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Community Energy Legislation in the European Union

Seven recommendations for a successful transposition

Contents

Summary

	Austria	Belgium (Brussels)	France	Greece	Italy	Poland	Portugal
Rules for membership in a community	✓	✓	✓	✗	✓	✗	✓
Territorial scope of a community	✓	○	✗	✓	○	✗	✗
Technical support for sharing and data access	✓	✓	○	✗	✓	✓	○
Allocation method of the shared electricity (allocation key)	✓	✓	✓	✗	✗	✗	✓
Financial and tax support for energy communities	✓	✓	○	✗	○	○	○
Consumer protection in energy community	✓	✓	✓	✓	○	✓	✓

Legend:

✓ The country is exemplary in meeting the requirements of EU law or does it with minor shortcomings or limitations.

✗ Does not meet the requirements of EU law, requirements not implemented at all or with major shortcomings.

○ Approximate compliance with EU legal obligations or containing shortcomings.

Austria

Virtually all parameters are regulated in an exemplary manner, also includes a discount for distribution.

It is not possible to use a hybrid allocation method, either the static or the dynamic method must be applied.

Belgium (Brussels)

Reasonable and justified discount on distribution fees for EC.

Lack of interconnection between Brussels, Flemish and Flanders DSOs; the scope of sharing is therefore limited to the Brussels region only.

France

Renewable sources favoured in sharing.

High administrative burden for individual communities.

Greece

Net metering allowed for renewable sources only.

Vague and incomplete legislation that does not comply with the requirements of EU law.

Italy

Intention to favour communities financially and a discount on the distribution fee.

Lack of implementing rules and use of net metering instead of sharing.

Poland

Currently adapting the legislation with view to its own negative experience and bringing it in line with EU law.

Use of net metering and limitation on the number of members as well as on the territory.

Portugal

Free and flexible choice of electricity allocation methods and open membership.

Strict territorial limitation on communities.

Introduction

This study examines the regulation of community energy and electricity sharing in seven European Union (EU) countries that have several years of experience with the operation of energy communities. It contributes to the current debate on setting the rules for community energy, which is ongoing in many Central and Eastern European countries. The analysis of the legislation in each country does not only cover the general rules laid down in their laws, but also analyses the implementing regulations and the practical experience with the legislation in general. Thus, it focuses on important details that can serve as inspiration and background for drafting laws and implementing legislation.

The analysis covers six thematic areas:

- Which entities can participate in electricity sharing.
- Technical support for electricity sharing and access to production and consumption data.
- Methods for allocating shared electricity (allocation key).
- Fees for electricity sharing and financial support to communities.
- Territorial scope of communities and administrative barriers.
- Consumer protection of persons (members of an energy community) involved in electricity sharing.

The analysis concludes with seven recommendations on how to successfully transpose the EU law while reflecting on the experience of countries where community energy has been operating for several years. Some countries provide positive examples worth following. Others, due to their complexity, show which way not to go, but in most cases they have learned from their mistakes and are modifying or have already modified their legislation.

Data collection for the present analysis was carried out through a questionnaire survey in the individual countries. Representatives of environmental authorities, energy regulators, universities and NGOs answered a set of research questions. Subsequently, we inquired about the specifics of a given country through emails and telephone interviews to verify any uncertainties. The last data collection tool was our own research on the legislation related to community energy in each country, including Belgium, France, Italy, Poland, Portugal, Austria and Greece.

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How to read the analysis: electricity sharing v. net metering

Legislation on community energy and electricity sharing is very diverse in the countries analysed. For a better understanding and at the same time to define the concept of sharing, we emphasise in the study the difference between two terms which may be wrongly interchanged in lay discussions.

In the analysis, **electricity sharing** is interpreted within the meaning of the European directives[1] as the joint production and consumption of electricity within an energy community for which the public distribution system can be used. Among other things, electricity sharing legislation should (positively) **incentivise the concurrence of production and consumption within the community** (shared electricity is consumed by one member at the same time as it is produced by another member). This is also linked to the requirement for communities to be non-profit making, with a primary focus on meeting the energy needs of their members.

In the analysis, you will also encounter the term **net metering** or **virtual net metering**, which does not represent electricity sharing in the sense as mentioned above. Net metering differs in that it allows members of the community to use the electricity generated at a later date, for example at intervals of one year. It is therefore similar to a virtual battery as already offered by some electricity suppliers. The problem with this model is that there is no incentive to strive for the coincidence of electricity production and consumption. Instead, communities and active customers are primarily incentivised by the rules to maximise generation. This can place disproportionate demands on the distribution and transmission system, increasing the risk of socialisation of costs. Therefore, we do not consider net metering to be an appropriate model for 'sharing' electricity.

Note

The study was originally written for use in the Czech Republic, but during the analysis, we arrived to the conclusion that the information and recommendations are relevant and applicable in all states that are struggling with modifying or creating new community energy legislation. We have therefore modified the study and had it translated into English so that all interested parties can benefit from it.

[1] Directive on common rules for the internal market in electricity (IEMD) and the Renewable Energy Directive (RED II).

Austria

Austria is a pioneer in community energy in the EU, approaching the definition of legal regulations strategically and with a clear commitment to support citizens' initiatives as one of the means to achieve climate neutrality. Austria's approach to community energy is thus rightly held up as a model for many European countries.

In Austria, electricity sharing is regulated by the Electricity Act (Elektrizitätswirtschafts und organisationsgesetz, hereinafter as **ElWOG**[2]). Although there is no explicit definition of electricity sharing in Austrian law, it is implicit in the provisions on metering and billing for energy communities (Section 16e of the ElWOG). It is understood as the allocation **of electricity from an energy community to its members at 15-minute intervals**, that is, in near real time when the electricity is generated. Electricity sharing is always a **complementary activity to the licensed supply** from the energy supplier. The more electricity a member of an energy community consumes through sharing, the less electricity the supplier will charge in the billing.

Who can participate in electricity sharing?

The Austrian regulation grants the right to share electricity to:

- active customers,
- energy communities.

For active customers, the **sharing of renewable electricity is only allowed within a single building**. There is no exception to this rule, even for multiple consumption points of the same customer.

If customers want to share renewable electricity **on a wider scale**, they have to set up an **energy community**. With regard to the potentially different needs of each community, customers can choose between the following models:

- **A local renewable energy community**, where electricity sharing is only possible **in the same low voltage network**[3], which is usually equivalent in scale to a **single neighbourhood**. Financially, this is the most favoured model (see below for details).
- **Regional renewable energy community.** This model can share electricity **up to the level of the same medium voltage network**[4], which usually corresponds to **one federal republic**. It benefits from partial financial concessions.
- **Nationwide citizen energy community.** A type of community that can share electricity across the whole of Austria without limitations, even across the territory of multiple distribution system operators. Due to the need to adapt the information systems of the individual DSOs to communicate with each other, electricity sharing across the whole of Austria will be practically launched from October 2023 (i.e. approximately 2 years after the entry into force of the law). There is no financial advantage.

Technical support for electricity sharing and data access

The DSO in whose territory an energy community is located is responsible for ensuring the technical side of electricity sharing. In the case of a nationwide citizen energy community, the electricity sharing is provided for by all the DSOs to whose distribution systems the community members are connected, and each DSO does that in its own part of the distribution territory. At the same time, the DSOs are obligated to provide each other with data on the other consumption points involved in the sharing in order for the nationwide electricity sharing to work.

[2] Bundesrecht konsolidiert: Gesamte Rechtsvorschrift für Elektrizitätswirtschafts- und -organisationsgesetz 2010, Fassung vom 06. 08. 2023. Available at: https://www.ris.bka.gv.at/GeltendeFassung.wxe?Abfrage=Bundesnormen & Gesetzesnummer=20007045.

[3] Austrian grid levels 6 and 7 are closest to low voltage in Czech terminology.

[4] Austrian grid level 5 and 4, no Czech equivalent exists.

Furthermore, DSOs are obligated to install a smart meter for each member of an energy community, which evaluates the consumption and supply of electricity to the network at 15-minute intervals to make electricity sharing practical. There is **no charge for the installation of the smart meter** and the DSO is required by law to install it within 2 months of a community member requesting it.

Metering data must be made available to community members online, preferably in real time, but no later than the following working day.

Allocation method of the shared electricity (allocation key)

In order to implement electricity sharing, a community must register with the DSO and notify it of its chosen method of allocating the shared electricity. According to the EIWOG (Section 16a(7)), the members of an energy community are entitled to choose between two allocation methods (the static and the dynamic model).

The **static method** is a single-round method. It allocates the shared electricity **according to predetermined percentages**. If a participant in the sharing does not consume the shared electricity within a given 15-minute interval, it cannot be allocated to another community member or active customer.

The **dynamic method** is also a single-round method. Unlike the static method, it **takes into account the current electricity consumption of each participant in the sharing**. The person who consumes the most electricity in a given 15-minute interval gets the most shared electricity.

Fees connected to electricity sharing

There are **no distribution or other fees for sharing electricity within the same building**. In the case of energy communities, the EIWOG (Section 52(2a)) stipulates that the Austrian regulator E-Control is obliged to determine the amount of the distribution fee for electricity sharing in local and regional renewable energy communities (REC) in such a way that **it does not include costs for the use of those voltage levels of the distribution system that are not actually used by the REC for electricity sharing**. The value is set as a **percentage discount on the full distribution fee** (i.e. when all seven voltage levels are used) and **may change over time** as the overall network costs change.

The Austrian regulator has assessed[5] that if only the lower voltage levels are used by local and regional communities for RES, the costs for grid usage correspond to the following percentage discount:

- for a local REC, **a 57% discount for using the same low voltage network (voltage levels 6 and 7)**,
- for a regional REC, **a discount of 28% for the use of the low voltage network (voltage levels 6 and 7) and a discount of 64% for the use of the same medium voltage network (voltage levels 4 and 5)**.

Renewable energy communities are furthermore exempted from the electricity tax. Electricity sharing is also not subject to VAT in Austria. If however an energy community fulfils the general legal conditions (e.g. a certain annual turnover), it can become subject to VAT.

Consumer protection in energy community

The Austrian legislation does not contain any specific provisions to protect the members of a community when they are involved in electricity sharing. This is due to the fact that electricity sharing is only complementary to supply and, in contrast to the unequal supplier–customer relationship, it **takes place among entities with similar economic power** (usually multiple consumers). Moreover, it often involves sharing electricity from a source that is co-owned by the members of the energy community. Therefore, the Austrian legislator did not think it appropriate to regulate the internal conditions of energy communities or the conditions for sharing by law.

[5] For detailed information on the distribution fee discounts for local electricity sharing see: https://www.e-control.at/documents/1785851/1811582/SNE-V_2te-Novelle_2021_Erlaeuterungen.pdf/1f845709-b0c0-5bbd-fc74-28b273afa730?t=1634897827315.

Summary

Austria's electricity sharing legislation is **among the best in Europe**. The biggest advantages of the Austrian legislation include:

- allowing for different models of electricity sharing ranging from one apartment building (without payment of distribution fees) to local and regional areas (with a corresponding discount on the distribution fee) to nationwide electricity sharing (with the payment of the full amount of the distribution fee),
- setting all the essential elements of electricity sharing directly by law (e.g. a clear deadline for the installation of a smart meter, the right of communities to choose between static and dynamic methods from the entry of a legal act into effect),
- Not interfering in the internal organisation of energy communities and leaving contractual freedom to determine the terms of electricity sharing.

Belgium (Brussels)

As is clear from the title, the chapter does not focus on the whole of Belgium, but only on the Brussels region. The other two regions, Wallonia and Flanders, have transposed the European community energy legislation as well. It was in Belgium, where one of the first energy cooperatives in Europe – Ecopower, was founded in 1991. In 2003, following the liberalisation of the energy market in Belgium, it has also become a renewable energy supplier. Today, Ecopower has over 67,000 members.

Electricity sharing in Brussels is regulated by the Ordinance on the organisation of the electricity market[6], hereinafter the Ordinance, which defines it as the **joint consumption of electricity** produced and supplied by facilities connected to the distribution or transmission system **in the same quarter-hour interval**. Sharing is always a **complementary activity to the licensed supply of electricity** by a supplier. The more electricity a customer gets from sharing, the less they consume from the supplier and the bigger their savings.

Who can participate in electricity sharing?

The Ordinance grants the right to share electricity to the following entities:

- an active customer,
- an energy community.

For active customers, electricity **sharing is only allowed within a single building**. However, there is an exception to this rule: If two active customers enter into a peer to peer contract with each other, they can share electricity between them across Brussels. However, the sharing must take place between the **maximum of two active customers**. The legislation also allows electricity sharing between **multiple points of consumption of the same active customer** (e.g. four establishments of the same commercial company). To participate in sharing, active customers do not need a licence, but such **sharing may involve, solely and exclusively, electricity from renewable sources** which they have generated themselves.

> **Peer to peer contract**
>
> You may have seen the term "peer to peer" (P2P) in the context of loans and credits, when people lend money to people without involving a bank. Here, a peer to peer electricity sharing contract means an agreement between two active customers to provide electricity to each other from their own power plants.

If **more than two active customers** want to share electricity across Brussels, they have to set up an **energy community**, which entitles them to share electricity among an **unlimited number of members**. Before electricity sharing can begin, the energy community must **register with the Brussels energy regulatory authority (BRUGEL)**, which is obligated to verify within 60 days whether the community meets all the defining characteristics under the Ordinance. Members of the community are entitled to share any electricity they generate, i.e. not only from RES. In practice, however, electricity sharing in the Brussels energy communities only concerns electricity from RES. **No licence** is **required** for electricity sharing activities.

> Electricity sharing between active customers and within an energy community **may be combined**. Thus, in one household electricity can be shared simultaneously between, for example, an energy community, active customers from the same residential building and another active customer under a *peer to peer* contract.

The entity responsible for ensuring the technical aspects of electricity sharing is the Brussels-based distribution system operator[7] (**DSO**). In the first place, the DSO is obligated to install for each active customer or energy community member a smart-meter[8] which evaluates their electricity consumption and supply within every 15 minutes. There is **no charge for**

[6] Ordonnance relative à l'organisation du marché de l'électricité en Région de BruxellesCapitale, available at: https://www.ejustice.just.fgov.be/eli/ordonnance/2001/07/19/2001031386/justel.

[7] https://www.sibelga.be/en

[8] Smart meters allow remote communication with distribution companies' servers in real time, thus speeding up availability of data on current electricity production and consumption.

the installation of the smart metering device and the DSO must carry it out **within 4 months** from the moment when the active customer or community member applies for it.

Continuous **access to the metering data** is provided by the DSO to active customers and community members **via an online portal**. Energy communities and active customers also receive a monthly statement of shared electricity consumption data from the DSO, including the billing of distribution system usage fees.

Types of metering and electricity meters

In the text of the analysis, we often use the terms "smart meter" or "continuous electricity metering". In the context of energy transformation and strengthening the role of the consumer, the collection and evaluation of data on electricity production and consumption is essential for the optimal functioning of the electricity grid and the utilization of RES. So what is the difference between the functions of each type of metering?

In the Czech Republic, the most common type of metering is the C4 metering, where data can only be read manually. This is performed either by a DSO employee or by the customer filling in a meter reading sheet (or record). The data is used for nothing but the annual electricity billing, and therefore the customer is only informed about their consumption on an annual basis.

Continuous metering (types A and B under a decree of the Czech Ministry of Industry and Trade) records the electricity production and consumption data at a given interval, which most often is 15 minutes. The DSO provides the data regularly, but at a longer time interval, e.g. once a day. For the customer, this means that in practice they cannot manage their consumption according to their actual production, and thus have difficulty achieving balance. However, with continuous metering it is possible to trace production and consumption profiles daily and then adapt to them at least partially.

The most advanced type of metering is the smart metering (a smart meter, types C1-C3 under the decree) which collects data at given intervals (most often each 15 minutes) and allows the customer to access data on their production and consumption in real time. The distributor is thus able to react flexibly to network usage and the customer can adjust their consumption to the production at a given moment.

Allocation method of the shared electricity (allocation key)

The choice of how the shared electricity will be allocated among the members of an energy community or active customers is **entirely at the discretion of the sharing participants**. They only need to notify the DSO of their decision before the sharing starts.

The Ordinance provides that the sharing participants may choose a **static, dynamic, hybrid or other proprietary method** of allocating electricity. If the participants choose their own method, the DSO has the right to refuse it if it would be too costly for them or would place excessive technological demands.

The **static method** is a single-round method. It allocates the shared electricity **according to predetermined percentages**. If a participant in the sharing does not consume the shared electricity within a given 15-minute interval, it cannot be allocated to another community member or active customer.

The **dynamic method** is also a single-round method. Unlike the static method, it **considers the current electricity consumption of each participant in the sharing**. The person who consumes the most electricity in a given 15-minute interval gets the most shared electricity.

The **hybrid method** is a two-round method. The first round is static, according to predetermined percentages. However, if any participant in the sharing does not consume the shared electricity in a given 15-minute interval, this remaining electricity is distributed dynamically among the other sharing participants, i.e. according to their actual consumption.

Other, proprietary methods may consist, for example, in establishing a **multi-round static** method, in different methods of electricity allocation **on weekdays and weekends** or **at different times of the year**.

Distribution fee for electricity sharing

Energy communities and active customers are **obliged to pay a distribution fee for electricity sharing**. However, the Ordinance stipulates that when setting the amount of the distribution charges the Brussels energy regulatory authority must take into account the **costs and the benefits of energy communities and electricity sharing** to reach a balance between solidarity in the payment of the total costs of the distribution system and **encouraging participation in energy communities** and **electricity sharing from RES**.

In order to assess the costs and benefits of electricity sharing, the Brussels regulator has conducted a study[9] showing that if **at least 20% of the consumption points in the Brussels area** are involved in electricity sharing, the **load on the distribution system in peak hours** (morning and evening) is **reduced**. In fact, by using PV electricity, people are financially incentivised to move a significant part of their electricity consumption to a time period from 10 am to 4 pm. This allows the DSO to delay investments leading to the reinforcement of the distribution system capacity. Thus, electricity sharing can have **benefits not only for the consumers** involved in energy communities but **also for the DSO**.

For electricity sharing, the Brussels regulator has set the following **discounts** on the distribution fee depending on the load on the distribution system:

- 51% discount for sharing **within a single building** (e.g. a residential building),
- 26% discount when sharing **in the same low voltage network**,
- 8% discount when sharing **in the same high voltage network**.

Consumer protection in energy community

The Ordinance contains safeguards to ensure the **protection of persons involved in electricity sharing**. In the first place, it provides that the decision on membership in an energy community must be free, voluntary and based on objective, transparent and non-discriminatory conditions set out in the community's statutes. **Termination of membership** in an energy community is governed by general civil and commercial law and **its terms depend on the legal form chosen** (energy communities in Brussels can have any legal form, from an association to a joint-stock company). However, the statutes must always specify the conditions for termination of membership.

While the conditions for termination of membership are governed by general civil and commercial law and the statutes of a community, for **electricity sharing**, the Decree defines in considerable detail the obligations and time limits which communities must satisfy. With each member of the community, a written electricity sharing agreement must be concluded, which must **be terminated within 3 weeks** from the moment when the member requests it. The community **must not charge the member any fee** for terminating the electricity sharing agreement. A sharing agreement must also contain a provision on the procedure in cases of non-payment for the shared electricity, when the community is obligated to firstly call upon the member to pay the arrears by a written letter before proceeding with the recovery of the arrears. **The same obligations also apply to the sharing of electricity between active customers.**

Summary

The electricity sharing legislation in Brussels may be included among **the best pieces of legislation in Europe**. The greatest strengths of the Brussels legislation include:

- minimum administrative and technical constraints on electricity sharing (no maximum number of persons or generating plants involved in sharing),
- a wide choice from different methods of electricity allocation (static, dynamic, hybrid and other methods),
- a distribution discount based on a study of the organisation of the costs and benefits of communities for the DSO.

[9] Study available online: https://www.brugel.brussels/publication/document/etudes/2023/fr/ETUDE-45-COUT-AVANTAGE-PARTAGE-CONSULTATION.pdf.

France

Currently, there are some 316 citizen-owned renewable energy projects in France with a total capacity of 629.3 MW, generating 1,262.5 GWh of electricity per year. The largest share of the electricity generated is from wind power (almost 80%). The projects are supported by the Énergie Partagée[10] civic movement, which coordinates consultancy for 13 regional civic energy networks. France seems to be moving in the right direction in community energy, but an analysis of their legislation will reveal more.

Energy communities and electricity sharing has been regulated by the French Energy Code (Code de l'énergie[11]) **since 2021**. The code sees sharing as a **collective self-consumption activity**[12] that can be carried out by different entities and divides it in two levels:

- **Collective self-consumption** takes place exclusively between consumption points **in the same building**, which is where the generation plant is also located (typically a PV plant on the roof of an apartment building or an office building).
- **Extended collective self-consumption** is defined by law as the supply and consumption of electricity between one or more producers and consumers **within a low voltage network**, meeting the geographical proximity criterion and other conditions of the government regulation. If the shared electricity comes from **renewable sources**, the consumption and transmission points may be located at **low and medium voltage**.

Both types of collective self-consumption must not constitute main professional or business activity for the participants in the sharing – by this the law transposes the rule of European legislation that energy communities are not to be established for profit-making purposes.

> To simplify the text in this chapter, we use the term energy communities to refer to all entities that participate in (extended) collective self-consumption activities. However, under French law, communities are only one type of the legal entities that can carry out electricity and heat sharing activities.

Who can participate in electricity sharing?

Under the energy act, anyone who is associated **within a single legal entity** can share electricity. An entity does not need to have a specific legal form to share electricity. For example, municipalities, companies, cooperatives or energy communities can share electricity. People and other entities may only participate in **one collective self-consumption project** at a time.

However, the benevolence of the legal form is compensated by **territorial limitations**. Sharing can take place either **within a single building** or at a **maximum distance of 2 km between two sharing participants**. The distance can be increased **up to 20 km** by a decision of the Minister of Energy[13].

The size of energy communities is also limited by the **installed capacity** of all power generating plants to 3 MW[14], in continental France; French islands are subject to a limit of 0.5 MW per a legal entity.

[10] Available at: https://energie-partagee.org/.

[11] Available at: https://www.legifrance.gouv.fr/codes/texte_lc/LEGITEXT000023983208/2023-07-20/.

[12] Collective self-consumption is governed by Articles L3151 to L3158 and D3151 to D31511 of Code de l'énergie, available at: https://www.legifrance.gouv.fr/codes/section_lc/LEGITEXT000023983208/LEGISCTA000032939883/#LEGISCTA000032939883 and https://www.legifrance.gouv.fr/codes/id/LEGISCTA000034527834.

[13] A community must apply for an exemption, which is granted by the Minister of Energy based on the criteria of low population density and high population dispersion. See https://www.legifrance.gouv.fr/loda/article_lc/LEGIARTI000042435108/2020-10-19.

[14] In the case of photovoltaic power plants, the peak installed capacity is considered, that is 3 kWp, or 0.5 kWp.

Difference between installed and reserved capacity

Installed capacity indicates how much electricity the plant can produce per hour at the maximum, e.g. with an installed capacity of 50 kWp, this is a maximum of 50 kW.

The reserved capacity is set by the distributor as the amount of electricity a customer can send to the grid. It may be lower than the value of the installed capacity, for instance, if the customer guarantees a certain share of self-consumption, which is not sent to the grid.

Also the concept of the distribution system capacity is related to reserved capacity. Simply put, it represents the total value of reserved capacity from all power plants that the distribution system can accommodate.

All consumption points involved in the sharing must be located **in the same low-voltage network**; in the case of **renewable electricity sharing**, it is also possible to use the same **medium-voltage network**, but always within the territory of one DSO.[15]

All consumption points participating in the sharing must be **equipped with a smart meter by the DSO**. In practice, this has been done systematically and free of charge since 2016 (in 2021, 90% of households in the territory of the largest distributor ENEDIS had a smart meter installed). The exceptions are smaller DSOs that operate in rural, remote or island areas and are not progressing as quickly in installing smart metering.

The role of the DSO is to **meter the shared electricity and provide data to the community and traditional suppliers**. The community, in turn, has to report to the distributor the baseline situation, that is, the generators involved in sharing (simple registration is sufficient), the list of participants in the sharing and any other necessary identification for data collection.[16]

What data the distributor must provide

To communities:	**To traditional electricity suppliers:**
→ the amount of electricity consumed by an individual, → the amount of electricity produced from each generation plant, → the proportion of electricity collectively consumed by an individual, → the share of total electricity consumed collectively, → the amount of electricity produced by all community generation plants, → the total electricity surplus, → the amount of electricity consumed in total.	→ the amount of electricity that passes through the public distribution system from individual community producers, → the proportion of electricity shared with individual community members, → community surpluses (overflows).

The distributor does not have to provide any data to the end consumers (sharing participants); this is the responsibility of the **community, which serves as a mediator between consumers and the distributor** and takes care of the related administration. In practice, this means that the community has to conclude a separate membership contract with each participant.

[15] There are a total of seven DSOs in France serving over 100,000 customers. The largest of these is the ENEDIS, operating in 95% of mainland France. The EDF distributes electricity on the islands and in overseas areas. See https://www.cre.fr/en/Electricity/Electricity-networks/electricity-networks.

[16] A sample ENEDIS contract available at: https://www.enedis.fr/sites/default/files/documents/pdf/Enedis-FOR-CF_01E.pdf.

Allocation method of the shared electricity (allocation key)

It is the responsibility of the community to inform the DSO about the chosen allocation method and the ratios of the energy-sharing participants. If the community fails to do so, the default allocation method is automatically chosen (see below).

The **static allocation key** distributes the electricity in one round based on the production and consumption at a given moment, depending on the predefined shares in 30-minute intervals.

Example[17]

Let's consider a community having two generating plants P1 and P2 which produce 30 kWh and 70 kWh over time t. **This in total makes 100 kWh.** However, the community's consumption at any given time is only **80 kWh** and the consumer (C) with the highest allocation share has lower consumption than the currently largest consumer who has a lower share in the allocation ratio.

Consumption in time t		**Allocation key for C**	**Allocation in t**	**Grid consumption**	**Total overflow**
C1	40 kWh	20%	20% * 80 kWh = 16 kWh	40 – 16 = 24 kWh	20 + 28 = 48 kWh
C2	20 kWh	20%	20% * 80 kWh = 16 kWh	20 – 16 = 4 kWh	
C3	20 kWh	60%	60% * 80 kWh = 48 kWh	0 kWh (28 kWh+)	

The **default allocation key** allows electricity to be distributed according to the current consumption of the community, with the most electricity allocated to the member with the highest consumption in a given interval. The default allocation key is a dynamic method of allocating electricity, to maximise self-consumption. Even this method does not prevent a surplus when the total consumption of the community does not reach the value of its production, as you can see in the example below, but the overflow will be lower.

Example

Let's consider the same conditions as in the first example, that is, total production and consumption is 100 kWh and 80 kWh, respectively.

Consumption in time t		**Allocation key for C**	**Allocation in t**	**Grid consumption**	**Total overflow**
C1	40 kWh	40/80 = 50%	50% * 80 kWh = 40 kWh	0 kWh	20 kWh
C2	20 kWh	20/80 = 25%	25% * 80 kWh = 20 kWh	0 kWh	
C3	20 kWh	20/80 = 25%	25% * 80 kWh = 20 kWh	0 kWh	

A community is also able to choose their **own allocation key**, which is up to their own inventiveness and subject to the approval of the distributor. However, the latter must allow it, if it is compatible with its IT system.

A community can request a change of method or ratios at any time. In the case of a modification of the ratios (e.g. inclusion of a new community member in the sharing), the distributor will start applying the new status after 15 days. For a change in the allocation method, the distributor has 15 days to consider the change, which is then applied from the new operating month.

[17] Example source: https://www.auvergnerhonealpes-ee.fr/fileadmin/user_upload/mediatheque/enr/Images/Solaire/Passer_a_l_action/Guide_synthetique_ALPGRIDS_VF.pdf.

Financial concessions and distribution fees for sharing

The Energy Regulatory Commission (CRE)[18] has a legal obligation to **set specific distribution rates for collective self-consumption** so as not to burden it with unnecessary charges.[19] This special tariff was indeed prepared by the regulator, but because of its disadvantages, it is practically unused by communities in France.

The main obstacles are:

- **sharing** only at the **low-voltage** level,
- **the complexity of the tariff, which also places high demands on the smart management of consumption in the community**, with the charge decreasing depending on the load of the network, which means that it increases at peak times.

Since 2021, the French government has introduced a favourable **feed-in tariff**[20] that can be used by **PV power plants up to 500 kWp**. This facilitates investments in solar energy projects, because the producer can also sell part of the production to the grid at a pre-determined (above market) price.

There are **no tax concessions for communities in France** and the taxes paid are very similar to those which a sharing participant pays for electricity from a traditional supplier. The consumer has to pay a network charge, local and national taxes for electricity and the same VAT.

Consumer protection in energy community

The protection of participants in collective self-consumption is also regulated by the Energy Act. It consists of rules relating generally to all consumers and partly regulating sharing. The general provisions include, for example, the **free choice of a supplier** and the sharing specific ones focus primarily on the **possibility of terminating electricity sharing and leaving a community**. A specific notice period for leaving a community, however, is not laid down in the law; what matters is the time limit for termination of sharing and member's exit from a community set in the community's statutes.

Summary

Except for very strict territorial restrictions on electricity sharing, the regulation of energy communities in France is very good. The biggest pros include:

- More favourable rules for electricity from RES, which can be shared by communities at low and medium voltage.
- Clear obligations for the DSO, the right of energy communities to choose among several methods of allocating the shared electricity (including their own allocation method) and support for the installation of smart meters.
- Financial support for communities through a special distribution tariff for communities and a feed-in tariff for all PV installations up to 500 kW. However, the special distribution tariff remains beneficial only on paper, not in practice. Instead, communities benefit from a feed-in tariff, but this only encourages maximisation of production, not coincidence of production and consumption. Thus, only the efforts to financially support energy communities can be clearly considered positive.

[18] Commission de régulation de l'énergie, see https://www.cre.fr/en/cre/who-are-we.

[19] Article L3153, Code de l'énergie: https://www.legifrance.gouv.fr/codes/section_lc/LEGITEXT000023983208/LEGISCTA000032939883/?anchor=LEGIARTI000039369902#LEGIARTI000039369902.

[20] See https://www.legifrance.gouv.fr/jorf/id/JORFTEXT000044173060.

Greece

Community energy is well developed in Greece despite imperfect legislation. Similarly, to Poland, Greece has been ahead of the EU in legislation and introduced community energy in 2018. Net metering is another feature which Greece legislation has in common with the Polish one, although its specific conditions are set differently. Community energy in Greece today is experiencing a boom, with the installed capacity of communities increasing by 71.4% and the number of communities by 36% (to 1,406) in 2022.[21]

The regulation of energy communities in Greece was initially mainly contained in Act No. 4513/2018 on Energy Communities[22], which was adopted by the government before the adoption of the EU energy communities legislation in 2018. Furthermore, community energy was regulated by Act No. 3468/2006 on electricity production from RES and high efficiency co-generation, and Act No. 4001/2011 on the functioning of the electricity and gas market. **In March 2023, a major amendment to these laws was made** by Act No. 5037/2023[23], which added some requirements from the European directives to the legal framework, in particular the definition of the types of energy communities (CEC and REC) and the modification of the provisions on sharing and self-consumption.

How does virtual net metering work?

Electricity sharing in Greece takes the form of **virtual net metering**. In this form of electricity sharing, consumption does not happen in real time as the shared resource generates electricity and sends it all to the grid (no continuous metering is used), but works **on a monthly billing basis**. As in the case of Poland, this is not electricity sharing in the true sense of the word, because it does not motivate participants to optimise electricity production and consumption in real time.

> **Example of how net metering works**
>
> A sharing participant buys a 5% share in a RES power generation project. At the end of each month, the total amount of electricity produced by the said generation plant during that period shall be measured, with 5% of that amount going to the said participant. At the end of the month, 5% of the electricity produced by the generation plant is deducted from the total amount of electricity consumed and the participant pays the traditional supplier only for the remaining amount of electricity consumed.

Who may participate in virtual net metering?

Under Greek legislation, the benefits of virtual net metering can be enjoyed by **self-consumers, collectively acting self-consumers, local authorities, farmers (including agricultural businesses) and energy communities**.

However, **energy communities are limited** in who they can provide electricity to in this way. Within the virtual net metering model, they can only provide it to **these community members**:

- household consumers,
- farmers and agricultural businesses (registered under the relevant act),
- people below the poverty line, including households suffering from energy poverty,
- local authorities (e.g. to operate schools, street lighting, etc.).

The number of participants in a virtual net metering system (or an energy community) is not limited by legislation. For some forms of energy communities, only a minimum number of participants is required.

The situation is different for the **maximum possible installed capacity of generating plants**. For energy communities, there is a maximum limit of 2 GW of total installed capacity. For self-consumers (individual and collective) the rule is that house-

[21] Energy communities in Greece boost installed capacity by 71.4% year over year, available at: https://balkangreenenergynews.com/energy-communities-in-greece-boost-installed-capacity-by-71-4-year-over-year/.

[22] ΝΟΜΟΣ ΥΠ' ΑΡΙΘΜ. 4513 ΦΕΚ Α' 9/23. 01. 2018, available at: https://www.kodiko.gr/nomothesia/document/341480/nomos-4513-2018.

[23] ΝΟΜΟΣ ΥΠ' ΑΡΙΘΜ. 5037 ΦΕΚ Α 78/29. 3. 2023, available at: https://www.kodiko.gr/nomothesia/document/872080/nomos-5037-2023.

holds are limited to 10.8 kW of installed capacity per point of consumption. Legal entities (including local governments) have a limit of 100 kW per point of consumption. Registered farmers and agricultural businesses are also limited to 100 kW per point of consumption. Greek legislation only allows RES installations.

A specific feature of Greece is that it is ahead of the European Union in the regulation of energy communities. The energy community as a legal entity was introduced by a Greek act **as early as in 2018**. However, due to its overly general definition, it has been abused by large players (businesses) in the past, and therefore there has **not been much development of civic initiatives in Greece**.

In addition, the early 2023 amendment (Act No. 5037/2023) introduced energy communities under EU law (REC and CEC). Thus, overall, there are three types of energy communities in Greece, which may look confusing.

At the same time, all energy communities (or their members) have to meet the **proximity condition**. More than **50% of the members must reside** (or at least own or rent property) **or have their headquarters in the same region in which the joint RES production site is located**. An exception is made for the Athens region, for which a production site can be located in a neighbouring region.

The differences between the "sharing" models in Italy, Poland and Greece

In Italy, communities benefit from feed-in tariffs; in Poland, active customers and communities can "store" electricity in the grid for up to a year; and in Greece, collectively generated electricity is reflected in the monthly invoice as a discount on the energy taken from the grid. A brief summary of the 'imperfect sharing models' shows that only the Italian model encourages coincidence of production and consumption.

The Greek virtual net metering model is generally comprehensible, a share of the electricity produced by the community is deducted from the total supply to the community member, who then pays less for it each month. In Poland, you can 'store' the electricity produced in the grid and the supplier must then supply it free of charge up to 80% for an active customer and 60% for a community. None of the models constitute sharing as defined by European law; all of them encourage, in the first place, maximum electricity production, not the desired coincidence of production and consumption.

Italy seeks to achieve the objective of matching generation and consumption for communities and active customers through feed-in tariffs for the generated electricity. The more community electricity a member consumes at the time when the electricity is generated, the more of the feed-in tariff they will be paid by the community.

Technical support for virtual net metering and data access

Virtual net metering in Greece is ensured by the **usual electricity suppliers**, because it is essentially a billing operation. For this purpose, the DSO **mandatorily transmits metering data** to the supplier and the energy community in turn provides **information on the shares** of its individual participants. Based on these data, the supplier reduces the electricity bills of the community participants. The exception is the Greek islands, where the DSO provides for all the virtual net metering. Electricity sharing is possible **across all voltage levels, low, medium and high voltage**.

There is **no obligation** in the legislation **for the DSO to install continuous metering** for members of energy communities. This is related to the fact that sharing takes place in the form of virtual net metering on a monthly basis. At the same time, the DSO is **not obligated to publish data on the capacity of the distribution network**, which makes it difficult to implement RES projects. Therefore, the Greek Ministry of Environment and Energy issued a regulation stipulating that **10 MW of capacity would be reserved for energy communities** in networks with little residual capacity. However, the Ministry left the detailed modification of this rule to the DSO, which decided to divide the 10 MW into packages of maximum 10 kW. Thus, an energy community can only apply for 10 kW of capacity on a priority basis, which is insufficient for its purposes.

Methods of electricity allocation in virtual net metering (allocation key)

The methods of distributing shared electricity among the members of the energy community are quite limited, as there is **no use of smart metering** (or other continuous metering). In practice, there is only a simplified static method in which the shared electricity is distributed among the members **according to predetermined percentages (according to their shares in the RES project)**. However, this distribution occurs at the end of the billing period (month), as in the example at the beginning of this chapter, and not in real time or, for example, at 15-minute intervals.

Fees connected to virtual net metering

In Greece, there is no exemption or discount from the distribution fee for energy communities. Energy communities have the **obligation to pay the full distribution fee for sharing electricity**. There are also **no tax advantages** that would support the activities of the communities.

Administrative requirements for energy communities

The establishment of a community is subject to simple **registration in the national energy community register**. However, the process of permitting a RES project and connecting it to the grid is challenging. The community must firstly submit a **grid connection application** to the DSO. Once the permit is granted and the connection fee is paid, the energy community enters into a virtual net metering contract with the DSO, which is entered into for a period of 20 years. This is followed by the conclusion of a **contract with the supplier**, which defines the specific model for the operation of the virtual net metering, meaning electricity allocation and billing.

For PV projects connected to the **low-voltage grid**, it takes approximately **7–14 months** from the submission of the connection application to the start of the project. For the **medium voltage grid**, the waiting period is extended to **10–20 months**.

Consumer protection in energy community

The Greek legislation contains the general requirements of European law for the protection of members of energy communities. It mentions a member's right to **participate freely and voluntarily** in communities, the **possibility to leave a community** and the possibility to freely choose **the electricity supplier**.

However, the details concerning voluntary participation and termination of membership in an energy community are **not explicitly covered by Greek law**. Therefore, the protection of community members is governed by general civil and commercial law or the requirements that this branch of law imposes on the legal form selected (e.g. an association). Furthermore, these issues are also specified in the constitutive legal act (e.g. the statutes) of the association.

As regards the last requirement concerning the free choice of a supplier, a change was made on the basis of the above-mentioned March amendment. Before the amendment came into force, members of an energy community using virtual net metering were obligated to have the same electricity supplier. This changed in spring 2023 and **now members can have different suppliers**.

Summary

Greece was ahead of the EU in regulating community energy, yet this fact did not initially have a significant impact on quality of the regulation. Later on, the Greek legislation failed to take into account the requirements of the European directives and became outdated, which partly changed at the beginning of 2023 – after the adoption of Act No. 5037/2023. However, the need to make adjustments to the older legislation has also brought reduction in the clarity of the original legislation. In terms of administrative requirements, transparency of information and clarity **we classify the Greek legislation among the better average within the EU**.

he advantages of the Greek legislation include:

- small territorial and technical limitations of energy communities – 50% of members in the same region is enough,
- free choice of supplier for each member of the energy community.

The negatives of the Greek legislation are:

- the fact this is not sharing in the true sense of the word but a form of virtual net metering, which does not motivate real-time optimisation of production and consumption,
- the confusing legislation – there are three definitions of energy communities,
- the non-transparency of the data related to grid connection (uncertainty regarding connection),
- the administrative complexity in permitting RES plants.

Italy

The situation in Italy is rather confusing and a questionnaire survey also showed that Italians are not entirely satisfied with the legislation. Nevertheless, dozens of energy communities have been set up with the legislation coming into force in 2021 and, according to a study by the Polytechnic University of Milan, there will be 40,000 energy communities in Italy by 2025.[24] Just like in France, the government has introduced a feed-in tariff, and while its application is very specific, it's also sensible from the perspective of community energy principles.

The legal regulation of Italian community energy sector can be found in Legislative Decree No. 199[25] of 2021 and is further specified by the regulation of the ARERA[26] energy market regulator. However, there is still **no implementing legislation** to ensure the development of decentralised energy and bring greater certainty to energy communities and their members.

Italy has a **specific model of electricity sharing using feed-in tariffs**. This is not sharing as defined by EU legislation and as already in place in, for example, Belgium or Austria. Unlike in other countries where feed-in tariffs are used, however, it **provides an incentive to achieve as much coincidence as possible between production and consumption**. The actual functioning of this model depends on the adoption of further regulations.

Feed-in tariff

Feed-in tariffs are a policy instrument to support investments in RES. Typically, this means that small renewable energy producers are promised to receive a higher-than-market price for the energy they feed into the grid. The payments are usually made on the basis of long-term contracts (15–25 years). Feed-in tariffs to support RES were introduced in 1978 by the USA. Today, feed-in tariffs are being phased out as renewable electricity is already fully competitive and its development does not need to be incentivised in this way.

Who can participate in sharing using feed-in tariffs?

The following entities can participate in the Italian sharing model:

- active customers,
- energy communities.

The community or active customers choose one **contact person** to represent them in communication with the authorities. This person is in charge of registering the community with the GSE (Gestore Servizi Energetici) state enterprise, whose aim is to achieve a sustainable environmental status using RES. The GSE is the primary point of contact for the communities. It licenses their PV power plants or checks that they meet all the legal requirements for their registration. Since the launch of their power plants, the communities have 60 days to apply for registration.

The role of feed-in tariffs in the Italian model

The **GSE is obligated to purchase** the electricity generated and pay the community a fixed feed-in tariff ranging from **EUR 100–110 per 1 MWh** of electricity produced. However, in order to qualify for this bonus, the community **must also consume the same amount of electricity**. Measurement and evaluation of production and consumption is carried out at **hourly intervals**. This differentiates the Italian model from other feed-in tariff systems, which tend to incentivise communities to overproduce electricity without taking into account consumption, thus placing an undue burden on the distribution network. In Italy, communities save the most when their **production meets their consumption at the same time**.

[24] Renewable energy communities in Italy and in Europe, available at: https://www.enelgreenpower.com/countries/europe/Italy/renewable-energy-communities/renewable-energy-communities-italy-europe.

[25] Decreto legislativo 8 novembre 2021, n. 199, available at: https://www.normattiva.it/uri-res/N2Ls?urn:nir:stato:decreto.legislativo:2021-11-08;199.

[26] Testo integrato autoconsumo diffuso, available at: https://www.arera.it/allegati/docs/22/727-22alla.pdf.

Unlike in traditional electricity sharing models, the traditional supplier does not deduct a portion of the consumed electricity when billing for the electricity supply to individual members. Each sharing member **pays the supplier for the total amount of energy consumed** and subsequently receives from its energy community a **portion of the state-provided feed-in tariff**. This ensures that those who consume at the time of generation actually save on their electricity bills. The way in which the proceeds of the feed-in tariff are distributed is defined by internal rules of communities.

Technical support for electricity sharing and data access

Sharing is managed by the aforementioned **state-owned GSE**, which is tasked with calculating the shared electricity and subsequently providing communities with the purchase price. In addition, it must also operate an **online portal** where communities can access all the necessary information.

The DSO is only obligated to install **meters that allow data collection on an hourly basis** (continuous meter). If for whatever reason, a household wishing to participate in the sharing does not yet have such a meter, it can still share electricity. Special predefined calculations are then used to determine the amount of shared electricity.

As the assessment of the ratio between electricity produced and consumed occurs only once per hour, the installation of smart meters with faster data capture is not necessary.

Financial concessions and distribution fees for sharing

The financial benefit of sharing lies in securing the **purchase price** and receiving a **discount on the distribution fee**. This area of regulation has so far suffered due to the non-existence of a ministerial decree and communities are kept in the dark as to the extent to which the project is economically worthwhile.

Feed-in tariffs are currently set at:

- EUR 110 per MWh of shared electricity for energy communities,
- EUR 100 per MWh of shared electricity for active customers (e.g. in residential buildings).

The feed-in tariffs are granted for a period of 20 years.

The **discount on the distribution fee currently amounts to some 30%** and the total charge for the use of the distribution system is around EUR 30 per 1 MWh. Of the purchase price per 1 MW, a community may in practice be left with approximately EUR 90, which is then distributed among its members.

In order to obtain financial concessions, the legislation also sets a limit on the possible production. For a community to reach the contributions, its total installed capacity must not exceed 1 MW.

The purchase prices are not subject to taxation, but where a community wants to sell electricity exceeding its own consumption, it is subject to all applicable taxes.

In addition, in Italy it is possible to obtain **public funding for the construction of photovoltaic installations**. In the form of what is called the tax superbonus, the state provides up to 110% of the investment back for installations up to 20 kW[27] and 50% back for installations up to 200 kW[28]. The use of this support however, is **incompatible with subsequent participation in sharing** for a period of 5 years after the use of the superbonus.

[27] Decreto-legge del 19/05/2020 n. 34 – Articolo 119, available at: https://def.finanze.it/DocTribFrontend/getAttoNormativoDetail.do?ACTION=getArticolo & id=%7b83672E3A-FEE0-4C97-9D4F-87790B110751%7d & codiceOrdinamento=200011900000000 & articolo=Articolo%20119.

[28] Testo unico del 22/12/1986 n. 917 – Articolo 16 bis, available at: https://def.finanze.it/DocTribFrontend/getAttoNormativoDetail.do?ACTION=getArticolo & id=%7b31D694E8-4398-4030-873B-FEAF5A6647F9%7d & codiceOrdinamento=200001600000200 & articolo=Articolo%2016%20bis.

Territorial restrictions and administrative barriers

Electricity can be shared within a **single market zone**, of which there are six in total in Italy, so these territories are quite large. In practice, however, what is more important is the territorial restrictions for obtaining financial support. The GSE purchase price is only paid if the community shares **within an area covered by one primary substation** (transformer from the high voltage to the medium voltage level). There are more than eighty of these in Italy. Until recently, the territorial restrictions were more stringent, hampering the development of community energy. Only communities sharing within an area covered by one secondary substation (transformer from medium voltage to low voltage level) then received the financial bonus.

A significant administrative barrier is the provision according to which **only facilities that were put into operation after the entry into force of Legislative Decree** No. 199, i.e. only from 2021, can be fully used for sharing. Already existing plants can also participate in the sharing, but their production must not account **for more than 30%** of the total installed capacity of the community.

Market zones in Italy

Consumer protection in energy community

Because a community does not supply electricity to its individual members in any way, the Italian legislator did not find it necessary to regulate this area in detail. Each participant in the sharing **retains their status as a consumer** vis-à-vis the supplier, from whom they buy the entire quantity of electricity they consume.

If a member of a community wishes to leave the sharing, they may do so in accordance with the internal rules of the community. For the community this only means that it will stop paying the member part of the purchase price.

Summary

Italy has taken its own approach to the transposition of the European rules for energy communities and the model it uses for common electricity consumption cannot clearly be regarded as sharing. Nevertheless, local legislation offers valuable lessons:

- **The specific model of "sharing" using feed-in tariffs** is not sharing in the true sense of the word, but it promotes local consumption and is economically advantageous for community members.
- The current state of community energy in Italy **suffers from the slow development of implementing legislation**. The long waiting for implementing decrees brings uncertainty, hinders development and generally makes the whole regulation unclear.
- However, it can be highlighted that Italian legislators were **able to reflect** upon the issues and adopted a major amendment in 2021, removing some unnecessary restrictions.

Poland

Poland has been experiencing a solar boom in recent years, with massive support for ground and rooftop installations. In 2019, the government introduced the Mój Prąd subsidy programme for households, which has supported over 411,000 PV power plants to date with over EUR 380 million.[29] The Polish government tried to lay down rules for community energy in 2015, but due to their incompatibility with the European regulation, it is now amending the legislation. Poland is also one of the countries without electricity sharing, but with net metering.

In Poland, community energy is regulated by the Renewable Energy Sources Act[30] (**RES Act**). Electricity is not shared in real time, as is the case in Austria or Belgium, for example. Energy communities or active customers can "store" the electricity they generate in the grid and consume most of it at a later date, but no later than one year (net metering). This is not electricity sharing in the true sense of the word. Sharing is always a **complementary activity to the licensed supply of electricity** by a supplier. The Polish method of using community electricity is **currently under review** and is set to change significantly.

Who can participate in net metering?

The following entities are entitled to use net metering under the RES Act:

- active customer,
- energy communities.

An active customer does not have the right to share electricity between more than one of its consumer points or with other active customers. However, under net metering, they can "store" electricity from RES in the distribution system and **take back 80% of this electricity from the grid free of charge within the billing period of one year**. As a result, active customers can save significantly on electricity costs. They **only pay the market price** to the supplier for the consumed electricity if **their annual consumption exceeds 80% of the production**.

The model has therefore enjoyed considerable popularity in Poland, leading to domestic rooftop PV installations being the most widespread source of solar electricity in the country.[31] However, net metering is **unsustainable in the long term** and rightly criticised. Unlike standard electricity sharing at 15-minute intervals,[32] it does not incentivise the coincidence of generation and consumption. On the contrary, it **can lead to overloading of the distribution system in the summer months**. An active customer is motivated by net metering to send as much electricity as possible to the grid in summer in order to pay as little as possible for winter consumption.

The Polish legislator has therefore prepared an **amendment according to which the electricity sent to the grid in each hour should take into account the current market price** (with the risk that prices in the summer months may be negative on certain days). Consequently, an active customer will be granted a corresponding discount for the total electricity consumed within the billing period of one year (net billing). The change is criticized as economically disadvantageous from the perspective of active customers; however, in terms of optimizing the production and consumption of electricity from RES in real time, it can be beneficial for the overall system.

Even energy communities are not entitled to share electricity between multiple consumption points of their members in real time. **In relation to the supplier, they act collectively as one customer and one producer** of electricity. Each year, they receive from the supplier one joint invoice and thereafter it is entirely up to their internal agreement as to how to share the costs between them. Like active customers, energy communities can use the net metering model described above, except that they can **only take back 60% of the total amount of electricity supplied** from the grid for free in the annual billing period. The model is therefore used much less than the active customer concept.

[29] Poland includes heat pumps in residential solar rebate program, 2023, available at: https://www.pv-magazine.com/2023/03/21/poland-includes-heat-pumps-in-residential-solar-rebate-program/.

[30] Ustawa o odnawialnych źródłach energii, available at: https://isap.sejm.gov.pl/isap.nsf/download.xsp/WDU20150000478/U/D20150478Lj.pdf.

[31] Poland has been massively promoting PV power plants on buildings since 2019, when it launched the Mój Prąd subsidy programme.

[32] A 30-minute or hourly interval is also acceptable.

Technical support for net metering and data access

The DSO is responsible for ensuring the technical aspects of net metering in cooperation with suppliers. Upon the request of an active customer or an energy community, the DSO is obligated to **install smart meters** on all connected consumption points **within 4 months**. The costs of installing smart metering are carried by the active customers and the energy communities.

In Poland, there is still **no common platform for data transfer** between individual DSOs. Therefore, net metering is **not possible across several regional distribution systems** and one of the technical requirements for energy communities is that all members are located in the distribution territory of the same DSO.[33] In addition, net metering can only take place **between generation and consumption points connected to the same low-voltage network**, which excludes wind power plants. **However, the situation is set to change from 1 July 2024.** In collaboration with the DSO and electricity suppliers, a **centralised electricity market system is now being developed** to overcome these technical limitations.

Production and consumption data are provided by the electricity suppliers to active customers and members of the energy communities. Although suppliers are also obligated to operate an online portal with access to community production and consumption data, these data may not be available in real time and therefore do not usually lead to optimization of production and consumption.

Fees connected to net metering

Electricity generated and consumed by an active customer or energy community under net metering is **exempted from some part of the regulated payments** (specifically the RES fee and the fee for the support of combined production of electricity and heat). At the same time, energy communities are also exempted from the distribution fee for shared electricity, the electricity billing fee and the net metering fee. The obligation to pay these charges is transferred to the electricity supplier in return for the remaining 40% of the electricity that the energy community "deposits" in the grid without being able to subsequently take it back.

Territorial restrictions and administrative barriers

Polish law distinguishes between two subtypes of energy communities, providing for what is called energy cooperatives and energy clusters since 2015. However, neither of the existing types of energy communities complies with the requirements of EU law, which is due to the late adoption of the definitions of energy communities at the EU level. **Therefore, the Polish legislator is now preparing a revision of the national definitions and related restrictions.**

The first of the existing subtypes of energy communities is "energy cooperatives". These can have a **maximum of 999** members and can be **located in a maximum of three neighbouring rural or urban-rural municipalities**[34] (urban municipalities are completely excluded from participation in community energy). **However, the limitation on the maximum number of members and the permitted territory has proved inappropriate in practice (there is no interest in energy cooperatives in Poland, with only five officially established since 2015) and is also contrary to the requirements of European law. The planned revision of the definitions of communities therefore includes the removal of these restrictions.**

A less administratively demanding and more popular type of energy communities are "energy clusters". The **number of members in energy clusters is not limited and their territorial scope can cover the territory of up to one region** or five neighbouring municipalities (regardless of regional borders). The only limitation is that at least one of the members of an energy cluster must be a municipality.

[33] There are currently four distribution system operators in Poland.

[34] The Polish territory is divided, among other territories, into "gminas", usually translated as municipalities. Distinction is made between rural, urban-rural and urban gminas. However, the territory of one gmina is usually larger than the territory of one Czech municipality, so the usual translation of this term can be confusing. In the Czech context, this territorial unit can best be likened to a municipality with extended powers.

Consumer protection in energy community

Polish law **does not contain specific provisions aimed at protecting members of energy communities**. Nevertheless, there is no known case of their abuse in practice. The **very legal form of a cooperative**, which Polish energy communities must use under the RES Act, **contains sufficient guarantees of protection for individual members**. Therefore, no specific regulation in the RES Act is necessary.

Summary

The community energy legislation in Poland **does not comply with the requirements of European law**, which is due to the previous regulation of community energy at the national level. While in 2015 the Polish legislation was one of the more successful ones (in the vast majority of other European countries community energy did not exist at all), by current standards it is outdated and full of disproportionate administrative and technical barriers. **Although many of the constraints are at least partially offset by the economic benefits** of energy communities, such as the waiving of distribution charges or some taxes, it is **generally a model that has not proved very successful in practice**. Even Poland itself is therefore now abandoning it and adapting the forthcoming legislation to the European standards.

Portugal

Portuguese legislation stands out in particular for its overall openness and friendliness towards the members of communities. However, energy communities are emerging rather slowly. The Portuguese government has declared its intention to democratise and decentralise its energy system. By 2050, the country wants to have 12–13 GWp of installed capacity in decentralised PV power plants and energy communities, together with citizens and businesses, should contribute up to 20% of total electricity production.

In Portugal, electricity sharing is considered a **collective self-consumption activity**, which may or may not be carried out within energy communities. The sharing itself takes place in a standard way, when the electricity generated is allocated to the points of consumption **at 15-minute intervals** on the basis of a chosen allocation key. This electricity is then **deducted from the customer's consumption in their monthly bill**. Self-consumption is a complementary activity to the licensed supply of electricity by the supplier. The activity of collective self-consumption is governed primarily by Decree No. 15/2022[35].

Who can participate in electricity sharing?

The Portuguese regulation is very open, so virtually anyone can participate in sharing - from ordinary consumers to businesses to local governments. If citizens decide to generate and share electricity together, it is up to them whether they wish to be covered by an energy community[36]or whether they prefer a looser arrangement without setting up a legal entity. In this case, however, they must designate a **self-consumption management body** (EGAC in Portuguese), for example one of their members, who then **represents them in communication with the authorities or the DSO** and supervises the progress of the sharing.

Before sharing can start, the community[37] must register with the Directorate General for Energy and Geology[38] – using an online form to enter the details of the generating unit, the management entity and the individual members and, where applicable, the energy community that represents it. Subsequently, information on the members, their consumption points and the chosen allocation key must also be provided to the relevant DSO.

Technical support for electricity sharing and data access

The main entity responsible for the management of electricity sharing is the **DSO** or the transmission system operator if the electricity is shared at the very high voltage level. The DSO **measures production and consumption** in a community and then **applies the selected allocation key** to determine the amount of electricity allocated within the community.

For sharing purposes, each member is required to have **a smart meter** installed. The DSO is currently carrying out their phased installation in all Portuguese households. If a household that has not yet received a smart meter wants to join electricity sharing, the DSO is **obligated to install it free of charge within the legal time limit** of 4 months.

The DSO operates an online portal where consumers can access real time information from their smart meters. Unfortunately, this tool does not yet distinguish between electricity shared and electricity provided by a traditional supplier, so the community is not able to manage electricity sharing in real time.

Detailed information on the production, consumption and quantity of electricity allocated to each member is **provided by the DSO** to the managing entity or the energy community **on a monthly basis**. In addition, the DSO is also **obligated to send the data to the licensed electricity suppliers** so that they can deduct the shared electricity from the consumption of the individual members and make the billing.

[35] Decree-Law No. 15/2022, available at: https://diariodarepublica.pt/dr/en/detail/decree-law/15-2022-177634016.

[36] The Portuguese legal framework, in line with EU law, allows the establishment of both renewable energy communities and citizen energy communities.

[37] In describing the Portuguese legislation, we use the term community to refer to any grouping of persons who participate in collective self-consumption. Such a grouping may or may not be represented by an energy community.

[38] Direção-Geral de Energia e Geologia, available at: https://www.dgeg.gov.pt/.

Allocation method of the shared electricity (allocation key)

Portuguese legislation gives communities **considerable freedom in the way they distribute the shared electricity**. As in many other countries, they can choose between a static, dynamic or hybrid method. A special feature is the possibility to use different coefficients to further modify the allocation of electricity.

In the static method, electricity is allocated in a single round based on predefined fixed ratios. Any electricity that is not allocated in this way **flows into the grid without compensation**.

The dynamic method allows shared electricity to be allocated on the basis of consumption at individual consumption points. It minimises the amount of overflows and optimises the flow of energy so that as much electricity as possible is consumed locally. For the purpose of dynamic management of sharing, the Decree requires the DSO to provide the necessary metering data to the community.

The **hybrid method** allows for a combination of the above-mentioned allocation methods. Allocation takes place in two rounds, in the first, electricity is allocated on the basis of fixed ratios, in the second, the remainder is allocated according to actual consumption.

The specificity of the Portuguese arrangement lies in the introduction of **fixed and variable coefficients by which the allocation methods can be partially modified**. They can be used, for example, to adjust the fixed ratios or the number of consumption points with which electricity is currently shared.

The **use of fixed coefficients** depends entirely on the will of the consumer or a community member and does not have to meet any special conditions. The coefficients can be set differently for weekdays, weekends and holidays or even for whole seasons. For example, a community may take more account of their consumption during the week and set higher weekday electricity allocation ratios for people who stay at home during the day.

Variable ratios, on the other hand, depend on a certain condition being met. This could be, for example, the **amount of electricity generated**. If the generation plant produces more than the determined number of kW, the ratios may be modified or the number of the community consumption points participating in the sharing may be increased.

The community shall **notify the DSO** of the chosen method of allocation of the shared electricity. If it fails to do so, the DSO shall automatically allocate electricity to each consumer point in proportion to its consumption (i.e. in a dynamic manner) at 15-minute intervals.

Fees connected to electricity sharing

In Portugal, there are two fees for the use of the public distribution system. The first is the grid usage fee, which is paid by producers for being able to send electricity to the grid. The second is the grid access fee, which is paid by consumers for the possibility to take electricity from the grid. However, a community is a special market entity that engages in both production and consumption. **The grid access fee is therefore reduced by the grid usage fee for communities.**

In addition, every consumer in Portugal pays a special **fee aimed at contributing to environmental and energy measures (CIEG)**. Communities are exempted from the fee because their activities contribute to reducing environmental impacts and increasing energy security. The exemption is granted to communities by the Directorate General for Energy and Geology for a period of 7 years with the possibility of extension.

However, the total amount of financial relief is highly variable and uncertain due to the frequent changes in the network charge and access to the network.

Where a community also sells electricity to other market participants and the income from the sale exceeds EUR 1,000, the community pays VAT at the highest rate.

Territorial restrictions and administrative barriers

A community can only share electricity if it meets the condition of **proximity between its generating plants and its consumption points**. The condition is automatically met if the community does not use the public distribution system, e.g. when sharing within a residential building. If the public grid is used, then the decisive criterion is **the relevant voltage level**.

In the case of a **low-voltage** connection, the generation plant must not be more than **2 km** from the farthest point of consumption, or both sites must be connected to the same low-voltage substation.

For **medium-voltage** connections, the permitted distance is increased to 4 km, for high voltage to 10 km and for very high voltage to 20 km.

Consumer protection in energy community

Portuguese legislation **does not lay down new rules** in this area, so the **general consumer protection standards of private and energy law apply**. However, in any case, the persons involved in the sharing retain their consumer status and **always have the right to stop participating in the sharing**. Similarly, a community may terminate the sharing of its member, but only under predefined conditions (e.g. in the case of repeated late payments, etc.).

Summary

The electricity sharing legislation in Portugal can be generally assessed as very good, although it has some shortcomings, in particular in the area of unclear financial incentives and excessive territorial restrictions. In practice, other problems such as non-compliance by the DSO, lengthy authorisation processes and lack of information or funding also arise. Nevertheless, the following in particular can be regarded as positives:

- **the quality of the legislative definition of sharing as a continuous allocation of the generated electricity**, which is simple and beneficial for consumers,
- a wide choice of **ways to allocate shared electricity**, allowing communities to choose the one that best suits their needs and maximises local consumption,
- no **unreasonable restrictions** on the number of participants or maximum production.

Seven recommendations for functional community energy

The transposition of European directives has not yet been completed or sufficiently implemented in 14 EU countries[39]; some countries are considering changes and others are proposing entirely new laws and regulations. The following recommendations summarise the findings of the analysis and show what to look out for when transposing the European legislation to make community energy work effectively.

1. Allowing different methods of allocating shared electricity

Community members should be allowed to choose the method of sharing electricity (allocation key) according to the following rules:

a) Freedom to choose between static, dynamic and hybrids methods.

b) The possibility to set the conditions for sharing electricity differently for different time periods (e.g. different allocation keys for weekdays and weekends or for different seasons).

c) The possibility to develop own methods of allocating shared electricity (e.g. multi-step allocation of electricity among different priority groups of community members, or a tailor-made solution for the community by the relevant IT company).

2. Setting a deadline for smart meter installation

A deadline of 2–4 months for the relevant DSO to install a smart meter for community members should be laid down by law.

3. Avoid introducing administrative barriers

Do not impose unjustified administrative barriers on members of energy communities (e.g. by setting a maximum number of members or delimiting a too strict territorial scope per community). These restrictions have not been successful abroad and are now being lifted by the countries concerned.

4. Positive incentives for local sharing

Incentivise communities to produce and consume locally, following the Austrian model, with a lower distribution fee which takes into account the fact that electricity is shared, for example, only through the same low voltage network, and thus higher voltage levels are not used at all (not burdening the distribution system). Conversely, if all voltage levels are used, no advantage is provided. We recommend that the Energy Regulatory Authority makes this change after carrying out a cost-benefit analysis of sharing for the distribution system during the preparation of the new tariff structure.

5. Adequate consumer protection of community members

The protection of the members of a community is best addressed by existing civil and consumer law provisions. There is no need to invent new provisions in the Energy Act for this purpose, nor do similar provisions exist in foreign jurisdictions. The key is to allow each member to leave the community freely and to end the sharing of electricity within a period of time that is reasonable for both the member and the community (e.g. a maximum of 3 months).

6. Only renewable electricity should be shared

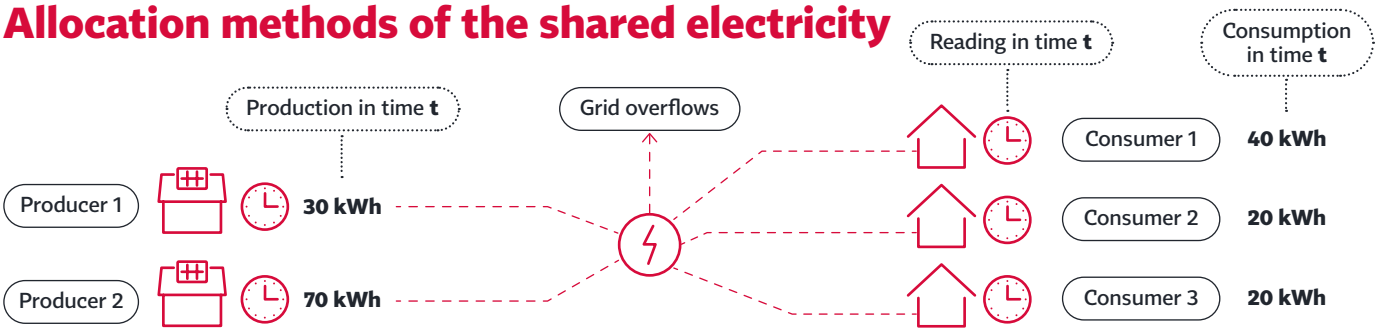
Only sharing of electricity from renewable sources should be allowed, both for energy communities and active customers. Individual customers should be allowed to combine both the sharing models.

7. Preference to sharing in communities

Electricity sharing is usually the prerogative of energy communities in European countries, and can only be carried out to a limited extent by active customers (usually within a single building or between their own and their neighbours' consumption units). We recommend respecting this principle.

[39] Source: https://www.rescoop.eu/transposition-tracker

Allocation methods of the shared electricity



STATIC METHOD

The amount of electricity that goes to a community member from a shared generation plant depends on a fixed percentage.

ALLOCATION KEY

C1 20%
C2 20%
C3 60%

SAMPLE BILLING

Allocation in t

C1 20% * 80 kWh = 16 kWh
C2 20% * 80 kWh = 16 kWh
C3 60% * 80 kWh = 48 kWh

Grid consumption

C1 40 – 16 = 24 kWh
C2 20 – 16 = 4 kWh
C3 0 kWh (28 kWh+)

Total overflow

20 + 28 = 48 kWh

ADVANTAGES

Better predictability of pre-agreed shares in shared electricity.

DISADVANTAGES

It is not flexible and does not result in the majority of electricity being used within the community. If a member does not consume the shared electricity in a given interval, it is sold (usually for a low price) as an overflow to the grid. This is not economically very profitable.

DYNAMIC METHOD

The electricity generated by the community is allocated to its members according to their actual consumption.

ALLOCATION KEY

C1 40/80 = 50%
C2 20/80 = 25%
C3 20/80 = 25%

SAMPLE BILLING

Allocation in t

C1 50% * 80 kWh = 40 kWh
C2 25% * 80 kWh = 20 kWh
C3 25% * 80 kWh = 20 kWh

Grid consumption

C1 0 kWh
C2 0 kWh
C3 0 kWh

Total overflow

20 kWh

ADVANTAGES

More electricity is used within the community.

DISADVANTAGES

It may disproportionately favour individuals with high consumption over other members of the community who are trying to reduce their consumption.

HYBRID METHOD

Combining static and dynamic methods, electricity is first allocated based on the fixed share and any surplus is allocated dynamically according to the actual consumption of the community members.

ALLOCATION KEY – Step1

C1 20%
C2 20%
C3 60%

Allocation in t

C1 20% * 80 kWh = 16 kWh
C2 20% * 80 kWh = 16 kWh
C3 60% * 80 kWh = 48 kWh
(28 kWh surplus)

ALLOCATION KEY – Step 2

C1 24/28 = 86%
C2 4/28 = 14%
C3 0

Allocation in t

C1 86% * 28 = 24 kWh
C2 14% * 28 = 4 kWh
C3 0

Grid consumption

C1, C2, C3 0 kWh

Total overflow

20 kWh

ADVANTAGES

Combines all the advantages of both static and dynamic methods while eliminating their shortcomings.

DISADVANTAGES

Less predictable than a simple static method.

Source: Österreichische Koordinationsstelle für Energiegemeinschaften[40]

[40] Available at: https://energiegemeinschaften.gv.at/messung-und-aufteilung/.

Abbreviations

CEC	Civic energy community
CIEG	Custos de Interesse Económico Geral (a network charge for environmental and energy measures)
DSO	Distribution system operator
EGAC	Entidade Gestora do Autoconsumo Coletivo (Managing Entity for Collective Self-Consumption)
EIWOG	Elektrizitätswirtschafts und organisationsgesetz (act on electrical energy and organization)
EU	European Union
GSE	Gestore Servizi Energetici (Italian energy services operator)
GW	Gigawatt
GWp	Gigawattpeak (peak, maximum performance)
HV	High voltage
kW	Kilowatt
kWh	Kilowatt hour
kWp	Kilowattpeak (peak, maximum performance)
LV	Low voltage
MV	Medium voltage
MW	Megawatt
MWh	Megawatt hour
PV	Photovoltaic
REC	Renewable energy community
RES	Renewable energy sources

Community Energy Legislation in the European Union.
Seven recommendations for a successful transposition

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