RESCOOP VPP

Energy sharing regulation in the EU

REScoopVPP first policy and market recommendations

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Executive Summary

The Clean Energy Package (IEMD and REDII) has introduced the possibility to share energy.

Energy sharing is a new activity in the energy sector and its implementation varies from one country to the other. This report aims at comparing the different national frameworks in order to assess the different possibilities and possible best practices. The review includes the following countries: Austria, Belgium (Flanders), France, Germany, Italy, Poland, Spain, The Netherlands and the United Kingdom. These countries have been selected for being the ones in which REScoopVPP pilot partners are active (BE, FR, DE, ES and UK) together with complementary countries for which information was available.

For each of these countries, a national report provides an overview about the current legal framework. It describes the role of the key actors involved in an energy sharing initiative to get a better understanding of the overall energy system in the different countries. The allocation of roles can be the success factor of the new business model. The report then details the technical requirements for setting up an energy sharing initiative, describing the main factors that may influence the profitability of an energy sharing initiative. Furthermore, and for some countries only, the report describes the information available to citizen and professional stakeholders and the quality of the administrative interface to put in place energy sharing initiatives. Finally, barriers and enablers summarise key aspects of the national framework in the country.

The review of these seven national frameworks provides some learnings related to the implementation of the right for energy communities to share energy. A list of 19 recommendations ordered by topic concludes the report.

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Abbreviations

§	Paragraph
CEC	Citizen Energy Community
CSC	Collective Self-Consumption
DSO	Distribution System Operator
FiT	Feed-in-Tariff
IEMD	Internal Electricity Market Directive (EU) 2019/944
HV	High Voltage
IT	Information Technologies
MV	Medium Voltage
NRA	National Regulatory Authority
LV	Low Voltage
OLP	Organising Legal Person
P2P	Peer-to-peer
PV	Photovoltaic
REC	Renewable Energy Community
REDII	Renewable Energy Directive (recast) (EU) 2018/2001.
RES	Renewable Energy Source
SRI	Smart Readiness Indicator
UK	United Kingdom

1. Introduction

The REScoopVPP project gathers energy cooperatives aiming to make the performance of self-consumption and demand response services accessible for energy communities. These two sets of services already have immediate applications, especially in the current context of high price volatility. Moreover, sharing energy within a group of end-users represents a longer-term perspective for these same services that represent a possibility to break-free from the ups and downs of energy markets.

The Clean Energy Package introduced the possibility to share energy. Both the Internal Electricity Market Directive (IEMD) and the Renewable Energy Directive (REDII) mention the possibility for energy communities and renewable energy self-consumers to share energy. This possibility is granted as a right for energy communities, whereas it is left to the discretion of Member States about whether and how to apply it to other commercial business models aimed at facilitating renewables self-consumers acting jointly.

The following provisions from the Electricity Directive (IEMD) and the Renewable Energy Directive (REDII) clarify part of the common EU legal background for energy sharing.

IEMD, recital 46

"(...) **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. (...)"

IEMD, art 2

"(8) 'active customer' means a final customer, or **a group of jointly acting final customers,** who consumes or stores electricity generated within its premises located within confined boundaries or, **where permitted by a Member State, within other premises**, or who sells self-generated electricity or participates in flexibility or energy efficiency schemes, provided that those activities do not constitute its primary commercial or professional activity;"

IEMD, art. 16
"3. Member States shall ensure that citizen energy communities: (…)
(e) 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."

REDII, art. 2
"(14) 'renewables self-consumer' means a final customer operating within its premises located within confined boundaries or, **where permitted by a Member State, within other premises**, who generates renewable electricity for its own consumption, and who may store or sell self-generated renewable electricity, provided that, for a non household renewables self-consumer, those activities do not constitute its primary commercial or professional activity;"

REDII, art. 22
"2. Member States shall ensure that renewable energy communities are entitled to: (…)
(b) **share, within the renewable energy community, renewable energy that is produced by the production units owned by that renewable energy community**, subject to the other requirements laid down in this Article and to maintaining the rights and obligations of the renewable energy community members as customers; "

In the context of this report "energy sharing" refers to the possibility for an energy community to share energy (REDII, art. 22.2). This provision provides a right for RECs to perform energy sharing at the level of the community. Moreover, we also use the expression "energy sharing" when Member States extend the activities of jointly-acting self-consumers beyond the building level. In that case, collective self-consumption is also performed at a neighbourhood level, but is not limited to energy communities.

Energy sharing is a new activity in the energy sector and its implementation varies from one country to the other. This report aims at comparing the different national frameworks in order to assess the different possibilities and possible best practices. The review includes the following countries: Austria, Belgium (Flanders), France, Germany, Italy, Poland, Spain, The Netherlands and the United Kingdom. These countries have been selected for being the ones in which REScoopVPP pilot partners are active (BE, FR, DE, ES and UK) together with complementary countries for which information was available.

Many REScoop.eu and BBEn members have shared their experience and expertise related to their national regulatory frameworks. This report would have not been possible without their input and we warmly thank them for their contribution.

2. Key aspects of energy sharing regulation

Energy sharing is a new technical activity in the energy sector that entails different aspects. This report is structured around these different aspects. This section describes the different criteria used to structure the analysis of each country's regulatory framework.

2.1 Overview of energy sharing status

This section gives an overview about the current legal framework in the different countries under consideration.

First, the sub-section "Insights on legislator objective and approach" takes a look at the general Member State's approach regarding the implementation of energy sharing measures. Then, the "Transposition of energy community dispositions" from the Clean Energy Package is reviewed. Furthermore, the section describes the chosen approach for the "Transposition for energy sharing"-related dispositions at a national level. Finally, the "Interaction between energy communities and energy sharing" in the national framework are mentioned to clarify if energy sharing is an exclusive right of energy communities, a right for them among other entities, or a possibility open to all.

2.2 Allocation of roles

This section describes the role of the key actors involved in an energy sharing initiative to get a better understanding of the overall energy system in the different countries. The allocation of roles can be the success factor of the new business model.

The subsection "Supplier & balance responsibility" is focused on the role of the supplier(s) who may have to perform different activities. This point can concern the question of the responsibility to cover seasonal variations and peak demand periods. It also mentions if the consumers are free to choose their supplier. The second part "Energy sharing organiser" takes a closer look at the entity in charge of managing the energy sharing initiative (e.g. who registers the community, how to join and to leave, etc.). Finally, the third part "DSO's role" pays special attention to the role of DSOs in collecting metering data and sharing with other involved actors and other contributions to the energy sharing model.

2.3 Technical rules for energy sharing

This section describes the technical requirements for setting up an energy sharing initiative.

The first subsection "Perimeter of the energy sharing" describes the definition of the area in which the initiative can be operated (as a geographical perimeter, a section of the distribution grid, etc.). Second, "Maximum allowed capacity" describes the allowed overall maximum production capacity (kWp) of the initiative, and the individual capacity per participant if relevant. Third, the "Requirement for a smart meter and other specific equipment" is detailed. Fourth, we give an overview of the"Allowed production technologies" (photovoltaic, wind, other) and fifth the "Netting period", i.e. the time unit for which consumption is deducted from the consumption, is mentioned providing key insights on the need for balancing production and consumption. Finally the subsection "Rules for connecting to the grid" helps to identify possible bottlenecks for the implementation of new projects.

2.4 Economics

This section describes the main factors that may influence the profitability of an energy sharing initiative.

The first subsection "Impact on bill components (Energy, Grid fees and Tax & levies)" describes incentives acting on one of the bill components. Indeed, if sharing energy may provide access to cheaper RES-electricity, Member-States may introduce some further incentives by limiting grid fees or tax and levies. Complementarity, the assessment looks at "Positive incentives" as other support schemes which may take the form of premium for the shared energy. A third aspect reviewed are "the dispositions in place for the valorisation of "Injections to the grid" (FiT, bilateral agreement, other). Finally "Additional incentives and disincentives" provides complementary insights on measures that may hamper the energy sharing's economic model.

2.5. Availability of information and facilitation

This section describes the information available to citizen and professional stakeholders and the quality of the administrative interface to put in place energy sharing initiatives. This section is filled only for a couple countries in the present report.

The subsection "Information from public administrations or system operators" describes available information to support initiatives through public or para-public entities (DSO, regulator, energy agency). "Established communication procedures and timelines" put a light on how easy or challenging existing procedures to put in place an initiative.

2.6 Barriers and enablers

This section identifies the main difficulties and opportunities identified in the regulatory framework of the given country, should they have been identified in the section above or not.

3. Energy sharing today in different EU countries

Based on the assessment criteria described above, the following section details various aspects of national frameworks on energy sharing in order to better understand differences among countries and some lessons that can be learned from these different approaches.

The regulatory frameworks for energy sharing are reviewed for the following countries: Austria, Belgium (Flanders), France, Italy, Poland, Spain. Complementary insights are provided for Germany, the Netherlands and the UK where energy sharing-related provisions have not been implemented yet.

Austria

Spörbichl-Dreisgen energy community foundation. © OurPower

1. Overview of energy sharing status

1.1 Insights on legislator objective and approach

The establishment of energy communities is at the heart of the Austrian EAG (Austrian Renewable Energy Act, the so-called Erneuerbaren-Ausbau-Gesetzespakets)[1] in order to foster a decentralised energy system and to enable citizens to take an active role in the energy transition[2]. The Austrian legislature thus clearly provided that in Austrian law the sharing of renewable energy should be possible by providing financial incentives such as reduced network charges, taxes and levies[3].

1 The Federal Legal Information System (RIS), Renewable Energy Expansion Law: "Bundesrecht konsolidiert: Gesamte Rechtsvorschrift für Erneuerbaren-Ausbau-Gesetz, Fassung vom 05.07.2022". Available at: https://www.ris.bka.gv.at/GeltendeFassung.wxe?Abfrage=Bundesnormen&Gesetzesnummer=20011619

2 Nobile Group, Leitfaden zur Finanzierung Erneuerbarer Energiegemeinschaften, 2021. Available at: https://energiegemeinschaften.gv.at/wp-content/uploads/sites/19/2022/01/Leitfaden-Umweltbundesamt-Langfassung_UA.pdf

3 Federal Ministry for Climate Protection, Environment, Energy, Mobility, Innovation and Technologie's website, "Erneuerbaren-Ausbau-Gesetz" (Renewable expansion law) webpage. "https://www.bmk.gv.at/service/

1.2 Transposition for energy community dispositions

The REDII's and the IEMD's dispositions related to energy communities have been implemented. The provisions relevant for RECs (in the EAG and ElWOG) came into force in July 2021. Since then, the establishment of energy communities has been legally possible. With the entry into force of the amendment to the System Charges Ordinance (November 2021), the reductions in grid charges for RECs were defined. Thus, all legal framework conditions are in place to establish and operate an REC. Nevertheless, some barriers exist that hinder the final uptake of RECs/CECs on a large scale. Complementary details are available in REScoop.eu Transposition Tracker[4].

1.3 Transposition for energy sharing

Transposition of the EMD and the REDII has been partly performed in chapter 6 of the Austrian Renewable Energy Act (the so-called Erneuerbaren-Ausbau-Gesetzespakets or EAG). The chapter is entitled "Renewable Energy Communities" and consists of § 79 and § 80.

1.4 Interaction between energy community and energy sharing

Renewable energy communities have the right to produce renewable energy and to use, to store or to sell the energy produced by the production units owned by that renewable energy community. Consequently, the legal framework for electricity suppliers (ElWOG 2010)[5] is not applicable for the internal relationship of the community. But the communities are entitled to provide other energy services. In this case, the renewable energy community has to respect the rights and obligations of an energy supplier.

2. Allocation of roles

2.1 Supplier & balance responsibility

In Austria, the renewable energy community can decide to provide all services on its own or to engage a service provider. Service providers can take care of the financial commitments, the plant operation, the marketing of surplus electricity and the customer service operation. Nevertheless, the participants remain free to choose their supplier.

presse/gewessler/20210317_eag.html

4 REScoop.eu's assessment on the transposition of the energy community-related dispositions in Austria is available at: https://www.rescoop.eu/policy/austria-rec-cec-definitions

5 The Federal Legal Information System (RIS), Complete legislation for the Electricity Industry and Organization Law: "Bundesrecht konsolidiert: Gesamte Rechtsvorschrift für Elektrizitätswirtschafts- und -organisationsgesetz 2010, Fassung vom 05.07.2022". Available at: https://www.ris.bka.gv.at/GeltendeFassung.wxe?Abfrage=Bundesnormen&Gesetzesnummer=20011619

2.2 Energy sharing organiser

For the organisation of a renewable energy community, there are different use cases possible. Residential building companies, cooperatives, individuals or entrepreneurs can be initiators of such a project. In Austria, a major driving force behind the communities are the municipalities. They benefit from reduced energy costs, better cooperation with companies, citizens and other regional organisations. Furthermore, thanks to this initiative they can make a visible contribution in the field of the energy transition.

The renewable energy community has to conclude different agreements concerning the data management by the DSO, the operation and maintenance of the renewable energy installations, the liability and insurance of the installations. The community has to inform the NRA which has the right to make limited spot checks. In addition, the NRA should produce an annual report outlining the activities of the renewable energy communities (§ 16d section 3 and 4 ElWOG 2010).

2.3 DSO's role

The DSO is responsible for the collecting metering data and the quarter-hourly billing (§ 16 e ElWOG 2010)[6]. The DSO has to measure the consumption and the input of electricity. Furthermore the DSO has to provide the information to the community and to the energy supplier at the latest within the following day. All information have to be available through an online portal, The access to the portal has to be for free and has to be in compliance with legal data protection requirements. In addition, the DSO has to match the produced energy to the installations (static amount or dynamic amount of the produced energy). § 16 a section 7 ElWOG 2010 explains how the consumed energy has to be reduced by the amount of produced energy for every quarter of an hour. This allocation can be adopted between the different net users if a dynamic amount has been agreed.

3. Technical rules

3.1 Perimeter of the energy sharing

The renewable energy community has to fulfil certain obligations to ensure that European requirements are satisfied (§ 16 c section 2 ElWOG 2010). The renewable energy plants and the members of the community have to ensure a certain geographical proximity. In Austria, the legislator defined therefore some technical criteria, the communities have to meet: connection between the members of the community through the local grid (minimum is the connection through the low-voltage distribution system, the so-called Niederspannungsverteilernetz (NE 7)) or the regional grid (maximum the medium-voltage

6 The Federal Legal Information System (RIS), Bundesrecht konsolidiert: Gesamte Rechtsvorschrift für Elektrizitätswirtschafts- und -organisationsgesetz 2010, Fassung vom 25.08.2022, available at: https://www.ris.bka.gv.at/GeltendeFassung.wxe?Abfrage=Bundesnormen&Gesetzesnummer=20007045

level, the so-called Mittelspannungssammelschiene im Umspannwerk (NE 4)).

Therefore, when founding an energy community in Austria, there are two possibilities depending on the proximity of the members: (i) the local REC (generation and consumption installations can be connected to network levels 6 and 7 only) or (ii) the regional REC (generation and consumption installations can be connected to grid levels 5 to 7 and the bus bar of network level 4).

The information on which part of the distribution network the respective generation and consumption installations are located must be made available by network operators within two weeks. The network operator should also provide information on whether the connection is located in the local or regional area of a specific energy community.

On top of this, the renewable energy community - in contrast to the citizen energy community- does not have the right to cross the borders of different concession areas.

3.2 Maximum allowed capacity

There are no technical limitations.

3.3 Requirement for a smart meter or other specific equipment

The DSO is obliged to measure the input and consumption of the energy by load profile meters or smart meters (depending on the size of the installation and the annual energy consumption). In Austria, the DSO shall, irrespective of the project plan on the roll-out of smart meters, provide end consumers with a smart meter upon request. If the installation of a smart meter is requested in connection with the establishment of an energy community, the grid operator shall install smart meters within two months (§ 16e par 1 ElWOG 2010).

In order to participate in an energy community, the transmission of quarter-hourly values to the network operator is a prerequisite. In Austria, this requires not only the installation of a smart meter, but also a so-called “opt-in”, i.e. the active consent to the transmission of quarter-hourly values: The electricity meter measures the electricity consumption every 15 minutes and sends these quarter-hourly values to the respective network operator all at once every day. The data is stored and can be viewed by the consumers.

3.4 Allowed production technologies

The renewable energy community has the right to use all renewable energy technologies (photovoltaic, hydroelectric, geothermal, biomass or wind power systems).

In contrast to the citizen energy communities (§ 16b ff ElWOG 2010) the renewable energy communities are not only limited to the production of electricity but can also focus on other renewable energy technologies such as renewable heating and cooling technologies.

3.5 Rules for connection to the grid

The renewable energy community has to make a request for every renewable energy plant into operation (§ 55 Austrian EAG).

The net users of the community are entitled to obtain information about the connection to the distribution grid of their renewable energy installations within 14 days (§ 16 c ElWOG 2010). The requirement to provide all necessary information to the network operator is established in § 16 d ElWOG 2010.

3.6 Netting period

The netting period takes 15 minutes.

4. Economics

4.1 Impact on bill components (Energy, Grid fees and Tax & levies)

The excess energy is supplied with a reduced tariff within the Renewable energy community thanks to reduced network charges, taxes and levies. So, members of the renewable energy communities can benefit from a cheaper electricity tariff.

The grid users of the renewable energy community benefit from reduced grid fees (the so-called "Netznutzungsentgelt für teilnehmende Netzbenutzer einer Erneuerbare-Energie-Gemeinschaft" § 52 Abs. 2a ElWOG[7]) with regard to the extent they use the different voltage levels. In addition, the energy produced and consumed within the community is exempt from the financial contribution to the promotion of renewable energy (the so-called "Erneuerbaren-Förderbeitrag" the former: "Ökostrompauschale" § 75 Abs. 5 EAG[8]) and from the tax regulation (the so-called "Elektrizitätsabgabe" § 2 Abs 1 Nr. 4 Elektrizitätsabgabegesetz[9]).

If existing renewable energy plants are integrated in the community, a fair rent has to be paid to the owner of the installations.

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7 The Federal Legal Information System (RIS), Bundesrecht konsolidiert: Gesamte Rechtsvorschrift für Elektrizitätswirtschafts- und -organisationsgesetz 2010, Fassung vom 25.08.2022, available at: https://www.ris.bka.gv.at/GeltendeFassung.wxe?Abfrage=Bundesnormen&Gesetzesnummer=20007045

8 The Federal Legal Information System (RIS), Bundesrecht konsolidiert: Gesamte Rechtsvorschrift für Erneuerbaren-Ausbau-Gesetz, Fassung vom 25.08.2022, available at: https://www.ris.bka.gv.at/GeltendeFassung.wxe?Abfrage=Bundesnormen&Gesetzesnummer=20011619

9 The Federal Legal Information System (RIS) , Bundesrecht konsolidiert: Gesamte Rechtsvorschrift für Elektrizitätsabgabegesetz, Fassung vom 25.08.2022, available at: https://www.ris.bka.gv.at/GeltendeFassung.wxe?Abfrage=Bundesnormen&Gesetzesnummer=10005027

4.2 Positive incentives

There are no additional positive incentives.

4.3 Injections to the grid

The members of the renewable energy community do not receive a market premium for the energy which is consumed within the community. Renewable-energy-sources-based electricity generation plants of RECs and CECs are (partly) eligible within the market premium support framework. The market premium is calculated based on the amount of electricity fed into the public electricity grid. No market premium is granted for electricity allocated to the members of the energy community [ElWOG §80 (2)]. I.e. electricity quantities generated (from a generation plant eligible for a market premium) but not consumed within an energy community can be subsidised. However, RECs and CECs, unlike all other plant operators, would not receive the market premium for 100% but only for a maximum of 50% of the energy generated (per plant).

5. Availability of information and facilitation

5.1 Information from public administrations or system operators

All information and guidelines are available at the homepage of the Austrian coordination centre for renewable energy communities which was established thanks to the climate and energy fund and the initiative of the Austrian Climate Protection ministry[10].

5.2 Established communication procedures and timelines

The community has to inform the NRA which has the right to make limited spot checks. In addition, the NRA should produce an annual report outlining the activities of the renewable energy communities (§ 16d section 3 and 4 ElWOG 2010).

6. Barriers and enablers

Since important IT processes still have to be adapted on the grid operator side, it is currently not possible that participants of an REC can be assigned to more than one generation plant. As a transitional solution for the operation of RECs with multiple generation plants, participants still can only be assigned to one specific plant. However, RECs with multiple plants can already be established and put into operation using this transitional solution.

As soon as the necessary IT processes are fully implemented (probably by the 3rd quarter of 2022) already existing and new RECs will automatically be transferred to the intended

10 Österrischische Koordinationsstelle für Energiegemeinschaften website, "Download area" webpage, available at: https://energiegemeinschaften.gv.at/download-bereich/

regular operation. Starting from 01.01.2024 a customer can participate in multiple RECs, e.g. in a local REC (l-REC) and regional REC (r-REC).

The ElWOG unfortunately only regulates the installation, not the putting into operation of the smart meter. The mere installation, without putting into operation, naturally has no added value for the customer and thus delays the establishment or participation in an energy community.

The "Opt-in" could possibly hamper the expansion of energy communities. Consumers could have reservations regarding the transmission of quarterly hour values (uncertainty regarding possible costs, data security, etc.). Furthermore, the necessity of a proactive action on the side of the consumer is always an additional barrier.

The legal and regulatory framework for energy communities in Austria has already been largely clarified. However, it is not always easy for local heroes to find out which type of energy community/collective action is suitable for them, and which regulations are relevant for them. Despite the existing legal framework, initiators of collective actions are often overwhelmed or confused by the complexity of these regulations and do not know where to start.

Currently, there is no easy way to find out for citizens where they can find the next energy community in their proximity. Thus, if they are interested in taking part in an energy community they have to rely on hearsay, newspaper articles, or Internet search.

For funding an energy community, asking the network operator for information, waiting for two weeks, asking again if the information is not provided on time: all this could hamper citizens from taking part in an energy community. The necessity of a proactive action on the side of the consumer is always an additional barrier, furthermore communication with the network operator often is seen as complicated and bureaucratic, overall for a first information.

Belgium (Flanders)

Citizens and their citizen-owned wind turbine. © Ecopower

1.Overview of energy sharing status

1.1 Insights on legislator objective and approach

In Flanders, the implementation of energy sharing is directly related to transposition of the EU directives, including in the perspective to provide a more important role to citizens in the energy market. Energy sharing is being implemented in a step-by-step approach together with collective-self consumption (CSC) at building level and to peer-to-peer (P2P) trading. CSC is already possible whereas P2P trading has been made possible from June 2022 and energy sharing will be possible in January 2023.

1.2 Transposition of energy community dispositions

The Energy Decree[11, 12] has ensured the transposition of the dispositions related to both

11 The amended Energy Decree is available on the Flemish regulation website, Codex, "Decreet houdende algemene bepalingen betreffende het energiebeleid [citeeropschrift: "het Energiedecreet"]", 2009. Available at: https://codex.vlaanderen.be/PrintDocument.ashx?id=1018092&datum=&geannoteerd=true&print=false#H1057365

12 Complementary dispositions can be found in Flemish government, "Besluit van de Vlaamse Regering houdende algemene bepalingen over het energiebeleid [citeeropschrift "het

citizen energy community and renewable energy community. A more detailed assessment is available in REScoop.eu Transposition Tracker[13].

1.3 Transposition for energy sharing

The transposition of the IEMD and the REDII has been performed. In this context, the energy law has been adapted to make community energy sharing possible. However, related rules at DSO level are still not in place and a gradual implementation has been planned in 2022 and early 2023. This will provide time to Fluvius (the Flemish DSO) to adapt its IT system and put in place the procedures. In the meanwhile Fluvius is experimenting with energy communities in 3 pilot sites[14] across Flanders with different types of building profiles.

The Council of State has overruled the phased approach proposed by the Flemish govt and the DSO. The decree then made all 3 activities possible from Jan. 2022. However, the DSO has maintained the phased approach in order to gradually implement the technical complexity.

1.4 Interaction between energy communities and energy sharing

In Flemish law, energy sharing is being made possible only for energy communities.

2. Allocation of roles

2.1 Supplier & balance responsibility

Rules for energy sharing are not known yet, however for collective self-consumption all apartments should have only one supplier. This requirement could be lifted in january 2023.

2.2 Energy sharing organiser

Rules for energy sharing are not known yet, however for collective self-consumption, collective self-consumption does not require a legal entity, Nevertheless, energy sharing is made possible only for energy communities. Their precise role, including the rules for declaring participants and their respective coefficient are not known yet.

Each REC of CEC has the obligation to register on the NRA's website[15].

Energiebesluit van 19 november 2010"]", available at: https://codex.vlaanderen.be/PrintDocument.ashx?id=1019755&datum=&geannoteerd=true&print=false

13 REScoop.eu's assessment on the transposition of the energy community-related dispositions in Flanders is available at: https://www.rescoop.eu/policy/flanders-rec-cec-definitions

14 Solar Magazine, "Flanders: Fluvius selects 3 pilot projects for sharing electricity from solar panels", May 2022. Available at: https://solarmagazine.nl/nieuws-zonne-energie/i27122/vlaanderen-fluvius-selecteert-3-proefprojecten-voor-delen-stroom-zonnepanelen

15 VREG website, "Energy communities" webpage, available at: https://www.vreg.be/nl/

2.3 DSO's role

The DSO's role consists in (i) validating the initiative and (ii) in collecting metering data and sharing with other involved actors. The implementation of this role has been designed as a step-by-step approach with Fluvius being criticised by stakeholders for slowing down the process. Three pilot projects are in progress where Fluvius studies the implementation of energy communities.

3. Technical rules

3.1 Perimeter of the energy sharing

Energy sharing will only be for energy communities. The proximity criteria is not clearly defined. However, most energy cooperatives in Flanders are operating within a range of 30 km around their installation.

3.2 Maximum allowed capacity

The maximum capacity for collective self-consumption at building level is 40 kVA. However, together with the implementation of energy sharing in 2023, the capacity limitation is expected to be lifted.

3.3 Requirement for a smart meter and other specific equipment

A smart meter is needed. The PV installation should have been certified after January 2021, however this limitation will disappear in 2023.

3.4 Allowed production technologies

Photovoltaic is the only one possible production technology. This limitation is expected to disappear in 2023.

3.5 Netting period

Self-produced electricity is netted from participants' consumption every 15 minutes.

4. Economics

4.1 Impact on bill components (Energy, Grid fees and Tax & levies)

The only impact of energy sharing is on the energy component of the electricity bill. There is no impact on grid fees nor on taxes.

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energiegemeenschappen-0#1

An investigation by the NRA (VREG) requested by the Flemish government to look at the possibility to lower transport fees for shared energy was performed by Fluvius[16]. The conclusions were negative and fees were not lowered.

4.2 Positive incentives

No positive incentives are being proposed for now.

4.3 Injections to the grid

All energy suppliers have to compensate prosumers for injections. Each supplier may set its own remuneration based on market prices and may change it every month. As a rough average, it may represent about 3/4 of the energy price.

4.4 Additional incentives and disincentives (mandatory requirements on equipment and services that may hamper the BM)

Limitations to recent PV installations restricts possibilities.

5. Availability of information and facilitation

5.1 Information from public administrations or system operators

The information from the DSO or the government is scarce. DSO provides very limited information[17]. Limited info is available for professionals. Advertisement efforts have not been made yet.

Some local authorities are actively promoting energy sharing. Big municipalities have taken some active steps as promoting RES comes together with their renovation target and their broader energy plans. They propose seminars to energy stakeholders. Antwerp, Leuven, Mechelen, Gent, sometimes smaller municipalities have raised awareness on the topic[18].

5.2 Established communication procedures and timelines

The existing limitations and the absence of incentives triggered limited interest and

16 Flemish Parliament, "Verslag (...) Ordening en Energie uitgebracht door Robrecht Bothuyne over de resultaten van de publieke consultatie van de Vlaamse Regulator van de Elektriciteits- en Gasmarkt (VREG) over het ontwerp van tariefmethodologie voor de reguleringsperiode 2021-2024", 2020. Available at: http://docs.vlaamsparlement.be/pfile?id=1602697

17 Fluvius' Energy Community webpage is available at: https://www.fluvius.be/nl/thema/zonnepanelen/energiegemeenschappen

18 The opinion of the Flemish Association of Cities and Communes, on energy communities can be found here: VVSG, "Energiegemeenschappen: Een aantal principes voor toekomstige wetgeving", July 2021. Available at: 20210705_StandpuntVVSG_Energiegemeenschappen.pdf

examples are scarce. There is limited feedback available.

6. Barriers & enablers

The current regulation on collective self-consumption at building levels is quite restrictive as it requires 40 KVa maximum installation. a recent inverter and only one supplier. Some of these limitations seem rather unjustified. In January 2023, all 3 limitations should be lifted.

From a technical level, it is unclear if suppliers will be able to work with the data provided by Fluvius. The possibility to perform energy sharing after Jan 2023 may be slowed down because of this.

The Flemish framework may be very open regarding the energy sharing initiative's perimeter, on the other side it does not offer any specific incentives that may improve the economics of the activity in comparison with traditional supply.

Though the economics of energy sharing remains positive, it is very related to current energy prices. Longer term perspectives for the activity are uncertain.

France

Pousse-Pisse solar parc inauguration. © Enercoop MIPI, Sergio DI

1. Overview of energy sharing status

1.1 Insights on legislator objective and approach

France introduced the notion of collective self consumption (CSC) into the Energy Code in 2016 in order to answer a need expressed by several players in the energy sector. The framework was quite light and it was only as of 2021 that CSC law was revised and enriched in order to fulfil the EU directives requirements regarding energy sharing.

1.2 Transposition of energy community dispositions

France published an Ordinance[19] in March, 2021, with provisions on both renewable energy communities and citizen energy communities. This has to be followed up by an Application Decree, which was finalised in October, 2021 but remains unpublished. A more detailed assessment is available in REScoop.eu Transposition Tracker[20].

1.3 Transposition for energy sharing

The regulatory framework for collective self-consumption was initiated in 2016, but made

19 Ordonnance n° 2021-236 du 3 mars 2021, available at: https://www.legifrance.gouv.fr/jorf/id/JORFTEXT000043210210

20 REScoop.eu's assessment on the transposition of the energy community-related dispositions in France is available at: https://www.rescoop.eu/policy/france-rec-cec-definitions

fully operational only in 2019 and revised again in 2021[21]. Art. 315-2 of the Energy Code[22] states that collective self-consumption requires the supply of electricity to be carried out between one or more producers and one or more final consumers located on the same low voltage substation and gathered within a legal person.

1.4 Interaction between energy communities and energy sharing

Energy sharing is one of many activities that energy communities are legally authorised to perform (production, efficiency, supply…). The Energy Code states that collective self-consumption is the one and only mode to share energy.

2. Allocation of roles

2.1 Supplier & balance responsibility

The participants in an energy sharing initiative may have different suppliers. However, few of these suppliers may have the technical capability to process the data shared by the DSO.

2.2 Energy sharing organiser

Producers and consumers should be gathered within a legal entity (teh entity is open: co-housing, local authority, commercial association) The Organising Legal Person (OLP or PMO in French) is a legal entity which signs the energy sharing agreement (convention) with the DSO. Each producer needs a contract with each consumer in the scheme. The producer sends a bill to each consumer which leads to an important administrative burden. Many municipalities are performing energy sharing within their own buildings which simplifies the contractual management.

2.3 DSO's role

The DSO validates the initiative and collects metering data and shares it with other involved actors. Technical issues and adaptation difficulties appeared at the implementation, however they are mostly solved now.

3. Technical rules for energy sharing

3.1 Perimeter of the energy sharing

21 The regulatory framework is described in the French ecology ministry website Ministry of Ecological Transition, Systèmes d'autoconsommation, (self-consumption systems) webpage, available at: https://www.ecologie.gouv.fr/systemes-dautoconsommation

22 Code de l'énergie : Chapitre V : L'autoconsommation (Articles L315-1 à L315-8), available at: https://www.legifrance.gouv.fr/codes/id/LEGISCTA000032939883/2016-07-29

An energy sharing initiative can be set up within a circle of 2 km diameter and be deserved by the same substitution. The OLP can send a request to the Ministry of Energy to get an extension to 20 km when the initiative is situated in low-density areas. So far, it has always been granted.

3.2 Maximum capacity

The maximum installed capacity should be 3 MW within the initiative (0.5 MW overseas).

3.3 Requirement for a smart meter and other specific equipment

A smart meter (Linky) is mandatory. No specific inverter is needed as PV electricity benefits from a priority dispatch regime.

3.4 Allowed production technologies

Any kind of electricity production technology is allowed.

3.5 Netting period

The netting period is 30 minutes.

3.6 Rules for connecting to the grid

Regional Schemas for RES-E Grid Connection (S3RENR in French) are co-elaborated by RES-E actors, municipalities and system operators in order to plan grid development.

If no grid reinforcement was planned for a given project, the project may be locked. For projects below 500 kWp, grid reinforcement costs are partly due by the project developer.

4. Economics

4.1 Impact on bill components (Energy, Grid fees and Tax & levies)

Energy sharing initiatives where participants are fed by the same substation (therefore rather small initiatives) have the possibility to opt for a specific grid fee regime. This regime is more dynamic including seasonal tariff, peak, off-peak and various values along the year. It can be financially interesting in situations of high self-production.

However, most initiatives seem to opt for the conventional grid fee scheme for now.

Energy sharing has no impact on tax & levies (however, taxes recently fell down from 22cts to 1 cts/kWh as an anti-inflation measure).

4.2 Positive incentives

There are no direct positive incentives for energy sharing. Yet, one can note that the feed-in-tariffs for the surplus of an energy sharing initiative is identical to those for full injection (only when the production does not rely on individual self-consumers and is directly injected to the grid) . It reduces the risk of sharing energy and incentivizes producers to join a CSC operation.

The specific grid fee for energy sharing is not meant to be preferential even if numerous actors advocate for a micro fee instead of a modular fee.

4.3 Injections to the grid

There are different feed-in-tariffs (FiT) regimes for injecting to the grid. Individual self-consumers can opt for a FiT specifically conceived for the surplus they inject or choose to fully sell their production (in this case, they are no longer self-consumers) . In the first case, the FiT is either equal or inferior to the one for full injection. Producers who are members of a CSC scheme but are not individual self-consumers (meaning they immediately inject their production to the grid) have access to the regular tariff. An individual self-consumer can easily switch to a producer status and gain the benefit of the regular tariff. The amount of the FiT for the surplus of full injection or the surplus of energy sharing operations is as follows :

- FiT for initiatives <100 KWp:
  - 0-9kWp: 17,89 cts/kWh
  - 3-9 kWp :15,21 cts/kWh
  - 9-36 kWp : 10,89 cts/kWh
  - 36-100 kWp : 9,47 cts/kWh
- FiT for initiatives 100-500 KWp: 9.8cts/kWh

NB : when the CSC operation relies on a self-consumer, the FiT for the surplus is lower.

4.4 Additional incentives and disincentives

A recent decree, referring to EU competition law, prevents local initiatives from benefiting from both national support regime and from local support. Many projects, especially in the northern half of France were stopped.

5. Barriers & enablers

In the French framework, the producer sends a bill to each consumer which makes it heavy. An alternative would be to have the OLP as a central contractual point.

Suppliers are in charge of collecting taxes on the self-consumed energy for the Treasury,

which may be perceived as an additional burden for them.

Self-consumption actors advocate in favour of an alleviation on the tax component of the bill (which represented 22 €/MWh before 2022[23]).

Major societal issues remain unclear:

- The national equality principle, applied through tariff equalisation across the country, would not be respected with energy sharing costs varying from one region to the other. The issue is similar for network tariffs.
- The capability to invest into these types of services is unevenly spread among the population. In order to ensure participation from all, dedicated support schemes could be put in place i.e. regional fund providing loan to citizens, or bank loans with State guarantee, or even citizens lending money to each other (similarly to emerging schemes in the renovation sector).

23 Energie-info.fr, "TICFE ou CSPE, TICGN, CTA, TVA… Toutes les taxes sur ma facture" webpage. Available at: https://www.energie-info.fr/fiche_pratique/cspe-ticgn-cta-tva-toutes-les-taxes-sur-ma-facture/#:~:text=Les%204%20taxes%20et%20contributions%20en%20%C3%A9lectricit%C3%A9&text=Depuis%20le%201er%20ao%C3%BBt,%C3%A9tait%20de%2027%2C04%25

Italy

Citizens and their citizen-owned wind turbine. © ènostra

1. Overview of energy sharing status

1.1 Insights on legislator objective and approach

The Italian framework provides important incentives for "shared " energy. It seems to have been designed to encourage RES through self-production while limiting the impact on the local grid.

1.2 Transposition on energy communities

REC's and CEC's definitions have been transposed.. A more detailed assessment is available in REScoop.eu Transposition Tracker[24].

1.3 Transposition for energy sharing

The rules for energy sharing have been implemented in Italy. The dispositions of the REDII on energy communities have been transposed by decree-law n. 162 of 30 December 2019

24 REScoop.eu's assessment on the transposition of the energy community-related dispositions in Italy is available at: https://www.rescoop.eu/policy/italy-rec-cec-definitions

(so-called "Decreto Milleproroghe"), converted into Law n.8 of 28 February 2020[25].

An experimental phase has begun that allows the establishment of legal entities and the implementation of collective self-consumption energy initiatives.

In addition, the regulatory authority ARERA defined in a resolution[26] the regulation of incentives relating to shared electricity.

More recently, a legislative Decree No. 199 of 8 November 2021[27] came into force, finally providing a framework regulation for the final stage of regulation. This will be followed by an implementation decree by June 2022..

1.4 Interaction between energy communities and energy sharing

The law defined a limited set of entities which can perform energy sharing. RECs are part of these, together with historic cooperatives and some others.

2. Allocation of roles

2.1 Supplier & balance responsibility

The rules allow for participants to have different suppliers. The related contracts do not need to be updated.

2.2 Energy sharing organiser

The law defined a limited set of entities which can perform energy sharing. RECs are part of these, together with historic cooperatives and some others. RECs must form their own legal entity (in the form of a cooperative, association, etc.) to carry out their activities. The energy sharing organiser is the REC's itself (its management body). Rules for joining and leaving are decided by the REC itself, within its internal regulation, unless the Civil Code provides specific rules linked to the legal entity typology (e.g. association, cooperative).

The participating parties should sign a contract which appoints a delegated party (the REC management body), responsible for the distribution of the shared energy. The delegated party may also perform the management of payment and collection items to sellers and the

25 Decreto-legge del 30/12/2019 n. 162 - Disposizioni urgenti in materia di proroga di termini legislativi, di organizzazione delle pubbliche amministrazioni, nonche' di innovazione tecnologica (decreto Milleproroghe 2020), Art. 42-bis Autoconsumo da fonti rinnovabili. Available at: https://def.finanze.it/DocTribFrontend/getAttoNormativoDetail.do?ACTION=getArticolo&id={74782FF5-8835-4235-BFE0-F8D4DA1A7AB4}&codiceOrdinamento=20000420000020O&articolo=Articolo%2042%20bis

26 Delibera 04 agosto 2020 318/2020/R/eel. Available at: https://www.arera.it/it/docs/20/318-20.htm

27 Decreto legislativo 8 novembre 2021, n. 199 Attuazione della direttiva (UE) 2018/2001 del Parlamento europeo e del Consiglio, dell'11 dicembre 2018, sulla promozione dell'uso dell'energia da fonti rinnovabili. (21G00214). Available at: https://www.gazzettaufficiale.it/eli/id/2021/11/30/21G00214/sg

GSE Spa[28] (Gestore Servizi Energetici, Energy Services Manager) in charge of incentives[29].

2.3 DSO and GSE's role

All new RECs need to register themselves on the Energy Service Manager (GSE) website, who perform an overall check on eligibility and compliance with national law and regulations. DSOs are in charge of collecting metering data and GSE is in charge of paying the REC for energy withdrawal (market price) and energy sharing premium.

3. Technicalities for energy sharing

3.1 Perimeter of the energy sharing

The participants should be located under the same secondary substation (neighbourhood level). The regulation is expected to change in June 2022, the participants might be entitled to share energy behind the same primary substation (1 or 2 kms).

3.2 Maximum allowed capacity

The maximum capacity should remain under 200 kW, however, it is not made clear if it is for an individual plant or for the overall initiative.

In June 2022, the production limit might be lifted to 1MW.

3.3 Requirement for smart meter needed and other specific equipment

No specific smart meter is needed, the old generation of smart meter installed since 2005 in Italy is enough to perform the service.

3.4 Allowed production technologies

Any type of technology can participate (PV, wind, etc…)

3.5 Connection rules

Missing information.

28 Gestore Servizi Energetici (Energy Services Manager) is a service owned by the Ministry of Economy and Finance in charge of promoting renewables and energy efficiency.

29 The Energy Professionals Group, "Renewable collective self-consumption and renewable energy communities. Analysis of the first transposition of Directive (EU) 2018/2001 in Italy". Available at: http://www.enusyst.eu/documents/CSC-EC-Italy.pdf

3.6 Netting period

The netting period is 1 hour.

4. Economics

4.1 Impact on bill components

REC's members keep paying their usual bill, without any changes on grid fees or taxes and levies. The economic benefits are paid directly to the REC's management body, who should decide how to redistribute it.

4.2 Positive incentives

There are two sets of positive incentives for "shared energy"[30]:

1. The RECs are entitled to a direct incentive (premium tariff) per kWh of self-consumed electricity of 0,11 €/kWh granted for a period of 20 years. The jointly acting renewables self-consumers are entitled to get 0,10 €/kWh for 20 years. This incentive may change within the course of 2022.
2. They both also are entitled to the partial refund of the transport tariffs (currently at around 0,07 €/kW), according to a cost-reflective approach (independent from subscribed capacity).

Both incentives 1. and 2. are granted for the kWh of electricity which are consumed simultaneously with electricity production ("shared energy"). The "shared energy" is equal to the minimum, in each hourly period, between the electricity produced and fed into the grid and the electricity taken from all the associated final customers. The incentives are designed to incentivize consumer behaviour that would maximise local consumption of renewable energy produced and thus minimise export to the grid.

4.3 Injections to the grid

Currently all the injected energy is withdrawn by GSE (the Energy System Manager) who pays a market price for it.

4.4 Additional incentives and disincentives

The National Recovery and Resilience Plan, approved in July 2021, specifically allocates 2.2

30 Gazzetta Ufficiale, DECRETO 16 settembre 2020 Individuazione della tariffa incentivante per la remunerazione degli impianti a fonti rinnovabili inseriti nelle configurazioni sperimentali di autoconsumo collettivo e comunita' energetiche rinnovabili, in attuazione dell'articolo 42-bis, comma 9, del decreto-legge n. 162/2019, convertito dalla legge n. 8/2020., article 3. Available at: https://www.gazzettaufficiale.it/eli/id/2020/11/16/20A06224/sg

billion euros to the development of energy communities[31].

5. Availability of information and facilitation

5.1 Information from public administrations or system operators

There is a general lack of information among possibly interested stakeholders, both citizens and professionals. No information is available for consumers and professionals have limited information and training.

5.2 Established communication procedures and timelines

Initiatives are too limited to draw lessons on these topics.

6. Barriers & enablers

Italy provides a contasted situation. The framework in place seems very much in favour of energy sharing initiatives with 2 sets of positive incentives (a first premium for shared energy and a second one for non-used grid).

However, no publicity nor training has been put in place. Only 24 operation energy sharing communities since 2020, energy professionals and DSOs have not demonstrated interest.

It remains unclear if the map of substation is being made available to enable the implementation of energy sharing initiatives.

31 ROSE Smart Energy Solutions website, "RED II Directive: The news on the energy communities addressed in the implementation", Dec. 2021. Available at: https://solutions.mapsgroup.it/en/red-ii-directive-the-news-on-the-energy-communities-contained-in-the-transposition/

Poland

Solar panels on a public swimming pool in Jaslo, Poland. © Xato Lux - Adobe Stock

1. Overview of energy sharing regulation status

Transposition for energy sharing

The Polish renewable energy law[32] provides the energy sharing scheme for renewable energy communities.

2. Allocation of roles

Supplier & balance responsibility

The virtual net metering (see under Economics) needs to be carried out by a seller. This can be the obligated seller or another chosen seller. The energy cooperative itself becomes not a seller.

32 Internet System for Legal Acts (ISAP), Renewable Energy Sources Law, Ustawa o odnawialnych źródłach energii, 2015. Available at: https://isap.sejm.gov.pl/isap.nsf/download.xsp/WDU20150000478/U/D20150478Lj.pdf

3. Technical rules

3.1 Perimeter of the energy sharing

The energy sharing scheme is applicable for energy cooperatives with less than 1000 members. The energy cooperative operates in a rural or urban-rural area of a DSO or gas distribution network. It supplies electricity, biogas or heat, in the case of electricity with a rated voltage lower than 110 kV.

3.2 Maximum allowed capacity

Regarding the maximum allowed capacity of renewable energy generation installations that an energy cooperative runs, the Polish law on renewable energy provides three thresholds. In the case of power generation the aggregated installation power of the cooperative must not exceed 10 MW. In the case of heat generation the total achievable thermal power must not exceed 30 MW. In the case of biogas the total annual capacity of all installations must not exceed 40 million m3.

3.3 Requirement for smart meter needed and other specific equipment

Smart meters are mandatory.

3.4 Netting period

The settlement is hourly.

4. Economics

4.1 Impact on bill components

The law provides with regard to the amount of electricity produced by all renewable energy sources (including amongst others wind, solar, biomass and biogas) installations of an energy cooperative, and at the same time consumed by all electricity consumers of the electricity cooperative, that for this electricity the renewable energy fee, the power fee and the cogeneration fee need not to be paid (incentives for energy sharing). Also, the cooperative is not obliged to pay charges for the distribution services for the electricity quantity that is consumed by the customers of the energy cooperative.

4.2 Positive incentives

There are no positive incentives for energy sharing

4.3 Injections to the grid

In the scheme the excess electricity fed into the distribution network from energy

cooperatives is not remunerated. However energy cooperatives can settle the amount of excess electricity fed into the distribution network against the volume of electricity withdrawn from the network for its own use by the cooperative and in the quantity ratio of 1 to 0.6 (virtual net metering).

4.4 Additional incentives and disincentives

The cooperative is not obliged to pay fees for the services of the obligated seller or another chosen seller. The cooperative needs to be able to produce at least 70 per cent of the electricity consumed by its members on a yearly basis.

Portugal

Solar panels near a portuguese village © dudlajzov - Adobe Stock

1. Overview of energy sharing status

1.1 Insights on legislator objective and approach

The decree introducing energy communities recognizes the role of citizens as potential active agents in electricity production, to increase competition within the energy market and contribute to lower prices.

1.2 Transposition on energy communities

The REC definition was introduced in the Decree-law on renewables collective self-consumption[33]. A CEC definition was then introduced in the decree-law organising the electricity system in early 2022[34]. The original law on renewables and self-consumption causes confusion regarding what potential activities a REC can engage in. Almost all

33 Decreto-Lei n.º 162/2019 de 25 de outubro. Available at: https://dre.pt/dre/detalhe/decreto-lei/162-2019-125692189

34 Decreto-Lei n.º 15/2022, de 14 de janeiro. Available at: https://dre.pt/dre/detalhe/decreto-lei/15-2022-177634016

provisions on RECs, including the definition, are copy-pasted. Therefore, without any specificity, this legislation does little to establish legal clarity around the concept of RECs and their role in the energy system. A more detailed assessment is available in REScoop.eu Transposition Tracker[35].

1.3 Transposition for Energy sharing

Energy sharing is described in Decree-Law 15/2022. Although the decree has completed some missing aspects, there are still some legal gaps that make it difficult for self-consumers to share energy for free. Energy sharing is understood as a new service to be provided, always for a price.

ERSE (national regulatory authority) defined all the terms of energy sharing in a complementary document[36] but important clarifications are still missing.

1.4 Interaction between energy communities and energy sharing

The REC definition was introduced in the Decree-law on renewables self-consumption together with the possibility to implement collective self-consumption, therefore sharing electricity between several consumers. Both frameworks are still vague causing (i) long delays (order of months) in the approval of new projects and (ii) uncertainties for entities interested in starting new projects.

2. Allocation of roles

2.1 Supplier & balance responsibility

The framework is incomplete and does not clarify the role of suppliers.

2.2 Energy sharing organiser

The process to create the RECs which are eligible to perform energy sharing is unclear, in particular about the legal figure this community should be based on (cooperatives, limited companies, etc...)

The DSO remains responsible of the Distribution Grid although, if the REC or collective self-consumption activities are the source of grid malfunctioning, the EGAC (Entidade Gestora do Autoconsumo - Management Entity of Self-Consumption) may be charged for the interferences.

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35 REScoop.eu's assessment on the transposition of the energy community-related dispositions in Portugal is available at: https://www.rescoop.eu/policy/portugal-rec-cec-definitions

36 See ERSE, "Regulamento n.º 373/2021" and complementary documents on ERSE self-consumption webpage. Available at: https://www.erse.pt/atividade/regulamentos-eletricidade/autoconsumo/#regulamento

2.3 DSO's role

The national administration DGEG[37] (Direção Geral de Energia e Geologia) with the close support of the local DSO (E-REDES in mainland, former EDP Distribução) and ERSE (the NRA) is responsible for validating all the projects related to renewable energy.

Additionally the DSO is responsible for collecting and validating production and consumption data before sharing these with the involved actors.

3. Technical rule

3.1 Perimeter of the energy sharing

The perimeter is defined based on the tension level of the participant and the production unit: 2 km for LV, 4 km for MV, 10 km for HV, and 20 km for VHV).

A project might be guaranteed to extend these limits if the technical conditions allow it, for example, in some cases where the involved point of production and consumption are attached to the same transformation point. The legislation says that all or almost all the production has to be consumed locally and that the size of the system has to take into account the local consumption.

3.2 Maximum allowed capacity

Projects above 1 MWp need a licence, but are allowed.

3.3 Requirement for a smart meter and other specific equipment (inverter)

A smart meter is needed at each consumption and production point involved in the REC. It is an obligation if the producer or consumer wants to inject/sell electricity to the grid or share it using the grid

3.4 Allowed production technologies

All major renewable technologies are allowed. The limitations are similar to individual self-consumption projects.

3.5 Rule for connecting to the grid

Auctions are taking place in specific points to connect to the grid. Last auction's model prices started from 45 €/MWh (project developers need to bet below this price). Outside these auctions the developer has to pay the connection to the grid (no interest in developing projects out of these model)

37 More info about DGEG can be found at : https://www.dgeg.gov.pt/

3.6 Netting period

The netting period is 15 minutes.

4. Economics

4.1 Impact on bill components (Energy, Grid fees and Tax & levies)

Greed fees for shared electricity are paid according to the grid levels production and consumption units are connected to. A table gives the different prices for each consumer/ producer tension level. For example, producers in MV and consumers in LV will pay a certain price which will be lower if producers and consumers are both at LV.

Additional tax exemptions where given for projects started till the end of 2021)

4.2 Positive incentives

There is no specific support for smaller sized projects (1-5 MWp).

4.3 Injections to the grid

Surplus electricity from individual and collective self-consumption projects can be sold through bilateral agreements with energy market actors (big barriers to sell directly to the market – 100 k € for licences + min exchange volumes of 0,1 MWh per hour). Prices vary depending on the agreement achieved (they used to range between 0,03 – 0,04 €/kWh).

5. Availability of information and facilitation

5.1 Information from public administrations or system operators

The only official contact point is DGEG which has limited resources. This causes a bottleneck in the access to information. E.g. the DSO can only share information about grid technicalities through DGEG and not directly to people interested in starting a new REC.

5.2 Established communication procedures/timelines

There are several challenges to face when registering an energy sharing initiative:

1. Several entities (DGEG, the NRA and the DSO) are involved in the approval of new projects, even very small one. This creates important delays in the transmission of the information;
2. The online tools to register new projects lack clarity. E.g. once a registration for a new REC is fulfilled , the entity in charge may ask to provide additional information that was not initially asked.
3. The fact DGEG is the only official contact point causes additional delays to get information.

6. Barriers and enablers

The Portuguese framework seems to be very lacunary and does not provide the basis for the development of energy sharing initiatives by citizens, local authorities or SMEs.

First-movers have reported to be waiting for replies for licences (DGEG) for over 6 months.

Spain

Inauguration of the Fontivsolar solar plant, a Generation kWh project. © Som Energia

1. Overview of energy sharing status

1.1 Insights on legislator objective and approach

Spain's legislation was specifically targeted by some measures of the Clean Energy Package (in particular related to repealing the unfamous 'sun tax'). The centre-left coalition at power since 2018 has been keen to catch-up on energy policies and on self-consumption in particular where the potential is important in Spain. Moreover, Spain and Portugal have limited interconnection with their neighbours which make them particularly exposed to market spikes[38].

1.2 Transposition for energy community

Spain introduced the definition of RECs in Royal Decree-Law 23/2020, which approves measures in the field of energy and in other areas for economic reactivation. They had also opened a consultation with specific questions on local energy communities. In the preamble of the Royal Decree it is mentioned that the introduction of RECs is aimed at the participation of citizens and local authorities in renewable energy projects, which will allow a greater local acceptance of these energies and a greater participation of citizens in the

38 This was acknowledged by a recent European Commission decision approving temporary measures to cap market prices. More info is available at: https://ec.europa.eu/commission/presscorner/detail/en/ip_22_3550

energy transition. A more detailed assessment is available in REScoop.eu Transposition Tracker[39].

1.3 Transposition for energy sharing

Both collective self-consumption (single building) and energy sharing (using public grid) are referred to as autoconsumo colectivo (collective self-consumption): "Autoconsumo colectivo en red interior" (single building) or "Autoconsumo colectivo a través de red" (energy sharing). A complete framework has been put in place for it.

1.4 Interaction between energy communities and energy sharing

Energy communities are distinct from collective self-consumption in the law. However there is a lot of confusion in practice, including through the activities of the Institute for Energy Diversification and Savings (IDAE)[40] who has been promoting Local Energy Communities in 2019-2020 as a way to perform collective self-consumption.

2. Allocation of roles

2.1 Supplier & balance responsibility

Participants in an energy sharing scheme may have different suppliers. They will have to provide a new contract to participants. In many cases the issuing of this new contract holds some complications. The supplier has to send the ideal coefficient for all participants. This might be difficult when several suppliers are involved.

2.2 Energy sharing organiser

Energy sharing is an activity which does not require a legal entity. The members of the scheme can only be changed once a year (with exceptions). Coefficients of attribution are decided by participants (the sum of all coefficients must be 1). Hourly coefficients were introduced in November 2021[41]. The energy allocation coefficient can also only be changed once a year. An improved coefficient regime (from fixed coefficient to hourly coefficient) is expected in a subsequent decree.

39 REScoop.eu's assessment on the transposition of the energy community-related dispositions in Portugal is available at: https://www.rescoop.eu/policy/portugal-rec-cec-definitions

40 The IDAE is the Government agency for energy reporting to the Secretary of State for Energy

41 Boletín Oficial del Estado, Orden TED/1247/2021, de 15 de noviembre, por la que se modifica, para la implementación de coeficientes de reparto variables en autoconsumo colectivo, el anexo I del Real Decreto 244/2019, de 5 de abril, por el que se regulan las condiciones administrativas, técnicas y económicas del autoconsumo de energía eléctrica. Available at: https://www.boe.es/diario_boe/txt.php?id=BOE-A-2021-18706

2.3 DSO's role

The DSO is in charge of validating the energy sharing scheme through a form which mainly determines participating users and related coefficients. The procedure looks simple however, in practice, important delays and lengthy processes are common.

Difficult to put in place individual self-consumption in 2020, now improved.

Similar difficulties are still in place for energy sharing and DSOs have difficulties to provide these new services.

3. Technical rule

3.1 Perimeter of the energy sharing

There are 3 alternatives to set up an energy sharing scheme: Participants should be:

- in a 500m radius;
- under the same substation;
- within the same property (cadastral reference).

In practice, all energy sharing schemes are based on the 500m radius, as needed information for the two other options are hard to find[42]. Moreover, 1 km perimeter appears limited in many contexts. In Spain, involving small run-of-the-river hydroelectricity is usually made difficult by the existing 1km perimeter[43].

3.2 Maximum allowed capacity

The energy sharing initiative cannot exceed 100 kWp overall.

3.3 Is a smart meter needed and other specific equipment

Missing information.

3.4 Allowed production technologies

Generating installations can be made with any renewable generation technology such as solar PV, wind, hydroelectric, renewable cogeneration or electric biomass.

42 Substation approach is the most difficult, the information is not easily available. Cadastral information can be found more easily: the cadastral number is a 20 digit number, a consumer can share energy with other consumers sharing the same first 14 numbers.

43 This is one of the findings of the Hidro-tippi project gathering cooperatives in the Nouvelle Aquitaine - Euskadi - Navarre (NAEN) Euroregion. More info at: https://www.goiener.com/es/proyectos-europeos/hidro-ttipi/

3.5 Rule for connecting to the grid

Difficulty to have a connection in rural areas for new PV plants.

3.6 Netting period

The self-consumption is netted every hour.

4. Economics

4.1 Impact on bill components (Energy, Grid fees and Tax & levies)

Shared energy is for now considered as self-consumed. No taxes are paid on shared energy and grid fees are set for now at zero, but could be increased in the future[44].

4.2 Positive incentives

There are no positive incentives on top of existing exemptions.

4.3 Injections to the grid

Injection to the grid may either be sold to the market or be compensated through a simplified scheme which varies from one supplier to the other[45]. If the surpluses are sold to the market, all the surpluses are assigned to the PV installations. If the surpluses are compensated (compensación simplificada de excedentes) each participant gets the discount for his own surpluses in the supplier invoice. It can be a dynamic tariff too. In the Simplified Compensation scheme, the user can receive the import of the surplus only if it is lower than the import of buying energy (a net-zero energy component of their bill is the maximum a Spanish consumer can obtain from selling surpluses to the grid). The surpluses that exceed the consumption import are not compensated.

4.4 Additional incentives and disincentives (mandatory requirements on equipment and services that may hamper the BM)

For now, economics are quite good and make investments predictable.

5. Barriers and enablers

For now coefficients are set as static (predetermined in advance), could be improved by

44 Spanish Govt. "Corrección de errores de la Circular 3/2020, de 15 de enero, de la Comisión Nacional de los Mercados y la Competencia, por la que se establece la metodología para el cálculo de los peajes de transporte y distribución de electricidad.", Boletín Oficial del Estado, 2020. Available at: https://www.boe.es/eli/es/cir/2020/01/15/3/corrigendum/20200219

45 At Som Energia, surpluses injection in march 2022 were paid 0,198 €/kWh

making them dynamic, determined on observed production and observed consumption. (afterhand rather than beforehand).

The geographical approach to determine the size of the initiative is a great enabler. However, 500m is too low. In France, this diameter is set at 2 km and possibly 20 km in rural areas.

Regulation and administrative rules may differ from one Autonomous region to another. A unique regulation would be easier.

DSOs and suppliers seem to have a lot of difficulties in implementing the rules and many installers are giving up based on the administrative difficulties.

Many companies are selling "energy communities" in order to perform energy sharing. The legal entity is often used to attach some specific conditions to their offer: the subscription to only one supplier contract, creating a subscription contract in the name of the community.

After a difficult start in 2020, the number of energy communities is rising and 12 initiatives emerged in 2021. Many municipalities seem to be interested in the concept.

Countries with limited or no framework

Germany

Overview of energy sharing status

1.1 Insights on legislator objective and approach

The coalition agreement between Social Democrats (SPD), Green Party and Free Democrats (FDP) was published in 2021 and has a strong climate and energy focus and underlines the recognition of citizen energy as an important pillar for acceptance in the energy transition. The German government wants to improve the framework for citizen energy with regard to the European regulation and energy sharing is explicitly mentioned.

1.2 Transposition on energy communities and transposition for Energy sharing

The current renewable energy act does not mention energy sharing but it revises the definition of citizen energy companies in order to meet the requirements of the IEMD and the REDII. The revision improves the competitiveness of citizen energy in the light of the European legal framework as citizen energy companies are now exempted from the obligation to participate in tenders. Citizen energy companies need to have at least 50 natural persons within a radius of 50 km from the planned project as members, which need to hold at least 75 percent of the voting rights in the company. Nevertheless, the amendment does not provide a basis for the successful implementation of energy sharing. The parliamentary process ended on July 8th, when both chambers, Bundestag and Bundesrat, enacted the amendment.

Netherlands

Overview of energy sharing status

1.1 Insights on legislator objective and approach

In the Dutch legislation, and even in the recent Energy Law, energy sharing does not occur; only the supply of energy with or without a licence is mentioned.

1.2 Transposition on energy community and transposition for Energy sharing

The Energy Law does define an energy community, which will give the role of the energy cooperatives a formal place in legislation. Besides this, under certain conditions, an energy

community is allowed to supply energy without a licence, however, it will not be given a specific role or extra possibilities in the energy system.

United Kingdom

Overview of energy sharing status

1.1 Insights on legislator objective and approach

In Great Britain, there is no energy sharing framework developed as such. However, attempts to create similar initiatives have taken place using existing legal frameworks. But in these cases participants should be part of a supplier portfolio who plays a central role.

1.2 Transposition on energy community and transposition for Energy sharing

Several energy local schemes have used similar principles as energy sharing. Customers are given a discount on energy directly produced by the local asset (primarily wind and hydro but also some solar). At present, it restricts customers to a single supplier.

A new scheme took shape where a number of suppliers offered their customers to source a percentage of their bill from a share in a wind farm. The scheme works with a range of suppliers and doesn't require customers to be local to the asset they have a share of[46].

For the development of energy local schemes supply companies and customers have concluded an agreement that works within the existing market regulation.

The ripple assets as a new type of commercial offer based on existing supplier business model are community owned assets (albeit not by a geographical community) in that each wind-farm is a cooperation fully owned by its members. This cooperation has partnerships with various suppliers which removes from each customer's bill their share of the energy produced by the asset. The electricity supplier buys the share of the wind farm's electricity and supplies it to the homes or premises via the grid[47].

46 Ripple Energy website: https://rippleenergy.com/

47 A leaflet example for buying shares of the Kirk Hill Wind Farm is available here: https://community.carbon.coop/uploads/short-url/x40R8eHcOtqbQBjj9lvLauzyemt.pdf

4. Takeaways & recommendations

The review of these seven national frameworks provides some learnings related to the implementation of the right for energy communities to share energy.

5.1 Transposition of the RED II into national law

1. **A clear and coherent framework addressing all the aspects of energy sharing is required to make it an effective right**. Some countries have not started implementing energy sharing at all (Germany, The Netherlands, United Kingdom) and others (Portugal and to some extent Austria) still have incomplete frameworks.
2. **Energy sharing and energy communities should both be clearly defined and eventually articulated**. The relationship between renewable energy communities (RECs) and energy sharing varies widely from one country to the other. In Flanders (Belgium) energy communities are the only market actors entitled to perform energy sharing. In Italy, however, RECs are just one of the entities who may perform it among others but they receive additional incentives, whereas in Spain there is no need for a legal entity at all. Also several countries (e.g. France or Spain) have suffered from confusion between the two concepts of energy community and energy sharing (or collective self-consumption) at the early stages of their implementation, delaying the implementation of citizens rights. REDII article 21 on (collective) self-consumption and article 22 on Renewable Energy Communities should each be transposed into national law consistently, without mixed transposition of both articles. Then, the right for RECs to share renewable energy (REDII, art 22 §2.b) needs to be ensured in this framework.
3. **The fragmentation of energy regulation within the same country may hamper the development of energy sharing**. For instance in Spain, regulation and administrative rules may differ from one Autonomous region to another. A national regulation would limit complexity and make it easier for stakeholders to organise themselves.

5.2 Allocation of roles

4. **Free choice of the energy supplier should be ensured, including through data access processes**. In most countries, participants of an energy sharing initiative may have different energy suppliers, though these should also adapt their processes

to be able to handle the requests. In Spain, the process is so chaotic that it is not uncommon that energy sharing initiatives choose to switch to a unique supplier to facilitate the operation of data handling and billing. Mandating the DSO to share the data directly with energy sharing initiative's representatives would be a way to avoid this constraint.

5. **The capability of DSOs and suppliers to process the necessary data should be monitored**. In Spain, suppliers and DSOs administrative management are the cause of significant delays in the kick-start of energy sharing initiatives. In Belgium (Flanders), it is highly unsure if suppliers will be able to work with the data provided by Fluvius as soon as January 2023. In Austria, if a community wants to operate beyond the border of a concession area of a DSO, the projects are often halted as the DSOs often still lack exchange structures. The effective implementation of the right for sharing energy should also look at the "down-stream" aspects and make sure that system actors' processes are operational.

6. **Suppliers may have a set of counter-incentives which can delay the implementation of energy sharing**:
   - Administrative burden to implement and handle new tasks in order to process participants' data, without new remunerated activity (energy sharing has not really taken off in any EU country, but the situation could be similar in a majority of countries).
   - Loss of revenue represented by the multiplication of prosumers being able to virtually self-consume rather than buy energy from the supplier.
   - In France, suppliers are also in charge of collecting taxes on the self-consumed energy for the Treasury, which may be perceived as an additional burden for them.

   Regular monitoring by the NRAs may help to clarify how substantive these counter-incentives are.

7. **Municipalities may play a key role in facilitating energy sharing initiatives**. The energy sharing initiative is free to organise the allocation of production, nevertheless the related processes (supply of energy, marketing of surplus electricity, customer service operation, etc.) may be too complex to handle without a service provider. In some countries, municipalities may play a key role as a driving force behind energy sharing.

5.3 Technical Rules for energy sharing

8. **Geographical perimeters (rather than references to distribution grid) are the easiest for citizens to implement**. Spain's 1 km diameter or France's 2 km diameter are good examples, though both diameters may be considered as too narrow. In

Spain where both substation-level and geographical perimeter approaches are possible, the latter is systematically preferred. Perimeters referring to distribution grid level should come with an easily accessible map of the grid.

9. **Perimeters should allow to connect exploitable remote resources**. In Spain, involving small run-of-the-river hydroelectricity is usually made difficult by the existing 1km perimeter. The broader the perimeter, the more chances it offers to put in place consistent initiatives with a mix of consumer profiles and production resources that may balance each other. The French approach using 2km and 20km on request may represent an interesting alternative approach. In Germany the diameter for members of citizen energy companies, which are exempted from tendering, is 100 km. This could also become the diameter for energy sharing and would remove a significant barrier for the set-up of coherent initiatives.

10. **The maximum allowed capacity should enable municipal-size projects with several installations**. The maximum allowed capacity varies from one country to the other. From 100 kW in Spain and 200 kW (might be lifted to 1 MW) in Italy to 10 MW in Poland and no limit in Austria. Though the density of the distribution network may play an important role, the justification for capacity limits is not always clear. The maximum allowed capacity should match a longer-term vision where municipalities or municipality-level initiatives may play an important role in the set-up of energy sharing initiatives.

11. **Technical limitation should be proportionate and duly justified**. For instance in Belgium (Flanders), the current regulation on collective self-consumption at building level is limited to installations certified after January 2021. This requirement together with the 40 KVa maximum limit and the need for only one supplier makes initiatives very rare.

12. **Dynamic coefficients are possible ways of improving energy sharing**. The coefficients which determine the amount of energy delivered to each participant are sometimes set as static (predetermined in advance). In Spain the coefficients are hourly but can be changed only once a year which is still bureaucratic. In Austria there is no coefficient at all - all produced power can dynamically and intelligently be consumed by all members at the same moment. This makes it possible to use as much power locally as possible.

5.4 Economics

13. **Reduction in grid fees, taxes & levies may act as a great incentive to support energy sharing**. In Spain, shared energy is for now considered as self-consumed with no tax & levies and grid fees set to 0 € cost. Positive incentives may represent an alternative like in Italy where energy sharing is entitled to 2 types of premium

while participants remain subject to normal tax and fees. To the contrary, the absence of incentives at all in Flanders (BE) limits the economics of such activity.

14. **The requirement to limit an initiative to a given substation level is usually accompanied with corresponding incentives**. In Italy, Austria and to a lesser extent in France, limiting the initiative at a given substation level offers the possibility for incentives in the form of premium for the shared energy or lower grid fees. However such an approach holds the risk to create a divide between energy sharing stakeholders and DSOs with competing financial interests on each side. A geographical perimeter approach remains preferable as the Spanish case demonstrates.

15. **Feed-in-tariffs play an important role of guarantee for investments**. The context of volatile energy prices leads to uncertainty. The possibility to opt for full FiT with guaranteed price, like in France or Germany, provides an important guarantee of stability for investment. Individual self-consumers can opt for a FiT specifically conceived for the surplus they inject or choose to fully sell their production.

16. **Support schemes may take into account the local conditions of RES-electricity production**. Support schemes may be national, whereas profitability conditions for RES-electricity differ from one region to the other, in particular for solar PV. In France for example, solar PV is much more productive in the south of the country than in the north. If public authorities deem relevant to deploy PV in the northern part of the country, the support scheme may be adapted to the intensity of solar radiation in each region. The same applies to wind conditions. In Germany there is a reference yield model in place, which makes projects with worse wind conditions competitive to projects with better wind conditions.

17. **National equality issues remain an open question**. E.g. in France like in other EU countries, energy tariffs and grid fees are the same throughout the country. In Germany however grid fees already vary from region to region. With energy sharing, the price of energy will vary between north and south for instance. Grid fees may also vary if a project applies to the dedicated regime supporting grid management. How a sense of national cohesion can be maintained is unsolved.

18. **The capability to invest into these types of services is unevenly spread among the population**. In order to ensure participation from all, dedicated support schemes could be put in place i.e. regional funds providing loans to citizens, or bank loans with State guarantee, or even citizens lending money to each other (similarly to emerging schemes in the renovation sector).

5.5 Availability of information and facilitation

19. **Information from public administrations or the system operator is essential for**

the kick-start of the activity. Despite a favourable framework, Italy has made no publicity around it and has seen a very shy take-up of energy sharing (only 24 initiatives since 2020). In Austria on the contrary, there is a coordination agency for energy communities which offers great help for the set-up of energy sharing schemes. Enabling frameworks for RECs (as Member States are mandated to perform by the article 16.2 of REDII) thus should take into account information availability. This may lead to the creation of one-stop-shops to facilitate the creation and operation of energy communities, including on specific activities like energy sharing.

20. **The accessibility and readability of grid maps by citizens is important**. When the distribution grid has to be taken into account, normal citizens should be able to know if their participation is eligible. Grid planning should involve municipalities and provide opportunities for DSOs to spare grid capacity for planned energy community projects.

21. **Clear procedures and reasonable timelines are key for the successful development of energy sharing**. Whereas difficulties when implementing new processes may seem inevitable (like it's been the case in France), processes should be rapidly streamlined to ensure a sufficient quality of service by involved actors. In Spain, repeated delays and poor administrative handling by some DSOs and retailers have caused service providers to give up this new activity.

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