müller, Bereich „Energie"—Gemeinden und Städte aktiv in der Energiewende, in *Rechtspraxis der kommunalen Unternehmen*, ed. G. Wurzel, A. Schraml, A. Gaß, Munich, 2021, Chap. J.V, p. 871.

[8] A. Gaß, Kommunalrechtliche Rahmenbedingen, in *Rechtspraxis der kommunalen Unternehmen*, ed. G. Wurzel, A. Schraml, A. Gaß, Munich, 2021, Chap. C para. 127.

[9] Ibid., para. 130.

[10] R. Kunze, O. Bronner, A. Katz, *Municipal Code for Baden-Württemberg (Gemeindeordnung für Baden-Württemberg)*, Section 102 para. 39.

[11] See the Circular on the Assessment of the Lasting Capacity of Municipalities (Runderlass zur Beurteilung der dauernden Leistungsfähigkeit von Kommunen), II 320—174.3.60 of 10 January 2007, http://docplayer.org/33664951-Runderlass-des-innenministeriums-zur-beurteilung-der-dauernden-leistungsfaehigkeit-von-kommunen.html [accessed 1.06.2023].

rior established criteria in the M-V circular on performance (RE M-V).[12] Relevant here are the financial[13] and human resources criteria.

Interim result

Budgetary principles and the criteria for determining capacity are intended to ensure the municipality takes into account the future prospects of a planned energy project in the sense of a forecast. The long-term ability to maintain the intended facility while minimizing follow-up costs must also be examined by the municipality.[14]

Subsidiarity Clause—According to the subsidiarity principle, the municipality must verify that the purpose of the undertaking cannot be fulfilled just as well and economically by another actor.[15]

Exemption provisions for the energy sector—Länder law provisions regarding the permissibility of municipal economic activities in the energy sector often deviate from the barrier triad to varying degrees. In some cases, such as in Mecklenburg-Western Pomerania,[16] Lower Saxony[17] or North Rhine-Westphalia,[18] individual economic activities in the field of renewable energies are privileged by State law provisions, for example by fictitiously fulfilling the requirements of the barrier triad.[19] Often only single variants of energy supply within the meaning of Section 3 no. 36 EnWG[20] are privileged in the State laws. In some cases, the municipal legal

[12] Ibid.

[13] To be able to evaluate the financial strength by the municipality and municipal supervision in a uniform manner, M-V has developed the system RUBIKON (Rechnerunterstütztes Haushaltsbewertungs- und Informationssystem der Kommunen). The system divides the municipalities into performance groups.

[14] U. Cronauge, Welchen rechtlichen Rahmen braucht die kommunale Wirtschaft von morgen? in *Alternative Kommunalpolitik—AKP*, 1998, no. 4, pp. 36–40.

[15] F. Müller, Bereich „Energie", Chap. J.V., p. 872.

[16] C. Moench, A. Lippert, *Leitfaden zu den kommunalrechtlichen Anforderungen an die wirtschaftliche Betätigung von Kommunen im Energiebereich in Mecklenburg-Vorpommern*, Berlin, 2014, pp. 16f.

[17] F. Klaß-Dingeldey, Kommunalrecht—Wirtschaftliche Betätigung, in *Kommunalrecht Niedersachsen*, ed. J. Dietlein, V. Mehde, Munich, 2020, Section 136 para., pp. 59 ff.

[18] F. Held, Wirtschaftliche Betätigung und nichtwirtschaftliche Betätigung, in *Gemeindeordnung für das Land Nordrhein-Westfalen*, ed. F. Held, J. Winkel, Wiesbaden, 2020, Section 107 no. 3.1.4.

[19] See for instance Section 136 (1) sentence 7 Lower Saxony Municipal Code (Niedersächsisches Kommunalverfassungsgesetz—NKomVG) of 17 December 2010, last amended by the Act of 23 March 2022 (Lower Saxony Law and Ordinance Gazette, 191).

[20] Energy Industry Act (Energiewirtschaftsgesetz) of 7 July 2005 (Federal Law Gazette I, p. 1970, p. 3621), as last amended by Article 1 of the Act of 26 April 2022 (Federal Law Gazette I, p. 674).

supply scheme covers heat supply,[21] whereas energy law understands energy to mean electricity and gas (Section 3 no. 14 EnWG).

Effects on municipal activities in the energy sector—The inconsistent terminology used and the deviations from the barrier triad make the legal regulatory framework for economic activities in the individual *Länder* particularly confusing.[22] It is doubtful whether the constituent elements reflect the dynamics and complexity of the different municipal economic activities. Economic activities in the field of renewable energy production may be possible in one State but fail in others due to their regulatory framework requirements.[23] For the municipality and the interested private parties, this results in a project-specific examination of the requirements under municipal law, often leading to legal uncertainty for the acting municipality.[24]

Supervision of Municipal Activities in the Energy Sector

To make matters worse, in all *Länder*, municipal activities in the energy sector are subject to either notification[25] or approval[26] by the competent municipal supervisory authority. This authority is thereby given the opportunity to examine the activity through legal supervision.[27] If necessary, where notification is required, this involves initiating further municipal supervisory measures. The authority can also refuse approval of the legal transaction. Legal supervision means that the legal supervisory authority merely monitors compliance of the municipal commitment.[28] The legal supervisory authority may not make expediency considerations. Problems arise when reviewing undefined legal terms with prognostic elements. The municipal supervisory authority might make its own expediency considerations. This would not be permissible due to the constitutionally guaranteed municipality's right to self-administration according to Article 28(2) Basic

[21] R. Kunze, O. Bronner, A. Katz, *Municipal Code for Baden-Württemberg*, Section 107 para. 6.

[22] S. Tomerius, *Kommunale Verantwortlichkeit und Ansatzpunkte im Rahmen der Energiewende*, Berlin, 2017, pp. 36ff.

[23] Ibid., p. 42.

[24] M. Burgi, Daseinsvorsorge und Energieversorgung—Teilnahme der Kommunen am energiewirtschaftlichen Wettbewerb, in *Energiewirtschaft und kommunale Selbstverwaltung*, ed. M. Kment, Tübingen, 2018, p. 13.

[25] See for instance Section 77 Municipal Code for the State of Mecklenburg-Western Pomerania (KV M-V) (Kommunalverfassung für das Land Mecklenburg-Vorpommern) of 13 July 2011, Law and Ordinance Gazette M-V, p. 777.

[26] Some legal transactions require approval; for example Section 56 (6) no. 2 KV M-V.

[27] U. Kotzea, Wirtschaftliche Betätigung, Section 115 para. III.

[28] C. Brüning, K. Vogelgesang, *Die Kommunalaufsicht*, 2nd edn., Berlin, 2009, Chap. V, no. 1.1.

Law (*Grundgesetz*).[29] The fact remains that legal supervisory examination takes place at various depths in the individual *Länder*.[30]

This results in a number of regional obstacles, which can make meaningful activity in the context of the energy transition even more difficult or even prevent it altogether. The interplay between the legal reviewability of vague legal terms with prognostic elements on the part of the municipal supervisory authority, and the state-specific different requirements for the constituent elements, impairs the municipalities' will to operate in the energy sector.

Public Procurement

Once the municipality has decided to become active in the energy sector, the next step is to find out how to involve its citizens. As a contracting authority wishing to award a public contract, the municipality is subject to public procurement law and must put the contract out to tender. Mere transfers of rights of use under the law of obligations, such as rental and leasing agreements, do not fall under the concept of a public contract and must not be put out to tender. When awarding a public contract, third parties as well as interested citizens may submit a bid—and possibly be awarded the contract. However, the municipality may be able to design the selection and award criteria in favour of awarding the contract to local citizens, or even award the contract directly to its citizens.

Design of the Suitability and Award Criteria

The invitation to tender is partly based on such suitability and award criteria, which the contracting authority is in principle free to choose. However, these criteria must be transparent, non-discriminatory, competition-neutral and in accordance with EU-law principles. Accordingly, the contracting authority cannot formulate the evaluation criteria in such a way that a local bidding consortium will secure the contract.[31] However, as an exception, the selection criteria design (a) and the award criteria (b) may privilege the citizens. This is possible by using environmentally friendly criteria, and only within narrow limits.

[29] Basic Law for the Federal Republic of Germany in the revised version published in the Federal Law Gazette Part III, classification number 100-1, as last amended by Article 1 of the Act of 29 September 2020 (Federal Law Gazette I p. 2048); see Ruffert, VerwArch 2001, p. 27f.

[30] M. Burgi, Daseinsvorsorge und Energieversorgung—Teilnahme der Kommunen am energiewirtschaftlichen Wettbewerb, in *Energiewirtschaft und kommunale Selbstverwaltung*, ed. M. Kment, Tübingen, 2018, p. 14.

[31] B. W. Wegener, Umweltschutz in der öffentlichen Auftragsvegabe, *Neue Zeitschrift für Baurecht und Verwaltungsrecht* [NZBau], 2010, pp. 273–279.

Suitability criteria

The municipality as contracting authority may only award public contracts to competent and suitable enterprises. To this end, the municipality may specify suitability criteria in the award procedure. Suitability criteria help the municipality ensure only the right companies or bidding consortia are selected for the provision of services. However, the privileged awarding of contracts to local bidding consortia through the inclusion of a suitability criterion of, for example, "local residence" or "regional procurement" is not permissible, "since economic operators from other EU Member States would be disadvantaged".[32]

Award criteria

When selecting award criteria, the municipality must comply with public procurement law principles. These include the above-mentioned prohibition of non-discrimination. Whether the formulation of award criteria favouring local bidding consortia is permissible for reasons of environmental protection will be discussed below. First of all, the prohibition of discrimination in Section 97 para. 2 GWB[33] makes it clear, and Section 31 para. 1 VgV[34] stipulates that "the opening of the national procurement market to competition may not be unjustifiably impeded". Indirect discrimination is also covered by the prohibition of discrimination. Indirect discrimination occurs when a national measure, despite being formulated in neutral terms, disadvantages significantly more holders of the protected personal characteristic in its application than persons who do not possess that characteristic.[35]

The inclusion of award criteria such as local presence, proximity or residence constitute indirect discrimination.[36] Nor is it admissible to stipulate that a certain percentage of contracts be awarded exclusively to companies from a certain re-

[32] T. Schneider, V. Schmidt, *Rechtsgutachten umweltfreundliche öffentliche Beschaffung*, 2020, p. 17, https://www.umweltbundesamt.de/sites/default/files/medien/5750/publikationen/2020_10_23_texte_188_2020_rechtsgutachten_umweltfreundliche_beschaffung.pdf [accessed 24.04.2023].

[33] Act against Restraints of Competition (Competition Act, GWB) in the version published on 26 June 2013 (Federal Law Gazette) I, 2013, p. 1750, p. 3245), as last amended by Article 4 of the Act of 9 July 2021 (Federal Law Gazette I, p. 2506).

[34] Ordinance on the Award of Public Contracts (Vergabeverordnung, VgV) of 12 April 122016 (Federal Law Gazette I p. 624), as last amended by Article 2 of the Act of 9 June 2021 (Federal Law Gazette I, p. 1691).

[35] European Court of Justice, Judgment of the Court (Grand Chamber) of 16 July 2015, C-83/14—CHEZ Razpredelenie Bulgaria, para. 101.

[36] M. Müller-Wrede, Örtliche Präsenz, Ortsnähe und Ortsansässigkeit als Wertungskriterien—eine Verletzung des Diskriminierungsverbots? *Zeitschrift für Vergaberecht* [VergabeR], 2005, pp. 32ff.

gion.[37] This would not be the case if environmentally friendly criteria are cited, even if indirect advantages for regional products result. One permissible award criterion would be, for example, the carbon footprint of the goods to be delivered.[38] Whether indirect discrimination against non-regional products is exceptionally justified would however need to be examined prior to a tender being issued. Under certain circumstances an award criterion such as the carbon footprint could be an advantage for local bidding consortia in the production of hydrogen or heat due to the short delivery routes.

Award of the Contract

As an exception to the basic obligation to tender and under limited conditions, the municipality may award a public contract in the shape of an in-house contract to its citizens. Potentially awarding a contract to citizens in the sense of an exclusive award is also explained below.

In-house business

A commissioning of the citizens in the sense of an in-house business requires the presence of both a control and a materiality criterion.

Control criterion

According to the control criterion, the contracting authority must exercise control over the legal entity to be commissioned "as if it were its own department", Section 108(1) no. 1 GWB. Pursuant to Section 108(2) sentence 1 GWB, the exercise of control is presumed if the contracting authority exercises a decisive influence on the strategic objectives and essential decisions of the legal entity. The influence to be exercised depends decisively on the legal entity's corporate form. Where citizens of a municipality act as a registered cooperative (eG), general doubts arise as to the fulfilment of the control criterion, since according to Section 43(3) GenG[39] each member has one vote in the general assembly. This is intended to prevent

[37] F. Michallik, Problemfelder bei der Berücksichtigung mittelständischer Interessen im Vergaberecht, VergabeR 2011, p. 691.

[38] T. Schneider, V. Schmidt, *Rechtsgutachten umweltfreundliche öffentliche Beschaffung*, p. 118.

[39] Cooperative Societies Act (Genossenschaftsgesetz—GenG) in the version published on October 16, 2006 (Federal Law Gazette I p. 2230), as last amended by Article 67 of the Act of 10 August 2021 (Federal Law Gazette I, p. 3436).

control of an eG by individual members.[40] According to the ECJ "Stadt Halle ruling", the exercising influence of the municipality in a GmbH is only fulfilled if said municipality holds one hundred per cent of the shares.[41] In the case of a GmbH & Co. KG, on the other hand, it is argued that the articles of association can, under certain circumstances, be structured so that municipal control is not impaired by private individual participation.[42] The participation of the local citizens' collective could then only be structured as a limited partner within the meaning of § 161 HGB[43] and sufficient control over the GmbH shareholders would need to be stipulated in the articles of association.[44]

Materiality criterion

Further, the contractor to be engaged must fulfil the materiality criterion. The activity must be performed "essentially" for the contracting authority,[45] Section 108(1) Nos. 1 and 2, (2) GWB. Hereby, at least 80% of the contractor's activities must serve the execution of those tasks it has been entrusted with by the municipality. However, in the case of municipal energy supply, the rulings of the Higher Regional Courts of Hamburg and Frankfurt assume that all the electricity transactions of a municipal or water utility with its customers are understood as third-party transactions and that therefore the prerequisites of an in-house business were denied.[46] In the situation where, for example, citizens operate the municipal renewable energies plant and the municipality completely consumes the electricity generated, the materiality criterion would be met.

Interim conclusion

An in-house business can be assumed when the citizens operate the renewable energies plant as limited partners of a GmbH & Co. KG, the partnership agreement guarantees the municipality a significant influence, and the electricity generated

[40] M. von Kaler, F. Kneuper, Erneuerbare Energien und Bürgerbeteiligung, *Neue Zeitschrift für Verwaltungsrecht* [NVwZ], 2012, 31, p. 794.

[41] European Court of Justice, Judgment of the Court (First Chamber) of 11 January 2005, C-26/03—*Stadt Halle RPL Recyclingpark Lochau GmbH*.

[42] S. Tomerius, *Kommunale Verantwortlichkeit*, pp. 45f.

[43] Commercial Code in the revised version, Federal Law Gazette Part III, Section 4100-1, Book 1, as amended by Article 11 of the Act of 18 July 2017 (Federal Law Gazette Part I, p. 2745).

[44] M. von Kaler, F. Kneuper, Erneuerbare Energien und Bürgerbeteiligung, NVwZ, 2012, 31, p. 794.

[45] Higher Regional Court (OLG) Düsseldorf, Public Procurement Senate, Decision of 9 January 2013, ZfBR 2013, pp. 401f.

[46] Higher Regional Court (OLG) Hamburg, Decision of 14 December 2010, NZBau 2011, p. 185ff; Higher Regional Court (OLG) Frankfurt, Decision of 30 August 2011, *Zeitschrift für deutsches und internationales Bau- und Vergaberecht* [ZfBR], 2012, pp. 77ff.

is consumed exclusively by the municipality. Under these defined conditions, the municipality would not be required to put the public contract out to tender.

Exclusive award

An exclusive award is understood to be a direct award to a specific company.[47] This is an exception to the priority open or restricted procedure pursuant to Section 119(1) GWB. These exceptions are to be interpreted narrowly.[48] The exception—technical reasons—according to Section 14(4) no. 2 letter b VgV, Section 3a EU (3) no. 3 letter b VOB/A[49] could be relevant for the direct commissioning of citizens.

Technical reasons for exclusivity may also exist. The mere assertion or presumption of there being only one bidder is not sufficient to assume exclusivity.[50] Technical reasons could be, for example, only one company having the necessary competence or the appropriate equipment.[51] However, the contracting authority defines the contract and its specifications and determines whether it may only be carried out by a specific company, for technical reasons. If this is the case, there must be no reasonable alternative or substitute solution and the lack of competition may not be the result of an artificial restriction of the contract award parameters, Section 14(6) VgV, Section 3a EU (3) sentence 2 VOB/A.

This exception could only become relevant for heat generation, since energy losses occur during heat transport. Local heat generation in the immediate vicinity could objectively constitute a technical reason within the meaning of Section 14(4) no. 2 letter b VgV, Section 3a EU (3) no. 3 letter b VOB/. Geographical proximity is not sufficient to constitute a reason to privilege local citizens' collectives.

Nor can an exclusive award in favour of local citizen energy systems be developed for technical reasons. The narrowly interpreted exceptions of the VGV and the VOB/A cannot be used for the preferential award of contracts to local citizen energy systems.

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[47] P. Tschäpe, Die Vergabe von Energielieferverträgen durch die Kommune an lokale (gemeindliche) Energieerzeuger, ZfBR 2013, vol. 6, p. 551.

[48] Higher Regional Court (OLG) Düsseldorf, Public Procurement Senate, Decision of 12 July 2017–VII-Verg 13/17, juris.

[49] Construction Tendering and Contract Regulations Part A Version 2019 (Vergabe- und Vertragsordnung für Bauleistungen Teil A Fassung 2019), Announcement of 31 January 2019 (BAnz AT 19.02.2019 B2).

[50] H. P. Kulartz, Arten der Vergabe—Zulässigkeit der beschränkten Ausschreibung, in *Commentary on the VOL/A*, ed. H.-P. Kulartz, F. Marx, N. Portz, Section 3 EG VOL/A, para. 73.

[51] H. Pünder, Anwendungsbereich der RL 2009/81/EG—Zulässigkeitsvoraussetzungen, in *Procurement Law*, ed. H. Pünder, M. Schellenberg, 2011, Section 3 EG VOL/A, para. 20 with reference to Section 3 a VOB/A para. 25.

Solar Mandate

The 2021 coalition agreement of the SPD, Greens/Alliance 90 and FDP parties, which form the federal government, sees the achievement of climate protection targets as a "top priority".[52] As part of its climate protection strategy, the agreement aims to expand photovoltaics from the current 59 GW (end of 2021) to around 200 GW by 2030. In a somewhat vague formulation, it states that the obligation to use solar energy should become "mandatory for new commercial buildings" and "the rule for new private buildings."[53] The term solar obligation includes not only an obligation to install and operate PV systems, but also a solar thermal obligation.[54] In Germany, there are various models of solar mandates at the *Länder* level (e.g. in Hamburg[55] and Baden-Württemberg,[56] Schleswig-Holstein[57] and Rhineland-Palatinate),[58] which differ in detail. In view of the challenges of climate change, energy transition with the move away from fossil and nuclear energy sources, and not least the massively increased geostrategic risks, the solar mandate could be an important element of climate change law on the way to a more sustainable energy supply.

A general solar mandate for building owners will result in many more roofs being equipped with PV modules and solar thermal systems. Many owners will not be willing or able to install and operate these systems themselves. Financial reasons may play a role here, but it may also be because owners shy away from the organizational effort. Therefore, these building owners will be interested in leasing their roofs to suitable partners. This is also provided for by *Länder* laws. For example, Section 16(2) of the City of Hamburg Climate Change Act (HmbKliSchG) explicitly states, "The owners of buildings whose construction begins after 1 January 2023, must ensure that systems for generating electricity from solar radiation energy are installed and operated on the roof surface. They may use a third party to use solar radiant energy on roof surfaces."[59]

[52] Coalition Agreement (Koalitionsvertrag) 2021—2025 between SPD, BÜNDNIS 90 / DIE GRÜNEN and FDP, 2021, p. 5, https://www.bundesregierung.de/resource/blob/974430/1990812/1f422c60505b6a88f8f3b3b5b8720bd4/2021-12-10-koav2021-data.pdf?download=1 [accessed 14.5.2023].

[53] Ibid., p. 56.

[54] T. Schomerus, Solarpflicht durch Bundesgesetz—Rechtliche Chancen und Grenzen, *Klima & Recht* [KlimR], 2022, p. 113.

[55] Hamburg Climate Change Act (Hamburgisches Klimaschutzgesetz, HmbKliSchG) of 20 February 2020, HmbGVBl. 2020, p. 148.

[56] Climate Change Act Baden-Württemberg (Klimaschutzgesetz Baden-Württemberg, KSG BW) of 23 July2013, GBl. 2013, p. 229.

[57] Schleswig-Holstein Energy Transition and Climate Protection Act (Energiewende- und Klimaschutzgesetz Schleswig-Holstein, EWKG) 7 March 2017, GVOBl. 2017, p. 124, last amendment by the Act of 2 December 2021, GVOBl., p. 1339.

[58] State Solar Act (Landessolargesetz, LSolarG) of 30 September 2021, GVBl., p. 550.

[59] In the original version: "Die Eigentümerinnen und Eigentümer von Gebäuden, deren Baubeginn nach dem 1. Januar 2023 liegt, haben sicherzustellen, dass Anlagen zur Erzeugung von Strom

This market opportunity can be used particularly well by energy cooperatives. They have the necessary know-how and experience, benefitting the mostly inexperienced building owners. In particular, models are conceivable in which building owners who lease their roofs to a cooperative become members of that cooperative themselves. This can create win-win situations.

Conclusion

In order to increase citizens' acceptance of the expansion of renewable energies in the municipalities, citizens and municipalities should benefit more from such an expansion. However, the existing legal framework in Germany makes this activity in the energy sector difficult.

The legal framework for municipal economic activities in the energy sector is based on municipal law. The prerequisites for the economic activity of municipalities are regulated in the laws of the *Länder*. State-specific requirements impose a wide variety of demands on municipal activities in the different stages of the value chain in the energy sector. The legal framework for economic activities in the individual *Länder* is partly confusing. This results in the necessity for a project-specific analysis of the municipal legal requirements for each municipality, which often leads to legal uncertainty.

Another complicating factor is that municipal activities in the energy sector must always be reported to the municipal supervisory authority (mostly the county—*Landkreis*). This authority has the opportunity to review the municipal measure with regard to its compliance with the *Länder* law and federal law. It is not allowed to make its own considerations of expediency. However, the elements of the barrier triad (*Schrankentrias*) and their formulation in the respective federal states contain indeterminate legal concepts with prognostic elements. When reviewing these prerequisites, there is often a risk that the supervisory authority will nevertheless make considerations of expediency.

The interplay of the legal reviewability of indeterminate legal terms with prognostic elements by the municipal supervisory authority and the state-specific different requirements for the constituent elements impairs the municipalities' will to operate in the energy sector.

If the municipality has decided to operate in the energy sector, the second step is to ask how it can involve its citizens. Should the municipality as a contracting authority want to award a public contract, it is subject to the requirements of public procurement law. In principle, it must put a public contract out to tender, so that in addition to interested citizens, third parties can also submit a bid—and possibly

aus solarer Strahlungsenergie auf der Dachfläche errichtet und betrieben werden. Sie können sich zur Nutzung der solaren Strahlungsenergie auf Dachflächen eines Dritten bedienen."

be awarded the contract. As an exception to the general obligation to tender, the municipality may award a public contract in the sense of an in-house business to a local citizens' collective under narrow conditions.

A general solar mandate for building owners to install and operate PV modules or solar thermal systems on their roofs could help combat climate change. The German government has committed to introducing such a mandate in its 2021 coalition agreement. This offers great opportunity for energy cooperatives. They can rent the roofs and install and operate the systems, and at the same time building owners can become cooperative members.

Chapter 5

A CONSTITUTIONAL APPROACH TO COOPERATIVES AND ENERGY

Antonios Maniatis

Cooperativism and constitutionalism are not just similar words but also interrelated values...

Introduction

It may seem strange to talk about the constitutional dimension of the institution of cooperatives, as this concerns a type of company that emerged from society and the autonomy of individual volunteers rather than from the State and official regulations. Nevertheless, the current study approaches the institution of cooperatives and the issue of energy in terms of Constitutional Law. It is not dedicated to a single legal order, but instead makes use of the comparative method. It addresses the following research question:

RQ: *Should Constitutions explicitly consecrate cooperatives, on the basis of the right to association?*

First of all, having adopted a chronological order for the analysis of the constitutional recognition of cooperatives, this chapter covers the first wave of cooperatives entering constitutions. Next, it focuses on the post-war era of the constitutional recognition of cooperatives. Then, it analyses the current period, namely the post-Cold War era, which in some legal orders has features of neo-constitutionalism, as in the case of African states. Furthermore, it includes a section on the case of the Indian Constitution and its provisions on cooperatives. Lastly, the fundamental right to energy is considered, particularly with regard to its modern specific versions.

The First Wave of Constitutional Recognition of Cooperatives: 1917–1945

In some cases, cooperatives appeared first, then their State specific regulation emerged in response, as was the case in the UK. In other cases, legislation existed alongside cooperatives, as in the countries of Central and South America. This also explains why in these countries' cooperatives were instruments for developmental purposes, as they were created for political purposes in the countries with planned economies.[1]

Cooperatives seem to have acquired a constitutional status for the first time in the legal order of Mexico. At first, there was a recognition at the inferior level, namely in the third Commerce Code of 1889. Congressmen did not forget those companies in the 1917 Constituent Congress, mentioning them in Articles 28 and 123 of the Republic's General Constitution, which are both currently in still in force.[2] In general terms, these articles state that production cooperatives do not constitute monopolies when selling directly to foreign markets.[3] The class-oriented spirit of the Congress is evident in Article 56 of the 1920 social Constitution of Peru, which states that: "The State shall encourage social solidarity and welfare, savings, and insurance institutions, and production and consumer cooperatives that are intended to improve the conditions of the working classes," whilst the 1933 Constitution recognized this concept.[4] The Peruvian cooperative movement started to develop in the mid-twentieth century as a result of the Canadian and American experiences related to savings and credit cooperatives that were promoted by the Catholic Church.[5] The most important regulatory document is the Commercial Code of 1902, which states that cooperatives (production, credit, or consumer) would only be considered trading companies that were subject to the provisions of such a Code, "if they were devoted to commercial acts different from mutual aid, or if they became companies with a fixed premium".[6]

In 1934, the KMT (Kuomintang—Chinese National Party) government launched the first cooperative law in Chinese history.[7] In the same year, the Constitution of China was also proclaimed, and it included a special article emphasizing govern-

[1] H. Henry, Chapter 38 Trends and prospects of cooperative law, in *International Handbook of Cooperative Law*, ed. D. Cracogna, A. Fici, H. Henry, Springer, 2013, pp. 803ff.

[2] J. J. Rojas Herrera, Chapter 24 Mexico, in *International Handbook of Cooperative Law*, ed. D. Cracogna, A. Fici, H. Henry, Springer, 2013, pp. 524ff.

[3] Ibid.

[4] C. Torres Morales, Chapter 27 Peru, in *International Handbook of Cooperative Law*, ed. D. Cracogna, A. Fici, H. Henry, Springer, 2013, pp. 585ff.

[5] Ibid.

[6] Ibid.

[7] D. Ren, P. Yuan, Chapter 14 China, in *International Handbook of Cooperative Law*, ed. D. Cracogna, A. Fici, H. Henry, Springer, 2013, pp. 339ff.

ment support and rewards for cooperative development, which was quite rare internationally in those days. [8] The Chinese Communist Party was founded in 1921 and managed to gain power some decades later. Then it established the People's Republic of China and began drafting its own cooperative law, which was completed in 1950. Nevertheless, that legislation was not enacted because the Party had chosen the road of constructing a socialist planned economy.[9]

Socialist States proved to be rather reluctant to institutionalize cooperatives from scratch, particularly at the constitutional level. The 1936 Fundamental Law of the Soviet Union made an explicit reference to cooperative associations and also stated that socialist property in that country existed either in the form of state property (the possession of the people as a whole), or in the form of cooperative and collective-farm property (property of a collective farm or property of a cooperative association).

The Postwar Recognition of Cooperatives in Constitutions: 1945–1989

The tendency to establish a social economy has been enshrined in constitutions through the constitutional recognition of the civil right of assembly and association.[10] More precisely, this concerns two separate classical civil rights, of which only the second is directly related to the phenomenon of cooperatives. The lack of repressive confrontation in democratic regimes and the recognition of the freedom to engage in association led to the conclusion that the dominant social classes accepted the social economy, due to the fact that this concept implies no direct danger to their economic interests, in contrast to revolutionary violence.[11]

A lot of post-war constitutions were endowed with provisions on cooperatives, such as the rigid Constitution of Italy, which is defined as a democratic Republic, based on work. Besides the pioneering consecration of the labour principle in Article 1, Article 45 states that: "The Republic recognizes the social function of the cooperation with mutual character and without private speculation purposes. The law promotes and favours its growth with the most adequate means, and ensures, through appropriate controls, its character and purposes. The law provides for the protection and development of craftsmanship." This provision has been convincingly explained by scholars to be based on the cooperative capacity to remove obstacles to everyone's participation, particularly as far as less

[8] Ibid.

[9] Ibid.

[10] C. Meleti, Cooperative Economy, in C. Meleti, Ch. Tsouramanis, *Cooperative Economy and Law, Papazisis Editions*, Athens, 2004 (in Greek), pp. 1ff.

[11] Ibid.

wealthy people and the working class are concerned, in the country's economic life, and thus to establish fair social relationships and democratize the economy.[12] Its main effects are to give special protection to the cooperative legal form, since its elimination by legislators would first require a constitutional revision, and to justify (or rather, to compel) supportive measures in favour of cooperatives.[13] This appears to be enough to justify, at the national level, the particular tax treatment of cooperatives as compared to companies, and thus to exclude, at the European Union (EU) level, its being categorized as "State aid prohibited'' under Article 107 of the Treaty on the Functioning of the EU.[14]

Furthermore, Egypt constitutes an emblematic case of the recognition of cooperatives in post-war constitutions. Already in the 1950s, this country began to guarantee this institution in its constitution. There has been a long-lasting tradition, which continues to this day, of explicitly distinguishing between three kinds of property: public, individual and cooperative. The 1971 Constitution not only guaranteed that trinity (with the cooperative ownership in the second position) but it emphasized cooperatives. For example, the second section of Article 26 states: "The law shall guarantee for the small farmers and small craftsmen 80% of the membership on the board of directors of the agricultural cooperatives and industrial cooperatives."

The Egyptian constitutional approach to this societal type as the "third type of ownership", essentially as the "third sector" of the national economy, could be compared to the remark that intellectuals, exemplified by Gide, attempted to incorporate the cooperative movement into the policy of capitalist development. That theoretical approach was based on the concept, which became a stereotype, that cooperatives constitute a separate sector of the economy, which coexists with the state sector and the private one, which is characterized by capitalist principles.[15] In that way, in 1976 the Constitution of the Portuguese Republic, which was a pioneer from many points of view, established a cooperative sector on equal footing with the public and private sectors, on the basis of ownership of the means of production.[16]

It is notable that this concrete political concept was not institutionalized by socialist states. The Soviet Union, in Article 10 of its 1978 Constitution, defined the property of cooperative organizations as one of the socialist means of production, which constituted the basis of the national economic system. However, it omitted the recognition of individual property, which had been authorized in the 1936 Constitution, as already signalled.

[12] A. Fici, Chapter 22 Italy, in *International Handbook of Cooperative Law*, ed. D. Cracogna, A. Fici, H. Henry, Springer, 2013, pp. 479ff.

[13] Ibid.

[14] Ibid.

[15] C. Meleti, Cooperative Economy, pp. 1ff.

[16] R. Namorado, Chapter 29 Portugal, in *International Handbook of Cooperative Law*, ed. D. Cracogna, A. Fici, H. Henry, Springer, 2013, pp. 635ff.

In a parallel way, in Article 5 the 1978 Chinese Constitution stated that in the current stage there were mainly two forms of property in the People's Republic of China, namely the socialist property of all people and the socialist collective property of working people. In spite of the fact that in Article 45 it explicitly recognizes the freedom of association, it assigns a particularly marginal place for cooperatives. Article 50 states that the State gradually expands the cooperative medical services, and other services.

In the legal order of Peru, according to article 29 of the 1979 Constitution, which replaced the 1933 Constitution, "Enterprises are obliged to contribute to the maintenance of centers of education. The law sets the limits of this precept. The schools that operate in the industrial, agricultural or mining centers are supported by the respective owners or enterprises." Article 30 states that: "The State recognizes, helps and supervises the private, cooperative, communal and municipal education that will be non-profit." Although the specific phenomenon of cooperatives being engaged in the educational sector is explicitly recognized, the educational mission of each cooperative with regard to its cooperators, administrators and employees is not recognized in the Constitution, at least not directly, as would be normal, particularly on the basis of the 1966 International Cooperative Principle "Cooperative Education", which is one of the traditional and diachronic principles. Cooperatives were recognized in Article 112 as companies within a pluralist economic system, whilst "the free development of the cooperative movement and the autonomy of cooperative companies" was encouraged and protected in Article 116.[17] Under the influence of that Constitution which emphasized cooperatives, the second cooperative law was adopted, called "New General Cooperative Law".

In addition, the 1952 Constitution of the Kingdom of Greece was the first constitution to make a reference to cooperatives and positivized the compulsory ones. This legal curiosum had been enacted by laws about two decades earlier, for instance in the matter of the agricultural co-ops dedicated to the famous "Moschato" wine of Samos. It was regarded as a mainstreaming tool for economic development, at least for certain regions (such as the newly acquired territories, which were incorporated into the national territory just in 1912 or 1913) and for certain kinds of cooperatives (agricultural cooperatives, forest cooperatives).

Article 11 of the Greek Constitution, explicitly guaranteeing the right of Greeks to association, makes a reference to "cooperatives" without meaning the (commercial) form of a cooperative society, at least in a specialized way. This expression covers in a vague way various unions of persons, including syndicates. In a parallel way, there is an ad hoc provision on cooperatives (in the common sense of Commercial Law institutions), outside the Bill of Rights. In the unity of articles entitled "General dispositions'', Article 109 cites that cooperatives, agricultural or

[17] C. Torres Morales, Chapter 27 Peru, pp. 585ff.

civil, are under the protection of the State, which systematically takes care of their development. The constituent power institutionalized compulsory cooperatives in a rather shy way, namely through the rare and avoidable technique of interpretative declaration. More precisely, according to the interpretative declaration under this article, "The establishment of a forced cooperative by law is not contrary, as such, to the Constitution."

Compulsory cooperatives survived and "reigned" even after the definite abolition of the monarchical form of the State, in the 1975 Constitution of the Hellenic Republic. The new fundamental law "promoted" them in a section of Article 12, which institutionalizes cooperatives in general. Anyway, the fact that this type of association was regulated in a rather detailed way, especially in the framework of the general right to association and no more outside the Bill of Rights, constitutes a successful practice.

The European Court of Human Rights ruled against Greece, in its judgment of 3 December 2015 (Case *Mytilinaios and Kostakis vs. Greece*) for having violated Article 11 of the European Convention on Human Rights which guarantees the right to association, including the right to form trade unions (like the cooperatives). This first and unique ruling against this country on this matter has not led to a full disappearance of this phenomenon. It is true that this mechanism has been alleviated in the Greek legal order through various measures (constitutional guarantee of equal treatment of cooperators, legislative recognition of the right of cooperatives to be transformed into free cooperatives). However, it continues to constitute an unfree form of association, which is contrary to Article 11 of the European Convention on Human Rights. As a result, it compromises the prestige of Greece, for instance in the matter of the exportable wine of Samos. That heroic island, which was ultimately left out of the modern State of Greece for almost a century despite its active and very important participation in the Greek Revolution, has been subject, for almost a century and to date, to one of the most repressive and obsolete restrictions of human rights. It is famous for its wine worldwide, but it is also the historical victim of Greek Cooperative Law…

The Post-Cold War Era of Constitutional Recognition of Cooperatives: From 1989 to Date

The recognition of cooperatives in constitutions has yet to be realized in many countries, independently of their traditions in these societies. For instance, in the Chilean Political Constitution there is no express reference to cooperatives as forms of economic organization worthy of promotion by the State.[18] Furthermore,

[18] J. Alcalde Silva, Chapter 13 Chile, in *International Handbook of Cooperative Law,* ed. D. Cracogna, A. Fici, H. Henry, Springer, 2013, pp. 317ff.

it is regrettable that there is no provision on cooperatives in the French Constitution and it cannot be claimed that the Constitutional Council could interpret such a principle from the Constitution.[19]

In a comparable way, a special feature of cooperatives in Denmark is that there is no *ad hoc* law, whilst the freedom of foundation of those unions results from the Constitution. In spite of the fact that this country has no specific cooperative law, it is endowed with one of the most developed cooperative movements in the world.[20]

The aforementioned 1979 Constitution of Peru was replaced by another, in 1993, which through the 2009 amendment is still in force. The new fundamental law has omitted the enterprise's obligation to maintain educational centres and it guarantees, in Article 15, the right of any person or corporate entity to promote and operate educational institutions and to transfer the ownership of such institutions, in accordance with law. Furthermore, cooperative education has been subsumed under the general concept of private education, whilst its support by the State is no less emphatical; Article 17 states that: "In order to ensure the greatest number of educational offerings and to help those who cannot afford their own education, the law sets forth the method of subsidizing private education in any of its forms, including communal and cooperative education."

It is also notable that this Constitution omitted any other—at least explicit—reference to cooperatives. This marginalization ties in with the abolition of the compulsory maintenance of educational services by companies and is quite indicative of the ideological tendency of the constituent power. Classical liberalism has been recycled in the specific form of neoliberalism, as follows: in the Peruvian Constitutional History, there were 13 constitutions of liberal ideologies—1823, 1828, 1834, 1856, 1865 and 1867, of conservative ideologies—1826, 1836, 1839 and 1860, of social ideologies—1920, 1933 and 1979, and the current neoliberal Constitution.[21]

Anyway, cooperative law is shaped inter alia by the very common figure of the constitutional judge. For example, in Indonesia in 2014 Law no. 17 of 2012 concerning cooperatives in lieu of Law no. 25 of 1992 was cancelled by the Constitutional Court.[22] The newer law was declared to be contrary to the 1945 Constitution and so a vacuum of norms resulted as far as the regulation of sharia cooperatives

[19] D. Hiez, Chapter 17 France, in *International Handbook of Cooperative Law*, ed. D. Cracogna, A. Fici, H. Henry, Springer, 2013, pp. 393ff.

[20] Ch. Kamenidis, *Cooperatives. Principles, Economic-Political Development, Organization, Law*, 3rd edn., Kyriakidis Editions, 2016 (in Greek), p. 243.

[21] R. Rojas Alvarez, Evolución constitucional peruana: de la Carta de 1979 a la Carta de 1993. Análisis crítico, perspectivas y debate sobre la actual reforma constitucional, *Derecho y Humanidades*, 2018, no. 14, pp. 90ff.

[22] A. Iktamalah, H. Muhaimin, Reconstruction of the arrangement of sharia cooperatives in the national legal systems, *International Journal of Humanities, Religion and Social Science*, 2018, vol. 2(11), pp. 44ff.

is concerned, because in law Number 25 of 1992, which was declared valid for a while until the establishment of a new law, there is no regulation or explanation at all about this societal type.[23]

A Case Study: The Constitution of India on Cooperatives

In India, cooperatives, which were essentially formed to help people overcome their financial problems, were infected due to various reasons, such as postponement of elections for an indefinite period and conflict of personal interests.[24] As they enact an important role in the socio-economic development, in order to address the problem Parliament introduced a revision to the Constitution,[25] notified on 13 January 2012. The amendment was held through the adoption of the Constitution (Ninety-seventh Amendment Act) of 2011. It was made "to provide a conducive environment, strong legal framework, and protection to cooperative societies, for their growth and to insulate them from unnecessarily political and bureaucratical interference".[26]

It enshrines in Article 19(1)c the right to form cooperative societies. Furthermore, an original Part IXB was inserted, which contains provisions relating, for example, to the incorporation, board structure, election of members and board directors, application of this part among others in order to bring about uniformity in the process of election of its members and board of directors and therefore solve the problems faced by them in respect of such issues.[27] Thus, the cooperative movement of India is strongly supported by the Constitution.[28]

Nevertheless, there is a sceptical group of cooperative members, according to whom the various changes or modifications effected in cooperative legislation (provision in the Companies Act, 97th Constitutional Amendment, etc.) portend the tendency of the Government of India towards Liberalization, Privatization, Globalization (LPG) and its hidden agenda to make cooperatives as a PPP (Public-Private Partnership), paving the way for the Multinational Companies (MNC) to have the final say in matters of economic importance.[29]

[23] Ibid.

[24] A. Aggarwal, *Understanding Cooperatives: Constitution (97th Amendment) Act*, 2011, Lexquest Foundation, 18 April 2018.

[25] S. Raje, Cooperative Societies and Constitution, *Law Times Journal*, 28 December 2018.

[26] G. Veerakumaran, Chapter 20 India, in *International Handbook of Cooperative Law*, ed. D. Cracogna, A. Fici, H. Henry, Springer, 2013, pp. 449ff.

[27] A. Aggarwal, *Understanding Cooperatives*.

[28] G. Veerakumaran, Chapter 20 India, pp. 449ff.

[29] Ibid.

In reality, the Constitution contains a unique sample of provisions on cooperatives, given that it has acquired not only a general provision, as would be normal for a constitution, but an entire specific "law" within the fundamental law of the federal State. Part IXB includes 13 articles (No. 243ZH to 243ZT) and its form, from a technical point of view, resembles the form of a formal law, as it is the case of Article No. 243ZH including the definitions of various terms. Furthermore, it is odd that the right to form cooperative societies was added in the Bill of Rights along with the already existent provision of the right to form associations or unions, without clarifying the concept of associations. It is also notable that Article 19 is extremely problematic as it comprises various authentic and autonomous rights, which could each be enshrined in a separate article.

An Introduction to the Right to Energy

From about 2002 onwards, the energy law leads a period of revolution.[30] From 1960s this specific but not also autonomous branch has been characterized by a double set of principles: on the one hand, monopoly as far as electricity is concerned, and, on the other hand, competition, as far as petroleum is concerned. The EU authorities obliged the Member States to introduce competition in a field in which competition seemed impossible to think about. Besides, international organizations and states wanted to consecrate mainly the rights to development and to the environment.[31] As a matter of fact, energy was introduced as a public development policy, as it was the case of para. 1 of Article 106 of the Greek Constitution, adopted in 1975.[32]

The constitutional reference to energy was a parallel tendency to the opening of international law to this phenomenon. For instance, para. 2h of Article 14 of the 1979 Convention on the Elimination of All Forms of Discrimination against Women guarantees rural women's right to enjoyment of adequate living conditions, particularly in relation not only to water supply but also to electricity, as a form of energy a necessary for domestic needs. Nevertheless, it should be stressed that this field of law proved to be particularly poor in terms of general explicit recognition of the right of all people (and not only of a social group, such as rural women) to the vital good of energy.

In any case, the guarantee of energy is a 3G fundamental right, consisting mainly in the enjoyment of energy, although explicit use of the term "right", let alone of the full expression "right to energy", has been systematically avoided, so

[30] J. Meilhaud, *Guide juridique des énergies*, Éditions TECHNIP, 2011.

[31] A. Maniatis, A constitutional approach to the rights to water and energy, *International Journal of Law and Political Sciences*, 2018, vol. 12(10), pp. 1472.

[32] Ibid.

far. The following pyramid-shaped arrangement of the content of this right has been proposed.[33]

The right to energy as a life choice—There are social groups, such as the Amish, who choose not to use electricity.

Universal service of energy supply—At this level there are some legal elements that allow energy to be enjoyed wherever the person has decided to live. The issue here is the universal character of the service which consists in providing energy to the applicants who can pay an appropriate price.

Providing energy to needy people—This level is marked by political-legal initiatives, such as the energy voucher technique, which tend to guarantee the provision of a service to those who cannot bear the corresponding costs.

Choice in favour of the environment—The holder of the right to energy has the freedom to choose between renewable sources and conventional ones. It is also notable that the energy discipline is not uniform and that there are particularly obvious differences depending on whether electricity, natural gas, oil, etc. are being referred to. For example, the universal service obligation is explicitly provided for in the electricity sector, but not in the natural gas domain.[34]

In the current era of 4G fundamental rights, which began in 1992, new rights of the precedent period have gained ground, not to mention the fact that the original guarantees have also emerged for the first time. In this dynamic context, not only has the right to energy been reinforced, but it has also been completed by a newer and more specific guarantee. The issue here is the right to energy efficiency, which is emblematic for the issue of buildings. Furthermore, the relevant set of EU directives puts the stress on the energy efficiency of public buildings.

More precisely, on the basis of the current EU legislation on energy efficiency, there are a lot of specific rights in the framework of the general fundamental right to energy, among other things[35]:

1. The right to the production of energy.
2. The right to energy efficiency.
3. The end users' right to the indication of the consumption of energy and other resources by energy-related products.

[33] A. Parente, *Principios de derecho europeo de la energía*, Aranzadi Thomson Reuters, noviembre 2010, pp. 296–297.

[34] Ibid., p. 297.

[35] A. Maniatis, A constitutional approach, p. 1473.

4. The right—duty of the companies acting in the energy domain to contribute to energy saving in the end use.
5. The right—duty of the companies acting in the energy sector and of the owners of building units to individual meters of energy consumption.
6. The final customers' right to billing of energy consumption on the basis of actual consumption.
7. The owners' right to autonomous heating of each building unit.
8. The universal right to clean energy, in the form either of renewable energy resources, as it is the case of "prosumers", or of cogeneration (combined heat and power, CHP).

It is necessary to emphasize that the right to energy communities constitutes one of the most recent guarantees, as energy communities have been institutionalized as "renewable energy communities" in Article 22 of Directive (EU) 2018/2021 on the promotion of the use of energy from renewable sources (recast), and as "citizen energy communities" in Article 16 of Directive (EU) 2019/944 on common rules for the internal market for electricity. This pioneering right is a modern specific version of the constitutional right to association, whilst energy communities are likely to be institutionalized as cooperatives.

Conclusion

The present analysis has arrived at the following conclusions:

The emergence of cooperatives as an informal institution by private individuals—Cooperatives stem from the classical right to association, which is an authentic civil right that emerged in the initial period of constitutionalism. Nevertheless, they were institutionalized in a rather informal way in the nineteenth century, with no ad hoc law, let alone any specific constitutional provisions.

The constitutional recognition of cooperatives based on compulsory participation—Although the principle of "free and voluntary participation" constitutes the first International Cooperative Principle of each conference of the International Cooperative Alliance (1937, 1966, 1995), compulsory participation was not banned in the constitutions of socialist countries, in which liberalism was not sufficiently recognized. In a parallel way, in the Greek Constitutions compulsory cooperatives gained explicit recognition and paradoxically they have managed to exist to date.

The RQ of the current research has been confirmed, as the constitutional recognition of cooperatives has proved to be conducive to further acquaintance with this institution and offers it enhanced prestige, not to mention the influence of such a development on the wider set of constitutional guarantees, especially the

right to association. As the incorporation of cooperatives is based on this classical freedom, it is obvious that it constitutes a legal barrier to the oppressive practices of State paternalism, such as forced cooperatives. Of course, some countries with important traditions in cooperatives have no constitutional provisions on the matter, as is inter alia the case of the UK (which does not have a written constitution) and of France. However, this case could not be held as a successful example to imitate, given that national economies have been based more or less in written law of mass application, exemplified inter alia by the formal Constitution, the Civil Code and the Commerce Code. The International Cooperative Principles have paved the way for a relatively uniform legal approach to cooperatives, which is useful inter alia when it comes to the introduction or the amendment of constitutional rules on the matter. Anyway, cooperatives continue to be a social economy alternative to societal types being based on capital, in spite of their problems.

The correlation between the right to energy and the right to association—The doctrine has admitted the existence of a 3G right to energy whilst a lot of 4G special rights to energy have also been recognized, such as the right to energy communities on the basis of the classical rights to association. It is necessary to point out that the enhancement of energy law could be supported inter alia through explicit recognition of the generic right to energy in constitutions, preferably by highlighting the mixed concept of the environment, including not only material goods but also energy. Furthermore, it is highly recommended that constitutional amendments be used in order to explicitly recognize the so-called "rights to the Sun", illustrated by the right to solar energy as well as the right to combatting climate change (CCC). In other words, not only does the energy cooperative deserve recognition in cooperative law but it also affects constitutional law, due to the dramatic and urgent character of the current climate crisis, in combination with the fact that new technologies have promoted renewable energies so that they have become an important component of the national energy mix.

Chapter 6

THE ROLE OF ENERGY COOPERATIVES IN THE GERMAN ENERGY TRANSITION

Andreas Wieg

Introduction

The German Bundestag set new climate targets in June 2021.[1] Germany wants to reduce its greenhouse gas emissions by 65% by 2030 and become carbon neutral by 2045.[2] The increased targets followed a ground-breaking decision by the Constitutional Court earlier this year.[3] It ruled that the government's climate legislation is insufficient because, among other things, there is no detailed plan beyond 2030. Together with the target adjustment, the government has introduced new legislation and programmes, such as the Climate Action Law and the Climate Action Programme 2030.[4] However, a recent government report shows a significant gap between the estimated emission reductions and the targets over the next 20 years.[5]

One of the cornerstones for closing this gap is the energy sector. The current CO_2 emission of 280 m tonnes in this sector has to be reduced down to 108 m tonnes CO_2 by 2030. Besides issues like energy efficiency activities, investments in transmission lines or new storage technology, the main task is a faster roll-out of renewable energy plants. In this respect, the recent amendment of the German

[1] The following, especially the statistical data, has the status of November 2021.

[2] Bundesministerium für Wirtschaft und Energie, *Deutsche Klimaschutzpolitik*, https://www.bmwi.de/Redaktion/DE/Artikel/Industrie/klimaschutz-deutsche-klimaschutzpolitik.html [accessed 1.06.2023].

[3] Bundesverfassungsgericht, *Verfassungsbeschwerden gegen das Klimaschutzgesetz teilweise erfolgreich*, press release No. 31/2021, https://www.bundesverfassungsgericht.de/SharedDocs/Pressemitteilungen/DE/2021/bvg21-031.html [accessed 1.06.2023].

[4] Bundesministerium für Wirtschaft und Energie, *Deutsche Klimaschutzpolitik*, https://www.bmwi.de/Redaktion/DE/Artikel/Industrie/klimaschutz-deutsche-klimaschutzpolitik.html; Bundesministerium für Wirtschaft und Energie, Klimaschutzprogramm, https://www.bmwi.de/Redaktion/DE/Artikel/Industrie/klimaschutzprogramm-2030.html [accessed 1.06.2023].

[5] Öko-Institut et al., *Projektionsbericht 2021 für Deutschland*, https://www.oeko.de/fileadmin/oekodoc/projektionsbericht_2021_bf.pdf [accessed 1.06.2023].

Renewable Energy Sources Act (EEG) contains higher tender amounts for rooftop and ground-mounted solar energy in 2022.[6]

Speeding up the energy transition is also linked with other challenges. One of these is the opposition of residents to renewable energy plants in their neighbourhoods, especially to wind turbines. The vast majority of German inhabitants favour the *Energiewende*,[7] but if asked directly, many of them would say, "Not in my backyard" (NIMBY).[8] Because of this NIMBY problem it is essential to involve citizens directly in the energy transition. Community energy projects run by renewable energy cooperatives give every citizen the opportunity for ownership. In this respect, energy cooperatives organized by citizens, farmers and enterprises play an essential role in winning local acceptance for the energy transition.

This chapter will explain the importance of citizen participation and how energy cooperatives can create a solution to NIMBYism. The next section contains data about the development of energy cooperatives in Germany, followed by some practical examples. The final section summarizes the main results.

The Boost of Energy Cooperatives during the 2010s

Energy cooperatives are not a new phenomenon. Like in other countries,[9] rural electric cooperatives were founded in the early twentieth century in Germany. Companies ran power stations and grids for cities but often ignored rural areas at that time. However, especially farmers in rural areas needed electrification on site. Therefore, many cooperatives were set up to meet this need. One example is the Albwerk[10] energy cooperative based in Southwestern Germany. It was founded in 1910 and has served as a grid operator and energy supplier until today. Surprisingly, 100 years after the electrification of rural areas, a new wave of energy

[6] Bundesregierung, *Weniger CO2-Emissionen bei der Energieerzeugung*, https://www.bundesregierung.de/breg-de/themen/klimaschutz/emissionsarme-energie-1794770#:~:text=Bis%202030%20soll%20die%20Energiewirtschaft%20ihren%20CO2%20-Aussto%C3%9F,Ausbau%20erneuerbarer%20Energietr%C3%A4ger%20und%20die%20Verbesserung%20der%20Energieeffizienz [accessed 1.06.2023].

[7] Energy transition in German.

[8] In general, 86% of the Germans support the growth of renewables but only 62% (solar energy) and 47% (wind energy) in its own "backyard". Agentur für Erneuerbare Energien, *Zustimmung für den Ausbau der Erneuerbaren Energien bleibt hoch*, https://www.unendlich-viel-energie.de/themen/akzeptanz-erneuerbarer/akzeptanz-umfrage/zustimmung-fuer-den-ausbau-der-erneuerbaren-energien-bleibt-hoch [accessed 1.06.2023].

[9] See for instance the development of rural electric cooperatives in the U.S. They have been set up since the 1930s. Today, the National Rural Electric Cooperative Association (NRECA) represents more than 900 consumer-owned, not-for-profit electric cooperatives, public power districts, and public utility districts in the United States. NRECA, *History—The story behind America's electric cooperatives and NRECA*, https://www.electric.coop/our-organization/history [accessed 1.06.2023].

[10] https://www.albwerk.de/home/ [accessed 1.06.2023].

cooperatives rose again. This time, however, it was related to the energy transition in Germany.

In the last 15 years, hundreds of thousands of people have joined numerous citizens' groups, local councils and regional businesses to establish joint renewable energy projects. The number of renewable energy cooperatives has increased enormously in this period.[11] Around 900 energy cooperatives have been set up. This increase started around 2006 and reached its peak with 167 foundations in 2011. The number of new energy cooperatives subsequently decreased, but there are still new energy cooperatives founded every year. For example, 13 cooperatives were registered in 2020.

The main reason behind this community energy development was the Renewable Energy Sources Act (EEG). More precisely, the feed-in tariff scheme and priority access to the grid for renewables facilitated the community energy boom. The law allowed all citizens to invest in their own renewable energy plant. The grid owner became obliged to purchase electricity from the owners of solar panels or wind turbines. Private investors received a fixed price over 20 years—guaranteed by the government—which made the investment easy and safe. As a consequence, 40% of the total investments in green energy were made by citizens, while 11% by the big energy utilities.[12] That is why the owners—the citizens—care as much about the roll-out of renewables as they do about their energy bill.

However, the legal framework for renewables has changed in recent years into a tender system which reduced the opportunities for energy cooperatives and other small community energy projects. In the new system, a small cooperative with one or two wind turbines cannot compete with a more prominent company that has several wind energy projects in different locations. Small cooperatives cannot spread the risks and, therefore, they have to set a higher price in the tender. The 2021 report by the German Cooperative and Raiffeisen Confederation (DGRV) underlines this problem. It points out that a third of energy cooperatives in Germany does not have new projects planned for this year. Last year, 54% of the co-ops planned solar projects, but this rate fell to 38% this year. This rate has gradually declined since 2017, when 72% of energy coops had project development plans.[13]

[11] The following numbers were taken from the State of the Sector Report by DGRV—Deutscher Genossenschafts- und Raiffeisenverband e. V., *Energy Cooperatives in Germany—State of the Sector 2021 Report*, https://www.dgrv.de/wp-content/uploads/2021/06/20210623_ENG_DGRV_Umfrage_Energiegenossenschaften_2021.pdf [accessed 1.06.2023].

[12] The category "citizens", which also includes farmers, has been decreasing over time. Agentur für Erneuerbare Energien, *Neue Studie zeigt: Bürgerenergie bleibt zentrale Säule der Energiewende*, https://www.unendlich-viel-energie.de/studie-buergerenergie-bleibt-zentrale-saeule-der-energiewende [accessed 1.06.2023].

[13] DGRV—Deutscher Genossenschafts- und Raiffeisenverband e. V., *DGRV-Jahresumfrage Energiegenossenschaften—Ein Drittel plant keine neuen Projekte mehr*, press release, 1 July 2021, https://www.dgrv.de/news/dgrv-jahresumfrage-energiegenossenschaften/ [accessed 1.06.2023].

Nevertheless, energy cooperatives are still a relevant driver for the energy transition. Around 200,000 members across Germany hold energy co-op shares and each energy cooperative has around 300 members; 95% of the members are private citizens and most of them participate with small amounts of money. On average, an individual member invests EUR5,146 but, in most cases, the minimum financial participation is much lower. The minimum participation is less than EUR100 in 24% of the cooperatives and less than EUR500 in 78% of them.[14] This means that there is no financial barrier to becoming a member. Instead, cooperatives are open to new members and everybody in the region can participate with small shares. The numbers also show that membership in an energy cooperative is not like a green financial investment: Dividends do not play an important role. Energy cooperatives are more about joining a common initiative which requires a financial basis.

Most of the energy cooperatives run solar energy plants (80%), followed by wind turbines (30%), biomass and biogas plants (19%). Many cooperatives sell electricity to their members (36%) or provide heat through a district heating network. Other services provided by energy cooperatives include e-mobility (17%), energy consulting (17%) and energy efficiency activities (15%).[15]

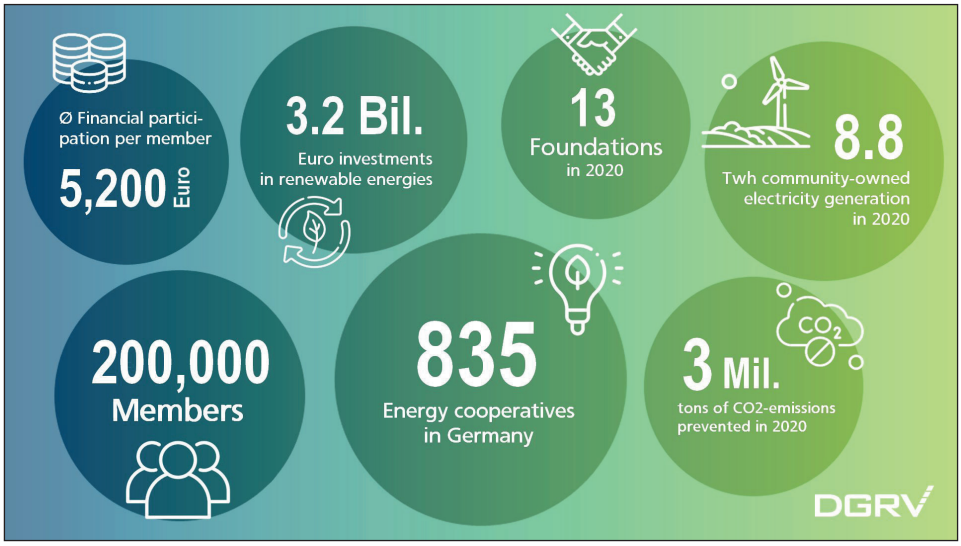

Fig. 6.1 Total figures for energy cooperatives in Germany 2020

[14] DGRV—Deutscher Genossenschafts- und Raiffeisenverband e. V., *Energy Cooperatives in Germany—State of the Sector 2021 Report*, https://www.dgrv.de/wp-content/uploads/2021/06/20210623_ENG_DGRV_Umfrage_Energiegenossenschaften_2021.pdf [accessed 1.06.2023].

[15] DGRV—Deutscher Genossenschafts- und Raiffeisenverband e. V., *Energy Cooperatives in Germany—State of the Sector 2021 Report*, https://www.dgrv.de/wp-content/uploads/2021/06/20210623_ENG_DGRV_Umfrage_Energiegenossenschaften_2021.pdf [accessed 1.06.2023].

In total, energy cooperatives have been investing EUR3.2 billion in green energy. They generated 8.8-terawatt community-owned electricity, which is 3.5% of Germany's total renewable electricity generation in 2020. This is equivalent to the annual electricity requirements of 2.7 million households, meaning that renewable energy cooperatives already produce 13 times more than the electricity demand of their members' households. This is a significant contribution to reaching the climate goals. Around 3 million tons of CO_2 emissions were prevented in 2020 thanks to energy cooperatives.

In the following section, three typical cases of renewable energy cooperatives will be presented. Their stories tell us how to create added value with renewables in the region, achieve acceptance for renewables, and develop a renewable energy system at lower costs.

Examples of Energy Cooperatives

Driver for Rural Development: The Odenwald Energy Cooperative

"Shaping the future together" is the mission statement of the Odenwald energy cooperative.[16] The cooperative is based in a rural area 70 kilometres south of Frankfurt and was founded in 2009. Unlike most other energy cooperatives, it unites citizens from several municipalities. "We didn't want to set up a small energy cooperative in every locality, so we joined forces with several towns and communities to create a joint umbrella organization for the region," explains Christian Breunig, CEO of the cooperative. Such an organization allows more and larger projects to be implemented. The impetus for the cooperative foundation came from Volksbank Odenwald, one of around 800 regional cooperative banks in Germany. It contributed its expertise right from the start. Employees of the bank transferred to the energy cooperative and took over management positions. This ensured from the outset that experts who were familiar with the cooperative philosophy were at work. Christian Breunig is one of those involved in the process.

However, the cooperative is a platform for citizens to invest together, for example, in solar panels. Citizens are keen to participate in the energy transition with their own money and support the added value in the region. Cooperatives enable many citizens to make a modest financial contribution to developing renewable energies in their local area. Solar energy plants are often launched jointly by communities, public institutions, local service companies and regional banks. Cooperatives facilitate the collective commitment of various local players and bring together broader social, business, municipal and environmental interests.

[16] https://eg-odenwald.de/ [accessed 1.06.2023].

Mostly these plants are installed and maintained by craftsmen based in the region. Thus, the regional added value is strengthened, increasing public acceptance even more.

The Odenwald energy cooperative is an exemplary case of such multiple benefits. They started with two solar plants on a beer hall and a village inn. Today, the cooperative operates 86 solar plants and it holds nine stakes in wind turbines. The total installed capacity is 11 MWp. Among them is a 1.1 MWp ground-mounted solar power plant on the site of a former landfill. In addition, the energy cooperative also serves as a regional competence centre. It provides advice on various issues including energy efficiency. "If the owner of a house built in the 1960s is considering replacing the windows or investing in thermal insulation, we provide them with impulse advice," says Breunig. Building renovation and reducing energy consumption are critical for the energy transition. Finally, the cooperative operates electric charging stations and supplies its members with electricity.

The second business area of the cooperative is regional infrastructure. Like solar energy projects, joint investments are made in infrastructure projects. The cooperative's office is one of these projects. The former building of the local brewery was purchased and renovated to make it more energy-efficient. Today, the "House of Energy" provides 4,000 square meters of office space for the region. Various service providers as well as public institutions related to living and environmental protection, such as the building inspectorate or the nature conservation authority, are located in the building. It is also a meeting place for the citizens. Larger premises can be rented for professional or private celebrations and the cooperative organizes events such as public viewing or concerts. Thus, the "House of Energy" is a social and community meeting place in the region. In addition to investing in buildings, the cooperative also designs and builds kindergartens on behalf of the surrounding communities.

The cooperative has approximately 3,000 members, and they have subscribed to EUR13 million of shares. Since 2009, the cooperative has invested EUR50 million in regional projects. The cooperative pays close attention to the local economy when implementing the projects. For example, all service or financing partners come from the region. To date, nearly 3,500 contracts have been awarded to 300 regional companies. Every member can see that their own money is being invested in the region. This communal benefit not only builds trust but also increases acceptance of renewable energy. Moreover, trust and acceptance are promoted further by the fact that membership is possible for as little as EUR100. Therefore, everybody can join the initiative. "People understand that we are creating something together for ourselves", says Breunig.

Fostering Acceptance—The Starkenburg Energy Cooperative

Wind power is unpopular with residents in many regions. In 2010, a group of citizens in southern Hesse founded a cooperative in the city of Heppenheim with the aim of solving a local NIMBY problem. "If you've got to look at it, you might as well get the benefit," says Micha Jost, board chairman of the Starkenburg energy cooperative.[17] Jost had long been committed to the idea of using a cooperative to build more than just photovoltaic facilities in his local area. He had in mind that a cooperative would work in the case of wind turbines too. The first cooperatively owned wind turbine was a chance affair: financing was still needed for a wind farm which had already been approved near Seeheim-Jugenheim, but there was resistance from the inhabitants on-site.

Two wind turbines had been planned for the hill "Neutscher Höhe" for some time. "Public opinion in the direct vicinity was clearly against the project and the local newspapers were very lukewarm", says Jost. "At the beginning, we had our heads to the wind, so to speak." But as soon as the residents of the neighbouring communities—Seeheim-Jugenheim, Modautal and Mühltal—got the opportunity to invest in the wind farm via the cooperative, acceptance for the windmill project WindSTARK 1 began to increase: 230 residents from the region have invested in the wind turbine. Almost half of them are people who live in its direct vicinity.

The cooperative regards itself as a politically neutral body of individuals and its aim is to promote the generation of renewable energy in the Starkenburg region. "In the first place, we're keen to involve the people who live close to the project sites," continues Jost. The initiative particularly wanted to target those residents who either did not own their own property or had no funds to install a system of their own. The idea was to reach as many people as possible in many different villages. "We were extremely surprised by the willingness of people to invest in the new cooperative," reveals Jost.

The amount of effort required by a wind energy project cannot be compared with that of a photovoltaic system. Complicated planning legislation, lengthy approval procedures, technical and legal expertise, the need for extensive maintenance and repairs, as well as the necessary insurances and operations management make wind power far more challenging than all other renewable energy sources. A cooperative generally is not able to manage this from a standing start. That is why the Starkenburg energy cooperative called on the services of an experienced project developer from Heppenheim.

[17] https://www.energiestark.de [accessed 1.06.2023], see also A. Wieg, *Stark am Wind—Regionale Bürgergenossenschaft für Windkraftanlagen*, BankInformation, October 2011, pp. 78f.

However, despite the citizen involvement, it was not all plain sailing for WindSTARK 1. But after the final clarification by the Darmstadt Administrative Court, the work could go ahead. On 30 July 2011, an opening ceremony was held on the Neutscher Höhe for the wind turbine. Every year the turbine generates some 5 million kilowatt hours of electricity. Statistically speaking this is enough to supply 1,250 households with their annual electricity needs. The facility saves some 2,800 tonnes of CO_2 per annum. The funding volume for WindSTARK1 in the region amounted to EUR3.5 million. By contrast, Jost describes the cooperative's photovoltaic systems as a "warm-up".

The first solar project SolarSTARK 1 was installed on the roof of a factory in Heppenheim, with a peak capacity of 140 kilowatts. The SolarSTARK 2 project, with a peak capacity of 19.5 kilowatts, has been fitted on the community hall in Ober-Laudenbach. In accordance with the Starkenburg approach, the investment opportunity was initially offered to the residents of Heppenheim and Ober-Laudenbach. New members have to purchase at least two shares at EUR100.

Today, the field of activity of the Starkenburg energy cooperative basically includes all forms of renewable energy generation and other services like energy efficiency or energy saving. Thirty-four cooperative solar projects with a total of 4,186 kWp of plant capacity have been completed. All solar plants were financed as citizen projects with 100% equity. Starkenburg has implemented or is involved in seven wind energy projects with a capacity of 7.9 megawatts. The cooperative also runs a biogas plant together with local farmers, a heating system at the city hall of the community Wald-Michelbach, and five charging stations for e-cars.

Another aspect of the cooperative's philosophy is the conservative nature of its calculations. Jost says, "We would rather guarantee people a little less than disappoint them later—if the return on investment doesn't turn out to be as high. Since we all live in the area, that's really the only option anyway." The cooperative is not the place to make a fast buck. It is a long-term and sustainable investment in climate protection.

Sustainable Heat at Reasonable Cost: The Lieberhausen Energy Cooperative

Autumn 1997: In Lieberhausen, a satellite of Gummersbach in the Rhineland, the board of the village association was holding a meeting. The community was planning to update its sewage system. The discussion centred on whether the opportunity could also be used to install a new heating system based on renewable sources. But how do you get from a freshly dug ditch to an energy supply for the entire village? Where do you start with such a project?

"The first step was to approach our regional utility", recalls Bernd Rosenbauer, chairman of the Lieberhausen energy cooperative.[18] "We asked how much the construction of an environmentally friendly heating system would cost each resident. When we heard the price, we dismissed the idea immediately." Each household connection would cost approximately EUR12,000. Another way had to be found if the original vision was not to simply disappear. So it was important to get the residents of the community of Lieberhausen actively involved.

A feasibility study was conducted—and the project was approved at the very next annual meeting of the village association. At least 40 households would need to take part for the system to pay off. To the surprise of the initiators, 42 households agreed to be involved, although the calculated energy price was more than the cost of their own oil heating at that time. But even then, it was obvious that the price of fossil fuels was going to continue increasing. "Our neighbours reached a very rational decision. All those involved agreed that this wasn't about a political debate, but about the common future of our village," explains Rosenbauer. These days, 85 of a total of 104 houses in Lieberhausen are connected to the local heating network.[19]

The Lieberhausen energy cooperative was founded in April 1999. It runs the heating plant and the district heating system. "After all, we wanted to get everyone actively involved. A project by residents for residents, where no-one could come from outside and tell us what to do," continues Rosenbauer. Thanks to the villagers' own initiative, they saved themselves a great deal of money during the planning, construction and operation of the plant.

The bio-heat is generated by a woodchip-fired heating plant, fed by material from local forests. The idea to change the heating source from oil to wood came from Rosenbauer, who is a full-time forester. Lieberhausen has proved that this change is possible. In the run-up, several residents were worried that the local forest would have to be felled to provide enough wood for the plant. But that is not the case: enough wood is made available from the region's forests by regular forestry maintenance.

The members bought cooperative shares to the tune of EUR90,000. The cooperative fee for each member was set at EUR1,050, and an additional network fee of EUR1,500 also had to be paid. Each house connection cost approximately EUR3,000, meaning that each household had to invest a total of EUR5,500.

[18] http://www.lieberhausen.de/unser-dorf/das-holzhackschnitzel-heizwerk/ [accessed 1.06.2023]. See also Agentur für Erneuerbare Energien, DGRV—Deutscher Genossenschafts- und Raiffeisenverband e. V., *Energiegenossenschaften—Bürger, Kommunen und lokale Wirtschaft in guter Gesellschaft*, 2nd edn., 2013.

[19] http://www.lieberhausen.de/unser-dorf/das-holzhackschnitzel-heizwerk/ [accessed 1.06.2023].

The network enables a family living in an older property to save approximately EUR1,000 a year in energy costs.

Thanks to the dedicated involvement of the Lieberhausen residents, it was possible to complete the project swiftly and affordably. They spent more than 5,000 hours assisting voluntarily in the construction of the plant and digging the ditches for the pipeline connections to the houses. Much of the plant operations and accounting are also in voluntary hands. In addition, the furnace needs to be cleaned every three months—this work is also done by the members. This keeps running costs down and strengthens the sense of community within the village.

Today, the villagers of Lieberhausen receive visits from other interested villages and interest groups. The transfer of knowledge and the preparatory planning for other villages represent additional sources of income for the cooperative. The village guesthouse and B&Bs are delighted by the influx.

Conclusion

The examples presented above show how energy cooperatives raise acceptance for renewable energy in their regions. The broad support for Germany's *Energiewende* is a result of the widespread ownership of renewable energy production. Many citizens like to get involved in energy projects, especially in their neighbourhoods. Their motivation is often not just to earn money, but also to be a part of the whole development. This possibility is not just confined to wealthy investors. That is the point where cooperatives come into play. That is to say, community energy projects and renewable energy cooperatives give every citizen the opportunity for ownership. In addition, cooperative members know that the investments made with their own money can support the local economy. Many craftsmen, small and medium-sized service companies or regional banks benefit directly from the energy cooperative's business activities.

However, the energy transition is not just a complex change in technical and economic terms. It always presupposes a behaviour change, too. A change in behaviour is proof of the cooperative concept's impact. The self-help principle of cooperatives and the benefits of ownership to each member have fostered the widespread acceptance of renewables in Germany and motivated individuals to change their behaviour. It is not just the financial benefit. People get to own a piece of the energy system and be a part of the whole project. That is why members of renewable energy cooperatives are not NIMBYs. On the contrary, they welcome the energy transition into their backyards.

In this respect, energy cooperatives organized by citizens, farmers and enterprises play an essential role in winning acceptance for the energy transition. This role will become more crucial for reaching the next level of the energy transition

in Germany. According to the new climate goals, the new German government has to set incentives for a massive expansion of renewables. However, this should not lead to a situation where only large companies get a chance. With regard to energy cooperatives, there is a need for a more ambitious expansion path for renewables, which can create more opportunities for all investors in green energy. Moreover, there is a need for a supportive scheme that enables stable investments in renewables, unless the market price is high enough to sell directly on the electricity market. This is followed by the need for high renewable tender thresholds, as cooperatives have little chance against large companies in the tendering process. It is the legislature's task to create a level playing field for all.[20]

Finally, there is a need for a regulation that enables energy communities to produce energy and share it with their members. The European Commission calls this Energy Sharing. Article 22(2b) of the EU's Renewable Energy Directive prescribes that "Member States shall ensure that renewable energy communities are entitled to share, within the renewable energy community, renewable energy that is produced by the production units owned by that renewable energy community".[21] Unfortunately, the German government has not issued any regulation on Energy Sharing to date. Given the important role of energy cooperatives and community energy in strengthening social acceptance for the energy transition, this is one of the most critical issues in the new legislative period.

[20] Fortunately, the new federal government recognizes the important role of citizen energy and implemented a new legal framework such as an exception for citizen energy companies when it comes to tenders. There is also a funding program for citizen energy to support the planning and approval phase of wind turbine construction. Bundesministerium für Wirtschaft und Klimaschutz, *A Boost to Public Acceptance for the Energy Transition—Support for Citizens' Energy to be Expanded*, https://www.bmwk.de/Redaktion/EN/Pressemitteilungen/2022/12/20221224-a-boost-to-public-acceptance-for-the-energy-transition-support-for-citizens-energy-to-be-expanded.html [accessed 1.06.2023].

[21] EU Directive (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, Official Journal of the European Union, 21 December 2018, https://eur-lex.europa.eu/legal-content/EN/TXT/PDF/?uri=CELEX:32018L2001&from=fr [accessed 1.06.2023].

Chapter 7

THE BULGARIAN COOPERATIVES— THEIR INTEGRATION AND SIGNIFICANCE TO THE PRODUCTION OF RENEWABLE ENERGY IN BULGARIA

Minko Georgiev and Boryana Ivanova

Introduction

The deepening ecological issues worldwide, the intensive reduction of non-renewable energy sources, and the strong dependence of human society and the world economy on energy have led to increased interest in the search for alternatives in the provision of energy. One of the directions on which hope is placed is the production of energy from renewable sources. It is suggested that the promotion of energy cooperatives will help directly involve society in the processes of solving the energy problem.

Cooperatives are associations of people that satisfy economic needs, but also social, cultural and other needs. The international cooperative movement is traditionally engaged with operations of a strong social and ecological nature, hence it is logical to search for opportunities to involve these organizations in solving the energy problem.

The specific path of development of the modern Bulgarian cooperatives stands out against the background of the world cooperative movement. These are newly created organizational forms, mainly registered at the beginning of Bulgaria's transition to a market economy. About 80% of them operate in the field of agriculture, which determines the concentration of research interest on them. Agricultural cooperatives are mainly production cooperatives, with only 1% of them defined as others. The rest of the Bulgarian cooperative movement is represented by several labour-production cooperatives of persons with disabilities and a small number of consumer cooperatives supporting cooperative grocery stores (according to the Central Cooperative Union, CCU).[1]

Against this background, the purpose of the present chapter is, on the basis of an analysis of the economic and legal characteristics of Bulgarian agricultural

[1] Central Cooperative Union, https://www.cks.bg/bg/dieinosti/ [accessed 1.11.2021].

cooperatives, to evaluate their potential for participation in the production of renewable energy.

The realization of the goal thus set requires the formulation of the following tasks: (1) To assess the state of the legislative base regulating the operation of the cooperative and energy sectors and the existence of prerequisites for more active involvement of cooperatives in producing renewable energy; (2) To evaluate the characteristics and state of modern Bulgarian agricultural cooperatives and the existence of internal prerequisites for the organizational form for inclusion in the renewable energy production sector; and (3) To formulate proposals for activating the participation of modern Bulgarian cooperatives in the production of renewable energy.

When completing the tasks, a legal-historical analysis of the legislation, a literature review of the characteristics of the Bulgarian cooperative system, and an empirical study using a survey method to assess the effectiveness of the functioning mechanisms of the Bulgarian agricultural cooperatives were used.

Materials and Methods

A comparative institutional analysis and an approach to analysing legislation derived from American legal realism are used in the survey. The legal historical analysis of legislation in cooperative organizations is combined with sociological methods allowing for the collection and analysis of empirical data. The proposed solutions for improving the legislative environment and framework of energy cooperatives are normative.

The empirical analysis is based on a study of agricultural cooperatives, as they represent the main part of the Bulgarian cooperative system. The information required for the study was collected through a literature review of works related to the nature and peculiarities of the cooperative form of organization and the institutional environment; and a review of the legislative basis related to the formation and functioning of the agricultural cooperatives in Bulgaria. Secondary sources of information from the National Statistical Institute (NSI) and the "Agrostatistics" department of the Main Directorate "Agriculture and Regional Policy" of the Ministry of Agriculture were used. The information on the changes to the legislation was collected through the legal information systems Eur-lex and Lex.bg.

The collection of data was based on two separate surveys: the first with the participation of 21 agricultural cooperatives in the District of Plovdiv, determined through random irreversible selection, based on the Register of the Bulgarian cooperative directory[2]; and the second with 5% of the members of one randomly selected agricultural cooperative.

[2] *Bulgarian Cooperative Directory*, Plovdiv: PH "Domino. Press", 2000 (Български кооперативен указател, ИК „Домино прес", Пловдив 2000), p. 304.

The approach allows a formal assessment of the effectiveness of regulations, informal practices, the mechanism of interaction and distribution of property rights, and the subordination of power between the members of the cooperative and the principals.

The choice of the object of research was determined by the good cooperative practices in the Plovdiv region, as well as by four innovation centres that are involved in developments for the integration of the "matter–energy" plane.

The Legislative Basis as an Element of the Institutional Environment

Oxley, cited by Dickson,[3] determines the institutional environment as a set of political, economic, social and normative conventions which determine the fundamental base of production and exchange. According to other authors, the institutional environment incorporates the systems of formal laws, regulations and procedures and informal practices, customs and norms, which expand, shape and limit the socio-economic activity and behaviour.

Institutions do not only influence the manner and efficiency of the functioning of the economic systems, but are also amenable to analysis.[4] One of the most popular definitions of the term is provided by Nord,[5] who states that the institutions are "the rules of the game". They cover the laws and norms according to which society functions, as well as the mechanisms established for the enforcement of these rules and norms.

Institutions can be formal and informal. Zenger et al.[6] define formal institutions as rules which can be easily subjected to examination through written documents, or rules defined and applied through the formal position provided by power and ownership.[7]

On the other hand, informal institutions are defined as rules based on internal understanding, which are mostly formed by the common, socially accepted model

[3] P. Dickson, Entrepreneurial orientation: The role of institutional environment and firm attributes in shaping innovation and proactiveness, Paper Presented at the Strategic Management Society Conference, 404, November 2004, 5, pp. 1–25.

[4] R. C. O. Matthews, The economics of institutions and the sources of economic growth, *Economic Journal*, 1986, vol. 96(903), pp. 903–918; O. E. Williamson, *The Mechanisms of Governance*, New York, 1996, pp. 3ff.

[5] D. C. North, Institutions, *Institutional Change and Economic Performance*, Cambridge: Cambridge University Press, 1990, pp. 4ff.

[6] T. R. Zenger, S. G. Lazzarini, L. Poppo, Informal and formal organization in new institutional economics, in *Advances in Strategic Management*, vol. 19 *The New Institutionalism in Strategic Management*, 2002, pp. 277–305.

[7] Article 110 of the Property Act equates the energy of "object". Property Act. https://lex.bg/laws/ldoc/2122102787 [accessed 8.04.2023].

of behaviour and are not accessible through written documents or enforced by a formal position. They include social norms, practices and political processes.[8] Integration itself can be described as a system of rules and actors united in a "governance structure".[9]

According to Ghecham,[10] there is a close and two-way relation between formal and informal institutions, which is historically determined. On one hand, norms and customs are the foundation on which laws and regulations base their legitimacy, and on the other hand, new laws, over a long-term period, would result in the support of the development of potential norms and customs which can govern society. Formal and informal rules are the reason for the existence of integration processes, both in terms of behaviour in organizations and in terms of the technological "matter–energy" connection.

The Influence of The Main Normative Acts on the Development of Modern Bulgarian Agricultural Cooperatives

The establishment of modern cooperatives occurred as part of the process of transitioning from one economic system to another.[11] It is related to the problem of effective management and the conditions for consolidating production factors and resources.

The start of that process for the agricultural sector was set in motion by the introduction of the Ownership and Usage of Agricultural Land Act[12] in 1991. This Act provided the tools for realization of land and structural reforms, by the initiation of a process of re-establishing private ownership over the land and the liquidation of the forms of organizing economic activities inherited from the centrally planned economy. But the path selected for the implementation of that process was full of negatives, the consequences of which can be seen even today.

[8] O. E. Williamson, *The Mechanisms of Governance*, pp. 3ff.

[9] Ibid.

[10] M. A. Ghecham, Formal and informal institutional constraints and the performance of firms in developing economies: The case of Egypt, Social Science Research Network, 2006, http://ssrn.com/id938099, 2–3, p. 24.

[11] A. Suchoń makes a historical analysis of the legislation related to cooperatives in Poland. The legacy of ideology and its role in the direction in which they will take the rules and forms of integration are noted. The Bulgarian case is similar, but the restitution of ownership of agricultural land during the transition fragmented resources and led to a different outcome in terms of the integration of cooperative forms. A. Suchon, *Legal Aspects of the Organizations and Operation of Agricultural Cooperatives in Poland* (Law Book 6), Poznań: Adam Mickiewicz University Press, 2019.

[12] Ownership and Usage of Agricultural Land Act, https://lex.bg/laws/ldoc/2132550145 [accessed 8.04.2023]. In addition to the restoration of ownership, this legal act paved the way for the liquidation of the old organizational structures—Labour Cooperative Farms (TKZS).

The main problems created by the Ownership and Usage of Agricultural Land Act can be summarized as follows: (1) The process of restoring land ownership took more than ten years, during which period the land was left with no economically active managers; (2) The new land owners did not have the required knowledge, experience or interest in the development of their own agricultural operations and their inherited lands were usually located away from their current place of residence; (3) The distribution of the property from the old organizational form, in the form of vouchers, hindered the economic realization of that property; (4) The application of the provisions of Article 72 of the Inheritance Act[13] resulted in significantly fragmented land ownership; and (5) There were free agricultural specialists with experience in the establishment and management of specific types and forms of organization who were looking for the realization of their knowledge and skills. These problems lead to significantly limited enthusiasm for initiating individual economic operations and the presence of significant amount of unused agricultural production resources.

The new Cooperatives Act was also passed in 1991,[14] which stabilized the formal institutional environment, regulating the formation and functioning of the cooperative forms of organizations and established a more favourable informal environment for including them through increasing trust.

The result of the introduction of these two main normative acts in the agricultural sector led to the intensive formation of new agricultural cooperatives, which, in their nature, to a great extent copied the characteristics of the cooperatives from the centrally planned economy period.

The Specific Features of the Current Bulgarian Cooperatives Act

The first Cooperatives Act, under the conditions of the market economy, was accepted in 1991 and was in force up to 1999, when the Cooperatives Act,[15] in force today, was passed. The current Act is evaluated by specialists as relatively good, but as with any normative act, it has many positive and negative characteristics.

The positive regulations in the Act include: (1) The emphasis on the opportunities for the cooperative to perform social and cultural activities in order to satisfy

[13] Inheritance Act, https://lex.bg/laws/ldoc/2132550145 [accessed 8.04.2023]. This legal act follows the classical model of inheritance known from Roman law. The latter is characterized by inheritance of groups of heirs by law (Article 5–12) and by will (Article 13–27), and due to the competition of rights, there are often processes of fragmentation of resources and problems with integration in organizations.

[14] Cooperatives Act, https://lex.bg/laws/ldoc/2134696966 [accessed 8.04.2023].

[15] Ibid. Special norms have been incorporated regarding the conditions for membership, management and representation in the Cooperatives, as a specific type of company.

the interests of its members, which corresponds to the latest trends in development of the world cooperative movement; (2) The opportunities for the cooperative to develop economic operations, which go beyond the limits of the economic goals of the single cooperative, which supports the self-sufficiency of the organization in a periodically unstable institutional environment; (3) The provisions in the law of some preferences as well as opportunities for state support and encouragement of cooperative operations, which reflects the public significance and specific ways of functioning of the organization; (4) Distribution of the property of the cooperative in property shares to its members with the idea to stimulate their investment activity; and (5) The regulation of land relations through rent contracts,[16] which protects the interests of the land owners and provides the opportunity to reduce the membership fee on the account of members participating only with land.

Together with the positive features, there are some omissions and norms with a contradictory or directly negative character. Such examples are: (1) The relatively good succession of the cooperative laws, existing outside of the centrally planned economy, related to the description of the main cooperative types, the operations performed by them, and the typical conditions utilized by them, is disturbed by the absence of such regulations in the new act. This has contributed to the lack of diversity in the modern Bulgarian cooperative system and the development of predominantly production cooperatives, known from the period of the centrally planned economy. The lack of such description and regulation of various types of cooperatives prevents formal institutions from being utilized for faster and more determined development of the informal cooperatives. (2) The measure determining the organization of inter-cooperative associations, such as limited liability companies with a single owner, but not as a cooperative, is restrictive and as a result, the modern Bulgarian agricultural cooperatives are left at a lower level, while the cooperation at higher level, as far as it exists, is formal. (3) There is no clear regulation of what conditions and to what extent the state will encourage and support cooperatives, which does not stimulate the development of cooperatives and the promotion of their social functions. (4) The requirement for the entire property to be distributed in ownership shares leads to the financial instability of cooperatives and contradicts to their open nature. (5) According to the regulations, a cooperative cannot be an owner of land, which puts it in an unequal position with regard to other forms of organization. Such provisions hinder the formation of common funds of cooperatives, according to their scope of operations, the stabilization of the organization structure, and the natural consolidation of land.

[16] The Law on Lease in Agriculture, https://lex.bg/laws/ldoc/2132550145 [accessed 8.04.2023], has an indirect impact on the consolidation of factors of production, through the integration of contractual processes, with the subject—land use.

The Legislative Basis and the Development of Modern Bulgarian Agricultural Cooperatives

The integration of the specific role and capabilities of the form of organization in the legal regulations of many different elements of the public and economic system of the country can significantly influence the successful development of the cooperative. A detailed review of the existing normative basis in that direction is performed by Pelov et al.,[17] through the sequential review of 21 acts, which, to varying extents, influence the cooperative form of organizations.

The review shows that in 67% of the cases, the acts do not provide an opportunity for implementing the cooperative form in the scope of operations. Particularly paradoxical is the lack of such norms in acts whose regulations incorporate essential characteristics for cooperatives, but do not provide an opportunity for conducting operations through it. A typical example of the above is the Irrigation Associations Act[18] in which, by definition, the irrigation associations have minimal differences from cooperatives.

Cooperatives are a type of organizational form which traditionally plays a significant role in the economic and social development of the regions. The significance of that role can be demonstrated by the fact that in many countries and in many scientific developments tests are performed for transferring some of the social functions of the State to cooperatives, but the role of cooperatives is not considered in the Regional Development Act.[19]

Similarly, the capabilities of cooperatives to reach the targets of the Livestock Breeding Act are not taken in consideration. In 33% of the reviewed laws, there are special regulations for cooperatives, but it does not mean that in 1/3 of the cases cooperatives have a favourable normative interpretation. A typical example of poor decision is the regulation of the Tobacco and Tobacco Products Act, which allows the production to be performed under a cooperative form rather than putting the emphasis on supply and marketing cooperatives.

The specialists[20] evaluate as rather inadequate the regulation of Article 67, para. 1, item 5 of the Wine and Alcoholic Drinks Act,[21] which places wine-growing cooperatives under State guardianship and in a relation of dependence to the large capital companies in the sector, which limits the free will and interests

[17] T. Pelov et al., *Bulgarian Cooperatives and Integration in the EU*, Topic NID, UNSS, Sofia 2002, pp. 76–102 and 345–352, p. 380 (Пелов, Т. и кол., *Българските кооперации и интеграцията в ЕС*, Тема НИД, УНСС, С., 76–102 и 345–352, 380.).

[18] Irrigation Associations Act, https://lex.bg/bg/laws/ldoc/2135180801 [accessed 8.04.2023].

[19] Regional Development Act, https://lex.bg/index.php/mobile/ldoc/2135589285 [accessed 8.04.2023].

[20] T. Pelov et al., *Bulgarian cooperatives*, pp. 78–79, 380.

[21] Wine and Alcoholic Drinks Act, https://lex.bg/laws/ldoc/2134683137 [accessed 8.04.2023].

of small and medium owners of vineyards and producers of wine and alcoholic drinks.

It may be stated that the legislative basis is a factor behind the lack of motivation for initiating individual economic activity, the uniformity of the modern Bulgarian agricultural cooperative movement, and the instability of that form of organization. From the standpoint of opportunities for renewable energy production through cooperative organizational forms, it can be noted that the regulations in the energy sector are in line with the abovementioned points. The Energy Law[22] and the accompanying normative acts do not have provisions to draw attention to energy cooperatives. It should be noted that the regulatory framework in the energy field is not restrictive, but it cannot be defined as stimulating. This, combined with the lack of practices outside the scope of production cooperatives, logically contributes to the lack of cooperative organizations whose activity is focused on the production and/or supply of energy, including from renewable sources.

The Specific Features of Property Rights Allocation

The impact which the property rights allocation has over the motivation and results of economic activities is the research focus of many economists.[23] The property rights system usually means a complete set of norms regulating access to rare resources. From the point of view of society, property rights are considered as limitations which define the relations between individual agents. But from the point of view of individual agents, they are a set of powers for decision making in relation to resources. Property rights have behavioural significance, because their distribution influences the choice of individuals. When the amount of power allocated to a given resource is large, its value also increases, and the precise determination of the ownership rights is a required condition for efficient operation on the market.

The legal and economic analyses of ownership are traditionally concentrated on two main topics: the residual rights of return and residual rights of control. Economists determine the residual rights of return as rights over net income, generated by the relevant company. Additionally, the owners of residual rights of return, in practice, are owners of the residual risk of the operations of the company,

[22] Energy Act, https://lex.bg/bg/laws/ldoc/2135475623 [accessed 8.04.2023].

[23] M. Sykuta, M. Cook, *A New Institutional Economics Approach to Contracts and Cooperatives*, Working Paper No. 01-04, Contracting and Organizations Research Initiative, University of Missouri 2001, 17ff.; Hr. Bashev, Economics of agrarian institutions, *Economics and Management of Agriculture*, 2000, vol. 3, pp. 3–15 (Хр. Башев, Икономика на аграрните институции, *Икономика и управление на селското стопанство*, бр. 3, 3–15).

because the net cash flows are uncertain. According to the property rights theory,[24] the owners of the residual rights of return are usually the owners of the company.

The residual rights of control are usually related to the right to take decisions, related to the usage of a given asset, which is not explicitly defined through a legal act or is entrusted to another party as per contract in force. The control rights are defined as rights or capacities to control the access to or utilization of a given asset under any circumstances, which do not contradict the provisions of the contract. These rights are the effective rules which are applied, by default, when the terms and conditions of the formal contract are incomplete. In the case of contractual incompleteness, ownership of the assets should be defined in such a way to result in the maximalization of the investment motivation and return.

The residual right of control appears as a result of the inability to develop and apply comprehensive contracts, especially in cases involving complex and dynamic transactions. As a result of the fact that all contracts are usually incomplete, the residual rights of control over a specific asset determine who the actual owner of the asset is.[25] According to the theory of incomplete contracts, the implementation of the control rights, and as a result, of the ownership, is governed by the preliminary investment motivation of the contractual parties. The theory assumes that the residual rights of control are intended for the agents who realize specific investments, whose quasi-rent is threatened by disloyal, deterrent or limiting behaviour.

Cooperative Models Based on the Distribution of Ownership Rights

On the grounds of the property rights theory, Chaddad and Cook[26] developed a typology of cooperative models, based on a broad understanding of ownership rights, including both rights of return and rights of control. In the suggested typology, the cooperative models are differentiated on the grounds of property rights distribution among the economic agents, who are contractually bound to the form of organization (members, consumers and investors). The traditional cooperative and capital-orientated companies are considered as opposing forms in the discussed typology.

[24] E. F. Fama, M. C. Jensen, Separation of ownership and control, *Journal of Law and Economics*, 1983, vol. 26, pp. 301–325.

[25] S. J. Grossman, O. D. Hart, The cost and benefits of ownership: A theory of vertical and lateral integration, *Journal of Political Economics*, August 1986, vol. 94, pp. 691–719.

[26] F. R. Chaddad, M. L. Cook, Understanding new cooperative models: An ownership—control right typology, *Review of Agricultural Economics*, 2003, vol. 26(3), pp. 348–360.

Traditional cooperative structures are characterized by the following distribution of rights: the ownership is limited to the members-consumers; the residual rights of return cannot be transferred, cannot be valuated and restored; and the benefits are distributed among the members proportionally to consumption. As a result of the vaguely defined property rights, cooperatives are subjected to investment and management limitations.[27]

The investment and management limitations in cooperatives emerge as a result of existing problems, which include the free-rider problem, horizontal problem, portfolio problem, control problem (including monitoring, consolidation and decision making) and the influence costs problem. These problems are the result of the restriction of ownership rights only to members with the abovementioned characteristics.[28] Their presence contributes to the members' lack of motivation to invest in traditional cooperatives and to be actively involved in their management, because these investments (in time and capital) are illiquid and do not receive proper return.

Capital oriented companies are on the other pole. Another five non-traditional models of cooperatives are identified by Chaddad and Cook,[29] who present various innovations in the structure of property rights in different cooperative enterprises. The main purpose of these models is to break the traditional ownership structures in order to overcome the investment and management problems associated with traditional cooperatives.

Property Rights and Problems in Implementing the Energy Legal Framework of Integration in Modern Bulgarian Agricultural Cooperatives

Regarding property rights allocation, it can be definitively stated that in the Bulgarian case they are limited to the members of the relevant cooperative. This study has not identified any practice which is different from that approach. This means that ownership, the rights for decision making and control, including those of residual type, at least formally, are completely within the hands of the cooperative's members. On the basis of theoretical constructions, a great deal of interest should be observed, strictly following of the interest of the members and high level of control.

[27] J. M. Staatz, *The Structural Characteristics of Farmer Cooperatives and Their Behavioral Consequences*, ACS Service Report 18, J. Royer ed., Washington, DC, 1987, pp. 33–60.

[28] M. Cook, The future of U.S. agricultural cooperatives: a neo-institutional approach, *American Journal of Agricultural Economics*, 1995, vol. 77, pp. 1153–1159.

[29] F. R. Chaddad, M. L. Cook, Understanding new cooperative models, pp. 348–360.

Directive (EU) 2018/2001 on the use of energy from renewable sources provides a path for the development of energy communities.[30] However, the country's energy legislation does not contain the necessary incentives for integration, either at the level of external, market cooperation or in terms of internal organizational processes for unification and consolidation. The Energy Act[31] provides an opportunity for the technological connection of the Bulgarian and international energy system,[32] as well as the consumers of thermal energy.[33] Despite legal options, energy integration has been delayed.[34] In agriculture, it is left in the hands of the voluntary but always clearly defined common interests of the members of the cooperative and their principals.

Studies show that the members of the Bulgarian agricultural cooperatives are almost uninterested in the operations and state of the cooperative of which they are members. The development of the organizational form, as well as the technological and integration innovations associated with it, are not in the focus of their attention. This is reflected in the established low level of control and creates prerequisites for realizing the advantages of asymmetric information and manifestation of opportunism by agents on the account of the principles of cooperatives. That also entails problems related to decision making and influence costs, which, in most of cases, accompany the development of traditional cooperatives.

In relation to opportunities for transfer of rights and responsibilities, the studies show that, according to the regulation of the Cooperatives Act[35] and its interpretation in the Charters of the cooperatives, in the event of the termination of membership, the share in the cooperative can be recovered under certain conditions. But the membership, together with its rights and obligations, cannot be transferred/sold to third parties. The above predetermines the inability to rearrange the individual portfolio of the members in relation to their shares in the cooperative, and the portfolio problem should be considered as part of the effects that create barriers to integration.

The practical result of that problem is insufficient investment in cooperatives, and a clearly formed low-risk functioning policy due to a compromise with the profit resulting from the operations of the organization.

Also, problems with the impossibility of ownership transfer, combined with high average age of the members, determine the presence of a well-identified horizontal

[30] See para. 71 Directive (EU) 2018/2001. Articles 21 and 22 govern the technological and financial framework of hydropower cooperatives, including meeting their own needs under the RES-coop model.

[31] Energy Act, https://lex.bg/bg/laws/ldoc/2135475623 [accessed 8.04.2023].

[32] Ibid., Article 82 para. 3.

[33] Ibid., Article 152 para. 1.

[34] Only in 2021 did the Bulgarian Solar Association (BAS) propose the establishment of "energy cooperatives".

[35] Cooperatives Act, https://lex.bg/laws/ldoc/2134696966 [accessed 8.04.2023].

problem. This impacts the desire and readiness for investment and long-term strategic development of the organization, which, on the other hand, has a negative effect on the financial results of the operation and the opportunities for future survival.

In relation to distributions of benefits of the operations, the data show that this matter is resolved in modern Bulgarian agricultural cooperatives through the distribution of benefits among the members as per the level of utilization by the cooperative. Due to the fact that they are organizations whose main scope of operation is the production of agricultural products, the direct participation by the members in the operations of the cooperative is manifested mainly by the provision of land for production operations. In that aspect, the main distribution of benefits from operations is performed by the payment of rent. But this type of payment is usually of a fixed nature (in 81.75% of the studied cases), which influences the motivation and involvement of the members in the operations and decisions of the cooperative. The return from the "labour" factor is also fixed, and mainly the right of return on the capital is of a residual nature. But the practice shows that dividends on capital are usually paid by about 5% of the studied cooperatives and about another 5% apply this practice periodically, when the financial state of the cooperative allows it. It should be noted that the amount of these payments is insignificant and the shareholding on the cooperative activity is not proportional to the consumption of the cooperative.

The effect of the policy in relation to the distribution of benefits from operation presents itself in the clear manifestation of the free rider problem, which, on the other hand, determines the lack of motivation for investment in the cooperative and the consumer's attitude towards the distribution of the positive gains of the operation.

Based on the characteristics of property rights allocation in accordance with the typology presented above, it can be established that modern Bulgarian agricultural cooperatives function on the principle of so-called traditional cooperatives. According to the characteristics of this organizational structure, the functioning of the Bulgarian agricultural cooperatives is burdened by serious investment and management problems.

Investment problems, such as limited desire of the members to invest in the cooperative are the result of the existing and well-identified free rider problem, as well as horizontal and portfolio problems. They, on the other hand, appear as a result of the specifics in the definition of the property rights, which are limited to the members, cannot be transferred, can be restored, and the benefits are distributed mainly on the basis of utilization rather than on investment in the cooperative. The identified problems have a demotivation impact on the willingness of current and potential members to invest in the cooperative. This determines decapitalization of the assets and maintenance of sub-optimal operational structure. The impact on the functioning of the cooperative is manifested in deteriorating financial and economic results of operations and gradual fading of its functions.

In relation to managerial problems, the most significant problems identified are issues with monitoring and consolidation, which are mainly manifested in a lack of control over the operations of the agents. The impact of these problems on the functioning of the cooperatives is the development of practices which serve the personal interests of the agents and destabilize the organization. The problems with decision making and influence costs are considered to be insignificant at the current stage of development of the cooperative organizational structures, but this is not enough to overcome the negative impact of the remaining problems.

As a result of the above presentation, it can be summarized that the majority of the agricultural cooperatives in Bulgaria do not function as sustainable forms of organization and do not possess adaptive capabilities which will ensure that they have long-term existence.

Investment, Risk and Integration Attitude in Cooperatives

The data related to the Bulgarian cooperative movement show that the preferred organizational form for farmers is the agricultural production cooperative. The share of other forms of cooperatives, such as marketing, credit, service and supply cooperatives, is insignificant, and according to data of the NSI, they make up below 1% of the total number of cooperatives in the sector. Agricultural production cooperatives are distributed mainly in the regions appropriate for the cultivation of highly-intensive crops, with large areas of agricultural land. These peculiarities determine the main production specializations of the cooperative organizations in the country. They produce a limited range of stock products, and most of their production portfolio is taken up by plant-growing production. Livestock is present in only a few of them and is limited.

Despite the fact that the specifics of the production structure are undoubtedly related to the geographical location of the cooperatives, the reasons for the choice of structure, including the geographical location, is a result of the investment and risk preferences of the members, which were identified in the study.

The data of the study show that more than 54% of the interviewed individuals are not interested in the requirement to invest and are ready to risk the future of the organization on the account of larger current incomes. These are mainly members for whom the limitation of time in relation to the duration of utilization of new assets is applicable. Their investment preferences and the stimulation of their consumer preference limitations are determined by the regulation stipulating that membership in the cooperative is personal and cannot be inherited. That condition does not motivate the members to invest in the cooperative, because their heirs will have no benefit from the increased capabilities of the coopera-

tive to create goods. Additionally, the majority of the members obtain their main incomes outside of the agricultural sector and a very small number of them are engaged in the problems of the organization and sector. This is not stimulating behaviour; it does not limit current consumption in the name of future benefits.

The part of the study related to the readiness of the members of the cooperative to perform more risky operations showed that 86.49% of the members of the cooperative prefer security over the possibility of higher gains, and 51.35% are ready to make a compromise with the amount of profit to minimize the risk associated with operations. Due to the fact the General Assembly of the members is the supreme body which takes decisions about the cooperative's development strategy, it can be assumed that the policy in Bulgarian agricultural cooperatives is oriented towards minimizing the risk associated with operation, despite the possible negative influence of that policy on the amount of profit.

The established investment and risk preferences of the members are directly reflected in the production structure developed and maintained by the cooperatives. The main part of the production structure of the cooperatives is focused on cereals, followed by technical crops and a limited number of other crops. On annual bases, the agricultural cooperatives manage a little less than 16% of the cereal farming areas in the country, but the relative share of these areas is steadily decreasing. A decrease is observed with other crops as well, and this is a result of both the reduced number of cooperatives and their smaller average size, and of some trends common for the entire country. In 2016, cooperatives managed a little over 16% of the total area devoted to technical crops and almost 17% of the oil-bearing crops, and there was also a decrease in the areas (Table 7.1).

Table 7.1 Relative share of areas with main crops in the country, planted by cooperatives

Crops:	**Cereals**	**Technical**	**Oil bearing**
2010	21,2%	20,11%	20,91%
2013	17,16%	17,73%	18,14%
2016	15,92%	16,31%	16,86%

As per the data of MAF, Agrostatistics: Ministry of Agriculture, Agrostatistics, *Census of Agricultural Holdings in 2010*, Bulletin 198 / October 2012 (МЗХ, Агростатистика, Преброяване на земеделските стопанства през 2010 г., Бюлетин 198 / Октомври 2012); Ministry of Agriculture, Agrostatistics, *Structure of Agricultural Holdings in Bulgaria in the Economic Year 2012/2013*, Bulletin 284 / December 2015 (МЗХ, Агростатистика, 2015, Структура на земеделските стопанства в България през стопанската 2012/2013 г., Бюлетин 284 / Декември 2015); Ministry of Agriculture, Agrostatistics, *Farm Structure Survey in 2016*, Sofia, 2018 (МЗХ, Агростатистика, Изследване на структурата на земеделските стопанства през 2016 година).

The district of Plovdiv, where the study was conducted, is known as the vegetable garden of Bulgaria, but the study of the production structure of the agricultural cooperatives in the district does not support this idea. According to the aver-

age data in relation to distribution of areas as per crops (Fig. 7.1), about 64.99% of the land is planted with cereals and 23.64% is planted with oil-bearing crops.

The analysis of the crops grown by the cooperatives shows that cereals and oil-bearing crops are found in the production structure of all of the studied sites: 100% of the studied cooperatives, and less than 10% of the studied cooperatives are involved in livestock breeding operations. At the national level, an average of 95.4% of the existing agricultural cooperatives grow cereals, 86.5% grow technical crops and 84.7% have areas occupied by oil-bearing crops, and 9.2% are involved in livestock breeding (cattle breeding).

The study shows that despite the membership of the cooperatives in the National Association of Agricultural Cooperatives (NAAC) in Bulgaria, there is no actual integration of the organizational form in a vertical direction. There are no data for horizontal integration of cooperatives either: not with other cooperatives, nor with other forms of organization. No data is available about the participation of cooperatives in joint companies or about shareholding in other companies.

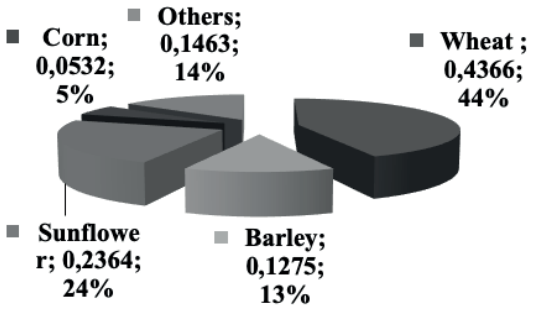

Fig. 7.1 Relative share of different crops in cooperatives' land

The Potential for Participation in the Production of Renewable Energy

According to the data of the statistical office of the European Union—Eurostat,[36] in 2018 the share of energy produced by renewable sources in the gross final energy consumption within the European Union was 18.01%, and reached 18.88% on the basis of EU-28, and 19.73% on the basis of EU-27 (from 2020) in 2019. For the same period, the total amount of consumed energy provided by renewable sources in Bulgaria was, respectively, 20.5% in 2018 and 21.56% in 2019, which

[36] Eurostat, *2021 Share of renewable energy in gross final energy consumption*, https://ec.europa.eu/eurostat/statistics-explained/index.php?title=Renewable_energy_statistics [accessed 1.11.2021].

is above the level of 18.7% reached in 2017, and is far above the target level of 16% planned for 2020.

Despite the established positive trends in the usage of renewable energy and the fact that the planned levels for Bulgaria were exceeded, society cannot enjoy the positive aspects, neither in economic nor in ecological terms, derived from the increase in the usage of this energy type.

At least in theory, the cooperative organization could significantly engage the attention of the public, encourage capital and investment in assets for renewable energy production, and provide, at the same time, energy for its members at more competitive prices. The development of that form of organization, predominantly in agricultural production, is an additional positive aspect in that direction because, as is stated by Brosowski et al.,[37] we can identify 18 categories of agricultural products and another 8 categories of forestry products, which are direct source of biomass that can be used in the production of energy.

But the Bulgarian cooperative system, based on the analysis presented above, possesses neither the organizational and economic potential, nor the psychological attitude of its members for participation in such enterprises. The lack of practices in the cooperative to supply resources and services is adding to the intrinsic weakness of the Bulgarian cooperative movement and additionally is limiting the opportunities for the development of such operations. The data analysis shows that it cannot be expected in the near future, not without the assistance of significant external incentives, that energy cooperatives, incl. cooperatives providing renewable energy, will find their place in the Bulgarian cooperative system.

The potential contribution of Bulgarian agricultural cooperatives to the production of renewable energy can be evaluated only indirectly, with reference to biomass manufacturers, since biomass is used as a material for the production of bio-energy.

According to data of the NSI,[38] 63.51% of the renewable energy is provided by solid bio-fuels. Here, the main source of raw materials is forest and livestock-breeding farms.

According to the official data, 0.5% of cooperatives describe themselves as involved in forestry operations, but their operations are highly limited. The forest cooperatives in Bulgaria have 5,261 ha, out of which 92% are occupied by coniferous forests, according to the Central Cooperative Union (CCU),[39] which is equal to about 0.12% of the forestry fund of the country. The main purpose of the

[37] A. Brosowski et al., A review of biomass potential and current utilisation—status quo for 93 biogenic wastes and residues in Germany, *Biomass Bioenergy*, 2016, vol. 95, pp. 257–272, https://doi.org/10.1016/j.biombioe.2016.10.017.

[38] NSI, *Renewable energy sources for 2019* (НСИ, 2021, Възобновяеми енергийни източници за 2019 година), https://tinyurl.com/aa55jaxj [accessed 1.11.2021].

[39] Central Cooperative Union, https://www.cks.bg/bg/agriculture_and_forestry/gorskostopanstvo/ [accessed 1.11.2021].

wood from these areas is logging, wood processing and the production of round and formed timber material. None of the cooperatives participates directly in the provision of raw materials for the production of solid bio-fuels.

As was stated above, livestock breeding accounts for little more than 9% of the activity of agricultural cooperatives, but the scope of that activity is significantly limited, since only 2.4% of the cattle is bred by cooperatives. The waste from the livestock breeding operations is used as fertilizers in the plant-growing operations, where some cooperatives sell manure to private farmers. No data was found about existing relations with producers of solid bio-fuels and there are no practices for the independent organization of such operations by cooperatives. Liquid bio-fuels are the third main source of renewable energy in Bulgaria, with 6.46% as per data of NSI.[40] One of the main sources of liquid bio-fuels is agricultural production, primarily in the form of waste.

Considering the fact that the agricultural cooperatives manage about 13.5% of the utilized agricultural land in the country, we can draw the conclusion that cooperatives have the potential for bio-mass production, which can be utilized further in the supply chain through the production of bio-fuels and bio-gases. The most significant contribution can be identified in the production of bio-mass from cereals and oil-bearing crops, since cooperatives are managing, respectively, 15.9% and 16.9% of the lands occupied by these crops. But engaging the agricultural production of cooperatives in the production of bio-energy should not undermine food provision and the country's food security. The possibility here is to utilize mainly the technical potential of the bio-mass, according to Thorenz et al.,[41] but there are risks associated with reorienting the production structure towards crops with energy significance (like rapeseed), on account of the agricultural land which plays a key role in ensuring food security and the provision of resources for light and food industries.

The Optimization of Cooperative Participation in the Production of Renewable Energy

Despite the fact that currently the participation of the cooperative system in Bulgaria in the processes of providing renewable energy is limited only to bio-mass production from agricultural cooperatives, there are opportunities to optimize this participation. Optimization requires taking some measures at the institutional level, as well as developing some practices at the cooperative level. At the institu-

[40] NSI, *Renewable energy sources for 2019*, (НСИ, 2021, Възобновяеми енергийни източници за 2019 година), https://tinyurl.com/aa55jaxj [accessed 1.11.2021].

[41] A. Thorez et al., Assessment of agroforestry residue potentials for the bioeconomy in the European Union, *Journal of Cleaner Production*, 2018, vol. 176, pp. 348–359.

tional level, it is necessary to introduce coordinated changes in the Cooperative Act, the Energy Law and the accompanying legal framework in order to stimulate cooperation, especially with regard to energy.

The transfer of normative changes in practice can be facilitated by the involvement of the CCU and the NAAC. The former should focus on the promotion of first-level energy cooperatives mainly in urban areas, and the latter should focus primarily on the promotion of energy cooperatives through second-level cooperation, mainly in areas with a developed agricultural sector (Fig. 7.2).

A significant contribution to the production of energy from renewable sources can be achieved through prioritizing the establishment of energy cooperatives in areas with a developed agricultural sector. Agricultural producers, incl. agricultural production cooperatives and farmers, and the residents of the area in which the cooperative operates should be involved as members of these cooperatives. The scope of the membership should be based on an assessment of the potential for resource provision (biomass from agriculture and household waste) and the technological connection with the volume of energy generated. The clients of the cooperative should mainly be its members, and due to the specifics of the product (impossibility of storage), clients can be also non-members—in the case of realized surplus. In order to minimize the inherent weaknesses of cooperatives, it would be appropriate to apply the proportional principles[42] and the resulting property rights.

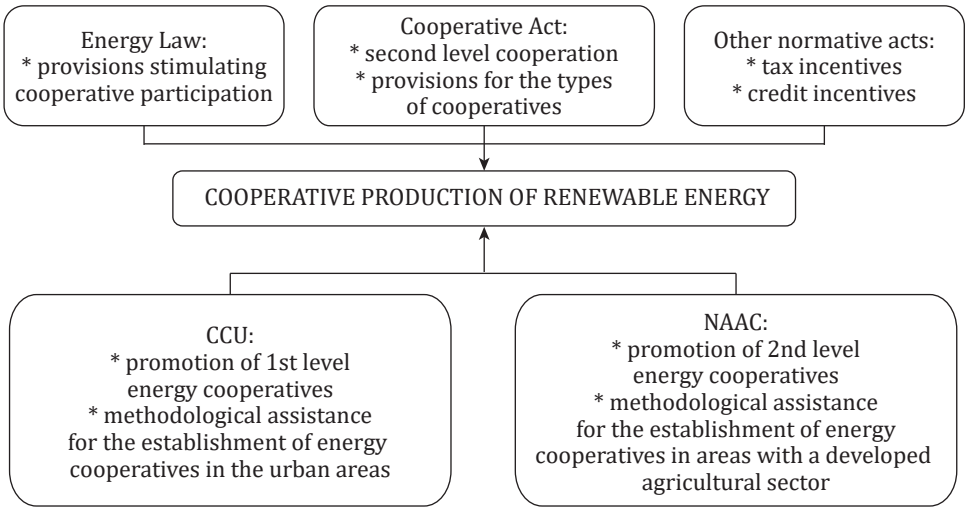

Fig. 7.2 Necessary framework for successful energy cooperative development

Source: the authors' elaboration.

[42] J. M. Staatz, *Farmer Cooperatives Theory: Recent Developments*, ACS Research Report 84, USDA, Washington, DC, June 1989, p. 30.

Such an approach would generate a number of economic, legal, environmental and social benefits, including by improving energy security and establishing informal prerequisites for diversification of the cooperative movement in Bulgaria, and more complete utilization of the advantages of that form of organization (Table 7.2).

Table 7.2 Energy cooperatives in areas with a developed agricultural sector

Initiative	Assessment of the potential for resource provision and the generated energy volume
Possibility to include	Biomass from agricultural production Biomass from household residues
Members	Agricultural producers Agricultural production cooperatives Residents in the area of operation of the cooperative
Customers	Members of the cooperative Non-members in the presence of surplus
Benefits	Economic: • energy supply at better prices • transformation of waste into profitable resources • additional benefits generation from the production of products with higher added value. Legal: • legal integration between the normative acts in the sectors of agriculture and energy • achieving procedural economy Ecological: • providing environmentally friendly energy • waste reduction • environmental protection, incl. landscape, biodiversity and non-renewable natural resources Social • raising the level of social culture and social responsibility • developing and strengthening trust and willingness to cooperate • affirmation of moral and ethical norms and opportunities for self-help and mutual assistance in society

Source: the authors' elaboration.

Conclusion

The structural reform performed by the consolidation of production factors gave society undefined property rights and destroyed forms of organization. The new regulatory framework and the chosen approach for the implementation of agrarian reform did not create appropriate incentives for the development of diverse and viable cooperatives oriented towards product and technological integration.

Inherent in the cooperatives are the clearly manifested free rider, horizontal and portfolio problems, as well as problems with monitoring and consolidation. They determine the consumer attitude and the lack of incentives for investment, which leads to a decapitalization of assets and maintaining a suboptimal structure of activity.

The presented characteristics of modern Bulgarian cooperatives, as well as the description of their path of development and features of the regulatory framework, clearly point to the fact that there are no cooperative organizations (at lower or higher levels) which can orientate their operations towards the renewable energy production, but neither are there any indications providing any reason to expect significant change. Consequently, despite the trends in the world cooperative movement, currently Bulgarian cooperatives remain in the field of potential sources of biomass in the process of providing renewable energy.

The protection of the interests of society and gaining benefits from the full utilization of the cooperative form of organization requires the development and application of a consistent policy which will encourage positive attitudes towards the diversification of the practices of the cooperatives and provide incentives for cooperation focused on the production and supply of renewable energy. This necessitates providing:

- energy legislation introducing sufficient incentives for technological integration, incl. through cooperative organizational forms, as well as ones related to renewable energy sources,
- cooperative legislation, stimulating the diversification of cooperative practices and allowing lower and higher-level cooperation, and last but not least,
- placing emphasis on the agricultural sector, not the energy sector, in the process of providing renewable energy.

Chapter 8

ENERGY CO-OP ICON WITH AN EMPHASIS ON SPAIN AND GREECE

Antonios Maniatis

Introduction

Cooperatives are a well-recognized form of private individuals' collective entrepreneurship. They are commonly referred to with the abbreviation "co-ops" whilst their members are often called "cooperators". As far as their legal nature is concerned, they constitute a member-owned societal type, in the field of private law, particularly in the autonomous field of Commercial Law. However, this legal feature has not been exempted from some rare exceptions. For instance, in Austria there are co-ops governed by public law, for example the "Water rights cooperatives", which should be distinguished from co-ops governed by private law.[1]

Co-ops initially appeared in the UK, with the case of the Rochdale Society of Equitable Pioneers. The first successful version of this novel form of association responded to the elementary need to cope with the difficult socioeconomic conditions of the Industrial Revolution. Nevertheless, energy, which nowadays constitutes an important economic sector, especially in the current era of the anthropogenic climate change, did not remain unrelated to the cooperative movement. The current paper deals with energy co-ops as an institution in the general framework of co-op law and particularly in the specific context of energy law. The focus is mainly on Renewable Energy co-ops, which the doctrine has started to call "RE co-ops" for the sake of simplicity.[2] The chapter refers mainly to two important legal orders in terms of Cooperative Law, such as those of Spain and Greece. It has the following, central research question:

RQ: *Does the legislation on energy co-ops constitute an icon?*

[1] G. Miribung, E. Reiner, Chapter 9 Austria, in *International Handbook of Cooperative Law*, ed. D. Cracogna, A. Fici, H. Henry, Berlin, Heidelberg, 2013, p. 233.

[2] S. Soeiro, M. Ferreira Dias, Energy cooperatives in southern European countries: Are they relevant for sustainability targets? *Energy Reports*, 2020, vol. 6, p. 449.

As for the structure of the analysis, at first the branch of cooperative law is analysed. The chapter introduces this branch, with a special reference to energy co-ops in comparative law. Next, it presents a case study on the legal order of Spain, which has a long tradition of energy co-ops and has gained the international interest of both academic and political circles. Then, it refers to the specific case of energy co-ops in the Greek legal order. Afterwards, it moves its focus from the national level (Spain, Greece) to the supranational one (EU), by examining the recent regulations on energy communities. To be precise, it is based mainly on the mainstreaming directive (EU) 2018/2021. Lastly, it deals with the academic elaboration of the research findings, by putting the stress on history.

Cooperative Law with an Emphasis on Energy Co-ops

The literature emphasizes that the earliest forms of cooperation involving mutual assistance existed as early as in antiquity.[3] Anyway, although other co-ops preceded the Rochdale Society of Equitable Pioneers, which was established in Rochdale, near Manchester, in 1844, this consumer legal person constituted the prototype for other societies in the UK. As the mechanization of the Industrial Revolution led skilled workers into poverty, 28 workers decided to open their own store selling food items. This offer was valuable not only because of the commodities these tradesmen sold, which workers were not otherwise able to afford, but also because some traditional traders were selling food on the market at rigged prices.

Co-ops constitute a sui generis type of business, the concept of which has been globalized. From the mid-nineteenth century onwards, the idea, values and principles behind cooperatives, as elaborated in 1844 by the Rochdale Pioneers, travelled the world over, following no specific pattern, undergoing multiple changes, and inspiring at least as many cooperative laws as there are jurisdictions.[4] Indeed, the co-op concept began to be internationalized in the nineteenth century, when the tendency to adopt ad hoc legislative dispositions emerged. For instance, the Latin American cooperative law started with the provisions set forth in the commercial codes of Argentina and Mexico, both enacted in 1889, even though they were insufficient and at times inadequate.[5] Besides, the twentieth century was marked by the explicit institutionalization of co-ops in constitutions, as it was

[3] A. Suchoń, Chapter II The origins and the development of legal regulations governing associations of agricultural producers in the world, with particular emphasis on co-operatives in Europe, in *The Legal and Economic Aspects of Associations of Agricultural Producers in Selected Countries of the World*, ed. A. Suchoń, Poznan, 2020, p. 23.

[4] H. Henry, Chapter 38 Trends and Prospects of Cooperative Law, in *International Handbook of Cooperative Law*, ed. D. Cracogna, A. Fici, H. Henry, Berlin, Heidelberg, 2013, p. 806.

[5] U. Garzón, Chapter 6 The Framework Law for the Cooperatives in Latin America, in *International Handbook of Cooperative Law*, ed. D. Cracogna, A. Fici, H. Henry, Berlin, Heidelberg, 2013, p. 166.

the case of the 1917 Constitution of Mexico. A century later, co-ops continue to be a social economy alternative to classical societal types based on capital.

Energy co-ops date back to the nineteenth century, as is the case of Germany. It is widely held in the scholarly literature that the concept of co-ops was developed then in this country as a result of the industrial revolution.[6] Throughout that century co-ops were formed to produce energy, and to install and operate a distribution network in remote locations, since large companies did not operate due to low profitability.[7] Thus, with the focus of the twentieth century on fairly cheap and abundant fossil fuels, an attempt was made to promote renewable energies through a revival of energy co-ops.[8]

Nowadays, energy co-ops have gained ground, but they are not free from problems. For instance, the number of cooperators should not exceed 999 in the Polish legal order. RE co-ops have expanded strongly in countries of Northern Europe, such as Denmark, Germany and, to a lesser extent, the UK.[9]

A Case Study: Energy Co-ops in Spain

The cooperative movement started later in Spain than in other countries due to the delayed industrialization of that rural society.[10] Although there have been co-ops since the mid-nineteenth century, the first general law on co-ops dates back to 1931.[11] At the close of 2011, "Mondragón Corporación Cooperativa'' owned 256 companies and had 83,869 employees, making it the biggest co-op group in the world.[12] Co-ops in Spain do not fulfil the role of major importance that the German ones have.[13] Besides, their role is more that of a marketer than a producer, since large wind or solar installations are limited to large companies, although there are some exceptions that do not reach such significant figures as in Germany.[14]

The cooperative movement in the electricity sector had stabilized its presence at the beginning of the twentieth century, when it helped households and companies to be supplied with electricity[15]. Many of those co-ops survived and were

[6] A. Suchoń, Chapter II. The origins and the development of legal regulations, p. 25.

[7] S. Soeiro, M. Ferreira Dias, Energy cooperatives in southern European countries, p. 449.

[8] Ibid.

[9] Ibid., p. 450.

[10] I. G. Fajardo García, Chapter 33 Spain, in *International Handbook of Cooperative Law*, ed. D. Cracogna, A. Fici, H. Henry, Berlin, Heidelberg, 2013, p. 701.

[11] Ibid., p. 703.

[12] Ibid., p. 702.

[13] Á. Rivera, Las cooperativas energéticas en España, *El Solidario*, diciembre 3, 2020.

[14] Ibid.

[15] G. Fajardo, New perspectives for the cooperative movement of renewable sources: legal recognition and promotion, Translation in Greek of the paper published in *International Journal of Co-*

maintained over time.[16] Besides those entities, some new co-ops were involved in the sale of renewable energy to their members, and some others appeared in the 2010s which deal with the production of this form of energy.[17]

Nevertheless, a Spanish law in 2015 introduced the world's first "Sun tax" on solar installations and previewed draconian fines, up to EUR60 million, for those who would commit tax evasion. After having caused severe criticism, that controversial act, which froze solar power development for years, was repealed in November 2018 by another political regime.

In Spain, the first RE co-op was founded in 1925, while Italy had to wait until 2007, and Portugal until 2013, for the first association of this kind.[18] The non-profit co-op "Som Energia" is Spain's first RE co-op of the current era. It was founded in Gerona in 2010 as a project of citizens' participation to change the energy model,[19] and it started selling green energy from existing resources in October 2011.[20] In Spain and Italy, and also in Portugal, but still on a very small scale, RE co-ops appear to be legitimate and well-positioned alternatives that can compete in domestic markets dominated by large companies.[21] This recent emergence of co-ops in southern European countries may be due to the dissatisfaction of citizens and consumers with the current market models.[22]

A Case Study: Energy Co-ops in Greece

Greece is marked by a serious form of anachronistic tradition in Cooperative Law, consisting in forced co-ops being explicitly institutionalized in the current Constitution of 1975, and in the previous one of 1952. Nevertheless, the Greek law is exempted from quantitative problems associated with maximum limits of participants in co-ops, including energy communities, unlike the aforementioned Polish case.

Greece is a pioneer State in the matter of forms of energy associations and so it deserves a particular research approach in Comparative Law. One of the reasons consists in the fact that this State is just the first in Europe to have adopted an ad hoc legislative text. The law in question is No. 4513/2018 on the so-called "energy communities", which was inspired by the ongoing EU processes of adopting

operative Law, 2019, issue 2: A. Mitropoulou, E. Vaiou, *Social Economy*, Wednesday, 11 December 2019, p. 33.

[16] Ibid.

[17] Ibid.

[18] S. Soeiro, M. Ferreira Dias, Energy cooperatives in southern European countries, p. 452.

[19] Á. Rivera, Las cooperativas energéticas en España.

[20] G. Huijink, D. Montgomery, Som Energia: the rise of Spain's first renewable energy co-operative, *The Guardian*, Tue 19 Jun 2012.

[21] S. Soeiro, M. Ferreira Dias, Energy cooperatives in southern European countries, p. 453.

[22] Ibid.

rules on energy auto-consumption. The Hellenic Republic faced severe problems of economic and especially of public financial nature. It would not end the 8-year period of Memoranda of Understanding with its international creditors, including EU, until August of that crucial year. In that context, the economic crisis was combined with the energy crisis, not to speak about the ideological priorities of the Government, which was very friendly to the institution of co-ops. The legislative initiative was due to the significant energy poverty of the Greek population and to the fact that many islands in the Aegean Sea were deprived of connection to the continental electrical infrastructure, were therefore fully dependent on fossil fuels, and thus had to face high energy costs.[23]

The law which introduced energy communities institutionalized them uniquely as a type of special purpose civil co-ops. In general, civil co-ops are commercial companies according to the formal system of acquisition of the commercial property. However, this novelty, which aims above all to promote social and solidarity economy and inter alia to strengthen energy self-sufficiency and security in island municipalities, is quite different from this basic model, constituting essentially a sui generis type. It is also important to point out that this particularity is related to the formal denomination of these associations. The legislator had the discretional power to baptize them "energy co-ops'' but he adopted the alternative "energy communities''. The consecration of the mainstreaming word "community'' is interesting, particularly because it links implicitly cooperativism with syncretism. The word "syncretism'', has been historically related to the union of the inhabitants of Crete against the Roman enemies, and more widely it means union of communities or concepts. Nowadays, empirical research has proved that syncretism is close to modern Cretans, inter alia at a linguistic level. The very expressive society of this Greek island has subconsciously resorted to a kind of substitute for the term "syncretism'', often using the term "community''.[24] This word is used more often than in wider Greece and it has a very clear historical background in the "Koinon of the Cretans'' (namely "Common of the Cretans''), against the danger of the conquest of Crete by the Roman State.[25]

The law emphasizes the potential participation of local self-government organizations, such as municipalities and regions, whilst this eventuality is not the mainstreaming one as long as classical civil co-ops are concerned. An energy community may include uniquely legal persons under public law, such as self-government organizations, whilst Article 2 para. 2 of the general law on civil co-ops, No. 1667/1986, has adopted a rather vague regulation, according to which municipalities, communities or other legal persons under public or private law can

[23] G. Fajardo García, M. Frantzeskaki, Las comunidades energéticas en Grecia, *Revista de Estudios Cooperativos*, 2021, vol. 137, p. 3.

[24] A. Maniatis, Syncretism in legal theory and practice (in Greek), *Talos* ΚΔ', 2016, http://www.ikd.gr/periech%20talos%20kd.htm [accessed 1.06.2023].

[25] Ibid.

become members of a co-op, if it is provided for in a statute. If the co-op is a public enterprise, it is not transformed into a legal person under public law but it becomes a part of the Public Administration and it essentially constitutes a quasi-legal person under public law, by substituting private economic initiative which may be reluctant to get involved in demanding—if not also sophisticated—financial projects.

Law No. 4513/2018 states that every energy community must carry out at least one of the 11 "mandatory activities'' it provides for. One of them consists in the supply of electricity or natural gas to final customers, within the region in which the energy community headquarters. For the energy communities, the capital required for the granting of the license to supply electricity or natural gas is EUR60,000, while for the commercial companies of the classic Company Law, such as the public limited companies, the required capital amounts to EUR600,000.

In May 2020, there were 330 energy communities (being registered in the General Merchant Registry of the Hellenic State), of which 315 were active, 12 were in the process of registration, and 3 in the process of liquidation. There is a very important development of this institution, given that in November 2022 the active energy communities numbered 1,406. Recent research has shown the important role which Public Administration can play, from promoting an energy community in favour of all agriculture producers (in Thessaly) to participating in projects guaranteeing the energy supply in insular zones (Crete and Sifnos).[26] In addition, it has highlighted that energy communities have contributed to the promotion of new economic activities, such as pellet production in Karditsa, and have encouraged technical innovation, like the Greek-made wind turbine "Thetis".[27]

Besides, it is also notable that a pioneer energy community was founded in July 2021 in Thessaloniki, called "WEnCoop''. This community is presented as the first women's energy community, being endowed with a broad composition, in Greece and Europe. It was created by women of different business backgrounds and cultures. It is about an initiative of the Association of Business Women of Greece, which aims to develop and promote female entrepreneurship, through which its members will be able to be active in the energy sector, utilizing clean energy sources.

EU Law on Energy Communities with an Emphasis on Directive (EU) 2018/2021

First of all, it is necessary to mention that the associations of agricultural producers grew in popularity thanks to the initial activity of the European Economic Community, and later the European Union.[28] The EU legal regulations incentivize

[26] G. Fajardo García, M. Frantzeskaki, Las comunidades energéticas en Grecia, p. 14.

[27] Ibid.

[28] A. Suchoń, Chapter II The origins and the development of legal regulations, p. 43.

agricultural producers to collaborate and build a stable organizational structure, by setting up groups and agricultural producer organizations, and by introducing regulations on agricultural markets, especially milk, and fruit and vegetables markets, as well as regulations on the financing and development of rural areas.[29]

In addition, the aforementioned "winter package" or "clear energy for all Europeans package" includes various texts of a legislative nature, which have recently been adopted or are at the stage of being adopted, on green energy. Energy communities have been institutionalized as "renewable energy communities" in Article 22 of Directive (EU) 2018/2021 on the promotion of the use of energy from renewable sources (recast), and as "citizen energy communities" in Article 16 of Directive (EU) 2019/944 on common rules for the internal market for electricity.

As far as the first directive is concerned, it is innovative, especially because it reserves a separate place for the consumers' right to become "renewables self-consumers" with the support of each Member State, according to the provisions of Article 21. Moreover, the exemption of the self-consumption from any tax, exemplified by the aforementioned "Sun tax", was proposed by the European Parliament during the adoption of the directive. It should be stressed that this political initiative was launched initially on the basis of an opinion of the Petitions Committee of the Parliament, invoking, among others, some parliamentary petitions. Nevertheless, this tax privilege was not finally institutionalized, due to the political assessments of the decision-makers involved, namely for economic reasons.

This new type of group constitutes an authentic innovation, as the 2009 version of the directive included no reference to such a community. According to Article 22 para. 1, "Member States shall ensure that final customers, in particular household customers, are entitled to participate in a renewable energy community while maintaining their rights or obligations as final customers, and without being subject to unjustified or discriminatory conditions or procedures that would prevent their participation in a renewable energy community, provided that for private undertakings, their participation does not constitute their primary commercial or professional activity." This community, which is not necessarily a category of co-op but is nevertheless well exemplified by this societal type, is usually part of the private sector and may itself proceed to self-consumption, like self-consumers acting jointly. According to Whereas (68) of the Preamble of the Directive, empowering jointly acting renewables self-consumers also provides opportunities for renewable energy communities to advance energy efficiency at the household level and helps fight energy poverty through reduced consumption and lower supply tariffs. However, the directive avoids explicitly recognizing the consumer's right to participate in a renewable energy community, in spite of the fact that Article 2 para. 4 point f clarifies that the framework, which Member States

[29] Ibid.

must provide, guarantees that the participation in renewable energy communities is accessible to all consumers, including those in low-income or vulnerable households. The result is that the right to share renewable energy has been essentially enshrined through the institutionalization of renewables self-consumers (if they act jointly), and mainly through the recognition of RE communities.

Article 16 para. 1 of the aforementioned Directive (EU) 2019/944 cites that: Member States shall provide an enabling regulatory framework for citizen energy communities ensuring that:

(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 Article 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 charges, including with respect to registration and licensing, and to transparent, non-discriminatory and cost-reflective network charges in accordance with Article 18 of Regulation (EU) 2019/943, ensuring that they contribute in an adequate and balanced way to the overall cost sharing of the system.

It is notable that EU regulation on energy offers new opportunities for cooperatives to develop their activities, which were till recently prohibited in Spain, such as joint self-consumption, or they were not recognized, such as energy communities.[30]

A Discussion of the Findings

The gradual foundation and legislative institutionalization of energy co-ops and particularly of RE co-ops is comparable to the parallel tendency to explicitly recognize co-ops at the level of formal Constitutions, from 1917 and on. In other words, co-ops at first emerged in some European countries with no specific framework, as was the case of the UK, Spain and Greece in the nineteenth century, and then an ad hoc legislative framework was adopted. It is also notable that this emergence mainly involved civil co-ops that were not related to the energy sector, apart from Germany. In the twentieth century, there was a double tendency to go further with co-ops, in both the sources of law and energy sector. On the one hand, from 1917 to date many States have adopted the practice of recognizing co-ops in their Constitutions, although no explicit reference to energy co-ops has been made. On the

[30] G. Fajardo, New perspectives for the cooperative movement of renewable sources, p. 34.

other hand, energy co-ops, and at least from 1925 onwards RE energy co-ops, have been founded, although the legislator did not find it appropriate to make a reference to energy co-ops as a specific category. Due to the gradual technical progress in renewable energy technologies and the dramatic developments in the environment and anthropogenic climate change, the legislator has recently begun to promote renewable energy, without excluding for the time being conventional energy sources, such as fossil fuels.

The evolution of RE co-ops has been much slower in Southern Europe when compared to some countries of Northern Europe. This seems to be in agreement with the overall development of Renewable Energy Sources in these countries, or other factors may be contributing.[31] It is necessary to emphasize that, as a general rule, Northern countries have a tradition of successful use of the generic institution of co-ops, in contrast to Southern countries, not only in Europe, but globally.

Nevertheless, this tendency is not reflected in the case of Greece, as far as the novelty of energy co-ops is concerned. This country has been the pioneering polity in Europe in terms of introducing the new cooperative types of energy communities, mainly due to its extreme energy poverty in the context of the economic crisis associated with public debt. Although the 2019 constitutional amendment was irrelevant to energy policies (and also to climate change), material constitutional law has been upgraded by virtue of law No. 4513/2018 on energy communities, with regard to the generic human rights to the environment and to energy, and the specific rights to Containing Climate Change (CCC) and energy efficiency. It could be argued that the energy co-op has evolved into an authentic icon of sustainable development.

Energy communities are endowed with various important advantages, in the framework of energy democracy and energy citizenship. It is notable that energy citizenship has been promoted in a pioneer way in practice, with the Greek initiative consisting in "WEnCoop". Energy co-ops contribute to the achievement of climate and environmental targets, in full compliance with the seventh International Cooperative Principle "concern for the community", including sustainability of the environment. They create a circular economy at the local level, where Renewable Energy profits are invested to promote other energy goals, as well as building reforms and energy savings.[32]

Conclusion

To sum up, energy co-ops emerged in some countries, such as Germany and Spain, in the nineteenth century, even informally. Furthermore, they have been institutionalized in the Constitutions of many countries, from the twentieth century to

[31] S. Soeiro, M. Ferreira Dias, Energy cooperatives in southern European countries, p. 450.
[32] Ibid.

date, although not in an explicit, specific way. In the current century, they continue to be institutionalized at a level inferior to the formal Constitution. So, a new category of co-ops has been introduced in Cooperative Law, with some flexibility in its legal classification with adequate tools, such as energy communities (EU), and partly a material modification of already existent ones, such as civil co-ops (Greece).

It can be concluded that the RQ of the current paper has been fully confirmed, especially in the context of the developed EU countries. First of all, the consecrated term "energy communities'' instead of the conventional one "energy co-ops" essentially links cooperativism with syncretism and upgrades the ideological background of cooperativism, mainly as far as sensitive areas are concerned, such as the insular ones, exemplified by Crete.

Besides, energy communities have been an antidote to the economic impasses of capitalism as well as to the ecological crisis that plagues humanity. They constitute an authentic icon in institutional and legal terms, being available particularly for the self-help of interested persons, both at microeconomic and macroeconomic levels. In this vein, it is possible to notice that the generic institution of the co-op is a classical icon, itself. The mainstreaming difference between the conditions of emergence and operation of these two legal tools consists in their historical background: co-ops were introduced to cope with the economic controversies of capitalism, not with an environmental crisis, whilst energy communities nowadays are used to deal with a complex crisis, featuring ecological and economic factors. Due to their common nature, energy communities and classical co-ops are intrinsically subject to the consecrated International Cooperative Principles.

* * *

In the framework of the Cooperative Idea, co-op means collective self-help of energetic people, so energy co-op is an emblematic form of co-op not only *ratione materiae* but already *ratione personae*.

Chapter 9

ENERGY COOPERATIVES AND SOCIAL VULNERABILITY IN SPAIN

Koldo Martín Sevillano

The Electricity Bill as a Problem

Introduction

Over the last 20 years, a growing number of Spanish households have had to make the choice between food or heating. A detailed analysis of the causes of this situation falls beyond the scope of this brief study, but it does seem appropriate to draw attention to two aspects: In the first place, no one disputes today that the endemic precariousness of the Spanish labour market is partly responsible for the situation. The high unemployment rates have contributed to the fact that in the last 30 years an important part of the Spanish population does not have the stability necessary to meet the essential expenses that maintain an adequate standard of living. This is not new. However, a new group has emerged, which is certainly in a vulnerable situation, as indicated by Iratxe Arístegui Fradua and María Silvestre Cabrera,[1] represented by those who have a job but who, due to their temporary nature or their meagre economic resources, are in a precarious situation.

Secondly, there are other factors outside the labour market that determine the increase in households in situations of vulnerability. These are two key factors:

- the increase in the cost of energy
- the impossibility of escaping the market.

The aim of this chapter is, on the one hand, to highlight the increase of the electricity prices and the rise of energy poverty in Spain, and, on the other hand, to study the benefits for energy cooperatives in this regard.

The hypothesis studied focuses on the possible relationship between liberalization of the electricity market and the rise of energy poverty in Spain. Among other possible solutions, energy cooperatives seem to have benefits in this area.

[1] I. Arístegui Fradua, M. Silvestre Cabrera, La vulnerabilidad social y el desempleo: Deconstruyendo la dicotomía público-privado, in *Políticas y derecho a la vivienda: gente sin casa y casas sin gente*, ed. N. Paleo Mosquera, Valencia: Tirant lo Blanch, 2019, pp. 77–94.

Electricity Market Liberalization

In 1996, after a crisis that led to a serious devaluation of the peseta in the early 1990s, the Spanish people decided that it was time to abandon the social democratic policies of Felipe González and embrace the liberal policies of José María Aznar. As a consequence, just one year later, in 1997, Congress approved the 54/1997 Act on the Electricity Sector.[2] This Act introduced two fundamental changes:

1. Liberalization. The act established a new structure for the electricity business. It was divided into four activities: generation, transport, distribution and commercialization. Transport and distribution remained as regulated activities, but generation and commercialization were liberalized.
2. As collateral damage of liberalization, the electricity service ceased to be a public service, as pointed out by Jose María Jover Gómez-Ferrer[3]. Of course, the service remains part of a regulated market, but the increase in energy prices supported as a result of liberalization (and which has reached shameful limits in recent months) shows that regulation is not capable of controlling the market.

Liberalization as a Cause of Price Increases

Among the benefits of a free market any microeconomy textbook will list more productivity, more employment, and better prices for the consumer. But there is an essential requirement for these objectives to be achieved: the market must remain in perfect competition. However, as Santiago Muñoz Machado[4] points out, several of the activities of the electricity sector were and continue to be natural monopolies, so the author already sensed difficulties in the implementation of a true market.

The situation of perfect competition is reached when none of the competitors has the potential to monopolize the market. Unfortunately, Spain liberalized generation and commercialization without considering this basic requirement (or, even worse, despite considering it). What data supports this claim?

The Association of Electric Power Companies (AELEC in Spanish), formerly known as the Electrical Industry Association (UNESA), brings together the five

[2] Ley 54/1997, of 27 November, del Sector Eléctrico, BOE No. 285 of 28 November 1997, https://www.boe.es/buscar/act.php?id=BOE-A-1997-25340#:~:text=La%20presente%20ley%20regula%20las,y%20t%C3%A9cnica%20del%20sistema%20el%C3%A9ctrico [accessed 13.04.2023].

[3] J. M. Jover Gómez-Ferrer, El sistema eléctrico, in R. Tarlea Jiménez, J. M. Jover Gómez-Ferrer, C. Gil-Casares Cervera, *Regulación del sistema eléctrico*, Cizur Menor: Aranzadi, 2021, pp. 27–51.

[4] S. Muñoz Machado, Introducción al sector energético: regulación pública y libre competencia, in M. Serrano. González, S. Muñoz Machado, *Derecho de la regulación económica*, vol. 3: *Sector energético*, Tomo I, Madrid: Iustel, 2009, pp. 17–51.

traditional electricity companies (they operated before the 1997 liberalization): Endesa, Iberdrola, Naturgy (formerly Unión Fenosa and Gas Natural Fenosa), Repsol (formerly Viesgo) and EDP (formerly HC). The data on these companies is overwhelming and leaves no doubt of their absolute dominance of the market: In terms of generation, their share exceeds 80% of the total energy generated. In marketing activity, they account for 89% of the energy demanded by the domestic consumers,[5] according to an analysis of the global operation of the market in Spain conducted in 2020, and 55% of the electricity demanded by industry consumers.[6] Considering this, we can affirm that these companies are able to monopolize the market.

Tariff Deficit

It has already been mentioned that as a consequence of the approval of the 54/1997 Act, four activities were distinguished: generation, transmission, distribution and commercialization. Two of those activities, transportation and distribution, remained regulated activities. This implies that today the electricity bill is the sum of the following elements: the cost of energy on the market; regulated costs, which are included in the access fee; the profit margin of the trading company; rental of measuring equipment; and taxes.

The regulated cost block includes the cost of transport and distribution activities. The tariff deficit is the difference between the amounts charged to consumers for the regulated elements and the real costs of them. That is, it is a debt contracted with the electricity companies. Until 2012, more than EUR26,000 million were accumulated in the concept of tariff deficit (it reached more than EUR30,000 million later), and that was one of the main reasons for the approval of the new 24/2013 Act on the Electricity Sector,[7] as pointed out by Jose María Jover Gómez-Ferrer.[8]

In fact, the explanatory memorandum of the Act itself justifies its regulation because of the risk of bankruptcy of the electricity sector due to the insufficiency of the regulated costs established to cover the costs of the system. Part of the responsibility for the generated debt falls on to successive governments, since they were responsible for establishing these regulated costs. If they did not do it

[5] CNMC, *Informe de supervisión del mercado minorista de electricidad 2020*, https://www.cnmc.es/sites/default/files/3981989.pdf [accessed 13.04.2023].

[6] Ibid.

[7] Ley 24/2013, of 26 December, del Sector Eléctrico, BOE No. 310 of 27 December 2013, https://www.boe.es/buscar/act.php?id=BOE-A-2013-13645 [accessed 13.04.2023].

[8] J. M. Jover Gómez-Ferrer, El régimen económico del sistema eléctrico, in R. Tarlea Jiménez, J. M. Jover Gómez-Ferrer, C. Gil-Casares Cervera, *Regulación del sistema eléctrico*, Cizur Menor: Aranzadi, 2021, pp. 127–189.

as they should, it is because no government likes to raise electricity bills for its citizens.

On the other hand, we cannot end this section without noting that the debt accumulated by the tariff deficit has never been audited. For that reason, in 2013 a popular legislative initiative to audit the tariff deficit was presented to the congress table, and it was accepted, but unfortunately in Spain a popular legislative initiative must have 500,000 signatures to be approved, and in this case the number of signatures was not reached, so the debt remains unaudited.

Eurostats

As a consequence of liberalization and the introduction of the tariff deficit debt, from 2003 to 2015 the average domestic consumer in Spain experienced a rise of 76.26% (from 13.10 to 23.09 c€/kWh—Eurostat). Today it is more than 83%. If we compare it to the average rise in Europe, we see that it has not reached 30% (though Poland has been in those figures). So, Spain has passed from having low electricity bills to very high ones. But this itself does not have to be a problem. What happened with the Gross Domestic Product per capita?

The Gross Domestic Product per capita in Spain in 2003 was EUR22,680. Today it is just a little higher, EUR23,080 (a rise of 1.76 %). This contrasts with the variation in Europe—11.72%. It's better not to compare with Poland—57.60%. As a result, perhaps in Poland people do not even think about their electricity bill, while in Spain that is a major problem.

It's very important to realize that the Gross Domestic Product per capita is average data. This means that this number hides an unwanted reality: Spain had in that moment (2015) a high per cent of unemployment (22.1%), and 11.8% of households with children and without a job (Eurostat). It's even worse. We must be aware that in 2015 38.8% of unemployed people had no coverage (contributory or non-contributory).

Not Only Numbers

But numbers are only numbers. Nothing happened until a new crisis shocked us. It was 2016. Winter was still to arrive. A Spanish grandmother who was forced to use candles for light died after a mattress caught fire. Now we understand why the term energy poverty is being increasingly used. Energy poverty could be defined as the "inability to keep homes adequately warm". The European Commission considers it as a widespread problem across Europe and includes terrible numbers ranging from 50 to 125 million people.

Energy Poverty

Definitions

We cannot define energy poverty without referring to the definition of fuel poverty provided by Brenda Boardman, in 1991, as the "inability [for a household] to obtain an adequate amount of energy services for 10% of disposable income".[9] It is a very reasonable first attempt, but linking the right to energy to disposable income, in our opinion, does not fulfil the mission of protecting the neediest groups: if the disposable income of a town is meagre, so will be the amount of energy they are able to access.

Possibly it is more appropriate to link the right to energy with needs that we can establish as basic (heating, lighting, cooking, washing clothes, etc.). With this idea in mind, the Spanish Government, in its *National Strategy against Energy Poverty 2019–2024*, defines energy poverty as "the situation in which a household finds itself in which the basic needs of energy supplies cannot be satisfied, as a consequence of an insufficient level of income and that, where appropriate, can be aggravated by having an energy inefficient home."

Furthermore, in this same document the vulnerable consumer is defined as that consumer of electricity "who is in a situation of energy poverty, and may be a beneficiary of the support measures established by the administrations". Therefore, we can see that the concepts of energy poverty and the vulnerable consumer are related.

The Fundamentals of Energy Poverty Protection

Before entering into an analysis of the legal regime for protection against energy poverty, we would like to provide a common-sense argument. As Paloma Mateo Martín[10] points out, energy is an essential factor for the economy of any country, due to its fundamental impact on its industry. The fact that a country is dependent on energy imports, as in the case of Spain, gives the sector an even more important role. This political-economic reason, as well as the fact it was impossible for us to store energy until not many years ago, cause the energy market to be strongly regulated in all industrialized countries. It is therefore clear that the State has sought to guarantee access to energy for companies through regulation, as a source of wealth and economic growth.

[9] B. Boardman, Fuel poverty is different, *Policy Studies*, 1991, vol. 12(4), pp. 30–41, https://www.tandfon-line.com/doi/abs/10.1080/01442879108423600.

[10] P. Mateo Martín, La energía en derecho europeo y en la Constitución española, in A. J. Sánchez Rodríguez, *Manual de derecho y mercado de la energía*, Valencia: Tirant Lo Blanch, 2019, pp. 65–78.

The State, however, had forgotten about homes. Just as the State needs its companies to produce to guarantee growth, households have seen their right of access to energy recognized, and we will argue that not only must such access be guaranteed, but protection must also be given to the right to a minimum of energy that allows households to make use of the basic functions that a home requires.

Access to Energy and Human Rights

So far, most efforts to recognize the right of access to energy have focused on doing so as an integral part of the right to housing. The Universal Declaration of Human Rights[11] recognizes in its Article 25 that all people have the right to an adequate standard of living, which ensures their health and well-being and, especially, food, housing, medical assistance and necessary social services. However, it could be questioned whether the right to energy must necessarily be linked to the right to housing.

Paloma Mateo Martín[12] echoes the link between the effective development of fundamental rights and universal access to energy. Thus, there is a direct relationship between the right to dignity of people, the right to health and education, food and security, and the right to universal access to energy. In September 2015, at the historic Sustainable Development Summit held in New York, more than 150 heads of State and Government approved the *2030 Agenda for Sustainable Development* at the UN,[13] within which 17 Goals were established.

The seventh SDG establishes the need to ensure access to affordable, reliable, sustainable and modern energy for all. Among the specific goals that it proposes we can cite:

- Guarantee universal access to affordable, reliable and modern energy services.
- Significantly increase the share of renewable energy.
- Double the global rate of improvement in energy efficiency.
- Increase international cooperation to facilitate access to clean energy research and technology.
- Expand infrastructure and improve technology to provide modern and sustainable energy services for all in developing countries.

In the *Sustainable development goals report* (2019), emphasis is placed on the need to accelerate efforts to achieve the seventh SDG. Among the data provided, it should be noted that nearly 1 billion people still live without electricity, and more

[11] UN, Universal Declaration on Human Rights, 1948, https://www.un.org/sites/un2.un.org/files/2021/03/udhr.pdf [accessed 13.04.2023].

[12] Ibid.

[13] UN, *Transforming our World: The 2030 Agenda for Sustainable Development*, 2016, https://sustainabledevelopment.un.org/content/documents/21252030%20Agenda%20for%20Sustainable%20Development%20web.pdf [accessed 13.04.2023].

than 3 billion still use polluting fuels to heat or cook, which has a detrimental impact on their health, productivity and quality of life.

The International Covenant on Economic, Social and Cultural Rights[14]

On 19 December 1966, the International Covenant on Economic, Social and Cultural Rights was signed in New York. It may have singular relevance for the recognition of the right to access to energy. Although this right is not expressly recognized in any of its articles, Article 11.1 can be interpreted as providing implicit recognition. The article in question literally states: "The States Parties to the present Covenant recognize the right of everyone to an adequate standard of living for himself and his family, including adequate food, clothing and housing, and to the continuous improvement of living conditions. The States Parties will take appropriate steps to ensure the realization of this right, recognizing to this effect the essential importance of international co-operation based on free consent."

Once again, we are referring to the right to access to energy included as a part of the right to housing, but what interests us in this chapter is the interpretation made of it by the Committee on Economic, Social and Cultural Rights (CESCR),[15] which expressly recognizes that, in addition to the right to adequate housing, the article in question includes "access to … energy for cooking, heating and lighting".

Right of Access to Energy in Spanish Legislation

Unfortunately, as highlighted by Paloma Mateo Martín,[16] the objectives and goals included in the 2030 Agenda are not legally binding. In fact, neither the Spanish Constitution[17] nor the 24/2013 Act, of 26 December, on the Electricity Sector include any reference to the right of universal access to energy. In fact, the Electricity Sector Act refers in many cases to the right of access to electricity grids, but this right differs absolutely from the right of universal access to energy, since it can be defined as the right of the distribution company to charge a certain amount for accessing the power supply.

[14] UN General Assembly, International Covenant on Economic, Social and Cultural Rights, 1966, https://treaties.un.org/doc/treaties/1976/01/19760103%2009-57%20pm/ch_iv_03.pdf [accessed 13.04.2023].

[15] CESCR, General Comment No. 4 on the the right to an adequate housing (Article 11(1) of the Covenant), Adopted at the Sixth Session, on 13.121991, https://www.refworld.org/pdfid/47a7079a1.pdf [accessed 11.04.2023].

[16] Ibid.

[17] Constitución Española, 1978, BOE No. 311 of 29 December 1978, https://www.boe.es/buscar/act.php?id=BOE-A-1978-31229 [accessed 11.04.2023].

The EU at the Forefront

Since its origins, with the Treaty establishing the European Coal and Steel Community (ECSC) or the Treaty of Paris, the EU has linked the concepts of community and energy. The 1951 Treaty of Paris sought to unite the European powers economically, with the idea of achieving common growth and scaring away the spectre of wars between them.

Today, 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 Regulation (EU) 2019/943 of the European Parliament and of the Council, of 5 June 2019, on the internal market for electricity, regulate rules conducive to a common internal market for electricity. The most important milestone in the achievement of the internal energy market was the *Framework Strategy for a Resilient Energy Union*,[18] which involves the cooperation of all Member States to merge the various national energy regulatory frameworks in a single European framework.

In principle, we already see that a large part of the Union's energy legislation is focused on the creation and optimization of the internal energy market, decarbonization, energy storage and the reduction of dependence on the outside, but we cannot forget the importance that directives concerning consumer and vulnerability issues have had on the Acts of the Member States.

Directive 2009/72/CE

Mention should be made here of Directive 2009/72/EC of the European Parliament and of the Council, of 13 July 2009, concerning common rules for the internal market in electricity, which imposes on Member States the obligation to guarantee the security of electricity supply and the protection of consumers, and especially the most vulnerable. Indeed, as Sergio Martín Sánchez and Antonio Jesús Sánchez Rodríguez[19] point out, despite being faced with a liberalized trading activity, the service provider is required to comply with certain public service obligations (including charging a reasonable fee) in exchange for a consideration that can be legally agreed or imposed.

On the other hand, this directive takes into account the pernicious effects that the liberalization of electricity markets may entail (note here the difference with

[18] European Commission, *A framework strategy for a resilient energy union with a forward-looking climate change policy, 2015*, https://eur-lex.europa.eu/resource.html?uri=cellar:1bd46c90-bdd4-11e4-bbe1-01aa75ed71a1.0001.03/DOC_1&format=PDF [accessed 13.04.2023].

[19] S. Martín Sanchez, A. J. Sánchez Rodríguez, El concepto de servicio universal de electricidad en derecho europeo y en derecho interno, in A. J. Sánchez Rodríguez, *Manual de derecho y mercado de la energía*, Valencia: Tirant Lo Blanch, 2019, pp. 385–396.

respect to the 54/1997 Act), and to compensate for them it establishes protective obligations for vulnerable consumers. In this sense, among the principles and obligations established in Article 3, it includes several revealing measures:

- Member States are obliged to guarantee that all domestic customers enjoy in their territory the right to supply electricity of a certain quality, and at reasonable, easily and clearly comparable, transparent and non-discriminatory prices.
- It is established that Member States can designate a supplier of last resort.
- The Member States are obliged to protect end customers and especially vulnerable customers.

24/2013 Act, of 26 December on the Electricity Sector, and the Protection of Vulnerable Consumers

The 24/2013 Act, of 26 December on the Electricity Sector, transposes the obligations contained in Directive 2009/72/EC on the protection of vulnerable consumers into Spanish law, and does so in its own way:

- On the one hand, it establishes a tariff of last resort, with a more limited profit margin, so that all domestic consumers (then up to 10 kW of contracted power, and today up to 15 kW), can benefit from it. Vulnerable consumers, among others, can benefit from this rate.
- This rate will be offered by a last resort trading company (a legal person other than free market trading companies).
- It establishes a social electricity bond with discounts of 25% for vulnerable consumers, and 40% for severely vulnerable consumers.

Vulnerable Consumers

The 24/2013 Act leaves open the way of determining the groups of vulnerable consumers and severe vulnerable consumers. Its implementation was carried out through RD 897/2017, of 6 October, which regulates the figure of the vulnerable consumer, the social bonus, and other protection measures for domestic consumers of electricity.

A vulnerable consumer, who benefits from a 25% discount on bills, is considered to be anyone who meets any of the following requirements:

- Having a joint annual individual or family income lower than certain amounts, higher in the event that all members of the family unit are pensioners due to retirement or permanent disability.
- Being in possession of the large family title. Recently it has been questioned whether all large families should enjoy the social bonus.

A severely vulnerable consumer, who benefits from a 40% discount on bills, is considered to be one who, in addition to meeting the previous income requirements:

- Has a recognized disability equal to or greater than 33% of the consumer or any of the members of the family unit.
- Credit due to the situation of gender violence of the consumer, or any of the members of the family unit.
- Credit due to status as a victim of terrorism.
- Has a recognized dependency situation of degree II or III of the consumer, or any of the members of the family unit.

In addition, it is possible that a person or family unit is considered a vulnerable consumer in a situation of social exclusion, with the right for the marketer to make a 50% discount on the bill, as long as they meet the following requirements:

- Being cared for by the social services of an autonomous or local administration.
- The regional or local administration finances at least 50% of the invoice and that financing is accredited by means of a document issued by the social services.

Prices in Free and Regulated Markets

In Spain small consumers can choose between free market prices and regulated market prices. Within the regulated market, the price that consumers pay on their bill is called the Voluntary Price for the Small Consumer. One of the requirements for vulnerable consumers to be eligible for the social bonus is to have a contract in the regulated market and, therefore, be subject to the VPSC.

The Social Bonus and Its Cost

The social bonus covers the difference between the value of the Voluntary Price for Small Consumers and a base value, which may be different depending on the categories of vulnerable consumers that are established, which will be called the last resort tariff and will be applied by the corresponding reference marketer in the bills of consumers who are covered by it.

On 29 March 2022 a major change was approved in Spain in relation to vulnerable consumers. Specifically, para. 4 of Article 45 of Law 24/2013, which refers to the costs generated by the social bonus for the system, was modified. This change, which came into force on 31 March 2022, was necessary in order to comply with Directive 2019/944, and relates to who must pay the cost of the social bonus.

After the implementation, the social bonus is assumed by all the subjects of the electricity sector that participate in activities aimed at the supply of electricity (including the production, transmission, distribution and commercialization of electricity), as well as by direct consumers in the market.

Essential Supply

As Sergio Martín Sánchez and Antonio Jesús Sánchez Rodríguez[20] highlight, RD 15/2018, of October 5, on urgent measures for the energy transition and consumer protection,[21] introduced in 24/2013 Act the concept of essential supply, which determines an additional benefit for severely vulnerable consumers in a regime of social exclusion and for those supplies with a beneficiary holder of the social bond that incur in non-payment of the electricity bill whose holder is a beneficiary of the social bond and has a person under 16 years of age in the family unit or a person in a situation of dependency of grade II or III, or have a recognized disability equal to or greater than 33%.

In these cases, the interdiction of the supply cut is imposed. In this case, we are not talking about a right of access to energy, but a right to energy itself.

The Barriers of the Bonus

Unfortunately, the bonus is not reaching to all the households it should, due to many factors. These include: shame, people being afraid to contact the social services (will they take my children away?); bureaucracy (the bonus is not easy to obtain and must be renewed every 6 months). Perhaps the reader may think that the bonus should be enough to solve the problem. On the other hand, despite the fact that we have just finished talking about the right to energy, which is covered in the 24/2013 Act when talking about essential supplies, there are still situations that violate universal access to electricity service, as has happened recently near Madrid. La Cañada Real is the largest irregular settlement in Europe. 3 October marked a year since the families settled in Sector 6 began to be evicted (urban reasons). This will be the second consecutive winter in which about 1,800 children will not have access to electricity to combat the cold.

[20] Ibid.

[21] Real Decreto-ley 15/2018, of 5 October, de medidas urgentes para la transición energética y la protección de los consumidores, BOE No. 242 of 6 October 2018, https://www.boe.es/buscar/doc.php?id=BOE-A-2018-13593 [accessed 13.04.2023].

Efficiency and Energy Communities

What Else Can Be Done to Solve Energy Poverty?

There are several ways of fighting energy poverty from the citizen's point of view (our Government's attempts have always been stopped or sabotaged by electrical energy companies). Of all the possible ways, reducing the dependence on the electricity supplied by traditional companies seems to be the most realistic. This includes the following possible actions:

- Reducing energy demand.
- Microgenerating energy for self-consumption.
- Microgenerating energy and selling the excess.

Reducing Energy Demand (Efficiency)

In the short term, consuming less energy is not easy, especially for vulnerable consumers. To reduce energy demand, among the measures that can be taken, we can identify the following:

- Buying efficient appliances. Unfortunately, they are more expensive.
- Use more efficient heating systems. Once again, we are faced with an investment that vulnerable households can hardly afford.
- Improve the insulation and windows of homes, so that they lose less heat. It is also not economically easy to achieve this.

We therefore see that it is very difficult to escape the demand for energy in the short term. That is why it is considered an inelastic demand: despite energy prices having surged since the summer of 2021, consumers have to continue consuming. The only option available to a vulnerable household is to try to consume during the cheapest hours.

Microgenerating Energy for Self-consumption

The most economically accessible energy generation system is the installation of photovoltaic panels, although other systems, such as geothermal or aerothermal pumps, are also being used. The advantage of photovoltaic solar energy generation is that, depending on the hours of sunshine in the area in question, the energy that will be generated by each panel can be predicted, and the amount generated can be adapted to the needs.

In addition, today there are batteries that allow energy to be stored, so, taking into account the hours of sunshine in the area (in Spain, they vary from 1,700 hours per year in Galicia or the Basque Country, to 3,400 in Alicante), in theory

it would even be possible to disconnect from the grid (if one has an emergency generator, of course).

Microgenerating and Selling the Surplus Energy

Until very recently this was not possible. This meant that, despite the aid for the installation of photovoltaic panels, given that individuals could only install them to heat water the return on investment was excessively long. Fortunately, this has changed recently. Today we can use the energy generated for all needs, and we can even sell surpluses to other nearby supply points. There are 2 directives with influence over this:

- Directive (EU) 2018/2001 of the European Parliament and of the Council, of 11 December, on the promotion of the use of energy from renewable sources.
- Directive (EU) 2019/944 of the European Parliament and of the Council, of 5 June, on common rules for the internal market for electricity and amending Directive 2012/27/EU.

These directives have not been transposed, but in the Spanish legal system, two recent provisions have been also approved:

- RD 244/2019, of 5 April, by which are regulated the administrative, technical and economic conditions of the self-consumption of electrical energy.[22]
- RD 1183/2020, of 29 December, on access and connection to the electricity transmission and distribution networks.[23]

So what can a Spanish citizen do to reduce dependence? Apart from efficiency actions, now it's economically viable to install photovoltaic panels and sell the surplus energy.

Public-Private Participation: Local Energy Communities

The energy communities (or citizen energy communities, as defined by the aforementioned directives) represent a turning point for Spanish consumers. Cristina Gil-Casares Cervera[24] defines them very simply as "groups of people, families or

[22] Real Decreto 244/2019, of 5 April, por el que se regulan las condiciones administrativas, técnicas y económicas del autoconsumo de energía eléctrica, BOE No. 83, of 6 April 2019, https://www.boe.es/diario_boe/txt.php?id=BOE-A-2019-5089 [accessed 13.04.2023].

[23] Real Decreto 1183/2020, of 29 December, de acceso y conexión a las redes de transporte y distribución de energía eléctrica, BOE No. 340, of 30 December 2020, https://www.boe.es/buscar/act.php?id=BOE-A-2020-17278 [accessed 13.04.2023].

[24] C. Gil-Casares Cervera, Las nuevas figuras del sistema eléctrico, in R. Tarlea Jiménez, J. M. Jover Gómez-Ferrer, C. Gil-Casares Cervera, *Regulación del sistema eléctrico*, Cizur Menor: Aranzadi, 2021, pp. 495–554.

even companies or administrations, that jointly manage or generate energy, in particular energy from renewable sources".

Community energy refers to a wide range of recognized collective energy actions and schemes that involve citizens' participation in the energy system. Energy communities can be understood as a way to "organize" collective energy actions around open, democratic participation and governance, and the provision of benefits for the members or the local community.

Energy Cooperatives in Spain

Local Energy Cooperatives as a Solution to Energy Poverty

What does this have to do with energy poverty? It has been mentioned that efficiency is a slow way of reducing dependence. Moreover, investment is needed, so households experiencing energy poverty cannot reach efficiency. Self-consumption suffers from the same problem. Local energy cooperatives are a real way to reduce dependence and, at the same time, to fight against energy poverty.

That being said, we must address the fact that there are less energy cooperatives in Spain than what one would expect. The main reason is legal uncertainty, due on the one hand to the regulatory changes of the last 30 years (including the well-known sun tax), but also to the fact that Spanish legislation is not yet fully adapted to the 2019/944 Directive.

It is clear that the rising energy costs of the last 20 years, coupled with the consequences of the war in Ukraine and the instability of the energy market have made consumers want to flee the market and look for alternative solutions. However, one would have expected a significant increase in energy cooperatives, and yet such an increase is not apparent.

For example, the largest union of cooperatives in Spain, Unión de Cooperativas de Personas Consumidoras y Usuarias de Energías Renovables (hereafter Unión Renovables) brings together 24 regional cooperatives dedicated to marketing electricity to its more than 120,000 members, training and informing them about responsible consumption, bill adjustments to save money and the electricity sector.

Proof that one of the reasons for the lack of creation of energy cooperatives is legal insecurity and mistrust is that in the Valencian Community alone, a pioneering community in Spain in energy cooperatives and an area where there is confidence in this system as an escape from the traditional energy market, Unión Cooperativas has 9 cooperatives out of that total of 24. The number of consumers benefiting from the energy produced by Unión Renovables' cooperatives is only 120,000.[25]

[25] Data available at https://www.unionrenovables.coop [accessed 14.04.2023].

On the other hand, if we analyse the data from Red Eléctrica Española's Renewable Energy Reports for the years 2021[26] and 2022,[27] we can see, for example, that the regions of Castilla y León and Galicia have contributed most to the installation of photovoltaic panels. In addition, non-shared self-consumption has grown significantly (80.4% of the new installed capacity in 2021 was photovoltaic, and 76.3% in 2022).

In our opinion, this shows that consumers are aware that they must escape from the energy market trap, but they have opted for self-consumption instead of energy cooperatives.

Enercoop: The Example of Crevillent (Valencia)

Crevillent is a town of about 29,000 inhabitants. The Enercoop Group, in collaboration with the Council, the Generalitat and the IDAE have created a project called COMPTEM (Community for Municipal Energy Transition). Its objective is to promote self-consumption and reduce the electricity bill (5 MW installation that plans to cover 50% of the energy needed by the entire town). Probably, Crevillent has hugely contributed to the arise of cooperatives in the Valencian Community.

Conclusion

The liberalization carried out with the 54/1997 Act in Spain was carried out without taking the precautions provided by Directive 2009/72/CE. In any case, this forecast only comes to alleviate the damages suffered by vulnerable households. In terms of free competition, the five companies that monopolized the market at the end of the last century continue to do so today. The right of universal access to energy is making its way into the different legislations, and we even find some formulation of the right to energy itself in the 24/2013 Act, which prevents the cut in so-called essential supplies. The social bonus requires too many procedures both in its application and in its renewal, and there are barriers that prevent it from reaching all the homes that it should.

Citizen energy communities represent a before and after. In a market with inelastic demand, they allow consumers to organize to share energy. In this way, and considering that it is possible to store energy, today it is possible to eliminate dependence on electricity companies. Energy consumers are aware of the need to escape from the energy market trap, but they have opted for self-consumption instead of energy cooperatives.

[26] REE, *El Sistema Eléctrico Español: Informe Resumen de Energías Renovables*, 2021, pp. 6–9, https://www.sistemaelectrico-ree.es/sites/default/files/2022-08/InformeEnergiaRenovable2021_Resumen.pdf [accessed 14.04.2023].

[27] Ibid.

Chapter 10

LEGAL DETERMINANTS OF ENERGY COOPERATIVES' DEVELOPMENT IN POLAND

Tomasz Marzec

Introduction: The Challenges of Energy Transition

Poland's energy transition appears inevitable. The greatest challenge of this process is the reduction of greenhouse gas emissions, since the Polish energy system is still very coal-dependent.[1] According to statistical data, the most important fuel for electricity generation in 2021 was hard coal, with a share of 53%, and lignite, with a share of 26%. At the same time, renewable energy sources (RES) were responsible only for 11% of total electricity generation.[2] However, the share of renewable energy in gross final energy consumption is steadily increasing: almost 72% of it comes from solid biofuels,[3] whose use is associated with negative environmental consequences.[4]

According to its international obligations, Poland should intensify its efforts to achieve a sustainable energy sector. In order to meet the obligations of the Paris Agreement, the European Commission in 2018 declared that zero net greenhouse gas emissions should be achieved in the EU by 2050. This process must take place through a socially just and cost-effective transformation.[5] In order to achieve this

[1] P. Bórawski, A. Bełdycka-Bórawska, L. Holden, Changes in the Polish coal sector economic situation with the background of the European Union Energy security and eco-efficiency policy, *Energies*, 2023, vol. 16, p. 726.

[2] PSE, Percentage share of national electricity production of each power plant group by fuel type in 2021, https://www.pse.pl/dane-systemowe/funkcjonowanie-kse/raporty-roczne-z-funkcjonowania-kse-za-rok/raporty-za-rok-2021#r6_2 [accessed 9.10.2023].

[3] *Energy 2022*, Warsaw: GUS, 2022.

[4] A. Żołądkiewicz, Economic and Ecological Aspects of the Production of Liquid Biofuels, *Roczniki Naukowe Stowarzyszenia Ekonomistów Rolnictwa i Agrobiznesu*, 2016, vol. 18(3).

[5] Communication from the Commission: *A Clean Planet for all A European strategic long-term vision for a prosperous, modern, competitive and climate neutral economy*, Brussels, 28.11.2018, COM(2018) 773.

objective, there was a series of calls for changes to be made to EU law, which are collectively referred to as the "European Green Deal".[6] The EU commitment to reduce greenhouse gas emissions was made legally binding through the enactment of the 2021 European climate law.[7] Under this legislation, a binding Union climate target for 2030 and 2050 has been established. The aim is to reduce net greenhouse gas emissions (emissions minus absorption) in the EU by at least 55% by 2030 compared to 1990 levels, and to achieve climate neutrality by 2050.

The process of energy transition presents a number of challenges. Decarbonization of the energy sector involves considerable costs. In the Polish case, for investments in the fuel and energy sectors, expenditures of PLN890 billion are foreseen.[8] Significantly, analysts point out that maintaining the status quo involves even more costs over the same period.[9] Therefore, public authorities should shape energy policy in order to minimize the costs borne by energy consumers due to the energy transition. Past experiences with the EU Emissions Trading System and supply disruptions connected with Russian aggression against Ukraine have already demonstrated that energy consumers are a group very threatened by energy price increase.

The community energy movement is one of the means that will enable a just energy transition process. This phenomenon was also recognized by the EU legislator, since EU Member States are obliged to implement the regulation concerning energy communities and prosumers in their domestic legal systems. In this context, the aim of this chapter is to assess the legal regulation on energy cooperatives in Poland and determine whether this regulation enables the development of energy cooperatives. This will be achieved through an analysis of the state of energy cooperatives' activity in Poland and an assessment of how it is influenced by legal regulations. The assessment of domestic legislation is carried out in light of the obligation to carry out the transposition of EU directives introducing energy communities—the renewable energy community and the citizen energy community.

Research Hypotheses

Energy cooperatives are one of the legal forms of citizen participation in the creation of a distributed energy system. The concept of distributed energy is implemented by the community energy movement, which promotes the construction

[6] Communication from the Commission: *The European Green Deal*, Brussels, 11.12.2019, COM(2019) 640.

[7] Regulation (EU) 2021/1119 of the European Parliament and of the Council of 30 June 2021 establishing the framework for achieving climate neutrality and amending Regulations (EC) No. 401/2009 and (EU) 2018/1999 ('European Climate Law'), L 243/1.

[8] *Polityka Energetyczna Polski do 2040 r.* (Poland's energy policy until 2040), https://www.gov.pl/web/klimat/polityka-energetyczna-polski [accessed 09.10.2023].

[9] Polski Instytut Ekonomiczny (The Polish Economic Institute), *Tygodnik Gospodarczy* PIE 2021, no. 6.

of a distributed energy system by citizens, in particular those associated within local communities, who take an active part in energy generation and its management. In the European Union, the development of citizen energy is encouraged by its law, obliging Member States to transpose regulations that introduce energy communities.

Despite the relatively large number of RES investments carried out by professional entities, such citizen initiatives have not appeared on a large scale in Poland so far. A few projects that can be classified as community energy initiatives have been described in the literature, but it should be noted that most of them have not yet managed to implement the planned investments in RES installations.[10] Thus, the current stage of community energy development in Poland can be described as mainly popularization of the concept of civil participation in the energy sector.

As in other EU countries,[11] the development of community energy in Poland is closely dependent on the introduction of favourable legal regulations facilitating social initiatives to carry out investments in renewable energy sources. This is particularly true for energy cooperatives. A favourable legal regulation enabling the dynamic development of energy cooperatives in Poland should meet at least four basic conditions. Namely, it should: (1) make it realistically possible for community energy initiatives to obtain a connection to the distribution network, (2) provide an effective system of support, (3) target community energy initiatives with a preferential system of incentives, and (4) be part of a deliberate process of implementing into the national legal order the provisions of EU law regulating energy communities.

Based on the analysis of the existing legal acts, as well as the available information on the legislative initiatives undertaken and the declarations from the government side, it should be hypothesized that a legal framework meeting these four basic criteria has not been introduced in Poland so far. It should be concluded that the national regulation meets only the second condition to the full extent, as the Polish legislator has adopted a favourable support system for energy cooperatives. It should be noted that being a beneficiary in this system is subject to a number of largely restrictive statutory requirements. However, it should be noted that the Polish legislator has recently taken some steps to meet the other three conditions. In 2023 an amendment to the law was adopted, which enters into force at the beginning of October.

The amendments facilitate the start-up of the energy cooperative and, to a limited extent, introduce an obligation for the distribution system operator to connect the RES installation operated for the benefit of the energy cooperative to the

[10] I. Capellán-Pérez et al., Is community energy really non-existent in post-socialist Europe? Examining recent trends in 16 countries, *Energy Research & Social Science*, 2020, vol. 61, p. 6.

[11] T. Bauwens, B. Gotchev, L. Holstenkamp, What drives the development of community energy in Europe? The case of wind power cooperatives, *Energy Research & Social Science*, 2016, vol. 13, pp. 136–147.

distribution network. Also, a number of subsidy programmes for energy cooperatives were announced in 2022. The legislator has also finished the process of implementing legal provisions that introduce citizen energy communities in Poland, while they are a separate legal form from energy cooperatives.

The Cooperative Movement in Poland

The energy cooperative is a relatively new concept in the Polish legal system. In 2016, the Polish legal system received a legal definition of an energy cooperative.[12] The Act of 16 September 1982—the Cooperative law differentiates between separate types of cooperatives. The criterion for the distinction is the object of the cooperative's activity and the type of members' interests satisfied by this association.[13] Therefore, the energy cooperative is a distinguished type of cooperative. In the view of the above, it is important to briefly outline the background for the cooperative movement in Poland and its development throughout the years.

The cooperative movement in Poland has a long-lasting tradition. The first organization founded on the principles that were later identified as characteristic for cooperatives was established for a rural Polish community in 1816.[14] Therefore, the roots of the Polish cooperative movement can be found even before the Rochdale Society of Equitable Pioneers. Despite the fact that during the nineteenth century many cooperative initiatives were established, in particular among the rural communities, their development was hindered by the fact that from 1795 to 1918 Poland was not an independent state and was partitioned between Prussia, the Habsburg monarchy, and Russia. As a consequence, cooperatives developed differently in the communities operating in each of these states.[15] It is important to mention that cooperative initiatives were often linked with the resistance movement and were consequently suppressed, especially by Russian authorities.[16]

The interwar period (1918–1939) is considered as the heyday of cooperative development, in particular agricultural and commercial cooperatives, food and housing cooperatives, and savings and loans cooperatives.[17] With the provisions of the Act

[12] By and amendment to the Act of 20 February 2015 on Renewable Energy Sources (Journal of Laws of the Republic of Poland [JL] 2015, item 478), from 22 June 2016 amending the Act on Renewable Energy Sources and certain other acts.

[13] K. Osajda, B. Lackoroński (eds.), *Prawo spółdzielcze. Komentarz* [Cooperative Law, Commentary], Warsaw, 2020.

[14] A. Suchoń, *Legal Aspects of the Organisation and Operation of Agricultural Co-Operatives in Poland*, Poznan: Wydawnictwo Naukowe UAM, 2019, p. 18.

[15] J. Mroczek, Początki rozwoju spółdzielczości w Polsce [The beginnings of cooperative development in Poland], *Przegląd Prawniczy, Ekonomiczny i Społeczny*, 2012, no. 1, pp. 29–35.

[16] Ibid., p. 34.

[17] K. Boczar, *Spółdzielczość. Problematyka społeczna i ekonomiczna* [Cooperative: Social and Economic Issues], Warsaw, 1986, pp. 112f.

on 29 October 1920 on Cooperatives,[18] the Polish legislator provided a unified legal framework for conducting economic activity in the legal form of a cooperative. Further expansion of cooperatives in Poland was stopped by the great economic crisis and World War II.[19] A brief glance at statistical data proves the importance of the cooperative movement during the interwar period—in 1937 there were 12,860 cooperatives with 2.933 million members, representing over 11% of Poland's population.[20]

The policy of the Polish socialist state (1945–1989) strongly affected the cooperative movement. The communist authorities made a number of attempts to forcibly collectivize agriculture. As a result, the number of cooperatives and cooperators reached the highest rates of quantitative development. The number of cooperatives among the rural population has reached approximately 60%. A total of 15,000 cooperatives were in operation at the time, employing around 2 million people. The cooperative sector produced about 6% of GDP at that time.[21] Regardless of the numbers, the authoritarian authorities violated cooperative principles and values by abolishing their self-governance and using a terror apparatus. This state of affairs has influenced the negative perception of cooperatives in rural areas, which is still observed today.

The period of system transformation was a time of another crisis in the cooperative movement in Poland. The transition to a free-market economy system caused a significant decline in the economic position of rural cooperatives in the national economy. The decrease in the share of cooperatives in economic sectors such as retail, catering and services amounted to about 80%.[22] Attempts to reestablish a strong cooperative sector in Poland are now being observed, although so far they have not had the expected effect.

The Origin of Regulation on Energy Cooperatives in Poland

The introduction of provisions governing energy cooperatives into the Polish legal system is linked to the popularity that this form of organizing community energy initiatives has achieved in Western European countries.[23] By means of the 2016 amendment to the RES Act, the Polish legislator introduced a legal definition of energy clus-

[18] JL 1920, no. 111, item 733.

[19] J. Mroczek, Początki rozwoju, pp. 36f.

[20] B. Brzozowski, *Podstawy gospodarki spółdzielczej. Wybrane zagadnienia* [Basics of Cooperative Economy: Selected Issues], Krakow: Wydawnictwo Uniwersytetu Rolniczego w Krakowie, 2008, p. 66.

[21] M. G. Brodziński, *Oblicza polskiej spółdzielczości wiejskiej: geneza—rozwój—przyszłość* [Faces of Polish Rural Cooperatives: Genesis—Development—Future], Warsaw, 2014, p. 20.

[22] Ibid., p. 174.

[23] Cf. A. Wierling et al., Statistical evidence on the role of energy cooperatives for the energy transition in European countries, *Sustainability*, 2018, vol. 10.

ter and energy cooperative, and amended the provisions regulating the renewable energy prosumer.[24] In doing so, the legislator attempted to realize, at least in part, the scientific demands to enable a legal framework for the energy community in Poland.[25]

When describing the process of introducing the provisions regulating energy cooperatives into the Polish legal system, it is necessary to mention two consecutive amendments to the Act on Renewable Energy Sources, from 2018[26] and 2019.[27] Through the aforementioned amendments, the objective of the energy cooperative's activity was stated more precisely, the extensive catalogue of requirements for conducting this activity were introduced, as well as a support system—net metering. Importantly, despite the detailed regulation at the statutory level, in order to regulate the matter of settlements regarding electricity produced by the cooperative or its members, the minister responsible for climate affairs had to adopt separate legal act. The aforementioned Regulation of the Minister of Climate and Environment of 23 March 2022 on the registration, balancing and provision of metering data and billing of energy cooperatives[28] was only adopted years after the legislation regulating energy cooperatives was introduced into the legal system.

It seems that it was not until the entry into force of the regulation on the rules of operation of the support system intended for energy cooperatives that a comprehensive legal regulation relating to energy cooperatives was established. Thus, the process of creating a legal framework for the operation of energy cooperatives in Poland has taken nearly six years. This state of affairs should be assessed negatively, as the tardy actions of the legislator discouraged potential founders of energy cooperatives, creating the negative phenomenon of legal uncertainty.

Legal Framework for Energy Cooperatives in Poland

According to its definition, an energy cooperative is a cooperative within the meaning of the Cooperatives Law Act,[29] or is a farmers' cooperative within the

[24] Ustawa z 22 czerwca 2016 r. o zmianie ustawy o odnawialnych źródłach energii oraz niektórych innych ustaw (Act of 22 June 2016 amending the Renewable Energy Sources Act and other acts), JL 2016, item 925).

[25] J. Jankowski, P. Pałka, Przyszłość i rola spółdzielczości energetycznej w Polsce—autorski projekt ustawy o spółdzielniach energetycznych [The future and role of energy cooperatives in Poland—author's draft law on energy cooperatives], *Pieniądze i Więź*, 2014, vol. 17(4), pp. 154–161.

[26] Ustawa z 7 czerwca 2018 r. o zmianie ustawy o odnawialnych źródłach energii oraz niektórych innych ustaw [Act of 7 June 2018 amending the Renewable Energy Sources Act and other acts], JL 2018, item 1276.

[27] Ustawa z 19 lipca 2019 r. o zmianie ustawy o odnawialnych źródłach energii oraz niektórych innych ustaw [Act of 19 July 2019 amending the Renewable Energy Sources Act and other acts], JL 2019, item 1524.

[28] JL 2022, item 703.

[29] Ustawa z 16 września 1982 r. Prawo spółdzielcze [Act of 16 September 1982 Cooperative Law], consolidated text JL item 648, as amended.

meaning of the Farmers' Cooperatives Act.[30] In the light of the above, an energy cooperative in Polish law is a subtype of a cooperative within the meaning of the above stated acts. An energy cooperative is legally distinguished primarily by its scope of activity.[31] It conducts economic activity consisting in the production (also trade and store) of electricity or biogas or agricultural biogas or biomethane or heat from renewable energy source installations; this activity is carried out exclusively for the benefit of the members of the cooperative. The activities stated above can be undertaken by means of RES installations owned by an energy cooperative or its members and balancing the demand for electricity or biogas or heat, solely for own needs of the energy cooperative and its members, who are connected to an area-defined power distribution network with a rated voltage of less than 110 kV or a gas distribution network or a heating network.

Support System for Energy Cooperatives

Due to the scope of economic activity of energy cooperatives, it should be emphasized that these entities in Poland are currently unable to sell and/or distribute energy to parties other than members of the cooperative. The use of the energy produced within the energy cooperative for the needs of its members is made possible by the net-metering support system. This system consists of a quantitative balancing of the electricity fed into and taken from the electric grid. The RES installations used by the cooperative feed electricity directly into the distribution grid, with cooperative members also taking their energy directly from the distribution network. With regard to the energy generated and subsequently used under the support scheme, it should be noted that the energy cooperative and its members are exempted from paying distribution charges to the distribution system operator.

The regulations establish that all members of energy cooperatives who are also energy producers or energy end-users within the meaning of the Act of 10 April 1997—Energy Law[32] shall have remote reading meters that record separately for each of them: (1) the quantities of electricity fed into the electricity distribution network, and (2) the quantities of electricity taken from the electricity distribution network.

Meters record the above data separately for each hour, as this is the basic unit of time in which energy is billed. Energy balancing is carried out through the fol-

[30] Ustawa z 4 października 2018 r. o spółdzielniach rolników [Act of 4 October 2018 on farmers' cooperatives], JL 2018, item 2073.

[31] D. Bierecki, Energy Cooperatives in the System of Polish Cooperative Law, *Review of Institute of the Grand Duchy of Lithuania*, 2021, vol. 1.

[32] Ustawa z dnia 10 kwietnia 1997 r.—Prawo energetyczne [Act of 10 April 1997—Energy Law], consolidated text: JL 2022, item 1385, as amended.

lowing operation—the energy fed into the grid is subtracted from the energy consumed from the grid, obtaining the total amount of electricity balanced in a given hour. The result of the balancing can be positive—in this case more energy has been taken from the grid by the cooperative member. When the balancing result is negative, more energy has been fed into the grid. This operation is performed for each cooperative member who is an energy consumer or producer. It is illustrated by the following formula:

$$Eb_{(t)} = Ep_{(t)} - Ew_{(t)}.$$

The individual symbols stand for:

$Eb_{(t)}$ —the amount of electricity totalled in a given hour t for a given member of the energy cooperative,

$Ep_{(t)}$ —the amount of electricity consumed from the electricity distribution network, summed from all phases,

$Ew_{(t)}$ —the amount of electricity injected into the electricity distribution network, summed from all phases.

The results of individual members are then added together to give the amount of energy totalled in a given hour for the energy cooperative. This operation is illustrated by the formula:

$$Ebs_{(t)} = \sum_{k=1}^{n} Eb_{(t)(k)}.$$

The individual symbols stand for:

$Ebs_{(t)}$ —the amount of electricity summed up in a given hour t for n members of the electricity cooperative, to be settled in a given settlement period (hour),

k —cooperative member,

$Eb_{(t)}$ —the amount of electricity, which is a result of the balancing operation for each energy cooperative member.

Settlement takes place over the settlement period adopted by the parties in the electricity sales contract (or comprehensive contract). This is usually a monthly or bi-monthly period. The amount of electricity billed in a given period for the entire energy cooperative is obtained by summing up:

1) the sum of the quantities of electricity balanced in all hours of a given settlement period in which the balancing result is positive,
2) the product of (1) the sum of the quantities of electricity balanced in all hours of a given settlement period in which the balancing result is negative, and (2) the quantity ratio 1 to 0.6,
3) the settlement of electricity from previous settlement periods carried forward to the period currently being calculated, for which the settlement value is negative.

This operation is illustrated by the formula:

$$Er_{(o)} = Ebsp + (Ebsw \times Wi) + Er_{(po)}.$$

The individual symbols stand for:

$Er_{(o)}$ —the amount of electricity balanced in a given billing period for the entire energy cooperative,

Ebsp —the sum of the quantities of electricity balanced at given hours *t*, to be settled in a given settlement period, for which the balancing result is positive,

Ebsw —the sum of the quantities of electricity balanced at given hours *t*, to be settled in a given settlement period, for which the balancing result is negative

Wi —quantitative ratio, 1 to 0.6,

$Er_{(po)}$ —the settlement of electricity from previous billing periods carried forward to the next billing period, for which the settlement value is negative.

Importantly, information about the energy balancing outcomes is provided by the DSO to the energy seller. This is the electricity seller appointed by the President of the Energy Regulatory Office. The indicated billing quantitative ratio (1 to 0.6) is defined in the Renewable Energy Sources Act, and it can be perceived as a "compensation" to the energy seller for the billing. In this way, the seller "receives" 40% of the surplus energy fed into the grid by the cooperative. This means that it can resell the aforementioned surplus energy to third parties.

When the outcome of the energy billing for the billing period is positive, the cooperative has consumed more energy than it fed into the grid. Then the amount of electricity in excess of its own production must be purchased, at a price agreed with the energy seller. A negative result, on the other hand, means that the cooperative has fed more energy into the grid than it has consumed—so the surplus energy is carried forward to subsequent billing periods, but for no longer than 12 months.

In the event that the outcome of the electricity billing is positive:

1. The amount of this electricity shall be distributed proportionally to the individual producers and consumers for whom the sum of the amount of electricity balanced in the given settlement period has a positive value.
2. Once the distribution referred to above has been made, the amount of electricity attributable to a given cooperative member shall be taken into account for the calculation of charges in accordance with the prices and rates set in the applicable tariff groups.

The billing model described is presented in accordance with the Regulation of the Minister of Climate and Environment of 23 March 2022. In order to participate in the settlement system, the cooperative member should be an energy consumer or producer within the meaning of the Energy Law Act, should have an energy sales contract (comprehensive contract). As a result, they settle sepa-

rately the underpayment to the energy seller. The consequence of this solution is that the cooperative does not bear the risk of insolvency of any of its members.

It can be said that under the support system described above, the electricity grid is a "virtual energy store" for the members of the cooperative. Despite the fact that, under the model adopted by the Polish legislator, a cooperative cannot sell energy to third parties, its activity still proves profitable for cooperatives. This is because the described system allows for a total reduction of electricity bills and enables electricity trading within the cooperative; however, there is no detailed statutory regulation for such trade.

Legal Requirements for the Energy Cooperative

The energy cooperative can conduct its economic activity on the basis of RESA only after being registered. In fact, the registration procedure includes two main steps. First—the registration of the cooperative or farmers' cooperative in a registration court. Second—the registration of the energy cooperative by the Director of the National Agricultural Support Centre. The list is publicly available on the webpage of the National Agricultural Support Centre.[33] In order to register the energy cooperative, all legal requirements stated in cooperative law and in RESA have to be fulfilled. Below, there is a catalogue of the most important legal requirements for the energy cooperatives (EC):

- The EC has to be registered as a cooperative or a farmers' cooperative (requirements in this respect include having specific number of members, cooperative's statute, members of cooperative's bodies).
- The subject of EC activity should comply with the RESA provisions.
- The EC should produce energy solely from renewable energy source installations owned by an energy cooperative or its members.
- The EC should generate or trade or store electricity (as well as biogas or agricultural biogas or biomethane or heat) exclusively as a part of activities carried out exclusively for the benefit of these cooperatives and their members;
- The EC may be established only in rural or urban-rural municipalities. It can cover maximally the territory of 3 municipalities directly adjacent.
- The EC may be established in the area of operation of one distribution-system operator.
- The EC members should be connected to the low- and medium-voltage electricity grid.
- The maximum capacity generated by the energy cooperative should not exceed 10 MW (30 MW for heat).

[33] List of energy cooperatives, National Centre for Agricultural Support, https://www.gov.pl/web/kowr/zatwierdzenie-w-wykazie-spoldzielni-energetycznych [accessed 9.10.2023].

- If the EC produces biogas, its annual capacity should not exceed 40 mln m^3.
- If the EC produces biomethane, its annual capacity should not exceed 20 mln m^3.
- If the EC generates electricity, the electricity generation efficiency of all RES installations used by the EC should cover no less than 70% of the EC's own annual needs and annual needs of its members (this requirement has been reduced to 40% for cooperatives that apply for registration between 1 October 2023 and 31 December 2025).

According to its support system, the Polish model energy cooperative is not established primarily as a profit-oriented entity and the purpose of its establishment is not to generate profits. According to the legal framework, the energy cooperative should be established in order to generate energy (in particular electricity) for the purpose of autoconsumption. This concept of energy cooperative should be assessed positively as being in line with the principle of sustainable development. This is due in particular to the requirement for the cooperative to align its energy generation profile with the energy needs of its members. In comparison, German energy cooperatives benefiting from the feed-in tariff system built RES installations that were not correlated with the local energy demand. Although this scheme fits into the sustainable development model, it also limits the energy cooperative's capability to raise capital, especially during the first stages of the investment.

Internal Billing Models for Energy Cooperatives

The provisions of the Regulation described in this work regulate in detail the settlement between the cooperative and the energy seller, but do not impose a method of settlement within the cooperative. Based on the cooperative business models already in place (e.g. housing cooperatives or dairy cooperatives[34]), two basic settlement models can in principle be distinguished:

- exchange (of energy) based on no-cost billing,
- energy trading within the cooperative.

The first model consists in the participation of the cooperatives members in the cooperative's assets (of which the RES installations will, as a rule, be the most important element) in a proportion that, as much as possible, corresponds to their energy needs, in relation to the energy needs of all members. The above will allow the cooperatives' profits to be reduced to a minimum and a high degree of cost-free energy exchange to be achieved.

[34] L. Coudroy de Lille, Housing cooperatives in Poland: The origins of a deadlock, *Urban Research & Practice*, 2015, vol. 8(1) pp. 17–31; P. Bórawski, A. Bełdycka-Bórawska, M. Grzybowska-Brzezińska, J. W. Dunn, Legal and economic aspects of the development of diary cooperatives in Poland, in *Challenges in the Milk Market (Investments, Disruptions, Logistics, Competitiveness, Prices, and Policy)*, ed. P. Bórawski, A. Parzonko, I. Żuchowski, Ostroleka, 2021.

The second model is based on the assumption that some members of the cooperative, while consuming energy, also produce energy and some of them only consume energy. Then, members who save energy by using the energy cooperative support system settle accounts with the cooperative using a mechanism analogous to energy sales. Finally, the cooperative members that generated more energy than they consumed receive due benefits by participating in the cooperative's balance surplus. It is important to mention that an energy cooperative, when it uses the support system, does not sell energy per se. The outcome of the balancing of energy under the support scheme is a reduction of the energy costs of individual cooperative members. Therefore the energy cooperative cannot sell energy, but can collect remuneration for the amount of savings earned by individual cooperative members.

Importantly, the legislation does not preclude an energy cooperative from also undertaking activities other than the production of energy from RES for its own use. Numerous community energy projects based on the cooperative form of operation engage in activities such as the distribution of food and services.[35]

Energy Cooperatives in Poland

As has been indicated so far, the development of energy cooperatives in Poland has been slowed down by significant legal and organisational barriers. First of all, the difficulties in accessing the financial resources necessary for investments in RES installations should be mentioned. The limited possibilities for obtaining external funding are also a fundamental problem. Energy cooperatives, as emerging entities, generally do not have much capital at their disposal. At the same time, there were no public funding programmes, and market opportunities for obtaining capital (credit, loans) were hampered by the financial crisis and the lack of preferences for social economy entities.[36]

Secondly, starting up as an energy cooperative under the RES Act requires RES installations. However, convincing individuals who could establish a cooperative to invest in a completely new, unfamiliar business model entails great difficulties. Thirdly, in order for an energy cooperative to be included in the support system, it has to conclude distribution and electricity sales contracts (a comprehensive contract). According to the available information, until now, it has proved extremely problematic for energy cooperatives to conclude such contracts, thus, until recently, no cooperative was included in the support scheme. It should be also emphasized that, according to the RES Act, both the DSO and the energy

[35] J. Radtke, A closer look inside collaborative action: civic engagement and participation in community energy initiatives, *People, Place and Policy*, 2014, vol. 8(3), pp. 235–248.

[36] T. Marzec, Prawne perspektywy rozwoju spółdzielni energetycznych w Polsce [Legal perspectives on the development of energy cooperatives in Poland], *Internetowy Kwartalnik Antymonopolowy i Regulacyjny*, 2021, no. 2.

seller are obliged to conclude the agreements necessary in order to enable an energy cooperative to make settlements based on the support system. However, until the 2023 amendment to the RES Act, the content of the provisions regulating the obligations of DSO and energy seller was not sufficiently defined; moreover, the energy companies did not have the software to collect data from the remote reading of electric meters and to bill the energy cooperatives under net-metering.

Currently, nearly six years since the concept of energy cooperatives was introduced into the Polish legal system, there are:

- 21 energy cooperatives, within the meaning of the RESA,[37]
- approx. 70 cooperatives with the term "energy cooperative" in their name.[38]

As already indicated in this study, the process of forming energy cooperatives has a two-stage character. The first stage—the acquisition of legal personality as a result of registration in the National Court Register—has been completed by approx. 70 cooperatives, the overwhelming majority of which were established in the second half of 2022. It is not possible to provide a full description of these entities on the basis of register data, but it should be noted that in many of them, the same natural persons sit in the representative bodies, for example on the management board.[39] The above shows that they have been established as a result of the large-scale activities of renewable energy consultancy providers in connection with the public funding programmes for energy cooperatives announced in 2022.

With regard to the cooperatives that have obtained registration in the list of energy cooperatives, and are therefore energy cooperatives within the meaning of the RES Act, data on them are presented in the Table 10.1.

As can be deduced from the Table 10.1, all cooperatives use photovoltaics and the great majority of all energy cooperatives have been established on the basis of prosumer installations—up to 50 kW of installed electricity capacity. Importantly, a member of an energy cooperative is disclosed differently in the register than is the case in the cooperative law. Accordingly to RESA, by "energy cooperative member" this legal act means an entity whose installation is connected to the electricity distribution network. Therefore, in the list of energy cooperatives are specified only energy cooperative members whose RES installations are connected to the grid. According to the cooperative law, a cooperative may be established by a minimum of three legal persons or 10 natural persons, while the register discloses significantly fewer members of energy cooperatives—in a few cases, such a cooperative is formed by only one member, which is not allowed under the cooperative law.

[37] As of 10 May 2023, based on a list of energy cooperatives, https://www.gov.pl/web/kowr/zatwierdzenie-w-wykazie-spoldzielni-energetycznych [accessed 9.10.2023].

[38] As of 09.10.2023, the author's own elaboration based on data from the Register of Entrepreneurs, National Court Register), https://ekrs.ms.gov.pl/ [accessed 9.10.05.2023].

[39] Own elaboration, based on data from the Register of Entrepreneurs, National Court Register.

Table 10.1 Register of energy cooperatives

No.	Name of the cooperative	Date of registration	Number of cooperative members (who utilize RES installations)	Number of RES installations	Types of RES installations	Installed electricity power (MW)
1.	Spółdzielnia Energetyczna EISALL	11.05.2021	4	2	Photovoltaics	0.020
2.	Spółdzielnia Energetyczna—Nasza Energia	21.12.2021	13	15	Photovoltaics	0.112
3.	Spółdzielnia Energetyczna Gminy Wiejskiej Hrubieszów, Trzeszczany, Werbkowice	30.01.2023	1	11	Photovoltaics	0.0396
4.	Żerkowska Spółdzielnia Energetyczna	9.02.2023	3	1	Photovoltaics	0.999
5.	Spółdzielnia Energetyczna Stawiski	17.02.2023	3	7	Photovoltaics	0.15902
6.	Niepołomicka Spółdzielnia Energetyczna	3.03.2023	3	4	Photovoltaics	0.037942
7.	Spółdzielnia Energetyczna Gminy Wiejskiej Dołhobyczów, Mircze i Gminy Miejsko-wiejskiej Tyszowce	13.04.2023	1	9	Photovoltaics	0.0324
8.	Spółdzielnia Energetyczna Gminy Wiejskiej Białopole, Horodło, Uchanie	13.04.2023	1	5	Photovoltaics	0.018
9.	Spółdzielnia Energetyczna Skawina-SES	29.06.2023	3	4	Photovoltaics	0.059535
10.	Spółdzielnia Energetyczna EKO WIELPLAST	7.07.2023	4	2	Photovoltaics	0.051

Tab. 10.1 (*continued*)

No.	Name of the cooperative	Date of registration	Number of cooperative members (who utilize RES installations)	Number of RES installations	Types of RES installations	Installed electricity power (MW)
11.	Wierzchosławicka Spółdzielnia Energetyczna	7.07.2023	3	2	Photovoltaics	0.02434
12.	Pawłowicka Spółdzielnia Energetyczna	13.07.2023	3	2	Photovoltaics	0.07287
13.	Spółdzielnia Energetyczna Czerwonak	14.07.2023	3	2	Photovoltaics	0.0261
14.	Spółdzielnia Energetyczna Michałowo	4.08.2023	3	9	Photovoltaics	0.073
15.	Spółdzielnia Socjalna Sąsiedzi	9.08.2023	2	1	Photovoltaics	0.026
16.	Spółdzielnia Energetyczna „Energia Optymalna"	30.08.2023	1	1	Photovoltaics	0.073
17.	Spółdzielnia Energetyczna Zielona Gmina	11.09.2023	3	5	Photovoltaics	0.1277
18.	Spółdzielnia Energetyczna Sudecka Energia	12.09.2023	3	1	Photovoltaics	0.0175
19.	Spółdzielnia Energetyczna BIODAR w Ustroniu Morskim	27.09.2023	3	4	Photovoltaics	1.07253
20.	Spółdzielnia Nyska Elektrownia Społeczna z siedzibą w Nysie	29.09.2023	1	1	Photovoltaics	0.0495
21.	Lądecka Spółdzielnia Energetyczna	20.10.2023	3	1	Photovoltaics	0.99954

Source: author's own elaboration on the basis of data available at https://www.gov.pl/web/kowr, as of 9 October 2023.

A key finding from the analysis of the Register of Energy Cooperatives data is the sudden increase in the number of cooperatives. At the beginning of 2023, there were only two registered cooperatives, whereas by the end of September 2023, the list already included 20 cooperatives. This represents an increase of 900%. It should also be underlined that between 2016 and May 2021 no energy cooperative was registered. The reasons for this increase in interest in energy cooperatives are to be found in (1) the functioning of the complete legal framework for energy cooperatives–counting from April 2022, (2) the announcement of public funding programmes for energy cooperatives, (3) the numerous training and promotion actions for energy cooperatives organized by NGOs, and (4) the activity of energy consulting providers.

There are several public funding programmes available for energy cooperatives (and its members) in Poland. The funding that they provide comes mostly from European funds. Of key importance for the future development of energy cooperatives is the RES investment subsidy programme for farmers—"Energia dla wsi" (Energy for villages). Under the programme, farmers, energy cooperatives, their members and emerging energy cooperatives can apply for a grant or loan to build RES installations. The total budget of the programme is PLN1 billion.

Under the programme, beneficiaries can apply for funding for the construction of a photovoltaic installation or a wind turbine: for these types of RES, applicants can obtain a loan of up to 100% of the eligible costs.[40] When applying for funding for biogas plants and hydroelectric power plants, support can take the form of a grant of up to 45% of eligible costs and/or a loan of up to 100% of eligible costs. The maximum level of a grant may be increased by 10% when the beneficiary is a medium-sized entrepreneur and by 20% in the case of micro and small entrepreneurs. Thus, a maximum grant of up to 65% of eligible costs can be applied for under the programme.[41] It should be noted, however, that in accordance with the rules of the call for proposals, only applications for very advanced projects will be financed: those which have the necessary administrative and legal permits and detailed technical documentation, as well as an analysis of the investment's impact on the environment.[42]

[40] Regulamin programu Energia dla wsi [Terms and conditions, Programme Energy for Rural Areas], https://www.gov.pl/web/nfosigw/nabor-wnioskow-2023-energia-dla-wsi [accessed 9.10.2023].

[41] Ibid.

[42] Ogłoszenie o naborze Energia dla wsi [Call for applications, Programme Energy for Rural Areas], https://www.gov.pl/web/nfosigw/nabor-wnioskow-2023-energia-dla-wsi [accessed 9.10.2023].

The Amendment to the Renewable Energy Sources Law of 2023

On 1 October 2023, part of the provisions of the Act of 17 August 2023 amending the Renewable Energy Sources Act and certain other acts[43] came into force, among them provisions that significantly facilitate the operation of energy cooperatives. The changes include mitigation of the requirement for energy cooperatives concerning the efficiency of RES installations. The requirement to cover the annual energy needs of cooperative members from RES installations utilized by cooperatives has been reduced from 70% to 40% for energy cooperatives that apply for registration between 1 October 2023 and 31 December 2025 (and cooperatives already registered).

The amendment to the RES Act also includes clarification of the legal definition of an energy cooperative and the object of its activity (the legislator has explicitly introduced the possibility of trading in energy generated from RES as part of the activity carried out by the cooperative for the benefit of its members); this chapter provides a revised legal definition of energy cooperatives.

The amended RES Act also changes the issue of the cooperative's contracting with energy companies. It provides greater guarantees for cooperatives, because it sets statutory deadlines for energy companies to conclude agreements with cooperatives and cooperators to enable cooperatives to be included in the support system. According to the wording of the amended RES Act, the energy seller is obliged to conclude contracts with individual members of the energy cooperative. The energy seller has a 90-day deadline for concluding contracts, allowing cooperatives to benefit from the support system provided for in this act. The electricity distribution system operator is obliged to conclude a distribution services agreement with the energy seller or to amend the concluded distribution services agreement in order to allow the energy cooperative to be billed by that seller within 21 days of the date of an application by the energy cooperative for the conclusion or amendment of such an agreement by that seller. The second obligation covers the installation of a remote reading meter by DSO to each member of the energy cooperative within 4 months of the date of the request by the energy cooperative for the installation of such a meter.

Importantly, the legislator has also introduced an obligation for the distribution system operator to issue conditions for the connection of new RES sources operating for the benefit of energy cooperatives. It should be mentioned that this obligation has a limited dimension. This only applies to sources ensuring a stable

[43] Ustawa z dnia 17 sierpnia 2023 r. o zmianie ustawy o odnawialnych źródłach energii oraz niektórych innych ustaw [Act of 17 August 2023 amending the Act on Renewable Energy Sources and certain other acts] JL 2023, item 1762.

electricity supply to the cooperative, because the total installed electrical capacity of all RES installations which will be connected to the grid and will generate electricity for the cooperative's members should be capable of covering, in any one hour, not less than 50% of the total electricity supply to the cooperative members. Therefore, the obligation to issue connection conditions will only apply to controllable RES sources, such as biogas plants or other types of installations combined with energy storage installation.

Although these changes should be called an evolution rather than a revolution, they are certainly a step in the right direction. The mitigation of the rather strict requirement to cover 70% of the cooperatives' annual electricity needs with RES installations generation should be assessed in a particularly positive light. This legal requirement was a barrier for many entities with high electricity demand, preventing the establishment of energy cooperatives. Another solution devised by the legislator, which seems particularly important to note, is to give preference to energy cooperatives, as community energy entities, in obtaining connection conditions. This seems to be the direction the legislation should follow, as social economy entities, social initiatives should have priority over typical business initiatives, and these usually include large-scale RES projects.

The Assessment of the Legal Framework for Energy Cooperatives

The regulations governing the operation of energy cooperatives in Poland have been subject to numerous amendments since their introduction (thus over the period 2016–2023). It should be noted that despite the changes, the basic shape of how energy cooperatives function in Poland has remained unchanged. It is a legal form designed for rural and urban—rural communities, generating energy solely for their own consumption based on net-metering support system. The Polish legal model for the functioning of energy cooperatives should generally be assessed positively. It is sustainable and quite effective in discouraging those who would like to set up a cooperative for the sole purpose of financial gain.

The main objection that can be addressed to the legislator is the exclusion of municipalities from the possibility of establishing energy cooperatives. This issue is constantly criticized by the cooperative community and environmental NGOs.[44] There are numerous civil society organizations in the cities that would be interested in setting up energy cooperatives and have the necessary know-how to do so. The legislator indicates that the *ratio legis* of the exclusion of areas of urban

[44] N. J. Bąk, W. Grzejszczak, B. Kupiec, R. Krenz, *Manual Społeczności Energetycznych* [Manual for Energy Communities], Warsaw, 2022, https://www.hub.coop/publikacja/manual-spolecznosci-energetycznych [accessed 9.10.2023].

municipalities from the possibility of establishing energy cooperatives was to favour rural communities.[45] Although setting up an energy cooperative is not an easy task, the support system provided for cooperatives is extremely favourable: it provides for volume billing of electricity (thus making the cooperative immune to energy price increases) and provides for exemption from paying distribution charges. With such a favourable incentive scheme, the legislator was concerned that urban communities would dominate the energy cooperative sector, leaving no room for rural community-based cooperatives. Taking the profile of individual renewable energy prosumers in Poland as an example (they are mainly wealthy residents of the suburbs of large agglomerations[46]) it is impossible to deny that the legislator is right, but it should be noted that the relatively small number of energy cooperatives is precisely due to the exclusion of urban communities, which have the greatest potential for community energy development in Poland.

Given the changes made to the legal framework for energy cooperatives over the years, positive assessment should be made of the following:

- mitigation of the legal requirements for obtaining registration in the list of energy cooperatives, regarding the obligation to cover 70% of the cooperative's annual demand from RES production;
- guaranteeing (to a limited extent) the cooperative that it shall be able to enforce on the energy companies—DSO and energy seller—the obligation to conclude contracts in order to be covered by the support system;
- the introduction of incentives for energy cooperatives and initiative groups planning to establish an energy cooperative, in particular, financing programmes with regard to the implementation of RES investments.

Although there are still many issues that are imperfect in terms of legal regulation, further changes should be postponed until the legislator has reliable data on the problems faced by energy cooperatives. Another problematic issue to which the legislator should devote attention is the implementation of EU legislation introducing energy communities.

Citizen Energy Communities

In September 2023, the amendment to the Energy Law[47] came into force. By virtue of this legal act, citizen energy communities were introduced into the Polish legal system. This constituted a step towards the implementation of EU direc-

[45] Works of the expert team working with the Polish Government Plenipotentiary for Energy Transformation of Rural Areas, working on the legal framework for energy cooperatives in Poland, 2022.

[46] T. Marzec, Rozwój energetyki obywatelskiej na obszarach wiejskich w Polsce [Development of community energy in rural areas in Poland], *Przegląd Prawa Rolnego*, 2023, no. 1(32), p. 71.

[47] Ustawa z dnia 28 lipca 2023 r. o zmianie ustawy—Prawo energetyczne oraz niektórych innych ustaw [Act of 28 July 2023 amending the Energy Law and certain other acts], JL 2023, item 1681.

tives, especially IEMD directive.[48] The deadline for incorporating these provisions into the national legal systems of the EU Member states was set for 31 December 2020. Therefore, it should be emphasized that the delay in this respect has been a negative factor limiting the development of community energy. At this point, it should also be noted that Poland has not yet fulfilled its obligation to implement the RED II directive[49] with regard to the introduction of renewable energy communities into the legal order.

According to this amendment, citizen energy communities have a very broad spectrum of economic activity on the energy market: they can engage in the generation, consumption or distribution, or sale or trade, or aggregation or storage of electricity, implement energy efficiency improvement projects, provide charging services for electric vehicles, provide other services on electricity markets, including system services or flexibility services, and produce, consume, store or sell biogas, agricultural biogas, biomass and agro-biomass.

They can operate in the legal form of a cooperative, housing community, association, or partnership, excluding a professional partnership and a farmers' cooperative. The Energy Regulatory Office keeps a register of citizen energy communities. What also should be noted is that there is currently no support system or system of incentives designated for those entities. The amendment to the Energy law states directly that obtaining an entry in the list of citizen energy communities does not exempt such a community from the obligation to obtain a licence or an entry in the register of regulated activities, if the citizen energy community undertakes an activity that is subject to the obligation to obtain a licence or an entry in the register of regulated activities.

According to the IEMD directive, the EU Member State is not obliged to provide energy communities with incentives or a support system. However, without such preferences there are limited possibilities for energy cooperatives to develop successfully in Poland. Nevertheless, the transposition of the IEMD directive should be perceived as a positive measure taken by the Polish legislator, although a confusing multitude of organizational and legal forms of community energy in Polish RES law currently exists. This is the outcome of the late implementation of EU law. In consequence, in the Polish legal system there are legal forms such as an energy cooperative (within the meaning of RES Act) and energy clusters, which were introduced into the legal system without the objective of achieving the compatibility with the EU law, which emphasized the energy communities. As a consequence of the entry into force of the amendment to the Energy Law, there are legal forms of

[48] Directive (EU) 2018/2001 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, L 158/125-IEMD directive.

[49] 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, L 328/82-RED II directive.

community energy in Polish law intended for groups of energy consumers (communities) that are a result of the process of transition in EU directives. These are prosumers and citizen energy communities and also legal forms that are strictly a result of the national legislation process, namely, energy cooperatives and energy clusters. It should be anticipated that this state of law should be organized in the future. However, the catalogue of legal forms, which increases with each amendment, is not conducive to understanding the law. In fact, it would be more desirable to establish even only one legal form for community energy initiatives, but one that is refined and gives real support to community energy initiatives entering and operating in the renewable energy market.

Conclusion

The Polish legislator has chosen a unique model for how energy cooperatives should function. Generating renewable energy solely for the needs of the energy cooperative and its members definitely complies with the idea of sustainable development. However, it should be pointed out that the benefits, which are essentially about making savings rather than profit, are not as strong an incentive to get involved in an energy cooperative as the earning opportunity.

In the Polish model, an energy cooperative allows its members to reduce the costs of electricity, rather than generate profit. This circumstance, along with other factors described in this paper, has resulted in the rather moderate interest in establishing new energy cooperatives by communities in Poland. The development of energy cooperatives is significantly hindered by four main barriers: (1) low popularity of cooperatives in Poland and the lack of successfully operating energy cooperatives, (2) complicated, unclear legislation, (3) limited possibilities to obtain external funding, and (4) difficulties with enforcing the obligation of energy companies to conclude relevant contracts. As a result of such a legal framework, only twenty energy cooperatives have so far been established in Poland. The amendment to the RES Act which came into force at the beginning of October has the potential to remove the fourth barrier, but a complete assessment of the amendment will only be possible once it has been checked that the provisions are actually applied by energy companies.

It should be also indicated that of the four basic conditions of a favourable legal regulation for the development of energy cooperatives mentioned in the introduction, Poland currently meets only the second to a robust extent, namely providing an effective system of support. Regarding the first condition, until the most recent amendment to the RES Act, there were no rules that support obtaining a connection to the distribution network by energy cooperatives. Furthermore, recent changes to the law only provide a guarantee of a connection to the electrical

grid for cooperatives to a limited extent. Referring to the third condition, the Polish official authorities have undertaken to meet this condition by targeting energy cooperatives' initiatives with a preferential system of incentives, mainly through public financing programmes. Currently, there are several available public funding programmes for energy cooperatives, but again, it is too early to assess their effectiveness. The last of the four factors is the main cause of the current increasing interest in energy cooperatives in Poland.

Importantly, considering incentives for energy cooperatives, the first and third conditions should be combined. Obtaining access to the electricity distribution grid is increasingly difficult for new RES installations. In view of the above, it should be postulated that the legislator should introduce a preference in this respect for initiatives belonging to the community energy sector, above all including energy cooperatives. Also, Poland has only partially implemented EU law regulating energy communities into its national legal order provisions. The most significant problem in this respect is the fact that, at present, energy cooperatives cannot be considered as citizen energy communities. Energy cooperatives are a legal entity separate from citizen energy communities. Such a division should be considered problematic, because citizen energy communities, on one hand, have a much broader scope of activities in the energy market, but on the other, they lack a support system. The invalid implementation of EU directives by the Polish legislator has led to the incorrect development of legal forms of community energy in Poland. At present, there are forms only provided for in the national legal order (energy cooperatives and energy clusters and legal forms resulting from the partial implementation of the IEMD—citizen energy communities). In the future, it will be necessary to solve this issue in the direction of full implementation of the EU directives introducing energy communities, citizen energy communities and renewable energy communities.

Chapter 11

RELATIONSHIP OF ENERGY COOPERATIVES WITH THE ENERGY COMPANIES INDICATED IN THE RENEWABLE ENERGY SOURCES ACT: IMPACT ON INTERNAL SETTLEMENTS WITHIN THE ENERGY COOPERATIVE

Piotr Kolasa

Introduction

As part of its climate policy, the European Union favours the development of renewable energy sources. Further documents prepared at European and local level favour the development of local energy communities. The foundation of civic energy is the direct involvement of citizens in the local production of electricity and heat from renewable energy sources and the use of solutions to improve energy efficiency. The role of local communities as the foundation of civic energy and distributed energy was promoted already in the first solutions related to this area. Diversification of generation sources is intended to reduce the risk of electricity shortages. Despite the current legislative uncertainty surrounding the development of renewable energy sources in Poland, solutions aimed at developing local energy communities are being introduced. The purpose of this chapter is to analyse the relationship between the energy cooperative and energy companies. From the point of view of the operation of energy cooperatives, ties with energy companies are essential for the proper performance of the role to be fulfilled by the energy cooperative.

In the regulatory package that was presented by the European Union in May 2019 under the name "Clean Energy for All Europeans", two concepts were introduced: "citizen energy communities" and "energy communities based on renewable energy". Under the terms of these regulations, citizens and energy communities across the European Union were to be given the opportunity to invest in renewable energy sources in a facilitated way. The provisions of 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 are also not without significance.[1] According to this European regulation, citizens should have easier access to the production, consumption, sale and storage of electricity. Moreover, the European Union Member States were obliged to promote and provide friendly legal conditions for the development of energy communities based on renewable energy sources.

Pursuant to Article 2(16) of Directive 2018/2001, the concept of renewable energy community has been introduced. This provision defines a legal entity whose primary objective, instead of making financial profit, is to bring environmental, economic or social benefits to its shareholders, members or local areas where it operates. The entity is based on open and voluntary membership and is independent. Control is exercised by shareholders or members located in a small dispersion and in close proximity to renewable energy installations that are owned by this entity or directly by its members or shareholders. Its shareholders or members can be individuals, small and medium-sized entrepreneurs (SMEs) or local government units.

In addition, under EU law we can also find other institutions that deal with the subject of forms or principles of association in the field of renewable energy sources. Article 2 para. 11 of Directive 2019/944[2] introduces the concept of a citizen energy community, understood as a legal entity whose existence is based on voluntary and open participation. In this case, control is also exercised by members or shareholders who are natural persons, local government bodies, including municipalities, or small businesses.

Energy communities undoubtedly include energy cooperatives. The institution of an energy cooperative refers to an organizational and business model in which citizens jointly initiate, finance and implement projects related to the production, sale, storage and distribution of electricity and/or heat from renewable sources, as well as engage in projects related to the improvement of energy efficiency or the development of electromobility. For the most part, energy cooperatives are oriented towards ensuring energy self-sufficiency for their members, improving air quality in the region and creating new local jobs. In addition, from the point of view of the members of energy cooperatives, it is important to ensure the supply of electricity at the lowest possible prices. In addition, energy cooperatives are expected to become local energy suppliers which will protect consumers, especially in rural areas, from the risk of blackout effects.[3] According to the adopted

[1] 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, Official Journal of the European Union [OJ] L 2018, L 328, pp. 82–209.

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

[3] Understood as a widespread failure of the power system, preventing the effective supply of electricity to customers caused by disruption in the operation of large power units. See P. Lelątko,

model of energy cooperatives in Poland, members can benefit from a number of exemptions from fees for the purchase and transmission of electricity. The solutions of statutory rank proposed by the legislator provide a number of opportunities to optimize the significant costs associated with electricity transmission.

For the operation of energy cooperatives, it is necessary to establish cooperation with energy companies in accordance with the provisions of the Act of 20 February 2015 Act on Renewable Energy Sources.[4] The legislator indicates two entities with which the energy cooperative must cooperate in order to function properly, these are the distribution system operator and the electricity seller (obliged seller or seller of choice). The purpose of this study is to explain the principles of cooperation between these two entities under the RES Act as well as to present solutions for the development of internal relations within the energy cooperative. As part of the first energy cooperative in Poland, plans were made to build an internal structure of settlements between members in order to ensure the economic attractiveness of participation within energy communities.

Pursuant to Article 38c. 1 of the RES Act, an energy cooperative operates within the area of a single operator of an electricity distribution system or a gas or district heating distribution network, supplying electricity, biogas, agricultural biogas, biomethane or heat to generators and customers that are members of the cooperative, whose facilities are connected to the network of a given operator or to a given district heating network. Thus, under the statutory regulations, the area of operations of energy cooperatives was narrowed down to the area of operations of one distribution operator. The area of operation of an energy cooperative is determined on the basis of the places of connection of generators and customers who are members of this cooperative to the distribution network. In the case of defining companies trading in electricity, the legislator indicates that the obliged seller or the seller chosen by the energy cooperative settles the volume of electricity with the energy cooperative.

The purpose of this study is to analyse the current legislation in the context of cooperation between energy cooperatives and energy companies as well as to present the mutual relationships within the energy cooperative. Two energy cooperatives have been established in Poland so far, despite the existence of legal regulations allowing their formation for a long time. Therefore, it is necessary to analyse the regulations themselves to see if they do not create too many limitations in the process of establishing energy cooperatives and in their functioning. The business model that energy cooperatives undoubtedly exemplify requires precise and accurate regulations. The transfer of the issue of electricity supply to the regional level determines the creation of such legal solutions.

D. Michalski, B. Krysta, Przerwy w dostawie energii elektrycznej, *Biuletyn Urzędu Regulacji Energetyki*, 2004, no. 2, p. 81.

[4] Consolidated text: Journal of Laws of the Republic of Poland [JL] 2022, item 1378, as amended (hereinafter the RES Act).

Relations between the Energy Cooperative and Energy Companies

The Role of the Distribution System Operator in the Operation of Energy Cooperatives

Under the current legislation,[5] the distribution system operator is required to take the following steps with immediate effect:

1. Install a remote reading meter, as defined in Article 3, para. 64 of the Energy Law of 10 April 1997[6] (hereinafter Energy Law), for each member of the energy cooperative, within 4 months of the date of the energy cooperative's application for the installation of such a meter.
2. Conclude an agreement for the provision of distribution services with a seller selected by the energy cooperative, referred to in Article 40 para. 1a of the RES Act, or amend the concluded agreement in order to enable this seller to enter into settlements with the energy cooperative, within 21 days from the date of submission of an application for the conclusion or amendment of such an agreement by the selected seller.

Taking the above statutory obligations into account, it should be pointed out that there is a lack of coherence in the regulations relating to contractual relations between the energy cooperative and the distribution system operator and the electricity seller referred to in Article 40(1a) of the RES Act.

Pursuant to the provisions of Article 5 section 1 of the Energy Law, in order for gaseous fuels or energy to be delivered to a consumer, it is required to first connect this consumer to the transmission or distribution network on the basis of a connection agreement, and then to conclude a sales agreement, on the basis of which the consumer will purchase the commodity, which is gaseous fuels or energy, and to conclude an agreement on the provision of services for the transmission or distribution of these fuels or energy to the point of their reception. Therefore, the sale of a commodity (i.e. gas fuel or energy) should be separated from the transport (transmission or distribution) of these fuels or energy. Article 5 para. 1 of the Energy Law indicates that the supply of gas fuels or energy takes place, in each case, on the basis of two contracts concluded by the customer, a sale contract and a distribution services contract. As a rule, however, performance of a sales contract and a distribution services contract concluded by the customer with the seller or the transmission or distribution undertaking, respectively, requires the conclusion of contracts by these undertakings and other entities (entities responsible for commercial balancing), which, although defined in the Polish

[5] Article 38da para. 1 of the RES Act.

[6] Consolidated text: JL 2022, item 1385, as amended.

Energy Law as "contracts for the provision of transmission or distribution services", do not consist in transport of a specified volume of gas or energy (performance by one party) and payment of a specified amount due for the transport (performance by the other party). Thus, these contracts are not strictly speaking contracts for the provision of transmission or distribution services. However, without concluding them, the energy company would not be able to conduct business activity regarding the transmission or distribution of gaseous fuels or energy. Such agreements may include, for example, an agreement concluded by the distribution system operator with the electricity seller (the so-called general distribution agreement) or with the entity responsible for commercial balancing, or an agreement concluded by the entity responsible for commercial balancing with the transmission system operator.[7] In summary, the contract for the provision of distribution services was separated pursuant to Article 5 of the Energy Law. And within its scope it includes the transport (transmission, distribution) of energy or gaseous fuels.

Regardless of the above, the supply of gaseous fuels or energy may also take place on the basis of a comprehensive agreement. This agreement is regulated in Article 5, Sections 3 and 4 of the Energy Law, which in fact provide a legal definition of a comprehensive agreement. According to the quoted legal provisions, a comprehensive agreement is an agreement which simultaneously contains the provisions of a sale agreement and an agreement on the provision of transmission or distribution services of gaseous fuels or energy. The comprehensive agreement, referred to in Article 5 para. 3 of the Energy Law, contains provisions of a contract for the sale of gaseous fuels or energy and a contract for the provision of transmission or distribution services of these fuels or energy. On the other hand, the comprehensive agreement, under which heat purchased from other companies is supplied, should also stipulate the conditions for the application of prices and fee rates binding for these companies. After analysing the definition of the comprehensive agreement, doubts arise as to whether there are any parties to this agreement. Despite such unclear construction of the provision, the conclusion of the comprehensive agreement referred to in Article 5 para. 3 of the Energy Law does not create a tripartite legal relationship. The obligatory relationship is only established between the electricity seller and the consumer. The electricity seller, by concluding a comprehensive agreement, undertakes towards the customer to sell gaseous fuels or energy and at the same time to ensure the provision of the service of transmission or distribution of these fuels or energy to the place of their reception from the transmission or distribution network. Thus, the electricity seller is liable towards the customer also for acts and omissions

[7] M. Gutowski, K. Smagieł, *Energy Law*, vol. 1: *Commentary to Articles 1–11s*, ed. Z. Muras, M. Swora, 2nd edn., Warsaw, 2016, Article 5.

of the enterprise actually transporting the gaseous fuels or energy (the distribution system operator). Consequently, the customer will file a claim for damages for non-performance or undue performance of both the sale and distribution service provisions.[8]

Given the above, it should be pointed out that the comprehensive agreement contains both elements of a sale agreement and elements of a distribution agreement. Thus, it is impossible to have both agreements (comprehensive agreement and distribution agreement) concluded at the same time.

When analysing other obligations of the distribution system operator, the following should be indicated:

1. The obligation to provide the electricity seller referred to in Article 40(1a) of the RES Act with measurement data covering hourly quantities of electricity injected into its distribution network and drawn from this network, by all the generators and electricity consumers of the energy cooperative before and after the aggregate balancing of electricity from all phases.
2. The obligation to make available historical daily and hourly metering data for the last full 12 months preceding the date of the application for access to such data by the energy cooperative, provided that the electricity distribution system operator has such data.

Thus, it should be pointed out that the obligations of the distribution system operator boil down to the collection and transmission (making available) of metering data covering hourly quantities of electricity injected into and drawn from its distribution network by all electricity generators and consumers to the energy cooperative. At no stage is the distribution system operator under any obligation towards the members of the energy cooperative or the energy cooperative itself for the transport of gaseous fuel or energy.

Taking the above into account, recent legislative changes that removed the obligation for energy cooperatives to conclude a distribution agreement with distribution system operators should be evaluated positively.

With regard to the collection and transmission of metering data, it is important to note that, according to Article 11t(6) of the Energy Law, the members of an energy cooperative may request that the distribution system operator provide them with metering data. Members of the energy cooperative may request that the distribution system operator install a remote reading meter, which may significantly facilitate the management of settlements within the energy cooperative.

[8] Confirmed by the Supreme Court in its judgment of 12 April 2013, ref. no. III SK 26/12, Lex no. 1425640.

The Role of the Electricity Seller (Trading Company) in the Operation of Energy Cooperatives

The second type of energy company actively involved in the operation of energy cooperatives is the electricity seller referred to in Article 40(1a) of the RES Act. In practice this will be the obliged seller[9] or a seller chosen by the energy cooperative: a trading company with a licence to trade in electricity.

As indicated above when analysing the role of the distribution system operator, energy cooperatives should have a comprehensive agreement in place under which the cooperative and its members will be guaranteed electricity supply. However, the law does not explicitly state whether the comprehensive agreement should be concluded with the energy cooperative and its members or whether it is sufficient for the energy cooperative to conclude the comprehensive agreement only. Given the lack of precise regulations in this respect, it should be pointed out that electricity sellers are free to interpret the regulations in question.

If a comprehensive agreement is concluded only with an energy cooperative, all obligations related to the execution of the comprehensive agreement with respect to its members are transferred to the energy cooperative. First, one should point out the obligations related to the collection of dues from members of the energy cooperative in order to satisfy the electricity seller's claims. Transferring the entire responsibility for debt collection may, in many cases, prove to be a problem resulting in the collapse of energy cooperatives or their failure. The electricity seller as an electricity trader in the vast majority of cases has an extensive debt collection department to deal with the collection of dues, and given the fact that, as a rule, members of energy cooperatives were customers of the electricity seller prior to joining them, the author believes that it should remain the electricity seller's responsibility to collect dues from members of energy cooperatives. Then, if members of the energy cooperative do not have comprehensive contracts with the seller, the question arises as to who will de facto be liable to the members of the energy cooperative for the lack of electricity supply or for a decline in the quality of supply. The current legislation does not provide for regulation in this area. Thus,

[9] Pursuant to Article 40 Section 2 of the RES Act, by 15 September of each year the operators of the power distribution systems shall provide the President of the Energy Regulatory Office with information on the electricity traders with the highest volume of sales of electricity during the period from 1 January to 31 August of that year to end customers connected to the distribution network of a given operator in the area of that operator's activity. Pursuant to Article 40 Section 3 of the RES Act, on the basis of the information referred to in Article 40 Section 2 of the RES Act, the President of the Energy Regulatory Office, by way of a decision, appoints the obliged seller: 1. in the area of operations of a given electricity distribution system operator, by 31 October of each year, for the following year; 2. being the seller of electricity with the highest volume of sales during the period from 1 January to 31 August of that year in the area of operations of the electricity transmission system operator, by 31 October of each year for the following year.

this may cause risks that may determine the decision to form an energy cooperative. A solution where each member of the energy cooperative first enforces their claims or rights against the energy cooperative and then the energy cooperative, on the basis of recourse or provisions of a comprehensive agreement, enforces claims or rights against the electricity seller seems to be an unattractive solution. It should be pointed out that such a model raises many doubts due to the fact that members of cooperatives who are consumers have limited possibilities for asserting their rights. For many entities for which maintaining continuity of supply, if only due to their business activity, is very important, lack of the possibility to assert their rights in the simplest possible form may be a significant impediment. Taking into account the experience of creating the first energy cooperative in Poland, it should be pointed out that electricity sellers prefer to cooperate with a single contractor: an energy cooperative.

Given the above, it should be pointed out that the current regulations do not clearly indicate the scope of the parties' obligations under the operation of energy cooperatives. Moreover, the regulations do not regulate precisely who should be a party to a comprehensive agreement with the electricity seller. Of course, recent legislative changes should be considered, but they do not provide a comprehensive solution to this issue. Another *de lege ferenda* proposal is to regulate precisely who will be a party to a comprehensive agreement with an electricity seller and how the rights of members of cooperatives as participants in the energy market will be secured. On the one hand, the current regulations, indicate that the electricity seller enters into a contract with the customer designated by the energy cooperative. On the other hand, however, in my opinion, these regulations omit the model where it is the energy cooperatives which are to be a party to the contract under such conditions as its member.

In a situation where only the energy cooperative will be a party to the comprehensive agreement, the issue of electricity supply to its members should be analysed. As a rule, the delivery of electricity is the responsibility of the electricity seller under a contract or, in the case of direct delivery, of the energy generator. In the case of an energy cooperative, the electricity seller is in principle obliged to make settlements on the basis of a comprehensive contract, which will define its obligation only to the party to the contract. In a situation where this is only the energy cooperative, the seller's obligation will only be towards the energy cooperative. In such a situation, it can be pointed out that the energy cooperative will trade in electricity: it will purchase it from the electricity seller and will then be responsible for supplying it to its members. Thus, the energy cooperative will be performing an economic activity of electricity trading. In this case, it is necessary to analyse whether the energy cooperative must have a licence in this respect. According to Article 32(1) para. 4) lit. e) Energy Law, a licence is not required for trading in fuels or energy by an energy cooperative as part of the activities carried

out for all customers (members) belonging to the cooperative. The analysed regulations may lead to the conclusion that the energy cooperative will sell electricity purchased from an electricity seller under a comprehensive agreement. Further, in such a case doubts arise as to whether the cooperative, as an electricity seller, will be obliged to set tariffs for its customers. The current regulations do not impose such obligations on energy cooperatives and members will be billed according to the seller's tariff, unless the parties agree on other billing rules.

The electricity seller's basic obligation is to settle with the energy cooperative the amount of electricity injected into the energy distribution grid in relation to the amount of electricity taken from this grid to be used for its own needs by the energy cooperative and its members at a ratio of 1 to 0.6. Settlement of energy amounts is made on the basis of indications of metering and billing devices connected to the energy distribution grid of all electricity producers and consumers belonging to the energy cooperative. Settlements are made after the total balancing of electricity from all phases based on measurement data.

The energy cooperative shall not pay on the quantity of electricity generated in all renewable energy source installations of the power cooperative and subsequently consumed by all electricity consumers of the power cooperative, including the quantity of electricity billed at a volume ratio of 1 to 0.6:

1) to the electricity seller, charges for its settlement;
2) distribution service charges, the amount of which depends on the volume of electricity consumed by all the generators and customers of the energy cooperative; these charges are paid by the electricity seller, to the operator of the electricity distribution system to whose network the installations of the renewable energy source and the installations of all the customers of the energy cooperative are connected.

With regard to the amount of electricity generated in all renewable energy source installations of the energy cooperative and subsequently consumed by all electricity consumers of the energy cooperative, including the amount of electricity settled according to the Net Metering principle:

1. There shall not be charged or collected:
   a) the RES fee referred to in Article 95(1) of the RES Act;
   b) power fee;[10]
   c) cogeneration fee;[11]
2. The obligations referred to in
   a) Article 52 (1) of the RES Act, i.e. the obligation to redeem certificates of origin or certificates of origin for agricultural biogas;

[10] In the meaning of the provisions of the Act of 8 December 2017 on the power market (consolidated text: JL 2021, item 1854, as amended).

[11] In the meaning of the provisions of the Act of 14 December 2018 on the promotion of electricity from high-efficiency cogeneration (consolidated text: JL 2022, item 553, as amended).

b) Article 10 of the Act of 20 May 2016 on energy efficiency (JL 2020, item 264, 284 and 2127): redemption of energy efficiency certificates;

3. Shall be deemed to be the consumption of electricity produced by the entity[12] and shall be subject to excise duty exemption on this account, provided that the total installed electrical capacity of all renewable energy source installations of the energy cooperative does not exceed 1 MW.

Electricity injected into the energy distribution network no earlier than 12 months before the date of injecting the electricity into the network is accounted for. The date of introduction of electricity to the grid is the last day of the calendar month in which the electricity was introduced to the grid, with the proviso that any unused electricity in a given settlement period is carried forward to subsequent settlement periods, but not longer than for the next 12 months from the date of its introduction to the grid. Thus, energy cooperatives must match their generation capacities to the consumption profile of their members in such a way as to make the most efficient use of the settlement system adopted for energy cooperatives.

The method of accounting for electricity within an energy cooperative was developed on the basis of the prosumer system,[13] using the Net Metering principle. The Net Metering mechanism consists in the fact that the owner of the renewable energy source installation can balance his energy on an annual basis—settle the energy introduced into the grid of the distribution system operator with the energy taken from the grid of the distribution system operator. If the prosumer[14] does not use the surplus due during the year, it is transferred to the seller. Also, any electricity which is not used by the energy cooperative and its members within 12 months from the date of its entry into the grid becomes the property of the electricity seller and can be freely disposed of by the seller.

Detailed rules for the settlement of accounts with the energy cooperative by the seller are to be laid down in an implementing act—a regulation.[15] Work is cur-

[12] In the meaning of the Excise Duty Act of 6 December 2008 (consolidated text: JL 2022, item 143, as amendment).

[13] Article 4 of the RES Act: "The seller referred to in Article 40 (1a) shall settle the amount of electricity injected into the power distribution grid against the amount of electricity taken from the grid for consumption for own needs by a renewable energy prosumer generating electricity in a micro-installation with a total installed electrical capacity: (1) greater than 10 kW—in a quantity ratio of 1 to 0.7; (2) less than 10 kW—in the volume ratio 1 to 0.8."

[14] Prosumer of renewable energy—means an end user generating electricity exclusively from renewable energy sources for their own needs in a micro-installation, provided that in the case of an end user who is not a household consumer of electricity, this does not constitute the subject of prevailing economic activity, as determined in accordance with the provisions issued pursuant to Article 40 para. 2 of the Act of 29 June 1995 on Public Statistics (JL 2020, item 443 and 1486).

[15] The minister in charge of climate issues in consultation with the minister in charge of rural development shall define, by way of an ordinance: (1) the detailed scope and method of registering measurement data and balancing energy quantities referred to in Article 38c(5) of the RES Act; (2) the detailed manner of making the settlement referred to in Article 38c(6) of the RES Act, and the manner of calculating the fees referred to in Article 38c(7) of the RES Act, taking into account

rently underway on the final version of the document, but according to the draft currently under consideration[16] the cooperative and its members are billed summarized in hourly periods without taking into account the different tariffs of members of the energy cooperative. Such a solution may raise doubts as to the fairness of the settlement of costs associated with the internal settlement of members of the energy cooperative. Considering the capabilities of accounting systems and the resources and experience of sellers, it should be pointed out that it is reasonable to adopt a model solution which will fully reflect the characteristics of electricity consumption by individual members.

As a result of the implementation of the comprehensive agreement with the electricity seller, the energy cooperative must make internal settlements with its members. On the one hand, the energy cooperative will have to charge electricity consumers for the electricity consumed and used for its needs and, on the other hand, it will have to pay the cooperative members who generated the electricity. Thus an important aspect is to create a precise system of internal settlements, which will fully reflect the electricity consumption of its members and will bring tangible benefits to the producers of electricity in renewable energy installations. It seems reasonable that all settlements should be made on the basis of contracts concluded within the cooperative. However, the rules of conducting may be included in internal corporate documents such as statutes or resolutions of the bodies (Supervisory Board or Management Board).

Internal Relations in an Energy Cooperative: Relationships between Members and the Cooperative

According to the above analysis, the current law governs the energy cooperative's relationships externally. No provision of generally applicable law refers to the rules of settlement between members of an energy cooperative or members with the energy cooperative itself. According to the assumptions of the operation of energy cooperatives (i.e. economic benefit for its members) only internal set-

the prices and rates of fees in individual tariff groups applied to the energy cooperative and its individual members; (3) the detailed scope of metering data referred to in Article 38c(5) of the RES Act: a) transferred between energy enterprises and the manner of transferring these data, b) made available by the seller, referred to in Article 40 para. 1a of the RES Act, to the energy cooperative and its individual members, as well as the manner of making such data available in the data communications system, 3a. the detailed scope of information on the settlement referred to in Article 38c(6) of the RES Act; (4) the detailed personal scope of the energy cooperative – taking into account the need to unify the method of making settlements and the protection of their interests, as well as the security and reliable operation of the electricity system.

[16] Draft Regulation of the Minister of Climate on the registration, balancing and provision of metering data and billing of energy cooperatives, list number 18.

tlements will achieve this goal and settle the costs associated with the operation of the energy cooperative (the cost of purchasing and supplying electricity). Billing rules may be defined in internal corporate documentation as well as on the basis of bilateral agreements.

Considering the experience with the creation of the first energy cooperative in Poland,[17] it is necessary to separate different groups of members in order to apply settlements between members and the energy cooperative. The following groups of members can function within an energy cooperative: consumers (exclusively electricity consuming), producers (exclusively electricity producing), both producers and consumers (both electricity producing and consuming). In order to classify individual members into specific groups, it is important what activities are performed at a specific connection point. The following proposal for classifying members of an energy cooperative is built on the basis of a breakdown of individual members understood as a single point of connection.

Consumer Members

The first group includes members who exclusively consume electricity. Accordingly, the electric cooperative will charge such member for the electricity consumed in each hour and fixed distribution charges. Therefore, the group of members in question will only pay fees to the energy cooperative. For the correctness of settlements within the energy cooperative, the group of recipients is the group whose settlements do not raise major doubts. Assuming that the metering and billing systems function correctly, the calculation of the amount due for the consumed electricity should not cause major problems. Given that one of the main objectives of the energy cooperative is to reduce the cost of acquiring electricity, the consumer members will have an interest in purchasing electricity below market values.

Generator Members

Another group is the members who are involved in generating electricity in the scope of their activity within the energy cooperative. In this case also, there will be no major problems with the settlement of the group of members in question. Members generating electricity will be paid for the electricity they produce, and will additionally have to pay for the electricity they consume for the purpose of generating energy (the needs of the renewable energy source installation).

[17] Eisall energy cooperative based in Raszyn.

Generator/Consumer Members

The last group of members within an energy cooperative are individuals, entities that simultaneously generate electricity and consume it within a single point of connection. Within this group, there may be difficulties in keeping an accurate financial accounting. Given that when electricity is generated, it is primarily consumed by the member and only the surplus is consumed, it is necessary to meter the plant itself to be able to make an overall accounting.

Billing Principles

Taking into account the above three groups of members, it is necessary to analyse what documents should form the basis of the members' settlements with the energy cooperative itself. Based on the experience of the first functioning energy cooperative in Poland, it should be pointed out that the basic principles, such as:

- qualification of members into particular groups,
- billing rules,
- payment deadlines,

should be defined in a resolution of the Supervisory Board. The second possible solution is to place these regulations in the statutes of the energy cooperative. Placing these rules in the statute may cause excessive difficulties in the event of the need to make changes, particularly given the dynamic changes in the electricity market. Of course, it is possible to separate the rules and divide them between the statutes and resolutions of the bodies of the energy cooperative. Notwithstanding the foregoing, it makes sense to set rates for electricity consumed and produced in a Supervisory Board resolution to be able to respond to unexpected changes in the energy market.

Conclusion

Energy cooperatives in Poland are just starting to develop; at the moment twenty-one have been registered. In spite of many opportunities that energy cooperatives offer, there is still rather low interest in this type of solution. Diversification of generation sources and development of local energy communities should be promoted more and more. Taking into account the fact that the energy cooperative is somehow a business model for distributed energy, new projects should develop in the near future. In order to create good conditions for the development of energy cooperatives, it is necessary to review the existing legislation. This study has identified areas that need further development. A broader analysis of the law

on energy cooperatives reveals areas where regulations also need improvement. Therefore, the legislator, using the experience of the few established energy cooperatives, should verify the current legislation.

Energy cooperatives have to cooperate with energy companies to ensure the supply of energy to their members, but also to reach their economic goals. Despite the imperfections of the legal solutions, cooperatives can develop and achieve their goals. What is important for them to function are both the arrangement of cooperation with energy companies, and internal structures. My experience with the creation of Poland's first energy cooperative shows that it is extremely important to develop internal rules that will allow day-to-day operation. Without additional internal regulations, common law provisions are insufficient. Given the purpose of this study, it should be pointed out that the relationship between the energy cooperative and energy companies was described in detail. According to current legislation, the energy cooperative is required to conclude two contracts with energy companies, which specify a number of obligations. This is an important part of how energy cooperatives operate in the energy market. The role of the energy cooperative in this case will be reduced to that of an intermediary, so to speak, between its members and the energy companies. After analysis, it should be pointed out that the current regulations on energy cooperatives and the role of energy companies do not comprehensively regulate all necessary areas. In addition, the current regulations, in my opinion, leave too much scope for energy companies to interpret the regulations. The regulations on energy cooperatives and cooperation with energy companies need to be amended in order to more broadly protect energy cooperatives in their dealings with professional entities such as energy companies.

Chapter 12

THE CONTRIBUTION OF DIFFERENT TYPES OF COOPERATIVES TO THE PRODUCTION AND USE OF RENEWABLE ENERGY IN POLAND—SELECTED LEGAL ISSUES

Aneta Suchoń

Introduction

There are more than 10,000 cooperatives in Poland,[1] mainly housing cooperatives (over 3,700), cooperative banks, social cooperatives, consumer cooperatives, and cooperatives related to agriculture (e.g. agricultural production cooperatives, cooperative groups of agricultural producers, dairy cooperatives, farmers' cooperatives). In Europe, 158,000 cooperatives operate, totalling in excess of 123 million members.[2] Cooperatives around the world have been involved in renewable energy production for many years. This activity can be part of the concept of an energy community operating in the field of renewable energy and a citizen energy community (EU Directive 2018/2001[3] and 2019/944[4]).

As already indicated, the "Fit for 55" package proposes to raise the current EU target for the share of renewables in the overall energy mix from 32% to at least 40% by 2030. The Commission's communication of 12 May 2021, entitled "Towards Zero Pollution for Air, Water and Soil. Pathway to a Healthy Planet for All", highlights that by reducing greenhouse gas emissions, renewable energy can also contribute to overcoming environmental challenges such as biodiversity loss and reducing pollution.

[1] See Urząd Statystyczny, Rocznik Statystyczny Rzeczypospolitej Polskiej, Warsaw, 2022, https://stat.gov.pl/obszary-tematyczne/roczniki-statystyczne/ [accessed 9.07.2023].

[2] KRS, *Spółdzielczość w Unii Europejskiej*, https://krs.org.pl/spoldzielczosc/ruch-spodzielczy/spodzielczo-w-unii-europejskiej [accessed 9.12.2022].

[3] 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 source.

[4] 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.

According to European Climate Law,[5] which changed Directive (EU) 2018/2001, "Each Member State shall establish a multilevel climate and energy dialogue pursuant to national rules, in which local authorities, civil society organizations, business community, investors and other relevant stakeholders and the general public are able actively to engage and discuss the achievement of the Union's climate-neutrality objective" (Article 11 Directive (EU) 2018/2001[6]).

The Polish Act of 22 June 2016 amending the Act of 20 February 2015 on renewable energy sources introduced the definition of an energy cooperative into the national Polish legislation. However, the involvement of cooperatives in renewable energy does not only apply to energy cooperatives. For example, the amendment to the above-mentioned act also includes housing cooperatives as a collective/tenancy prosumer. In order to achieve (even partial) energy independence, some dairy and agricultural production cooperatives, cooperative agricultural producers and social cooperatives have undertaken activities related to renewable energy sources. Considering the present situation of constantly rising energy prices, environment problems and energy security, it would be justified to increase the participation of cooperative entities in the production and use of renewable energy.

The scope of legal regulations affecting the organization and functioning of cooperatives in Poland are dispersed. The basis is the already-mentioned Act of 16 September 1982 on Cooperative Law.[7] In addition, other legal acts concerning various types of cooperatives should be noted, including the Act of 15 December 2000 on Housing Cooperatives,[8] the Act of 27 April 2006 on Social Cooperatives,[9] and the Act of 7 December 2000 on the Functioning of Cooperative Banks, their Association and Affiliating Banks,[10] the Act of 4 October 2018 on farmers' cooperatives,[11] the Act of 15 September 2000 on Agricultural Producer Groups.[12] Additionally, it encompasses the regulations indirectly governing the structure and operation of cooperatives. These often regulate cooperatives' economic environment, for example the Act of 15 February 1992 on legal person income tax,[13] the Act of 12 January 1991 on local taxes and fees,[14] the Act of 20 August, 1997 on the National

[5] Regulation (EU) 2021/1119 of the European Parliament and of the Council of 30 June 2021 establishing the framework for achieving climate neutrality and amending Regulations (EC) No. 401/2009 and (EU) 2018/1999 ('European Climate Law').

[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 (recast).

[7] JL 2021, item. 648, as amended.

[8] JL 2021, item 1208, as amended.

[9] JL 2020, item 2085, as amended.

[10] JL 2022, item 1595, as amended.

[11] JL 2018, item 2073 as amended.

[12] JL 2023, item 1145, as amended.

[13] JL 2022, item 2587, as amended.

[14] JL 2023, item 70, 1313, as amended.

Court Register,[15] the Act of 20 February 2015 on renewable energy sources**,** and the regulation concerning financing within the Common Agricultural Policy. The Act of 23 April 1964 on the Civil Code is also of importance because cooperatives enter into various agreements in the course of their activities.[16]

The aims of this chapter are as follows: firstly, to distinguish the characteristics of energy cooperatives in comparison with other cooperative entities and to evaluate whether legal regulations facilitate the inclusion of already-existing cooperative entities into the list of energy cooperatives. Secondly, it attempts to assess whether and to what extent different kinds of cooperatives in Poland are involved in the implementation of investments related to renewable energy sources, and whether the legal regulations currently in force encourage such activity.

As cooperatives operate within the renewable energy market, this chapter opens by presenting selected regulations regarding renewable energy, followed by statistics on the growth of this market in Poland. Additionally, general information is provided with regard to cooperatives in Poland. The chapter explores different types of cooperatives, including energy cooperatives, farmers' cooperatives, agricultural production cooperatives, social cooperatives, cooperative groups of agricultural producers and organizations, as well as housing cooperatives, all in the terms of renewable energy sources investments. Furthermore, there is a brief discussion of energy clusters and citizen energy communities, which may involve the activities of cooperatives.

General Remarks on Renewable Energy and Cooperatives in Poland

The basic legal acts related to renewable energy are: the Act of 20 February 2015 on renewable energy sources**,** the Act of 10 April 1997 on Energy Law and the Regulation of the Minister of Climate and Environment of 23 March 2022 on the registration, balancing and provision of metering data and billing of energy cooperatives**.** According to the Polish Act on renewable energy sources, non-fossil energy sources include wind energy, solar radiation energy, aerothermal energy, geothermal energy, hydrothermal energy, hydropower, wave, sea current and tidal energy, energy obtained from biomass, biogas, agricultural biogas, and bioliquids-biomethane, and renewable hydrogen (Article 2 point 22). A definition is also included in Article 2 of 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 source (energy from "renewable sources" or "renewable energy" means

[15] JL 2023, item 685, 825,1705, as amended.

[16] JL 2023, item 1610, 1615 as amended.

energy from renewable non-fossil sources, namely wind, solar (solar thermal and solar photovoltaic) and geothermal energy, osmotic energy, ambient energy, tide, wave and other ocean energy, hydropower, biomass, landfill gas, sewage treatment plant gas, and biogas).

A feature of renewable energy is the lack of exhaustion of its sources and, as a rule, a positive impact on the environment.[17] It does not emit harmful by-products through combustion or contribute to the reduction of greenhouse gas emissions, thanks to which it has a positive effect on the climate. According to the literature, renewable energy sources will not only be a remedy for the deteriorating condition of the natural environment but will also perform important social and economic functions.[18]

Renewable energy is essential for improving the environment now and in the future.[19] As has already been indicated, due to the war in Ukraine, an important challenge is to ensure energy security. An EU initiative aimed at ending the EU's reliance on Russian fossil fuels emphasizes the large-scale and swift integration of renewable energy. The plan primarily highlights solar energy and its deployment, including photovoltaic and thermal technologies, which offer both ecological and economic benefits for citizens and businesses. In fact, it could be said that solar energy is the foundation of the worldwide transition to zero carbon emissions.[20]

Renewable energy also allows natural resources such as hard coal and lignite to be left for future generations. This is an important energy transformation,

[17] A. Suchoń, J. Goździewicz-Biechońska, Wpływ energii odnawialnej na ochronę środowiska i rozwój obszarów wiejskich—wybrane aspekty prawne, in *Prawne instrumenty ochrony środowiska*, ed. B. Jeżyńska, E. Kruk, Lublin, 2016, pp. 279–294.

[18] International Energy Agency [IEA] (2021). Security of Clean Energy Transitions. Paris. https://www.iea.org/reports/security-of-clean-energy-transitions-2 [accessed 9.12.2022]. G. Narvaez et al., The impact of climate change on photovoltaic power potential in Southwestern Colombia, *Heliyon*, 2022, no. 8(10), https://doi.org/10.1016/j.heliyon.2022.e11122; D. Rodríguez-Urrego, A. G. Olabi, M. A. Abdelkareem, Renewable energy and climate change*, Renewable and Sustainable Energy Reviews*, 2022, vol. 158, https://doi.org/10.1016/j.rser.2022.112111.

[19] For more, see P. Gołasa, P. Litwiniuk, Główne czynniki rozwoju odnawialnych źródeł energii w perspektywie krótko- średnio- i długoterminowej, in *Ekonomiczne, prawne i społeczne uwarunkowania produkcji i korzystania z odnawialnych źródeł energiix*, ed. P. Gołasa, P. Litwiniuk, Warsaw: SGGW, 2023, pp.13–26.

[20] Communication from the Commission to the European Parliament, the Council, the European Economic and Social Committee and the Committee of the Regions—EU Solar Energy Strategy, COM(2022)221 final, Brussels, 18.5.2022, https://eur-lex.europa.eu/legal-content/EN/TXT/?uri=COM%3A2022%3A221%3AFIN&qid=1653034500503 [accessed 28.12.2022]. See also Opinion of the European Economic and Social Committee on Communication from the Commission to the European Parliament, the Council, the European Economic and Social Committee and the Committee of the Regions—EU Solar Energy Strategy (COM(2022) 221 final) and Commission recommendation on speeding up permit-granting procedures for renewable energy projects and facilitating Power Purchase Agreements (C(2022) 3219 final).

because it is not possible to determine how the climate will develop in the next centuries, or whether there will be enough sun or wind.[21]

As indicated, the development of renewable energy is important in terms of achieving climate neutrality. According to Article 2 and 4 of the Regulation of 30 June 2021 establishing the framework for achieving climate neutrality and amending Regulations (EC) No. 401/2009 and (EU) 2018/1999 ("European Climate Law")[22]: "Union-wide greenhouse gas emissions and removals regulated in Union law shall be balanced within the Union at the latest by 2050, thus reducing emissions to net zero by that date, and the Union shall aim to achieve negative emissions. … The binding Union 2030 climate target shall be a domestic reduction of net greenhouse gas emissions (emissions after deduction of removals) by at least 55% compared to 1990 levels by 2030."

It is also worth mentioning the Directive (EU) 2023/2413 of the European Parliament and of the Council of 18 October 2023 amending Directive (EU) 2018/2001, Regulation (EU) 2018/1999 and Directive 98/70/EC as regards the promotion of energy from renewable sources, and repealing Council Directive (EU) 2015/65.[23] The preamble emphasizes that: "Buildings have a large untapped potential to contribute effectively to the reduction in greenhouse gas emissions in the Union. The decarbonization of heating and cooling in buildings through the increased production and use of renewable energy will be needed to meet the ambition provided for in Regulation (EU) 2021/1119 of achieving the Union objective of climate neutrality".[24] In the mentioned EU Directive it has been underline that "the increased use of renewable fuels and electricity in transport, which can contribute to the decarbonisation of the EU transport sector, and the reduction of greenhouse gas emissions, energy dependency and energy prices cannot be sufficiently achieved by the Member States alone; the scale of the action required therefore means it would be better achieved at Union level, in accordance with the principle of subsidiarity as set out in Article 5 of the Treaty on European Union".[25]

Renewable energy matters were brought up in the Polish Strategic Plan for the Common Agricultural Policy 2023–2027. For instance, agricultural producers will have the ability to utilize programmes promoting investment in renewable energy and facilitating the accomplishment of several challenges outlined in the European Green Deal. Potential EU funding opportunities exist for building

[21] *Rozwój innowacyjnych technologii odnawialnych źródeł energii na obszarach wiejskich*, https://www.cdr.gov.pl/images/Radom/2021/broszury/oze_.pdf [accessed 9.12.2022].

[22] OJ L 243, 9.7.2021, p. 1–17.

[23] OJ L, 2023/2413, 31.10.2023.

[24] https://eur-lex.europa.eu/legal-content/EN/TXT/?uri=CELEX%3A52021PC0557 [accessed 9.12.2022].

[25] Directive (EU) 2023/2413 of the European Parliament and of the Council of 18 October 2023 amending Directive (EU) 2018/2001, Regulation (EU) 2018/1999 and Directive 98/70/EC as regards the promotion of energy from renewable sources, and repealing Council Directive (EU) 2015/65.

biogas production facilities, solar energy installations, including energy storage and management systems, energy efficiency enhancement systems for agriculture buildings used in production, such as thermal upgrades, biomass boilers, heat recovery systems and renewable energy generation facilities.[26]

As entities with a long tradition in Poland, cooperatives usually have the potential to invest in renewable energy. These are buildings where photovoltaics can be located (e.g. roofs in housing cooperatives), waste produced by cooperatives in the agri-food industry, for example dairies or agricultural production cooperatives, can be utilized.[27]

The largest source of electricity obtained from RES in Poland in June 2022 was the sun (installed capacity amounted to over 10.3 GW: 52% of all renewable energy sources). Wind was second.[28] In July, solar farms increased production to 1,285 GWh (612 GWh a year earlier).[29] The share of renewable energy in Poland is therefore growing. The largest growth in energy generation in 2020 compared to 2016 was achieved by: solar energy—294.8% (by 7,769 TJ)[30]; municipal waste—135.1% (by 3,452 TJ); heat pumps—90% (by 5,912 TJ); and wind energy—25.5% (by 11,565 TJ).[31]

In 2020, the share of renewable energy in total primary energy was 21.6% for Poland and 40.7% for the EU-27. The average annual growth rate of this indicator between 2017 and 2020 was 15.2% for Poland and 7.5% for the EU 27. In 2023, 44 TWh electricity in Poland came from renewable sources, half of which came from onshore wind power. In 2023, the share of coal in Poland's electricity generation fell to 63%, the share of RES increased to 27% and the share of gas reached 10%. One of the reasons for the popularity of photovoltaics among prosumers (including cooperatives) is the possibility of relatively swift implementation and lower costs compared to constructing wind turbines.[32]

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[26] Polish Strategic Plan for the Common Agricultural Policy 2023–2027.

[27] M. Bukowski et al., *Wybrane ekonomiczne i prawne aspekty wytwarzania energii z instalacji fotowoltaicznych w gospodarstwach rolnych województwa mazowieckiego*, Warsaw, 2022.

[28] https://www.rynekelektryczny.pl/moc-zainstalowana-oze-w-polsce [accessed 9.09.2022].

[29] *Struktura produkcji energii elektrycznej*, https://www.rynekelektryczny.pl/moc-zainstalowana-fotowoltaiki-w-polsce/ [accessed 9.09.2023].

[30] Photovoltaic has been popular for years in many countries around the world, for example in Germany, France, Spain, USA and Korea. *Future Generation Photovoltaic Technologies: First NREL Conference*, Denver, CO, March 1997 ed. R. D. McConnell, New York, 1997; G. Narvaez et al., The impact of climate change; D. Rodríguez-Urrego, L. Rodríguez-Urrego, Photovoltaic energy in Colombia: current status, inventory, policies and future prospects, *Renewable and Sustainable Energy Reviews*, 2018, vol. 92, pp. 160–170; F. Zuluaga et al., The climate change perspective of photovoltaic power potential in Brazil, *Renewable Energy*, 2022, vol. 193, pp. 1019–1031; A. Schröder, Das Recht der Solarenergie in Spanien: im Vergleich zur deutschen Regelung des EEG, *Recht der internationalen Wirtschaft*, 2010, vol. 56(7), pp. 460–468.

[31] Urząd Statystyczny, *Energia ze źródeł odnawialnych w 2020 r.*, Warsaw, 2021, p. 35.

[32] Urząd Statystyczny, *Energia ze źródeł odnawialnych w 2021 r.*, Warsaw, 2022, p. 20f; B. Derski, Udział węgla w energetyce spadł do 63%, https://wysokienapiecie.pl/96011-udzial-wegla-i-oze-w-polsce-2023/[accessed 29.12.2023].

Taking into account the change in the settlement of prosumers, as well as problems with obtaining loans, interest in photovoltaic investments decreased in 2022. Therefore, a better solution for the inhabitants of rural areas may be energy cooperatives, especially with regard to the construction of biogas plants.

According to the announcement of the Minister of Climate and Environment of 2 March 2021 on the state energy policy until 2040[33]: "Renewable sources will play an increasingly important role—their level in the structure of domestic net electricity consumption will not be less than 32% in 2030, which will primarily enable the development of photovoltaics and offshore wind farms, which, due to economic and technical conditions, have the greatest development prospects. In order to achieve such a level of RES in the balance, it is necessary to develop grid infrastructure and energy storage technologies."

Energy use of biomass will increase. In 2020, there were about 100 biogas plants in Poland. At the end of 2022, there were 364 biogas plants.[34] In September 2023, 32 entities were entered into the register of agricultural biogas producers kept by the National Centre for Agricultural Support.[35] Over 10,000 such biogas plants operate in Germany.[36] They are also popular in Italy, Great Britain, Sweden, Denmark and throughout Europe, in fact, there are more than 1,200 biomethane plants,[37] with 20,000 biogas plants.[38] Biomethane plants have seen dynamic development in the last 2–3 years; in France there was an increase of 60% last year. At the moment, France has more than 330 biomethane plants.[39] However, too few investments are being made by agricultural producers in Poland. This is due to the

[33] Obwieszczenie Ministra Klimatu i Środowiska z 2 marca 2021 r. w sprawie polityki energetycznej państwa do 2040 r., Official Gazette of the Government of the Republic of Poland 2021, item 264.

[34] T. Elżbieciak, *Żywią i zasilają. Biogazowy potencjał rolników powinien rosnąć szybciej*, https://wysokienapiecie.pl/85430-biogazowy-potencjal-rolnikow-powinien-rosnac-szybciej/ [accessed 9.05.2023]; https://www.europeanbiogas.eu/category/publications/ [accessed 9.05.2023].

[35] Register of agricultural biogas producers, https://www.gov.pl/web/kowr/rejestr-wytworcow-biogazu-rolniczego [accessed 9.09.2023].

[36] *Niemcy mają ponad 10 tys. biogazowni, a Polska ok. 300*, https://energetyka24.com/gaz/wiceprezes-pgnig-dla-e24-niemcy-maja-ponad-10-tys-biogazowni-a-polska-ok-300-to-dziwne [accessed 9.12.2022].

[37] Biomethane, which is purified biogas, can be produced using a variety of substrates. The most commonly used include energy crops, plant and agricultural residues (including manure), waste and sewage sludge, agricultural and food industry residues and a fraction of municipal biowaste. For more, see Rządowy projekt ustawy o zmianie ustawy o odnawialnych źródłach energii oraz niektórych innych ustaw, Druk 3279; https://www.sejm.gov.pl/sejm9.nsf/druk.xsp?nr=3279 [accessed 8.07.2023].

[38] *Niemcy mają ponad 10 tys. biogazowni*.

[39] Rządowy projekt ustawy o zmianie ustawy o odnawialnych źródłach energii oraz niektórych innych ustaw, Druk 3279; https://www.sejm.gov.pl/sejm9.nsf/druk.xsp?nr=3279 [accessed 8.07.2023]. For years, biogas plants have been focused almost exclusively on electricity generation, there has been an evolution towards perceiving biogas plants through the prism of biomethane plants—biomethane plants no longer produce biogas, but biomethane, i.e. a substance with almost the same chemical composition as natural gas. Thus, it can be used for different purposes (*Niemcy mają ponad 10 tys. biogazowni*).

high costs, for example, of building a biogas plant. Therefore, a better solution is the accession of agricultural producers to cooperatives that carry out such investments in order to use energy for agricultural activities and for housing purposes.

New opportunities for the development of biogas plants also by cooperatives were created by the Act of 13 July 2023 on facilitating the preparation and implementation of investments in the field of agricultural biogas plants, as well as their operation.[40] This law defines specific rules of procedures for issuing a decision regarding a construction permit for agricultural biogas plants and is aimed at facilitating and accelerating the preparation and implementation of investments, as well as creating the conditions for conducting activities in these biogas plants. Article 3 of this Act indicates that an entity authorized to prepare and implement investments in the field of agricultural biogas plants is an entity that, for example, runs a farm or a special department of agricultural production as part of agricultural activity; this might be a group of agricultural producers or a producer organization, an energy cooperative or a cooperative of farmers. The provisions of the Act specify that they apply to agricultural biogas plants in which only the indicated substrates in mentioned regulations are used to produce agricultural biogas, electricity from agricultural biogas, heat from agricultural biogas or biomethane from agricultural biogas, for example agricultural products and agricultural by-products, including animal waste; products from the processing of products of agricultural origin and by-products, waste or residues from this processing, including food processing and production.[41]

Moving on to the issue of cooperatives, according to the Act of 16 September 1982 on Cooperative Law, a cooperative is a voluntary association of an unlimited number of people, with a variable composition and a share fund. A cooperative engages in joint economic activity in the interest of its members. It should be emphasized that Article 1 of this legal act states that a cooperative may also conduct social, educational and cultural activities for the benefit of its members and their local environment. The Polish definition of a cooperative does not indicate how a cooperative should act on behalf of its members. The only thing the legislator stated was that such entities carry out joint business activities in the interests of their members. According to the Polish language dictionary *interest* means "usufruct, benefit, and undertaking bringing a financial gain".[42] The accomplishment of the cooperative's goals may be achieved by means of the economic activity conducted by its members, which leads to an increase in the revenue or a decrease in costs.[43]

[40] JL 2023, item 1597.

[41] For more, see M. Rokosz, Specustawa biogazowa a bezpieczeństwo energetyczne, *Prawo i Klimat*, 2023, no. 2, pp. 40–52.

[42] Słownik PWN [online], s.v. *interes*, http://sjp.pwn.pl/ [accessed 9.12.2022].

[43] P. Zakrzewski, Cel spółdzielni, *Kwartalnik Prawa Prywatnego*, 2005, issue 1, p. 51.

As a rule, cooperatives conduct their activities mainly for the benefit of their members, who might be suppliers, consumers or users of goods or services. In carrying out their activities, they are primarily based on the performance of work by members, or on their contributions to goods or services. The pursuit of these economic entities involves, among other things, securing work or the exchange, sale of goods and services between the cooperative and its members by concluding membership agreements that are as favourable as possible for the cooperatives. There is no doubt that in the current situation marked by global climate change and energy-related problems, it is extremely important for cooperatives to engage in investments in the field of renewable energy. The main point is to provide cheaper electricity to the cooperative and its members. As Bierzanek rightly points out, the principle of the membership community requires that the cooperative be treated as a compact social group with a keen interest in appreciating the individual value of its members. The principle of a loose association of persons, for example, in capital companies, is the opposite of that of a membership community. In the company, the interests and individual characteristics of each member are of no significance to the entity. A different situation is that of cooperatives, in which every member is important. Companies as a rule do not create any obstacles to the assignment of membership rights by the sale of shares or by the transfer of membership by inheritance.[44] Article 18(1) of the Act of 16 September 1982 on Cooperative Law states that all members have the same rights and obligations arising from the membership of a cooperative. This provision lays down one of the basic principles of cooperatives: the equality of cooperatives and their members. The rights enjoyed by the members of a cooperative may be divided into non-property and property rights.

The cooperative principle of the open door not only allows the possibility of joining a cooperative upon successful fulfilment of the conditions stipulated in the law or the statutes, but also the possibility of renouncing membership. In addition, membership may be terminated as a result of the member's exclusion, expulsion or death.[45] As has already been underlined, cooperatives are part of the EU concept of Civic Energy Communities, and one of their features is open and voluntary participation. Cooperatives are based on democracy and working on behalf of their members. As indicated by the EU regulations, community energy initiatives are primarily oriented towards providing members or shareholders with affordable types of energy, such as renewable energy, as opposed to traditional energy companies, which prioritize the profit motive.

[44] R. Bierzanek, *Prawo spółdzielcze*, p. 21.

[45] J. Ignatowicz, System ochrony praw członków spółdzielni, *Spółdzielczy Kwartalnik Naukowy*, 1987, no. 2, pp. 37f.; S. Grzybowski, *Prawo spółdzielcze w systemie porządku prawnego*, Warsaw, 1976, p. 120; T. Misiuk, *Sądowa ochrona praw członków spółdzielni*, Warsaw, 1979.

The very definition of a cooperative implies activities for the benefit of the members of the cooperative.[46] The activity of cooperatives on the energy market is also part of the implementation of the EU's regional[47] and energy policy. The former focuses on strengthening the economic, social and territorial cohesion of the EU. In particular, the Union's aim is to reduce disparities between the levels of development of the various regions. Regulations relating to this policy are set out in Articles 174 to 178 of the Treaty on the Functioning of the EU.[48] As emphasized in the literature, the fundamental aim of European regional policy is to promote harmonious development within the Union by reducing disparities and fostering cohesion between regions in their socio-economic development.[49]

Characteristic Features of Energy Cooperatives and the General Legal Principles of Their Establishment and Operation

Characteristic Features of Energy Cooperatives in the Act of 20 February 2015 on Renewable Energy Sources

A cooperative must meet several criteria to be considered an energy cooperative.[50] It is important to indicate the characteristics of energy cooperatives and to distinguish them from other cooperative entities, and these relate to activity, location and members.[51] It should be noted that only some issues relevant for further consideration will be covered in the present chapter. A broad overview of the issues concerning energy cooperatives is presented in the chapter written by Tomasz Marzec.[52]

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[46] Also, regarding the concept of a cooperative, see e.g. K. Pietrzykowski, Spółdzielnia a spółka handlowa, *Przegląd Ustawodawsta Gospodarczego*, 1991, no. 6, pp. 65f; A. Stefaniak, *Prawo spółdzielcze. Ustawa o spółdzielniach mieszkaniowych. Komentarz*, [Legal Database] Lex/el. 2014.

[47] See e.g. K. Kokocińska, *Polityka regionalna w Polsce i w Unii Europejskiej*, Poznań, 2010, p. 14 f.; S. Pastuszka, *Polityka regionalna Unii Europejskiej. Cele, narzędzia, efekty*, Warsaw, 2012, p. 15 f.

[48] For more, see P. Kucharski, *Komentarz do art. 174 Traktatu o funkcjonowaniu Unii Europejskiej, in Traktat o funkcjonowaniu Unii Europejskiej. Komentarz*, vol. I, [Legal Database] SIP Lex 2012.

[49] T. G. Grosse, *Polityka regionalna Unii Europejskiej i jej wpływ na rozwój gospodarczy. Przykład Grecji, Włoch, Irlandii i wnioski dla Polski*, Warsaw, 2000, p. 7f.

[50] Regulations regarding energy cooperatives were changed. Last amendments on 17 August 2023.

[51] See M. Szyrski, Ruch spółdzielczy w energetyce. Nowe trendy w energetyce lokalnej, *Ruch Prawniczy Ekonomiczny i Socjologiczny*, 2021, vol. 83(3); T. Marzec, Prawne perspektywy rozwoju spółdzielni energetycznych w Polsce, *Internetowy Kwartalnik Antymonopolowy i Regulacyjny*, 2021, no. 2.

[52] See also D. Bierecki, Energy Cooperatives in the System of Polish Cooperative Law, *Review of Institute of the Grand Duchy of Lithuania*, 2021, vol. 1.

Firstly, an energy cooperative is a cooperative within the meaning of the Act of 16 September 1982—Cooperative Law, or a cooperative within the meaning of the Act of 4 October 2018 on farmers' cooperatives. The definition of a cooperative in the first act is broad. On the other hand, a characteristic feature of a farmers' cooperative is its members (farmers and non-farmers who meet certain characteristics) and the subject of its activity. This will be presented in the next section. The legislator used the conjunction 'or': a cooperative or a farmers' cooperative. The latter is also one of the types of cooperatives referred to in Article 1 of the Cooperative Law. Since a farmers' cooperative is part of the general definition of a cooperative, the question arises as to why the legislator singled out farmers' cooperatives for separate attention. It seems that the legislator rightly assumed they deserve special attention due to the specificity of renewable energy sources and production within the agriculture and agri-food economy understood in a broad sense. It is reasonable to use the form of farmers' cooperatives, and likewise, it seems fully justified to emphasize the importance of farmers' cooperatives by indicating them in the definition of an energy cooperative. Moreover, the definition of farmers' cooperatives is broad and there is no need to refer to the Cooperative Law of 16 September 1982. Simultaneously, pursuant to Article 3, in matters not regulated by the provisions of the Act of 4 October 2018 on farmers' cooperatives, the rules of the law of 16 September 1982 apply to farmers' cooperatives.

Secondly, the activity of an energy cooperative is focused on the production of electricity, biogas or heat in renewable energy installations and on balancing demand for electricity or biogas or heat. Moreover, it is produced only for the needs of an energy cooperative and its members. It should be underlined that the activities of an energy cooperative in the supply of: (1) electricity introduced into the electricity distribution network, or (2) heat, or (3) biogas or agricultural biogas, (annual capacity of all installations not exceeding 40 million m^3) or biomethane (annual capacity of all installations not exceeding 20 million m^3) may be carried out for the benefit of all or selected members of this cooperative only in renewable energy installations owned by the energy cooperative or its members. In addition, where the aim of its activity is the production of electricity, the total installed electrical capacity of all renewable energy source installations should make it possible to cover no less than 70% of the energy cooperative's own needs and those of its members during the year (Article 38e(1) point 3). The amendment to 17 August 2023 introduced an exception. More specifically, according to Article 41 of the Act of 17 August 2023 amending the Act on Renewable Energy Sources, cooperatives are deemed to meet the condition of covering the energy cooperative's own needs during the year referred to in Article 38e(1)(3)(a) of the RES Act if, by 31 December 2025, they submit an application for inclusion to the National Support Centre for Agriculture, and the electricity generation efficiency of all renewable energy source installations will enable no less than 40% of the own needs of the

respective cooperative and its members to be covered, or those of the respective farmers' cooperative and its members during the year.

Thirdly, energy cooperatives operate in the area of a rural or urban-rural commune within the meaning of the provisions on official statistics or in the area of no more than three such communes directly adjacent to each other. In practice, a situation may occur where a rural commune is changed into an urban commune. Such provisions limit the possibility of establishing such entities. Additionally, cooperative operates in the area of a single operator of an electricity distribution system or a gas or heating distribution network, supplying electricity, biogas or heat to producers and customers who are members of this cooperative. The Act of 17 August 2023 amending the Act on Renewable Energy Sources and certain other acts stipulates that the scope of collaboration of an energy cooperative is determined based on the cooperative's designation of various factors. These include energy consumption delivery points of generators, or locations where it is connected to the heating network of generators and heat consumers, the locations of a connection to the gas distribution network of generators, members of the energy cooperative, and locations of biogas or agricultural biogas, or biomethane from renewable sources are generated and consumed. Decisions on such factors are crucial for the functioning of energy cooperatives.

Fourthly, the Act of 17 August 2023 amending the Act on Renewable Energy Sources and certain other acts on energy cooperative members introduces the characteristics of members of energy cooperatives. Thus, a member should be understood as an entity: (1) whose installation is connected to the electricity distribution network or gas distribution network or heating network; (2) to which biogas or agricultural biogas or biomethane produced by an energy cooperative or its members from renewable sources is supplied in a way other than through the gas distribution network. Membership of an energy cooperative has been defined in broad terms: it can include natural or legal persons and legal entities without legal personality. However, these entities must meet additional legal requirements included in the Act on Renewable Energy Sources. This Act does not require that the cooperative member has a place of residence, be registered or reside in the communes where the energy cooperative operates. The Act on Renewable Energy Sources does not specify the number of members of an energy cooperative. Moreover, the limit of 1,000 members stated in the Polish RES Act has now been removed due to the amendment of 17 August 2023, and as of 1 October 2023, it is no longer in force. The Polish RES Act implements further provisions concerning the termination of membership. Withdrawal from an energy cooperative as a result of notice by member may take place not earlier than at the end of a given accounting period referred to in Article 38c of para. 1 of the Act on Renewable Energy Sources.

Fifthly, an energy cooperative may start operating after its data is included in the list of energy cooperatives, which is maintained by the Director General of

National Support Centre for Agriculture. The cooperative must be registered with the National Court Register and obtain legal personality. However, a distinction should be made between energy cooperatives that meet the requirements set out in the Act on Renewable Energy sources and others operating in the renewable energy industry. The National Court Register may register a cooperative that has 'energy cooperative' in its name but which is not a cooperative within the meaning of the Act on Renewable Energy Sources. The Polish Act RES does not require an energy cooperative to have the designation "energy" in its name. Therefore, a farmers' cooperative might exist that does not have this designation in its name. The vast majority of listed cooperatives do have it, however.

The General Director of the National Support Centre for Agriculture is authorized to carry out inspections related to the scope of activities of the energy cooperative. The Act of 17 August 2023 amending the Act on Renewable Energy Sources also specifies that the General Director of the National Support Centre for Agriculture, by way of a decision, removes the data of an energy cooperative from the list of energy cooperatives if, for example, the energy cooperative no longer meets the condition referred to in Article 38e para. 1 sec. of the Act; if it has submitted the declaration contrary to the actual situation. Before issuing a decision, the Director of the National Support Centre for Agriculture sets a deadline for remedying the violations identified. After being removed from the register (list) of energy cooperatives, the cooperative will continue to operate as a cooperative within the meaning of the Act of 16 September 1982 on Cooperative Law or the Act of 4 October 2018 on Farmers' Cooperatives. However, it cannot benefit from the privileges designated for energy cooperatives.

Sixthly, it is worth mentioning at least some of the special legal instruments offered to energy cooperatives. The possibility of using them distinguishes these cooperatives from others. Namely, for the amount of electricity generated in all renewable energy sources installations of the energy cooperative and consumed by all electricity consumers of the energy cooperative, the energy cooperative does not pay to the seller any fees for its settlement, or distribution service fees, the level of which depends on the amount of electricity consumed by all generators and consumers of the energy cooperative. The production of electricity in micro-installations by an entity that is a member of an energy cooperative and is not an entrepreneur within the meaning of the Entrepreneurs' Law, and then the supply of this energy to the electricity distribution network, which is subject to settlement, does not constitute an economic activity within the meaning of the Entrepreneurs' Law. The energy seller shall settle with the energy cooperative, including its individual members, the quantity of electricity fed into the electricity distribution network against the quantity of electricity drawn from this network for consumption by the energy cooperative and its members, in a quantity ratio of 1 to 0.6. Energy cooperatives have access to EU and Polish funding for investments in renewable energy.

A Farmers' Cooperative as an Energy Cooperative—General Legal Principles of Their Establishment and Scope of the Activity

As has already been indicated, farmers' cooperatives[53] pursuant to Article 38g of the Act of 20 February 2015 on Renewable Energy Sources may apply to the Director General of the National Support Centre for Agriculture to have the data of an energy cooperative included in the register of energy cooperatives. According to the Act of 4 October 2018 on farmers' cooperatives, this entity comprises fluctuating bodies of persons and variable capital which conduct joint business activity for the benefit of their members. Such a cooperative is a voluntary association of natural or legal persons who: (1) run an agricultural farm in the meaning of agricultural tax regulations or conducting an agricultural activity referring to special branches of agricultural production, which are the producers of agricultural products or of groups of these products or which breed fish, hereinafter referred to as the "farmers", (2) are not farmers and conduct activity related to storing, sorting, packing or processing agricultural products or groups of these products or fish produced by the farmers referred to in point 1, or service activities supporting agriculture, including those referred to in point 1, services using machines, tools or devices for the production of agricultural products by these farmers or groups of these products, or fish hereinafter referred to as "entities which are not farmers".

In the light of the Agricultural Tax Act, a farm is an area of agricultural land with a total area exceeding 1 ha or 1 conversion ha, owned or held by a natural person, legal person or organizational unit, including a company, without legal personality. Pursuant to the Act of 23 April 1964 of the Civil Code, the possessor of a thing is both the one who actually controls it as an owner (independent possessor) and the one who actually controls it as a usufructuary, including a lessee (dependent possessor).[54] It seems reasonable to assume that any entity running a farm within the meaning of the agricultural tax regulations may be a member. A farmer who can create a cooperative is also an entity conducting special branches of agricultural production. Tax laws (e.g. the Act of 15 February 1992 on Corporate Income Tax) specify that the special branches are, for example: cultivation in greenhouses and heated polytunnels, cultivation of mushrooms and their mycelium, cultivation of in vitro plants, the farm breeding and rearing of slaughter and carrier poultry, poultry hatcheries, laboratory animals, breeding of earthworms, breeding of entomophages, breeding of silkworms, running apiaries and breeding other animals off-farm.

[53] For more, see A. Suchoń, Nowa ustawa o spółdzielniach rolników—wybrane zagadnienia, *Studia Prawnicze KUL*, 2020, no. 3, pp. 261–290.

[54] A. Suchoń, Z prawnej problematyki zakładania i prowadzenia działalności przez spółdzielcze grupy producentów rolnych, *Przegląd Prawa Rolnego*, 2012, no. 2, pp. 221–242.

The above-mentioned persons who are farmers may be the founders of farmers' cooperatives. A minimum of 10 farmers is required for their establishment. It is worth noting that non-agricultural producers may also be members, but not founders, of cooperatives. The Act on Farmers' Cooperatives stipulates that the subject of the activity of farmers' cooperatives is, for example, running a business activity for the benefit its members, relating to: farmers planning their production of produce or groups of products and adjusting it to market conditions, especially considering their quantity and quality; concentrating demand and handling the purchase of necessary means for the production of products or groups of products, storing, packaging and standardizing the products or groups of products produced by the farmers; and processing the products or groups of products produced by the farmers and marketing those processed products. At the beginning, the subject of activity in the Act did not directly indicate activity in the field of renewable energy. However, considering that the Act on Renewable Energy Sources states that a farmers' cooperative can be an energy cooperative, it was possible to create such an entity by farmer cooperative. The latest amendments from 17 August 2023 to the Act on Farmers' Cooperatives (came into force on 1 October 2023) specified that a farmers' cooperative may also conduct activities as follows: firstly, as a citizen energy community referred to in the provisions of the Act of 10 April 1997—Energy Law; and secondly, in the scope of generating electricity or biogas, or agricultural biogas, or biomethane, or heat from renewable sources in renewable energy installations, trading them or storing them, carried out as part of activities conducted exclusively for the benefit of this cooperative and its members.

In terms of organizing a cooperative and then conducting investments in the field of renewable energy, the provision of the Cooperative Law Act is important which states that the statute may provide for the members to make contributions to the ownership of the cooperative or for their use by the cooperative on the basis of another legal relationship (Article 20 para. 2 of the Cooperative Law). In such a case, this document should specify the nature and scope of the cooperative's right to contributions, the amount and their type. If these are contributions in kind, the deadlines for their payment, the principles of valuation and return in the event of liquidation of the cooperative, resignation of a member, or termination of membership for other reasons, as well as in other issues specified in legal regulations, must be included in the statute. The role of the contribution is to provide the cooperative with an appropriate asset base needed to run its business. For the implementation of RES investments, such as wind farm or biogas, contributions such as land can be important. The Act on Farmers' Cooperatives indicates in Article 12 that a member who is the owner of an in-kind contribution to the cooperative may dispose of it. However, he is obliged to notify the farmers' cooperative in writing of the intention to sell such a contribution at least 12 months before the date of this action, unless an earlier date is indicated in the statutes.

The problem is that currently farmers' cooperatives are not very popular. The legislator has provided for additional financial legal instruments to encourage such activity, primarily tax facilities (real estate tax and corporate income tax) which cooperatives can use. As indicated with regard to the development of rural areas, it would be reasonable to create cooperatives which will then apply for entry in the register (list) of energy cooperatives.

Energy Cooperatives Other Than Farmers—Establishment and Operation in the Light of the Act of 16 September 1982 on Cooperative Law

As has already been emphasized, not only farmers' cooperatives but any other cooperative that meets the requirements of the Cooperative Law may apply for inclusion in the list kept by the Director General of the National Support Centre for Agriculture. The RES Act mainly focuses on issues related to the inclusion of data in the list of energy cooperatives and how such cooperatives function in the renewable energy market. On the other hand, issues concerning, for example, the organization of cooperatives, their bodies and functioning are defined in the Cooperative Law. Pursuant to Article 6 of the Act on Cooperative Law, persons intending to establish a cooperative (founders) adopt the cooperative statutes and confirm their acceptance by affixing their signatures. The number of founders of a cooperative may not be fewer than ten if the founders are natural persons, and three if the founders are legal persons. In the case of certain agricultural cooperatives, fewer than ten founders may set up such an entity and, in addition, lay down requirements for the members of the cooperative (or its founders). In agricultural production cooperatives, the number of founders who are natural persons may not be fewer than five. Cooperative groups of agricultural producers may be established by no fewer than five entities. The Act on Cooperative Law distinguishes between two categories of member of a cooperative.[55] One is those who obtain their membership *ex lege* upon the registration of the cooperative. According to Article 17 para. 1 of the Act on Cooperative Law, founders of cooperatives who have signed the statute become members of the cooperative upon its registration. The other category includes those who join after the cooperative has been set up.

The statute of the cooperative does not have to be in the form of a notarial document—a simple written form is sufficient.[56] This shall specify, for example: the object of the cooperative's activity and its lifetime if it is founded for a definite

[55] See H. Cioch, *Zarys prawa spółdzielczego*, Warsaw, 2006, p. 23f.

[56] A. Suchoń, *Legal Aspects of the Organization and Operation of Agricultural Co-operatives in Poland*, Poznan, 2019, pp. 15f.

period; the value and number of shares which a member is obliged to declare, time limits of paying and withdrawing a share and the consequence of not paying a share on time; the rights and duties of the members; the rules and procedures for accepting members, notice of termination of membership, striking off and excluding members; the rules and procedures for electing and recalling members of cooperative bodies; the rules for dividing a balance surplus (general income) and covering a cooperative's losses.[57]

An extremely important activity at the stage of organizing a cooperative is the submission of documents to the National Court Register for entry in the register of entrepreneurs. This must be done on the official printed form prescribed by the applicable provisions. A cooperative acquires legal personality only when it is registered in the National Court Register.

The rules for admitting members to the cooperative are relatively simple, making it possible to increase the number of members. The procedure is outlined in Article 16 of the Act on Cooperative law. The declaration should be submitted in writing and contain, for example, the name and surname of the applicant, the applicant's place of residence, the number of declared shares, information on contributions (if the statutes provide for such contributions) and other information provided for in the statutes. In the case of energy cooperatives, new members will also have to comply with the requirements set out in the Renewable Energy Sources Act. A member of the cooperative is obliged to pay the entry fee and obtain declared shares in accordance with the provisions of the statute. He or she participates in covering the cooperative's losses up to the amount of the declared shares. Their amount is not specified in the Act on Cooperative law; it depends on the cooperative. Financial resources from the share or resource fund can be used for the development of the cooperative, including in the field of renewable energy. The bodies of the cooperative are (1) the general meeting; (2) the supervisory council; (3) the board; (4) in cooperatives in which the general meeting has been replaced by a meeting of delegates—meetings of groups of members (Article 59).[58] There is no doubt that efficient and effective operation of the Management Board contributes, in general terms, to the development of cooperatives.

The Act on Cooperative Law provides regulations for the institution of a survey, and these are also important for the proper functioning of an energy cooperative. They include verifying the cooperative's compliance with the law and the provisions of the statute in terms of the following: conducting activities in the interest of all cooperative members; controlling (monitoring) the economy, purposefulness and reliability of the cooperative's implementation of its economic, social and cultural goals; providing organizational and instructional assistance in removing any irregularities identified; and in improving the opera-

[57] Translation, Cooperative law, Legalis Beck.

[58] Translation, Cooperative law, Legalis Beck.

tion of the cooperative.[59] Every cooperative shall be subject to a survey in respect of the legality, economic effectiveness and accuracy of its overall operations at least once every three years and once per year during liquidation. The survey shall cover the period since the preceding survey (Article 91 of the Act[60]). This procedure has a positive impact on how it functions and contributes to the development of this entity. As indicated in the literature, the survey should "be effective, but at the same time it should not excessively limit the independence of the cooperative".[61]

As emphasized, cooperatives that were established on the basis of the Act on Cooperative Law and meet the requirements of the Act of Renewable Energy Sources can apply for entry in the list of energy cooperatives kept by the National Centre for Agricultural Support. Hypothetically, if the statutory requirements are met, agricultural production cooperatives, cooperative agricultural producer groups or cooperative agricultural producer organizations, and social cooperatives may apply for entry in the list of energy cooperatives.

Agricultural Production Cooperatives and Renewable Energy Sources

As mentioned above, there are different types of cooperatives involved in investing in RES, not only energy cooperatives. In this context, the agricultural production cooperative should first be mentioned. According to Article 138 of this Cooperative Act, the purpose of the agricultural activity of an agricultural production cooperative (APC) is to run a joint agricultural holding and to operate for the benefit of the individual agricultural holdings of its members. Article 55^3 of the Civil Code states that an agricultural holding is considered to be agricultural land together with forest land, buildings or parts of buildings, equipment and livestock, constituting or capable of constituting an organized economic unit and rights related to running an agricultural holding. Within the set of components constituting an agricultural holding, agricultural land is given primary importance.[62]

Cooperatives running agricultural activity have quite significant opportunities for the development of renewable energy. The average area of an agricultural

[59] See K. Pietrzykowski, Komentarz do Article 91, 93, 93a ustawy Prawo spółdzielcze, in *Spółdzielnie mieszkaniowe. Komentarz*, 9th edn., Warsaw, 2018, [Legal Database] Legalis; W. Gonet, Nadzór i kontrola w bankach spółdzielczych, *Przegląd Prawa Publicznego*, 2010, no. 6, pp. 31–41; A. Suchoń, *Prawna koncepcja spółdzielni*, Poznan, 2016, pp. 254f.

[60] Translation, Cooperative law, Legalis Beck.

[61] K. Pietrzykowski, Komentarz do Article 91, 93 ustawy Prawo spółdzielcze, in Spółdzielnie mieszkaniowe. Komentarz, Warsaw, 2018, [Legal Database] Lex/el.

[62] For more on this, see R. Budzinowski, *Koncepcja gospodarstwa rolnego w prawie rolnym*, Poznan, 1992, pp. 71–96.

production cooperative in Poland is 652 ha of agricultural land.[63] Agricultural production cooperatives manage a total area of approx. 250,000 ha of agricultural land. They usually conduct plant and animal production, and thus have outbuildings and conditions for the development of photovoltaics on the farm. Photovoltaic panels can be located on various parts of the farm, for example on the roofs of outbuildings, wastelands or garages. The panels can also be installed on agricultural land. Regarding food security, it is reasonable to use wasteland and agricultural land with the lowest valuation class for energy purposes. It should be emphasized that agricultural production cooperatives relatively seldom allocate cultivated agricultural land for photovoltaic panels for their own energy needs. As a rule, the areas assigned are not used for agriculture, for example, at the end of agricultural land or in an orchard between trees. After installation, the photovoltaic device or solar collectors are part of the farm of the agricultural production cooperative.

Some agricultural production cooperatives are also investing in agrophotovoltaics. This is a new segment of the solar energy sector created in response to the needs of agriculture in the times of climate change. This technology allows for the development of agricultural activities on agricultural land while producing electricity.[64] They are placed on special structures above the crops, at the same time creating a kind of roof protecting plants from excessive wind, rain, hail or heat.[65] It is rightly pointed out that agrophotovoltaic installations, as a rule, also positively affect agricultural production, and, at the same time, serve to produce energy used on a farm.[66]

Since the implementation of the agrophotovoltaic investment allows for further agricultural activity and the use of land for agricultural purposes, it could be argued that their installation complies with the regulations. The realization of such an investment by an agricultural producer on his farm means that the land can still be used for agricultural production purposes. A similar situation occurs with photovoltaics mounted on outbuildings. They might be located on a building where, for example, animal breeding is carried out and this activity can still be carried out. Due to the installation of the RES equipment, a small part of the land may be excluded from production. However, such exclusions when accessing land, places intended for agricultural equipment or greenhouses, are common on farms and are necessary. The need to install an agrophotovoltaic device can be compared

[63] https://krs.org.pl/branze-spoldzielcze/rolnicze-spoldzielnie-produkcyjne [accessed 10.09.2022].

[64] *Agrofotowoltaika—przyszłość rolnictwa w Polsce?* https://www.oze.pl/blog/agrofotowoltaika-przyszlosc-rolnictwa-w-polsce// [accessed 10.09.2022]; Agrofotowoltaika—rewolucja na świecie rolnictwa i energetyki?, https://www.brewa.pl/finansowanie/agrofotowoltaika-rewolucja-w-swiecie-rolnictwa-i-energetyki.htm// [accessed 10.09.2022].

[65] Ibid.

[66] M. Kruś, K. Tychmanowicz, Agrofotowoltaika jako narzędzie ochrony gruntów rolnych, *Samorząd Terytorialny*, 2022, no. 7/8, pp. 122–130.

to a greenhouse for growing plants. In these cases, agricultural activity is carried out on the ground. Greenhouses contribute to the creation of better conditions for growing, developing and cultivating plants, since they effectively store heat from the sun, thanks to which the vegetation period is extended, and they provide conditions conducive to plant development and yielding.[67] These panels, including agrophotovoltaic ones, allow for agricultural production and energy generation.

In the aforementioned communication of the European Commission of 18 May 2022 entitled "EU Solar Energy Strategy", it is stated that: "under certain conditions, the agricultural use of land can be combined with solar generation in so-called agrivoltaics (or agri-PV). The two activities can establish synergies, whereby PV systems can contribute to crop protection and yield stabilisation, with agriculture remaining the primary use of the land area. Member States should consider incentives for the development of agri-PV while designing their National Strategic Plans for the Common Agricultural Policy, as well as their support frameworks for solar energy (e.g. through the integration of agri-PV in renewable energy tenders). It is also worth noting that, in the agricultural sector, State aid rules allow investment aid to sustainable energy."

The problem is the lack of legal regulations, especially the lack of a definition of what an agrophotovoltaic system is and how it should be implemented. A problem arises, in particular, when entrepreneurs (e.g. energy cooperatives) intend to install such devices in order to obtain electricity for sale. In such cases, the area allocated for use on the terms set out in the contract would be the space above the agricultural producer's land. However, setting up such an installation requires a small amount of space. In the literature, *de lege ferenda* conclusions are rightly put forward to introduce a definition of agrophotovoltaics into Polish legislation. Kruś and Tychmanowicz[68] propose to define an agrophotovoltaic installation in wording referring to, for example, the French definition. According to the definition proposed by the French Agency for the Environment and Energy Management (ADEME), "a PV installation can be qualified as agro-photovoltaic when its photovoltaic modules are located in the same plot area as agricultural production and directly affect it. They affect agricultural production in one of the following ways without causing a significant decrease in agricultural production (qualitative and quantitative) or a decrease in income from agricultural production: serve to adapt to climate, protect against threats, serve to improve animal welfare, serve to protect against abiotic factors (protection against atmospheric)".[69]

[67] https://www.podoslonami.pl/artykuly-reklamowe/precyzyjna-uprawa-szklarniowa-dzieki-nowoczesnym-rozwiazaniom-technicznym/ [accessed 10.09.2022]; E. Wachowicz, Zasady sterowania klimatem w szklarniach z wykorzystaniem komputerów, *Inżynieria Rolnicza*, 2009, no. 6(115).

[68] M. Kruś, K. Tychmanowicz, Agrofotowoltaika, pp. 122–130.

[69] ADEME, *Caractériser les projets photovoltaïques sur terrains agricoles et l'agrivoltaïsme*, https://librairie.ademe.fr/energies-renouvelables-reseaux-et-stockage/4992-caracteriser-les-projets-

Agricultural production cooperatives conducting agricultural activity have a substrate that can be used in a biogas plant. In agricultural biogas plants, waste from food production (vegetable waste, fruit pomace, fat and cheese waste, waste from animal production (slurry, manure, dry excrement), and from crop production (cereal waste, feed waste) may be used as a raw material for biogas production.[70]

However, only a few have such biogas plants. The main obstacle to the development of agricultural biogas plants is the lack of funding. Ambitious plans for the use of biogas of agricultural origin were included in an official government document from 2010, in which it was assumed that at least one biogas plant should be built in each municipality.[71] However, this has not been implemented. It is also worth pointing out that tax regulations encourage this type of activity. Article 13 Act on Agricultural Tax states that taxpayers of agricultural tax are entitled to investment relief for expenses incurred, for example, in the purchase and installation of equipment to be used for production purposes of natural energy sources (wind, biogas, sun, waterfalls), provided that these expenses have not been financed, in whole or in part, using public funds. This investment relief is granted after the completion of the investment and consists in a deduction from the agricultural tax due on land located in the municipality where the investment was made, and amounts to 25% of the financial expenses documented with investment accounts. Agricultural production cooperatives implementing projects in the field of renewable energy usually benefit from the above-mentioned agricultural tax relief. There are several rules concerning this tax preference that should be mentioned. Firstly, with regard to RES investments, it is important to consider the material scope of this relief.[72] This includes environmental protection facilities: the purchase and installation of equipment to use natural energy sources, such as the sun, for production purposes. However, it should be noted that there is no definition of environmental equipment.[73] Such facilities may include photovoltaics,

photovoltaiques-sur-terrains-agricoles-et-l-agrivoltaisme.html [accessed 31.05.2022]. See M. Kruś, K. Tychmanowicz, Agrofotowoltaika, pp. 122–130.

[70] Z. Ginalski, CDR O/Radom, *Substraty dla biogazowi rolniczych*, https://cdr.gov.pl/pol/OZE/substraty.pdf [accessed 31.12.2022].

[71] Polski Fundusz Rozwoju et al., *Raport Biogaz w Polsce 2022*, http://cdr112.ekei.pl/cdr/images/2021/05/Raport-Biogaz-w-Polsce-2020-magazynbiomasa.pdf [accessed 31.05.2022].

[72] B. Pahl, Nowe zasady przyznawania ulgi inwestycyjnej w podatku rolnym, *Finanse Komunalne*, 2009, no. 6, pp. 38f.

[73] See W. Modzelewski, Komentarz do art. 13 ustawy o podatku rolnym, in *Komentarz do podatków: rolnego, leśnego i od nieruchomości*, ed. W. Modzelewski, J. Bielawny, Warsaw, 2021, 9th edn., [Legal Data base] Legalis/el. According to Article 3(13) of the Act of 27 April 2001 on the Environmental Protection Law, environmental protection means: undertaking actions which enable the preservation or restoration of a natural balance or refraining from actions which upset this balance; in particular this protection consists in a) rational shaping of the environment and the management of environmental resources in accordance with the principle of sustainable development, b) counteracting pollution, and c) restoring natural elements to their proper condition.

heat pumps, hydroelectric power plants, wind power plants, or geothermal power plants, for example. It is worth adding that the Act on Renewable Energy Sources does define a renewable energy source installation. According to Article 2(13), it is an installation consisting of a separate unit of equipment for the production of electricity or heat, in which electricity or heat or cooling is produced from renewable energy sources; or buildings and equipment forming a single technical and functional unit for the production of biogas, agricultural biogas, biomethane or renewable hydrogen; or a storage installation connected to the unit for the production of electricity.

The financing, in whole or in part, by public funds (Polish or EU funds) of the purchase of equipment to be used for the production of natural energy sources (wind, biogas, solar energy, hydroelectric energy) will lead to the refusal on the part of the municipality office to reduce the agricultural tax due. The same applies to the construction or modernization of environmental facilities, including RES. Therefore, in principle, relief is granted if the facilities have been purchased with funds that are not directly or indirectly related to public funds. This can be the taxpayer's own money, but also borrowed money. The funds may also be obtained by means of a loan granted on market conditions by a private bank or by a cooperative bank. However, the legislator used the phrase "partly financed by public funds" without specifying a value. Thus, financing the costs of even a part of 1% of the investment from public funds entails that the agricultural taxpayer will not be able to benefit from investment relief.[74]

Article 13f of the Act on Agricultural Tax specifies that the investment tax relief constitutes the following: aid for investments in tangible or intangible assets on agricultural holdings linked to the primary production of agricultural products, in accordance with the conditions laid down in Commission Regulation (EU) No. 702/2014 of 25 June 2014 declaring certain categories of aid in the agricultural and forestry sectors and in rural areas compatible with the internal market in the application of Articles 107 and 108 of the Treaty on the Functioning of the European Union.[75] It should be emphasized that this Regulation entered into force on 1 July 2014 and applied until 31 December 2022. Commission Regulation (EU) 2022/2472 of 14 December 2022 declared certain categories of aid in the agricultural and forestry sectors and in rural areas compatible with the internal market in the application of Article 107 and 108 of the Treaty on the Functioning of the European Union is binding from 2023. According to Article 14, aid for investments

[74] For more, see A. Suchoń, Wybrane aspekty podatkowe związane z odnawialnymi źródłami energii, in Podręcznik OZE. Ekonomia, technika, prawo, samorząd, społeczeństwo, ed. P. Gołasa, Warsaw: FAPA, 2022, pp. 235–253.

[75] OJ EU L 193, 1.07.2014, p. 1. See also A. Suchoń, Pomoc publiczna w prawie unijnym i krajowym a podatek rolny—wybrane zagadnienia, in *Integracja europejska jako determinanta polityki wiejskie—Aspekty prawne*, ed. P. Litwiniuk, Warsaw: FAPA, 2017.

in agricultural holdings related to the primary production of agricultural products is compatible with the internal market within the meaning of Article 107 sec. 3 lit. (c) of the Treaty and is exempt from the notification requirement laid down in Article 8 thereof. 108 sec. 3, if the conditions set out in this Article and in Chapter I of this Regulation are met. These investments facilitate the implementation of at least one of the following objectives: the creation and improvement of infrastructure related to the development, adaptation and modernization of agriculture, including energy efficiency, sustainable energy supply, and energy or water savings; and contributing to the mitigation and adaptation of climate change, including by reducing greenhouse gas emissions and increasing carbon sequestration.

The scheme notified by the European Commission is addressed to large enterprises. Pursuant to Article 108(3) TFEU, Poland notified the aforementioned scheme to the Commission by Letter No. SA.41773 (2015/N) of 5 May 2015.[76] It should be emphasized that the investment tax relief for agricultural tax is not an example of *de minimis* aid in agriculture and is not included in the maximum three-year aid amount of EUR20,000.[77]

Agricultural production cooperatives may submit applications under for example the Energy for the Countryside programme from 25 January 2023.[78] The programme is compliant with the legislation of the European Union, including Article 10d of Directive 2003/87/EC of the European Parliament and of the Council of 13 October 2003 establishing a scheme for greenhouse gas emission allowance trading within the Union and amending Council Directive 96/61/EC, and Commission Implementing Regulation (EU) 2020/1001 of 9 July 2020, setting out detailed rules for the application of Directive 2003/87/EC of the European Parliament and of the Council with regard to the functioning of the Modernization Fund supporting investments in the modernization of energy systems and improving the energy efficiency of certain Member States. A farmer can apply for help, being not only a natural person, but also a legal person who, as part of agricultural activity, has run a farm for a period of at least 12 months within the meaning of the agricultural tax act; the farm is located as part of homestead development within the meaning of the regulations on the protection of agricultural and forest land or a special department agricultural production. An agricultural production cooperative runs a farm, but a question arose in the aspect of homestead development (*budowa zagrodowa*). According to the Act on the Protection of Agricultural and Forest Lands, farm buildings are understood as both residential buildings and

[76] https://www.gov.pl/web/rolnictwo/ulga-w-podatku-rolnych-dla-duzych-przedsiebiorstw [accessed 30.09.2022].

[77] A. Suchoń, Pomoc de minimis w rolnictwie jako instrument wsparcia producentów rolnych—wybrane aspekty prawne, in *Z zagadnień systemu prawa: księga Jubileuszowa Profesora Pawła Czechowskiego*, ed. A. Niewiadomski, K. Marciniuk, P. Litwiniuk, Warsaw, 2021.

[78] *Nabór wniosków 2023 w programie Energia dla Wsi*, https://www.gov.pl/web/nfosigw/nabor-wnioskow-2023-energia-dla-wsi [accessed 2.02.2023].

the buildings and devices used exclusively for agricultural production and agri-food processing, if they are located on agricultural land and are part of a farm. In the case of agricultural production cooperatives, these are usually buildings and equipment used exclusively for agricultural production and agri-food processing. Only in some situations do they include mixed-use buildings, which are usually occupied by members of the cooperative and employees. It seems justified to state that residential buildings are not an obligatory element of a homestead development; even in the case of farmers, natural persons do not always live on the farm.

Agricultural production cooperatives that run a special section for agricultural activity may also apply for aid. This co-financing takes the form of a loan or a grant. For biogas plants and waterpower plants a subsidy of up to 45% of eligible costs and/or a loan of up to 100% of eligible costs might be offered.

A photovoltaic installation or a wind turbine may qualify for a loan of up to 100% of eligible costs.[79] Types of investments include: photovoltaic installations (excluding investments on agricultural land constituting class I–IV agricultural land), wind installations, hydroelectric power plants, installations for generating energy from agricultural biogas in the conditions of high-efficiency cogeneration with an electric power of more than 10 kW, not more than 1 MW and thermal above 30 kW and not more than 3 MW.[80] Thus, only some agricultural production cooperatives meet this requirement. It is worth noting that energy cooperatives and their members, as well as emerging energy cooperatives (cooperatives or farmers' cooperatives whose purpose is to produce electricity or biogas or heat) can also benefit from the programme. Agricultural production cooperatives can apply for financial assistance, for example under the programme 10.2—Investments in farms in the field of RES and improvement of energy efficiency.[81] This is provided for in the Strategic Plan for the Common Agricultural Policy 2023–2027. The aim of the intervention is to reduce the pressure of agricultural activity on the environment through the use of energy from renewable sources, proper management of agricultural waste and by-products, and by improving energy efficiency. Investments in energy-generating installations will serve to meet only the beneficiary's own energy needs, and the production capacity of these installations will not exceed the equivalent of the total average annual consumption of thermal and electric energy in a given agricultural holding. This intervention supports tangible or intangible investments, in particular regarding the construction or purchase of new equipment for the production of energy from agricultural biogas (electricity, heat or gaseous fuel), or installations producing energy from solar radiation,

[79] Ibid.

[80] https://www.gov.pl/web/nfosigw/energia-dla-wsi [accessed 31.02.2023].

[81] MRiRW, *Inwestycje w gospodarstwach rolnych w zakresie OZE i poprawy efektywności energetycznej*, https://www.gov.pl/web/rolnictwo/i102-inwestycje-w-gospodarstwach-rolnych-w-zakresie-oze-i-poprawy-efektywnosci-energetycznej [accessed 2.02.2023].

together with energy storage and energy management systems or with a heat pump.[82] Detailed terms and conditions are available at Ministry guidelines for the granting and payment of financial support under the Strategic Plan for the Common Agricultural Policy 2023–2027 for interventions I.10.2 Investments on farms in the field of renewable energy and improving energy efficiency.[83]

Social Cooperatives and Renewable Energy Sources

According to the Act of 27 April 2006 on Social Cooperatives, the subject of activity of a social cooperative is to run a joint enterprise based on the personal work of members and employees of a social cooperative. A social cooperative works for the social and professional reintegration of its members and employees of a social cooperative.

It should also be pointed out that social cooperatives are entities of the social economy. According to the Social Economy Act of 5 August 2022,[84] the term social economy should be understood as the activities of entities for the benefit of the local community in the field of social and professional reintegration, creating jobs for people at risk of social exclusion and providing social services, carried out in the form of economic activity, public benefit activity and other paid activities; Article 3 of the Act specifies that the status of a social enterprise may be held by a social economy entity conducting payable public benefit activity, economic activity referred to in Article 3 of the Act of 6 March 2018—Entrepreneurs' Law,[85] and other paid activity, if they meet the conditions set out in the Act.

Some of the activities of cooperatives are related to renewable energy. Thus, we can distinguish social cooperatives investing in renewable energy sources, for example, photovoltaics for their own needs, and cooperatives operating in the field connected with renewable energy. In 2018, 12 social cooperatives focused on renewable energy sources, 30% of which sold solar collectors, 20% wind turbines and 20% photovoltaic installations. Social cooperatives: "Elektro-energa" from Strzelno, "ABC" from Niechobrze, "Zielona Praca" from Krakow and "Brawo" from Elbląg conducted activities in the field of obtaining biomass for energy needs

[82] Plan Strategiczny dla Wspólnej Polityki Rolnej na lata 2023–2027 [Strategic Plan for the Common Agricultural Policy 2023–2027], p. 32 and next https://www.gov.pl/web/wprpo2020/zatwierdzony-przez-komisje-europejska-plan-strategiczny-dla-wspolnej-polityki-rolnej- na-lata-2023-2027 [accessed 10.11.2022].

[83] See Announcement of the Minister of Agriculture and Rural Development of 15 September 2023 on detailed guidelines for the granting and payment of financial support under the Strategic Plan for the Common Agricultural Policy 2023–2027 for interventions I.10.2 Investments on farms in the field of renewable energy and improving energy efficiency M.P. 2023, item 1037.

[84] Act of 5 August 2022 on Social Economy, JL item 1812.

[85] JL item 162, 2105, and JL 2022, item 24, 974 ,1570.

and the production of briquettes and pellets.[86] Social cooperatives which are engaged in agricultural activities can apply for funds for RES from the Energy for the countryside or AgroEnergia programme.[87] Conducting non-agricultural economic activity, these cooperatives may apply for other financial support related to the development of renewable energy.

Dairy Cooperatives and Renewable Energy Sources

Dairy cooperatives have a long tradition in Poland. These are entities that usually purchase and process milk. Large Polish dairy cooperatives include Grupa Mlekovita and Mlekpol (SM), which are among the largest dairy companies in Central and Eastern Europe.[88] Other cooperatives are, for example, Piątnica OSM, Łowicz OSM and Koło OSM. Currently, increasing numbers of dairy cooperatives are investing in renewable energy.[89] An example of this is biogas plants, and sometimes such plants are the next stage in the process of modernizing a company's sewage treatment plant. The main goal is to use the primary energy contained in sewage and production waste, from which biogas is produced in an anaerobic reactor. It should be emphasized that large dairy cooperatives also have funds for their construction, which might come not only from their own resources, but also from EU funds or loans. As the cooperatives emphasize, they have a substrate for the operation of biogas plants. In this regard, biogas allows energy security to be increased. In addition, compared to energy obtained from wind or solar power, agricultural biogas plants are a highly stable source of renewable energy.

The question is, of course, whether a dairy cooperative can apply for the status of an energy cooperative. Legal problems arise in this respect, especially with regard to larger entities. As a rule, only a branch of the cooperative, and not the entire entity, meets the prerequisites. These are entities that do not only operate in rural and urban-rural municipalities. It should also be noted that the boundaries of towns and cities are increasingly extended and that municipalities which were once rural are now urban. An energy cooperative operates in the area of one operator of the electricity distribution system or gas or heating distribution network, supplying electricity, biogas or heat to producers and consumers who are members of this cooperative and whose installations are connected to the net-

[86] M. Błażejowska, W. Gostomczyk, Warunki tworzenia i stan rozwoju spółdzielni i klastrów energetycznych w Polsce na tle doświadczeń niemieckich, *Problemy Rolnictwa Światowego*, 2018, vol. 18(2), pp. 20–32, https://doi.org/10.22630/PRS.2018.18.2.31.

[87] Agroenergia, https://www.gov.pl/web/nfosigw/agroenergia-2021 [accessed 31.12.2022].

[88] Mlekpol stawia na odnawialne źródła energii, *„Magazyn Biomasa"*, https://magazynbiomasa.pl/mlekpol-stawia-na-odnawialne-zrodla-energii-sprawdz/ [accessed 10.11.2022].

[89] *Spółdzielnia mleczarska ma własne źródło energii*, https://www.cire.pl/artykuly/serwis-informacyjny-cire-24/68292-spoldzielnia-mleczarska-ma-wlasne-zrodlo-energii [accessed 10.11.2022].

work of a given operator or to a given heating network. A member of an energy cooperative is an entity whose installation is connected to the power distribution network. Therefore, if a dairy cooperative wished to be recognized as an energy cooperative, it would have to produce electricity for its own needs and for those of the cooperative members. This is therefore not possible in principle. On the other hand, an energy cooperative may be attractive to small local dairy cooperatives, which can be members of energy cooperatives.[90] For instance, a small dairy cooperative with its seat and processing plant in one or two municipalities could be a member of an energy cooperative. Hypothetically, such a dairy cooperative could apply for entry into the register of energy cooperatives in the National Centre for Agricultural Support.

It should be noted that some small dairy cooperatives will be able to obtain the status of farmers' cooperatives, as, according to the Act of 4 October 2018, a farmers' cooperative may run a business activity relating to the processing of products or groups of products produced by farmers and to trading in processed products obtained this way.

Groups and Organizations of Agricultural Producers Operating and Renewable Energy Sources

Pursuant to the Act of 15 September 2000 on Agricultural Producer Groups, natural persons, organizational units without legal personality, and legal persons that, as part of agricultural activity, run a farm in accordance with the agricultural tax regulations, or an agricultural business in special sectors of agricultural production, may be organized into agricultural producer groups. The main tasks of such producers groups are for example to adjust agricultural products and the production process to market conditions; to jointly market the products, in particular, to prepare the products for sale; to centralize sales and deliveries to wholesale buyers; to develop business and marketing skills; to streamline the innovation processes; and to protect the environment. In the first stage, agricultural producers establish cooperatives. They then apply for registration in the register kept by the Agency for Restructuring and Modernisation of Agriculture.

Groups of agricultural producers can also engage in renewable energy activities.[91] As indicated in the Scientific literature, at the end of 2016 there were only 16 producer groups with an energy profile, representing 1.2% of the total number

[90] *Skąd się bierze prąd w Polsce. Spada eksport energii*, https://energia.rp.pl/elektroenergetyka/art36811461-skad-sie-bierze-prad-w-polsce-spada-eksport-energii [accessed 10.11.2022].

[91] D. Bała, Możliwości integracji producentów rolnych w oparciu o substrat energetyczny w województwie wielkopolskim, *Rozwój Regionalny i Polityka Regionalna*, 2017, no. 40, pp. 215–225.

of registered groups in the country.[92] Such groups integrate specialized agricultural producers that deal primarily with energy crops such as energy willow and maize. The most popular direction for the development of agricultural renewable energy sources in Poland is the use of agricultural by-products and waste. This requires a different approach to the integration of energy substrate producers. These manage by-products together in a cooperative producer group, building biogas plants and producing energy for the cooperative and for the benefit of the agricultural producer group's members. Such activities are part of the agricultural producer group's statutory activity for the sake of environmental protection. This activity not only reduces the costs of agricultural activity (lower energy costs and a stable energy supply), but also makes it possible to manage by-products and agricultural waste, of which there is a considerable amount in intensive livestock production in a high concentration, such as in Wielkopolska Voivodeship. In 2012, the Cooperative Group of Swine Producers from Greater Poland (Wielkopolska), together with other entities, established a company that built its own agricultural biogas plant. This investment of over PLN 32 million was made possible thanks to support from the Infrastructure and Environment Operational Programme (over PLN15 million). The biogas plant was built with a view to utilizing liquid manure, the disposal of which posed a problem, due the very intensive pig production carried out by the group's members. The second basic substrate is maize silage, the annual demand for which exceeds 30,000 tons. Maize for silage is primarily purchased from group members.[93]

Agricultural producer organizations are receiving increasing attention from the EU legislator. They are supposed to contribute, inter alia, to the empowerment of farmers in the food supply chain, and to development of farms and agricultural markets.[94] The legislator clearly considers them to be an essential instrument for the development of agriculture. Point 131 of the preamble of Regulation (EU) No. 1308/2013 of the European Parliament and of the Council of 17 December 2013 establishing a common organization of the markets in agricultural products and repealing Council Regulations (EEC) No. 922/72, (EEC) No. 234/79, (EC) No. 1037/2001 and (EC) No. 1234/2007[95] indicates that: "Producer organizations and their associations can play useful roles in concentrating supply, in improving the marketing, planning and adjusting of production to demand, optimizing production costs and stabilizing producer prices, carrying out research, promoting best practices and providing technical assistance, managing by-prod-

[92] Ibid.

[93] Ibid., pp. 215–225.

[94] European Commission, *Study of the best ways for producer organisations to be formed, carry out their activities and be supported*, 2019, http://real.mtak.hu/105490/1/report-producer-organisations-study_en.pdf [accessed 10.11.2022].

[95] OJ EU L 2013, L 347/671, as amended.

ucts and risk management tools available to their members, thereby contributing to strengthening the position of producers in the food chain."

Agricultural producer organizations pursue one or more of the objectives indicated in Article 152 of Regulation 1308/2013. There are more than ten of them and they can be divided into several groups. Firstly, those objectives related to farming and the sale of agricultural products (e.g. ensuring that production is planned and adapted to demand, particularly in terms of quality and quantity; concentrating supply and placing the products produced by their members on the market). Secondly, those objectives that are connected with environmental protection (e.g. investments to maintain environmental and animal welfare standards; carrying out research and developing initiatives on sustainable production methods, innovative practices, economic competitiveness and market developments; by-product and waste management). Thirdly, those objectives related to investment, promotion, technical assistance, development of promotion and marketing initiatives (e.g. management of mutual funds). Based on Regulation (EU) 2021/2117 of the European Parliament and of the Council of 2 December amending Regulation (EU) No. 1308/2013 establishing a common organization of the markets in agricultural products, Article 152(1)(c) is modified as follows: "(vii) the management of by-products and of waste in particular to protect the quality of water, soil and landscape and preserving or encouraging biodiversity". The activity of agricultural producer organizations is more broadly defined in EU legislation on agricultural markets than in that pertaining to agricultural producer groups. They meet the needs of the development of farms and agricultural markets. The organization's activities focus not only on placing products manufactured by their members on the market, including by means of direct sales, optimization of production costs, innovative practices, economic competitiveness and market development, but also on joint processing of products, or developing initiatives in the field of promotion and turnover. Agricultural producer organizations can build biogas plants, for example, and apply for registration in the list of of energy cooperatives.

Organizations associating agricultural producers who conduct agricultural activity can produce biomass of agricultural origin (biomass from energy crops, as well as waste or residues from agricultural production and industry processing its products) and should therefore undertake activities in the field of construction of agricultural biogas plants. Interest in setting up agricultural producer organizations is expected to grow in the coming years. According to the Strategic Plan under the programme 13.2, the creation and development of producer organizations and agricultural producer groups are to be allocated larger subsidies for agricultural producer organizations. These funds are to amount to EUR100,000/year; whereas for groups EUR60,000/year.[96]

[96] *Plan Strategiczny dla Wspólnej Polityki Rolnej na lata 2023–2027* [Strategic Plan for the Common Agricultural Policy 2023–2027], pp. 32f., https://www.gov.pl/web/wprpo2020/zatwierdzony-

In some countries, dynamic growth in the number of agricultural producer organizations can be observed. For example, in early 2020, France had a total of 633 producer organizations and 25 associations of recognized producer organizations in all sectors.[97] In Germany there were already 904 agricultural producer organizations in 2012.[98] In turn, across the European Union, by mid-2017, there were 3,434 agricultural producer organizations and 71 associations, 50% of which were cooperatives.[99]

Cooperatives as Prosumers

The definition of a prosumer has changed over the years. According to Article 2(27a) added by the Act of 22 June 2016,[100] which entered into force on 1 July 2016, a prosumer is to be understood as a final consumer purchasing electricity on the basis of a comprehensive agreement, generating electricity exclusively from renewable energy sources in a micro-installation in order to consume it for their own needs, not related to the business activity regulated by the Act of 2 July 2004 on Freedom of Economic Activity. In light of this definition, cooperatives cannot have the status of prosumer, as they are classed as entrepreneurs. The amended RES Act of 2015 under the Act of 6 March 2018 provisions implementing the Entrepreneurs' Law and other acts, and the Act of September 2019, modified the definition of a prosumer.[101]

Currently, Article 2(27a) of the Act of 20 February 2015 on Renewable Energy Sources specifies that a renewable energy prosumer is a final consumer who generates electricity exclusively from renewable energy sources for their own needs in a micro-installation, provided that, in the case of a final consumer who is not

przez-komisje-europejska-plan-strategiczny-dla-wspolnej-polityki-rolnej- na-lata-2023-2027 [accessed 10.11.2022].

[97] C. Del Cont, A. Macé, Les organisations de producteurs en France: état des lieux et réflexions, in *Legal and Economic Aspect of the Association of Agricultural Producers in the Selected Countries of the World*, ed. A. Suchoń, Poznan, 2020.

[98] J. Martinez, Das Recht der Kooperation der landwirtschaftlichen Erzeuger in Deutschland, in *Legal and Economic Aspect of the Association of Agricultural Producers in the Selected Countries of the World*, ed. A. Suchoń, Poznan, 2020, pp. 81–105.

[99] European Commission, *Study of the best ways for producer organisations to be formed, carry out their activities and be supported*, 2019, http://real.mtak.hu/105490/1/report-producer-organisations-study_en.pdf [accessed 5.04.2022]. See A. Suchoń, Introductory considerations, in *Legal and Economic Aspect of the Association of Agricultural Producers in the Selected Countries of the World*, ed. A. Suchoń, Poznan, 2020.

[100] Ustawa z dnia 22 czerwca 2016 r. o zmianie ustawy o odnawialnych źródłach energii oraz niektórych innych ustaw (Act of 22 June 2016 amending the Act on Renewable Energy Sources and certain other acts), JL 2016, item 925.

[101] B. Karbowski, *Fotowoltaika—przepisy prawne obowiązujące w 2019 roku*, https://durajreck.com/blog/fotowoltaika-przepisy-prawne-obowiazujace-w-2019-roku/ [accessed 10.11.2022].

a household consumer of electricity, this is not the subject of the predominant economic activity defined in accordance with the provisions issued pursuant to Article 40(2) of the Act of 29 June 1995 on Public Statistics.[102]

The word "prosumer"[103] thus refers to the owner of a registered RES installation, using the electricity produced by means of photovoltaic panels, for example. Not only natural persons, but also entrepreneurs and farmers can become prosumers. The condition for this to happen is the conclusion of a comprehensive agreement with the energy supplier. Once the agreement is signed, the energy company carries out the necessary work to connect the photovoltaic power plant to the electricity grid.[104] Thus, for example, an agricultural production cooperative, a social cooperative, or a dairy cooperative can become a prosumer. According to the new legal regulations, a prosumer may be (in addition to a natural person) an entrepreneur for whom energy generation will not be the main business activity. Currently, the billing of new prosumers is based on a summary of the surplus energy produced (so-called net-billing). Cooperatives that managed to connect the installation by the end of March 2022 can still use a discount system. However, this changed in April 2022. Until then, the prosumer did not incur the cost of the variable distribution fee, had the possibility of settlements in the discount system for 15 years, and could settle surplus energy for 12 months. A prosumer, including an agricultural producer, could remain in this system, but had the right to voluntarily decide to settle their accounts in the net-billing system. The changes that took place from 1 April 2022 were aimed at implementing the provisions of Directive (EU) 2019/944 of the European Parliament and of the Council of 5 June 2019 on common rules for the internal market in electricity and amending Directive 2012/27/EU, which Member States are obliged to do.

Housing Cooperatives and Renewable Energy Sources

The way that housing cooperatives function is based on the Act on Cooperative Law and the Act of 15 December 2000 on Housing Cooperatives. Article 1 of the latter Act states that the purpose of such cooperatives is to meet the housing needs of other members and their families by providing members with independent housing units or single-family houses, as well as premises for other purposes. This act also indicates that the activity of a cooperative may encompass, for example, the construction or acquisition of buildings in order to establish, for the benefit

[102] JL 2022, item 459 and 830.

[103] N. Wrońska, Prosument—czyli jak konsument staje się producentem, in *Wybrane węzłowe zagadnienia współczesnego prawa energetycznego*, ed. A. Walaszek-Pyzioł, Krakow, 2012, p. 128.

[104] T. Szymusiak, *Prosument—Prosumpcja—Prosumeryzm, Ekonomiczne oraz społeczne korzyści prosumpcji na przykładzie Polski oraz Niemiec (podejście naukowe)*, Warsaw, 2015.

of members of tenant housing cooperatives, the rights to residential premises located in these buildings; building or acquiring buildings in order to establish, for the benefit of members, separate ownership of residential premises or premises for other purposes located in these buildings, as well as a fractional share in joint ownership in multi-car garages; building or acquiring single-family houses in order to transfer the ownership of these houses to the members.

As is rightly emphasized in the literature, a housing cooperative also has a particular purpose for its operations, which is related to the way in which it meets the needs of its members. According to the definition of a cooperative, a housing cooperative meets the housing and other needs of its members and their families by undertaking joint economic activities in the interests of these members.[105]

In the justification of the judgment of 15 July 2009, the Constitutional Tribunal stressed that "housing cooperatives should be classified as voluntary associations (Article 12 of the Constitution), benefiting from the guarantees provided for in Article 58 of the Constitution. Housing cooperatives, the purpose of which is to meet the housing needs of members and their families, have a special legal status resulting from the Constitution, which is related to their role in implementing the state's tasks as specified in Article 75 sec. 1 of the Constitution"[106] (see reference number K 5/01).

For several years, some housing cooperatives have been involved in renewable energy projects. This mainly concerns photovoltaics installed on buildings belonging to housing cooperatives. However, cooperatives have enjoyed new opportunities since 1 February 2023. Pursuant to the Act of 29 September 2022 amending certain acts supporting the improvement of housing conditions, an amendment was made to the Act of 21 November 2008 on supporting thermomodernization and renovations and on the central register of building emissivity.[107] According to Article 11m of this legal act, an investor (e.g. a housing cooperative) is entitled to a RES grant to cover 50% of this project if the subject of the project is: (a) the purchase, assembly or construction of a new renewable energy source installation, or (b) the modernization of a renewable energy source installation, as a result of which the installed capacity of the installation will increase by at least 25%; if the renewable energy installation generates energy for the needs of the building; and if the project does not cause significant damage to environmental objectives. The cost of the project includes the expenditures on the infrastructure necessary for the operation of the renewable energy source installation. If in the building which is the subject of the project, there are usable areas used for purposes other than

[105] J. Gajda et al., Spółdzielnie mieszkaniowe, Article 1 SPP T. 21 ed. Pietrzykowski, 2020, [Legal Database] Legalis.

[106] K 64/07, JL 2009, no. 117, item 988, OTK Series A 2009, no. 7, item 110, [Legal Database] Legalis.

[107] JL 2022, item 438, 1561, 1576, 1967, 2456.

residential, or for the performance of public tasks by public administration bodies, the amount of the RES grant is the product of the amount of this grant plus the ratio of the share of usable area used for residential purposes and the performance of public tasks by public administration bodies in the usable area of the building.

In addition, as of 1 October 2023, there are new regulations for a tenant prosumer (*lokatorski*), which can also be a housing cooperative.[108] This solution offers benefits, as any energy overproduction will be converted into a prosumer deposit by the seller and paid at 100% of the specified account at the end of a specific settlement period. Additional requirements include that of the micro-installation being required to be situated on the roof, balcony or façade of a multi-unit building which has a primarily residential function.

Following the amendment to the Act of Renewable Energy Sources, a housing cooperative can have the status of a collective renewable energy prosumer. According to Article 3(27c) of this Act, a collective prosumer of renewable energy is a final customer generating electricity exclusively from renewable energy sources for its own needs in a micro-installation or a small installation connected to the electricity distribution network via an internal electrical installation of a multi-family building in which the energy consumption point is located, provided that in the case of a final customer who is not a household consumer of electricity this generation is not the subject of the predominant economic activity defined in accordance with the provisions issued pursuant to Article 40(2) of the Act of 29 June 1995 on Public Statistics.

European Cooperatives and Renewable Energy Sources

The legal basis for the activities of European cooperatives is the Council Regulation No. 1435/2003/EC of 22 July 2003 on the Statutes for a European Cooperative Society, supplemented by Council Directive No. 2003/72/EC of 22 July 2003,[109] containing provisions concerning the involvement of the employees of a European Cooperative Society and the Polish Act of 22 July 2006 on the European Cooperative Society.[110] The purpose of an ESC is to meet the needs of its members and/or to support their economic and/or social activities, in particular, by concluding agreements with them for the supply of goods or services or for the performance of work within the framework of the activities which it carries out itself or commissions the ECS to carry out. In addition, an ECS may have as its objective meeting

[108] Ministerstwo Rozwoju i Technologi, Prosument lokatorski z podpisem Prezydenta, https://www.gov.pl/web/rozwoj-technologia/prosument-lokatorski-z-podpisem-prezydenta [accessed 5.04.2022].

[109] OJ EC No. L. 207, 18.08.2003, p. 25.

[110] JL 2016, item 7.

its members' needs by promoting, in the manner laid down above, their participation in the economic activity of one or more ECSs and/or national cooperatives (Article 1(3) of the EU Regulation). Such a cooperative may also operate in the renewable energy sector. Taking into account the fact that the subscribed capital of such cooperatives is at least EUR30,000 and the principles of their formation and operation are rather complicated, such entities have not yet developed in Poland. Nevertheless, this is a new legal form, separate from national cooperatives.[111] They conduct trans-border activities. In the current legal environment, it would be difficult to register a European cooperative on the list of energy cooperatives maintained by the Director of the National Support Centre for Agriculture. A European cooperative must register in accordance with the rules laid down for joint-stock companies. There is also, as in the case of domestic cooperatives, a register of entrepreneurs in the National Court Register. At the same time, it is of course hypothetically possible that a European cooperative would meet the requirements set out in the Cooperative Law for cooperatives or farmers' cooperatives in the Farmers' Cooperative Law. The creation of a European cooperative that could operate in the energy sector in the EU countries may, in practice, be a difficult task due to the different energy distribution systems. In the future, when energy storage and mobile transmission are more advanced, such cooperatives may develop. This course of action seems advisable, if only because of different climate zones or access to energy. It might be prudent to set up a separate global cooperative entity in the future, which could bring together entities from different countries. Such cooperatives could also operate in the energy market, for example, by storing energy and distributing it to cooperative members.

According to Directive (EU) 2019/944 of the European Parliament and Council of 5 June 2019 on common rules for the internal market for electricity, Member States have the option to allow cross-border participation for members in citizen energy communities.

Energy Clusters and Cooperatives

When discussing the issue of cooperatives on the energy market in Poland, clusters should also be mentioned. A cluster is a civil law agreement that may include, for example, natural persons, legal persons, or local government units involved in the production and balancing of demand, distribution or trade in energy from renewable energy sources or other sources or fuels, within a distribution network with a rated voltage of less than 110 kV, in an area of operation of the cluster not

[111] P. Zakrzewski, Spółdzielnia europejska jako nowy typ osoby prawnej, *Kwartalnik Prawa Prywatnego*, 2008, no. 1, pp. 5–20; M. Piotrowska, Spółdzielnia europejska – zarys zagadnienia, *Edukacja Prawnicza*, 2007, no. 5, pp. 3–11.

exceeding the borders of one district *(poviat)*, as defined by the Act of 5 June 1998 on *Poviat* Self-government, or five municipalities, as defined by the Act of 8 March 1990 on Municipal Self-Government. According to the Renewable Energy Sources Act, an energy cluster is represented by a coordinator, which is a cooperative, association, foundation or any member of the energy cluster appointed for this purpose, referred to as 'energy cluster coordinator', as indicated in the civil-legal agreement. Cooperatives may therefore be members of a cluster. The cooperative form may also be used to appoint a cluster coordinator. The idea of energy clusters is part of the formula for the development of distributed energy generated by the local generation and consumption of energy close of the recipient. The new regulations concerning clusters will come into effect on 1 January 2024.

Cooperatives as a Citizen Energy Community

New opportunities for cooperatives are also created by the implementation of citizen energy communities (Directive no. 2019/944)[112] into the Energy Law. According to Article 3 point 13f The Act of 10 April 1997 the Energy Law they are entities with legal capacity, for example cooperatives under cooperative law, farmers' cooperatives or housing cooperatives. Some features of such a citizen energy community are as follows:

Firstly, it is based on voluntary and open participation, with decision-making and control rights vested in members, shareholders or partners who are exclusively natural persons, local authorities, micro-entrepreneurs or small entrepreneurs; Secondly, its main objective is to provide environmental, economic or social benefits for its members, shareholders or associates or the local areas in which it operates'. Thirdly, it may generate or consume energy, or distribute energy, or sell energy, or aggregate energy, or store energy, or generate, consume, store or sell biogas, agricultural biogas, biomass and biomass of agricultural origin within the meaning of Article 2 para. 1, 2, 3 and 3b of the Act of 20 February 2015 on Renewable Energy Sources (Article 3 point 13 f The Act of 10 April 1997 Energy Law).

A citizen energy community may commence operations after being entered into the list of civic energy communities kept by the President of the Energy Regulatory Office. This provision concerning registration does not come into force until August 2024. If the citizen energy community operates solely with renewable

[112] The Act of 28 July 2023 amending the Energy Law and certain other acts implements, inter alia, 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. M. M. Sokołowski, Renewable and citizen energy communities in the European Union: how (not) to regulate community energy in national laws and policies, *Journal of Energy & Natural Resources Law,* 2020, vol. 38(3), pp. 289–304, https://doi.org. 10.1080/02646811.2020.1759247.

energy sources, then control and decision-making rights are given to members of the cooperative who reside or have registered offices within the area of operation of the same electricity distribution system operator (Article 11i(1) of the Energy Law). Creating a legal framework for the activities of citizen energy communities is intended to enable direct participation by end users of electricity in the production, consumption and sharing of electricity with other consumers, providing its members with affordable electricity, and increasing energy efficiency at the household level.[113]

Conclusion

On the basis of the discussion presented here, the following conclusions can be drawn. Firstly, the introduction of provisions on energy cooperatives into the Polish legal regulations should be assessed positively. These are entities whose activity is greatly needed, especially in view of the war in Ukraine and in the context of the global problem of ensuring energy security. New development opportunities for energy cooperatives have been created by the 2023 amendment to the Act on Renewable Energy Sources and the Energy Law. Consequently, some new cooperatives have been entered into the list of energy cooperatives and some entities are still waiting to be registered. Action is also required in terms of climate change and CO_2 reduction.

If we compare energy cooperatives to other types of cooperatives, the area and the scope of activities of the former are limited, and their members must meet certain requirements. The characteristic feature of energy cooperatives is that they must be entered in a list kept by the National Support Centre for Agriculture. This results in their obtaining the status of energy cooperatives, which allows them to enjoy certain legal privileges regarding energy settlements, financial support for investments, tax privileges and other privileges. The possibility of benefiting from these privileges is connected with inspections conducted by the National Support Centre for Agriculture. The results of such inspections may lead to an energy cooperative being deleted from the list. In such a case, although a cooperative with legal personality may continue to operate, it cannot continue to enjoy any privileges. However, cooperatives which do not meet the requirements, or do not make an entry in the list kept by the Director General of National Support Centre for Agriculture, can also generate energy and be active on REW market.

[113] Druk nr 3279, Rządowy projekt ustawy o zmianie ustawy o odnawialnych źródłach energii oraz niektórych innych ustaw, https://www.sejm.gov.pl/sejm9.nsf/PrzebiegProc.xsp?nr=3279 [accessed 5.08.2023]. Legal Regulations currently Art. 3 point 13f, "Chapter 2e" Citizens' energy communities Art. 11zi – Art. 11zo of the Act of 10 April 1997 Energy Law.

At the same time, further changes could have a positive impact on the development of energy cooperatives. Obstacles to this include the requirement to operate in the territory of a rural or urban-rural municipality, or in the territory of no more than three such municipalities in close proximity to one another. Another important barrier is the production of electricity, biogas or heat in renewable energy plants and the balancing of electricity, biogas or heat demands exclusively for the energy cooperative's own needs and those of its members. It would therefore seem reasonable to introduce greater liberalization and openness of energy cooperatives. The introduction of too many requirements and the difficulties in how these entities function will not make these entities a common form in energy market. Above all, there should be no territorial restrictions. It is also reasonable to broaden their scope of activity. To this end, there should be a regulation stating that the energy cooperative has the possibility to sell all its energy at market prices when this is not used by the cooperative and its members.

Secondly, the involvement of existing cooperatives in production and use of renewable energy should be assessed. Some of these cooperatives have embarked on investments that they expect to complete in the near future. However, due to legal requirements, a dairy cooperative is unlikely to be able to obtain the status of an energy cooperative. Moreover, by taking advantage of the investment tax relief for agricultural taxes, more and more agricultural production cooperatives are becoming involved in RES activities. Some cooperatives are looking forward to the introduction of CAP 2023–2027 and are using funds from new programmes from CAP. This programme is quite significant in that it subsidizes cooperatives to a greater extent. It will be possible to create renewable energy through grant support and in the form of rather attractive loans.

Thirdly, broadening the definition of a prosumer was certainly important for the development of RES. A prosumer can now also be an entrepreneur, including a cooperative. The discount system was particularly beneficial, as many entities have taken advantage of it for installing photovoltaic panels. They can still participate in this scheme. Nevertheless, due to high energy prices, the new system should also encourage investment. In the future, increasing numbers of photovoltaic devices should be set up, especially agro-installations, which can protect agricultural production from excessive sunlight or hail, for example, and on the other hand, produce electricity for the farm. From the perspective of the Common Agricultural Policy 2023–2027, for progress to be made in Polish agriculture, it is important to apply for registration of agricultural producer organizations. In this respect, it seems reasonable to create similar legal conditions for the establishment and operation of organizations (e.g. tax benefits) as for agricultural producer groups. The best solution for the development of rural areas would be the creation of farmers' cooperatives, which would then be eligible for registration in the register of energy cooperatives and agricultural producer organizations.

Fourthly, the adoption of the Act of 29 September 2022 amending certain acts supporting the improvement of housing conditions, on the basis of the Act of 21 November 2008 on supporting thermal modernization and renovations and on the central register of building emissivity, was also positively assessed. Currently, housing cooperatives can apply for a RES grant. This is a very attractive proposition, because it is possible to obtain support for up to 50% of the purchase costs of photovoltaic panels, for example. The possibility of energy settlement by housing cooperatives as tenant prosumers, introduced from 1 October 2023, should also be positively assessed. The energy produced by the system installed in the cooperative building and used within the same hour constitutes self-consumption, and is not burdened with energy purchase costs or distribution fees.[114]

To sum up, it should be stated that although in Poland there are currently relatively few energy cooperatives entered in the list (register) maintained by the National Agriculture Support Centre (21 entities), many cooperatives presently operating are involved in projects related to renewable energy sources. The financing that cooperatives will be able to use in the future (e.g. under the CAP 2023–2027) makes renewable energy projects even more common. I also hope that the regulations on energy cooperatives will be changed in the future and the legislator will create more legal possibilities for the establishment and operation of these entities on energy market. As rightly indicated in the literature, the activities of energy cooperatives within the framework of distributed energy will bring financial benefits to individual members, contribute to the improvement of local energy security, and also promote both local economic development and environmental protection.[115]

[114] S. Lewkowicz, *Prosument lokatorski – na czym polega? Kto może się ubiegać?*, https://columbusenergy.pl/prosument-lokatorski-na-czym-polega-kto-moze-sie-ubiegac/[accessed 5.08.2023].

[115] M. Jasiulewicz, W. Gostomczyk, P. Zarbski, *Wykorzystanie biomasy rolniczej do celów energetycznych*, Gdansk, 2015; M. Błażejowska, W. Gostomczyk, Warunki tworzenia i stan rozwoju spółdzielni i klastrów energetycznych w Polsce na tle doświadczeń niemieckich, *Problemy Rolnictwa Światowego*, 2018, vol. 18(2), pp. 20–32, https://doi.org/10.22630/PRS.2018.18.2.31.

Chapter 13

POWERING UP: EXPLORING ENERGY COOPERATIVES IN TAIWAN THROUGH A CASE STUDY AND THE ANALYSIS OF REGULATORY FRAMEWORKS AND OPERATING PRINCIPLES

Hui-Tzu Huang

Introduction

In recent years, Taiwan has been making efforts to transition towards a sustainable energy future by reducing its reliance on fossil fuels and increasing the share of renewable energy in its energy mix. In addition to the target of reaching a renewable energy capacity of 20GW by 2025, the government has also set a target of achieving net-zero emissions by 2050. Both of these targets will require significant public involvement and cooperation. One innovative approach to achieving this goal is the development of energy cooperatives, which enable citizens to participate in the production and consumption of renewable energy.

The purpose of this study is to explore the role of citizen participation in Taiwan's pursuit of a sustainable energy future, with a particular focus on the development of renewable energy cooperatives. The study will begin by providing an overview of Taiwan's energy goals and current energy structure, highlighting the need for greater citizen involvement. It will then examine the legal and policy frameworks that have been established to facilitate citizen participation in renewable energy development, including the Renewable Energy Development Act, the Electricity Act, and the Energy White Paper.

The study will then delve into the concept of participatory models of citizen power plants and their electricity utilization, exploring how they have been applied in Taiwan and their potential for wider adoption. This will be followed by a discussion of the development of renewable energy cooperatives in Taiwan, including their legal framework under the Cooperatives Act and the government incentives that have been put in place to encourage their formation.

In the final section, the study will present a case study of an energy cooperative in Taiwan, highlighting its unique features, such as low entry thresholds, multi-party cooperation, equal voting rights, and energy autonomy awareness. The

study will conclude with a discussion of the challenges and opportunities for the development of energy cooperatives in Taiwan and their potential to contribute to a more sustainable energy future.

Taiwan's Pursuit of a Sustainable Energy Future: Goals and Energy Structure

Taiwan's energy supply is heavily reliant on imported sources, with 96.8% of its energy supply coming from imports. In terms of the share of electricity generation in 2022, coal-fired electricity is still the highest at 42.07%, followed by natural gas (38.81%), renewable energy (8.27%), nuclear energy (8.24%), fuel oil (1.54%), and pumped hydro (1.06%).[1] However, this high dependency on imported energy has led to serious energy security and national security problems. To address these concerns, Taiwan has developed a clean energy development plan that prioritizes "coal reduction, gas increase, green development, and non-nuclear" as the planning principle.[2]

Under this plan, Taiwan has set a target of achieving 20% of renewable energy generation by 2025. The Ministry of Economic Affairs (MOEA) aims to expand renewable energy generation by promoting the active use of solar photovoltaic and wind power. The MOEA expected to reach a capacity of 20 GW for solar photovoltaic installations and over 5.7GW for offshore wind power installations by 2025. To increase natural gas infrastructure, Taiwan plans to increase the number of new natural gas receiving stations and self-owned storage tanks. In addition, Taiwan imported liquefied natural gas from 16 countries in 2019 to ensure a stable supply of natural gas.

To reduce coal usage, Taiwan will not expand any coal-fired units before 2025, and after decommissioning, coal-fired units will be converted to gas-fired units. Furthermore, Taiwan aims to abolish nuclear power by 2025 and establish a non-nuclear home.[3]

Despite these efforts, Taiwan's current power generation structure still heavily relies on fossil fuels. According to estimates by the Budget Centre of the Ministry of Legislative Affairs, renewable energy is only projected to account for 15.2 of electricity generation by 2025, which falls short of the original target of 20%.[4]

[1] Bureau of Energy, Ministry of Economic Affairs, *2023 Energy Supply Structure*, https://www.esist.org.tw/ [accessed 2.03.2023]

[2] Bureau of Energy, Ministry of Economic Affairs, *Promoting Energy Transition: Coal Reduction, Gas Increase, Green development, and Non-nuclear*, https://www.moea.gov.tw/MNS/populace/Policy/Policy.aspx?menu_id=32800&policy_id=9 [accessed 16.02.2020].

[3] Ibid.

[4] Y.-J. Huang, H-L. Zhong, 2025 Renewable energy only accounts for 15.2%. Non-nuclear home energy ration announced to skip, https://udn.com/news/story/7238/6007230 [accessed 12.03.2022].

Citizen Participation in Renewabel Energy: Renewable Energy Development Act, Electricity Act, Energy White Paper and Public Involvement

Renewable Energy Development Act and Electricity Act

The reasons for citizen participation in renewable energy production are inextricably linked to the development of renewable energy policies. Huybrechts and Mertens' study shows that renewable energy cooperatives have developed strongly in Denmark and Germany, and to a moderate extent in the UK, however, in other countries, such as southern Europe, citizen participation in energy cooperatives is less common.[5]

In 2009, Taiwan passed the Renewable Energy Development Act, which established the legal framework for green energy development and incentivized private investment through a Feed-in Tariff (FIT) system. This system allows Taiwan Power Company to contract with renewable energy generators to purchase energy at a fixed, favourable price for 20 years. In June 2018, Taiwan's government and private sectors jointly drafted an Energy White Paper on transitioning to a sustainable energy future. The paper outlines the conditions and forms of citizens power plants.[6]

Energy White Paper and Public Involvement

In November 2020, the Energy White Paper approved a "Citizens Power Plant Promotion Program" to promote renewable energy through citizen's participation in the planning, operation and financing of the energy system. The program aims to involve local residents as the main body in the process of energy transition, allowing them to acquire ownership of the energy system and use the income generated from power generation to maintain the operation of the power plant.

Additionally, the program seeks to attract more people to participate in renewable energy production through local cultivation and operating experience. Citizens, including tribes, villages, communities and other local participants, are the primary actors, and the space and community areas identified by the consensus of the residents are confirmed following specific procedures.[7]

[5] B. Huybrechts, S. Mertens, The relevance of the cooperative model in the field of renewable energy, *Annals of Public and Cooperative Economics*, 2014, vol. 85(2), pp. 193–212.

[6] Bureau of Energy, Ministry of Economic Affairs, *Energy White Paper*, https://eip.iner.gov.tw/Manage/Uploads/energy/%E8%83%BD%E6%BA%90%E8%BD%89%E5%9E%8B%E7%99%BD%E7%9A%AE%E6%9B%B8%E6%A0%B8%E5%AE%9A%E7%89%88.pdf [accessed 16.01.2020].

[7] Ibid.

Citizen power plants can take various organizational forms depending on the initiating unit, level of public initiative, ownership distribution, and revenue planning. These forms may include joint-stock companies, cooperatives, non-profit organizations, social enterprises, and unincorporated organizations with representatives or managers. However, regardless of the form, it is essential that these power plants are financed by the public and that the revenue is shared by the participants or returned to local public services and public welfare. To overcome the financing challenges faced by citizen power plants, it is also recommended to establish a trust fund in the future.[8]

Participatory Models of Citizens Power Plants and Their Electricity Utilization

In a study of citizen power plants in Taiwan, Liu and Lin[9] have identified three forms of participatory models. The first type, known as "community energy", involves community residents as the primary participants, with power generation facilities installed locally to provide for local consumption and return profits to meet local needs. The second type, called "online-fundraising", allows people from diverse backgrounds to contribute to fundraising for power plants through an online platform, while the operation of the power plant is managed by the platform without direct involvement of the fundraisers. The third type is the "energy cooperative", which is formed by members sharing a common philosophy, and involves collective decision making, planning and operation.

In terms of utilizing electricity from these power plants, there are two primary methods. The first is "self-generation and self-consumption", where solar panels and storage batteries are installed in homes to generate electricity for personal use. The second is the Feed-in Tariff (FIT) scheme, which involves selling electricity to Taiwan Power Company through the national power grid. According to the Renewable Energy Development Act, the Taiwan Power Company must purchase green electricity at the rate established by the Ministry of Economic Affairs for 20 year-period, ensuring that citizens can sell their electricity at the same rate for the same duration.[10] However, the Electricity Act provides electric utilities with the option to choose between the FIT scheme, direct sales, and transfer sales. The Renewable Energy Development Act also allows self-generating equipment install-

[8] Ibid.

[9] C-Y. Liu, X-A. Lin, *Fearing Blackouts, Saving Electricity, and Supporting Green Energy? Taiwan's citizens' power plants are on fire*, http://research.sinica.edu.tw/community-renewable-energy-solar/ [accessed 22.01.2020].

[10] Ibid.

ers with a capacity of less than 2,000 kW to choose between the FIT scheme and self-generation.[11]

Renewable Energy Cooperative Development in Taiwan

Energy Cooperatives in International Society and Their Impact on Taiwan

Cooperatives are established as a business model or a legal form to support the economic, cultural, or social activities of their members through co-ownership or collective business operations. They are autonomous societies with open membership. According to a more optimistic assessment, by 2050, half of the population in the EU will be able to produce their renewable energy, and collective schemes such as renewable energy cooperatives should contribute 37% of the electricity.[12]

In recent years, the development of citizen power plants in Taiwan has seen a gradual increase in the number of cooperative types. In 2016, the first renewable energy cooperative in Taiwan, the Green Advocates Energy Cooperative, was established. Subsequently, four energy cooperatives were established up to 2019, including the New Taipei City People's Power Learning Community Cooperative (Hereinafter referred to as "People's Power"), the New Taipei City Smart Green Energy Community Cooperative, the Chiayi County Dalin Citizen Power Plant Cooperative, and the Kinmen County Renewable Energy Community Cooperative, all of which have their own sites underway.[13] These citizen power plants mainly generate electricity from rooftop solar power and sell electricity under the FIT system, with some generating electricity for their own use.

The development of energy cooperatives in Taiwan has been influenced by the experiences of energy cooperatives in European Union countries and citizen co-owned power plants in Japan. German energy cooperatives have been an important source of reference for citizen groups in Taiwan. For example, the Taromak tribe referred to the Schönau community and then established a tribal citizen power plant. Similarly, the Thaisi Village in Changhua County visited energy cooperatives in Ger-

[11] Bureau of Energy, Ministry of Economic Affairs, *Difference between renewable energy generation and Type III captive generation equipment*, https://www.cre.org.tw/xmdoc/cont?xsmsid=0I313668892559573811&sid=0I324412275009344702 [accessed 11.02.2022].

[12] J. Lowitzsch, F. Hanke, Renewable Energy Cooperatives, in *Energy Transition: Financing Consumer Co-Ownership*, ed. J. Lowitzsch, Renewables Springer International Publishing, 2019, pp. 139–162.

[13] L-R. Hsu, The development of community power plants in the process of energy transition, Conference Paper of Taiwanese Sociological Association 2020.

many with NGO groups.[14] The Homemakers United Foundation invited Rescoop.eu to Taiwan to share its energy cooperative practices and concepts.[15] In addition, in 2019, the Homemakers United Foundation visited Kyoto and introduced the case of 40 publicly owned rooftops planned by the Kyoto City government for citizens to generate electricity in Taiwan.[16] It can be said that the development of citizens' energy participation, renewable energy cooperatives, and community-based citizen power plants in Taiwan has been largely inspired by foreign experiences.

The Cooperatives Act and Government Incentives

The establishment of energy cooperatives can be done in compliance with two legal sources: the Cooperatives Act and the other being the "Regulations for Demonstration and Incentives for Cooperatives and Communities to Set up Renewable Energy Citizens' Power Plants by Public Fundraising." By adhering to these laws, energy cooperatives can access government incentives and support for the setup of citizen power plants.

The Cooperatives Act

According to the Cooperatives Act of 2015, citizen power plants that operate on a cooperative basis are registered under the Cooperatives Act.[17] Chapter 1, Article 1 of the Act defines cooperatives as organizations that operate based on the principles of equality and mutual assistance, with the aim of improving the economic interests and livelihoods of their members through joint management. The total number of members and amount of stock can be adjusted as necessary. Article 2 confirms that cooperatives are recognized as legal entity.

Pursuant to the Cooperatives Act, cooperatives are authorized to engage in a broad range of business activities, including production, transportation, sales, supply, utilization, labour, consumer, public use, transportation, banking, insurance and other related pursuits (Article 3). In addition, cooperatives are afforded exemptions from both income tax and business tax (Article 7). Notably, Article 8 mandates that a cooperative may not be established unless it has at least seven

[14] H-T. Huang, S-W. Wang, Personal Interview, 12.11.2021.

[15] Homemakers United Foundation, *The Diverse Face of Citizenship and Energy Transition*, https://www.huf.org.tw/event/content/4467 [accessed 5.12.2018].

[16] W-E. Chen, Environmental education driven by renewable energy—Kyoto's Citizens' Power Plant. Homemakers United Foundation, https://www.hucc-coop.tw/topic/issue9/21961 [accessed 23.05.2020].

[17] Ministry of the Interior, Republic of China (Taiwan), Cooperatives Act (promulgated on 1 March 1934; latest revision on 3 June 2015). Laws and Regulations Database of the Republic of China, https://law.moj.gov.tw/LawClass/LawAll.aspx?PCode=D0050112 [accessed 9.04.2020].

members. The Act further prescribes the minimum and maximum limits for member shares, requiring each member to subscribe for at least one share that does not exceed 20% of the total share capital (Article 17). Moreover, the annual interest on shares is capped at 10%, and no interest shall be paid if there is no balance (Article 22).

Regulations for Demonstration and Incentives for Cooperatives and Communities to Set Up Renewable Energy Citizens Power Plants by Public Fundraising

In 2019, the Renewable Energy Development Act was amended to encourage citizen participation in green energy generation by providing subsidies for cooperatives and community-based citizen power plants that are publicly funded (Article 11). Subsequently, the "Regulations for Demonstration and Incentives for Cooperatives and Communities to Set up Renewable Energy Citizens' Power Plants by Public Fundraising" were enacted in 2020. The subsidies are applicable to various organizations, including cooperatives, social organizations, foundations, apartment building management committees, companies, and agricultural production and marketing organizations (Article 3). Article 5 of the Act outlines two stages of incentives. The first stage provides a maximum incentive of NT$600,000 per case for the promotion and publicity activities conducted by Citizen Power Plants. The second stage provides incentive for renewable energy generation equipment, including energy storage equipment. The total capacity of the installation should be at least 20 kW and no more than 300 kW.[18] These regulations aim to promote the establishment of citizen power plants through public fundraising, which will contribute to the development of green energy in the country.

The Case of Energy Cooperatives in Taiwan

This study analysed the characteristics of the People's Power Learning Community Cooperative (Hereinafter referred to as "People's Power") located in New Taipei City, which was established by the Ludi Community College. The cooperative is distinguished by four key features, including low entry threshold requirement, cooperation among multi-party, equal voting rights, and a strong emphasis on energy autonomy awareness.

[18] Bureau of Energy, Ministry of Economic Affairs, *Regulations for Demonstration and Incentives for Cooperatives and Communities to Set up Renewable Energy Citizens' Power Plants by Public Fundraising* (Issuance date on 16 November 2020), https://www.moeaboe.gov.tw/ECW/populace/Law/Content.aspx?menu_id=13189 [accessed 8.06.2021].

Low Entry Threshold

To increase residents' concerns about electricity consumption and promote energy saving, the People's Power set a low threshold for investment and recruited shareholders in the form of NT$5,000 (approx. €146) per share, with 5% of the balance of electricity sales going to local energy education in addition to distribution to members.[19] This low threshold allowed more people to participate in electricity production. As a result, by the end of 2020, the People's Power had three power plants, with a total power generation of 55 KW, 100 members, and a total share capital of NT$2.4 million.[20]

The amount of shares in the People's Power was decided jointly by the public. According to Yi-Kun Li, director of Ludi Community College, the proposed amount of NT$5,000 reflects the expectations of the members, and the low threshold indicates that the nature of its operation is not for investment or fund raising. Li further explained that "the higher the amount, the faster the fundraising is completed, but NT$5,000 is closer to the consensus or the state of the group. Partners playing together is the basis of a relationship and collaboration is also a kind of commitment to the relationship".[21] The basic operation of the cooperative-type citizen power plants can be seen in Figure 13.1.

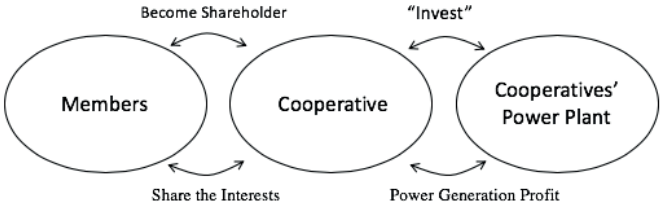

Fig. 13.1 Capital raising and profit distribution of energy cooperatives

Source: author's elaboration.

Multi-Party Cooperation

Multi-party cooperation is a crucial aspect of the People's Power movement. An excellent example of such cooperation is evident in the construction of a power plant, where various actors collaborate to achieve a common goal. The New Taipei

[19] Ludi Community College Facebook, https://www.facebook.com/LudiCommunityUniversity/posts/2190680377675994/ [accessed 22.01.2020].

[20] Y-T. Wei, *The first citizens' power plant in New Taipei City: Two public sites in New Taipei City take the lead in demonstrating the power plants built by citizens*, https://news.housefun.com.tw/news/article/831319228127.html [accessed 20.03.2020].

[21] Ludi Community College and Industrial Technology Research Institute, *How to Incorporate Citizen Participation in Local Energy Governance*, 2020 Annual Training Course.

City Government provides the site for the power plant, the Tatung Company provides the solar panel system, while the People's Power and the Tamsui Community College provide funding and encourage public participation. The collaboration not only helps overcome the challenges of finding suitable locations for citizen power plants but also promotes trust and understanding between the different parties involved. This cooperation can also lead to future partnerships that can help promote policies that benefit the community.[22]

Equal Voting Right

The energy cooperatives aim to develop solar energy sites on urban rooftops while promoting democratic participation among its members. People's Power is made up of ordinary citizens from diverse backgrounds, such as housewives, cloth store owners, and cleaners. The founding meeting was held on a workday, and many of the members took time off work to attend. They formed the cooperative after attending energy visits and lectures organized by the Ludi Community College, which helped them gain a deeper understanding of energy issues. According Mr. Gao, a member of the cooperative, all members have an equal say in discussions and voting, regardless of their financial contributions or social status. This principle of equivalence of votes is essential for ensuring fairness and transparency in the cooperative's decision-making processes, and it can also forster trust and consensus among members.[23]

Energy Autonomy Awareness

The main ways to move toward energy autonomy are as follows. First, energy education: Some courses are held in the college to teach people how to understand their electricity bills, household electricity consumption, and knowledge of solar energy. Second, members of the community participated in the construction of the power plant: Unlike the general way of completing the construction of a citizen power plant in a short period of time, Ludi Community College took a longer time to set up the power plant, from design, delivery, construction to supervision, and seized the opportunity to let members of the cooperative enter the project site to

[22] Ibid.

[23] Y-H. He, *You too can run a power plant! New Taipei's Industry-Government-People Cooperation Promotes Citizens' Power Plants*, https://news.ltn.com.tw/news/life/breakingnews/2800976 [accessed 8.11.2019]; Coolloud, People's Cooperative in New Taipei has Established: New Taipei City's First and Taiwan's Second Solar Citizens' Power Plant Cooperative, https://www.coolloud.org.tw/node/92600 [accessed 9.05.2020]; Bureau of Economic Development of the New Taipei City Government, New Taipei City's first public case to introduce a mechanism for citizens' power plants, the industry, government and people work together to build a sustainable low-carbon city, https://www.ntpc.gov.tw/ch/home.jsp?id=e8ca970cde5c00e1&dataserno= e6f957f62f261f5657415be00c81e63d [accessed 7.09.2019].

learn from engineers, foremen, and field supervisors. Third, the "micro-inverter" is used in one of their power plants, which allows the members to manage the solar panels separately, so that they can be more familiar with the development of solar panels. Fourth, to promote self-generation and self-consumption of electricity for small households, for example, to encourage the installation of two solar panels to meet their own electricity needs.[24]

Conclusion: Challenges and Opportunities for Taiwan's Energy Cooperatives

In conclusion, this study has explored the role of citizen participation in Taiwan's pursuit of a sustainable energy future, with a particular focus on the development of renewable energy cooperatives. The research purpose was to examine the legal and policy frameworks that have been established to facilitate citizen participation in renewable energy development, to delve into the concept of participatory models of citizen power plants and their electricity utilization, and to present a case study of an energy cooperative in Taiwan.

Taiwan's energy cooperatives have emerged as an innovative approach to achieving the government's ambitious renewable energy targets. These energy cooperatives are fuelled by the passion of their members for renewable energy development and public participation. Despite their growth and progress over the past few years, these cooperatives have faced significant challenges in their operations, primarily due to regulatory and institutional constraints. The electricity law has yet to be fully liberalized, and policies restricting rooftop installations have limited available space. Furthermore, local governments have not given sufficient attention to citizen power plants, resulting in cumbersome administrative processes for applicants. Cooperation from local governments is thus crucial to the success of energy cooperatives and the development of citizen power plants.

Looking at the example of People's Power in this study, it is evident that members of energy cooperatives currently play a major role in fundraising and operation. In the future, there is a need for these members to develop their professional and service skills, and for income from power generation to become the primary source of economic income for members. This will require leveraging their professional skills to create job opportunities in the community.

[24] Ludi Community College, The Cooperative's Site as an Educational Site, in *Energy Play Up*, Ludi Community College, 2020, p. 22.

Chapter 14

ENERGY COOPERATIVES IN BRAZIL

Igor Loureiro de Matos

Introduction

The chapter consists of panoramic research focused on the legal framework for Brazilian energy cooperatives. This is a qualitative and descriptive study that uses bibliographic research and document analysis as methodological procedures, in addition to observation.

The research sources consist of historical documents, statistics and databases from the National Electric Energy Agency (ANEEL) and other public entities operating in the sector, academic studies, and technical analysis provided by agents in the sector.

The chapter aims to present the historical process of cooperatives' formation, the current context, and the challenges and opportunities that await in the future.

The Origins and Evolution of Electricity Production in Brazil

Electricity arrived in Brazil in 1879. This year, lighting was installed at the Central do Brasil Railroad Station, in the city of Rio de Janeiro. Electricity generation came from a dynamo powered by locomotives.[1] The initiative was undertaken by Thomas Edison, at the invitation of the then Brazilian Emperor.[2] In the period between 1880 and 1930, the electricity sector was developed and managed by private actors. From 1920 to 1930, foreign-owned companies dominated the sector.[3] From 1930 onwards, the liberal economic policy was interrupted and a process

[1] A. C. Jannuzzi, *Regulação da Qualidade de Energia Elétrica sob o foco do Consumidor*, Brasília, 2007, pp. 216ff.

[2] Brazil became a Republic in 1889.

[3] J. P. P. Gomes, M. M. F. Vieira. O campo da energia elétrica no Brasil de 1880 a 2002, *Revista de Administração Pública—RAP*, April 2009, vol. 43(2), pp. 295–321.

of gradual State interference in the economy began. In the decades that followed, the Brazilian state adopted the positions of regulator (1931–1945), of inductor (1946–1962), and, finally, of state monopoly holder (1963–1992) in the electricity sector.[4]

The second oil crisis, in 1979, triggered a deep fiscal crisis and the Brazilian state lost its investment capacity. After a decade of deep political crises,[5] it was possible to review the institutional pattern of the electricity sector. In the little less than 30 years that have followed since 1993, privatization of public distribution companies has been promoted, the construction of private generation units has been allowed, and a Regulatory Agency (National Electric Energy Agency—ANEEL) has been created. Today Brazil presents a hybrid model, with the participation of public companies and private entities.[6]

In the table below, it is possible to verify the evolution of the installed capacity of Brazilian electricity generation in the last decades:

Table 14.1 Installed capacity of electricity generation (MW)

Year	Hydro	Thermo	Wind	Solar	Nuclear	Total
1975	16,316	4,652	0	0	0	20,968
1980	27,649	5,823	0	0	0	33,472
1985	37,077	6,373	0	0	657	44,107
1990	45,558	6,835	0	0	657	53,050
1995	51,367	7,097	1	0	657	59,122
2000	61,063	10,623	19	0	1,966	73,671
2005	71,060	19,770	29	0	2,007	92,865
2010	80,703	29,689	927	1	2,007	113,327
2015	91,650	39,563	7,633	21	1,990	140,858
2020	109,271	43,057	17,131	3,287	1,990	174,737

Summary extracted from original complete table designed in Empresa De Pesquisa Energética. Balanço Energético Nacional 2021: ano base 2020—Brasília: EPE, 2021, pp. 182–183.

Despite the evolution of generation, the country continues to be a net demander of energy. The installed generation capacity is unable to support the economic development process. Considering data for the year 2018, Brazil accounts for about 2.75% of the world population[7] and was responsible for the generation of

[4] Ibid.

[5] The military dictatorship ended in 1985, the Democratic Constitution was promulgated in 1988, the first president elected by popular vote was impeached for corruption in 1992.

[6] J. P. P. Gomes, M. M. F. Vieira, O campo da energia elétrica, pp. 295–321.

[7] World Bank Group, https://data.worldbank.org/indicator/SP.POP.TOTL?end=2018&locations=1W&start=1960 [accessed 27.12.2021].

2.3% of global electricity.[8] In 2020, Brazil consolidated net imports of 24.7 TWh to meet its electricity demand.[9]

Cooperatives in the Development of Electricity Production in Brazil

The role of cooperatives in the development process of the Brazilian electricity sector was quite restricted, although important for the development of regions where they are located.

The first Brazilian energy generation cooperative emerged in 1941.[10] Since then, cooperatives have been organized in communities in which the government and concessionaires did not supply electricity. Isolated communities, constituted predominantly by small and medium rural producers, founded their cooperatives. Starting in the 1970s, the federal government provided financing to rural electric cooperatives. The resources came from the Inter-American Development Bank (IDB) and were transferred through the Executive Group for Rural Electrification (GEER) of the Ministry of Agriculture.

Due to the strong urbanization process of the Brazilian population, the energy cooperatives restricted their operations in rural areas, for regulatory reasons.

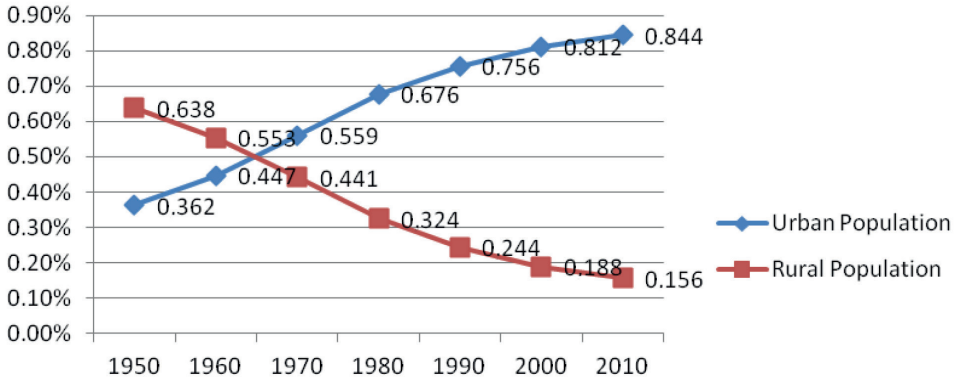

Fig. 14.1 Brazilian rural/urban population

Source: Instituto Brasileiro de Geografia e Estatística (IBGE).

[8] Empresa de Pesquisa Energética, *Balanço Energético Nacional 2021: ano. base 2020*, Brasília, 2021, pp. 301ff.

[9] Ibid.

[10] L. C. Palma et al. Cooperativas de eletrificação rural gaúchas e o desenvolvimento do agronegócio: uma análise sobre a nova legislação para o setor de energia elétrica. *Redes*, December 2006, vol. 11(3), pp. 69–87.

In 1991, the National Confederation of Infrastructure Cooperatives (INFRACOOP) was created, which represents cooperatives and federations of electric cooperatives. In 2020, INFRACOOP amounted to 68 cooperatives, with a total of 727,613 users. The segment accounts for only 1.86% of the Brazilian effective generation power.[11] This proportion may grow, however, due to opportunities created by the current context of electricity generation in Brazil.

Context of Electricity Generation in Brazil

In Brazil the current situation is that there is a potential abundance of energy resources but scarce financial resources for expansion of the generation and distribution network. This is an opportunity for energy cooperatives. Studies of the 2050 National Energy Plan point to a total energy demand of around 15 billion tonnes of oil equivalent (TOE) in the period between 2015 and 2050. To meet this demand, the country has a potential of nearly 280 billion TOE in the same period, including 21.5 billion TOE of potential for non-renewable resources and 7.4 billion TOE of annual potential for renewable resources.[12] Confirmation of this prognosis will transform the country from an importer into a net exporter of energy.

The realization of potential capacity requires financial investments. According to the Ministry of Mines and Energy, Brazil should promote investments in the order of R$400 billion (c. US$70.87 billion) to expand its energy matrix in the next ten years.[13] This amount should come from the private sector, since the public accounts show consecutive annual deficits that practically make state investment unfeasible. Private financing of the Brazilian energy matrix should take place through the privatization of companies still under state control, concessions to new investors, and the promotion of energy cooperatives.

New Boost to Energy Cooperatives

Since 2015, Energy Cooperatives have been recognized by Brazilian regulations as actors in the distributed energy generation regime. Pursuant to Normative Resolution (REN) No. 687/2015 of the National Electric Energy Agency (ANEEL),[14] which

[11] Confederação Nacional das Cooperativas de Infra-estrutura, https://www.infracoop.com.br/dados/relatorios [accessed 27.12.2021].

[12] Empresa de Pesquisa Energética, *Plano. Nacional de Energia 2050*, Brasília, 2020, pp. 230ff.

[13] Ministério de Minas e Energia do Brasil, https://www.gov.br/mme/pt-br/assuntos/noticias/matriz-energetica-brasileira-recebera-investimentos-de-r-400-bilhoes-nos-proximos-dez-anos [accessed 21.12.2021].

[14] Agência Nacional de Energia Elétrica (ANEEL), Normative Resolution (REN) nº 482/2012, modified by REN nº 687/2015, Brasil, 2015.

modified the previous wording of REN 482/2012, from then on cooperatives have been able to operate modes of distributed energy generation, integrated with the National Electric System Operator (ONS).

Under the new regulation, a private user, in addition to generating its energy in its own area (in the local self-generation or remote self-generation regimes), can now meet with other users and create distributed generation units, through cooperatives.

The distributed generation plants inject the load produced in the National System and generate energy credits in kW/h, which are distributed among the cooperative members, in proportion to their acquisition/enjoyment. These credits are deducted from the energy bills held by the cooperative members on the Electric System Operator of their domicile. As a result, citizens who did not have areas for installing solar panels, for example, can create plants on a shared basis, through cooperatives. This modification shifted the axis of action of energy cooperatives. They are no longer restricted to isolated power generation and/or distribution systems in remote communities. They are now able to integrate into the National System, which allows users and plants to gather across Brazil. By the first half of 2020, distributed energy generation had reached 3.6 GW.[15]

New Renewable Energy Cooperatives

REN 687/2015 was incorporated into the legal system and incentives were offered for the generation of photovoltaic energy. The result was the emergence of new cooperatives focused on this generating matrix. In a survey carried out by DGRV—Deutscher Genossenschafts-und Raiffeisenverband e. V.,[16] sixteen new distributed photovoltaic generation cooperatives were identified in operation in Brazil. In addition to these, another seven initiatives under implementation were catalogued.[17] Despite the recognition of the opportunity introduced, it is noticeable that the evolution of the sector entails that some challenges need to be faced.

[15] Agência Nacional de Energia Elétrica, Geração Distribuída por Fonte 2020, https:www2.aneel.gov.br/scg/gd/GD_Fonte.asp [accessed 27.12.2021].

[16] Survey carried out within the scope of the international project "Plataformas de diálogo cooperativo de energia para fortalecer projetos descentralizados de energia renovável por meio do engajamento cidadão" (Cooperative energy dialogue platforms to strengthen decentralized renewable energy projects through citizen engagement) by DGRV – Deutscher Genossenschafts- und Raiffeisenverband e. V. and financed by German Ministry of Economic Cooperation and Development (BMZ), in partnership on the Instituto para o Desenvolvimento de Energias Alternativas na América Latina (IDEAL), the Centro de Pesquisa e Capacitação em Energia Solar da Universidade Federal de Santa Catarina (Fotovoltaica-UFSC), and the Organização das Cooperativas Brasileiras (OCB).

[17] Energia Cooperativa: mapa de iniciativa. Energia Cooperativa, https://energia.coop/mapa-de-iniciativas/ [accessed 27.12.2021].

Challenges to the Development of Renewable Energy Cooperatives in Brazil

Taking advantage of the opportunity introduced by REN 687/2015 requires facing some challenges. In this section, they are indicated and analysed.

Lack of Knowledge about the Modality[18]

The first challenge faced for the development of energy cooperatives is the citizens' lack of knowledge about the organizational modality and its application to energy generation. Cooperatives account for less than 6% of the Brazilian GDP[19] and are traditionally concentrated in rural areas and in the south and southeast regions of the country. In other regions, cooperatives usually have their image associated with the execution of public policies of dubious interest. In urban areas, the misapplication of work cooperatives as scams to mitigate the rights of employees[20] means that citizens' have a negative perception of the Cooperative System.

Fig. 14.2 Cover of a Brazilian Energy Cooperative guide

[18] K. Schneider, *Geração comunitária e descentralizada de energia renovável no Brasil: Cooperativas de geração distribuída compartilhada*, https://www.researchgate.net/publication/347986382_Geracao_comunitaria_e_descentralizada_de_energia_renovavel_no_Brasil_Cooperativas_de_geracao_distribuida_compartilhada [accessed 27.12.2021].

[19] Organização das Cooperativas Brasileiras (OCB), *Agenda Institucional do Cooperativismo 2018*, Brasília, 2018.

[20] A. J. S. L. Carvalho, *O Novo Cooperativismo: alternativa de trabalho e renda ou mais um caminho para a precariedade das relações de trabalho?* Campina Grande, 2010, pp. 250ff.

Its application in power generation was restricted to communities far from large urban centres and the energy credit compensation scheme, although simple, requires effort from the common citizen to understand it.

To overcome this challenge, it is necessary to carry out campaigns to introduce the service and raise awareness among potential users. The Organization of Brazilian Cooperatives has undertaken efforts in this direction, in partnership with affiliated cooperatives and civil society partners.[21] It would be useful to involve actors who, even though they are foreign to the cooperative environment and to the generation of renewable energy, have greater proximity and identification with the target audiences of the intended expansion.

Lack of Standard Procedure for Registration of Generating Units in the Energy Distribution Concessionaires[22]

Although Brazil has a single National System Operator, the circulation of energy is made through 105 agents operating in the distribution market.[23] There is no standard procedure for submitting generation plant projects to these agents, so it is still impossible to replicate models nationwide. This requires reworking in each unit of the federation. To tackle the regulatory problem, the "Distributed Generation Work Group" was created by the Organization of Brazilian Cooperatives (OCB), headquartered in the federal capital. The group has support and advice from the national organization and promotes periodic meetings to address issues of common interest. It generates a newsletter that is sent monthly to the cooperatives leaders of each state, in order to maintain the alignment of the sector's leaders.

The initiative is useful. But insufficient. It is reasonable to promote the partial decentralization of initiatives, even if only to reach the distribution agents operating in each geographic area. The Brazilian Cooperative System has a political representation entity in each Brazilian state, so that it is possible to use its own structure to undertake such actions.

[21] Exemples of initiatives to overcome this challenge are: (a) the creation and dissemination of a publication (D. B. Lima, *Cooperativas de Energia: guia de constituição de cooperativas de geração distribuída fotovoltaica*, Brasília, 2018); and (b) the creation of the Energy Cooperatives Plattaform (www.energia.coop), in partnership on DGRV—Deutscher Genossenschafts- und Raiffeisenverband e. V., Instituto para o Desenvolvimento de Energias Alternativas na América Latina (IDEAL), and Centro de Pesquisa e Capacitação em Energia Solar da Universidade Federal de Santa Catarina (Fotovoltaica-UFSC).

[22] K. Schneider, Geração comunitária e descentralizada de energia renovável no Brasil.

[23] Agência Nacional de Energia Elétrica, Serviço Público de Distribuição de Energia Elétrica. 2015, https://www.aneel.gov.br/distribuicao2#:~:text=O%20servi%C3%A7o%20p%C3%BAblico%20de%20distribui%C3%A7%C3%A3o,atuando%20no%20mercado%20de%20distribui%C3%A7%C3%A3o [accessed 27.12.2021].

Units of the Brazilian federation that own or intend to organize energy cooperatives need to engage in negotiations with local agents. Brazil has continental dimensions, and it is necessary that the sector's leaders, given the impossibility of changing the scenario in short and medium time, promote the necessary measures to implement the cooperative development process in the current context.

General Cooperative Law Regulations on Governance, Financing and Remuneration[24]

The normative elaboration process is dynamic and reflects the context in which the norm is produced. The current general law on cooperatives in Brazil (regulating energy cooperatives) was drawn up under the strong influence of the agricultural policies of the military regime (1964–1985), in line with what had already happened in other cooperative regulations since the beginning of the twentieth century. The rationale used in the formulation of the legal regime of the cooperative society was not intended to confer economic efficiency, but to provide it with mechanisms to encourage it to act as a vehicle for the dissemination of public subsidies, duly submitted, in return, to rigid controls of conduct and operation.

Adapting cooperative institutions to the application of government agricultural programmes, the National State reformulated the legal architecture of cooperative societies and scrutinized cooperative policies. Incentives and restrictions were established that practically oriented its functioning. Although cooperative societies are formally comprised at private law studies area, they suffered a strong influx of public bodies and guidelines. Public financing subsidies were established as incentives. In the table 14.2, it is possible to verify the negative real interest rates applied to rural cooperatives in the period, until the outbreak of the economic recession resulting from the second oil crisis.[25] In another sense, it established the authority for public intervention and restrictions on the choice of managers. Cooperatives needed, at the time, to submit candidates for elective office for analysis to government bodies, which had the authority to reject them.

After the promulgation of the Democratic Constitution of 1988, freedom of organization in cooperatives was guaranteed and state interventionism was prohibited. Even so, some elements of the legal architecture used to scrutinize the corporate model continue to generate effects. Under the profusion of finance public resources available at the time, the model did not need to become attractive to self-financing by the cooperative member, nor did it develop incentive mechanisms for

[24] I. L. Matos, *Regime Jurídico das Cooperativas de Produtores Rurais: desafios e oportunidades ao financiamento privado da agropecuária brasileira*, São Paulo, 2019, pp. 123ff.

[25] R. Shirota, *Crédito Rural no Brasil: subsídio, distribuição e fatores associados à oferta*, Piracicaba, 1988, pp. 263ff.

Table 14.2 Real interest rate on rural credit, by loan purpose, Brazil, 1970–1985[a]

Year[b]	Goal		
	Costing	Investiment	Commercialization
1970	−1.85	−1.85	−1.85
1971	−2.34	−2.34	−2.34
1972	−0.43	−0.43	−0.43
1973	−0.61	−0.61	−0.61
1974	−14.50	−14.50	−14.50
1975	−11.13	−11.13	−11.13
1976	−21.34	−21.34	−21.34
1977	−17.15	−14.99	−14.99
1978	−18.32	−16.19	−16.19
1979	−35.10	−31.72	−31.72
1980	−36.76	−34.38	−38.66
1981	−25.72	−25.72	−25.72
1982	−27.39	−13.92	−27.39
1983	−30.13	−9.45	−30.13
1984	0.93	0.93	0.93
1985	−1.34	−1.34	−1.34

[a] Considering loans for medium-sized producers in the Center-South of Brazil.
[b] Variation between December and December of each year.

good governance rules. To date, all partners can participate in the management of the collective enterprise, under equal conditions: one vote for each partner.[26] This is an expression of the formal equality principle. In the Brazilian model of cooperative society, there is no proportionality of corporate political rights due to the fraction of shares held in title nor the proportion of economic activity carried out. The only exceptions reside in central cooperatives, federations and confederations, which can adopt proportionality.[27] *Prima facie* this may sound good, but it prevents the application of the material equality principle: to treat equals equally and unequally, to the extent of inequalities. Furthermore, the reduction of the principle of

[26] According to the ICA, under the terms approved by the Manchester Congress in 1995, the principle of Democratic Management establishes that cooperatives are democratic organizations controlled by their members, who actively participate in the formulation of their policies and decision-making. Men and women elected as representatives of other members are accountable to them. (Aliança Cooperativa Internacional (ACI) Declaração sobre Identidade Cooperativa—Manchester: ACI, 1995.)

[27] Lei 5.764/71, Article 4: "As cooperativas são sociedades de pessoas, com forma e natureza jurídica próprias, de natureza civil, não sujeitas a falência, constituídas para prestar serviços aos associados, distinguindo-se das demais sociedades pelas seguintes características: … V—singularidade de voto, podendo as cooperativas centrais, federações e confederações de cooperativas, com exceção das que exerçam atividade de crédito, optar pelo critério da proporcionalidade; (grifos nossos)."

equality to its formal manifestation encourages the participation of agents who, not being typical cooperative members, join the cooperative with conflicting interests.

The General Law of Cooperatives does not allow a financing partner, nor does it encourage capitalization by the cooperative member. There are no relevant personal advantages of a social or economic nature. The fact of making a greater contribution of financial resources does not increase the influence of the member in the conduct of the cooperative. Furthermore, the remuneration of capital is doubly conditioned (by the configuration of surplus/leftovers and by the approval of the General Meeting) and limited to a maximum of 12% per year (non-existent limitation in other corporate models).

By international standards, this rate should be quite attractive, but not in Brazil. The rate of inflation in the last 12 months in the country, at the end of 2021—the time of writing, is above 10%.[28] Low-risk financial investments reach levels above inflation. There is no economic incentive to invest risk capital in cooperatives, given the conditioning and limited return.

In Law 5.764/71 standard, a cooperative is a society (1) subject to restrictive governance rules, (2) without attractive provisions for capitalization by the members and (3) with strict capital remuneration limitations. This makes it difficult for users to join cooperatives and invest in the energy generating park.

A way to get around this obstacle has been the formation of companies to contribute capitalization to prosumers (members who produce shared energy and consume the originated kW credit), which securitize the property of the plants, but rent them to cooperatives. Thus, despite the complexity of the corporate architecture, it has been possible to attract private financing for the construction of shared generating plants. A definitive way to solve this challenge would be to change the legal framework of cooperativism, but the current political environment and the dissensions in Brazilian cooperativism do not allow us to consider this possibility as feasible in the coming years.

Conclusion

In Brazil, energy cooperatives were originally created about 80 years ago to serve remote rural communities, in isolated electricity generation and/or distribution systems. From ANEEL Normative Resolution No. 682 of 2015 onwards, the opportunity for energy cooperatives to move towards new audiences arose, including and especially those interested in distributed generation of photovoltaic energy.

New initiatives are emerging in the country, but their market share is restricted to less than 1% of consumer units. There are challenges for the development

[28] Instituto Brasileiro de Geografia e Estatística, Inflação 2021, https://www.ibge.gov.br/explica/inflacao.php [accessed 27.12.2021].

of energy cooperatives concerning: (a) the lack of knowledge about the modality; (b) the lack of a standard procedure for registering generating units in the Energy Distribution Concessionaires; and (c) the regulations of the General Cooperative Law on governance, financing and remuneration in enterprises.

There are initiatives to (a) publicize energy cooperatives entities; (b) encourage dialogue between the enterprises and their leaders with other actors in the sector; and (c) creating complex corporate structures that combine cooperatives and companies to alleviate difficulties in accessing private self-financing for the construction of plants.

A structural change in the legal framework of cooperativism, tending to remove the limitations created in the interventionist period, does not seem feasible in the near future. It is evident, therefore, that, in Brazil energy cooperatives received a relevant boost since REN 687/2015, but they still have challenges to overcome.

Chapter 15

FINAL CONSIDERATIONS AND REFERENCES TO THE CURRENT POLITICAL, ECONOMIC AND LEGAL SITUATION CONCERNING ENERGY COOPERATIVES, ENERGY COMMUNITIES AND THE ENERGY MARKET*

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The discussion presented in this work confirms the importance of issues related to energy transformation all around the world today. The European Economic and Social Committee, in its opinion dated 26 October 2022, "Strategic vision of the energy transition enabling the EU's strategic autonomy" emphasized that the "the current situation in Ukraine, after the military invasion by the Russian Federation, make energy transition a top priority…. The Russian aggression has caused a global geopolitical crisis, which is having an exponentially growing impact on both the economic balance and global energy security. … Ensuring equal access to energy and the security of energy supply at affordable cost must be an absolute priority for the EU and its Member States."[1]

There will be fewer and fewer natural deposits (hard coal, lignite, gas) which are usually owned by a given state.[2] Renewable energy, for example, solar or wind

* *The final consideration and remarks have been prepared by all the authors. The author's name and surname appears in brackets at the end of his or her text.*

[1] *Strategic vision of the energy transition enabling the EU's strategic autonomy*, https://www.eesc.europa.eu/en/our-work/opinions-information-reports/opinions/strategic-vision-energy-transition-enable-eus-strategic-autonomy [accessed 5.05.2023].

[2] According to the Polish Act of 9 June 2011 Geological and mining law (Journal of Laws of the Republic of Poland [JL] 2023, item 633) deposits of hydrocarbons, hard coal, methane occurring as an accompanying mineral, lignite, metal ores with the exception of bog iron ores, native metals, ores of radioactive elements, native sulphur, rock salt, potassium salt, potassium-magnesium salt, gypsum and anhydrite, precious stones, rare earth elements, and noble gases, regardless of their location, are

energy, is usually associated with the need to place an installation on the ground or on a building, which is an undertaking often performed by private persons. Access to such renewable energy is open to most citizens. However, social acceptance is often the basic condition for ensuring the development of RES and rapid transformation. While this is a global topic, the solution to a problem must take into account the specificity of a given country, and often the region (e.g. access to appropriate water to generate hydropower,[3] proper insolation of the area to obtain energy from the sun, or efficiently harnessing wind power and offshore wind energy). There is no doubt that future energy production will be much more decentralized than it was in the past. Thus, energy cooperatives at the local level can be an effective tool in the process of energy transition and adaptation with the aim being sustainable development of the energy market, country or region. Through increased investment in REW, there will be a decline in greenhouse gas emissions into the atmosphere. The European Climate Law aims to achieve net zero greenhouse gas emissions by 2050 and Objective 7 of the 2030 Agenda for Sustainable Development is to provide everyone with access to sources of stable, sustainable and modern energy at an affordable price.

On the one hand, cooperatives work for cooperative members, who are natural or legal persons. On the other, however, they also align with the needs of society, and thus the subject of the activity evolves in REW. The energy cooperative is also an example of development of the subject of activity of cooperatives. The expansion of the renewable energy market resulted in the involvement of cooperatives in the RES market. In some countries, the creation of such entities gave rise to changes in legal regulations. However, the discussion in this book shows that there is no common definition or model of energy cooperatives. It is worth emphasizing that we can distinguish different types of energy cooperatives operating in the broader energy market. When it comes to cooperatives, each country usually has its own separate legal regulations, often related to history and tradition. These regulations should be divided, on the one hand, into those relating to cooperatives, including the establishment and operation of energy cooperatives, and on the other, legal regulations concerning the energy market. There is no single legal solution when it comes to the legal framework of cooperatives, and laws are changed to adapt to current needs. In this sense, a simplification of the rules concerning the establishment and functioning of cooperatives is increasingly observable.

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covered by the term mining property. Mining property also includes deposits of medicinal waters, thermal waters and brines. Deposits of unlisted minerals are covered by the land property ownership right. The right of mining ownership belongs to the State Treasury.

[3] About 16% of the world's electricity demand is covered by hydropower. In Europe, especially Sweden and Norway. *Energia wodna—najintensywniej wykorzystywane źródło odnawialne na świecie*, https://leonardo-energy.pl/artykuly/energia-wodna-najintensywniej-wykorzystywane-zrodlo-odnawialne-na-swiecie [accessed 5.05.2023].

For energy cooperatives operating on the local market, the seventh cooperative principle, namely being involved in the concerns of the local community, is particularly important. Cooperatives are obliged to contribute to the development of the local community in which they operate. The research carried out by the authors in the book shows that the increasing involvement of local governments in the creation and operation of energy cooperatives should be noted. Such activity has many positive dimensions. First of all, it ensures cheaper, stable electricity for the inhabitants of a given region, and thus reduces energy poverty. In addition, in terms of economic activity, electricity at a lower price usually means greater opportunities for the development of economic activity: increased tax revenues for municipalities.

Thanks to the operation of energy cooperatives, municipalities are more attractive. Additionally, there is no doubt that prosumers, will be more and more involved in investments in the field of energy from renewable sources.[4] However, cooperatives have many advantages, as the discussions in the book confirm. First, cooperatives usually ensure the diversification of energy sources, as well as stability (often in the form of photovoltaics, wind energy, biogas plants). Cooperatives are better able to innovate and use the best available renewable energy techniques. Moreover, there is better access to finance, especially in some countries, due to assistance from cooperative banks. Such banks provide special loans to cooperatives, which can be viewed as exemplifying the principle of cooperation between cooperatives (inter-cooperative cooperation).

Barriers should be noted not only in the field of establishing energy cooperatives but also other ones related to, for example, RES investments (e.g. the local plan excludes the construction of biogas plants), administrative and procedural difficulties, issues related to membership agreements, and rules for settling energy with cooperatives. In some countries, problems occur regarding how transmission networks function or the limited possibilities of financing investments. In the EU, the possibility of providing support for investing in and developing renewable energy sources (RES) results from its policy and state aid framework. However, it needs to be shown that in some parts of the world, there is still a lack of public acceptance or awareness of renewable energy. Therefore, educational activities are important. This should lead to a new idea of citizen participation in the REW transition and cooperatives can be part of this process.

As noted, energy cooperatives usually operate on the renewable energy market and therefore, in the midst of the global energy crisis triggered by Russia's invasion of Ukraine in February 2022, developing them is extremely important. Directive (EU) 2023/2413 of the European Parliament and of the Council of 18 October 2023 amending Directive (EU) 2018/2001, Regulation (EU) 2018/1999 and

[4] G. Beggio, K. Sigrid, *Renewable Energy Cooperatives: Main Features And Success Factors In Collectively Implementing Energy Transition,* Conference: The 3rd Virtual Multidisciplinary Conference.

Directive 98/70/EC as regards the promotion of energy from renewable sources, and repealing Council Directive (EU) 2015/65[5] states that: "The Union's climate neutrality objective requires a just energy transition which leaves no territory or citizen behind, an increase in energy efficiency and significantly higher shares of energy from renewable sources in an integrated energy system."

Energy security is one of the elements of national and global security. Ultimately, there is no doubt that providing energy to everyone is related to the state's obligation to guarantee human and civil rights, and to implement more freedoms in relation to renewable energy investments.[6] (*Aneta Suchoń*)

Finally, it is worth referring to current issues and the likely future of energy cooperatives, energy communities, and the energy market, according to the authors of the chapters. The role of energy communities in the current socio-economic environment will largely depend on the design of the legal environment for their operation. The EU-level regulatory trends and the energy transition programmes endorsed at the political level undoubtedly favour them. This strengthens the position of energy consumers by allowing their greater participation in the market while keeping their protections. Meanwhile, the obligations of natural monopolies that own the energy infrastructure to share the grid are being increased, and smaller power generation is being promoted. These and a number of other changes are leading to increased interest in decentralized forms of energy market participation.

However, the success of energy communities depends on their economic attractiveness and the clarity of the regulatory model provided for them. This is still hampered by several barriers. Among them, two main types can be distinguished: entry barriers and operational barriers. The former can be defined as all those restrictions that discourage the creation of an energy community and impose excessive requirements for participation, such as losing consumer status. The latter refer not to the stage of formation, but to the operation of the established community, such as the obligation to update the official registers kept by the public administration each time there is a change in personnel.

The register of barriers proposed in this publication can be a way to reduce some of the regulatory risks and thus increase the attractiveness of energy communities. It can also provide a positive developmental stimulus by increasing consumer confidence through showing what elements should be regulated with examples, as well as what clauses may be considered incompatible with national regulations, a tool that is commonly used in consumer protection. Improving the legal environment for the operation of energy communities is necessary, especially when considering the concept of energy justice, which promotes the recognition

[5] OJ L 2023/2413, 31.10.2023.

[6] J. Robel, Złożoność pojęcia „bezpieczeństwo energetyczne" i jego podstawy w Konstytucji RP, *Przegląd Prawa Konstytucyjnego*, 2015, no. 4(26), https://doi.org/10.15804/ppk.2015.04.07.

of different stakeholders of the energy sector, like prosumers and their groups, and the use of zero- and low-carbon dispersed energy sources. This opens up new opportunities for energy communities, but only just legislation can expand these possibilities. (*Piotr Mikusek and Maciej M. Sokołowski*)

EU Member States face a number of challenges in implementing the concept of energy markets with the significant participation of non-commercial energy communities. High expectations are placed on energy communities, since it is believed that such communities can organize collective and citizen-driven energy actions that help pave the way for a clean energy transition while moving citizens to the fore. It can be considered that the unprecedented military aggression against Ukraine by the Russian Federation on 24 February 2022 has strengthened the EU's expectations of energy communities. At that time, Europe became aware of the dangers of the European Union's dependence on Russian energy imports. In spite of numerous attempts to reduce EU energy dependency, the share of Russian gas in the EU gas consumption at the start of the war was still nearly 40%, and Russia was still the main supplier of EU imports of crude oils and coal. After the outbreak of the war, the Commission received appeals for the Member States to be pushed to finalize their national assessments of the potential of energy communities and barriers to their development, and to present action plans to boost renewables production and energy efficiency through self- consumption and renewable energy communitie. On 18 May 2022, the European Commission published The EU Solar Energy Strategy and called for the Member States to establish at least one renewable energy community (REC) per municipality above 10,000 residents by 2025. In 2022–2023 the European Union implemented three important projects that contribute to the dissemination of best practices and provide technical assistance for the development of concrete energy community initiatives across the EU: the Energy Communities Repository, the Rural Energy Community Advisory Hub, and the support service for Citizen-Led Renovation. So much has changed since I prepared the article published in this book, but the problems I raised are still relevant. The implementation of the adopted concept of energy communities in the common energy market will not be easy. (*Tomasz Długosz*)

The Russian war of aggression against Ukraine, which began on 24 February 2022, has changed the framework conditions for the energy transition in Germany. The discontinuation of imports of gas, oil and coal from Russia has necessitated significant changes. Added to this is the phase-out of nuclear energy, which took effect on 15 April 2023. On the one hand, all this increased the pressure to accelerate the expansion of renewable energies. On the other hand, coal-fired power generation was increased, and new and much more expensive energy sources were developed, for example, through the import of LNG and the development of an LNG-infrastructure with special ports and pipelines.

The German government and federal legislators have responded to this with various laws, especially in the so-called Easter Package 2022. These include the Wind-on-Land Act, which aims to facilitate the expansion of onshore wind energy, and amendments to the protection law, which adjusted nature conservation standards. These changes were facilitated by the EU Emergency Directive, among others.

All of this has a direct impact on energy cooperatives. The coalition agreement of the German government for the years 2021–2025 already provided for a strengthening of citizen energy, with an energy sharing model, risk hedging funds, as well as an exhaustion of the de-minimis regulations. Furthermore, a solar obligation is foreseen, with an obligation for owners to provide roofs with solar installations. Under the so-called Easter package, citizen energy projects can also be implemented without first having to participate in a tender. This is limited to wind projects up to 18 MW and solar projects up to 6 MW, due to the requirements of the European Commission's climate, environment and energy state aid guidelines. NGOs have also called for additional measures, for example prompt implementation of the EU's energy sharing directive or strengthening the local anchoring of wind energy projects and improving the participation of municipalities. Energy cooperatives are a key pillar of the energy transition. Their importance should be further strengthened. It is to be hoped that these findings and changes in the law will then also be reflected in practice. (*Felix Lindschau, Thomas Schomerus, Lars Holstenkamp and Christian Kriel*)

Cooperatives constitute a sui generis legal tool, in contrast to the mainstreaming concept of private financial initiative, which is based on individual ventures and liberal trade unions, such as the joint-stock company. It is necessary to underline the fact that the cooperative, a quite flexible form of organization which was adapted to any form of political regime and model of national economy, has evolved in various branches of law as well as fields of theoretical approach to the economy. It concerns a much or less autonomous category of legal person, being strictly related to the alternative model of social economy. First of all, it was created as a separate form of private company, without being imposed by the political authority on the masses, in its homeland, the UK.

In some countries, cooperation, improvised by the working class to deal with current socio-economic controversies, has gradually been developed into an ad hoc form of legal entity under private law, especially as a general type of company in the commercial law. Furthermore, shortly afterwards, cooperation began to gain ground in Constitutional Law, underlying the fact that Private Law, illustrated by Civil Law, is essentially the alter ego of Constitutional Law, particularly as far as civil fundamental rights, such as the right to association, are concerned: it is no coincidence that the civil rights of Constitutional Law and the general branch of Private Law, namely Civil Law, have the term "civil'' in common. Besides, co-

operativism was institutionalized as one of the third types of property, as is the case with the Egyptian Constitutions. As for the guarantee of energy, it is more recent as a fundamental right and is still in search of explicit recognition, at least at the constitutional level. This 3G right would deserve to be promoted through recognizing and guaranteeing the human rights to the Sun, including mainly (not exclusively) the right to solar energy and the right to Containing Climate Change (CCC). Furthermore, the two guarantees on the matter, the right to association (cooperatives) and the right to energy, have been merged into new rights, such as the right to energy communities. This guarantee is particularly pertinent in the context of the energy crisis being caused by the war of the Russian Federation against Ukraine, which began in late February 2022. The cooperative idea does not mean simply power through union but above all a peaceful, democratic approach to living conditions of the members of society, at both internal and international levels. (*Antonios Maniatis*)

Bulgaria's energy capacities at its disposal successfully balance the entire energy market of the Balkan region. In the context of the Green Pact, Bulgaria has committed to producing 42.6% of its energy by 2030 from renewable energy sources. Diversification of the entire energy sector is imminent, which is why urgent measures have been introduced in the country through the Energy Act to facilitate access to transmission networks and energy storage facilities and remove obstacles that prevent access to the energy market from renewable energy sources. An amendment to the Law on Energy from Renewable Sources is being prepared, which should suspend the procedure of the European Commission against the country for failure to fulfil obligations of EU law and the REPowerEU plan. On the other hand, BGN524.9 million from the Fund for Promoting the Technological and Ecological Transition of Agriculture and BGN23.9 million from the Farm to Fork Digitalization Fund should be invested in agriculture. Legislation is to be harmonized to ensure the existence of hybrid organizations engaged in producing products at the organizational-technological level in the specific implementation of the "renewable energy–food" link.

A significant role in harmonizing economic systems with the ambitious goals of the Green Transition can be played by the cooperative organizational form, which is widespread in Bulgarian agriculture and is a vital source of food and biomass. The research shows that cooperatives need more understanding and readiness for inclusion in these crucial societal processes. From the standpoint of preserving the public interest, it would be advisable for cooperatives to reorient their position from that of producers of raw materials (including biomass) to producers of products and service providers with high added value for society (including the provision of energy from renewable sources). The established facts indicate that it is necessary to develop and implement a targeted policy of measures and mechanisms to stimulate cooperatives' commitment to the critical pro-

cesses for producing renewable energy while preserving food security. Achieving this goal requires identifying the understanding that emphasis should be placed primarily on the agricultural rather than the energy sector. (*Minko Georgiev and Boryana Ivanova*)

Energy cooperatives essentially constitute a contemporary novelty, given that they were not endowed with their own, specific rules in the era of their emergence. As a result, they represent a new institution which was able to evolve into an emblematic legal tool of the current period. Energy co-ops constitute a mainstreaming trend of *ius commune Europeaum*, as is illustrated by the case of Greece. This state, which had to cope with a very serious socioeconomic crisis of sovereign debt, was led to adopt a pioneering law on the European Union scale, No. 4513/2018, before the adoption of the relevant rules at the supranational level. Thus, energy communities provide clear confirmation of the historical observation that cooperativism has been produced and promoted by serious existential crises, either of private individuals (cooperators) or of public entities, such as States (policymakers) and other public legal persons, especially local self-government organizations, which have been institutionalized as potential members of those entities. Besides, it is notable that the recognized term "energy communities'' instead of the conventional alternative "energy co-ops'' links the general movement of social economy, illustrated by cooperativism, with another social phenomenon of peaceful coexistence and alliance, namely syncretism. This is also evident from the fact that the non-governmental organization representing co-ops worldwide, the International Cooperative Alliance, is officially called an "Alliance''. So, the use of the expression "energy communities'' upgrades the ideological background of cooperativism, mainly for sensitive areas, such as insular ones, as is illustrated by Crete, which was the historical homeland of the phenomenon of syncretism.

Last but not least, the 4G right to energy communities is strictly related to the current context of priority being assigned to renewable energy, well exemplified by—but not limited to—solar energy. Although the World Health Organization ended the global emergency status for COVID-19 on 5 May 2023, this disease has not fully disappeared, whilst humanity has to cope with other very serious challenges, such as climate change, which has recently evolved into an authentic phenomenon of climate crisis, threatening the material and immaterial goods of people at both individual and collective levels. (*Antonios Maniatis*)

Even before the outbreak of the war in Ukraine, in Spain the cost of electricity bills had risen disproportionately since 1997. The liberalization of the energy sector became one of the main reasons for this, and as a consequence, the hitherto almost unknown concept of energy poverty emerged. The 24/2013 Act, of 26 December, on the Electricity Sector, on protection against vulnerability in the energy sector, strongly influenced by Directive (EU) 2009/72/EC of the European Parlia-

ment and of the Council, of 13 July 2009, concerning common rules for the internal market in electricity tried to create a system of protection against energy poverty.

Unfortunately, the measures taken have proved to be insufficient. For instance, different groups of vulnerable consumers have been recognized by the Electricity Sector Act, such as through the rights for households under social exclusion, but the settlement of La Cañada Real (sectors V and VI), near Madrid, has remained without electricity since October 2020, when the service was interrupted. Since then, 1,800 children have been living without electricity. A right to a minimum amount of energy should be recognized as a social fundamental right, but for the time being 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 Directive (EU) 2018/2001 of the European Parliament and of the Council, of 11 December, on the promotion of the use of energy from renewable sources, seem to be very interesting, as they allow the creation of local energy communities, and give Spanish consumers a possibility hitherto denied: to escape from the inelastic energy market.

The other solution for consumers is self-consumption, but if a vulnerable consumer has difficulties paying his electricity bill, it seems difficult for him to afford the cost of a self-consumption installation. That is why energy communities, which mainly take the legal form of energy cooperatives, should be the solution. Unfortunately, mistrust and legal uncertainty have meant that, by 2023, only in the Valencia area can the idea of energy cooperatives be said to have taken off. In the rest of Spain, the preferred solution is self-consumption, but as has been said, it is not accessible to households in vulnerable situations. (*Koldo Martín Sevillano*)

The Polish energy market has undergone significant changes in recent years. Disruptions to coal supplies caused by Russian aggression against Ukraine and the passing on to consumers of the costs of CO_2 emissions under the EU ETS have been the main reasons for the drastic increases in electricity prices in recent years. It should also be noted that the share of RES in energy production in the Polish electricity system is steadily increasing, notwithstanding the geopolitical situation. At the same time, operators responsible for the technical condition of the grid are not making the necessary investments to allow proper balancing of the electricity system. As a result, on days with very high energy production from weather-dependent RES sources, operators limit the supply from these installations, blocking energy off-take. In turn, the lack of production on days with unfavourable conditions drives up energy prices. All energy market participants—large-scale operators, farmers, small and medium-sized enterprises and household consumers—must cope with this new reality. Passivity on the part of energy consumers in the face of such dynamically changing conditions can only result in losses. While large-scale entities are able to carry out RES investments on their own, for consumers or smaller entrepreneurs the most sensible option seems to be to cooperate with the local community.

The energy cooperative is such a solution. The Polish legislator has chosen a unique model for the functioning of energy cooperatives. In the Polish model, the energy cooperative allows its members to reduce the costs of electricity, rather than generate profit. This circumstance, along with other factors described in chapter in question, has resulted in the rather moderate interest in establishing new energy cooperatives by communities in Poland. The development of energy cooperatives is significantly hindered by three main barriers: (1) complex, unclear legislation, (2) difficulties with obtaining external funding, and (3) difficulties with enforcing the obligation of energy companies to conclude relevant contracts. As a result of this legal framework, only eight energy cooperatives have so far been established in Poland.

However, the Polish legislator has provided energy cooperatives with an effective system of support, currently there are no rules that support obtaining a connection to the distribution network by those entities. It should be pointed out that at the beginning of May 2023 the draft amendment to the Polish RES Act, which includes changes to the regulation governing energy cooperatives, was submitted to the Polish parliament and the legislative process has been started. The draft includes important measures that are aimed at making life easier for emerging energy cooperatives—a guarantee to obtain connection conditions (in certain cases), a mitigation of legal requirements for starting up an economic activity and an assurance that energy companies will enter into agreements with energy cooperatives, allowing them to benefit from the support scheme. The current efforts of the Polish official authorities also target energy cooperatives' initiatives with a preferential system of incentives—mainly public financing programmes. The last factor is one of the main causes of the current increasing interest in energy cooperatives in Poland. (*Tomasz Marzec*)

The regulation of energy cooperatives is becoming increasingly important, particularly given the conflict in Ukraine and recent events involving the shutdown of renewable energy facilities due to over-generation during periods when demand is reduced. Diversification of the location of generation sources becomes particularly important in the event of armed conflicts and events involving excessive generation of weather-dependent sources. The answer to the above challenges is undoubtedly local energy communities, including energy cooperatives. Local electricity supply, without dependence on fossil fuel-producing countries, will be the most important challenge for European countries, including Poland, in the coming years.

Distributed energy allows problems with the electricity distribution system to be mitigated, which stands on the brink of success after the connection of significant renewable generation capacity. At present, the biggest challenge for investors in renewable energy sources is undoubtedly the ability to connect the proposed plant to the electricity grid. On the other hand, the dispersal of generation sources

will reduce the load on the grid in this regard and increase capacity opportunities for power generators.

Energy independence is one of the most important aspects that define local needs today. Energy cooperatives undoubtedly respond to local community needs and allow new business models to be built. When analysing the current state of regulation of energy cooperatives, it is necessary to evaluate the positive momentum that was implemented in 2019, but after almost four years it is necessary to introduce further regulations that will facilitate the formation and operation of energy cooperatives. The energy transformation of Europe, including Poland, cannot take place without an energy transformation at the lowest local level. Considering the principles of cooperation between energy cooperatives and energy companies, it is reasonable to demand an increase in the regulatory powers of energy cooperatives as a party with less organizational capacity, which may cause imbalances in the cooperation of these two entities. (*Piotr Kolasa*)

Energy security is one of the critical issues that most countries face today. Taiwan is no exception as it relies heavily on energy imports, which makes it vulnerable to geopolitical and political events around the world. Additionally, the country has a high demand for energy due to its growing economy and industrial development, which has led to air quality issues. To address these challenges, Taiwan has been pursuing an energy transition policy that focuses on reducing the country's dependence on fossil fuels and increasing the use of renewable energy sources (RES). One of the key initiatives in this transition is the promotion of energy cooperatives, particularly citizen energy cooperatives or public energy cooperatives. Taiwan is an island nation with a population of approximately 23 million people. Due to its geographical location and political status, it faces unique challenges related to energy security. Taiwan relies heavily on energy imports, primarily from the Middle East, which accounts for more than 90% of the country's total energy consumption. This reliance on energy imports not only exposes the country to price fluctuations but also raises concerns about energy security. Additionally, the political and economic situation in the world, particularly in the wake of the Russia-Ukraine conflict, has further highlighted the importance of energy security for Taiwan. Taiwan has also been grappling with air pollution issues in recent years. Its high energy consumption and reliance on fossil fuels have contributed significantly to the country's air quality problems. Moreover, Taiwan's energy consumption is among the highest in the world, and the country is facing increasing pressure to reduce its carbon footprint to address climate change.

Energy cooperatives, particularly citizen energy cooperatives, have emerged as a crucial initiative in Taiwan's energy transition policy. Citizen energy cooperatives are non-profit organizations that are established by local communities to produce and distribute renewable energy. They are an excellent way to involve citizens in the energy transition and promote community participation in sustain-

able energy production. One of the primary objectives of citizen energy cooperatives in Taiwan is to reduce the country's dependence on fossil fuels and promote the use of renewable energy. Citizen energy cooperatives are playing a significant role in promoting the use of solar energy, particularly through rooftop solar projects. These projects enable citizens to generate their electricity and sell any excess back to the grid, thus promoting energy independence and creating economic opportunities for citizens. Citizen energy cooperatives are also promoting the use of other renewable energy sources, such as wind power and hydroelectric power. Taiwan's energy cooperatives have made significant strides in promoting the use of renewable energy sources and reducing the country's dependence on fossil fuels. However, there are still challenges that need to be addressed to ensure the continued growth and success of these cooperatives.

One of the primary challenges facing energy cooperatives in Taiwan is regulatory hurdles. Energy cooperatives face a range of regulatory barriers, including lengthy approval processes and legal restrictions that limit their ability to expand and operate. Additionally, there is a lack of clarity about the roles and responsibilities of different stakeholders, which can lead to confusion and conflicts.

Another challenge facing energy cooperatives in Taiwan is the lack of financial resources. Energy cooperatives rely on investment and subsidies to fund their operations, and securing funding can be challenging, particularly for small cooperatives. As a result, many energy cooperatives struggle to secure the necessary financing to expand their operations and increase their impact. In the future, citizen energy cooperatives in Taiwan have the potential to play a critical role in the country's renewable energy transition, providing a grassroots solution to energy challenges and contributing to the growth of the renewable energy market. To achieve this potential, it is essential to continue to promote citizen participation and cooperation between citizens and the government, ensuring that citizen energy cooperatives have the necessary regulatory support and technical assistance to thrive. (*Hui-Tzu Huang*)

The role of cooperatives in the development process of the Brazilian electricity sector was quite restricted, although important for the development of regions where they are located. The current situation is that there is a potential abundance of energy resources but scarce financial resources for expansion of the generation and distribution network. From the National Agency of Electric Energy (Agência Nacional de Energia Elétrica—ANEEL) Normative Resolution No. 682 of 2015 onwards, the opportunity for energy cooperatives to move towards new audiences arose, especially including those interested in the distributed generation of photovoltaic energy. This is an opportunity for energy cooperatives. New initiatives are emerging in the country, but there are challenges for the development of energy cooperatives, such as: (a) the lack of knowledge about the modality; (b) the lack of a standard procedure for registering generating units in the Energy Distribu-

tion Concessionaires; and (c) the regulations of the General Cooperative Law on governance, financing and remuneration in enterprises. Furthermore, there are initiatives to (a) publicize energy cooperatives entities; (b) encourage dialogue between the enterprises and their leaders with other actors in the sector; and (c) creating complex corporate structures that combine cooperatives and companies to alleviate difficulties in accessing private self-financing for the construction of plants. (*Igor Loureiro de Matos*)

To sum up, it can be stated that in the coming years energy cooperatives, and more broadly cooperatives operating on the energy market, will contribute to the development of the energy market around the world, although to a different extent and under dissimilar legal conditions. The decentralization of energy sources will continue. There is no doubt that there will be development and new opportunities to obtain energy from renewable sources, including photovoltaic devices, wind turbines and biogas. Energy storage will develop. Energy cooperatives will have more opportunities than individuals. They can contribute to reducing energy poverty, stabilizing the income of cooperative members, and ensuring the sustainable development of economic activity. Energy communities, especially energy cooperatives, are part of the current socio-economic needs and challenges of the energy market. Cooperatives are familiar with local problems, which makes it easier to identify solutions. Operating on the energy market, they bring environmental, economic or social benefits. They contribute to development and the areas in which they are active are often rural, but in some countries there are also urban cooperatives.

It is also worth noting the existence of REScoop.eu, which is a federation of citizen groups and cooperatives for renewable energy in Europe. Established in 2011, it has created a support network and provides assistance to cooperatives and enables communication between cooperatives.[7] The issue of energy cooperatives will be the subject of further research, conferences and publications, and this will provide great opportunities to exchange views, expand scientific knowledge and improve practices. There is no doubt, however, that legal regulations regarding RES and energy cooperatives in many countries of the world should be changed in order to create more favourable conditions for their development and to boost the ability to compete on an equal footing with large energy companies. Renewable energy installations built by cooperatives as green energy devices have an impact on the reduction of carbon dioxide CO_2, because in this situation no emission energy is used. Ultimately, the development of new energy technologies, greater social awareness, climate change, the depletion of natural resources and the growing importance of renewable energy will accelerate the global energy transition. (*Aneta Suchoń*)

[7] About our federation, https://www.rescoop.eu/about-us [accessed 1.06.2023].

Appendix

THE INTERNATIONAL COOPERATIVE ALLIANCE

Santosh Kumar

Director of Legislation, International Cooperative Alliance, Global Office in Brussels where he provides comparative analyses of cooperative laws and legal services to member organizations. He advocates to assert the distinctness of cooperatives through legislation, regulation and public policy, and supports the work of the ICA Cooperative Law Committee.

The International Cooperative Alliance (ICA) unites, represents and serves cooperatives worldwide. Founded in 1895, it is one of the oldest non-governmental organizations and one of the largest ones measured by the number of people represented: 1 billion cooperative members on the planet. It is the apex body representing cooperatives, which are estimated to be around 3 million worldwide, providing a global voice and forum for knowledge, expertise and co-ordinated action for and about cooperatives.[1]

For decades, the International Cooperative Alliance has expressed its deep commitment to the sustainable development of communities. Since 1995, this commitment has been articulated in the 7th Cooperative Principle of Community Concern. This principle was developed after nearly a decade of global consultation on sustainable development and was added to the list of cooperative principles in the wake of the 1992 Rio Summit.

The pioneering cooperative organization in the field of community-led sustainable energy efforts is REScoop in Europe. Also, an emblematic case of the rapid adoption of renewable energy cooperatives within the ICA network is that led by the National Rural Electric Cooperatives Association, which more than tripled its renewable energy capacity between 2010 and 2021. NRECA has been a strong

[1] Information based on ICA's resources, https://ica.coop/ [accessed 30.09.2023].

advocate for policies that promote the responsible development of cost-effective renewable energy. In July 2023, NRECA encouraged its member electric cooperatives to take advantage of USD11 billion in federal funding to help utilities build or purchase clean energy.

ICA develops a wide range of digital tools and resources on international cooperative development. Most recently, ICA has expressed its commitment to renewable energy cooperatives through a global thematic research publication entitled Cooperation for the transition to a green economy. Additionally, ICA has also coproduced a film on renewable energy cooperatives in Costa Rica. ICA supports also local initiatives. As part of a replication project, the ICA Youth Committee supported the formation of two renewable energy cooperatives through seed funding and mentorship. These initiatives were undertaken in Brazil and Zimbabwe.

Among its many roles, ICA works to position cooperatives at the highest levels of policy discussions around the world. The recently published Secretary-General's report on progress towards the Sustainable Development Goals (SDGs): Towards a Rescue Plan for People and Planet, lists as one of its priority actions mobilising finance to support the Energy Compacts, and calling on multilateral development banks, development finance institutions and bilateral agencies to play their part in taking more risk and developing/re-purposing financial instruments to lower the cost of capital for renewable technologies. This can help expand cooperative models on renewable energy transition, such as the Just Energy Transition Partnerships. ICA is committed to advancing the contribution of cooperatives to the SDGs. The 33rd World Cooperative Congress on Deepening our Cooperative Identity was hosted by Seoul, South Korea in December 2021. One of the key parallel sessions focused on housing and energy cooperatives, and featured a number of strong initiatives.

The United Nations General Assembly has adopted a new resolution on cooperatives in social development calling for the proclamation of 2025 as an International Year of Cooperatives. The initiative comes after the success of the first International Year of Cooperatives in 2012, which highly contributed to raise awareness of the important role of cooperatives in promoting sustainable development. This resolution encourages all member states, as well as the United Nations and all other relevant stakeholders, to take advantage of the International Year of Cooperatives as a way of promoting cooperatives and raising awareness of their contribution to the implementation of the Sustainable Development Goals and to overall social and economic development. The activity of energy cooperatives is specially in line with the 7th SDG: "Ensure access to affordable, reliable, sustainable and modern energy for all."[2]

[2] Information based on ICA's resources, https://ica.coop/ [accessed 30.09.2023].

Appendix

REScoop.eu, the European federation of citizen energy cooperatives

(REScoop.eu was legally set up in 2013 as a Belgian not-for-profit association and operate just like a cooperative)

THE ENERGY TRANSITION TO ENERGY DEMOCRACY IN EUROPE

Dirk Vansintjan

President of REScoop.eu, the European federation of citizen energy cooperatives

The electrification of Europe started at the end of the nineteenth century. By the late 1930s in most parts of Europe there was access to electricity. In the densely populated cities and industrialized areas where households, SMEs and large companies were keen on having efficient and clean lights private investors saw a profitable business case and invested in production installations and in the distribution grid. But in rural areas and small cities often the local authorities, SMEs, or the citizens themselves grouped collectively in a cooperative had to act to get electricity. In Germany, for example, this led to the foundation of more than 6,000 electricity distribution cooperatives by the mid-1930s. Only 44 of them survived the centralization of the energy sector under Nazism, communism and neo-liberalism. Also in Italy, Spain and Portugal century old energy cooperatives are still in existence.

Cooperatives are a reaction of people to a problem. This was not only the case a century ago during the electrification of Europe when the rural areas were left behind, but since then we have seen several new waves of people founding energy

cooperatives. The second wave came as a reaction to the oil crisis of 1973, and others followed the nuclear disasters in Three Mile Island (USA, 1979), Chernobyl (UA, 1986) and Fukushima (JA, 2011) that ended the naïve wide-spread belief that nuclear energy would be the future of our clean energy supply—too cheap to measure.

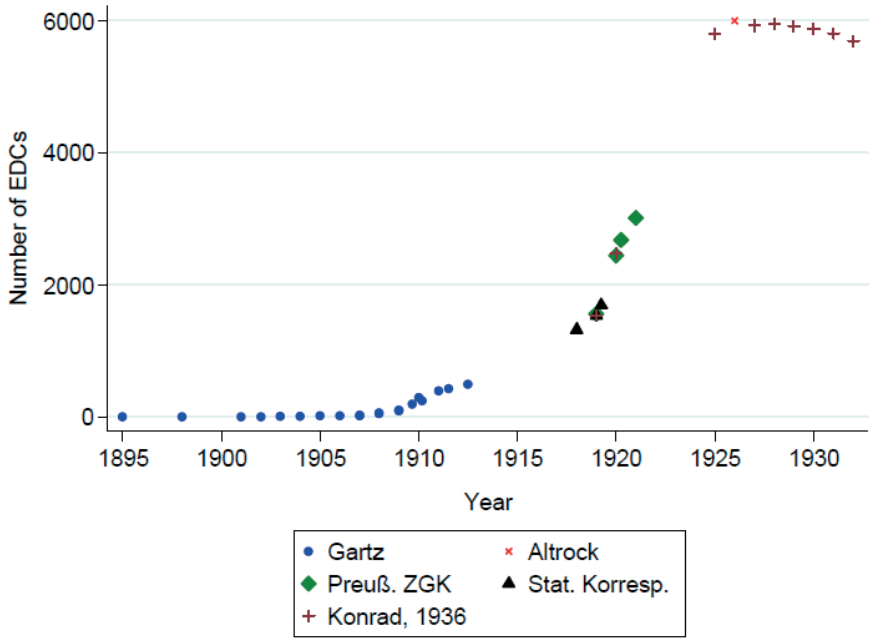

Fig. 1 Numbers of electricity distribution cooperatives (EDCs) in Germany until 1934

Source: L. Holstenkamp, The rise and fall of electricity distribution cooperatives in Germany (September 1, 2015), based on a paper presented at the Conference on Cooperative Systems, Bolzano, 9 November 2012.

In Europe we estimate that now in 2023 there are more than 4,500 bottom-up initiatives of citizens together with other local actors, who are taking an active role in the energy transition from fossil and nuclear to renewable, from centralized to decentralized, from (state) monopolies to community ownership.

From 2008 onwards citizen energy cooperatives across Europe started having regular contacts and this resulted in REScoop 20-20-20, a project funded by the European Commission. One of the side effects of this Intelligent Energy Europe project was the foundation of the European federation of citizen energy cooperatives: REScoop.eu in 2013.

When the European Commission launched the revision of EU directives on energy in 2015, REScoop.eu was consulted as one of the stakeholders. The need for a definition for its members—citizen-led bottom-up, not for profit initiatives—

was eventually shared by the European Commission, most fractions in the European parliament and eventually also the European Council.

In fact, we had two definitions: the first is of a Renewable Energy Community (REC) in the Renewable Energy Directive (REDII), and the second of a Citizen Energy Community (CEC) in the Internal Electricity Market Directive (IEMD). Unfortunately, these are not aligned completely. Now member states think this was intentional, but it was, in fact, accidental, because different people in DG Energy, in the European Parliament and in the Council had been working on these definitions. Moreover, although the recitals I to both directives leave no doubt about the fact that it concerns legal entities with citizens in the driver's seat, the unfortunate phrasing that 'citizens, local authorities and SMEs/any company' can be members of an REC or a CEC, respectively, means this legally allows a Citizen Energy Community to be set up without citizens.

Indeed, at the member state level, we see this happen. Maybe in a subsequent revision of these directives our EU legislators might amend this by creating also proper definitions for the public authorities and commercial enterprises. In that way, RECs and CECs will be preserved for bottom-up initiatives of citizens, eventually together with their local authority and local SMEs.

REScoop.eu was legally set up in 2013 as a Belgian not-for-profit association. We operate just like a cooperative. People working for REScoop.eu have different nationalities and backgrounds. The Coordinator takes charge of the daily operations of the association and reports to the Board of Directors. Our Board of Directors is elected by the General Assembly for a 4-year term. Members are eligible for re-election.[1]

Through REScoop.eu, energy cooperatives make their voices heard in the European energy debate. REScoop.eu empowers citizens and cooperatives and wants to achieve energy democracy. REScoop.eu is the European federation of citizen energy cooperatives. We are a growing network of 2,250 cooperatives operating across Europe and jointly represent over 1.50 million citizens.[2]

REScoop.eu empowers citizens and cooperatives and wants to achieve energy democracy.

Our federation REScoop.eu has four well-defined objectives:

1. We represent the voice of citizens and energy cooperatives to European policy makers.
2. We support starting and already established energy cooperatives and provide them with tools and contacts to help them grow and prosper.
3. We facilitate international exchanges and cooperation between energy cooperatives.
4. We promote the cooperative business model in the energy sector.

[1] Information based on REScoop.eu's resources, https://www.rescoop.eu [accessed 1.09.2023].

[2] Information based on REScoop.eu's resources, https://www.rescoop.eu [accessed 1.09.2023].

It also became a new sector organization of Cooperatives Europe, the European branch of the ICA, the International Cooperative Alliance.

REScoop.eu teams up with a broad range of partners in order to strengthen our vision and increase our impact, for example European Commission, Cooperatives Europe Community Power Coalition, The Coalition of Energy Savings, Decarb Europe, Right to Energy Coalition, REScoop MECISE, Energy Cities, and Climate Alliance.

REScoop.eu is a sector federation of Cooperatives Europe, the European branch of the International Cooperative Alliance.

REScoops and municipalities are natural allies. Both serve the same stakeholder: the citizens. REScoop.eu has been working together with municipalities in the implementation of the LICHT approach, which constitutes building trust between local authorities and their citizens.

REScoop.eu works on a number of different EU-funded projects, covering a broad range of themes, to find solutions for the energy transition to energy democracy together with partner organizations: LIFE ACCE, SCCALE 203050, LIFE LOOP. The full list of REScoop.eu projects is available on our website.

STOWARZYSZENIE NA RZECZ EFEKTYWNOŚCI IM. PROF. KRZYSZTOFA ŻMIJEWSKIEGO

Prof. Zmijewski Association for Efficiency, Warsaw, Poland

Rafał Czaja

President of Prof. Zmijewski Association for Efficiency, Warsaw, Poland, Member of the team working out the key assumptions of the first Energy Efficiency Act of 15 April 2011, and co-author of the comments to the subsequent amendments to the energy efficiency regulations (of 20 May 2016 and 20 April 2021). Within the Association, he also cooperates with the administration in the areas of promotion and development of local energy markets and energy communities in Poland.

The Association for Efficiency was established in 2006 by Krzysztof Żmijewski, a Professor of Warsaw University of Technology, as a response to the upcoming challenges in the field of sustainable development, especially in the context of Poland's accession to the European Union. Since its foundation, the organization has been led by Rafał Czaja with the advisory support of the Program Council—a team of leading experts in the field of sustainable development. From the beginning of its activity until 2015, the Chairman of the Program Council of the Association was Prof. Krzysztof Żmijewski.

Krzysztof Żmijewski (born in 1949 in Warsaw, died in 2015), was one of the pioneers and main initiators of the development of civic energy in Poland and co-author of regulations on improving energy efficiency in Poland. He was a visionary, an academic teacher but also a practitioner—Deputy Minister of Construction, President of the Management Board of Polskie Sieci Elektroenergetyczne SA, President of the Management Board of KAPE SA, Vice-President of the Management Board of Polskomtel SA.

The aim of the Association is, among others, to undertake actions to increase the efficiency and competitiveness of the Polish economy, in particular by promoting the use of high-performance labour resources, materials, energy and the environment, taking into account the principles of sustainable development.

In July 2018, the Board and members of the Association decided to honour the outstanding activity of the late Professor Żmijewski in the area of promoting modern and effective economy, by adopting the name of the Professor Krzysztof Żmijewski Association. Since 2018, the organization has been functioning as the Prof. Zmijewski Association for Efficiency.

From the beginning of its activity, the Association has been creating a platform for expert meetings, by hosting debates, workshops and conferences in the field of sustainable development with the participation of decision-makers, market leaders and academics (e.g. Areopag of Renewable Energy, Energy Transformation Forum, Power Ring, NEUF).

Prof. Zmijewski Association for Efficiency is also a promoter of the development of distributed energy, including energy cooperatives. Inspired by the team of Prof. Żmijewski and the President of the Association Rafał Czaja, in 2014 the Association in cooperation with the Ministry of Agriculture and the Embassy of Germany organized the first study trip in Poland for local government officials, energy specialists and specialists from the Ministry of Agriculture to Germany in order to better understand the essence of the then dynamically developing energy cooperatives (there were approximately 500). The direct effect of the study visit to Germany was an attempt to introduce the energy cooperative formula not only into the legal order in Poland but also into the rural development policy.

The legacy of this visit is the fact that the Ministry of Agriculture and Rural Development is still the main advocate and driving force of energy cooperatives in Poland, as a partnership undertaking that involves state administration, local governments, non-governmental organizations, RES enthusiasts, universities and energy companies in joint activities. Back in 2015 the term "energy cooperative" was developed with the involvement of the Association, and eventually the term "energy cooperative" was introduced into the RES legislation. In the following years, detailed regulations and further legal changes introduced a number of facilitations and incentives for the development of cooperatives.

In 2022, under an agreement with the National Support Centre for Agriculture, the Association conducted a series of 16 training sessions on the establishment and operation of energy cooperatives for each voivodship under the patronage of the Minister of Agriculture and Rural Development. Continuing its commitment to rural development, in January 2020 the Association created an educational project www.energiadlawsi.pl, which aims to promote modern models of rural development, new methods of technology in the use of Agriculture 4.0, renewable energy sources by Polish farmers and also to improve standarts of living in rural areas.[1]

[1] More information available on: https://stowarzyszenie-zmijewski.pl/ [accessed 1.09.2023].

ZWIĄZEK STOWARZYSZEŃ POLSKA ZIELONA SIEĆ

Alliance of Associations Polish Green Network, Warsaw, Poland

Joanna Furmaga

President of Alliance of Associations Polish Green Network, Warsaw, Poland, Co-founder and leader of both the Union of Associations Polish Green Network and the social movement for community energy "More than Energy" ("Więcej niż energia"). Member of the Monitoring Committee of the European Funds for Infrastructure, Climate and Environment (FEnIKS) programme and the National Reconstruction Plan (KPO). She is involved in advocating for a just transition of coal regions, programming and monitoring EU funds to fight the climate crisis and promoting energy communities and cooperatives.

The Alliance of Associations Polish Green Network (PGN) is a nationwide non-governmental organization with the status of a public benefit organization, working for sustainable development, environment and climate policy. With our over 25 years of history, we are one of the longest-running Polish non-governmental organizations in the field of climate and environmental protection. During this long period, we have conducted countless campaigns and projects concerning energy policy, nature protection, ecological education, responsible trade and consumption, and sustainable development in Europe and in the countries of the Global South.

In 2015, the PGN co-created the "More than Energy" (MTE) campaign, which it has also been coordinating since then. The MTE campaign was created to promote and develop dispersed and civic energy in Poland. After we managed to develop the market of individual prosumers, we started promoting community energy, with particular emphasis on energy cooperatives. We were one of the first organizations that saw the potential of community power and took action for its

benefit. Activities in this area have been intensified especially following the European Union adoption of the Renewable Energy Directive in 2018 (the RED II). This has become the basis for us to apply for the introduction of comprehensive national regulations for community energy.

Our activities included advocacy for good and transparent legislation, educating citizens about the opportunities offered by community energy, informing local governments and encouraging them to initiate such activities in their area, and finally, striving for the EU funds in the new financial perspective (2021–2027) provided for extensive support for cooperative energy. Many of our aims have been achieved, but we continue our efforts for Poland's energy transformation towards a distributed, democratic, green and cheap energy.

This publication comprehensively discusses the issues that we have studied and analysed in our MTE campaign in recent years. We hope that it will not only provide you with knowledge, but also convince you to support and join the creation of your local energy communities.[1]

[1] More information available on: https://zielonasiec.pl/ [accessed 1.09.2023].

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The volume *Energy Cooperatives in Selected Countries of the World: Legal and Economic Aspects*, published by Adam Mickiewicz University in Poznań, Poland represents an important step towards a better understanding of the role cooperatives play in addressing global challenges related to energy production and distribution. Once again, the cooperative model—combining economic as well as social goals of its members and based on recognized cooperative principles and values—proves its adaptability and usefulness in diverse corners of the world.

The Overseas Cooperative Development Council / The International Cooperative Research Group (OCDC/ICRG) Washington, DC, USA (from the Foreword)

The book presents both the theoretical and practical aspects of the development of energy cooperatives, cooperatives active in the renewable energy sources (RES) market, and citizen energy communities. Democratic governance of these entities and decentralization of the energy industry are essential elements of the global transition in this industry, which aims to develop RES, reduce greenhouse gas emissions and combat climate change along with its effects. The activities of energy cooperatives provide financial benefits for individual members, promote economic development and environmental protection on the local level, and contribute to improving energy security. This publication not only analyses the general provisions of cooperative law, the various types of cooperatives and civil energy communities, but also energy law, registries, and the permits and contracts entered into by these entities. The authors, who represent Brazil, Bulgaria, Germany, Greece, Poland, Spain and Taiwan, also address the issues of financial support for the implementation of RES investments from public funds, including those from the European Union, and tax preferences, in addition to pointing out barriers to the development of energy cooperatives and civic energy communities. The publication is a valuable source of information and can also inspire further research or changes in legal regulations.

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