LEGAL FRAMEWORKS ENABLING NOT FOR PROFIT AND DECENTRALISED RENEWABLE ENERGY COMMUNITIES. CASES FROM THE EU & ECOWAS

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Abstract

The article explores the energy transition in the EU and Africa. It deepens the research hypothesis of whether a commons-based approach can be an effective strategy to ensure energy justice and energy poverty. This article therefore aims to explore the potential of community-led energy initiatives, such as energy communities. It then focuses on the European Union and ECOWAS, to open a vision of the North and South of the world, analyzing their energy policies and deepening through an empirical analysis three case studies as virtuous examples of not profit renewable energy production at the local level: Middelgrunden Offshore Windmill Cooperative, in Denmark, Melpignano Cooperative, in Italy and Bboxx Energy, in Togo.

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1. Introduction

There has been a remarkable proliferation of contemporary studies devoted to the socio-economic implications arising from legislation and policies on the climate and energy transition. This growing body of writing is visible in academic fields of policy and law, as well as in activism and civil society. The debate focuses on energy poverty, democracy, and energy justice.

For an equitable energy system, the literature argues that climate and energy transition policies must incorporate concerns of equity and justice. In line with this view, recent and ambitious clean-energy and climate policy objectives promote collaboration within local communities and the spread of collaborative governance schemes at the city level. In recent years, examples have emerged of self-organization within local communities—often enabled by urban public policies—to produce renewable energy or build energy-security infrastructure. These fall under the category of community energy, or energy communities.

This article conducts an exploratory analysis of European and ECOWAS clean-energy policies to offer a reflection comparing how the two supranational organizations address energy poverty and ensure equity and justice. It also seeks to clarify the issues that arise concerning decentralization and local energy generation.

2. Energy Poverty

Energy poverty is broadly defined as the inability of one household to afford a basic basket of energy services. Cooking warm meals, heating, and cooling one's home are all parts of a basic basket of energy services. Another, widely accepted, feature of it is when a household is able to afford the cost of their energy needs, only by way of sacrificing a - socially unacceptable - portion of their income. This portion of income would otherwise be used to purchase goods and services that are fundamental for human dignity or for the protection of the elderly and children, such as housing, food, or health care. This condition is sometimes defined as energy vulnerability[1], 'fuel poverty[2]', 'energy deprivation', 'consumer vulnerability'. These terms are often used interchangeably.

Advocacy and scholarly concern for the problem of affordability of energy services first emerged in the late seventies in the United Kingdom[3]. Labelled as fuel poverty, the problem was the affordability of heating during winter. The problem was so dramatic that led to the phenomena of 'excess winter deaths'[4].

Around early 2000, the term energy poverty, referring to the availability and affordability of basic energy services, emerged as a policy and scholarly concern also the global governance literature, focused on issues affecting developing economies' countries[5].

In the broader European policy arena, the issue of energy

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[1] K. Bickerstaff, G. Walker & E.H. Bulkeley, *Introduction: making sense of energy justice section,* in K. Bickerstaff, G. Walker & E.H. Bulkeley, *Energy Justice in a Changing Climate (*2013).

[2] B. Boardman, *Fixing Fuel Poverty: Challenges and Solutions* (2010).

[3] B. Boardman, *Fuel Poverty: From Cold Homes to Affordable Warmth* (1991).

[4] J. Hills, *Fuel Poverty: The Problem and Its Measurement* (2011).

[5] K. Li, B. Lloyd, X.J. Liang & Y.M. Wei, *Energy Poor or Fuel Poor: What Are the Differences?*, Energy Policy, 476 (2014).

poverty as a social policy problem was first addressed by EU secondary law in 2009, as we will see later in this paper. Today, the issue is embedded into the broader EU policy landscape of climate change mitigation and adaptation.

Why is energy poverty a distinct problem[6] and not merely a feature of poverty. The lack of access to energy sources and services, especially clean, renewable ones, infringe on human, social, and economic rights such as the right to life, food, health, and education. Furthermore, energy poverty has implications on a person's human, social and economic rights. Cooking with polluting fuels like charcoal, coal, crop waste, dung, and kerosene in lieu of electricity, gas, and other sources produces serious health consequences, such as pulmonary diseases. Lack of access to energy means a lack of access to lighting, tools for purifying water, to mechanical power for transportation and agriculture[7]. Deprivation of basic energy services damages physical health. It hampers children's development and mental health, by contributing to one's social isolation. This lack of access can be due to unavailability or unaffordability of energy. In developing economies, vulnerable communities are affected by infrastructure coverage problems and unequal access to energy sources, although scholars urge caution when generalizing and suggesting a relative and contextualized understanding of energy poverty.[8] In developed economies, energy poverty has to do with affordability of energy itself and of related technologies such as heating and cooling appliances (eg. cost of an Air Conditioning Unit). Energy efficiency technologies (for example smart homes technologies) can lower the impact of energy use on electricity bills; however, they are expensive in and of itself.

Energy poverty has a cumulative impact. Low-income households whose home is also not energy efficient consume more energy - to meet the same needs - compared to someone who lives in an energy-efficient home. This is a hidden problem of energy policy, as those who do not have access to energy-efficient homes will end up using more of their income to pay for energy. The same household will struggle to afford the cost of the interventions needed to achieve greater energy efficiency. Therefore, even if

[6] J. Hills, *Fuel Poverty: The Problem and Its Measurement* (2011).
[7] L.D. Guruswamy, *Global energy justice: law and policy* (2016).
[8] S.A. Sy & L. Mokaddem, *Energy poverty in developing countries: A review of the concept and its measurements*, Ener. Res. & Soc. Sc., 89 (2022).

interventions in the house could lower the cost of energy bills, the affordability of such interventions makes it impossible to access the benefits of energy efficiency technologies.

According to recent estimates by the International Energy Agency, "Some 75 million people who have only recently gained access to electricity are at risk of losing the ability to pay for it and 100 million people could return to using traditional biomass for cooking." Globally, about 5 billion people live in areas with significant space cooling needs, but only a third of households, mostly concentrated in advanced economies, have access to an air conditioner.[9]

Vulnerable low-income households that are unable to afford the amount of energy needed to meet their heating and cooling needs are inflicted with health damage, including cardiovascular and respiratory diseases, mold-related illnesses, mental and psychological health, due to social isolation and the development of depression. Being exposed to unhealthy temperatures for long periods also contributes to chronic diseases that affect children's development[10].

The consequences of energy vulnerability and poverty are uneven. Regional differences in affordability of energy services are significantly high[11]. Differences in access deficit between urban and rural areas are also significant[12]

Although there is no standard measurement for energy poverty, several indicators for energy poverty are available: Low Income High Cost (LIHC) which refer to a high level of energy expenditure combined with an income below the poverty line; high share of energy expenditure in relation to income (percentage of the population whose share of income devoted to energy expenditure is more than twice the national median, low absolute energy expenditure, percentage of the population whose energy expenditure is less than half the national median value; energy expenses, income quintile; high level of energy expenditure; extent

[9] *World Energy Outlook 2022*, IEA (2022). https://www.iea.org/reports/world-energy-outlook-2022.
[10] K. Fabbri & J. Gaspari, *Mapping the energy poverty: A case study based on the energy performance certificates in the city of Bologna*, Ener. and Build., 234, 2 (2021).
[11] *Tracking SDG 7: The Energy Progress Report*, 6 (2022).
https://trackingsdg7.esmap.org/downloads.
[12] *Tracking SDG 7: The Energy Progress Report*, cit. at 11, 7.

of share of energy expenditure in income, for the population in the first income quintile[13]. Energy poverty affects an estimated 1.3 billion people worldwide, particularly in developing countries and marginalized communities. Globally, one in five people do not have electricity to meet basic needs such as cooking, lighting and heating their home[14]. This problem is characterized by a lack of access to affordable, reliable and sustainable energy sources, resulting in a significant impact on the quality of life, health and economic opportunities of affected individuals and communities. Energy poverty is a critical aspect of energy injustice that requires immediate attention and decisive action. In the context of energy poverty, renewable energies linked to projects involving local communities are the main tools for redesigning the face of energy both in the north and south of the world[15].

Energy communities and other kinds of community-led initiatives provide some relief to energy poverty problems. These initiatives enable local communities to take control of their energy needs and resources, promoting energy autonomy, sustainability and social justice, ensuring access to energy even for the most vulnerable communities who bear the brunt of energy sector challenges.

3. Research Hypotheses and Methodology

Energy poverty is often associated with a combination of factors, including insufficient income, high energy prices, low energy efficiency of homes, or costly infrastructure for heating or cooling. This situation worsens due to population growth and climate-related impacts requiring more warming in winter and cooling in summer[16]. While the energy transition makes tackling the fight against climate change possible, it can also risk negatively impacting energy

[13] A. Fiorini, *Contrastare la povertà energetica per una transizione inclusiva ed equa*, Ener., Amb. e Innov., 2, 72 (2022).
[14] M. Bongioanni, *Energy poverty, what it consists of and what can be done to combat it*, LifeGate (2023).
[15] P.K. Adom, F. Amuakwa-Mensah, M.P. Agradi & A. Nsabimana, *Energy poverty, development outcomes, and transition to green energy,* Renewable Energy, 178, 1337-1352 (2021).
[16] S.A. Churchill, R. Smyth & T. Trinh, *Energy poverty, temperature and climate change*, Energy Economics, 114 (2022).

poverty. On one hand, the increase in upfront energy costs and the installation of sustainable energy technologies such as solar panels, wind farms or more efficient heating systems may require significant upfront investments. Low-income households may be unable to cover these upfront costs and, therefore, remain excluded from access to the most efficient technologies. On the other hand, as energy costs rise, it may be necessary to invest in more advanced or sustainable electricity grid infrastructure or charge higher tariffs to finance renewable energy production. These cost increases could disproportionately affect low-income households, increasing their energy poverty.

Another impact could be to generate unemployment in the fossil fuel sector: the energy transition often leads to a decrease in dependence on fossil fuels, which can harm communities that are economically dependent on these industries. Job losses in fossil fuel-related sectors can, therefore, increase poverty in affected areas[17]. To mitigate these negative impacts, it is hence essential to embrace, on the one hand, the issue of energy justice and that of energy democracy. In particular, the idea that energy and democracy go hand in hand has become much more popular since 2010. The emergence of energy democracy is linked to the increased uptake of widespread and small-scale renewable energy sources. Energy democracy refers to increased community involvement in resource governance and energy policy[18]. Energy justice assesses where injustices emerge, which layers of society are ignored, and what processes exist to reveal and reduce those injustices[19].

In this context of energy poverty, renewable energy linked to projects involving local communities is the primary tool for redesigning the face of energy systems to combat energy poverty. This paper explores whether community-based energy solutions that draw in particular on the theories of Elinor Ostrom, Sheila Foster, and Christian Iaione can serve as a viable response to these two challenges.

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[17] D. Streimikiene & G.L. Kyriakopoulos, *Energy poverty and low-carbon energy transition*, Energies, 16, 610 (2023).

[18]M. Wahlund & J. Palm, *The Role of Energy Democracy and Energy Citizenship for Participatory Energy Transitions: A Comprehensive Review*, Ener. Res. and Soc. Sc., 87 (2022).

[19] K. Jenkins, D. McCauley, R. Heffron, H. Stephan & R. Rehner, *Energy Justice: A Conceptual Review*, Ener. Res. and Soc. Sc., 11, 174-182 (2016).

Ostrom studied the concept of polycentricity of scarce resources, delving into the dynamics of the management of common resources, i.e. common goods, such as water resources, focusing on local communities and decentralized forms of governance[20]. Ostrom stressed the importance of a polycentric perspective to address the challenges related to the management of common resources, promoting collective action, co-ownership, and co-management of these resources[21]. Ostrom explains that in most cases, it is more efficient for users to co-manage resources rather than have government policies that do so, which often accelerate resource depletion. It has shown that common resources can be managed effectively through self-organization through cooperatives or user associations rather than centralized regulation[22]. To achieve a sustainable socio-ecological system, Ostrom identifies several principles and factors that contribute to the success of polycentric management of common resources, including the presence of clear and community-accepted rules, the participation and engagement of community members in decision-making, the monitoring and enforcement of regulations by the community itself, and the presence of local and effective conflict resolution mechanisms[23]. Iaione and Foster then applied commons co-governance to urban areas to understand how to make cities collaborative and centers of innovation[24]. Analyzing more than 500 case studies in 150 cities, they developed the Co-City Protocol, an index based on five design principles that create the conditions necessary to rethink the city as a common good. The five principles are the enabling state, social and economic pooling, urban experimentalism, technological justice, and the quintuple helix[25]. The enabling state refers to the role of public authorities as enabling platforms for cooperation with other urban actors. Social and economic pooling is aimed at

[20] E. Ostrom, *Beyond markets and states: polycentric governance of complex economic systems* (2009).
[21] E. Ostrom & C. Hess, *Understanding Knowledge Common* (2010)
[22] P.K. Andersson & E. Ostrom, *Analyzing decentralized resource regimes from a polycentric perspective,* Policy sciences, 41, 71-93 (2008).
[23] M.D Mcginnis & E. Ostrom, *Social-ecological system framework: initial changes and continuing challenges*, Ecology & Soc'y, 19.2 (2014).
[24] S.R. Foster & C. Iaione, *Co-cities: Innovative transitions toward just and self-sustaining communities* (2022).
[25] C. Iaione, *The CO-City: Sharing, collaborating, cooperating, and commoning in the city*, Amer. Jour. of Econ. and Soc., 75.2, 415-455 (2016).

including non-profit organizations, cooperatives, voluntary associations, and other forms of social enterprise to produce goods and services to bring social benefits rather than profits, based on principles of solidarity, cooperation, and community participation. It involves sharing resources among community members to promote more efficient use of resources.

Urban experimentalism is the approach taken to urban processes in this model. Technological justice enables the community's access to technology and digital infrastructure, which is sometimes managed by the community to develop neighborhood services. Finally, the quintuple helix characterizes the process of co-governance in the management of a common good that must be based on the interaction between the five urban actors (so-called five helixes): civic actor (innovative communities and active citizens), social actor (third sector organizations); cognitive actor (cultural institutions, schools, and universities); public actor (public institutions); private actor (responsible companies and industries that rely on local vocations)[26]. Therefore, using the principles of the Co-city Protocol allows the experimentation and implementation of social, environmental, and technological innovation projects. Such theories demonstrate that the commons could provide a framework for building a holistic and sustainable alternative to the current socio-economic configuration that permeates virtually all aspects of human activity, i.e., profit-maximizing market relations. The research hypothesis aims, therefore, to understand how energy communities based on the production of energy from renewable sources such as solar and wind, which apply the theories described above, are the solution to address energy poverty and injustice.

This paper focuses on two exemplary regulatory frameworks of "not for profit production" of renewable energy in Europe and West Africa (ECOWAS). The EU and ECOWAS were selected because they are two regional political and economic organizations with some common characteristics albeit completely different political and legal system. The EU, founded by the Treaty of Rome

[26] S. Foster & C. Iaione, *Ostrom in the City*, in B. Hudson, J. Rosenbloom & D. Cole, Routledge Hand. on the study of the comm. (2019); E. De Nictolis & C. Iaione, *The City as a Commons Reloaded: from the Urban Commons to Co-Cities Empirical Evidence on the Bologna Regulation*, Cambridge Hand. of Comm. Res. Innov. (2021).

in 1957[27], is a supranational economic and political union[28] (until 1993, called the European Economic Community) among its twenty-seven member states[29]. ECOWAS, established by the 1975 Treaty of Lagos, is a regional political and economic union of fifteen countries in West Africa, one of the main regional blocs of the Continental African Economic Community (ERM).[30] Three case studies concerning community energy initiatives were selected to understand and compare these two areas contextually. One case from Northern Europe, Middelgrunden Offshore Windmill Cooperative, in Denmark; one from Southern Europe, *Cooperativa di Comunità di Melpignano*, in Italy; and one from the African ECOWAS area, Bboxx Energy, in Togo. A qualitative analysis was conducted based on semi-structured interviews with qualified interlocutors representing each case. The cases were identified by analyzing certain sources (e.g. reports, papers) and following selection criteria based on the legal form used, the polycentrism in

[27] M. Dedman, *The origins and development of the European Union 1945-1995: a history of European integration,* Routledge (2006).
Its main institutions are the European Parliament, the Council of the European Union and the European Commission, which have regulatory decision-making powers and act in a coordinated manner. As a rule, it is up to the Commission to propose new rules, while it is up to Parliament and the Council to adopt them. It is also the Commission's responsibility to ensure that the rules are properly applied by the Member States. The other institutions are the European Council, the Court of Justice of the European Union, the European Central Bank and the Court of Auditors. See the types of institutions and bodies in the European Union website.
https://european-union.europa.eu/institutions-law-budget/institutions-and-bodies/types-institutions-and-bodies_en.

[29] Pursuant to Article 3 of the Treaty on European Union states that "the EU shall pursue the objective of promoting peace, stability and security on the European continent; create a single market in which goods, services, people and capital can move freely and without barriers across national borders, in order to stimulate economic growth and improve competitiveness; promoting common values, including respect for human rights, democracy and the rule of law; promoting innovation and scientific research to improve Europe's global competitiveness; play an active role in international cooperation, addressing global challenges such as climate change, poverty, epidemics and promoting peace and stability in the world; promote sustainable development, balancing economic growth with environmental protection and social welfare". This includes adopting policies that address environmental challenges, promote energy efficiency, and sustainable use of resources.

[30] Y. Aguibou, *West African economic integration: Is ECOWAS the answer?*, Africa Today, 24.3, 43-59 (1977).

management, the role played by the public body in the promotion of the project, the involvement of the local community, the production of energy from renewable sources (solar or wind). The results were then discussed, comparing the cases to verify their virtuous and negative aspects and suggesting a vision for a fairer and more supportive energy transition in the light of the theories mentioned above.

4. Energy Transition and Energy Communities in the EU Legal Framework

Energy poverty is a challenge in the European Union and amongst the policy goals that the EU legal framework on energy communities aims at addressing. Energy poverty follows territorial variations within the EU, with Eastern and Southern European countries being particularly vulnerable due to high levels of general income poverty, inefficient housing, and inadequate infrastructure development. Significant poverty levels are also found in urban centers and neighborhoods in some Central European cities[31].

The EU has developed several energy policies in response to these challenges as part of its comprehensive energy legislation and strategy. Before the Treaty of Lisbon, the intervention of the European Community on the issue of energy did not have an express basis in the Treaties but rather in the so-called implied powers under Article 235 of the TEC. With the Treaty of Lisbon, signed on 13 December 2007, which amended the Treaty on European Union and the Treaty on the European Community (whose name was changed to the Treaty on the Functioning of the European Union – TFEU), the two Treaties expressly provide for a reference to sustainable development (Article 3 TEU) and environmental protection (Article 191 TFEU, *formerly* Article 174 TEC)17, while the link between sustainable development, environmental protection and the energy sector can be deduced, in art. 194 TFEU[32], which places "energy saving, energy efficiency and

[31] S. Bouzarovski, H. Thomson & M. Cornelis, *Tackling Energy Poverty in Europe: A Policy and Research Agenda,* Energies, 14, 858 (2021).

[32]Article 194 TFEU states: "*in the context of the establishment or functioning of the internal market and taking into account the need to preserve and improve the environment, the Union's energy policy shall be intended, in a spirit of solidarity between*

the development of new and renewable energies" at the heart of European energy policy[33]. The entry into force of the Treaty of Lisbon has thus given impetus to European legislation for a sustainable energy policy and environmental protection, as the Treaties become the legal basis of the EU[34].

The European Green Deal (COM (2019) 640 final) includes a plan to achieve EU climate neutrality by 2050 and a set of interim targets, including a significant reduction in greenhouse gas emissions by 2030. This plan promotes renewable energy, energy efficiency, and a cleaner and more sustainable energy system. The EU has also mandated all Member States to draw up national action plans to combat energy poverty, as well as criteria for defining energy poverty and assessing how many households do not have the necessary energy services. But the heartbeat of the EU approach that aims at combining climate neutrality goals with energy poverty goals is the "Clean Energy Package" for new energy market regulation, the energy efficiency of buildings, and the promotion of renewable energy through the adoption of Regulation (EU) 2019/943 on the regulation of the internal market for electricity; the Energy Performance of Buildings Directive (2018/844/EU) and above all the introduction, for the first time in Europe, of the rules on energy communities with Directive 2018/2001/EU (so-called RED II) for "renewable energy communities" (RECs) and with Directive 2019/944/EU (so-called IEMD) concerning "citizens energy communities" (CECs). By 2050, 264 million Europeans will enter the energy market as prosumers and generate 45% of the total renewable electricity. Climate change, the clean energy transition, and energy poverty are strictly connected. Energy poverty is inherently tied to and influenced by climate change.

From a strict emission reduction point of view, energy poverty represents a problem because the unaffordability of energy efficiency technologies in low-income housing may be an obstacle

Member States, to: (a) ensure the functioning of the energy market, (b) ensure security of energy supply in the Union, (c) promote energy savings, energy efficiency and the development of new and renewable energies, (d) promoting the interconnection of energy networks".

[33]L. Kaschny, *Energy Justice and the Principles of Article 194 (1) TFEU Governing EU Energy Policy*, Trans. Envir. Law (2023).

[34] A. Aquili, *Comunità energetiche: l'evoluzione del quadro regolatorio europeo e italiano*, Dir. Soc., 4, 799-842 (2022).

to achieving decarbonization goals.

But most importantly, low-income households and vulnerable individuals and communities more broadly Systemic crises affect the poorest and more vulnerable populations the hardest. Energy shocks impact most countries, but developing countries (especially if they are energy importing) face relatively higher burdens, such as having to recycle rationing in some countries and experiencing growing poverty. Even though households have gained access to energy in areas that were underserved, it may become unavailable to them because they cannot afford to pay for it[35].

Affordable access to renewable energy is thus an important policy goal for both climate change and social policy concerns. Renewable electricity use is growing. Hydropower, wind, then solar. However, the growth of renewable energy access has significant regional disparities[36].

Combating energy poverty is one of the priorities of the current European clean energy policy. With the so-called 'third energy policy package for the internal electricity and gas market'[37]. Like in other contexts, also in Europe, the problem is getting increasingly worse due to the cumulative impact of major crises such as for example climate change or the socio-economic implications of the Covid-19 pandemic. Domestic and supranational policies to exacerbate existing inequities further.

Ambitious climate and clean energy transition laws and policies may respond to some of the causes or implications of energy vulnerability and poverty or tackle them, but they also raise equity and justice issues, especially as they tackle existing polycentric problems. Energy poverty and energy security are among those problems. A comprehensive account of energy poverty should consider the impact of climate policies from a social justice perspective. The increase in energy costs resulting from the European Union's aggressive approach to clean energy with regard to fossil fuels further affects vulnerable households who are burdened by energy prices. Of course, systemic shocks may lead to

[35] *Energy Context Overview* (2022).

[36] *Tracking SDG 7: The Energy Progress Report,* 16 (2022).

[37] M. Roggenkamp & L. Diestelmeier, *Energy Market Reforms in the EU: A New Focus on Energy Consumers, Energy Poverty, and Energy (in)Justice?*, Ener. Jus. and Ener. Law, 161 (2020).

a sharp increase in energy prices that is tackled by the State (for example, the increase in energy prices linked to the Russian invasion of Ukraine). While distinguishing themselves from the price hike that is shaped by energy policies, these market dynamics have a disproportionate impact on energy-poor households in general. These factors should be carefully considered as part of a broader policy strategy to tackle energy poverty.

5. Energy Justice and Energy Democracy

The energy democracy scholarly debate stemmed out of the energy justice literature, as a subset of the broader environmental justice field. The energy democracy debate was picked up by EU legal scholars after being initiated in the broader social science field[38]. The first discussions of energy democracy mirrored activists' concerns about broad issues related to the model of provision, distribution, supply of energy in wealthy countries. The movements were diffused in different European countries and were not collectively organized. They advocated for the promotion and diffusion of solutions to tackle energy poverty that relied upon energy efficiency technologies, often based on renewable sources that civil society was experimenting with in towns, cities, rural areas for a few years.

Many of the claims that energy democracy and energy justice literature advance are rooted in a global justice framework. Movements advocate for people to be able to use their agency as voters and energy consumers to demand better conditions for inhabitants and industry workers in extraction site areas.

The conceptualization of energy democracy that emerges from these experiences is that of an ideal, unrealized model that constitutes a normative frame society should aim for. The earliest, social movement-based advocates emphasize the access/affordability of energy as the first dimension: "Energy democracy means that everybody is ensured access to sufficient

[38] A. McHarg, *Community Benefit through Community Ownership of Renewable Generation in Scotland: Power to Peolple?*, in L. Barrera-Hernandez, B. Barton, L. Godden, A. Lucas & A. Ronne, *Sharing the Costs and Benefits of Energy and Resource Activity*, Oxford, 297 (2016).

energy"[39].

The connection between advocacy claims for policy measures against energy poverty and those for renewable energy is tight. In the U.S., the energy democracy debate is close to the environmental justice and energy justice movement. Recently, the political philosopher Olufemi Taiwo stressed that energy democracy is an ideal model for the energy industry based on the empowerment of the industry workers, and their unions[40]. A crucial point that surfaces also in recent literature is the dissatisfaction with the technocratic-oriented decision-making structure around energy choices[41]. Roughly speaking, there is a perception that decisions around energy are taken away from wide public scrutiny and kept in the hands of politicians, utility corporations, and top civil servants. This would be justified by the complex technical nature of energy issues[42]. This is ill-suited to the increased public awareness about the necessity to tackle climate change aggressively, the diffusion of consumer generation technologies, and of clean energy technologies more broadly. As a result of these changes, the awareness that the clean energy transition is not to be guided purely by technical choices, but by values. This is unless we as a society do not care about the inequalities that will be further increased if the transition is guided purely by technical considerations. Energy democracy principles, as they emerge from the social science literature, seem to envision an ideal form of democracy, a normative goal toward which the current energy system should transition. An energy democracy framework serves as a guide for just transitions policies. An energy democracy system encourages democratic, local control, decision-making, and proactive participation of energy users from the consumption to the production, distribution, and ownership side. Within the existing typology of forms of democracy, the type of energy democracy that fits the most seems to be associative and

[39] The definition is a quote from the 2012 Lausitz Climate Camp. C. Kunze & S. Becker, *Energy democracy in Europe* (2014).
[40] T.O. Olúfẹ́mi, *Towards and Energy Democracy*, New York Magazine (2022).
[41] S. Welton, *Grasping for energy democracy,* Mich. L. Rev., 116, 598 (2018); K. Szulecki, *Conceptualizing energy democracy*, Environmental Politics, 27, 21 (2018).
[42] B. K. Sovacool & M. H. Dworkin, *Global Energy Justice: Problems, Principles, and Practices*, 25-26 (2014).

material democracy[43]. Associative democracy[44] is a form of democracy that enhances the role of organized civil society (chiefly, the volunteering sector and civic organization) and in the case of energy democracy, they would support the local control and ownership of energy resources. Material democracy emphasizes the relationship between matter and politics in a democratic society and highlights the importance of autonomous engagement of people with, in this case, energy resources[45]. Other forms of democracy that resonate with energy democracy principles albeit to a lower extent are participatory and deliberative democracy.

Participation through voice and deliberation is extremely important, but scholars seem to emphasize the deeper dimensions of association and direct, autonomous engagement with energy resources as key factors of energy democracy. From a legal scholarship perspective, as English public law scholar Aileen McHarg has argued it is important to understand the feasibility in a specific legal context, as well as the desirability of an energy democracy framework rooted in community energy[46].

The social science literature on energy democracy provides a useful background, but vagueness and uncertainty pertain to some degree as to the legal reforms that are necessary to implement energy democracy claims that may even be divergent[47]. Shelley Welton identifies applications of three energy democracy visions to energy law reforms, particularly in the electric energy sector in the United States: 1. Energy democracy as a consumer choice. This would require 1. rationalization of energy pricing; 2. regulatory-regime reform, to change the role that utilities play in the provisioning of electricity; 3. Consumer engagement[48]. The first vision of energy democracy as a consumer choice encapsulates a view of the electric grid as a public infrastructure that every consumer has a right to use in the way that is most profitable to

[43] B. V. Veelen & D. V. Horst, *What is energy democracy? Connecting social science energy research and political theory,* Ener. Res. & Soc. Sc. (2018).

[44] The first important theorization of associative democracy is P.Q. Hirst, *Associative democracy: new forms of economic and social governance,* Amherst (1994).

[45] B. van Veelen & D. van der Horst, *What is energy democracy? Connecting social science energy research and political theory,* cit. at 43.

[46] A. McHarg, *Community Benefit through Community Ownership of Renewable Generation in Scotland,* cit. at 38, 304.

[47] S. Welton, *Grasping for energy democracy,* cit. at 41.

[48] S. Welton, *Grasping for energy democracy,* cit. at 41, 603-605.

them. By increasing transparency of energy price fluctuations and information availability through sensors, plus lifting legal and commercial barriers to self-production, an energy consumer might use and then sell the energy that her solar panels produce when it is more profitable, maximizing its energy efficiency through advanced smart home systems and gain revenues from providing energy services.

The second vision is energy democracy as decentralized/ local, direct control of energy production, storage, consumption, and exchange. Others have pointed out that the justification for a democratization of the energy sector in terms of increased control for ordinary citizens in the decision-making process and higher accountability would lead to more efficient governance of energy as well as more legitimate decisions in the sense that they would satisfy a bigger part of the stakeholders[49]. The realization of this vision would entail the municipalization of local utilities, a process that requires a heavy procedure including a referendum, negotiation with the existing private utility and relevant costs, community choice aggregation, but also community-owned energy generators or distributors, such as CER or microgrids[50].

6. Civic Based Renewable Energy Communities at the Local Level

EU law mandates Member States to promote Community energy as a way to address social problems connected to the energy system, especially within a climate and energy transition policy framework but also energy poverty.

This type of policy on decentralized production of renewable energy by consumers have been around since the late nineties in some contexts. The increasing pressure from advocacy movements on EU policymakers to take action to counteract the climate crises with the European Green Deal, the Covid-19 crisis and later the energy crises determined by the Russian invasion of Ukraine further exposed fragile communities to energy poverty or vulnerability. With the Clean Energy for all Europeans package, the European Union introduced for the first time a set of legal measures

[49] K. Szulecki, *Conceptualizing energy democracy*, cit. at 41.
[50] S. Welton, *Grasping for energy democracy*, cit. at 41, 613-618.

to promote community energy amongst other things to promote renewable energy and consumer empowerment in the EU internal market. This paragraph will first analyse the goals that community energy is supposed to achieve by design. Then, it will discuss the types of community energy and entities that the framework recognizes, the regulatory tools introduced, and the legal obligations of Member States. Finally, it will address the role of cities specifically as enabling actors of community energy.

Starting in 2018, the EU created an enabling framework, within their clean energy policy landscape, to encourage citizen-based, renewable energy communities. Entered into force in 2019, the Clean Energy package consists of 8 new EU Directives (EU secondary law). The entities are Renewable Energy communities (introduced by Directive 2018/2001 on the promotion of the use of energy from renewable sources) and 'Citizen Energy Communities', introduced by Directive 2019/944 on common rules for the internal market for electricity.

Within this framework, two types of institutions are recognized: the Renewable Energy Community (hereinafter: REC), introduced by the directive 2018/2001/UE, Renewable energy directive (so-called Directive RED II); the Citizen Energy Community (hereinafter: CEC), introduced by the directive 2019/944/UE on common rules for the internal electricity market.

It appears that the policy vision behind these directives prioritizes affordability, transparency, security, and efficiency in the energy market, and heavily promotes decentralized, local energy systems and the empowerment of consumers to produce, share and redistribute energy produced hyper-locally from renewable sources. One of the most important goals of the Directives is to empower EU's Member States to promote the meaningful engagement of citizens in the energy market by eliminating the legal and commercial barriers that hamper self-production, self-consumption, storage, and selling of energy by entities constituted by citizens, imposing a disproportionate burden on them. They also aim at counteracting the overarching problem of energy poverty and guaranteeing the conditions for the engagement of vulnerable energy users in energy self-production and renewable energy more broadly. The Directives acknowledge that RECs improve local security of energy supply, shorten transportation distance, reduce energy transmission losses, and

promote energy efficiency at the household level. They also have a broader value in the eyes of the EU regulator since they increase the acceptance of the transition towards renewable energy in the EU.

The 2018 Directive encourages Member States not to apply charges when renewable energy communities produce and consume energy within the same building with limitations.

The EU frames community energy as: a tool for climate policy, via energy efficiency and promotion of the renewable energy sector; a tool for promoting the empowerment of small users and not-for-profit actors in the internal energy market; a tool to eradicate energy poverty. It acknowledges RECs as part of a political economy of energy at the local level, due to the ability of decentralized energy production of increasing not only energy efficiency and security, as noted above, but also creating new jobs and income sources at the local level[51] and helps fight energy poverty through reduced consumption and lower supply tariffs. The 2019 Directive establishes an overarching duty of Member States to issue policies that counteract energy poverty.

The Directive appears to incorporate the challenges signalled by the literature in terms of the measurement of energy poverty (a multidimensional form of poverty[52]. It admonishes states to consider them all (low income; high energy expenditure; poor energy efficiency of homes) and promotes an integrated approach that includes social policy and buildings' energy efficiency improvement programs[53]. The 2019 Directive specifies that the Commission shall establish guidance on the definition of significant number of households in energy poverty in this context and the context of Article 5(5), starting from the premise that any proportion of households in energy poverty can be considered to be significant.'[54].

The dimension of participatory approaches in policies regarding renewable energy production is highlighted in both directives and the equity in access to REC or CEC is a concern addressed by the regulatory framework. The planning of the

[51] Directive (EU) 2018/2001 on the Promotion of the Use of Energy from Renewable Sources 2018), preamble 65.
[52] S. Welton, *Public Energy*, N.Y.U. Law Review (2017).
[53] Directive (EU) 2019/944 on Common Rules for the Internal Market for Electricity and Amending Directive 2012/27/EU 2019), preamble 60.
[54] Directive (EU) 2019/944 art. 29.

infrastructure needed to produce electricity from renewable sources should consider policies relating to the participation of those affected by the projects, in particular local populations[55]. Equitable access to renewable resources and to renewable energy self-production is underlined in the Directive when it acknowledges that RECs can be a useful way of counteracting energy poverty. In fact, it mentions that Member States should catch the opportunity by, for example, facilitating the participation 'by households that might otherwise not be able to participate, including vulnerable consumers and tenants'[56].

7. Lifting Barriers for Community Energy

The regulatory intervention of the Directives aims to lift the legal and economic barriers that may hamper the equal participation of RECs/CECs in the energy market. The 2018 Directive states that, at the general level, Member States should not impose charges on RECs since their features in terms of size and membership type, but chiefly the fact that they have a not-for-profit nature even when they generate revenues will hamper the competition with major energy providers[57]. Member States can apply fair charges when necessary and ensure that renewable self-consumers contribute in a balanced and adequate way to the overall cost-sharing system of producing, distributing and consuming electricity when electricity is fed into the grid[58] and when the communities make efficient use of their support schemes and apply non-discriminatory and effective access to their support schemes. The Directive weighs in concerns of overall financial stability of the electricity system and of incentive systems for renewable energies that should be limited to small installations with an electrical capacity of 30 kW or less. They should also be able to apply partial exemptions from charges, levies, or a combination thereof and support up to the level needed to ensure the economic viability of such projects[59]. However, RECs members should not be exempt from costs that are associated with the use of the public

[55] Directive (EU) 2018/2001.
[56] Directive (EU) 2018/200, preamble 67.
[57] Directive (EU) 2018/2001, preamble 69.
[58] Directive (EU) 2018/2001, preamble 68.
[59] Directive (EU) 2018/2001.

infrastructure or that other customers that are not in a REC sustain[60].

The 2019 Directive regulates (art. 39 - 47) the economic and commercial features that allow CECs to operate. It empowers Member States to facilitate their activities by lifting all regulatory restrictions of an economic nature for energy communities. It establishes that the fees for internally consumed energy are reduced or eliminated, lifts the obligation to feed electricity generated into the grid, differentiates requirements for energy suppliers, self-producers, and consumers, etc. (art. 39).

The sharing should be facilitated in accordance with the obligations and correct timeframes for balancing, metering and settlement. The provisions of this Directive on citizen energy communities do not interfere with the competence of Member States to design and implement policies relating to the energy sector in relation to network charges and tariffs, or to design and implement energy policy financing systems and cost sharing provided that those policies are non-discriminatory and lawful[61].

CECs can become distribution system operators either under the general regime or as closed distribution system operators. Once a citizen energy community is granted the status of a distribution system operator, it should be treated as and be subject to the same obligations as a distribution system operator[62].

Member States must also ensure that energy communities are granted the same status that larger energy operators do by allowing them to participate in available support schemes on an equal footing with them as well as providing technical and financial support, reducing administrative requirements, including community-focused bidding criteria, creating tailored bidding windows for renewable energy communities, or allowing renewable energy communities to be remunerated through direct support where they comply with requirements of small installations[63].

It also roots the policy strategy in a locally-conscious approach: the planning of the infrastructure needed for the production of electricity from renewable sources should take into

[60] Directive (EU) 2018/2001, preamble 71.
[61] Directive (EU) 2019/944.
[62] Directive (EU) 2019/944.
[63] Directive (EU) 2018/2001, preamble 26.

account policies relating to the participation of those affected by the projects, in particular local populations[64].

8. Energy Transition and Energy Communities in the ECOWAS Legal Framework

About the energy sector in ECOWAS, it is imperative to note that the principal energy policy currently in effect which also serves as the legal framework for renewable energy in the Economic Community of West African States (ECOWAS) and also primarily established at the regional and national levels is the ECOWAS Regional Renewable Energy Policy (EREP)[65].

This aims to ensure increased use of renewable energy sources such as solar, wind, small-scale hydro, and bioenergy for grid electricity supply and rural energy services. The policy sets clear targets to increase the share of renewable energy in the region's overall electricity mix to 10% in 2020 and 19% in 2030, focusing on commercially viable and mature technologies. The EREP also emphasizes the need for a coherent, efficient, and flexible legal, institutional, and regulatory framework to develop consistency between regional and national renewable energy policies. The vision of the EREP prioritizes three key objectives: universal access to electricity by 2030 to bridge the energy access gap that the region faces and ensure electricity availability for all citizens. It further focuses on sustainable and safe domestic energy services with the importance of providing clean, reliable, and affordable energy solutions for essential domestic activities like cooking. This was aligned with the White Paper's objective of achieving universal access to modern energy services by 2020. With regard to the Implementation Framework, the EREP focuses on three key areas for achieving its objectives, i.e. Grid-connected renewable energy applications, Off-grid and stand-alone applications, and Domestic renewable energy applications.

Even though the goal of the regional framework is ambitious, and the region has made modest strides to meet them, it recognizes the critical energy challenges faced by ECOWAS countries which include energy poverty, energy security, and

[64] Directive (EU) 2018/2001, preamble 27.
[65] *ECOWAS Renewable Energy Policy* (2015).

climate change mitigation. However, by creating synergies with other regional and global initiatives, the EREP operates within a broader context such as the ECOWAS White Paper on Energy Access[66]. In combination with the EREP, the ECOWAS Energy Efficiency Policy (EEEP) has also been strategically designed with the explicit objective of significantly enhancing energy efficiency levels throughout the regions that comprise the Economic Community of West African States (ECOWAS) so that they align with the internationally recognized standards by the target year of 2030.

The ECOWAS region's commitment to improving energy access is evident in its efforts to promote renewable energy and energy efficiency, as well as its focus on addressing the challenges of unreliable power supply and increasing energy demand through the introduction of the ECOWAS Renewable Energy Policy (EREP)[67].

The fundamental purpose of the West African Power Pool (WAPP) is to facilitate and enhance the integration of various regional power systems while concurrently establishing a coherent and functional Regional Electricity Market[68].

This organization is composed of a diverse array of both public and private entities that are actively engaged in the critical sectors of electricity generation, transmission, and distribution across the West African region, and as of now, WAPP boasts a total membership of 26 distinct companies. The establishment of WAPP was formally sanctioned through Decision A/DEC.5/12/99 during the 22nd Summit convened by the Authority of Heads of State and Government of ECOWAS, and the organization is steadfastly committed to advancing the overall power supply framework within the West African sub-region to meet the increasing demands of its populations. Also, the Energy Efficiency Policy delineates a comprehensive overarching objective that seeks to align regional policy frameworks with the established international energy

[66] This initiative shares a common goal of expanding energy access in rural and peri-urban areas.

[67] M.K. Aglina, A. Agbejule & G.Y. Nyamuame, *Policy framework on energy access and key development indicators: ECOWAS interventions and the case of Ghana,* Energy Policy, 97, 332-342 (2016).

[68] see at West African Power Pool website.
https://www.ecowapp.org/en/content/creation-wapp.

efficiency standards by the year 2020 across the various ECOWAS Regions. This ambitious objective is further broken down into specific targets that include implementing strategic measures aimed at releasing an impressive 2,000 megawatts (MW) of power generation capacity by 2020. These targets encompass a multitude of objectives, which include, but are not limited to, the systematic phasing out of inefficient incandescent lamps by the year 2020; the significant reduction of average losses in electricity distribution from the current range of 15-40% to a target level of below 10%, which is recognized as the global standard, by the year 2020; the attainment of universal access to safe, clean, affordable, efficient, and sustainable cooking solutions for the entirety of the ECOWAS population by the year 2030; the development and adoption of region-wide standards and labels for major energy equipment prior to the conclusion of the year 2020; the formulation and adoption of a comprehensive energy efficiency framework along with measures pertinent to buildings, which will include the establishment of mandatory building codes; and the establishment of financial instruments dedicated to facilitating sustainable energy initiatives, which will encompass short-term carbon financing as well as the creation of a regional fund aimed at the development and implementation of sustainable energy projects over the longer term. However, it is crucial to observe that within the scope of these two principal energy policies that govern the region, there exists a notable absence of any policies that specifically address the establishment and promotion of renewable energy communities. It is necessary to add that even with the absence of such binding regional regulations to support this purpose, through simple yet innovative and sustainable ways and efforts, including RECs through solar homes, big hydro projects, in the overall mix to 35% by 2020 and 48% by 2030 to increase the share of renewables within the region[69]. Furthermore, it is important to highlight that the aforementioned policies do not carry any legally binding implications for the member states of ECOWAS.

Nevertheless, certain member states, including Togo and others, are actively pursuing the implementation of renewable

[69] E. Okpanachi, T. Ambe-Uva & A. Fassih, *Energy regime reconfiguration and just transitions in the Global South: Lessons for West Africa from Morocco's comparative experience*, Futures, 139, 7 (2022).

energy communities at both the national and community levels, with much of this initiative being sponsored or supported by a variety of stakeholders, including non-governmental organizations (NGOs), individual contributors, and international or perhaps national corporations through their Corporate Social Responsibility (CSR) programs. In exemplification, Ghana, for instance, has enacted the Renewable Energy Act, 2011 (Act 832)[70] to establish a framework for managing and utilizing renewable energy sources efficiently and sustainably. Similarly, Côte d'Ivoire has implemented Decree No. 2016-862, offering tax and customs benefits for renewable energy equipment and related projects aimed at improving energy efficiency. As a matter of fact, other member states such as Mali, Nigeria, Togo, and others have seen the opportunities that renewable energy communities through solar offers. Mali and Nigeria have established frameworks to promote renewable energy development through national policies and specific regulations.

In Mali, the National Energy Policy of 2006 serves as the cornerstone, supplemented by ordinance No.2020-012/P-RM of March 23, 2020[71]. This ordinance offers crucial incentives by exempting renewable energy equipment from VAT, import duties, and taxes. This demonstrates Mali's commitment to making renewable energy accessible and affordable. Nigeria, on the other hand, relies on the recently enacted Electricity Act 2023 as its primary legislation governing electricity production, transmission, and distribution. This act is complemented by the National Renewable Energy and Energy Efficiency Policy of 2015, which provides a dedicated regulatory framework for renewable energy development. Further highlighting the importance of renewables, the 2023 Electricity Act mandates the Nigerian Electricity Regulatory Commission (NERC) and the Independent System Operator (ISO) to actively promote and encourage the generation of electricity from renewable sources[72].

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[70] D. Obeng-Darko, *Regulation of the Renewable Energy Sector and the Proposed Renewable Energy Authority in Ghana: An Examination,* Renew. Ener. Law and Policy Rev., 8, 7-22 (2017).

[71] *National Energy Policy*, Bamako (2006).

[72] The Nigerian Electricity Act 2023; P.A. Ogbodo-Nathaniel, O.J. Olujobi, C.C. Izu & N.I. Ogbodo, *The Nexus between Clean Energy and Human Rights: Evaluating*

This explicit requirement ensures that renewable energy is not just an option but an actively pursued goal within the Nigerian electricity sector. Thus, in stark contrast to the European Union, it is evident that ECOWAS has yet to enact any regional legislation that specifically addresses the concept and establishment of energy communities within its member states.

In Togo, the government has demonstrated a strong commitment to achieving universal electricity access by 2030 fostering renewable energy development and partnering with supportive sponsors. This commitment is evident through several key policy initiatives and legal instruments.

To begin with, the establishment of the Rural Electrification Agency (AT2ER) with Decree No. 2016-064, 2016, established the AT2ER[73], a crucial agency dedicated to promoting rural electrification and renewable energy development. This agency plays a central role in planning and implementing renewable energy projects, particularly in the most vulnerable areas. Secondly is the Tax Exemption for Renewable Energy Equipment which purposely incentivizes investment in renewable energy technologies, i.e. Togo exempts imported equipment from relevant taxes. It helps reduce the upfront costs associated with renewable energy projects, making them more financially viable such that consumers are not also burdened with high taxes. Furthermore, Law No. 2018-010 stands as the cornerstone legislation governing renewable energy in the region[74]. It meticulously establishes the legal framework for all aspects, from the equipment and infrastructure needed for generation, storage, and distribution to the rules governing the market for trading and consuming electricity produced from renewable sources[75]. In this law's Title II, Articles 16 & 17 specifically highlight this in the three (3) legal regimes for electricity production projects based on renewable

the Legal Framework for Advancing Sustainable Development Goals in Nigeria, Jour. of Sust. Develop. Law and Policy, 15.3, 474-478 (2024); J.J. Olusola & W. Idiaru, *Legal Frameworks for Renewable Energy in Nigeria* (2021).

[73]*Rapport Final - Projet d'Electrification Rurale CIZO, Cadre de Politique de Reinstallation (CPR),* Agence Togolaise d'Electrification Rurale et des Energies Renouvelable - AT2ER (2019).

[74] Republique Toglaise - Loi n. 10/2018, Energie Relative a la promotion de la production de l'electricite a base des sources d'energies renouvelables au togo.

[75] Togolese Republic - Plan National de Developpement 2018-2022, 36-37.

energy sources. They are the Renewable Energy Act and Performance Thresholds under Decree No. 2019-019, 2019 and this sets performance thresholds for various legal regulations governing electricity generation projects powered by renewable sources.

To enable project developers to meet specific standards for efficiency, sustainability, and contribution to national energy goals, these thresholds are set. The Concession Agreements for Renewable Energy Generation found in Decree No. 2019-018, 2019 also lays out the conditions for concluding and terminating concession agreements for the generation and marketing of electricity from renewable sources.

It provides clarity and stability for private sector investment in renewable energy projects. Finally, under Decree No. 2019-021, 2019 which provides a Licensing framework for Renewable Energy projects, establishes the conditions for granting and withdrawing licenses for the generation, distribution, and marketing of electricity from renewable sources to ensure the responsible development and operation of renewable energy projects while protecting consumer interests. These are all found in the Renewable Energy Act[76]. By implementing these policy initiatives and legal instruments, Togo has created a supportive environment for the development of renewable energy and rural electrification.

However, unlike the Italian and Danish nations which have specific laws and policies that govern renewable energy communities, Togo does not and relies on the general renewable energy policies that ECOWAS has laid down which is also unbinding.

9. Case Studies and National Legislation: Community Energy Initiatives in the EU and ECOWAS

After having deepened in the previous paragraphs the policies implemented in the energy sector and to support community-led energy initiatives, the case studies in the two different contexts of the European Union and ECOWAS are analyzed. The case of Middelgrunden Offshore Windmill Cooperative, in Denmark, representing Northern Europe, the Community Cooperative of Melpignano, Italy, for Southern

[76] Strategie du electrification du Togo (2018).

Europe, and Bboxx Energy, in Togo, for ECOWAS. For the in-depth analysis of each case, we started from the information collected from the study of the different cases, enriched by the collection of new data, opinions, and motivations through the conduct of interviews and by the study materials provided by the interlocutors to integrate the interviews. Specifically, the Chairman of the Board of Directors of the Middelgrunden Offshore Windmill Cooperative and the President of the Community Cooperative of Melpignano and Chief Commercial Officer of Bboxx Energy were interviewed.

To give greater context to the cases, the regulatory evolution in the field of energy and energy communities adopted in each state where the projects covered by the case studies were also briefly explored.

9.1 Northern Europe – Middelgrunden Offshore Windmill Cooperative and Danish legislation

Middlegrunden is a wind farm located off the coast of Copenhagen, Denmark. It is one of the largest community offshore wind farms in the world. The wind farm was developed through a partnership between the local government and the Middelgrunden Offshore Windmill Cooperative. The development of Middelgrunden began in the late 1990s[77]. In 1996, a group of citizens took the initiative to participate in the process of energy production in Copenhagen through the development of a wind farm to produce renewable energy. The idea was born to demonstrate the possibility of producing renewable energy in a different way than that produced by the Swedish nuclear production site located in Sweden, neighboring the city of Copenhagen. Nuclear production was in fact banned in Denmark.

The citizens' group presented the initiative to the Copenhagen Office for Environment and Energy (CEEO), specifically to the city councilor, who welcomed the idea of the project and promoted the initiative. A feasibility study was funded by the Danish Energy Authority to study the technical, environmental, and economic aspects of the Middelgrunden offshore wind project, recognizing its innovative approach. With the support of the CEO, the group of local people formed the

[77] A. Vikkelso, *The Middelgrunden Offshore Wind Farm*, Copenhagen Environment and Energy Office (2003).

Middelgrunden Offshore Windmill Cooperative and then established a cooperation (through the signing of a contract in 1998) with Copenhagen Energy, the utility company in the energy sector, which the municipality owned[78].

The cooperation for the realization of the project was based on the fact that the Middelgrunden Offshore Windmill Cooperative had to find the funds for the development of the project and the utility company would put in place the technical know-how, once the wind farm was built, the management of the park would be shared between the cooperative and the utility company. Around 25 million euros were needed for the construction of the wind turbines owned by the cooperative, and the Middelgrunden Offshore Windmill Cooperative was able to find it by raising awareness among the population of Copenhagen. The money obtained came from private citizens, starting with very prominent citizens, whom they asked to invest and do marketing (e.g. through public meetings) to find more money. In the end, the total amount could be found before work began on the wind turbines. The commitment at the local level, together with the cooperation between the cooperative, the local public services, and the municipality of Copenhagen, was a significant precondition for the development of the project. This cooperation has given credibility to the project in the eyes of politicians and the public. Construction of the Middelgrunden wind farm began in 2000 and was completed by the end of the same year.

The Middelgrunden wind farm consists of 20 turbines, each with a capacity of 2 MW, for a total of 40 MW of installed capacity developed by the Middelgrunden Offshore Windmill Cooperative and Copenhagen Energy Wind. It covers an area of about 3.8 square kilometers (1.5 square miles) in the Øresund Strait. The wind farm is located on a natural coral reef 3.5 km east of the Port of Copenhagen. The Middelgrunden Offshore Windmill Cooperative and Copenhagen Energy Wind jointly managed all phases of the design and construction of the wind farm. After the completion of the project, they switched to operating their respective halves of the wind farm independently – Copenhagen Energy for the northern turbines and the cooperative for the southern ones – while

[78] B. Baş & I. Demirtaş, *A View of Energy Cooperatives from the Framework of Energy Justice*, Jour. of Rec. Econ. & Sustain. Policy, 1, 18-26 (2022).

maintaining cooperation in operational matters. The partnership benefited from the technical advice of the SEAS Wind Energy Centre in Copenhagen Energy, improving the execution of the project[79].

The Middelgrunden Wind Cooperative has been in operation since 2001, selling 42,500 shares (one share corresponds to 1/40,500 of the partnership), each for €570 representing 1,000 kWh of annual production, for a total of €23 million in collective investment schemes. Most shareholders own 5 or fewer shares in the cooperative. Each share has had an average return of 3 to 4% interest per year over the past 23 years. 90% of the members are citizens, companies, organizations, schools, universities, pension funds, and trade unions are also members of the cooperative. Examples include the local branches of the Danish Teachers' Union and the General Workers' Union, which bought shares to cover electricity consumption in their buildings. All these members make up the assembly of the cooperative (one vote each independently of owned shares); among the citizens who actively participate in the cooperative (e.g. through participation in the members' assembly), there are people with high and low incomes. In fact, the peculiarity of the Middelgrunden Offshore Windmill Cooperative was that it signed an agreement with a Danish bank to give loans at subsidized rates to needy people (low-income people) who can borrow money at low rates to invest in the wind farm and become members of the cooperative, to obtain 3/4% annual return and contribute to the production and consumption of renewable energy. This diverse ownership base underscores the cooperative's commitment to community engagement and reflects the broader social impact of sustainable energy initiatives in Denmark. The wind farm has become a kind of monument, which is now part of the city's architecture. The turbines are divided into groups that curve in an elliptical shape in the middle of the water, forming circles and are called the "environmental fortresses" of Copenhagen.

Citizens are very proud to be shareholders as it is more important to participate in contributing to the energy transition in Denmark than to think about the economic return. The wind farm

[79] *Open door scheme closed*, Ministry of Climate, Energy and Utilities website (2023). https://kefm.dk/aktuelt/nyheder/2023/dec/aaben-doer-ordning-lukkes#:~:text=Åben%20d
ør%2Dscheme%20gav%20private,was%20final%20installed%20i%202010

provides clean, renewable electricity to thousands of households in the Copenhagen area, contributing significantly to Denmark's renewable energy goals and reducing greenhouse gas emissions.

In addition to generating clean energy, the cooperative model ensures that local communities directly benefit from the project. Cooperative members typically receive dividends from electricity sales, and surplus funds can be reinvested in community projects or used to support additional renewable energy initiatives. For example, the Middelgrunden Wind Cooperative tries to raise awareness of wind energy; in fact, every year, it organizes an open day to visit the wind farm. It also supports the construction of wind turbines in disadvantaged suburbs and in fact, has a subsidiary company made up of 2700 citizens as partners that deals with the construction of wind turbines for the production of renewable energy in the suburbs of the city. The wind farm produces up to 85,000 MWh of energy per year, which makes up about 3% of Copenhagen's total energy consumption. In one year, the Middelgrunden wind farm reduces the production of sulfur dioxide by 150 tonnes, 140 tonnes of nitrogen oxide, 81,000 tonnes of carbon dioxide, and 5,200 tonnes of dust and clinker[80].

The cooperative's board of directors applies for repowering of the wind farm for further 25 years – from 2026 to 2051. The Danish Energy Agency has accepted a repowering and in the Spring 2024 the conditions for repowering the wind farm will be settled in a negotiation with the agency. Due to the prolongation of the offshore electricity production permission the new goal of the Middelgrunden Offshore Windmill Cooperative is to sell energy directly to citizens, it is believed that thanks to the transposition of the RED II Directive on energy communities in Denmark, it will be possible to implement this goal. In Denmark, the legal framework for energy communities consists of the Renewable Energy Promotion Act[81], LBK nr 125 af 07/02/2020; the Electricity Supply

[80] *Information for Citizens about the OpenDoor Scheme*, in Ministry of Climate, Energy and Utilities website. https://ens.dk/ansvarsomraader/vindmoeller-paa-hav/aaben-doer-ordningen-vedvarende-energi-anlaeg-paa-havet-1;
P. Nielsen, J. Lemming, P.E. Morthorst, N. E. Clausen, H. Lawetz, H.H. Lindboe, E. James-Smith, N.C. Bang, S. Strøm & J. Larsen, *The Economics of Wind Turbines* (2009).

[81] Act on the Promotion of Renewable Energy (RE Act), LBK no. 125 of

Act, LBK nr 984 af 12/05/2021[82]; the Executive Ordinance on Renewable Energy Communities and City Energy Communities and the Relationship between Renewable Energy Communities and City Energy Communities and Commercial Energy Companies electricity supply company, BEK no. 1069 of 30/05/2021[83].

In transposing the Directive, the Ordinance provides that RECs (in Danish *VE-fællesskaber)* have the status of legal persons and can be based on various organizational structures such as associations, partnerships, cooperatives, or corporations and have the same characteristics as provided for in the RED II Directive[84]. A REC may not own, establish, purchase, or lease distribution networks to arrange for the sharing of electricity produced in electricity generation facilities owned by the renewable energy community or in electricity generation facilities owned by its participants.

The sharing of electricity in the community is, therefore, based on a virtual system and takes place through an agreement on the supply of electricity with a trading electricity company to the participants or owners of the REC capital. The commercial electricity company shall manage the distribution and clearing

07/02/2020.
https://www.retsinformation.dk/eli/lta/2020/125#:~:text=Lovens%20form%C3%A5l%20er%20at%20fremme,CO2%20og%20andre%20drivhusgasser.

[82] The Electricity Supply Act, LBK no. 984 of 12/05/2021. https://www.retsinformation.dk/eli/lta/2021/984.

[83] Executive Order on renewable energy communities and citizen energy communities and the relationship between renewable energy communities and citizen energy communities and electricity trading companies and collective electricity supply companies, BEK no. 1069 of 30/05/2021. https://www.retsinformation.dk/eli/lta/2021/1069.

[84] Participation in these communities is voluntary and open, but may be limited by contractual agreements or community statutes. This ensures that individuals, SMEs and local authorities, including municipalities, can freely join these communities. Members shall retain their rights and obligations as consumers of electricity, including as household consumers and active customers. RECs may engage in various activities, including production, supply, consumption, aggregation, energy storage, energy efficiency services, or other energy services to their members. They have access to all electricity markets in a non-discriminatory manner, either directly or through third parties, and must comply with the relevant regulations if they participate directly in the electricity market. (*Energistyrelsen*, 2021).

among the participants or capital owners of the REC according to the request of the energy community.

The Executive Order on Subsidies to Local Energy Communities and Local Anchoring of the Climate Transition, BEK No. 1162 of 09/08/2022[85], issued by the Danish Ministry of Climate, Energy and Public Utilities (*Klima-, Energi- og Forsyningsministeriet*), supports the development and proliferation of local energy communities in Denmark through the provision of subsidies for projects aimed at fostering renewable energy solutions within communities Local. Funding is directed explicitly at two main types of projects: information projects and larger projects. Information projects aim to disseminate information that can help develop renewable energy solutions in local communities, whereas larger projects focus on planning, creating, and organizing exemplary projects that demonstrate solutions involving energy production, supply, consumption, sharing, aggregation, energy storage, flexibility, and energy efficiency services (such as energy community projects)[86].

Organizations that can provide renewable energy solutions in local communities can benefit from funding ranging from DKK 10,000 to DKK 200,000 for information projects and DKK 20,000 to DKK 15 million for larger projects[87]. As stated by the President of the Middelgrunden Offshore Windmill Cooperative, in Denmark there is therefore legislation aimed at regulating the phenomenon of RECs that establishes rights and obligations, while remaining a very open legislation based on the needs of the local community to leave ample room for dialogue with the municipality. The problem is the monopoly of electricity companies, although they are currently beginning to understand the importance of supporting the development of energy communities, rather than suppressing them.

[85] Executive Order on subsidies to local energy communities and local anchoring of climate transition, BEK no. 1162 of 09/08/2022.
https://www.retsinformation.dk/eli/lta/2023/642
[86] Ministry of Climate, *Energy and Utilities* (2022).
[87] Ministry of Climate, *Energy and Utilities* (2022).

9.2 Southern Europe – Melpignano Community Cooperative and Italian Legislation

Melpignano is an Italian town of 2,135 inhabitants in the province of Lecce in the Puglia, region of Italy. Melpignano was one of the founding municipalities of the National Association of Virtuous Municipalities[88] together with Colorno (PR), Monsano (AN), and Vezzano Ligure (LS). One of the main aims of the Association was to reduce energy consumption by encouraging the use of bio-architecture, soft technologies, and energy saving and to reduce waste in the consumption of drinking water.

So that the Municipal Administration of Melpignano, the cooperative society Officina Creativa, and the Department of Innovation Engineering of the University of Salento have collaborated to implement the "Melpignano Project, widespread photovoltaic system on the Roofs", which is an initiative for the construction of a widespread system on the roofs of the houses insisting on the territory of the Municipality of Melpignano.

In particular, with the signing of a memorandum of understanding, the three partners promoted a feasibility study of the project to verify whether it was possible to build on the roofs of houses, a widespread plant for the generation of electricity from solar energy, which could represent a significant share of the community's domestic electricity consumption. In order to make this project possible, systematic work was carried out to inform citizens (through the organization of public meetings, information desks, etc.) and to analyze the needs of the various family units residing in the municipality[89]. The results that emerged from the

[88] Virtuous municipalities are municipalities that love their territory, care about the health, future and happiness of their citizens; And for these reasons, they adopt all those measures capable of protecting the common goods, the treasure of humanity. I. Stomeo, *Muovere l'economia non sarà un'impresa,* Edizioni Kurumuny, 12 (2012).

[89] In particular, the role played by the three partners was fundamental. The municipal administration of Melpignano had the role of main animator and coordinator of the project, provided the technical-operational support for the implementation of the project, participated in all the communication initiatives to the public. The Officina Creativa, as a non-profit cooperative society, specialized in the creation of new professions and in the promotion of virtuous models of behavior, aimed at protecting the environment and the development of alternative technologies with low environmental impact, represented the

feasibility study showed that the total energy needs of the residents of Melpignano were estimated at around 1,563,562 Kwh/year, while the families who had given their availability to host the plant (of about 3 kwp) were about 170, for an annual production of about 729,000 kWh/year, i.e. equal to 47% of the energy needs of Melpignano families. The Municipal Administration of Melpignano has thus proposed to its fellow citizens to create a cooperative community.

On July 18, 2011, through the signing of the statute, the "Community Cooperative of Melpignano" with limited liability was born with 71 founding members, becoming the first in Italy composed of citizens and the municipal administration[90], which is also a member of the Cooperative[91]. As a result, 29 photovoltaic panels were installed[92] on citizens' roofs.

The Melpignano Cooperative has developed thanks to an investment of about 400 thousand euros, made possible thanks to a loan provided by Banca Etica and an initial loan of 100,000 euros by CoopFond[93], as a mutual fund of Legacoop. To cover the mutual contract for the design, construction, and start-up of the plants, it has been established that the members of the cooperative (i.e. the owners of the buildings on which the plants have been installed) must transfer the incentives they receive from the Energy Services Manager (GSE) for the production and self-consumption of energy

facilitator of the entire process, putting the subjects involved in communication and providing technical support in identifying the operating methods and carrying out the activities. The Department of Innovation Engineering of the University of Salento was the technical-scientific partner of the project, took care of the contents of the promotion and information campaign and planned the operational methodology, monitoring the progress of the activities and analyzing the results obtained from the territorial survey covered by this intervention. I. Stomeo, *Muovere l'economia non sarà un'impresa*, cit. at 88, 22 ss.

[90] The City Council resolved (with act no. 21 of 11/07/2011) its adhesion to the community cooperative to be established. I. Stomeo, *Muovere l'economia non sarà un'impresa*, cit. at. 88, 30 ss.

[91] Cooperativa di Comunità Melpignano, Banca delle terre. https://www.sibater.it/2020/11/30/cooperativa-dicomunita-melpignano/

[92] 29 photovoltaic systems have been installed, compared to the 170 families who had agreed to install solar panels on their roofs, some are discarded because they are not suitable and to make the project compliant with the Fifth Energy Account. Ministerial Decree of 5 July 2012, published in the Official Gazette no. 159 of 10 July 2012.

[93] *ENEA Report PTR 053*, 64-66 (2021).

from photovoltaic plants to the cooperative for twenty years. The members on who's building the system have been installed (each system has power from 3 to 10 kW), benefit from a discount on the bill because during the day they self-consume the energy produced by the system (there is, therefore, a physical scheme of self-consumption).

The surplus of the energy produced is fed into the public distribution network through on-site trading[94](on average, in the year 2022, each of the 29 plants has generated a reimbursement for on-site trading of between 400 and 4000 euros per plant), and the reimbursement for on-site exchange is credited by the GSE to individual members who have a photovoltaic system installed on the roof of their property.

Members are only required to pay € 25 for the registration fee to join the cooperative, which will be returned if they decide to leave it. The photovoltaic system remains the property of the Cooperative for 20 years, therefore, all the costs related to maintenance and management costs are borne by the Cooperative. The relationship between the owners of the buildings and the cooperative is governed by a separate deed that takes the form of a fixed-term exclusive-use contract. At the end of the twenty years, it was agreed that the plants would be owned by the owners of the buildings. The turnover of the Community Cooperative of Melpignano is about € 650,000[95] per year and the photovoltaic system produces 212 kWh per year, the economic surplus is invested in other projects for the benefit of the local community.

Thanks to the development of the Melpignano energy community, important economic savings have been achieved for families through the self-production and self-consumption of energy from photovoltaic systems and the sale of excess energy,

[94] On-the-spot trading is a virtual model of energy exchange. The On-Site Exchange service is a particular form of on-site self-consumption that makes it possible to offset the electricity produced and fed into the grid at a certain time with that withdrawn and consumed at a time other than that in which production takes place. In the On-Site Exchange, the electricity system is therefore used as a tool for the virtual storage of electricity produced but not contextually self-consumed. A necessary condition for the provision of the service is the presence of plants for the consumption and production of electricity underlying a single connection point with the public grid. GSE website. https://www.gse.it/servizi-per-te/fotovoltaico/scambio-sul-posto

[95] *ENEA Report PTR,* cit. at 93.

while the GSE incentives from photovoltaic production, net of the reimbursement of investments made, have been reinvested in infrastructures and socio-environmental services useful to the community[96]. The grandiosity of the project is to leave it to the members of the cooperative, and therefore to the inhabitants of Melpignano, to decide how, where, and when to spend the profits obtained from the production of renewable energy to improve the urban context in which they live. In fact, the CER of Melpignano has developed the "Water Houses" project for the distribution of public water at negligible costs for all inhabitants. To build the first municipal "water house", an agreement was signed with the Municipality of Melpignano for the use of the site on which to build the water house, and a dispenser was purchased that provides chilled water at 0.5 cents per liter, taken from the public aqueduct, to reduce the use of plastic bottles, reduce carbon dioxide emissions and other pollutants due to road transport, and encourage the consumption of public water. Starting from this, 59 Water Houses have been built that distribute about 30,000 liters of water every day to 46 municipalities. Another project was the redevelopment of the Peace Park, a green area equipped with games for children, and the construction of a new bar-cafeteria inside the park[97].

Other projects were the creation of a community apiary, the purchase of canteen vouchers and schoolbooks for the most disadvantaged families[98], the purchase of interactive whiteboards (IWB) for the local primary school, the environmental and sustainability awareness courses carried out in primary schools and finally the activities included in the context of the "Exchange Project – Solidarity with the elderly, mothers, children together[99]. The Community of Melpignano has been awarded the "Comuni Raggianti Puglia" award for having successfully created a Community Cooperative focused on the promotion of photovoltaic energy, and for having thus contributed to the enhancement of the territory from a social, economic, and environmental point of view.

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[96] L. Bartocci & F. Picciaia, *Le non profit utilities tra Stato e mercato: l'esperienza della cooperativa di comunità di Melpignano*, Azienda pubblica, 3, 381-402 (2013).
[97] *ENEA Report PTR*, cit. at. 95.
[98] G. Tagliani, *La rivoluzione virtuosa della comunità energetica di Melpignano: In cooperativa per risparmiare su sole e acqua*, La Repubblica (2022).
[99] Progetto Scambio website. www.progettoscambio.it

To date, 320 members (29 are the owners of the plants, the others are citizens or small craft and local businesses that use the cooperative's goods and services) are part of the community cooperative. The Municipality, on the other hand, formally left the cooperative, because it was subsequently understood that the participation of the P.A. could harm the initiative, determining the risk of conflicts of interest with other projects and activities.

The Community Cooperative of Melpignano now aims to become an energy community under recent Italian legislation. The EU RED II Directive was, in fact, implemented in Italy through Legislative Decree no. 199/2021, Article 31 of which incorporates the definition of renewable energy community in the RED II Directive[100]. The operation of the RECs is then regulated by the Integrated Text of the provisions of the Regulatory Authority for Energy, Networks and the Environment for the regulation of Widespread Self-Consumption (TIAD) adopted by ARERA[101] with ARERA Resolution 727/2022/R/EEL of 27 December 2022, which identifies as the model to be adopted to make the RECs operational the virtual regulation model that provides for the use of the existing public distribution network for the exchange of between the ERC's production facility and its members. Through this regulatory model, the ERC plant that produces energy can virtually share energy with all members (even those who are consumers because they do not have a system installed on their roof) and obtain shared

[100] Article 31 of Legislative Decree no. 199/2021 defines CERs as: an autonomous legal entity with an open and democratic structure, whose members are natural persons, small businesses, associations with private law personalities, local authorities, research and training bodies, third sector and environmental protection bodies, religious bodies, as well as local administrations contained in the list of public administrations disclosed by the National Institute of Statistics (hereinafter: ISTAT) in accordance with the provisions of Article 1, paragraph 3, of Law No. 196 of 31 December 2009, which are located in the territory of the same municipalities in which the energy sharing plants are located, which are available and under the control of the community. The main purpose of the CER is to provide environmental, economic or social benefits at the community level to its members or members or to the local areas in which the community operates and not to make financial profits. Art. 31, c. 1, lett. a) of Legislative Decree no. 199/2021.

[101] ARERA is the acronym for the Regulatory Authority for Energy, Networks and the Environment. It is an Italian authority which carries out regulation and control activities in the sectors of electricity, natural gas, water services, the waste cycle and district heating.

energy at any time the incentives established by the decree of the Ministry of the Environment and Energy Security (MASE) of 7 December 2023, No. 414 and the reimbursement of network charges for not having used the network to draw electricity thanks to the production and self-consumption of the energy due from the ERC plants. Both economic contributions are provided by the GSE and to access this service, the GSE technical rules published on 23 February 2024 must be followed. In particular, art. 31, paragraph 2, letter c), of Legislative Decree no. 199/2021 provides for energy sharing on which incentives are obtained, that participants in the CER must be in the same market area and must be connected to the same primary substation and the plant powered by renewable sources must have a maximum power of 1MW.

Currently, the Community Cooperative of Melpignano takes advantage of the legislation before the CERs, which does not provide for the possibility of sharing energy among all members (i.e. even those who are simple consumers). The Melpignano cooperative uses only the energy produced by its members' plants and at the same time self-consumed by them and the surplus is fed into the grid, so there is no sharing of energy with the other members who do not have the plants but are consumers. This would be possible through the transformation into REC. Processes have therefore begun to move in this direction. Certainly, the legal model of the community cooperative is a legal structure favorable to the implementation of projects such as CERs and in line with European and national legislation on CERs.

The Community cooperative is regulated by the Regional Law of Puglia, 20 May 2014, n. 23 and is characterized by being a legal entity (as required to establish a REC by the Red II directive) open to the participation of all citizens and economic operators, based on a model of organization with democratic governance suitable for the development of the community[102].

[102] In fact, the explicit objective of the community cooperative must be to produce advantages in favour of a community to which the members belong. This objective must be pursued through the production of goods and services in order to have a lasting impact on fundamental aspects of the quality of social and economic life. *Guida alle Cooperative di Comunità,* Legacoop (2011). https://www.legacoopmarche.it/ajaxfilemanager/uploaded/CoopComunita.pdf

9.3 ECOWAS - Bboxx Energy

Bboxx is a prominent exemplar within the renewable energy sector across Africa, leading the advancement of off-grid electricity solutions and extending electrical access to over 2 million individuals. The foundation of Bboxx was predicated on the recognition of inadequate energy accessibility throughout Africa, particularly in rural areas. Following an extensive analysis, Bboxx identified Solar Home Systems as the most scalable solution that aligned with consumer expectations. Although solar home systems present a seemingly uncomplicated solution—comprising a panel, battery, and basic appliance connection—the principal obstacle encountered was the scarcity of appropriate financing alternatives that impeded widespread adoption in rural domains. In conjunction with the absence of a formal retail network for the distribution, installation, and maintenance of these products, Bboxx assumed the roles of both financiers and retailers of the technology.

This innovative concept effectively bridged the chasm between market demand and access to solar home systems by proffering affordable financing via a pay-as-you-go model. In Togo, Bboxx operates as a joint venture partially owned by EDF, designated Bboxx EDF Togo, where approximately 400,000 individuals utilize Bboxx Systems to power not only their homes but also water pumps, streetlights, shops, and educational institutions. Bboxx EDF Togo inaugurated the electrification initiative named "Tomorrow's Connected Community," which embodies a collaboration among the digital economy, technology, and energy sectors. The initiative is underpinned by a vision and commitment to ensure universal electricity access by the year 2030, employing environmentally sustainable methods, with a specific focus on solar energy. By incorporating solar kits, mini-grids, and augmenting the existing network, the objective is to elevate Togo's electrification rate to 75 percent by 2025 and achieve full electrification by 2050. A significant milestone for Bboxx EDF Togo occurred in 2019 with the introduction of a pioneering initiative that launched innovative energy projects and obtained the inaugural government subsidy for solar energy payments in Togo and throughout Africa, as outlined in the Tax Exemption for Renewable Equipment.

This landmark achievement, aligned with the government's "CIZO" electrification strategy, empowered Togolese citizens to

invest directly in solar solutions and facilitated the acceleration of the transition toward a cleaner, more sustainable future. In the context of "Tomorrow's Connected Community," electricity is delivered through a microgrid engineered by General Electric, supplemented by solar systems that power residential households and small to medium-sized enterprises (SMEs).

Since 2017, Bboxx EDF Togo has served as a steadfast partner in Togo's struggle against energy poverty, with its contributions extending beyond the mere initiation of projects. It has had a demonstrable impact on the lives of individuals by catalyzing a transformative shift towards solar energy. Situated in the remote and vulnerable regions of Southern Togo, Sikpé Afidégnon is a village encompassing 1.28 km² with a population of 4,940, which previously depended on noisy and polluting generators for its electricity needs[103].

However, through a collaborative effort between Bboxx EDF Togo and GE, the village has undergone a remarkable transformation, transitioning towards a solar-powered future.[104] This groundbreaking initiative, executed in 2019, provided clean and reliable electricity to approximately 300 households (specifically within *Sikpé Afidégnon*) and illuminated the village thoroughfares with solar-powered lighting. The Bboxx Energy Initiative operates quite differently from the usual RECs known across the European landscape and is serving as a means for providing clean energy for Togo and its environs.

10. Discussion of results

The research aims to understand how community-led energy initiatives are tools that can reduce problems related to energy poverty and energy justice. The three cases represent community-led energy initiatives as virtuous examples of realizing environmental, economic, and social benefits. On the one hand, they are based on the production of renewable energy through wind and photovoltaic, which reduces greenhouse gas emissions; on the other

[103] *Village Data Analytics for mini-grid site selection in Togo,* TFE Energy.
[104] *Solar Power Transforms Remote Togolese Village,* adf (2020). https://adf-magazine.com/2020/03/solar-power-transforms-remote-togolese-village/

hand, they show how it is possible through the reinvestment of economic savings to invest in social services in favor of the community, such as the production of drinking water.

Energy injustice and the protection of vulnerable communities happen thanks to the legal models on which these energy initiatives are based. Exploiting legal models that are not only aimed at profit, such as cooperatives, allows for true citizen participation and democratization of energy services, as well as the enhancement of territorial identity. In the same way, the involvement of a plurality of actors, the so-called actors of the quintuple helix of Foster and Iaione, is essential to allow effective governance of resources such as energy. In all three cases, the participation of the public sector, cognitive institutions, businesses, citizens, and the local community is noted. This shows how it is essential to manage energy as a common good and to have polycentric management and co-ownership according to Ostrom's theory, in order for the project to be successful.

In fact, giving decision-making power to the members-citizens-cooperators makes it possible to make citizens active and improve the urban quality of the territory in which they live. The reinvestment of economic savings in services for the good of the community thanks to logic not based on profit, but on the culture of creating value is a fundamental element for the development of the local community and central to the organization of an energy community. For the development of energy communities and community energy initiatives that enjoy long-term economic sustainability, it is certainly important that public entities, at the state or local level, support the community for the development of the project through funding, awareness campaigns, and simplification of administrative procedures.

This is in line with Foster and Iaione's conception of the enabling state: public authorities must be promoters and facilitators of community initiatives. It is important to promote innovative forms of capability approaches, such as energy communities, to address inequalities of power, status, and access to resources.

The structure of community energy initiatives characterized by the assumption of the theoretical frameworks of Ostrom, Iaione and Foster shown by the three cases, allows us to highlight three crucial advantages: for the user, who benefits from service at cheaper rates; for the environment, since electricity is produced

from renewable and ecological sources; for the community, since the wealth created can be used to support the development of the territory. From the difference in legislation between the European Union and ECOWAS, it is shown that the binding nature of energy policies in the EU, unlike ECOWAS, which entails the obligation to transpose them in the Member States, is important for the acceleration of realities, such as energy communities.

The two European cases, which were already virtuous, have decided to improve even more by adapting to the legislation on energy communities that makes it possible to combat energy poverty thanks to the possibility of making vulnerable consumers members of the legal entity (i.e. the REC), guaranteeing them energy sharing, without the obligation to install photovoltaic systems. Consumers have the possibility while remaining connected to their meter and their energy supplier, by the mere fact of being a member of the CER, to obtain discounts on their bills and incentives, thanks to the consumption of the energy produced by the CER. In ECOWAS, the bottom-up initiatives show how important it is certainly to have a greater push at the regulatory level both by the region and by the states that constitute it.

In summary, the production, sharing, and consumption of energy from renewable sources in EU forms can not only be an opportunity for technological innovation and the fight against the climate emergency, but also represent a key to fighting inequalities, energy poverty and offer opportunities for development thanks to non-welfare structural interventions that encourage collective action, local realities and the emergence of new professional figures.

11. Conclusion

This article set out to analyse the state of energy transition within the European Union (EU) and West Africa, with a particular focus on the legal frameworks enabling communities to engage in decentralized, not-for-profit renewable energy production. Through an exploratory examination of Renewable Energy Communities (RECs) in the EU and ECOWAS regions, the study highlights the potential of a commons-based approach as a transformative mechanism for combating energy poverty and achieving energy justice. This approach emphasizes community

ownership, democratic governance, and equitable distribution of energy resources, offering a pathway toward more inclusive and sustainable energy systems. The analysis reveals that energy communities and the decentralization of the energy system are intricately linked, presenting multiple benefits such as enhanced energy access, community empowerment, and environmental sustainability. In the EU, robust legal frameworks have been established to support renewable energy and renewable energy communities. These frameworks are legally binding and harmonized across member states, ensuring consistent implementation and fostering a supportive environment for community-driven renewable energy initiatives. Notable legislations, including the Renewable Energy Directive (RED II) and the Internal Electricity Market Directive, explicitly recognize and promote energy communities, providing clear definitions, rights, and obligations that enable citizen participation in the energy transition.

In contrast, the ECOWAS region exhibits a more fragmented legal landscape. While some policy initiatives and strategic frameworks advocate for renewable energy, they largely remain non-binding and are characterized as soft laws. There is an evident gap in specific legislation that directly supports decentralized renewable energy production or legally recognizes energy communities. Despite this, civic actors—including local communities, cooperatives, and non-governmental organizations—play a crucial role in enhancing energy access through commons-based initiatives. These grassroots movements demonstrate the potential of community-led renewable energy projects in bridging the energy access gap, particularly in rural and vulnerable areas.

The case analysis reveals both commonalities and distinctions across regions. Within the EU, the two European cases showcase similarities in their strategic deployment of RECs, driven by favourable policy environments and strong regulatory backing. These communities have successfully reduced energy poverty and promoted local sustainability while maintaining a low carbon footprint. Conversely, the Togolese case illustrates a different trajectory, characterized by limited legislative support but high community resilience, innovation and supportive stakeholders. Despite the regulatory constraints, Bboxx Energy is supporting

rural communities in Togo to achieve energy access goals, emphasizing the role of multi-actor governance experimentalism in energy transitions.

A key finding of this study is the strategic importance of a commons-based approach, which leverages collective ownership and community governance to ensure equitable energy distribution. By embedding energy production within community structures, this model effectively addresses energy poverty while safeguarding energy justice and environmental sustainability. It empowers local communities, enhances social cohesion, and fosters economic resilience by enabling communities to produce, consume, and manage their own energy resources. The study underscores the need for tailored legal frameworks that recognize and support energy communities within the ECOWAS region. To achieve this, policymakers should transition from soft laws to binding regulations that explicitly acknowledge energy communities as legitimate market actors. Furthermore, cross-regional cooperation and knowledge exchange between the EU and West Africa can facilitate the adaptation of best practices, such as the recently introduced Italian Piano Mattei while respecting regional socio-economic and cultural contexts. By leveraging the experiences and legislative advancements in the EU, ECOWAS countries can formulate context-specific policies that promote decentralized, community-led renewable energy solutions. In conclusion, the integration of commons-based energy communities within national and regional legal frameworks has the potential to accelerate the energy transition while promoting social equity and environmental sustainability. As the world moves toward clean energy goals, the strategic deployment of decentralized renewable energy systems through community empowerment presents a viable pathway to achieving universal energy access, reducing energy poverty, and ensuring energy justice. This research contributes to the growing discourse on civic power and collective governance of shared public resources like energy and energy transitions, advocating for inclusive and participatory governance models that place communities at the heart of the energy landscape.