ENERGY REGULATORS
REGIONAL ASSOCIATION

BENCHMARKING REPORT:

NEW PHENOMENA IN THE ENERGY MARKETS IN ERRA MEMBER COUNTRIES:

Prosumers, Energy Communities, Peer-to-Peer Trading and Sharing

ERRA Customer Protection Working Group

December 2023

Energy Regulators Regional Association
44/B Logodi Street, 1012 Budapest, Hungary
Tel.: +36 1 477 0456 | Mobile: +36 70 392 5986
E-mail: secretariat@erranet.org | Web:
https://erranet.org

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NEW PHENOMENA IN THE ENERGY MARKETS IN ERRA MEMBER COUNTRIES: Prosumers, Energy Communities, Peer-to-Peer Trading and Sharing

Authors:

Dr. Viktor SZILÁGY
Vice-Chairman of the ERRA CP WG, International Expert for Energy, Hungarian Energy and Public Utility Regulatory Authority (MEKH)

Ms. Lucie CHMELÍČKOVÁ
Lawyer, Legislative Unit, Energy Regulatory Office (ERÚ), Czech Republic

Mr. Martin MARTINOSKI, MBA
Head of Department for Monitoring, Investigations and Misdemeanour, Energy, Water Services and Municipal Waste Management Services Regulatory Commission of North Macedonia (ERC)

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The report was prepared based on information collected through an internal survey filled by 17 ERRA Customer Protection Working Group (CP WG) Members in June – August 2023.

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- Ms. Lucie CHMELÍČKOVÁ, Energy Regulatory Office (ERO), *Czech Republic* - Author
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- Mr. Viktor SZILÁGY, *Hungarian* Energy and Public Utility Regulatory Authority (MEKH) – Author
- Ms. Elza BERGMANE, Public Utilities Commission (PUC), *Latvia*
- Ms. Sandra GRABAUSKAITĖ, National Energy Regulatory Council (NERC), *Lithuania*
- Mr. Iulian GUZUN, National Agency for Energy Regulation (ANRE), *Moldova*
- Ms. Janete ZEFANIAS, Energy Regulatory Authority (ARENE), *Mozambique*
- Mr. Martin MARTINOSKI, Energy, Water Services and Municipal Waste Management Services Regulatory Commission (ERC), *North Macedonia* – Author
- Mr. Tomasz WIŚNIEWSKI, Energy Regulatory Office (URE), *Poland*
- Ms. Alexandra DIALA, *Romanian* Energy Regulatory Authority (ANRE)
- Ms. Eva HARNIŠOVÁ, Regulatory Office for Network Industries (ÚRSO), *Slovakia*
- Mr. Ahmet GÖK, Energy Market Regulatory Authority (EMRA), *Türkiye*

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LIST OF ERRA MEMBERS INVOLVED IN THE DEVELOPMENT OF THE SURVEY

Country	Flag	Organization Name	Country Code used in the report
Algeria		Commission for Electricity and Gas Regulation (CREG)	DZ
Armenia		Public Services Regulatory Commission (PSRC)	AM
Azerbaijan		Azerbaijan Energy Regulatory Agency (AERA)	AZ
Czech Republic		Energy Regulatory Office (ERO)	CZ
Egypt		Gas Regulatory Authority (GASREG)	EG
Estonia		Estonian Competition Authority (ECA)	EE
Georgia		Georgian National Energy and Water Supply Regulatory Commission (GNERC)	GE
Hungary		Hungarian Energy and Public Utility Regulatory Authority (MEKH	HU
Latvia		Public Utilities Commission (PUC)	LV
Lithuania		National Energy Regulatory Council (NERC)	LT
Moldova		National Energy Regulatory Agency (ANRE)	MD
Mozambique		Energy Regulatory Authority (ARENE)	MZ
North Macedonia		Energy, Water Services and Municipal Waste Management Services Regulatory Commission (ERC)	MK
Poland		Energy Regulatory Office (URE)	PL
Romania		Romanian Energy Regulatory Authority (ANRE)	RO
Slovakia		Regulatory Office for Network Industries (ÚRSO)	SK
Türkiye		Energy Market Regulatory Authority (EMRA)	TR

EXECUTIVE SUMMARY

This comprehensive report examines the regulatory landscape for energy prosumers, citizen energy communities, as well as peer-to-peer trading and energy sharing across various ERRA member countries. The study evaluates the legal frameworks, practical instances, and operational challenges associated with these emerging concepts, shedding light on the diverse approaches adopted by different states.

Energy Prosumers: Legal Framework and Practical Presence

Energy prosumers, defined in general terms as consumers who both generate and consume electricity, are gaining prominence in the energy landscape. In this study, it was found that:

- Legal Frameworks: In ten ERRA member countries, a legal framework addressing energy prosumers is already established, often emphasizing the use of renewable energy sources for self-consumption. These countries include Armenia, Azerbaijan, Estonia, Hungary, Latvia, Lithuania, North Macedonia, Poland, Romania, and Slovakia.
- Ongoing Developments: In Algeria, Czech Republic, Georgia, Moldova, and Türkiye, specific legal frameworks are currently absent, but practical instances of prosumers exist, and ongoing legislative procedures aim to establish comprehensive regulations for them in the coming period.
- Variability: While various entities including households, public institutions, schools, municipalities, and private companies often have the opportunity to become energy prosumers, this option is somewhat less prevalent for communities of household owners.

Energy Prosumers: Activities and Features

While the primary focus of prosumers is generation of renewable electricity for self-consumption, they do engage in various activities that exceed this scope. Other activities include demand flexibility measures, electricity sharing initiatives, active participation in energy efficiency programs, and providing electricity storage services. Notably, regulations for peer-to-peer trading are currently in place in Latvia, but practical implementation is still pending.

- Electricity Sharing: Electricity sharing among different connection points owned by the same entity is observed in five ERRA member countries. According to the answers provided by ERRA member regulators, it can be concluded that this capability enhances grid efficiency and helps balance electricity systems.
- Renewable Sources: Solar and wind energy are the primary renewable sources used by energy prosumers for self-generation, with biomass, hydropower, and biogas also playing a significant role.
- Delegation of Activities**:** In eight ERRA countries, regulations permit energy prosumers to delegate installation, operation, data handling, and maintenance to third parties without classifying these third parties as energy prosumers.
- Contribution to System Costs: In six ERRA countries, energy prosumers actively contribute to the overall system cost through cost-reflective, transparent, and non-discriminatory network charges. However, in three countries, energy prosumers are exempt from paying grid charges for the electricity they feed into the grid.
- Regulatory Responsibilities: Regulatory responsibilities regarding energy prosumers vary significantly among ERRA countries, with National Regulatory Authorities (NRA) playing various roles in policy development, monitoring, and dispute resolution.
- Compensation Mechanisms: Net-metering and net-billing are the most widely adopted compensation mechanisms among countries, with variations in pricing mechanisms for surplus electricity.
- Special Charges**:** In most countries, special charges are not imposed on prosumers.

- Operational Challenges: Operational challenges arising from the proliferation of prosumers vary significantly among countries, reflecting the dynamic nature of the energy landscape. These challenges include residual loads, grid stability, negative pricing, billing delays, and voltage complications.

Citizen Energy Communities: Legal Framework and Activities

The report also examines the legal frameworks and activities related to citizen energy communities in ERRA Member countries. Key findings include:

- Legal Frameworks: Eight ERRA Member countries have established legal frameworks for citizen energy communities: Armenia, Estonia, Hungary, Latvia, Lithuania, Poland, Romania, and Slovakia.
- Jurisdiction of NRAs: Most NRAs actively engage at some level in energy community oversight, with varying competencies and responsibilities. Some focus primarily on tariff regulation, while others register energy communities, issue licenses, or exercise supervisory powers.
- Legal Form Requirements: Legal form requirements for energy communities are absent in several ERRA Member countries, allowing flexibility in their establishment. In countries where such requirements exist (Hungary, Latvia, Poland), permissible forms include cooperatives, housing or apartment building associations, and non-profit legal entities.
- Profit Distribution: Profit distribution rules vary; some countries allow unrestricted profit distribution among community members, while others impose specific constraints.
- Cost Contribution: All responding ERRA Members confirmed that citizen energy communities contribute to the overall cost of the system by remitting transparent and non-discriminatory network charges.
- Activities: Most energy communities are allowed to engage in various activities, including renewable heat or electricity generation, distribution, electricity supply, aggregation, storage service, sharing, peer-to-peer trading, demand flexibility, energy efficiency services, and EV charging. However, electricity distribution is limited to specific countries (Estonia, Romania, Poland) being subject to obtaining the appropriate license.
- Consumer Rights: In general, members of citizen energy communities retain all customer rights as non-members. However, some countries impose restrictions on the right to switch suppliers for community members.

Peer-to-Peer Trading and Energy Sharing: Emerging Concepts

- Emerging Concepts: Peer-to-peer trading and energy sharing are emerging concepts in several countries, with limited legislation in place. Regulators often lack data on the extent of participation and exchanged volumes, suggesting the need for increased monitoring.
- Challenges and Considerations: Emerging concepts may have implications for grid development, local energy generation, tax regulations, and classification within the traditional framework of wholesale and retail markets.
- Tax Implications: Tax implications related to energy sharing, including excise tax, value-added tax (VAT), and income tax; they are complex and vary among countries.

In conclusion, this report underscores the evolving regulatory landscape in ERRA Member countries, highlighting the growing importance of energy prosumers, citizen energy communities, and emerging concepts like peer-to-peer trading and energy sharing. The diversity of approaches across countries reflects the dynamic nature of the energy sector and the need for tailored regulatory solutions to accommodate these new paradigms. The findings of this report serve as valuable insights for policymakers, regulators, and stakeholders as they navigate the complex terrain of modern energy markets.

INTRODUCTION

The central objective of this study is to explore the regulatory landscape within ERRA Member Countries, with a keen focus on the new trends in the energy markets. These trends encompass the transformative roles of energy prosumers and citizen energy communities, alongside pioneering concepts like peer-to-peer trading and energy sharing. These remarkable developments are a direct consequence of the widespread adoption of advanced technologies for harnessing renewable energy sources, signifying a pivotal moment in the ongoing shift from fossil-based energy systems to sustainable alternatives.

For the purpose of this report and to preserve its unity, the EU legal definition of citizen energy communities, energy prosumers and pee-to-peer trading was chosen together with newly proposed definition of energy sharing, despite the fact that ERRA members are mix of both EU and non-EU NRAs and countries. All ERRA Members were given space in the questionnaire to describe particularities of their legal system regarding these phenomena, because it is very likely that legal systems will vary a lot (which also proved to be the case). ERRA Members could therefore describe models that do not fit the definition of either of the phenomena but have some common features or principles or resemble them in a way as well.

In the first section of this research paper, our aim is to comprehensively explore various aspects of Energy Prosumer Regulation within ERRA Member Countries. This investigation encompasses a broad spectrum of topics, each of paramount importance for understanding and refining the regulatory landscape for energy prosumers. We embark on a journey through the intricate web of legal frameworks governing energy prosumers, which includes defining their status and establishing eligibility criteria. Furthermore, we delve into the critical aspects of electricity sharing among multiple connection points owned by a single individual, examining its implications on equitable energy distribution. Our investigation extends to the pivotal role played by renewable energy sources in self-generation, accompanied by an examination of the regulatory complexities involved in delegating energy prosumer activities to third parties. We shed light on fiscal considerations, encompassing transparent network charges and compensation schemes, providing insights into the system cost contributions of energy prosumers. The responsibilities and jurisdictional dimensions of National Regulatory Authorities (NRAs) with respect to energy prosumers are also explored. We delve into compensation mechanisms, particularly in net-billing systems, along with special charges levied on prosumers. Additionally, we address operational challenges emerging from the increased penetration of prosumers, striving to provide a holistic perspective on the regulatory considerations and sharing valuable lessons learned from prosumer implementation.

In the second section of this research paper, we shift our focus to the exploration of various facets related to the establishment and operation of Citizen Energy Communities, consumer protection requirements and the role NRAs have in Citizen Energy Communities regulation. This includes an in-depth analysis of NRAs' involvement and their competences and duties, various forms of registration or licensing procedures of Citizen energy Communities, legal definitions and legal form prerequisites, maximum allowable profit margins, consumer rights in relation to members of Citizen Energy Communities, and the scope of NRA jurisdiction concerning these entities.

In the concluding section of the research paper, we turn our attention to assessing several key aspects. These encompass the eligibility criteria for energy sharing and peer-to-peer trading, and possible restrictions on them, as well as the regulatory complexities associated with this innovative approach to energy exchange.

To facilitate this comprehensive research, we designed a tailored questionnaire, made available for responses from June to August 2023. The formulation of the questionnaire and the drafting process were guided by the

latest EU legislation governing active consumers, energy prosumers, citizen energy communities, and innovative concepts like peer-to-peer trading and energy sharing. The EU legislation was chosen as a reference point due to its status as the most advanced legal framework in these domains.

However, the report recognizes that ERRA comprises both EU and non-EU NRAs and countries, each with its unique legal system. To account for this diversity, we extended the opportunity to participating ERRA Members to elucidate the distinctive aspects of their respective legal frameworks concerning these subjects. As a result, ERRA Members had the flexibility to describe models that might not precisely align with EU definitions and understandings but shared common features, principles, or resemblances in certain respects.

The subsequent analysis is firmly grounded in the invaluable insights provided by the National Regulatory Authorities of 17 ERRA Member Countries. These esteemed regulatory bodies include CREG in Algeria (DZ), PSRC in Armenia (AM), AERA in Azerbaijan (AZ), ERÚ in the Czech Republic (CZ), GasReg in Egypt (EG), ECA in Estonia (EE), GNERC in Georgia (GE), MEKH in Hungary (HU), PUC in Latvia (LV), NERC in Lithuania (LT), ANRE in Moldova (MD), ARENE in Mozambique (MZ), ERC in North Macedonia (MK), URE in Poland (PL), ANRE in Romania (RO), URSO in Slovakia (SK), and EMRA in Türkiye (TR).

These contributions establish the bedrock upon which this analysis rests, enabling all interested parties to gain a holistic and informed perspective on the complex realm of energy active consumer regulation within ERRA Member Countries.

I. ENERGY PROSUMERS

The term 'Energy Prosumer' is a relatively recent addition to the energy lexicon, primarily signifying individuals or entities within the energy domain who engage in both electricity production and consumption. These individuals "self-consume" a portion of the electricity they generate while selling any surplus back to the grid. However, it's worth noting that self-generation doesn't always serve as the exclusive defining characteristic of prosumers. A broader interpretation encompasses all energy consumers who actively participate in the energy market, contributing value to themselves or other stakeholders. Prosumers, in this wider context, can generate value in various ways, such as by achieving energy savings through measures like energy efficiency and demand-side response, essentially shifting their energy demand to times when supply is more abundant. These reductions in demand hold market value, including their contribution to the overall balance of the electricity system, for which prosumers may receive compensation. Additionally, prosumers can potentially sell any surplus electricity they have stored within their energy storage systems.

According to the EU legislation, an active consumer or energy prosumer refers to an end-user, either an individual or a collective of end-users, who utilizes, or stores electricity generated within their confined premises or, if allowed, on other premises. They may also engage in selling self-produced electricity or participating in flexibility and energy efficiency initiatives, as long as these activities do not serve as their primary commercial or professional focus.

I.1. The Legislation of the EU

Article 15 within Directive (EU) 2019/944, adopted by the European Parliament and the Council on 5 June 2019, and which recasts Directive 2012/27/EU, presents essential legal components pertaining to Active Consumers.

According to this, Member States shall ensure that final customers are entitled to act as active customers without being subject to disproportionate or discriminatory technical requirements, administrative requirements, procedures, and charges, and to network charges that are not cost-reflective.

Furthermore, Member States shall ensure that active customers are:

a) entitled to operate either directly or through aggregation;

b) entitled to sell self-generated electricity, including through power purchase agreements;

c) entitled to participate in flexibility schemes and energy efficiency schemes;

d) entitled to delegate to a third party the management of the installations required for their activities, including installation, operation, data handling and maintenance, without that third party being considered to be an active customer;

e) subject to cost-reflective, transparent, and non-discriminatory network charges that account separately for the electricity fed into the grid and the electricity consumed from the grid, in accordance with Article 59(9) of this Directive and Article 18 of Regulation (EU) 2019/943, ensuring that they contribute in an adequate and balanced way to the overall cost sharing of the system;

f) financially responsible for the imbalances they cause in the electricity system; to that extent they shall be balance responsible parties or shall delegate their balancing responsibility in accordance with Article 5 of Regulation (EU) 2019/943.

Member States may have different provisions applicable to individual and jointly acting active customers in their national law, provided that all rights and obligations under this Article apply to all active customers. Any difference in the treatment of jointly acting active customers shall be proportionate and duly justified.

Member States that have existing schemes that do not account separately for the electricity fed into the grid and the electricity consumed from the grid, shall not grant new rights under such schemes after 31 December 2023. In any event, customers subject to existing schemes shall have the possibility at any time to opt for a new scheme that accounts separately for the electricity fed into the grid and the electricity consumed from the grid as the basis for calculating network charges.

Member States shall ensure that active customers that own an energy storage facility:

a) have the right to a grid connection within a reasonable time after the request, provided that all necessary conditions, such as balancing responsibility and adequate metering, are fulfilled;

b) are not subject to any double charges, including network charges, for stored electricity remaining within their premises or when providing flexibility services to system operators;

c) are not subject to disproportionate licensing requirements or fees;

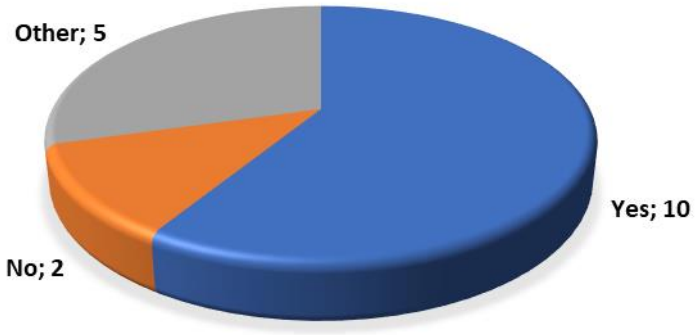
d) are allowed to provide several services simultaneously, if technically feasible.

I.2. Key Findings

i. Legal Framework for Energy Prosumers

Based on the information provided, it can be concluded that in 10 of the ERRA member countries, there exists a legal framework pertaining to energy prosumers. In 5 ERRA member countries, there are practical instances of energy prosumers, even though there might not be a specific legal framework in place, or it may still be in the process of being adopted. However, in 2 ERRA member countries, there is neither a legal framework nor any practical presence of energy prosumers.

Figure 1: ***Presence of Legal Framework for Energy Prosumers***



Responses:

Yes (10)	AM, AZ, EE, HU, LV, LT, MK, PL, RO, SK
No (2)	EG, MZ
Other, please explain (5)	CZ, DZ, GE, MD, TR

ii. Legal Acts and Definitions for Energy Prosumers

In Armenia, Azerbaijan, Estonia, Hungary, Latvia, Lithuania, North Macedonia, Poland, Romania, and Slovakia, there are well-defined terms related to energy prosumers in either primary or secondary legislation. A common thread among these definitions is the utilization of renewable energy sources for the generation of electricity intended for self-consumption. However, variations exist in terms of additional permissible activities, eligibility criteria, installed capacity restrictions, and other regulatory aspects.

In Algeria, Czech Republic, Georgia, Moldova, and Türkiye, a specific legal framework explicitly addressing the concept of energy prosumers is currently absent. However, it's important to note that, in practice, there are instances of prosumers in these countries. Furthermore, ongoing legislative procedures aim to establish a more comprehensive framework to accommodate and regulate energy prosumers in the future.

1. Armenia

The primary definitions and regulations governing self-consumption in Armenia are outlined in the Energy Law of the Republic of Armenia and are subsequently detailed through secondary legislation. Specifically, the Energy Law establishes eligibility criteria and netting schemes for autonomous power producers (self-consumers). The practical implementation of these regulations at the secondary legislation level is stipulated by the NRA through the Retail electricity market rules.

According to the Energy Law, an autonomous power producer is defined as a consumer producing electricity for own needs using renewable energy sources, who has signed the net metering contract with the universal supplier. Any customer meeting the specified requirements is eligible to seek the status of an autonomous power producer. The installed capacity of energy facilities for the autonomous power producer is capped at 150 kW. Additionally, it should not exceed the maximum allowed capacity stated in the connection contract with the Distribution company for each of its connection points with the distribution network.

Legislative reforms entered into force on May 1, 2022 introduced new opportunities for electricity net metering, enabling energy sharing through virtual metering between autonomous group members and separate connection points owned by the same person. Autonomous power producers now have the right to generate and consume electricity at different delivery points in the system, to form groups of residents and organizations, and to receive market-based compensation for excess electricity they inject into the network. Only distribution network charges are applied in case electricity is generated and consumed at different connection points. The total installed capacity of energy facilities of the autonomous power producers participating in the group shall not exceed 1050 kW.

The overarching objective of these reforms is to align Armenian legislation governing self-consumption with the RED II and to enhance and optimize electricity generation and consumption patterns by empowering consumers to generate their own electricity, aligning with the benefits of self-consumption.

Autonomous power production in Armenia is facilitated through various support schemes, which include:

- Licensing exemption: Activities related to the construction and operation of autonomous power producers are exempted from licensing requirements.
- Net metering scheme: The scheme operates with a yearly netting period.
- Grid charges: only distribution network charge is applied for autonomous power producers.
- Tax exemption: The Tax Code of Armenia provides for tax exemptions specifically tailored to the activities of autonomous power producers. For those with an installed capacity cap of 150 kW, the net metering activity is not categorized as entrepreneurship, thereby being exempted from both profit tax and income tax.

2. Azerbaijan

The legal landscape surrounding renewable energy sources in electricity generation is evolving. As of May 31, 2021, the "Law on the Use of Renewable Energy Sources in Electricity Generation" (No. 339-VIQ) is in effect. This law lays the groundwork for defining an "active consumer" as either a legal entity or an individual. An active consumer, in addition to electricity consumption, also generates electricity from renewable sources, with a power limit set by the Cabinet of Ministers of the Republic of Azerbaijan. This limit is presently up to 150 kW. A new development is on the horizon with the "Law on Electricity" (No. 858-VIQ) dated April 11, 2023, set to come into force on January 1, 2024. According to this law, the definition of an "active consumer" remains consistent with the previous law, but it now explicitly states that an active consumer can generate up to 150 kW of electricity from renewable sources. Moreover, the Cabinet of Ministers of the Republic of Azerbaijan approved the "Rules of Application of the Active Consumer Support Mechanism" by its Decision 346 dated 28.09.2023, where the regulatory framework governing active consumers in the realm of renewable energy is stipulated. Furthermore, on 02/08/2023 the President of the Republic of Azerbaijan confirmed the "Rules on selection of electricity generators in renewable energy source fields" by Decree 2285 which portrayed the terms and conditions for such projects, contract terms, selection measures and so on.

3. Estonia

In the Electricity Market Act, subjects fitting this profile are referred to as "active users of network services." This category encompasses both individual consumers and groups of consumers who engage in various activities. These activities include the consumption, storage, or sale of electricity generated on real property owned by them, commonly referred to as "self-generated electricity." Additionally, these active users may provide flexibility services or utilize self-generated electricity to enhance a building's energy efficiency, provided that such activities are not their primary business or profession.

4. Hungary

Act LXXXVI. Of 2007 on Electricity Art. 3 (17a) defines active customer as a customer who consumes or stores self-generated or self-stored electricity at his own connection point, feeds it into the public utility system, or who offers to participate in flexibility or energy efficiency schemes in terms of consumption or in-put, provided that those activities do not constitute its primary commercial or professional activity. According to Art. 3 (17c) renewables self-consumer means an active customer who produces electricity for self-consumption from renewable energy sources, or who is engaged in the storage and sale of electricity self-generated from renewable energy sources.

5. Latvia

As per the Electricity Market Law, an active customer is defined as an end-user who generates electricity for self-consumption and has the option to sell or share surplus of self-generated electricity. Additionally, it has the option to engage in flexibility services or energy efficiency schemes. Importantly, an active customer is not a licensed or registered energy undertaking (i.e., the active customer is not regulated as a producer, supplier or trader).

6. Lithuania

In the context of the Law on Electricity, a "prosumer" is defined as an electricity consumer who generates electricity from renewable resources within their electricity production facilities, either through ownership or other legally established means. This generation is primarily intended to meet the consumer's own electricity needs and those of their household. Moreover, the producing consumer is entitled to supply any surplus

electricity, not consumed for personal or household needs, into the power grids, following the regulations stipulated by the Law on Renewable Energy of the Republic of Lithuania.

7. North Macedonia

In the "Rulebook for Renewable Energy Sources," a "prosumer" is defined as a household, a community of residential building tenants, a small consumer, or a national/local government entity that has established an electricity generation facility using renewable energy sources. This facility is primarily intended to satisfy their own electricity demands, with any surplus electricity generated being fed into the electricity distribution network. For households and residential building tenant communities, the permissible installed capacity for such power plants is capped at 6 kW. In contrast, small consumers and national/local government entities have a higher threshold, allowing them to establish power plants with an installed capacity of up to 40 kW.

8. Poland

In accordance with the "RES Act" that came into effect on May 4, 2015, the following definitions apply:

- Renewable Energy Prosumer: This is an end user who exclusively generates electricity from renewable energy sources within micro-installations for personal use. It's important to note that for non-household electricity consumers, electricity generation cannot be their primary economic activity.
- Collective Prosumer of Renewable Energy: This refers to an end user who produces energy from renewable sources for personal consumption. This can be done with a micro-installation, or a small installation connected to the electricity distribution network via the internal electrical system of a multi-unit building.
- Virtual Prosumer of Renewable Energy: This category applies to an end user who generates energy for their own needs using a renewable energy source installation connected to the electricity distribution network, but at a location different from where the electricity is supplied to the recipient.
- Micro-Installation: This is a renewable energy source installation with a total installed electric capacity of no more than 50 kW. It is connected to the electricity grid with a rated voltage lower than 110 kV or has a combined thermal capacity of no more than 150 kW, with the total electric power not exceeding 50 kW.
- Small RES Installation: This category encompasses renewable energy source installations with a total installed electrical capacity exceeding 50 kW but not exceeding 1 MW. These installations are connected to a power grid with a rated voltage lower than 110 kV or have a combined heat output exceeding 150 kW but less than 3 MW, with the total installed electric capacity ranging from 50 kW to 1 MW.

9. Romania

The concept of a "prosumer," as defined by Article 3, point 95 of Law No. 123/2012, along with subsequent amendments and additions, encompasses a final consumer who simultaneously meets the following criteria:

- Operates within their own designated space that is demarcated by a connection point specified in the connection certificate, in relation to the electrical network.
- Generates electricity from renewable sources for personal consumption.
- Does not primarily engage in the business of electricity production.
- Has the ability to consume, store, and sell electricity generated from renewable energy sources. This can be done in the following ways:
  - Through an electricity supply contract with an electricity supplier.
  - By supplying consumers connected to the power plant's busbars.

- Has the capability to settle the electricity produced and delivered with the electricity consumed across multiple points of production and consumption. This applies when the respective consumption points share the same electricity supplier and are connected to the same electricity distribution network to which the prosumer is connected. It's worth noting that in the case of non-household autonomous energy consumers, these activities must not constitute their primary trade or professional activity.

10. Slovakia

The definition of an "energy prosumer," as stipulated in Act No. 251/2012 on Energy, is as follows:

A prosumer is an electricity consumer who consumes, or stores electricity generated within their own electricity production facility or supplies their self-produced electricity or offers flexibility services, provided that these activities do not constitute their primary business endeavor. Additionally, a consumer who is an entrepreneur and engages in at least one of these listed activities is recognized as a prosumer, but only if the income generated from these activities in the last accounting period does not surpass the income from any of their other business pursuits.

The key advantage of being a prosumer lies in the fact that they are not burdened with the full scope of legal obligations outlined in Act No. 251/2012 on Energy, which are mandatory for typical electricity producers, operators of electricity storage facilities, electricity suppliers, and so forth. Furthermore, prosumers benefit from the fact that engaging in electricity production within a facility with an installed capacity of up to 1 MW, storing electricity within a facility with an installed capacity of up to 1 MW, or supplying electricity does not classify as an energy-related business. Nonetheless, prosumers are subject to specific reporting obligations to the Office for the Regulation of Network Industries (ÚRSO). These obligations vary depending on factors such as the technical parameters, the installed capacity of their production facility, whether their production is profitable, or if they receive subsidies.

11. Algeria

Law 02-01, which pertains to electricity and the distribution of gas via pipelines, grants the opportunity for both individuals and legal entities to engage in electricity production. This opens up the potential for prosumer activities. However, it's important to note that the regulations regarding this matter are currently in the process of being developed.

12. Czech Republic

Although not expressly termed and explicitly outlined as "prosumers," the Energy Act empowers customers to maintain their consumer status while owning a production facility. Under this framework, they have the prerogative to consume the electricity they generate for themselves or offer it for sale to their electricity supplier, albeit with certain operational inconveniences in the current setup. However, it's worth noting that a proposed amendment to the Energy Act is presently under consideration in the legislative process, with the intent of incorporating a more comprehensive framework for energy prosumers. This amendment is expected to provide a more robust, effective, and accommodating environment for individuals who wish to engage in both electricity production and consumption.

13. Georgia

The current energy-related legislation in Georgia, including the Law of Georgia on Energy and Water Supply, lacks specific legal definitions for terms such as "active consumer" or "energy prosumer." To align with the requirements of the Clean Energy package, particularly the Renewable Energy Directive Recast (Red II), the Ministry of Economy and Sustainable Development of Georgia has proposed amendments to the Law of Georgia on Promoting the Generation and Consumption of Energy from Renewable Sources. These

amendments encompass various provisions addressing different types of active consumers and outlining their corresponding rights and obligations. Specifically, the amendments focus on Renewables Self-Consumers, Jointly Acting Renewables Self-Consumers, and Renewable Energy Communities. The proposed changes require a regulatory impact assessment and are expected to be adopted by the end of the current year. In the context of this ongoing harmonization process, it is crucial to recognize the significance of Article 38 in the Law of Georgia on Energy and Water Supply. According to this article, every final customer, or a group of customers, who possesses a micro-generating power plant, is entitled to connect it to the electricity distribution network and deliver any surplus electricity generated to the network. The terms and conditions governing this connection and delivery are established in the Electricity Distribution Network Code.

14. Moldova

In the Republic of Moldova there is no specific legal definition for prosumers. However, the current legislation allows consumers to generate energy using power plants (regardless of the type) installed on their property. In this scenario, consumers also function as producers simultaneously. These consumer-producers can utilize the network to inject surplus electricity and use it when needed. Currently, this service is provided free of charge under the net metering system. However, new legislative amendments being discussed in parliament will introduce specific network usage costs (net billing). In essence, even though there is no legal definition or status for prosumers, the conditions for both using and producing electricity simultaneously are in place. Furthermore, it's worth noting that this year, the legislation will be updated to provide a clear definition of prosumers.

15. Türkiye

In Türkiye, there exists a regulation that permits electricity generation of up to 5 MW at consumption points without the necessity of obtaining a license. Under this regulation, it is feasible for consumption and generation to coexist at the same location. It's important to note, however, that there is currently no specific legal framework in place to address the concept of energy prosumers.

iii. Determining Eligibility for Energy Prosumer Status

In the majority of the cases examined, households, public institutions, schools, municipalities, and private companies have the opportunity to attain the status of an energy prosumer. However, this option is somewhat less prevalent for communities of household owners.

Figure 2: ***Entities Entitled to Gain Status of Energy Prosumer***

Figure 3: ***Entities Entitled to Gain Status of Energy Prosumer (in detail)***

	Households	Public institutions (schools, municipalities, etc.)	Private companies	Community of household-owners	Other, please specify
AM	■	■	■	■	■
AZ	■	■	■		
CZ					■
EE	■	■	■	■	
GE	■	■	■		■
HU	■	■	■	■	■
LV	■	■	■	■	
LT	■	■	■	■	
MD	■	■	■		
MK	■	■	■	■	
PL	■	■	■	■	
RO	■	■	■		
SK	■	■	■	■	
TR	■	■	■	■	
∑	12	12	12	9	5

In Armenia and Hungary, the designation of an active consumer, and thus a prosumer, is open to any type of consumer. In Azerbaijan, this opportunity extends to households, public institutions, and private companies. Meanwhile, in Georgia, a collective of customers has the potential to attain the status of energy prosumers or active consumers. In the Czech Republic, there currently lacks a legal framework for formally recognizing energy prosumers. However, in general terms, any customer can generate their own electricity up to the limit of 50 kW of installed power output of the electricity generation plant, as long as this activity does not meet the criteria of entrepreneurship. Moreover, a concept of quasi-sharing exists among residents in apartment buildings, and you can find an illustrative case study preceding the conclusion of Chapter III.

iv. Energy Prosumer Activities

The predominant activity pursued by energy prosumers, observed across most of the examined countries, is the generation of renewable heat and/or electricity for self-use. This is followed by engaging in demand flexibility measures, participating in electricity sharing initiatives, actively participating in energy efficiency programs, and providing electricity storage services. Notably, regulations for peer-to-peer trading are currently in place in Latvia, but practical implementation is still pending.

Figure 4: ***Diverse Activities for Energy Prosumers Beyond Consumption***

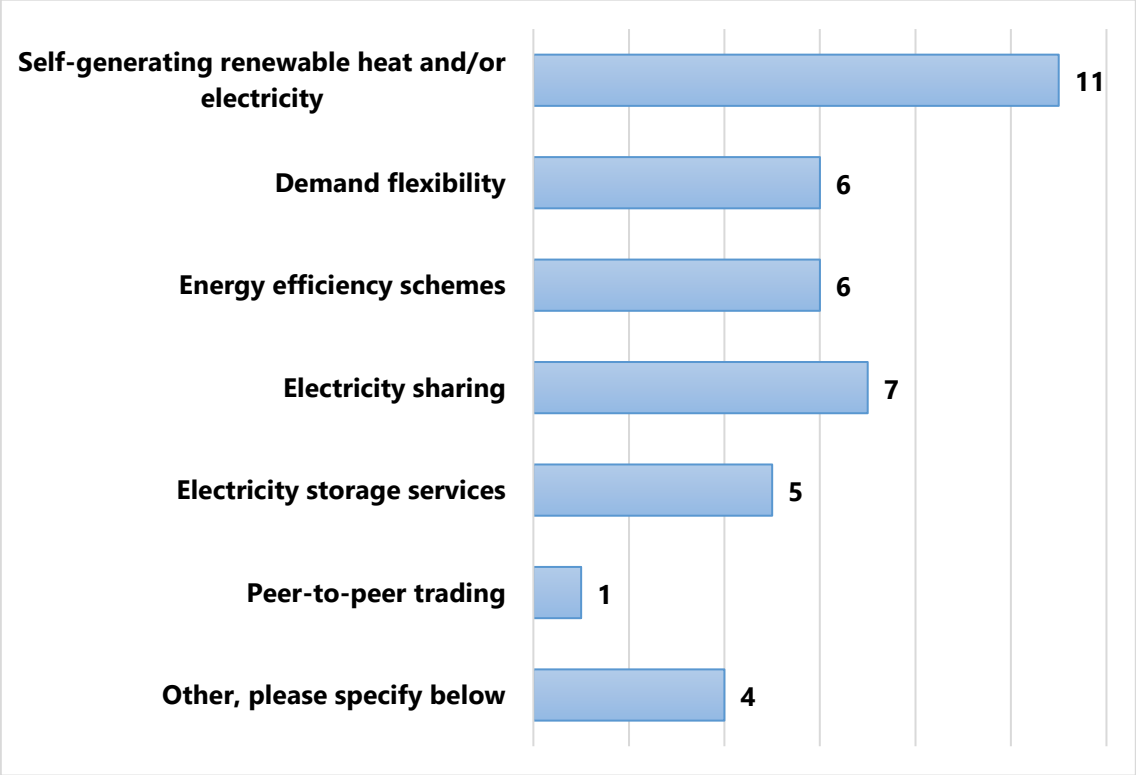


Figure 5: ***Diverse Activities for Energy Prosumers Beyond Consumption (in detail)***

	Self-generating renewable heat and/or electricity	Demand flexibility	Energy efficiency schemes	Electricity sharing	Electricity storage services	Peer-to-peer trading	Other, please specify
AM				■			
AZ	■						■
CZ							■
DZ							■
EE	■	■	■		■		
GE							■
HU	■	■	■	■	■		
LV	■	■	■	■		■	
LT	■	■	■	■	■		
MD	■						
MK	■						
PL	■	■	■		■		■
RO	■			■			
SK	■	■	■	■	■		
TR	■						
∑	**12**	**6**	**6**	**6**	**5**	**1**	**5**

In Algeria, there are ongoing developments in the procedures for biogas production, which prosumers can potentially engage in.

In Armenia, the framework governing energy sharing is regulated through the Energy law and further specified in the Retail electricity market rules. Renewable energy power producers operating in the electricity market under competitive terms and autonomous power producers have the right to generate electricity at one or more delivery points of the distribution network and to consume it at the same or different connection points. For autonomous power producers, energy sharing is available under the net metering scheme. The procedures and cases are outlined in the Retail electricity market rules.

In the Czech Republic, as previously mentioned, every customer retains the ability to generate their own electricity up to the limit of 50 kW of installed power output of the electricity generation plant, provided that this activity doesn't take on the characteristics of entrepreneurship.

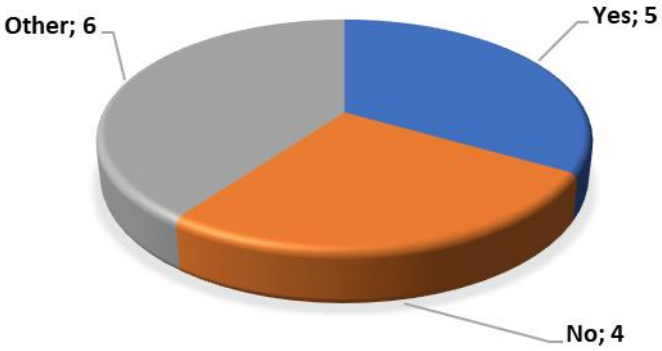
In Georgia, as stipulated by the Law of Georgia on Energy and Water Supply and the Electricity Retail Market Rules, as adopted through GNERC's Resolution N47, dated August 13, 2020, any generated electricity must be shared exclusively among group members who either own or utilize the micro-generation power plant.

In Poland, regulations related to Peer-to-Peer trading and electricity sharing are part of the government's draft act amending the Energy Law Act and other related statutes (Parliament's Paper No. 3237). The legislative process regarding this project is nearing completion.

v. Electricity Sharing Between Separate Connection Points Owned by the Same Person

Electricity sharing across different consumption/connection points owned by the same person is currently available in five ERRA member countries.

Figure 6: ***Feasibility of Electricity Sharing across Multiple Owned Connection Points***



Responses:	
Yes (5)	HU, LV, LT, RO, SK
No (4)	EE, MD, MK, TR
Other, please explain (6)	AZ, AM, DZ, CZ, GE, PL

In Algeria and the Czech Republic, this capability is in the developmental stages and is expected to become possible in the future. In the Czech Republic it is possible to share electricity between two separated connection points by direct connection (without using of distribution system operator network). Also, quasi-sharing (mentioned above and in the case study in last chapter) can in its essence be considered as a connection between two separated points of a one owner.

In Georgia, the provision for electricity sharing is outlined in Art. 32.2.(b) of the Electricity Retail Market Rules. It states that if the owner of a micro-generating power plant produces electricity and supplies it to different locations within the same supplier's service area, or if the owner of the micro-generating power plant is served by the same supplier at multiple delivery addresses, then electricity sharing is allowed.

In Latvia sharing will occur within the net billing system and will be exclusively accessible to active consumers who generate electricity from renewable energy sources. This sharing mechanism will be structured to allow surplus, unconsumed electricity to be credited towards the electricity consumption at another connection point of the same active consumer. Although the basic framework regarding the net billing system is already laid down in Electricity Market Law, detailed framework is still needed and is expected to be regulated by forthcoming Cabinet of Ministers regulations which are currently under preparation.

vi. Renewable Energy Sources Utilized by Energy Prosumers for Self-Generation

The primary renewable energy sources utilized by energy prosumers for self-generation are solar and wind, with biomass, hydropower, and biogas also playing significant roles in their energy production portfolios.

Figure 7: ***Renewable Energy Sources for Energy Prosumer Self-Generation***

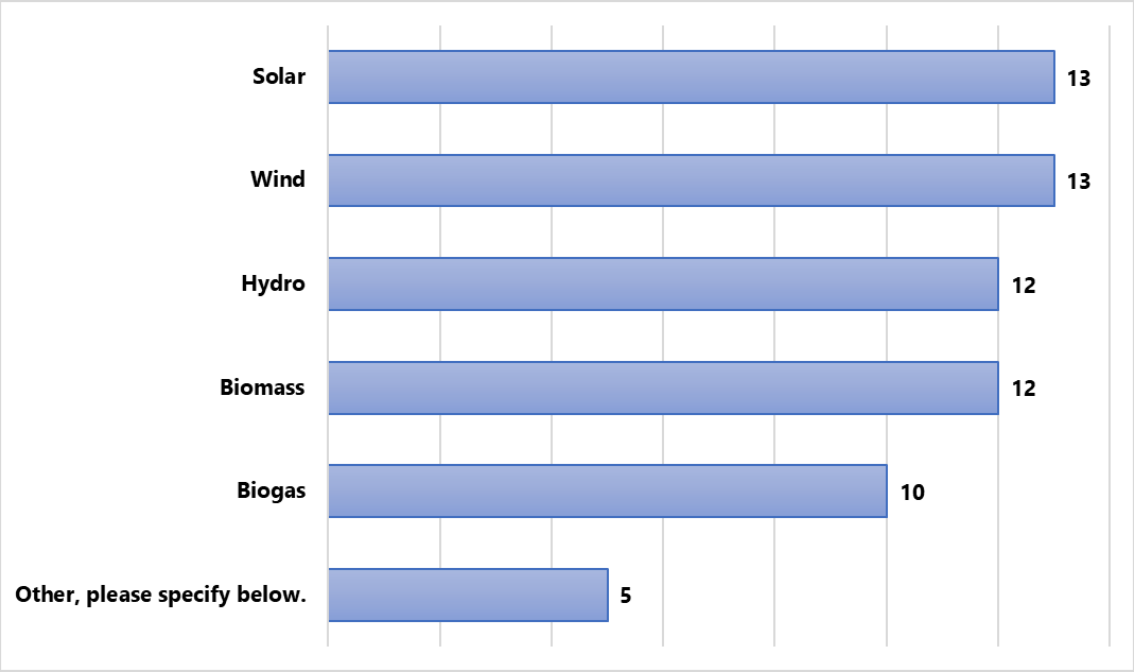


Figure 8: ***Renewable Energy Sources for Energy Prosumer Self-Generation (in detail)***

	Solar	Wind	Hydro	Biomass	Biogas	Other, please specify
AM	■	■	■	■	■	■
AZ	■	■	■	■		■
CZ						■
DZ						■
EE	■	■	■	■	■	
GE	■	■	■	■	■	
HU	■	■	■	■	■	
LV	■	■	■	■	■	
LT	■	■	■	■	■	
MD	■	■	■	■	■	
MK	■	■				
PL	■	■	■	■	■	
RO	■	■	■	■	■	
SK	■	■	■	■	■	
TR	■	■	■	■		
∑	13	13	12	12	10	4

In Algeria, energy prosumers can harness a wide range of renewable energy sources, as defined by Law 02-01, in addition to waste recovery, to constitute their energy sources.

In Armenia, energy prosumers have the flexibility to utilize any renewable energy resource of their choice for self-generation.

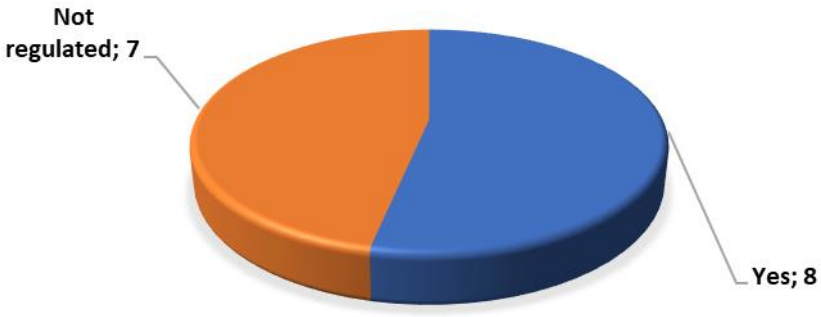
In Azerbaijan, the Law on the use of renewable energy sources in electricity generation permits prosumers to tap into a variety of renewable energy sources, including hydropower, wind energy, solar energy, geothermal energy, biomass energy, wave energy in seas and oceans, tidal energy, as well as the energy of water flows, and more.

In the Czech Republic, while not explicitly regulated as mentioned earlier, customers have the freedom to produce their own electricity, provided that this activity does not meet the criteria of entrepreneurship. The production facility is limited to an installed capacity of 50 kW, and there are no specific restrictions on the sources used for self-generation.

vii. Delegating Energy Prosumer Activities to Third Parties: Regulatory Implications

Based on the responses, it can be inferred that eight countries have established regulations permitting energy prosumers to delegate installation, operation, data handling, and maintenance to third parties without classifying them as energy prosumers, while in seven countries, no specific regulations on this matter exist.

Figure 9: ***Delegating Energy Prosumer Activities to Third Parties***



Responses:	
Yes (8)	AM, HU, LV, LT, PL, RO, SK, TR
Not regulated (7)	DZ, AZ, CZ, EE, GE, MK, MD

In Estonia, while not explicitly regulated by law, the delegation of these activities is permitted; however, it must be ensured that such delegation does not conflict with any provisions of the Electricity Market Act.

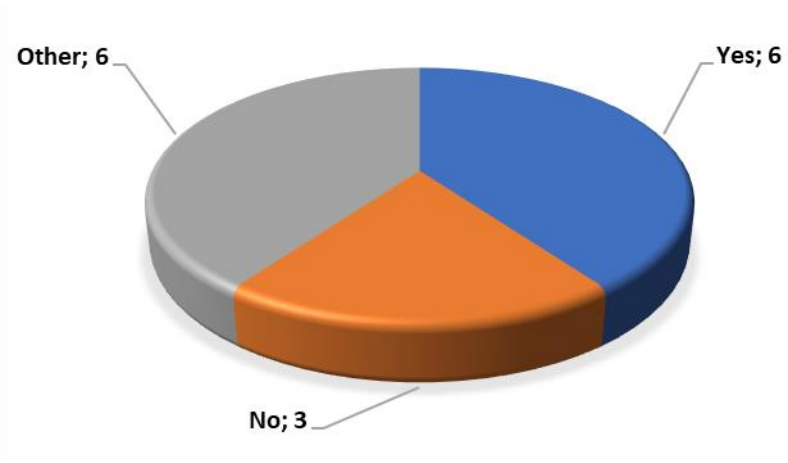
In Hungary, for energy prosumers with a capacity of less than 0,5 MW, the delegation of these activities to third parties who are not classified as energy prosumers is allowed. However, for cases with a capacity of 0,5 MW or more, such delegation is not permitted.

In Lithuania, an energy prosumer, whether a legal or natural person, produces and consumes electricity for their own needs. They have the option to hire an enterprise to install and maintain the power plant, with the enterprise being required to hold qualifications for electrical installation work. Data handling is conducted through the DSO DataHub.

viii. System Cost Contribution of Energy Prosumers through Transparent Network Charges

In six ERRA countries, energy prosumers actively contribute to the overall system cost by adhering to cost-reflective, transparent, and non-discriminatory network charges. These charges are meticulously structured to account separately for the electricity they feed into the grid and the electricity they draw from it. Conversely, in three countries, energy prosumers are exempt from paying grid charges for the electricity they inject into the grid.

Figure 10: ***Contribution of Energy Prosumers to System Costs via Transparent and Equitable Network Charges Accounting for Grid Interaction***



Responses:	
Yes (6)	EE, LV, LT, PL, SK, TR
No (they are exempted from paying grid charges for the electricity they feed into the grid) (3)	GE, MD, MK
Other, please explain (6)	AM, AZ, DZ, CZ, HU, RO

In Armenia, autonomous energy producers (generators) are subject to payment for the energy distribution service based on rates established by the Commission, as outlined in accordance with market rules. However, beginning on September 1, 2023, in scenarios where autonomous energy production occurs within the same residential or public-purpose building or within a complex of building units situated at the same address, no distribution service fee is levied upon the autonomous energy producer or participants in an autonomous group. This exemption applies when all group participants are either autonomous energy producers or consumers associated with the same building or complex of building units located at the same address.

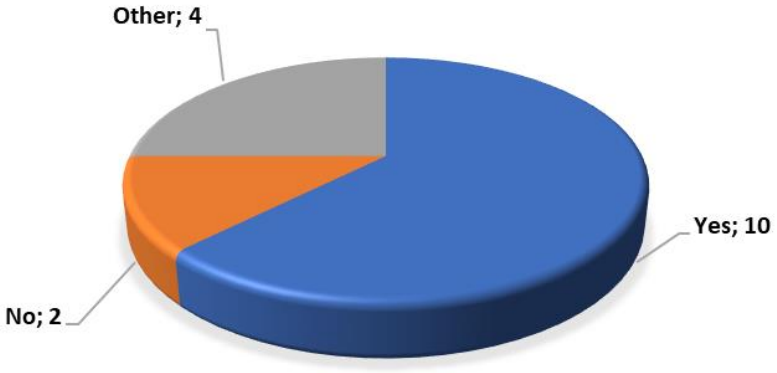
In Azerbaijan, a one-time connection fee is applicable, whereas in Romania, in accordance with national legislation, energy producers are exempted from paying tariffs for the energy injected into the distribution network.

In Hungary there is twofold regulation in force currently. In case of household consumers/prosumers having small scale generation (a household scale micro power plant connected to a low voltage system with an interconnection capacity of less than 50 kVA at any given connection point) established before 31.12.2023 pay network charges for the difference between the feed-in (injection) and the off-take (consumption). Household consumers that have started small scale generation after 01.01.2024 pay network charges for feed-in and off-take. In the case of other types of consumers/prosumers (micro powerplants with a nominal generation capacity of less than 50 MW) the answer is yes as prosumers pay network charges for feed-in and off-take separately.

ix. Responsibilities and Jurisdiction of National Regulatory Authorities Regarding Energy Prosumers

The regulatory landscape for energy prosumers across ERRA countries varies significantly in terms of competencies and responsibilities. In Armenia, the regulator is primarily involved in policy and methodology development related to autonomous energy production. In Georgia, the NRA's oversight centers on specific regulations governing micro-generating power plant connections and pricing during transitional periods. Hungary's NRA actively monitors various aspects related to energy prosumers and works to identify and eliminate potential barriers. Latvia's NRA focuses on tariff establishment for system services, with nuanced applications for prosumers based on connection point characteristics. Lithuania's NRA handles fee establishment for using electricity network system (distribution tariff) and dispute resolution between prosumers and energy companies. In North Macedonia, the NRA's primary role is to provide grid charge exemptions for energy prosumers. Poland's regulator produces annual reports on electricity generation in renewable energy source micro installations. In Romania, the distribution operator certifies prosumer status based on installed capacity. In Slovakia NRA permits are required for facilities exceeding 1 MW capacity, whereas prosumers are subject to specific reporting obligations to the Office for the Regulation of Network Industries (ÚRSO), depending on factors such as the technical parameters, the installed capacity of their production facility, whether their production is profitable, or if they receive subsidies. In Türkiye, the NRA defines criteria for evaluating applications from consumption facilities involved in unlicensed electricity generation, while in Estonia, energy prosumer activities remain largely unregulated, with the regulator maintaining a limited role in overseeing their operations.

Figure 11: ***NRA duties and/or jurisdiction over Energy Prosumers***



Responses:

Yes (10)	AM, GE, HU, LV, LT, MK, PL, RO, SK, TR
No (2)	MD, MZ
Other, please explain (4)	AZ, DZ, CZ, EE

The Armenian NRA has authority to develop and implement secondary legislation in the energy sector. Among other responsibilities, this includes approving market rules and grid codes, as well as defining methodologies for organizing autonomous power production. Within the Retail electricity market rules, detailed provisions outline the organization and compensation of autonomous power production, while the Distribution network code outlines regulations for the grid connection of autonomous power producers' installations. The NRA is responsible for approving the sample form of contract between autonomous power producer and universal supplier. Additionally, NRA continuously monitors the development of the autonomous power producer's activities, identifies barriers and makes improvements in the market rules and grid codes to facilitate the self-consumption grid and market integration.

The Georgian NRA primarily holds responsibilities related to the oversight of specific regulations outlined in the Electricity Distribution System Operator Rules, particularly Art. 21 and 22. These regulations pertain to the connection of micro-generating power plants to the electrical grid and include provisions that impose a limit

on the total installed capacity of such plants. Specifically, micro-generating power plants connected to the network of the system operator must not collectively exceed 4 percent of the peak load within the distribution network managed by the relevant system operator. Furthermore, in line with Art. 45, which addresses regulations during the transitional period, the NRA is involved in price determination. This article stipulates that the price of electricity generated by micro-generating power plants operated by either the universal service provider or a public service electricity supplier and subsequently delivered to the distribution network should align with the rates paid by electricity distribution licensees for the electricity they procure for the network.

In Hungary, the NRA is monitoring various aspects related to energy prosumers. This oversight extends to active customers, jointly acting active customers, renewables self-consumers, renewable energy communities, and energy communities. The NRA tracks changes in the volume of electricity generated and consumed by these entities, while also keeping a watchful eye on the establishment of energy communities and the prevalence of aggregation activities. Moreover, the NRA proactively identifies potential barriers that could impede the efficient functioning of these entities within the energy landscape. When such barriers are identified, the NRA takes proactive measures to address them. This includes making recommendations to the Minister aimed at eliminating these obstacles and fostering a conducive environment for energy-related activities.

Latvian NRA primarily focuses its competence on the establishment of tariffs for the system service within the energy sector. Specifically, the NRA is responsible for setting these tariffs, which are designed to ensure the smooth functioning of the system. It's worth noting that the application of tariff in the case of prosumers is contingent upon various factors, including the specific characteristics of the connection point and the allowed capacities. This nuanced approach ensures that the tariff structure aligns with the diverse needs and circumstances of prosumers.

Lithuania's NRA primary duties include the establishment of fees for the utilization of electricity network maintenance services. Additionally, the NRA plays a crucial role in managing and resolving disputes that may arise between energy prosumers and energy companies. This dual function ensures a fair and transparent environment within the energy market.

Conversely, in North Macedonia, the primary NRA competence related to energy prosumers revolves around providing exemptions from grid charges. This measure is aimed at promoting and supporting energy prosumers in their endeavors within the energy landscape.

The competences of the Polish NRA in the realm of prosumers are somewhat limited, as a significant portion of statutory responsibilities related to prosumers is carried out by electricity distribution system operators. Nevertheless, it's noteworthy that the Polish NRA plays a role in producing annual reports concerning electricity generated in renewable energy source (RES) micro installations, as stipulated by Art. 6a of the RES Act. These reports have been published since 2018 and rely on data supplied by the distribution system operators (DSOs).

In Romania, the certification of prosumer status is conducted by the distribution operator to which the prosumer is connected. This applies to both prosumers who own electricity production facilities from renewable sources with an installed capacity of up to 400 kW per place of consumption, in accordance with the Procedure for connecting consumption and production locations of prosumers to publicly owned electric networks approved by the Romanian NRA Order no. 19/2022, as well as for prosumers with electricity production facilities from renewable sources exceeding 400 kW per place of consumption, in line with the provisions of Article 55, paragraph (3) of the Regulation governing the connection of users to publicly owned electric networks, approved by the Order of the President of the Romanian NRA no. 59/2013, with subsequent amendments and revisions.

In Slovakia, if a prosumer intends to produce electricity in a facility with an installed capacity exceeding 1 MW, store electricity in a facility for electricity storage with an installed capacity greater than 1 MW, or supply electricity, they are required to obtain a permit from the NRA.

In Türkiye, the NRA plays a crucial role in defining the criteria for evaluating applications from consumption facilities engaged in unlicensed electricity generation by distribution companies and in resolving related disputes.

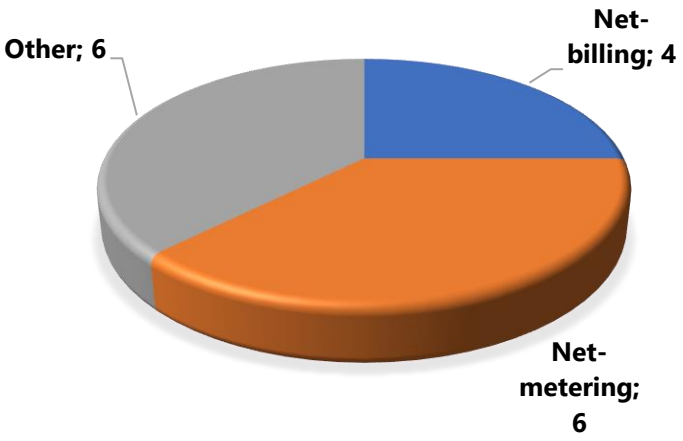
In Azerbaijan, the NRA (AERA) has the power over all customers, including active consumers. However, there isn't a distinction between prosumers and other customers in its charter or other relevant legislation. AERA and RES Agency of Azerbaijan are under the Ministry of Energy. Therefore, all legislative acts (laws and by-laws) concerning RES that are prepared or commented by the Ministry or by the RES Agency are due to be coordinated with AERA from regulatory and technical supervision points of view (AERA also is the technical supervisory authority of Azerbaijan in electricity, heat energy and gas supply fields). AERA plays the role of the arbiter between DSO and consumers (including active consumers) (clause 1.1 of its Charter), reviews issues concerning cases of infringement of the Customers' Rights Protection Law; takes prompt actions for refining services, rendering to customers by TSO and DSOs, etc.

In Estonia, energy prosumer activities are not subject to direct regulation, and consequently, the NRA maintains a limited role in overseeing their operations.

x. Compensation Schemes for Energy Prosumers

Net-metering and net-billing are the most widely adopted compensation mechanisms among countries, with Armenia, Hungary, Lithuania, Moldova, and Türkiye favoring net-metering, while Georgia, North Macedonia, Poland, and Romania opt for net-billing. Romania, however, employs both mechanisms based on installed capacity thresholds. In the net-metering system, prosumers receive credits for surplus electricity they feed into the grid, effectively offsetting their future consumption. Azerbaijan implemented a system that is close to net-metering with a particularity that a set-off is due to be completed just at the end of each year (it is a combination of 2 systems). Lithuania is currently enrolling possibility for prosumers to switch from using net-metering to net-billing scheme Conversely, net-billing entails either payment or credit at specified rates for surplus electricity. Notably, several countries, such as Algeria, Czech Republic, Estonia, Latvia, and Slovakia, either lack direct payment compensation mechanisms or are currently in the process of formulating regulations for prosumer compensation (or for prosumers in general). In Latvia for instance, there are both a net-metering system (available only to households) and a net-billing system. Within the framework of the net-billing system (once the secondary legislation is in place), the prosumer will be able to sell the energy. Within the framework of the net-metering system, the prosumer can transfer the surplus to the grid and later receive and consume it from the grid. This diversity underscores the distinctive approaches taken by nations in addressing prosumer compensation within their energy sectors.

Figure 12: ***Compensation Schemes for Energy Prosumers***



Responses:

Net-billing (4)	GE, MK, PL, RO
Net-metering (6)	AM, HU, LT, MD, RO, TR
Other, please specify below (6)	AZ, DZ, CZ, EE, LV, SK

In Armenia, as per the Energy law, the following net metering regulation is applied**:**

- Under the autonomous power production, the electricity supplied to the universal supplier and electricity consumed by the autonomous power producer (group members in case of the autonomous group) shall be netted on a monthly basis regardless of the electricity generation and consumption hours.
- In cases where a positive difference (surplus) occurs on a monthly basis between the electricity supplied to the universal supplier and electricity consumed by the autonomous power producer (by members of the group in case of autonomous group), it should be added to the electricity supplied to the universal supplier by the autonomous power producer (or autonomous producers involved in the group in case of autonomous group) during the following month. After the last month of the settlement year the autonomous power producer will be compensated for the surplus electricity delivered to universal supplier. The price of the surplus electricity is set as the minimum imbalance settlement price in the wholesale electricity market during the settlement year.
- In cases where a negative difference (deficit) occurs on a monthly basis between the quantity of electricity supplied to the universal supplier and electricity consumed by the autonomous power producer (by members of the group in case of autonomous group), the autonomous power producer will need to compensate for that electricity based on the retail tariffs set by the NRA.

In Estonia there is no such scheme set by law.

In Romania, in accordance with the stipulations outlined in Article 73^1, paragraphs (3) and (4) of Law No. 123/2012, along with subsequent amendments and revisions, the following regulations apply:

(3) Upon request from prosumers who generate electricity using electricity production units with an installed capacity of up to 200 kW, and with whom they have entered into electricity supply contracts, electricity suppliers are mandated to:

a) Include quantitative compensation in the prosumers' invoices, wherein they bill solely the difference between the amount of energy consumed and the amount of energy produced and delivered to the network.

b) Carry forward, within the prosumers' invoices, any surplus energy in cases where the volume of energy produced and fed to the network exceeds the energy consumption. Prosumers are permitted to utilize this carried-forward energy for a maximum period of 24 months from the date of invoicing.

(4) Upon request from prosumers who produce electricity using energy production units with an installed capacity ranging from 200 kW to 400 kW, and with whom they have entered into electricity supply contracts, electricity suppliers are required to:

a) Purchase the electricity produced and delivered as per paragraph (1) at a rate equal to the weighted average price observed in the Day Ahead Market for the respective month in which the energy was generated.

b) Implement financial settlement between the electricity delivered and the electricity consumed from the network within the prosumers' invoices.

In Slovakia, it's important to note that prosumers do not receive direct compensation for their energy generation; however, they are eligible for various subsidies aimed at promoting renewable energy adoption. These subsidies encompass support for initiatives such as building solar panels, installing heat pumps, and adopting solar collectors. For detailed information on these subsidy programs and how to access them, individuals can refer to the website of the Slovak Innovation and Energy Agency: https://zelenadomacnostiam.sk/sk/

In Latvia, although the basic framework is already laid down in Electricity Market Law, detailed framework for compensating prosumers is still in the draft stage and is expected to be regulated by forthcoming Cabinet of Ministers regulations, which are currently under preparation.

xi. Compensation Mechanism in Net-Billing Systems

Diverse pricing mechanisms for kWh fed into the grid are evident across various countries. In Poland, it relies on a weighted average price, whereas Romania aligns it with the weighted average price observed in the Day-Ahead Market for the respective month of energy generation. Azerbaijan's approach entails two scenarios, involving compensation to the electricity supply (transmission) for surplus electricity or reimbursement to the prosumer, depending on the balance of the actually received (obtained) by meters versus fed-back electricity. Georgia's pricing mechanism is tied to the average market price in the day-ahead market, with a transitional period following 2021 distribution system operator rates. Meanwhile, North Macedonia utilizes a formula to calculate surplus value (C) based on prosumer consumption relative to production, relying on the prosumer's average price (PCE) for purchased electricity, excluding grid charges and taxes, over a six-month period. These variations in pricing highlight the nuanced approaches to compensating prosumers for their contributions to the grid.

Figure 13: ***Paid Price for each kWh Fed into the Grid***

Weighted average price.	**1**	PL
DAM price.	**1**	RO
Other, please explain.	**3**	AZ, GE, MK

In Azerbaijan, as per the provisions outlined in the Law on the Use of Renewable Energy Sources in Electricity Generation (RES Law), specifically Article 10.2, the calculation of the residual electricity's value is carried out after the conclusion of the defined accounting period for replacement. This calculation follows two scenarios:

1. If the electricity actually received (obtained) by the meters from the network exceeds the electricity fed to the network, the active consumer is obligated to compensate for the cost of the surplus electricity to the electricity supplier. This compensation amount is based on the retail tariff corresponding to the consumer group.

2. Conversely, if the electricity actually received (obtained) by the meters from the network is less than the electricity fed to the network, the electricity supplier is responsible for reimbursing the consumer for the cost of the surplus electricity. This reimbursement is based on the wholesale tariff at the time.

In Clause 5 of the "Active consumer support mechanism Rules" is stipulated that:

5.2.1. If the electricity transmitted by the active consumer to the power supply network during the reporting period exceeds the electricity received from the network, the balance of the active consumer is reflected in the notification of the current month, taking the balance at the beginning of the reporting period into account;

5.2.2. Compensation is continued in each subsequent reporting period, taking the balance of the previous reporting period into account, until the end of the reporting year;

5.2.3. If the electricity received from the electricity supply network during the reporting period exceeds the electricity transmitted to the network, the balance of the active consumer is reduced according to the difference.

In Georgia, as outlined in Art. 31.3 of the Electricity Retail Market Rules, the purchase price for electricity generated by micro-generation power plants and supplied to the distribution network by the universal service provider or public service electricity supplier is determined based on the average market price observed in the day-ahead market. However, during the transitional period, which extends until April 30, 2024, Art. 45.2 specifies a different pricing mechanism. During this interim phase, the price aligns with the rates that distribution system operators (DSOs) paid in 2021, a measure taken pending the enforcement of electricity DSOs unbundling regulations.

In North Macedonia, the calculation of the surplus value (C) for electricity taken from the prosumer by the supplier during a six-month calculation period follows a specific formula:

- If the electricity consumed by the prosumer (Ei) is equal to or greater than the electricity fed back to the distribution network (Ep) within the calculation period, the formula is C = PCE * 0.9.
- If the electricity consumed by the prosumer (Ei) is less than the electricity fed back to the distribution network (Ep) within the calculation period, the formula is C = PCE * 0.9 * (Ei / Ep).

Here, Ei represents the total electricity (measured in kWh) delivered by the supplier and consumed by the prosumer during the calculation period, while Ep represents the total electricity (measured in kWh) fed back to the electricity distribution network by the prosumer in the same period.

PCE signifies the average price (in MKD/kWh) that the prosumer pays to the supplier for the electricity they purchase, excluding any grid charges, fees, or taxes, and this average is calculated over the entire calculation period.

xii. Special Charges Imposed on Prosumers

In the majority of countries, special charges are not imposed on prosumers. Armenia, Estonia, Hungary, Latvia, Moldova, North Macedonia, Romania, and Slovakia all confirm that there are no special charges applied to prosumers.

Figure 14: ***Special Charges Imposed on Prosumers***

Balancing reserves	**1**	PL
Grid reinforcements	**1**	LT
Recovery network costs		
Fixed network costs	**1**	PL
Other, please specify below	**12**	AM, AZ, CZ, EE, GE, HU, LV, LT, MD, MK, RO, SK

However, in Poland, there are prosumer charges related to balancing reserves and fixed network costs. In Azerbaijan, prosumers are obligated to install a net-meter (meter, which allows the calculation of electricity feed to and received from the grid) and additionally (in accordance with the new article 8-1 of the Electricity Law) if they are located out of the area envisaged with the plans stipulated in the Building and City Planning Code, they have to connect to the electricity network at their own expense (if their area is encompassed by city plan, such connection must be paid by DSO). Meanwhile, Lithuania enforces a fee for using the electricity network maintenance service. Additionally, in cases where grid upgrades are necessary for prosumer installations, prosumers individually contribute to the associated grid upgrade costs. This diverse regulatory landscape regarding special charges highlights the varying approaches adopted by different regions, with some opting for minimal or no charges while others consider cost-sharing arrangements under specific circumstances.

xiii. Operational Challenges Arising from High Penetration of Prosumers

The operational challenges arising from the proliferation of prosumers vary significantly among countries, reflecting the dynamic nature of the energy landscape.

Figure 15: ***Operational Issues Arising from High Prosumer Penetration***

Residual loads.	**3**	HU, LV, PL
High ramp-up rates.	**1**	HU
Negative pricing.	**2**	LV, PL
Other, please specify below.	**3**	LT, MK, RO

In Hungary, Latvia, and Poland, the prominent challenge revolves around residual loads, with Hungary additionally facing issues related to high ramp-up rates. Both Latvia and Poland have identified the problem of negative pricing, a consequence of increased prosumer presence. Lithuania faces with the practical obstacle of high grid reconstruction costs, which has to be partially covered by the newly launching prosumers, as the available grid capacity is decreasing. While North Macedonia currently experiences modest prosumer penetration, the anticipation of operational challenges is tied to residual loads, grid stability, and negative pricing, particularly during peak hours in summer. Romania is witnessing a rising prosumer population, accompanied by emerging issues such as billing delays, the imperative need for energy storage regulation, and grid voltage complications. To address these challenges, the Romanian National Regulatory Authority is actively developing regulations tailored to the prosumer sector.

Overall, the diverse challenges underscore the necessity for bespoke regulatory and technical solutions to ensure the seamless integration of prosumers into the grid and energy markets.

xiv. Other Regulatory Considerations and Lessons Learned from Prosumer Implementation

Several ERRA member countries are in various stages of implementing prosumer-related legal frameworks. The Czech Republic, for instance, is still in the process of establishing the legal status of prosumers, with an expected amendment to the Energy Act set for 2024. In Egypt, GASREG primarily focuses on the natural gas sector, and while prosumers aren't currently within its scope, studies are underway for potential prosumer involvement in the emerging hydrogen sector.

Hungary is grappling with voltage quality issues as prosumer penetration rises, while Latvia foresees challenges related to oversupply during peak solar and wind generation hours, contingent on the full implementation of reservations for renewable energy projects.

Lithuania initially faced issues with grid reconstruction costs for prosumers, leading to canceled applications, but later modified its financial support calls to require connection conditions from DSOs.

Poland has experienced rapid prosumer development, resulting in challenges related to micro-installation capacity integration into the national power system, leading to amendments in prosumer energy regulations to enhance power system flexibility, network management, and process automation.

These insights highlight the diverse regulatory and operational considerations across ERRA member countries as they navigate the evolving landscape of prosumer energy integration.

I.3. Conclusions on Energy Prosumers

Based on the information provided, it can be concluded that in ten of the ERRA member countries, there exists a legal framework pertaining to energy prosumers. In five ERRA member countries, there are practical instances of energy prosumers, even though there might not be a specific legal framework in place, or it may still be in the process of being adopted. However, in the two ERRA member countries, there is neither a legal framework nor any practical presence of energy prosumers.

In Armenia, Azerbaijan, Estonia, Hungary, Latvia, Lithuania, North Macedonia, Poland, Romania, and Slovakia, there are well-defined terms related to energy prosumers or active consumers in either primary or secondary legislation. A common thread among these definitions is the utilization of renewable energy sources for the generation of electricity intended for self-consumption. However, variations exist in terms of additional permissible activities, eligibility criteria, installed capacity restrictions, and other regulatory aspects.

In Algeria, Czech Republic, Georgia, Moldova, and Türkiye, a specific legal framework explicitly addressing the concept of energy prosumers is currently absent. However, it's important to note that, in practice, there are instances of prosumers in these countries. Furthermore, ongoing legislative procedures aim to establish a more comprehensive framework to accommodate and regulate energy prosumers in the coming period.

In the majority of the cases examined, households, public institutions, schools, municipalities, and private companies have the opportunity to attain the status of an energy prosumer or active consumer. However, this option is somewhat less prevalent for communities of household owners.

The predominant activity pursued by energy prosumers, observed across most of the examined countries, is the generation of renewable electricity for self-use. This is followed by engaging in demand flexibility measures,

participating in electricity sharing initiatives, actively participating in energy efficiency programs, and providing electricity storage services. Notably, regulations for peer-to-peer trading are currently in place in Latvia, but practical implementation is still pending.

Electricity sharing among different connection points owned by the same individual or entity is currently established in six ERRA member countries. In Armenia, the framework governing energy sharing is regulated through the Energy law and further specified in the Retail electricity market rules. Renewable energy power producers operating in the electricity market under competitive terms and autonomous power producers have the right to generate electricity at one or more delivery points of the distribution network and to consume it at the same or different connection points. For autonomous power producers, energy sharing is available under the net metering scheme. The procedures and cases are outlined in the Retail electricity market rules. Georgia's Electricity Retail Market Rules, Art. 32.2.(b), explicitly permit electricity sharing for micro-generating power plants supplying multiple locations within the same supplier's service area or serving the same supplier at various delivery addresses. Latvia facilitates electricity sharing within its net billing system, exclusively for active consumers engaged in renewable energy generation, enabling them to credit surplus electricity toward consumption at other connection points within the licensed area of the same system operator (detailed framework is still needed and is expected to be regulated by forthcoming Cabinet of Ministers regulations which are currently under preparation).

The primary renewable energy sources utilized by energy prosumers for self-generation are solar and wind, with biomass, hydropower, and biogas also playing significant roles in their energy production portfolios.

In eight countries there are established regulations permitting energy prosumers to delegate installation, operation, data handling, and maintenance to third parties without those third parties to be classified as energy prosumers, while in seven countries, no specific regulations on this matter exist.

In six ERRA countries, energy prosumers actively contribute to the overall system cost by adhering to cost-reflective, transparent, and non-discriminatory network charges. These charges are meticulously structured to account separately for the electricity they feed into the grid and the electricity they draw from it. Conversely, in three countries, energy prosumers are exempt from paying grid charges for the electricity they inject into the grid.

The regulatory landscape for energy prosumers across ERRA countries varies significantly in terms of NRA’s competencies and responsibilities. In Armenia, the regulator is primarily involved in policy and methodology development related to autonomous energy production. In Georgia, the NRA's oversight centers on specific regulations governing micro-generating power plant connections and pricing during transitional periods. Hungary's NRA actively monitors various aspects related to energy prosumers and works to identify and eliminate potential barriers. Latvia's NRA focuses on tariff establishment for system services, with nuanced applications for prosumers based on connection point characteristics. Lithuania's NRA handles fee establishment for electricity network maintenance services and dispute resolution between prosumers and energy companies. In North Macedonia, the NRA's primary role is to provide grid charge exemptions for energy prosumers. Poland's regulator produces annual reports on electricity generation in renewable energy source micro installations. In Romania, the distribution operator certifies prosumer status based on installed capacity. In Slovakia NRA permits are required for facilities exceeding 1 MW capacity, whereas prosumers are subject to specific reporting obligations to the Office for the Regulation of Network Industries (ÚRSO), depending on factors such as the technical parameters, the installed capacity of their production facility, whether their production is profitable, or if they receive subsidies. In Türkiye, the NRA defines criteria for evaluating applications from consumption facilities involved in unlicensed electricity generation, while in Estonia, energy

prosumer activities remain largely unregulated, with the regulator maintaining a limited role in overseeing their operations.

Net-metering and net-billing are the most widely adopted compensation mechanisms among countries, with Armenia, Hungary, Lithuania, Moldova, and Türkiye favoring net-metering, while Georgia, North Macedonia, Poland, and Romania opt for net-billing. Azerbaijan has mixed mechanism that is closer to the net-metering. Romania, however, employs both mechanisms based on installed capacity thresholds, net metering for the active energy without taxes and net billing in the invoice. In the net-metering system, prosumers receive credits for surplus electricity they feed into the grid, effectively offsetting their future consumption. Conversely, net-billing entails either payment or credit at specified rates for surplus electricity. Notably, several countries, such as Algeria, Czech Republic, Estonia, Latvia, Lithuania, and Slovakia, either lack direct payment compensation mechanisms or are currently in the process of formulating regulations for prosumer compensation (or for prosumers in general). This diversity underscores the distinctive approaches taken by nations in addressing prosumer compensation within their energy sectors.

Diverse pricing mechanisms for kWh fed into the grid are evident across various countries. In Poland, it relies on a weighted average price, whereas Romania aligns it with the weighted average price observed in the Day Ahead Market for the respective month of energy generation. Azerbaijan's approach entails two scenarios, involving compensation to the electricity supplier for surplus electricity or reimbursement to the prosumer, depending on the balance of transmitted and received (obtained) by the meters versus fed-back electricity. Georgia's pricing mechanism is tied to the average market price in the day-ahead market, with a transitional period following 2021 distribution system operator rates. Meanwhile, North Macedonia utilizes a formula to calculate surplus value (C) based on prosumer consumption relative to production, relying on the prosumer's average price (PCE) for purchased electricity, excluding grid charges and taxes, over a six-month period. These variations in pricing highlight the nuanced approaches to compensating prosumers for their contributions to the grid.

In the majority of countries, special charges are not imposed on prosumers. Armenia, Estonia, Hungary, Latvia, Moldova, North Macedonia, Romania, and Slovakia all confirm that there are no special charges applied to prosumers.

The operational challenges arising from the proliferation of prosumers vary significantly among countries, reflecting the dynamic nature of the energy landscape. In Hungary, Latvia, and Poland, the prominent challenge revolves around residual loads, with Hungary additionally facing issues related to high ramp-up rates. Both Latvia and Poland have identified the problem of negative pricing, a consequence of increased prosumer presence. Lithuania grapples with the practical obstacle of imposing substantial fees for connecting solar power plants to the electricity grid, driven by the imperative need for grid reconstruction. While North Macedonia currently experiences modest prosumer penetration, the anticipation of operational challenges is tied to residual loads, grid stability, and negative pricing, particularly during peak hours in summer. Romania is witnessing a rising prosumer population, accompanied by emerging issues such as billing delays, the imperative need for energy storage regulation, and grid voltage complications. Overall, the diverse challenges underscore the necessity for bespoke regulatory and technical solutions to ensure the seamless integration of prosumers into the grid and energy markets.

Several ERRA member countries are in various stages of implementing prosumer-related legal frameworks. The Czech Republic, for instance, is still in the process of establishing the legal status of prosumers, with an expected amendment to the Energy Act set for 2024. In Egypt, GASREG primarily focuses on the natural gas sector, and while prosumers aren't currently within its scope, studies are underway for potential prosumer involvement in

the emerging hydrogen sector. Hungary is grappling with voltage quality issues as prosumer penetration rises, while Latvia foresees challenges related to oversupply during peak solar and wind generation hours, contingent on the full implementation of reservations for renewable energy projects. Lithuania initially faced issues with grid reconstruction costs for prosumers, leading to canceled applications, but later modified its financial support calls to require connection conditions from DSOs. Poland has experienced rapid prosumer development, resulting in challenges related to micro-installation capacity integration into the national power system, leading to amendments in prosumer energy regulations to enhance power system flexibility, network management, and process automation.

Overall, these insights highlight the diverse regulatory and operational considerations across ERRA member countries as they navigate the evolving landscape of prosumer energy integration.

II. ENERGY COMMUNITIES

Energy communities are more or less formalized legal entities that allow citizens, small businesses, and other legal persons to actively participate as local actors in the energy transition process – energy communities are in principle organized, institutionalized form of energy sharing, consumption and production on local, community level. As the European Commission[1] states, „*energy communities are one of the key elements for achieving the EU's energy transition: by 2050, half of Europe's citizens could be producing up to half of the EU's renewable energy*." Energy communities offer many benefits for their members – they keep money in the local economy, foster social acceptance for renewable energy, keep individual investment affordable while lowering energy bills and, nevertheless, they benefit the local community and empower customers to take action on energy and to become more involved locally. Generally, it can be concluded that energy communities can bring overall benefit to both EU and non-EU countries and their power markets and society and are therefore one of the tools to use on a way to green, decarbonized future.

II.1. The Legislation of the EU

i. Electricity Market Directive

According to Article 2 point 11 of the Directive (EU) 944/2019 on Common Rules for the Internal Market for Electricity, Citizen energy community means a legal entity that:

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

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

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

Article 16 of the Directive (EU) 944/2019 states further conditions of the citizen energy communities for the states to implement into the national legislation.

This definition was used for the purpose of the second part of the questionnaire with the knowledge of the fact that there are many non-EU ERRA Members who do not have obligation to implement the directive (EU) 944/2019 along with any EU acquis in general. Despite that it was concluded that this definition of citizen energy communities is uniform and will most likely be widely well-understood and easy to explain in a uniform way so that the data gathered by the questionnaire are also of utmost unity.

[1] See https://energy-communities-repository.ec.europa.eu/energy-communities-repository-energy-communities/energy-communities-repository-general-information_en

ii. REDII

The Directive (EU) 2018/2001 on the promotion of the use of energy from renewable sources (known as "REDII") also embeds a form of energy community called "renewable energy community" which according to Article 2 point 11 means a legal entity:

(a) which, in accordance with the applicable national law, is based on open and voluntary participation, is autonomous, and is effectively controlled by shareholders or members that are located in the proximity of the renewable energy projects that are owned and developed by that legal entity;

(b) the shareholders or members of which are natural persons, SMEs, or local authorities, including municipalities;

(c) the primary purpose of which is to provide environmental, economic, or social community benefits for its shareholders or members or for the local areas where it operates, rather than financial profits.

Article 22 of REDII states further conditions of these communities for the states to implement as in the case of Electricity Market Directive. There are some differences regarding the effective control and members of each type of community and also renewable energy community are limited in terms of energy sources only to renewables. However, it is likely that citizen energy community's sources will also most often be renewables (as also proved to be the case at most ERRA Members with energy communities' legislation answering the questionnaire – see below). Also, since the citizen energy community definition according to the Directive (EU) 944/2019 is broader and more general, it was used rather than REDII definition, which is more specific.

II.2. Key Findings

i. Legal Framework for Citizen Energy Communities

8 ERRA Members (AM, EE, HU, LV, LT, RO, SK) replied there is a legal framework regarding citizen energy communities (or similar phenomena in case of AM).

3 ERRA Members (DZ, CZ, MK) replied there are undergoing discussions about citizen energy communities, or that legal framework is being under consideration or already in the legislative process, which is not finished yet.

6 ERRA Members (AZ, EG, GE, MD, MZ, TR) stated there is no legal framework for citizen energy communities.

Figure 16: ***Legal Definition or Recognition of Citizen Energy Communities***

		Legal framework exists	Legal framework is under consideration or discussion	No legal framework
Algeria	DZ		✓	
Armenia	AM	✓		
Azerbaijan	AZ			✓
Czech Republic	CZ		✓	
Egypt	EG			✓
Estonia	EE	✓		
Georgia	GE			✓
Hungary	HU	✓		
Latvia	LV	✓		
Lithuania	LT	✓		
Moldova	MD			✓
Mozambique	MZ			✓
North Macedonia	MK		✓	
Poland	PL	✓		
Romania	RO	✓		
Slovakia	SK	✓		
Türkiye	TR			✓
	∑	**8**	**3**	**6**

ERRA Members with Legislation for Citizen Energy Communities

Analyzing the responses of those NRAs that reported there was a legal definition or recognition of citizen energy communities, we can see the following.

1. **Armenia**

In Armenia the concept of energy communities as such and according to EU legislation is not established, however Armenia described a form of collective consumption and production that is enabled in Armenia, which are called autonomous groups. According to the Trading rules of the Electricity retail market, an autonomous group is a group of an autonomous energy producer or an autonomous energy producer(s) and a consumer(s). There are 80 autonomous groups by the 1st of June 2023. These groups are not obliged to obtain a license as such and are not considered a legal entity. In order to become a member of an autonomous group, a contract needs to be signed and the consumer applies to the Armenian guaranteed supplier by submitting consumer's settlement card number (personal registration card issued by the Distributor for the consumer which includes the personalizing data and information of the consumer), the installed capacity of the power generating facility, in case of generating electricity at one or more points of the power system and consuming it at different points, the registration cards numbers of all points of production and consumption. Members of an autonomous group can be any consumer and any autonomous energy producer. In an autonomous group there can be

more than one producer. The members can be producers and consumers and can be only consumers. There is no limit to the number of group members. But the maximum installed capacity of the group's power plant must not exceed 1050 kW. The consumer can be included only in one autonomous group at the same time for each connection point. Participants in the autonomous group undergo changes no more frequently than once a year. The designated accounting year for this group spans from May 1 of one calendar year to April 30 of the following calendar year. Within this accounting year, a participant is required to maintain a minimum three-month membership duration. Furthermore, during the last three months of the accounting year, no alterations to the group's composition are allowed. Since 1st September 2023, in the case where the autonomous energy producer creating the autonomous group intends to remove a participant from the group or terminate the activity of the group, he applies to the guaranteed supplier to make appropriate changes in the contract or to resolve it, which, in case of removing a participant from the group, also includes the settlement card number of the relevant participant of the group. In the case when the autonomous group participant intends to leave the autonomous group, they apply to the guaranteed supplier, indicating his intention together with their settlement card number. Besides energy consumption, autonomous groups in Armenia are allowed to generate renewable electricity. For that purpose, they can use all sorts of renewable energy sources. Since autonomous groups are not legal entities, the question of profit is naturally not regulated. Members of the autonomous group, who are customers, retain all customer rights as non-members, however they cannot switch supplier freely, they can be supplied only by the autonomous group they are member of. As far as NRA's duties towards autonomous groups are concerned, Armenian NRA is responsible generally for policy development, regulation development and implementation or definition of methodology for organizing autonomous energy production.

Since 1st September 2023, in case of autonomous energy production in the same residential or public purpose building or in a complex of building units located at the same address, no distribution service fee is charged for the autonomous energy producer, autonomous group participants, if all group participants are autonomous energy producers or consumers of the same building or complex of building units located at the same address. Effective from 1st September 2023, no distribution service fees are levied on autonomous energy producers or participants in an autonomous group when their production occurs within the same residential or public-purpose building or a complex of building units sharing the same address. This exemption applies when all group participants are either autonomous energy producers or consumers within the same building or complex of building units at the identical address.

2. Estonia

In Estonia there is a legal framework for citizen energy communities. According to provided definition energy community from Estonian Electricity Market Act energy community is:

a legal person:

1) participation in which is voluntary and open, and which is controlled by members who are natural or legal persons;
2) whose principal aim is, instead of a monetary profit, to provide environmental, economic, or social benefits to its members or to the area in which the community operates;
3) which may provide energy services to its members;
4) whose members retain rights and obligations that they hold by virtue of legislation made under this Act as a household consumer or as an active user of energy services.

ECA does not collect information about the number of established energy communities as it does not regulate their activities and they are not obliged to report their activities to the regulator. Energy communities are not

registered by the regulator in any way, they may, however, need to register with the Business Register. Energy communities in Estonia are not required to have any specific legal form as long as they fulfill the criteria in the definition. Members of a citizen energy community can be natural persons, SMEs, local municipalities and non-business/non-profit legal entities. Members can voluntarily and freely join and/or leave the community. Besides energy consumption, citizen energy communities in Estonia are allowed to generate renewable heat and/or electricity, to provide electricity distribution (entitled to own, establish, purchase or lease distribution networks and to autonomously manage them), to provide electricity supply (sell the surplus of their generated electricity), to provide electricity aggregation (Virtual Power Plants), to provide electricity storage services, demand flexibility and energy efficiency services. These activities can be performed in the areas of solar, wind, hydro, biogas and biomass energy sources. As far as profit is concerned, there is no direct regulation of the amount that the community is allowed to distribute among its members. Members of the energy community, who are customers, retain all customer rights as non-members including the right to freely change supplier. However, an energy community can decide to set the internal rules for modifying the supplier change procedure on a voluntary basis. For example, the members may agree among themselves to only change supplier jointly for all members. If they have agreed on some common rules, generally they have to follow them. But at the same time, a member of the community does not lose any rights provided by law by simply becoming a member. Citizen energy communities in Estonia pay network charges on the same basis as other consumers or producers. As indicated above Estonian NRA does not have any duties or jurisdiction towards citizen energy communities.

3. Hungary

Hungarian law includes the definition of energy community, which is:

> a legal entity set up as a cooperative society or nonprofit business association that has for its primary purpose to provide environmental, economic or social community benefits to its members or in the field specified in the energy community's instrument of constitution, rather than to generate financial profits, by carrying out at least one of the following activities: engage in generation, storage, consumption of electricity, provide distribution flexibility services, electricity sharing, aggregation, provide electro-mobility service under the Act on Road Transportation and charging services for electric vehicles.

Currently MEKH indicates there are 2 energy communities in Hungary. The registration regime for energy communities is different from licensing regime but is executed by MEKH as NRA. A specific legal form for the energy community is required – that is cooperative or non-profit private company. Practically anybody, who can establish a company, or can hold ownership/shares in a company can become a member of a citizen energy community. Members of citizen energy community are allowed to voluntarily and freely join or leave energy community, but as the rules for the establishment of energy communities are mainly set in civil law due the mandatory legal form an energy community must have, the rules for joining and leaving the energy community are set in civil law, not in energy legislation. Besides energy consumption, citizen energy communities in Hungary are allowed to generate renewable heat and/or electricity, to provide electricity supply (sell the surplus of their generated electricity), electricity aggregation (Virtual Power Plants), electricity storage services, electricity sharing, demand flexibility, energy efficiency services and EV charging services. Citizen energy community in Hungary can establish a micro power plant with a nominal generation capacity less than 0.5 MW and an electricity storage facility with a nominal output capacity less than 0.5 MW. These activities can be performed in the areas of solar, wind, hydro, biogas and biomass energy sources. An energy community in Hungary is allowed to make profit and distribute it among its members, but financial profit cannot be the primary purpose of an energy community. There are no legislative prescription or prohibitions for this so far. Members of the energy community, who are customers, retain all customer rights as non-members, that also includes the right to freely switch supplier.

Citizen energy communities in Hungary contribute to the overall cost of the system by paying cost-reflective, transparent, and non-discriminatory network charges that separately account for the electricity they feed into and consume from the grid. MEKH has several duties regarding energy communities. The NRA registers the establishment of energy, monitors changes in the volume of electricity generated and consumed by the active customer, jointly acting active customers, renewables self-consumers, renewable energy communities, or the energy community, the establishment of energy communities, the prevalence of aggregation activities. The NRA identifies potential barriers and makes recommendations to the responsible ministry for eliminating such barriers. In case of complaints against energy communities submitted by non-household consumers, the NRA has jurisdiction to issue a decision.

4. Latvia

Latvian law includes the definition of energy community, which is:

> a legal subject which engages in generation of, trade in energy, mainly electricity obtained from renewable energy resources and renewable energy of other types, sharing, consumption, and accumulation of electricity, provision of the demand response service, provision of the electric vehicle charging service, the energy efficiency service, or other energy services.

PUC answered there is currently no energy community registered. The registration regime of energy communities in Latvia is different from licensing regime. The State Construction Control Bureau of Latvia is responsible for the creation, maintenance, administration, and management of the register of energy communities, and also for making, updating, and public accessibility of data entries.

Legal form of energy communities in Latvia is limited. Energy community can only have a form of cooperative, private company, and civil association. Members of the energy community can be natural persons, SMEs, local municipalities, or other public entities. All members are entitled to voluntarily join or leave the energy community.

Besides energy consumption, citizen energy communities in Latvia are allowed to generate renewable heat and/or electricity, to provide electricity supply (sell the surplus of their generated electricity), electricity aggregation (Virtual Power Plants), electricity storage services, electricity sharing, peer-to-peer trading, demand flexibility, energy efficiency services and EV charging services. These activities can be performed in the areas of solar, wind, hydro, biogas, and biomass energy sources.

Energy communities in Latvia are entitled to make a profit, but it must be solely used on energy community activities. Generally, the law states that the primary purpose of an energy community is not to make a profit. If the energy community is a capital company, its articles of association must provide that it shall not distribute or pay out dividends but shall invest the profits for the purposes set out in its articles of association.

Members of the energy community, who are customers, retain all customer rights as non-members. The question of free switch of a supplier remains to be discussed and regulated by the government regulation, which is at the moment still being drafted. Citizen energy communities in Latvia pay cost-reflective, transparent, and non-discriminatory network charges that separately account for the electricity they feed into and consume from the grid and contribute to the overall costs of the system. PUC have jurisdiction related to energy communities, however, its competence is limited to setting tariffs for the system service. The application of the tariff in the case of energy communities depends on the characteristics of connection point and allowed capacities.

5. Lithuania

According to Lithuanian law energy community is:

> a legal entity meeting the criteria established in the Law on Electricity, which has been granted the legal status of Citizens' Energy Community in accordance with the procedure established by the Law on Electricity.

Lithuania informed about 5 citizen energy communities and 2 renewable energy communities being registered at the moment of preparation of this report.

Citizen energy communities that want to sell electricity to their shareholders or members, as well as citizens' energy associations that produce electricity from renewable sources, do not need a permit to carry out independent electricity supply activities. Citizen energy communities in Lithuania have the right to sell produced electricity to consumers who are not its shareholders, members, or participants, if they meet the conditions and requirements set for an independent supplier and have a permit to carry out independent electricity supply activities. For citizen energy communities concluding contracts, as determined in point b of Article 4, paragraph 1 of Regulation (EU) 1348/2014, regarding the physical supply of electricity produced by an individual production unit with a capacity of no more than 10 MW or production units with a total capacity of no more than 10 MW supply and to consumers who wish to sell electricity to consumers who are not shareholders or members of that citizen's energy association, permission to carry out independent electricity supply activities is not required. A public institution, association, association of owners of multi-apartment residential houses and buildings of other purpose, association of gardeners or legal entities of another legal form, which are non-profit-making persons according to the laws governing that legal form, acquire the legal status of citizens' energy association by applying according to terms and conditions established by NERC for granting the status of citizens' energy community.

The citizens' energy association is a legal entity established on the basis of the Law on Public Institutions of the Republic of Lithuania, the Law on Associations of the Republic of Lithuania, the Law on Associations of Owners of Multi-apartment Residential Houses and Other Purpose Buildings of the Republic of Lithuania, or the Law on Gardeners' Associations of the Republic of Lithuania, or a legal entity of another legal form in accordance with the laws regulating the form, a non-profit person who, according to the founding agreement and/or articles of association or other founding documents of a legal entity, can use electricity (share electricity) and carry out the supply, demand pooling of electricity production, including production from renewable resources, energy storage activities, to provide energy efficiency services and/or electric vehicle charging services, or to provide its shareholders, members or participants with other services related to activities in the electricity sector, with the exception of distribution, and which, meeting the requirements set forth in this law, has acquired the legal status of a citizens' energy community.

Members of the energy community can be natural persons, small enterprises, non-business/non-profit legal entities, or local municipalities. All members are entitled to voluntarily join or leave the energy community. Besides energy consumption, citizen energy communities in Lithuania are allowed to generate renewable heat and/or electricity, to provide electricity aggregation (Virtual Power Plants), electricity storage services, electricity sharing, demand flexibility, energy efficiency services and EV charging services. These activities can be performed in the areas of solar, wind, hydro, biogas, and biomass. The main purpose established in the founding agreement and/or statutes of the citizen energy community is to provide environmental, economic, or social benefits to its shareholders, members, or participants or to provide those benefits in the places where it operates, and its main purpose is not to seek profit. In addition to the requirements outlined in the founding agreement, statutes, or other foundational documents of the citizen energy community, and in compliance with the provisions of the Law on Public Institutions, the Law on Associations, the Law on Associations of Owners of Multi-apartment Residential Buildings and Other Purpose Buildings, the Law on Gardeners'

Associations, or any other legislation governing the legal entity's specific legal form, the procedures for distributing income derived from electricity production activities are also stipulated. Shareholders, members or participants of the citizen energy community do not lose their rights and obligations as household consumers, producing consumers or active consumers, except for the user's right to choose the energy supply, which may be limited to choosing the energy supplier of the citizen energy community by voting regarding the energy supplier of the citizen energy community in accordance with the procedure established in the articles of association of the citizen energy community. Citizen energy communities in Lithuania contribute to the overall cost of the system by paying cost-reflective, transparent, and non-discriminatory network charges that separately account for the electricity they feed into and consume from the grid. NERC as part of its jurisdiction over citizen energy communities determines the procedures and conditions for applications for the granting of the status of the citizen energy community and grants of this status, requires the information to be provided by the distribution network operator to the NERC about the volume of the citizen energy community and active users and determines the procedure for providing this information. NERC also controls how the rights and legitimate interests of active users and citizen energy communities are ensured, including the removal of unreasonable obstacles and restrictions to their activities and development of activities. As part of its duties, NERC checks, supervises, and controls whether citizen energy communities meet the requirements set out in law and the operational goals set out in the founding agreement and/or statutes.

6. Poland

Poland has brand new energy communities' legislation. Effective from 7th September 2023, the Act of July 28, 2023, amending the Energy Law and certain other acts has entered into force, which implements a number of EU legal acts in the field of energy into the Polish legal order. Pursuant to Art. 3-point 13f of the amended Energy Law Act citizen energy community is an entity with legal capacity that:

a) is based on voluntary and open participation and in which decision-making and control rights are vested in members, shareholders or partners who are only natural persons, local government units, micro-entrepreneurs or small entrepreneurs within the meaning of Art. 7 section 1 point 1 and 2 of the Act of March 6, 2018 - Entrepreneurs' Law (Journal of Laws of 2023, items 221, 641, 803 and 1414), for whom economic activity in the energy sector is not the subject of the basic economic activity specified in accordance with the regulations issued pursuant to Art. 40 section 2 of the Act of 29 June 1995 on public statistics,

b) its main objective is to provide environmental, economic, or social benefits for its members, shareholders or associates or the local areas in which it operates,

c) may deal with:

- for electricity:
  - producing, consuming or
  - distribution, or
  - sale, or
  - rotation, or
  - aggregation, or
  - storage,

or

- implementing projects aimed at improving energy efficiency within the meaning of Art. 2 point 12 of the Act of 20 May 2016 on energy efficiency, or
- provision of electric vehicle charging services referred to in the Act of January 11, 2018, on electromobility and alternative fuels, or
- the provision of other services on electricity markets, including system services or flexibility services, or
- production, consumption, storage or sale of biogas, agricultural biogas, biomass and biomass of agricultural origin within the meaning of Art. 2 points 1, 2, 3 and 3b of the Act of February 20, 2015, on renewable energy sources (Journal of Laws of 2023, items 1436 and 1597).

Since the legislation is new, there are currently zero energy communities in Poland – the new regulation allows energy communities to operate in Poland from August 2024 the earliest. Energy communities need to have a license for their activities similarly to other market participants. This license is issued by Polish NRA – the President of ERO. Pursuant to Art. 11zi section 1 of the Energy Law Act, citizen energy community may conduct activities in the form of:

- cooperatives within the meaning of Art. 1 § 1 of the Act of September 16, 1982 - Cooperative Law (Journal of Laws of 2021, item 648 and of 2023, item 1450) and the housing cooperative referred to in the Act of December 15, 2000, on housing cooperatives (Journal of Laws of 2023, items 438 and 1463);
- a housing community referred to in Art. 6 of the Act of 24 June 1994 on the ownership of premises (Journal of Laws of 2021, item 1048);
- associations within the meaning of Art. 2 section 1 of the Act of April 7, 1989 - Law on Associations (Journal of Laws of 2020, item 2261), excluding ordinary associations;
- partnership, excluding a partnership within the meaning of Art. 4 § 1 of the Act of September 15, 2000 - Commercial Companies Code (Journal of Laws of 2022, items 1467, 1488, 2280 and 2436 and of 2023, items 739 and 825) or
- farmers' cooperatives referred to in the Act of October 4, 2018, on farmers' cooperatives (Journal of Laws, item 2073).

Members of the energy community can be natural persons, SMEs, and local municipalities. All members are allowed to freely and voluntarily join or leave the energy community. Activities of the energy community depend on the detailed provisions of additional legal acts. As a rule, in accordance with Art. 11zm section 4 of the Energy Law Act obtaining an entry in the list of citizen energy communities does not release you from the obligation to obtain a license or entry in the register of regulated activities if the civil energy community undertakes activities that are subject to the obligation to obtain a license or entry in the register of regulated activities. However, the energy community is not limited in terms of energy sources it can use to pursue its activities of electricity generation, it can use solar, wind, hydro, biogas, or biomass. The energy community is allowed to both make a profit and distribute it among its members. Pursuant to the statute or agreement of the citizen energy community the method of settlement and the division of electricity generated by generating units owned by this community within the citizen energy community is specified.

All citizen energy community members, who are customers, retain all customer rights as non-members including free switching of supplier. Citizen energy communities contribute to the overall cost of the system by paying cost-reflective, transparent, and non-discriminatory network charges that separately account for the electricity they feed into and consume from the grid.

As far as the jurisdiction of ERO is concerned towards energy communities, The President of the Energy Regulatory Office, in accordance with the provisions of, in particular, Art. 11zn of the Energy Law Act, enters (upon request) a citizen energy community in the list of citizen energy communities and performs all activities related to it (verifies the application, issues a certificate of entry, corrects the entry ex officio, etc.), but may also refuse to enter a citizen energy community in the list (by way of a decision, in the cases specified in the Act). Additionally, the President of the Energy Regulatory Office changes entries and may also remove them from the list (also in cases specified in the Act).

7. Romania

In Romania, in accordance with the provisions of art. 3 para. (24) of Law no. 123/2012, with subsequent amendments and completions, a citizens' energy community is a legal entity that meets, cumulatively, the following conditions:

a) is based on voluntary and open participation and is effectively controlled by members or shareholders, individuals, local authorities, including municipalities, or small businesses;

b) has as its main objective the provision of environmental, economic or social advantages for its members or shareholders or for the local areas in which it operates, rather than generating financial profits;

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

Citizen energy communities in Romania are required to obtain license as entrepreneurial authorization issued by ANRE similarly to other market participants. However, the number of energy communities is not available, because ANRE does not have a legal competence to manage a record of it. Energy communities in Romania are not required to have any specific legal form as long as they fulfill the criteria in the definition. Members of the energy community can be natural persons, small enterprises, non-business/non-profit legal entities, or local municipalities. All members are entitled to voluntarily join or leave the energy community. Besides energy consumption, citizen energy communities in Romania are allowed to generate renewable heat and/or electricity, to distribute electricity (entitled to own, establish, purchase or lease distribution networks and to autonomously manage them), to provide electricity supply (selling the surplus of their generated electricity) provide electricity aggregation (Virtual Power Plants), electricity storage services, energy efficiency services and EV charging services. These activities can be performed in the areas of solar, wind, hydro, biogas, and biomass. According to Romanian law citizen energy community has as its main objective the provision of environmental, economic, or social advantages for its members or shareholders or for the local areas in which it operates, rather than to generate financial profits. Members of the energy community, who are customers, retain all customer rights as non-member household consumers or active consumers and are allowed to switch supplier freely. Citizen energy communities contribute to the overall cost of the system by paying cost-reflective, transparent, and non-discriminatory network charges that separately account for the electricity they feed into and consume from the grid. As far as ANRE's duties and jurisdiction are concerned, other than stated in primary law and described above, ANRE is currently in the process of drafting the secondary legislation related to citizen energy communities, so that it aligns with the provisions of the Law no. 123/2012, with subsequent amendments and completions.

8. Slovakia

Slovakian law includes the definition of energy community, which is:

> a legal entity,
>
> a) which is established for the purpose of electricity production, electricity supply, electricity sharing, electricity storage, aggregation activity, electricity distribution, operation of a charging station or performance of other activities or the provision of other services related to ensuring the energy needs of its members or partners (hereinafter referred to as "member") with the aim of implementing environmental, economic or social community benefits,
>
> b) which does not carry out activities according to letter a) for the purpose of achieving profit,
>
> c) in which it is possible to enter, acquire a share or otherwise become a member, and from which it is possible to withdraw, terminate participation or membership based on the decision of the member
>
> d) the members of energy community are only natural persons, small businesses, higher territorial units or municipalities in the territorial district of the higher territorial unit in which the energy community is based.
>
> It follows from the above that the energy community will be established by fulfilling the above-mentioned mandatory conditions. The establishment of the community entitles it to exercise rights and obligations established in § 35a, t. j. purchase, produce, store and supply or share electricity to its members, carry out aggregation activities for its members or operate a charging station.
>
> However, the community must not carry out business activities for the purpose of making a profit, it must be explicitly about the services it provides to its members.

URSO answered there is currently one energy community in Slovakia[2] at the time of issuing this report, as the law came into effect only from 1st July 2023 and the implementation process is still ongoing. Energy communities are required to obtain a license – this licensing regime is similar to other market participants as it serves as an entrepreneurial authorization and is done at the NRA. Energy communities in Slovakia are always legal entities, but not required to have any specific legal form as long as they meet the criteria outlined in the definition.

Members of the energy community include natural persons, small enterprises, non-business/non-profit legal entities or local municipalities. All members are entitled to voluntarily join or leave the energy community. In addition to the energy consumption, citizen energy communities in Slovakia are allowed to generate renewable heat and/or electricity, to provide electricity aggregation (Virtual Power Plants), electricity storage services, electricity sharing, demand flexibility, energy efficiency services and EV charging services. These activities can encompass various renewable energy sources, including solar, wind, hydro, biogas, and biomass. As far as profit is concerned, energy community in Slovakia can distribute maximum of 50 % of its profit generated among its members. Members of the energy community, who are consumers, retain all consumer rights as non-members and are allowed to switch supplier freely. Citizen energy communities in Slovakia pay cost-reflective, transparent and non-discriminatory network charges that separately account for the electricity they feed into and consume from the grid and contribute to the overall costs of the system. URSO holds jurisdiction over energy communities – issues license and oversees and supervises their activities.

[2] For more information see the register at: https://www.urso.gov.sk/osvedcenia/?order=1

Figure 17: ***Overview of Frameworks for Citizen Energy Communities***

		NRA involvement	Registration /license	Legal form requirement	Profit (max. amount)	Consumer rights	NRA jurisdiction
Armenia	AM	Yes	Different regime	Not regulated	Not regulated	Yes, except right to switch	Yes
Estonia	EE	No	Not regulated	Not regulated	Not regulated	Yes	No
Hungary	HU	Yes	Registration	Limited	Not regulated	Yes	Yes
Latvia	LV	Yes	Registration	Limited	Solely on EnCom activities	Yes, except right to switch	Limited – tariff setting
Lithuania	LT	Yes	Registration	Limited	Regulated depending on legal form	Yes	Yes
Poland	PL	Yes	Registration + license	Limited	Not regulated	Yes	Yes
Romania	RO	Yes	License	Not regulated	Not regulated	Yes	Yes
Slovakia	SK	Yes	License	Not regulated	50 % among members	Yes	Yes

ERRA Members with Pending Legislation

Countries that have reported that the legal framework for energy communities is currently under consideration or in the legislative process include Algeria, the Czech Republic, and North Macedonia.

In Algeria, discussions and considerations are ongoing regarding energy communities and collective consumption and generation. However, no specific legislative framework has been established at this stage.

In the **Czech Republic**, a legislative proposal is currently pending and under discussion in the Chamber of Deputies, which is a lower chamber of the Czech Parliament. Therefore, as of the time of writing this report, no final form of energy communities' legislation has been determined. It cannot be predicted what features, conditions, rights or obligation these entities will have or whether the respective legislation will ultimately be enacted. Nevertheless, it should be noted that there is a significant interest in adopting this legislation, especially due to the necessary implementation of respective EU legislation.

The current proposal (known as "Lex RES 2", RES referring to *renewable energy sources*) anticipates the establishment of energy communities with a special registration regime performed by NRA. Current proposal also does not impose limitation on the legal form of energy communities and allows for anyone to become member of a citizen energy community (although certain restrictions are proposed regarding the voting rights for specific groups of members only). According to the current legislative proposal, the members of citizen energy community are to be allowed to voluntarily and freely join or leave energy community, while retaining all customer rights as non-members, including the right to switch supplier freely.

The existing proposal outlines that energy communities contribute to the overall cost of the system. Regarding profit distribution, in accordance with the present legislative draft, if a citizen energy community takes the form of a cooperative or other similar business entity, it may, if permitted by the founding legal agreement, distribute

up to 33% of its profits and other proprietary resources only among its members, provided that certain conditions are met to safeguard the community's purpose and members' needs. If a community takes the form of an association or another similar entity that is not a business corporation, the distribution of profits or other proprietary resources is prohibited.

As outlined in the most recent version of the proposal, citizen energy communities will be allowed to engage in various activities with no specific restrictions on the energy sources used for these activities. The primary activity that the citizen energy community will have the right to conduct is sharing electricity among its members. Other activities must be performed under the conditions set by the Energy Act, potentially requiring specific licenses (e.g., for supply outside the community itself). In other words, whether the community will be authorized to exercise or utilize the mentioned rights depends precisely on the fulfillment of the conditions stipulated in other provisions of the Energy Act.

To conclude, it is essential to emphasize that the aforementioned information is based on a legislative proposal (Chamber Print No. 487) currently under consideration in the Chamber of Deputies of the Parliament of the Czech Republic. This proposal may undergo (significant) changes before its adoption, if it is indeed adopted.

In **North Macedonia** as of May 2023, a new Law on Cooperatives has been introduced, providing comprehensive regulations governing the establishment, registration, operation, and termination of cooperatives. This legal framework outlines the specific conditions, methods, and procedures that cooperatives are required to adhere to, while also including provisions for effective supervision and oversight of their activities. The primary objective of this law is to enhance transparency and efficiency within the cooperative sector and to bolster their positive impact across various sectors of the economy.

Regarding energy cooperatives, while general aspects are covered by the Law on Cooperatives and existing regulations in the field of energy (provisions for residential building tenant community in the Rulebook for Renewable Energy Sources), a complete set of regulations is yet to be established. These forthcoming regulations are anticipated to be implemented alongside the transposition and incorporation of the Clean Energy Package into domestic legislation in the near future. This integration aims to bolster the development of energy cooperatives and foster sustainable energy practices within the country.

It is expected that energy communities will be required to register with the Central Register of North Macedonia and will have a limited legal form, likely that of a cooperative or a community of households-owners. According to current Law on Cooperatives and existing regulations in the field of energy members of the communities, who can be natural persons, SMEs, local municipalities or non-business/non-profit legal entities, are able to voluntarily and freely join or leave the energy communities. However, the right to freely switch supplier and retention of other customer rights as non-members are yet to be regulated, although it is expected that members will retain these rights.

Possible activities of energy communities are still to be defined but will include generation of renewable heat/electricity in the field of solar and wind energy. According to the Law on Cooperatives communities with the legal form of cooperatives will be able to make profit and distribute it among its members in the amount of up to 90 %. At least 10 % should be allocated for the reserve fund.

Regarding the contribution to the overall cost of the system this aspect is not yet regulated, but there is an anticipation, that, similarly as for prosumers, citizen energy communities could be exempted from paying grid charges for the electricity they feed into the grid, at least during an initial period in order to incentivize their establishment. The North Macedonian NRA is expected to issue these grid exemptions and there might also

be some new additional competences for ERC arising with the upcoming transposition of the Clean Energy Package.

II.3. Conclusions on Energy Communities

Based on the information provided, it can be concluded that in six ERRA Member countries, being Azerbaijan, Egypt, Georgia, Moldova, Mozambique and Türkiye, there is no legal framework for energy communities or other type of collective consumption and generation. There are three ERRA Member countries (Algeria, North Macedonia, the Czech Republic) that declared intentions or discussions around energy communities' legislation with North Macedonia and the Czech Republic mentioning draft legislation currently pending or being incomplete.

Secondly, it can be concluded that in eight ERRA Member countries there is a legal framework regarding citizen energy communities. These countries include Armenia, Estonia, Hungary, Latvia, Lithuania, Poland, Romania, and Slovakia. Nevertheless, Armenia deviates significantly from the standard citizen energy community concept outlined in Directive (EU) 944/2019, as it does not fully implement this framework. Nonetheless, Armenia permits customers and producers to reap certain benefits related to collective consumption and generation.

With the exception of the Estonian and Latvian NRAs, all other NRAs have indicated their active involvement in the sphere of energy communities in various capacities. The Estonian NRA lacks jurisdiction over energy communities completely, while the Latvian NRA specified that its jurisdiction is primarily limited to tariff regulation. Conversely, other NRAs possess broader competencies, encompassing responsibilities such as registering energy communities, issuing licenses, or exercising supervisory powers.

The legal form requirement is absent in most ERRA Member countries, namely in Armenia (Armenian autonomous groups are actually not legal entities), Estonia, Lithuania, Romania, and Slovakia. So, the energy communities in these countries are not obliged to have any specific legal form as long as they fulfill the criteria in the definition and other conditions set by the law. In countries where legal form requirements exist (namely Hungary, Latvia, Poland), the permissible forms include various types of cooperatives, housing or apartment building associations, and non-profit legal entities.

In five ERRA Member countries the right to make profit and distribute it among the community's members unrestricted or limited solely by corporate law regulations pertaining to the specific legal form of certain energy communities. Hungary, Latvia, Poland, and Slovakia have articulated particular constraints on profit distribution specifically targeted at energy communities. Latvia, in particular, imposes strict conditions, allowing energy communities to generate profit but requiring it to be exclusively reinvested in community activities.

All respondents affirmed that citizen energy communities contribute to the overall cost of the system by remitting cost-reflective, transparent, and non-discriminatory network charges, which account separately for the electricity they feed into and consume from the grid.

Regarding possible activities that can be performed by energy communities, most answers included all activities listed in the questionnaire, these being generation of renewable heat or electricity, distribution, electricity supply, aggregation, storage service, sharing, peer-to-peer trading, demand flexibility, energy efficiency services and EV charging. Electricity distribution is only explicitly permitted in Estonia, Romania, and Poland (subject to obtaining the appropriate license) and is, therefore, the least frequently authorized activity for energy communities. On the other hand, according to provided answers, all energy communities are

allowed to generate renewable heat or electricity (or both). Notably, with the exception of Estonia, Armenia and Poland (where the community must secure additional permissions), energy communities are generally permitted to engage in activities related to EV charging. Furthermore, irrespective of the type of activity, all can be conducted using any available renewable energy source for generation.

All responding ERRA Members affirmed that members of citizen energy communities, who are customers, generally retain all customer rights as non-members. However, Armenia, specified that customers under their jurisdictions might not always retain the right to freely switch the supplier, in Latvia this right is yet to be regulated. In Armenia the customers can only be supplied within the autonomous group they are member of, similarly as they can be supplied only by the guaranteed supplier. In Estonia and Lithuania, the right to switch the supplier is to be determined by the articles of association or other founding document or agreement of the respective energy community. Overall, this indicates that the legal framework in the aforementioned ERRA Member countries is customer-friendly and becoming a member of the energy community is not discriminatory towards regular customers.

III. PEER-TO-PEER TRADING AND SHARING OF ENERGY

Energy sharing can be defined as a type of smaller scale transaction among active consumers (prosumers) where typically renewable energy not consumed on the site of production is supplied to a consumer at another location. Although the theoretical concept covers all forms and carriers of energy, in practice – at present – the energy to be shared is renewable electricity and the means of its transport is the network. As a general rule, the transaction should take place within the same geographical area (e.g., the same bidding zone).

In Europe, the promotion of energy sharing became a priority during the 2022 energy crisis in the wake of Russia's attack on Ukraine and the ensuing unprecedented energy market turmoil. Energy sharing, on the one hand, facilitates the green transition by opening a novel market segment for renewable energy, and on the other, it serves the purpose of decoupling from external dependencies in energy supply as local production is enhanced.

III.1. The Legislation of the EU

The current legislation of the European Union in force recognized "peer-to-peer trading" and energy sharing. Historically, peer-to-peer trading and energy sharing appeared first in (EU) 2018/2001[3] Directive (REDII, entered into force on 24 December 2018 with the deadline for transposition being the 30th of June 2021), then in (EU) 2019/944[4] Directive (Electricity Directive, entered into force on 4 July 2019 and 1 January 2021, with the deadline for transposition being the 31st of December 2020) which is under review also with regard to energy sharing, among others.

i. Peer-to-peer trading

The REDII defines "peer-to-peer trading of renewable energy" in Art. 2 (18) as the sale of renewable energy between market participants by means of a contract with pre-determined conditions governing the automated execution and settlement of the transaction, either directly between market participants or indirectly through a certified third-party market participant, such as an aggregator. The right to conduct peer-to-peer trading shall be without prejudice to the rights and obligations of the parties involved as final customers, producers, suppliers, or aggregators. The definition enables peer-to-peer trading for market participants, and it means the sale of renewable energy.

According to Art. 21 2. of REDII, Member States shall ensure that renewables self-consumers, individually or through aggregators, are entitled:

(a) to generate renewable energy, including for their own consumption, store and sell their excess production of renewable electricity, including through renewables power purchase agreements, electricity suppliers and peer-to-peer trading arrangements, without being subject:

(i) in relation to the electricity that they consume from or feed into the grid, to discriminatory or disproportionate procedures and charges, and to network charges that are not cost-reflective.

[3] DIRECTIVE (EU) 2018/2001 OF THE EUROPEAN PARLIAMENT AND OF THE COUNCIL of 11 December 2018 on the promotion of the use of energy from renewable sources

[4] DIRECTIVE (EU) 2019/944 OF THE EUROPEAN PARLIAMENT AND OF THE COUNCIL of 5 June 2019 on common rules for the internal market for electricity and amending Directive 2012/27/EU (recast)

(ii) in relation to their self-generated electricity from renewable sources remaining within their premises, to discriminatory or disproportionate procedures, and to any charges or fees.

This provision allows renewables self-consumers to participate in peer-to-peer trading arrangements.

While Art. 2 (18) uses the term "market participant" for the eligibility criterion for participation in peer-to-peer trading, Art. 22. 2. puts an emphasis on renewables self-consumers, as they are the small- scale generators that can provide production for peer-to-peer trading.

As we can see, the key points for peer-to-peer trading are the sale of excess energy generated from renewable energy source, which is traded among the market participants.

ii. Energy Sharing

Energy Sharing in REDII

Energy sharing appeared first in REDII Art. 21, which contains provisions on the renewable energy communities. Art. 21. 4. states that Member States shall ensure that renewables self-consumers located in the same building, including multi-apartment blocks, are entitled to engage jointly in activities referred to in paragraph 2 and that they are permitted to arrange sharing of renewable energy that is produced on their site or sites between themselves, without prejudice to the network charges and other relevant charges, fees, levies and taxes applicable to each renewables self-consumer. Member States may differentiate between individual renewables self-consumers and jointly acting renewables self-consumers. Any such differentiation shall be proportionate and duly justified.

As we can see, while REDII sets rules for energy sharing, it does not give a definition for it.

Energy/Electricity Sharing in the Electricity Directive

The Electricity Directive, which entered into force later than the REDII, provides more details on sharing.

Paragraph (43) of the preamble emphasises that distributed energy technologies and consumer empowerment have made community energy an effective and cost-efficient way to meet citizens' needs and expectations regarding energy sources, services, and local participation. Community energy offers an inclusive option for all consumers to have a direct stake in producing, consuming, or sharing energy. Community energy initiatives focus primarily on providing affordable energy of a specific kind, such as renewable energy, for their members or shareholders rather than on prioritising profit- making like a traditional electricity undertaking.

According to Paragraph (46) of the preamble, citizen energy communities should not face regulatory restrictions when they apply existing or future information and communications technologies to share electricity produced using generation assets within the citizen energy community among their members or shareholders based on market principles, for example by offsetting the energy component of members or shareholders using the generation available within the community, even over the public network, provided that both metering points belong to the community. Electricity sharing enables members or shareholders to be supplied with electricity from generating installations within the community without being in direct physical proximity to the generating installation and without being behind a single metering point. Where electricity is shared, the sharing should not affect the collection of network charges, tariffs and levies related to electricity

flows. The sharing should be facilitated in accordance with the obligations and correct timeframes for balancing, metering, and settlement.

Art. 16. 3. e) foresees Member States to ensure that energy communities are entitled to arrange within the citizen energy community the sharing of electricity that is produced by the production units owned by the community, subject to other requirements laid down in this Article and subject to the community members retaining their rights and obligations as final customers.

As we can see, the Electricity Directive does not offer a definition for energy sharing either, but foresees it as an activity of energy communities, more exactly the sharing of electricity generated by the energy community among the members of the community.

When comparing the REDII and the Electricity Directive in force, we find that in the Electricity Directive:

- there is mention of trade, which means the energy can be shared for free, while peer-to-peer trading implies a price;
- there is no mention of generation of electricity of renewable resource, which implies technology neutrality;
- sharing is foreseen among the members of the energy community.

Energy/Electricity Sharing in the Proposal for the Revision of Electricity Directive

Due the energy crisis that hit Europe hard, the European Commission (EC) took measures to mitigate its effects, and one of these measures is the revision of the Electricity Directive. The EC published its proposal[5] on the 14th of March 2023. While amendment is still in making and its final text is going under changes, we can see from the original proposal that the EC wants to boost energy sharing by introducing its definition:

(10a) 'energy sharing' means the self-consumption by active customers of renewable energy either:

(a) generated or stored offsite or on sites between them by a facility they own, lease, rent in whole or in part; or

(b) the right to which has been transferred to them by another active customer whether free of charge or for a price.

Moreover, the EC introduces the right to energy sharing by inserting a new article (Art. 15a in the proposal):

1. All households, small and medium sized enterprises and public bodies have the right to participate in energy sharing as active customers.

(a) Active customers shall be entitled to share renewable energy between themselves based on private agreements or through a legal entity.

(b) Active customers may use a third party that owns or manages for installation, operation, including metering and maintenance a storage or renewable energy generation facility for the purpose of facilitating energy sharing, without that third party being considered an active customer.

(c) Member States shall ensure that active customers participating in energy sharing:

[5] https://eur-lex.europa.eu/legal-content/EN/TXT/?uri=CELEX%3A52023PC0148&qid=1679410882233

(d) are entitled to have the shared electricity netted with their total metered consumption within a time interval no longer than the imbalance settlement period and without prejudice to applicable taxes, levies and network charges;

(e) benefit from all consumer rights and obligations as final customers under this Directive, except in case of energy sharing between households with an installed capacity up to 10.8 kW and up to 50 kW for multi-apartment blocks using peer-to-peer trading agreements;

(f) have access to template contracts with fair and transparent terms and conditions for peer-to-peer trading agreements between households, and for agreements on leasing, renting or investing in storage and renewable energy generation facilities for the purpose of energy sharing; in case of conflicts arising over such agreements, final customers shall have access to out of court dispute settlement in accordance with Article 26;

(g) are not subject to unfair and discriminatory treatment by market participants or their balance responsible parties;

(h) are informed of the possibility for changes in bidding zones in accordance with Article 14 of Regulation (EU) 2019/943 and of the fact that the right to share energy is restricted to within one and the same bidding zone.

(i) Member States shall ensure that relevant transmission or distribution system operators or other designated bodies:

(j) monitor, collect, validate and communicate metering data related to the shared electricity with relevant final customers and market participants at least every month, and in accordance with Article 23;

(k) provide a relevant contact point to register energy sharing arrangements, receive information on relevant metering points, changes in location and participation, and, where applicable, validate calculation methods in a clear, transparent, and timely manner.

2. Member States shall take appropriate and non-discriminatory measures to ensure that energy poor and vulnerable households can access energy sharing schemes. Those measures may include financial support measures or production allocation quota.

As we can see, the proposal of the EC contains a definition for the first time for energy sharing. The subjects in the proposed definition are active consumers of renewable energy, which is a significant change compared to the Electricity Directive in force that allows energy sharing among the members of energy communities. The proposal enables active consumers to be entitled to share renewable energy between themselves based on private agreements or through a legal entity.

Regarding payments, energy can be shared free of charge or for a price, which may cause overlap with peer-to-peer trading in case there is a price set for the shared energy, as peer-to-peer trading can be bilateral or multilateral. It is important to note that in case of sharing energy free of charge, only the energy component does not have a price, levies and network charges still apply. In paragraph (50) of the preamble of the proposal the EC explains that energy sharing arrangements can either be based on private contractual agreement between active customers or organised through a legal entity, which gives a wide range of possibilities for active consumers.

Another noteworthy change of the proposal is that energy sharing is aimed for active customers of renewable energy. The Electricity Directive currently in force prescribes sharing of electricity within an energy community, which is technology neutral compared to renewable energy communities.

The proposal declares participation in energy sharing as active consumers as a right of all households, small and medium sized enterprises, and public bodies, which is a strong signal from the EC for the promotion of energy sharing.

Regarding consumer rights, the proposal extends them explicitly, as active consumers participating in energy sharing shall be entitled to have the shared electricity netted with their total metered consumption within a time interval no longer than the imbalance settlement period and without prejudice to applicable taxes, levies, and network charges. Active consumers participating in energy sharing retain their consumer rights and obligations, except in case of energy sharing between households with an installed capacity up to 10.8 kW and up to 50 kW for multi-apartment blocks using peer-to-peer trading agreements.

The EC sets other obligations on the Member States, which may be delegated to NRAs. Such obligations are:

- to provide template contracts with fair and transparent terms and conditions for peer-to-peer trading agreements between households, and for agreements on leasing, renting or investing in storage and renewable energy generation facilities for the purpose of energy sharing;
- in case of conflicts arising over such agreements, final customers shall have access to out of court dispute settlement;
- to ensure fair and non-discriminatory treatment by market participants or their balance responsible parties;
- informing the participants about the possibility for changes in bidding zones and of the fact that the right to share energy is restricted to within one and the same bidding zone.

Regarding transmission or distribution system operators or other designated bodies, Member States shall ensure that the designated bodies:

- monitor, collect, validate and communicate metering data related to the shared electricity with relevant final customers and market participants at least every month;
- provide a relevant contact point to register energy sharing arrangements, receive information on relevant metering points, changes in location and participation, and, where applicable, validate calculation methods in a clear, transparent and timely manner.

The EC considers energy sharing as a possible instrument for helping energy poor customers and vulnerable households by obligating Member States to take appropriate and non-discriminatory measures to allow such consumers to participate in energy sharing schemes. Clearly, the EC sees a potential in energy sharing also as a tool that can help consumers mitigate the effects of price shocks and become active consumers and to further the uptake of renewable energy.

The entry into force of the legislation depends on ongoing political negotiations, but it is estimated to happen at the end of 2023 or the beginning of 2024.

III.2. Key Findings

i. Legal framework for Peer-to-peer Trading and Energy Sharing

To chart the legislative landscape of ERRA Members, the questionnaire included questions related to peer-to-peer trading and energy sharing.

11 (DZ, AZ[6], CZ[7], EG, EE, GE, MD, MZ, MK, PL[8], TR) from 17 NRAs replied that in their countries there was no legislation for peer-to-peer trading or for energy sharing at present.

6 (AM, HU, LV, LT, RO, SK) from 17 NRAs reported that there was a legal definition or legal recognition for peer-to-peer trading or for energy sharing, or for both.

Figure 18: ***Legal Definition or Recognition of Peer-to-Peer Trading and Energy Sharing in ERRA Member States***

		Legal definition or recognition of	
		Peer-to-peer trading	**Energy sharing**
Algeria	DZ	✗	✗
Armenia	AM	✗	✓
Azerbaijan	AZ	✗	✗
Czech Republic	CZ	✗	✗
Egypt	EG	✗	✗
Estonia	EE	✗	✗
Georgia	GE	✗	✗
Hungary	HU	✗	✓
Latvia	LV	✓	✓
Lithuania	LT	✓	✓
Moldova	MD	✗	✗
Mozambique	MZ	✗	✗
North Macedonia	MK	✗	✗
Poland	PL	✗	✗
Romania	RO	✗	✓
Slovakia	SK	✗	✓
Türkiye	TR	✗	✗

[6] AZ reported that the RES Law allows active consumers to share electricity with (transmit electricity to) DSOs, but there is no wording as "electricity sharing" in the law. Moreover, there aren't provisions of the law concerning peer-to-peer trading for an active consumer (the person who generates electricity from RES less than 150 kW).

[7] CZ reported that currently there is no legal definition for energy sharing in the Czech Republic, however the legislative procedure has started and is expected to enter into force in 2024. The proposal contains the possibility for energy sharing, but it does not tackle the issue of peer-to-peer trading.

[8] PL reported that there is an ongoing legislative process concerning peer-to-peer trading and energy sharing which has not ended yet.

ERRA Members with Legislation for Peer-to-peer Trading and/or Energy Sharing

Analysing the responses of those NRAs that reported there was a legal definition or recognition for peer-to-peer trading and/or for energy sharing, or for both in their countries, we can see the following.

1. Armenia

a) Energy sharing

Legislative reforms entered into force on May 1, 2022 introduced new opportunities for electricity net metering, enabling energy sharing through virtual metering between autonomous group members and separate connection points owned by the same person.

In Armenia, the framework governing energy sharing is regulated through the Energy law and further specified in the Retail electricity market rules. Renewable energy power producers operating in the electricity market under competitive terms and autonomous power producers have the right to generate electricity at one or more delivery points of the distribution network and to consume it at the same or different connection points. For autonomous power producers, energy sharing is available under the net metering scheme. The procedures and cases are outlined in the Retail electricity market rules.

b) Peer-to-peer trading

There are no legal provisions for peer-to-peer trading.

2. Hungary

c) Energy sharing

In Hungary, a legal definition for energy sharing is in force since the 1st of January 2021.

Electricity sharing means the supply of electricity generated by an active customer or energy community directly to another customer or energy community with or without compensation through a public utility system or private line.

The sharing of electricity is only allowed in case of active consumers or energy communities (renewable energy communities included).

Regarding the geographical area for energy sharing, there are certain limitations, e.g., energy sharing is restricted to the service area of the same DSO of which the consumers are within and energy sharing cannot go beyond borders.

It is important to note that while the main legal framework for energy sharing has been in force since the 1st of January 2021, there is very little practical regulatory experience with it and detailed rules may be required or more thoroughly elaborated when energy sharing will become widespread.

d) Peer-to-peer trading

Currently, there is no legal definition for peer-to-peer trading. The reason is that private bilateral contracts exist and energy sharing may cover the legislative needs for peer-to-peer trading as well.

3. Latvia

a) Energy sharing

Latvia's definition for energy sharing is defined in the Electricity Market Law (in the version of law in force since 2nd of August 2022), and means the transfer of the electricity generated by an active customer and transferred into the system to other final customers, including active customers, or transfer of the electricity generated in the electricity energy community and transferred into the system to the members or shareholders of the electricity energy community. Electricity sharing is only carried out by active customers or within an energy community.

Regarding the geographical area of energy sharing, it is restricted to the service area of the same DSO of which the consumers are within.

Two or more end-users in the same building or other type of real estate may act jointly, which means that this is the area of operation of a single DSO. An active customer is entitled to participate in only one electricity energy community at a time and to share electricity only within that electricity energy community.

b) Peer-to-peer trading

Currently there is no legal definition for peer-to-peer trading in Latvia, but practically it can be carried out by active customers or within an energy community and it is restricted to the service area of the same DSO of which the consumers are within.

4. Lithuania

a) Energy sharing

Lithuania reported that while there is no legal definition for energy sharing, it is a legally recognized activity – since the 28th of April 2020 in case of renewable energy communities, and since the 11th of November 2021 in case of citizens' energy community – that can only be performed among the members belonging to the same energy community, as individual prosumers cannot share energy.

b) Peer-to-peer trading

Similarly, to energy sharing, there is currently no legal definition for peer-to-peer trading, it is a legally recognized activity that can only be performed among the members belonging to the same energy community, as individual prosumers cannot share energy.

5. Romania

a) Energy sharing

Romania reported that while the concept of energy sharing is not defined in legislation, the activity of energy sharing is legally recognized since the 29th of November 2022. According to Romanian legislation, citizens' energy communities have the right to organize within their community and among their members the sharing of the electricity produced by the generators owned by the community.

As we can see, energy sharing is restricted to members of energy communities, but there are no geographical limitations.

b) Peer-to-peer trading

There are no legal provisions for peer-to-peer trading.

6. Slovakia

a) Energy sharing

Slovakia amended its energy legislation having entered into effect on the 1st of July 2023. The amendment defines sharing electricity as an activity to provide electricity to active consumers or energy communities other than the sale of electricity. As URSO reported, the detailed rules for energy sharing are still being developed.

All consumers are entitled to energy sharing and there no geographical limitations.

b) Peer-to-peer trading

There are no legal provisions for peer-to-peer trading.

Figure 19: ***Eligibility and Restrictions of Peer-to-Peer Trading and Energy Sharing in ERRA Member Countries***

		Eligibility for energy sharing	Restrictions for energy sharing	Eligibility for peer-to-peer trading	Restrictions for peer-to-peer trading
Hungary	HU	Active consumers or energy communities	According to legislation in force energy sharing cannot go beyond borders. In practice energy sharing may be restricted to DSO areas as practical aspects of energy sharing are still under development.	-	-
Latvia	LV	Active consumers or energy communities	DSO area	Active consumers or energy communities	DSO area
Lithuania	LT	Energy communities	No geographical restrictions	Energy communities	-
Romania	RO	Energy communities	No geographical restrictions	-	-
Slovakia	SK	Active consumers or energy communities	No geographical restrictions	-	-

III.3. Case Study of Quasi-Sharing in Czech Republic

Since January 1, 2023, an amendment to ERO's Decree on Electricity Market Rules has come into effect. This Decree introduces a procedure for the virtual allocation of electricity generated within a residential building among the customers who own a consumption point in the same building where the electricity generation facility is installed. Every customer who chooses to participate in this "quasi-sharing" within the residential building retains all their rights, including the right to select and change their electricity supplier. Furthermore, this customer (during the process of setting the allocation conditions) has the option to determine how big this share of consumed electricity generated by the shared generation facility will be. Typically, the generation facility would be a solar power plant (complemented by e.g., electricity storage systems) typically installed on the roof of the residential building.

By consuming this self-generated electricity, customers will save money on both c market based (commodity) price and regulated charges calculated based on consumed electricity volume, typically measured in MWh.

Relevant DSO will record, process, evaluate, and subsequently transfer the data to the market operator and electricity supplier for billing purposes for each of the customers.

The collaborating group of customers participating in this electricity allocation scheme (hereinafter referred to as "sharing participants") consists of one leading consumption point ("CP_L"), and a number of associated consumption points ("CP_A"). All these points of consumption must be connected to one main fuse box as this is electricity sharing without using the distribution system.

The CP_L is consumption point of the sharing participant (apartment, premises, or common areas of the residential building) where the electricity generation facility is connected. The electricity generation facility (including systems for storing generated electricity) is connected to the LC in a manner like how power generation facilities are connected to single-family homes. This electricity meter must be replaced by a flow (continuous) meter, capable of measuring both electricity consumption from the grid and electricity injection into the grid in fifteen-minute intervals.

The CP_A are the consumption points for sharing participants to which electricity generated in the source connected only to the CP_L and not directly consumed by the CP_L is "virtually" allocated based on the defined allocation key. The CP_A can thus "virtually" consume this electricity. To ensure proper distribution (allocation) of the electricity generated from the facility connected to CP_L among the respective CP_As, the CP_A must also be equipped with a flow (continuous) meter.

The points of consumption of customers who do not wish to participate in or do not meet the conditions for electricity sharing within the residential building (e.g., where it is impossible to install flow/continuous metering) are not included in the sharing group. Their rights and obligations are in no way affected by the electricity sharing within the residential building.

Sharing participants must mutually agree on the so-called "allocation key," as stipulated in the Decree. According to this allocation key, which defines the percentage share of CP_A, the electricity supplied to the main residential building distribution from CP_L will be virtually allocated among the CP_A points during the evaluation process conducted by the DSO. Only the electricity delivered to the grid is considered in the evaluation, i.e., the portion of generation that was not directly consumed by CP_L.

The allocation key can currently only have a static form (allocating a pre-agreed firm percentage share for each CP_A, up to a maximum equal to their consumption in each 15-minute interval). The amount of electricity generated that has not been consumed by CPL or CPA is supplied in accordance with the connection agreement to the distribution system.

III.4. Conclusions on Peer-to-Peer Trading and Energy Sharing

As we observed, most ERRA Member countries do not have legislation for peer-to-peer trading or energy sharing. It is important to note that both peer-to-peer trading and energy sharing are new legislative concepts, and such arrangements and transactions may happen in practice without getting the attention of legislators. If these activities will become more widespread, legislators may have to put more focus on them.

Another observation of the survey was that even in those countries which recognized peer-to-peer trading and/or energy sharing the regulators had neither data regarding the number of consumers participating in such activities, nor on the exchanged volume of electricity. In the future, regulators may find it necessary to

expand their monitoring practices to encompass these activities, enabling them to obtain a more comprehensive overview of the energy markets.

There are some questions that may become important in the future, especially for EU Member States.

One issue is that of cost and resource allocation consequences of extended consumer rights. In some countries, energy sharing currently is just a possibility, and in many cases only for the members of energy communities. If the proposed amendment of the Electricity Directive on granting the right for energy sharing is passed, consumers' right to participate will be reinforced. If energy sharing becomes a right and the number of eligible consumers for this activity is widened, then possibly many consumers will want to exercise their rights and participate in energy sharing schemes. This in turn will likely put considerable pressure on network operators as the option of refusing applications for grid connection will increasingly become unavailable and therefore their network development plans will have to be more and more ambitious considering new patterns of electricity consumption and generation. This pressure will also be transferred onto the NRAs that approve the network development plans and set the corresponding tariffs for the recovery of costs. Planning of network development may have to become a more cooperative activity to take the interests of all stakeholders (network operators, consumers, and municipalities) even more into consideration, and NRAs should carefully consider those when approving the network development plans.

Other possible effect that peer-to-peer trading and energy sharing may evoke regarding network development is the increase of the role of local generation, distribution, and consumption. If such local activities become more widespread and involve a larger amount of energy exchange, this could ease the constraints put on the transmission system.

Another conceptual question is where, in the traditional framework of wholesale vs. retail markets, peer-to-peer trading and energy sharing belong. On the wholesale market the trade of energy happens for the purpose of the resale of the purchased energy, and, generally, transactions do not involve consumers. On the retail market, however, one party of the transaction is a final customer who purchases electricity from a supplier for their own use. Peer-to-peer trading and energy sharing have characteristics of both market segments. Peer-to-peer trading is like a retail activity as it is a final sale of (renewable) energy if it is traded directly between the producer and the consumer (i.e., not involving a supplier), but if the transaction does involve a supplier or a third party (like an aggregator), it is a resale of energy like on the wholesale market. Energy sharing may not even qualify as a market activity as it can (and is likely to) happen free of charge, but it does have some market characteristics consisting in involvement of at least two parties and a transfer of a commodity between them. Therefore, it seems that we might have to revise our traditional concepts.

Another issue of energy sharing is tax related. In many countries, energy is subject to different kinds of taxes. One of them is the excise tax, which is a tax on specific goods or services when obtaining them, and energy is considered as such in many countries. If the exchange of energy takes places for remuneration, the case is simple as the excise tax should be charge. But if the exchange of energy takes place without charge, i.e., is shared free of charge, it raises the question how to calculate the excise tax or whether it should even be charged at all. In case of value added tax (VAT), if energy is shared without charge, then VAT should not be charged. Regarding the income tax, the situation is more complicated even in this case. If consumers receive free electricity, they obtain a financial benefit by receiving goods (electricity) for free, which causes an improvement in their financial situation. Usually, states have income taxes or wealth taxes based on the given person's financial situation (annual income or wealth). In case of receiving gifts, the gift may be fully exempt from taxes, or to a certain limit. Above that limit the person must usually pay income or wealth tax. But whether electricity shared for free should be considered a gift in a tax perspective is remains another big question on its own.

In scenarios where tax regulations are structured in this manner, determining the appropriate valuation for the free energy received through sharing becomes a crucial question when considering whether income tax should be applicable. One potential approach involves considering an average price based on all the energy offers currently available.