



Deliverable 4.2

Report on novel financing instruments for RECs

Date: 07.06.2022

Version: 2



This project has received funding from the European Union's Horizon 2020 research and innovation programme under grant agreement No 953040. The sole responsibility for the content of this document lies with the COME RES project and does not necessarily reflect the opinion of the European Union.

www.com-res.eu

WP:	Name of the WP: Assessment of examples for novel financing instruments for renewable energy communities		
Dissemination level:	Public	Due delivery date:	31.03.2022
Type	Report	Actual delivery date:	07.06.2022
Lead beneficiary:	BBH, Co-Lead: KAPE		
Contributing beneficiaries:	FUB, REScoop.eu, ECOAZ, LEIF, TU/e, CICERO, INEGI, ECOR		
Lead Authors: Contributing Authors:	Dörte Fouquet Erika Meynaerts, Stavroula Pappa (Country Overview Belgium) Lucas Schwarz, Maria Rosaria di Nucci, Michael Krug (Country Overview Germany) Massimo Bastiani (Country Overview Italy) Aija Zučika, Ivars Kudreņickis, Gaidis Klāvs (Country Overview Latvia) Erik Laes, (Country Overview Netherlands) Hege Fantoft Andreassen, Karina Standal, Stine Aakre (Country Overview Norway) Anna Dylağ (Country Overview Poland) Isabel Azevedo (Country Overview Portugal) Nicoletta del Bufalo, Pouyan Maleki (Country Overview Spain)		

Document history				
Version	Submitted for review by	Date	Reviewed/approved by	Date
V0	Dörte Fouquet, BBH	25.05.2022	Lucas Schwarz, FUB	28.05.2022
V1	Dörte Fouquet, BBH	03.06.2022	Michael Krug; Rosaria Di Nucci, FUB	05.06.2022
V2	Dörte Fouquet, BBH	07.06.2022	Rosaria Di Nucci, FUB	07.06.2022

ABOUT COME RES

COME RES - Community Energy for the uptake of renewables in the electricity sector. Connecting long-term visions with short-term actions aims at facilitating the market uptake of renewable energy sources (RES) in the electricity sector. Specifically, the project focuses on advancing renewable energy communities (RECs) as per the EU's recast Renewable Energy Directive (RED II). COME RES takes a multi- and transdisciplinary approach to support the development of RECs in nine European countries; Belgium, Germany, Italy, Latvia, the Netherlands, Norway, Poland, Portugal, and Spain.

Issues addressed and major steps

COME RES covers diverse socio-technical systems including community PV, wind (onshore), storage and integrated community solutions, investigated in nine European countries. The project has a specific focus on a number of target regions in these countries, where community energy has the potential to be further developed and model regions where community energy is in a more advanced stage of development. COME RES analyses political, administrative, legal, socioeconomic, spatial and environmental characteristics, and the reasons for the slow deployment of RECs in selected target regions. COME RES synchronises project activities with the transposition and implementation of the Clean Energy Package and its provisions for RECs in policy labs. Policy lessons with validity across Europe will be drawn and recommendations proposed.

ABSTRACT

Work Package 4 (WP 4) fulfils three main objectives. The first one is to screen and analyse the existing organisational and legal forms for RECs as well as business models for RECs to define best suited models for the COME RES target regions (Task 4.1). The second objective is to provide examples on novel financing instruments and to examine advantages and disadvantages of each type (Task 4.2). The third objective is to identify the most appropriate business model for RECs in four selected target regions based on the local conditions and barriers (T4.3).

In more detail, this Deliverable 4.2 (D 4.2) addresses various model financing instruments, with a focus on the framework conditions and the context. D 4.2 provides an analysis of the financing instruments and of their instrumental adequacy to promote RECs. The D 4.2 report will also consider established financial incentives to promote RECs under “grid-supporting” conditions. This implies an overview on different tariffs (energy and grid) as well as the corresponding legal framework conditions for the economic viability of RECs in future energy markets. The report shortly analyses the regulatory framework conditions with regard to grid tariffs for active and passive market participants.

The following analysis will thus represent a preparatory step for other work packages and future tasks, especially the concluding task, since this will assess which instruments work best under what regulatory and policy conditions under work package 4 and stretching to WP 7.

Furthermore, the project report D4.2 will – following the tradition of hands-on approaches under COME RES in the target regions - give an overview of the financing instruments that already exist in the COME RES countries, including e.g. tax incentives, renewable energy certificates or specific local bond mechanisms. Throughout this task they will be analysed regarding their benefits and deficits, based on input received from the COME RES countries. This analysis can then be used to determine appropriate business models and financing instruments, which work best under certain local specific conditions. Preliminary results of this Deliverable were fed into project tasks 5.2 and 5.3 which identify and assess good and best practice cases of RECs.

COME RES aims to further develop RECs and take them on an advanced level, in view of Member State’s ambition for facilitation and promotion of RECs, in view of good practices in the target regions

as well as in view of current legislative and programmatic work on the European level. On the project regions' level, we compile evidence on the transposition of the recast Renewable Energy Directive (RED II). Currently, in most countries the transposition of this EU Directive has not proceeded as far as formally required and desirable and the number of RECs in Europe is still very small. Therefore, this Deliverable aims to give hands-on overviews on investment and support models for RECs.

CONTENTS

ABOUT COME RES	2
Issues addressed and major steps	3
ABSTRACT	3
1. Analysis of the financing and regulatory supporting instruments.....	8
1.1. The Message from the European Union	8
1.1.1. The main provisions for RECs under RED II	8
1.1.2. Enforcement of target planning under RED III.....	9
1.2. The role of citizens and energy communities and financing quest.....	10
1.3. Preliminary remarks on the distinction of energy communities.....	11
1.3.1. Traditional approach – self-consumption.....	14
1.3.2. Cooperatives as frontrunners for legal set-up – security and self-consumption ...	14
1.3.3. Major support avenues	17
1.3.4. Some principles for financing for RECs.....	17
1.4. Public Funding.....	18
1.4.1. Financing and ownership of RECs	18
1.4.2. What ownership model for the project?	19
1.4.3. European funding – a helpful starter	19
1.5. Outlook: practical call for EU funding for RECs.....	21
1.6. “Traditional” equity funding and its adaptation to RECs projects.....	21
1.6.1. “Traditional” debt funding or debt financing	22
1.6.2. The access to funding pathways.....	22
1.6.3. Municipal involvement and grants on the level of Member States	23
1.6.4. Crowdfunding with and without community involvement.....	24
1.6.5. Gaps in Knowledge of crowdfunding and its potential for smaller -/RECs projects	24
.....	24
1.6.6. Blockchain crowd funding platforms.....	25
1.7. Preliminary results	25
1.8. Presentation of criteria on our work in the project target regions.....	26
2. COME RES Country overview.....	27
2.1. Belgium/Flanders.....	27
2.1.1. Financial needs and barriers.....	27
2.1.2. Financing of existing community energy initiatives.....	27
2.1.3. Transposition of RED II.....	29
2.1.4. Use and distribution of EU resources for RECs.....	30
2.2. Germany.....	32
2.2.1. Financial needs and barriers.....	32
2.2.2. Financing of existing community energy initiatives.....	34

2.2.3. Transposition of RED II.....	37
2.2.4. Use and distribution of EU resources for RECs.....	38
2.3. Italy.....	39
2.3.1. Financial needs and barriers.....	39
2.3.2. Financing of existing community energy initiatives.....	39
2.3.3. Transposition of Red II.....	41
2.3.4. Use and distribution of EU resources for RECs.....	41
2.4. Latvia.....	43
2.4.1. Financial needs and barriers.....	43
2.4.2. Financing of existing community energy initiatives.....	43
2.5. The Netherlands.....	45
2.5.1. Financial needs and barriers.....	45
2.5.2. Financing of existing community energy initiatives.....	45
2.5.3. Transposition of RED II.....	46
2.5.4. Use and distribution of EU resources for RECs.....	46
2.6. Norway.....	48
2.6.1. Introductory remark.....	48
2.6.2. Financial needs and barriers.....	48
2.6.3. Financing of existing community energy initiatives.....	49
2.6.4. Transposition of RED II.....	51
2.6.5. Use and distribution of EU resources for RECs.....	51
2.7. Poland.....	52
Introductory remark.....	52
2.7.1. Financial needs and barriers.....	52
2.7.2. Financing of existing community energy initiatives.....	53
2.7.3. Transposition of RED II.....	57
2.7.4. Use and distribution of EU resources for RECs.....	57
2.8. Portugal.....	60
Introductory remark.....	60
2.8.1. Financial needs and barriers.....	60
2.8.2. Financing of existing community energy initiatives.....	60
2.8.3. Transposition of RED II.....	61
2.8.4. Use and distribution of EU resources for RECs.....	62
2.9. Spain.....	63
2.9.1. Introductory remarks.....	63
2.9.2. Financial needs and barriers.....	63
2.9.3. Financing of existing community energy initiatives.....	63
2.9.4. Transposition of RED II.....	66
2.9.5. Use and distribution of EU resources for RECs.....	66

3. Lessons learned from Task 4.2.....	68
3.1. Which financing instruments are the best?.....	68
3.2. RED II enforcement	69
3.3. The national regulatory setting – friend or foe	69
3.4. The burden from regulatory fees.....	70
3.5. Proximity issues.....	70
3.6. Size of the REC and access for low-income households and assistance of municipalities.....	70
4. Conclusions.....	71
4.1. Introduction.....	71
4.2. Access to finance – status quo	71
4.2.1. EU Funding.....	71
4.2.2. National, local and regional funding to support RECs	71
4.2.3. Financing and investment models emerging for RECs.....	72
4.2.4. The access to private funds/banking/donations.....	72

1. Analysis of the financing and regulatory supporting instruments

1.1. The Message from the European Union

In December 2018, the recast Renewable Energy Directive 2018/2001/EU (RED II) entered into force, as part of the “Clean energy for all Europeans package”. In a nutshell, the RED II should assist in helping the EU to meet its GHG emissions reduction commitments under the Paris Climate Agreement.

RED II establishes a new binding renewable energy target – albeit on EU level only. The Directive no longer includes binding national targets, as the previous Renewable Energy Directive 2009/28/EC. The EU RES target for 2030 is set at minimum 32%, with the option for a possible upwards revision by 2023. RED II provides measures for the different sectors to follow up on this target. This includes specifically an enabling legal framework for citizens to play an active role in the development of renewables – strengthening the role of renewable energy communities (RECs) and of individual and collective self-consumption of renewable energy, an increased 14% target for the share of renewable fuels in transport by 2030 and strengthened criteria for ensuring bioenergy sustainability.

1.1.1. The main provisions for RECs under RED II

Art. 22 RED II is the anchor article for RECs. According to its first paragraph, Member States shall ensure that final customers, in particular household customers, are entitled to participate in a REC while maintaining their rights or obligations as final customers, and without being subject to unjustified or discriminatory conditions or procedures that would prevent their participation in a REC. The article provides a clear framework to set up RECs in the Members States and the variety of involvement possible for them in the energy market. RECs may:

- produce, consume, store and sell renewable energy, including through renewables power purchase agreements;
- share, within the REC, 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;
- access all suitable energy markets both directly or through aggregation in a non-discriminatory manner.

Highly important is also the clear obligation under paragraph (para) 3 that Member States shall carry out an assessment of the existing barriers and potential of development of RECs in their territories.

Para 4 outlines, that Member States shall provide an enabling framework to promote and facilitate the development of RECs. A framework which should, inter alia, secure, that

(a) unjustified regulatory and administrative barriers to RECs are removed;

- (b) RECs that supply energy or provide aggregation or other commercial energy services are subject to the provisions relevant for such activities;
- (c) the relevant distribution system operator (DSO) cooperates with RECs to facilitate energy transfers within RECs;
- (d) RECs are subject to fair, proportionate and transparent procedures, including registration and licensing procedures, and cost-reflective network charges, as well as relevant charges, levies and taxes, ensuring that they contribute, in an adequate, fair and balanced way, to the overall cost sharing of the system in line with a transparent cost-benefit analysis of distributed energy sources developed by the national competent authorities;
- e) RECs are not subject to discriminatory treatment with regard to their activities, rights and obligations as final customers, producers, suppliers, DSOs, or as other market participants;
- (f) the participation in the RECs is accessible to all consumers, including those in low-income or vulnerable households;
- (g) tools to facilitate access to finance and information are available;
- (h) regulatory and capacity-building support is provided to public authorities in enabling and setting up RECs, and in helping authorities to participate directly;
- (i) rules to secure the equal and non-discriminatory treatment of consumers that participate in the renewable energy community are in place.

Member States have to outline the elements of their enabling frameworks for RECs in their National Energy and Climate Plans and they may provide for RECs to be open to cross-border participation. Member States shall also take into account the specificities of RECs when designing support schemes in order to allow them to compete for support on an equal footing with other market participants.

1.1.2. Enforcement of target planning under RED III

Under the present legislative process on EU level for an amended Renewable Energy Directive (RED III), the EU Commission proposes a new target of 40% instead of 32% RES under RED II in the overall energy consumption of the European Union by 2030.¹ Given the current aggressive war by Russia against Ukraine the call for further ambition for renewable energies in all sectors intensifies. The Commission recently issued the process for an advanced impact assessment, aiming at a feasibility of a 45% RES target, an ambition already asked for by the Rapporteur of the European Parliament during the current legislative procedure. Already under the almost outdated 32% target, it is estimated that the EU needs to invest at least €380 billion annually over the next 8 years to achieve the EU's 2030 climate and energy targets, which means almost to double the investment of €201 billion in 2018.

¹ COM(2021) 557 final 2021/0218 (COD) Proposal for a Directive of the European Parliament and of the Council amending Directive (EU) 2018/2001 of the European Parliament and of the Council, Regulation (EU) 2018/1999 of the European Parliament and of the Council and Directive 98/70/EC of the European Parliament and of the Council as regards the promotion of energy from renewable sources and repealing Council Directive (EU) 2015/652.

It is further estimated that no less than 9% of the foreseen annual investments, at least €34 billion per year, will have to finance the deployment of renewable power capacity, again under the presumption of the currently established modest 32% RES target.² We assume that rather 12% than 9% of annual investments need to be foreseen, in case the 45% targets will be included under the RED III.

1.2. The role of citizens and energy communities and financing quest

This report relies on evaluations and good practice reviews on the financing background and structure of energy community projects – under this EU project and from other EU funded community projects for renewable energy, establishing the base for a forward looking set of model financing key conditions.

There are manifold problems and barriers for RECs in the EU Member States, which lie outside the issues of REC structures and access to financing. But financing is certainly a crucial issue. RECs enhance the shift to a decentralised energy system based on RES and the important role of citizens in the energy system change. RECs can be the prime movers to enable the EU to reach its increasingly progressive targets for renewable energies.

This has been acknowledged by the EU Clean Energy Package, in particular with:

- the recast of the Renewable Energy Directive (RED II), establishing clear rights for renewables self-consumers and Renewable Energy Communities (RECs);
- the recast of the Internal Electricity Market Directive (IEMD), calling for and ensuring the rights of active consumers and Citizen Energy Communities (CECs); as well as with
- the accompanying Governance Regulation and the input into the integrated National Energy and Climate Plans (*NECPs*) and respective progress reports³.

Recent research⁴ quantifies in principle the financial power of community energy projects to fill the above gap for target reaching. The social potential of €176 billion is estimated as budget which European citizens could contribute through collective investment schemes directly responding to the transformation needs, over a ten-year timeline. This would result in an annual investment of €17.6 billion, enough to halve the investment requirements foreseen to achieve a 32% RES share by 2030 which would be an enormous benefit fostering a proactive financial participation and involvement of an increasing number of European citizens, when facilitating easily accessible, risk-insured community investment options across Europe⁵.

² See with further reference: Pons-Seres de Brauwer, Christian., Cohen, Jed. 2020. Analysing the potential of citizen-financed community renewable energy to drive Europe's low-carbon energy transition, *Renewable and Sustainable Energy Reviews* 133 (2020) 110300.

³ See e.g. Krug, Michael, Di Nucci, Maria Rosaria, Citizens at the heart of the energy transition in Europe? Opportunities and challenges for community wind farms in six European countries, 2020; see European Commission, Energy Union Package. Communication from the European Commission to the European Parliament, the Council, the European Economic and Social Committee, the Committee of the Regions and the European Investment bank. A framework strategy for a resilient energy union with a forward-looking climate change policy. 2015. Brussels, Belgium, <https://eur-lex.europa.eu/legal-content/EN/TXT/?uri=CELEX:52015DC0080>. Accessed on 30.05.2022.

⁴ See e.g. Pons-Seres de Brauwer, Cristian, Cohen, Jed, *ibid*.

⁵ See e.g. Pons-Seres de Brauwer, Cristian, Cohen, Jed, *ibid*.

For the European context of the RED II, the following questions are apparent:

- Are there robust support and financing mechanisms evolving and applied in the EU and its Member States for community energy projects, being good and established enough to help fast deployment all over the EU?
- Are established progressive instruments used also for access to funding for energy communities?
- Is the traditional access in communities for local projects in general a good source of support for REC financing?

Less evidence could be gathered so far on the potential for RECs to close the gap of Member States for target reaching, even under the current 32% target (RED II). Until 2020, around 16% of the electricity generation came from collective projects.⁶

1.3. Preliminary remarks on the distinction of energy communities

To recall: In 2018, a legal definition for RECs was introduced in the RED II together with an enabling legal framework for such entities. The REDII rules have an equivalent in the Internal Electricity Market Directive (EU) 2019/944 (IEMD), which took effect in 2019 and which provides a broader definition of "citizen energy communities" (CECs). Both definitions show parallels, but also distinct differences and understand energy communities as non-commercial legal entities based on open and voluntary participation of their members. Their primary purpose is to provide environmental, economic or social community benefits for its shareholders or members or for the local areas where they operate, rather than financial profits. Membership in RECs is more restrictive than for CECs and is limited to natural persons, SMEs or local authorities, including municipalities. In contrast to CECs, RECs must be effectively controlled by shareholders or members that are located in the proximity of the renewable energy projects that are owned and developed by the REC.

Community members are asked to be active: they must at least partially be involved in day-to-day decision-making and operational control, and potential revenues must be used to provide local services/benefits.

⁶ See Reis, Ines F.G., Gonçalves, Ivo, Lopes, Marta A.R., Henggeler Antunes, Carlos, Business models for energy communities: A review of key issues and trends, Renewable and Sustainable Energy Reviews 144 (2021) 111013.

The following table (Table 1) describes the differences between the two types:

Table 1 Differences between RECs and CECs

	REC	CEC
Effective control	Effective control by small-scale end users located in the proximity of the renewable energy projects that are owned and developed by that legal entity	Effective control by members or shareholders that are natural persons, local authorities, including municipalities, or small enterprises; No proximity criterion
Activities	Production, consumption, storage, sales of renewable energy, including through renewables power purchase agreements; energy sharing; accessing all suitable energy markets both directly or through aggregation in a non-discriminatory manner; distribution system operation	Generation, distribution, supply, consumption, aggregation, energy storage, electric vehicle charging, energy efficiency, other energy services; electricity sharing;
Sectors/Technologies	Only RES based technologies in electricity, heating/cooling, transport	Only electricity; technological neutrality (both renewable and fossil technologies are allowed)
Membership	Natural persons, SMEs or local authorities, including municipalities	Allows large companies to participate as members or shareholders as long as their business is not (primarily) energy-related

- Proximity principle or geographic scope: Effective control by members/shareholders that are located near renewable energy projects, while CEC has no physical boundaries.
- CECs include as activities generation, distribution, supply, consumption, aggregation, energy storage, electric vehicle (EV) charging, energy efficiency (EE), or other energy services
- REC promote engagement in the generation, trading, storage, and delivery of energy from renewable sources.
- RECs only allow renewable technologies while CECs are limited to electricity, technology neutral, meaning both renewable and fossil technologies are allowed.
- Membership constraints
- CEC allows large companies to participate as members or shareholders as long as their business is not energy-related, unlike REC.
- RED II energy communities to be effectively controlled by small end users located in the proximity of the RES projects.

Research has filtered two main distinctive structures of energy communities ⁷:

Table 2: Distinctive structures of energy communities

	Non-Place-Based Communities	Place-Based Communities
Single purpose	Established exclusively for the production, management, and purchasing of energy, abiding shared rules. Members can be from any location	Established exclusively for the production, management, and purchasing energy, abiding shared rules. Members need to be from a specific location

⁷ The following table stems from Mehmet Efe Biresselioglu, Siyami Alp Limoncuoglu, Muhittin Hakan Demir, Johannes Reichl, Katrin Burgstaller, Alessandro Sciallo and Edoardo Ferrero, Legal Provisions and Market Conditions for Energy Communities in Austria, Germany, Greece, Italy, Spain, and Turkey: A Comparative Assessment, Sustainability 2021, 13, 11212, file://svwfile01/CTXRedirection\$/fouquetd/Downloads/sustainability-13-11212-v2.pdf, and is based . Accessed on 30.05.2022 and is based on e.g., Moroni, S.; Alberti, V.; Antonucci, V.; Bisello, A. Energy Communities in a Distributed-Energy Scenario: Four Different Kinds of Community Arrangements. In Smart and Sustainable Planning for Cities and Regions; Bisello, A., Vettorato, D., Laconte, P., Costa, S.;Eds; Springer International Publishing: Cham, Switzerland, 2018; pp. 429–437.

Multi-purpose	Can carry out the production, management, and purchasing of energy, other commodities and services, abiding shared rules. Members can be from any location	Can carry out the production, management, and purchasing of energy, other commodities and services, abiding shared rules. Members need to be from a specific location
----------------------	--	--

This distinction might be important to keep in mind, when trying to draft model financing schemes later under Work package 4 since it might be practical to draft modelling finance under proximity rules and models without proximity rules.

1.3.1. Traditional approach – self-consumption

Currently, there is a dominance of traditional self-consumption place-based communities, whereas models involving more advanced system services such as demand flexibility, aggregation, energy efficiency and electric mobility are still few⁸. In the area of wind energy, electricity sales to the wholesale market/grid is a typical activity of community energy initiatives.

1.3.2. Cooperatives as frontrunners for legal set-up – security and self-consumption

The legal form of a cooperative seems to be - at least in the West European countries - the most common for energy communities. Austria, Denmark, Germany, and the former EU Member State United Kingdom “shared” the bulk of those structures with a number of 2,500 cooperatives (2018). By 2020, the estimated number of renewable energy cooperatives across the EU was approaching 3,500.⁹ While Germany alone accounts for about a half of the EU renewable energy cooperatives, in most East and South European countries they are still a novel concept.¹⁰

Other legal forms used are limited partnerships or foundations.¹¹ A recent analysis of underlying business models (BM) e.g., for RECs found that many BM exist since several years and were often implemented before RED II and the new IEMD entered into force.¹²

Major conclusions of this analysis can be structured as follows:

- **Self-consumption first:** A majority of RECs are involved in self-consumption and surplus generation trading, mirroring long-lasting tradition of energy cooperatives in Northern Europe countries These BM aim to engage citizens in local energy generation to achieve some autonomy from the power grid and profit from the sale of surplus energy.¹³
- **Initial shared investment and joint value chain:** as main “raison d’être” for RECs.
- **Local financial support as a rule:** Projects usually financially supported by small local investors (customer-side BM), “who are simultaneously involved as asset owners, investors and

8 See Reis, Ines F.G. et al, *ibid.*

9 See figures in <https://socialres.eu/news/sharing-power-to-foster-renewables-the-cooperatives-model/> Accessed on 30.05.2022.

10 See *ibid* (<https://socialres.eu/news/sharing-power-to-foster-renewables-the-cooperatives-model/>) Accessed on 30.05.2022.

11 Biresselioglu, Mehmet Efe et al., *ibid.*, page 4 of 25.

12 See Reis, Ines F.G. et al., *ibid.*

13 See Reis, Ines F.G. et al., *ibid.*

consumers, whereas third-party investment is mostly used to create value in low-income settings”.

- **Outlook more varied:** Differentiated BM emerge, allowing communities to “control their distribution network, optimally manage the resources generated locally, develop local energy markets and provide integrated EE and e-mobility services.”¹⁴

Table 3: Typical set up structures

<p>KEY PARTNERS</p> <ul style="list-style-type: none"> • Community <u>members</u>. • Technology <u>manufacturers</u>. • Technical <u>know-how providers</u> (engineers, lawyers, accountants, etc). • External Investors. • DSO and other <u>network operators</u>. • <u>Municipalities</u> and <u>public entities</u>. 	<p>KEY ACTIVITIES</p> <ul style="list-style-type: none"> • <u>Local generation</u> and <u>supply</u>. • Aggregation. • Services <u>Provision</u>. • System <u>Operation</u>. • New <u>members</u> <u>recruitment</u> <p>KEY RESOURCES</p> <ul style="list-style-type: none"> • <u>Members</u>. • <u>Physical conditions</u>. • <u>Available funding</u>. • <u>Regulatory framework</u>. • <u>Public incentives</u> 	<p>VALUE PROPOSITION</p> <ul style="list-style-type: none"> • <u>Economic value</u>. • <u>Environmental value</u>. • <u>Social value</u>. • <u>Energy self-sufficiency</u> • <u>Distribution of costs</u> and <u>responsibilities</u>. 	<p>CUSTOMER RELATIONSHIPS</p> <ul style="list-style-type: none"> • Personal and <u>direct contact</u>. <p>CHANNELS</p> <ul style="list-style-type: none"> • <u>Face-to-face meetings</u>. 	<p>CUSTOMER SEGMENTS</p> <ul style="list-style-type: none"> • <u>Households</u>. • <u>SMEs</u>. • <u>Public entities</u>.
<p>COST STRUCTURE</p> <ul style="list-style-type: none"> • <u>Technical and economic feasibility studies</u>. • <u>Planning and licensing costs</u>. • <u>Capital costs for building and installing assets</u>. • <u>Public grid usage costs</u>. • <u>Reinvestment costs to maintain, improve and increase the existing infrastructure</u> • <u>Procurement costs</u>. • <u>Outsourcing costs</u>. 	<p>REVENUE STREAM(S)</p> <ul style="list-style-type: none"> • <u>Sale of community members' shares</u> • <u>Sale of energy to other consumers</u>. • <u>Sale of generation surplus</u>. • <u>Sale of aggregated demand flexibility</u>. • <u>Subsidies or long-term contracts between the government and renewable energy producers</u>. 			

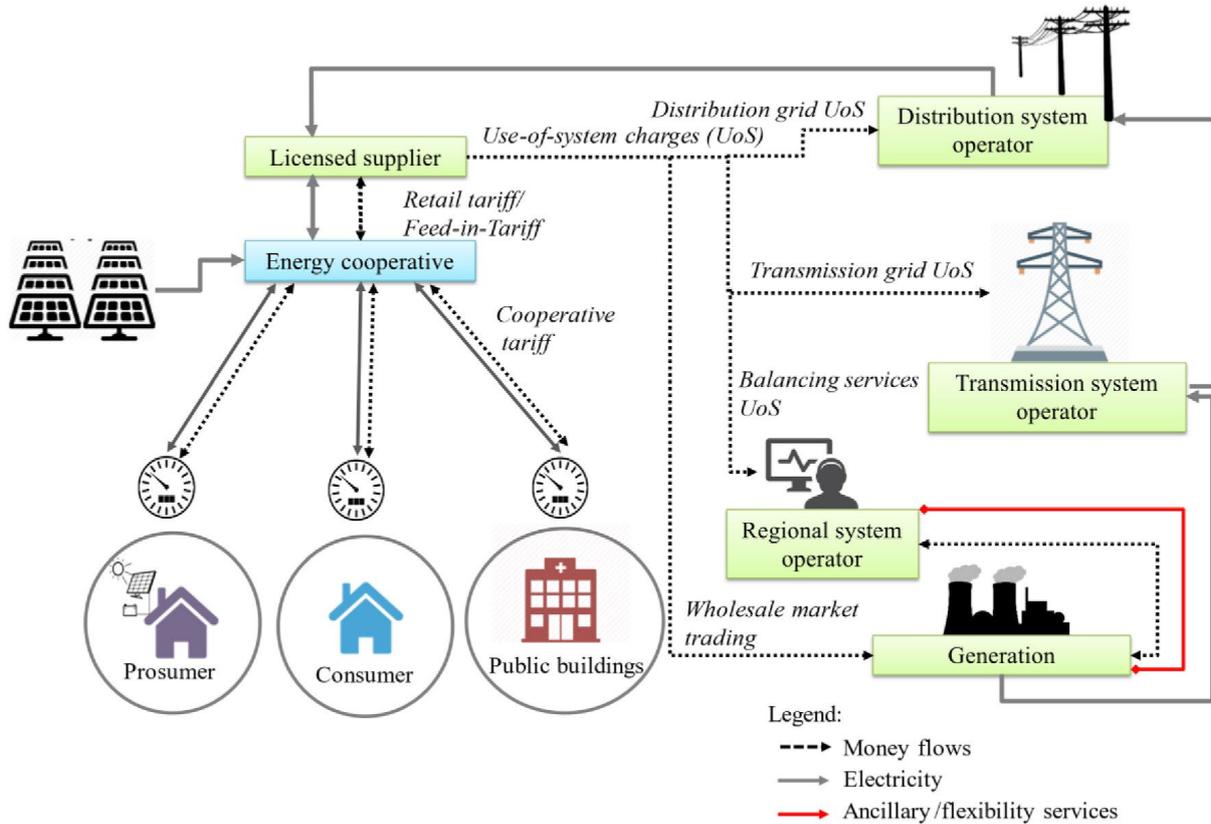
Source: Reis et al. *Business models for energy communities: A review of key issues and trends, Renewable and Sustainable Energy Reviews* 144 (2021) 111013.

14 See Reis Ines F.G. et al., *ibid.*

The following figure explains a more detailed Energy Cooperative Model:

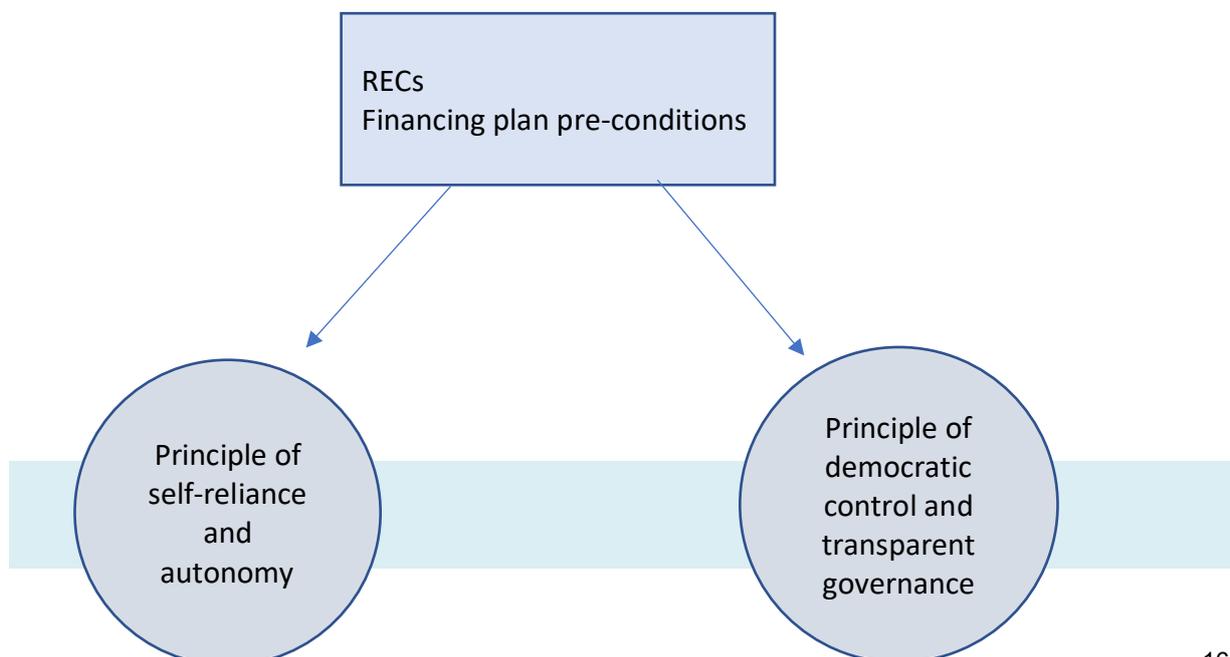
Figure 1: Overview of energy production and flow for a detailed Energy Cooperative

Source: Reis et al. (2021)



The preparatory structure and planning approach for an energy community set-up is of utmost importance for success or failure.

Figure 2: Principles for financial planning (own overview)



1.3.3. Major support avenues

Based on the existing structure for RECs, this section will provide an overview on major financing tools available for energy communities: public funding, traditional financing tools, crowdfunding and grants or donations.

Financial key aspects

The financial key aspect is that a REC needs access to capital to buy equipment. This could be done by raising money from its members, accessing a loan from a bank or cooperative lenders, donations, or even crowdfunding. Following the “Compile Financing Toolkit”¹⁵ which has been developed under the EU funded Horizon 2020 project COMPILER, key questions RECs need to answer beforehand and in view of the financing plan are:

- How much financing is needed? This question relates not only to the amount of money that needs to be mobilised but also to the best timing at which you need to mobilise (parts of) this money.
- What are the bottlenecks in the financing plan?
- What kind of financing is adequate? The project needs to look at the expected outcome for the REC and for the validity and sustainability of the respective RECs.
- What ownership model is best for the project? The goal of an energy community should be to remain autonomous and democratic, to be transformative. Therefore, the Compile Financing Toolkit suggests that the construction of the ownership structure should be part of the financing discussion. It is equally important to decide if the REC wants to have one legal ownership for all projects or some sublegal ownership for different projects. All partners need to share the profit in a balanced way.

1.3.4. Some principles for financing for RECs

The first prerequisite for obtaining financing for a REC is a solid business plan and feasibility study. In this pre-planning phase, seed money is necessary, especially for the feasibility study, the pre-project management, and all administrative requirements to make the project bankable respectively to have a sound financing structure.

Local authorities can provide the necessary start-up funding via grants, loans, even administrative personnel dedicated to the development of RECs.¹⁶

¹⁵ Coolkit financing guide, https://www.rescoop.eu/uploads/rescoop/downloads/D4.1.2_Financing_Guide.pdf.

¹⁶ Good practice examples in: Energycities, How cities can back renewable energy communities?

1.4. Public Funding

For the financing of renewable projects in general, the European Bank for Reconstruction and Development (EBRD) underlined some years ago some basic principles that are still valid:¹⁷

a) Regulatory frameworks

The regulatory framework should ensure:

- Clarity and certainty, track record: early projects may require more support either from authorities or sponsor,
- Minimizing the chances of retroactive tariff reduction via e.g. limit on total renewable generation capacity eligible for FiT.
- Change in Law / Change in Tax – lenders prefer state to take this risk.

The European Investment Bank (EIB) follows similar funding patterns, since small projects cannot access direct funding, albeit the EIB gives money to partner banks in the Member States and sets criteria for lending. Therefore, there is a request that the EIB facilitates access to the European Fund for Strategic Investments (EFSI) investment tool, it should be designed in a way that access for small municipalities, cities, islands, SMEs and energy communities is possible via pooling their sustainable energy projects in specific portfolios. According to the request from the Community Power Coalition, the European Commission and the EIB can help these local players with the financial engineering of their projects' need.

b) Recommendation for better access to EIB funding

In this context, the Community Power Coalition recommends:

“Access to EFSI and other EIB tools (e.g. JASPERS – Joint Assistance to Support Projects in European Regions¹⁸) can also allow smaller local players to raise money from local citizens, banks, and pension funds. We recommend specific support for bundling schemes for community energy projects to facilitate access to this type of financing facility. Additionally, funding streams need to be small enough and run over a long enough period to be easily usable for community energy.”¹⁹

1.4.1. Financing and ownership of RECs

Financing and ownership for RECs are two sides of one coin.

First rule is, that a community energy project has a solid business plan and has successfully carried out a feasibility study.

Already in this pre-planning phase, seed money is often necessary, especially for the feasibility, the pre-project management and all administrative requirement to make the project bankable respectively having a sound financing structure, local authorities can provide the much-needed impulse, via grants,

¹⁷ Financing large- and small-scale renewable energy projects – an EBRD perspective Renewable Energy Coordination Group 1st Meeting, Energy Community Secretariat, Vienna 2nd March 2016.

¹⁸ <https://jaspers.eib.org/>. Accessed on 06.06.2022.

¹⁹ Financing Community Energy, a position paper from the Community Power Coalition, https://communitypowercoalition.eu/Financing_Community_Energy_Report_FINAL.pdf. Accessed on 30.05.2022.

loans even administrative personnel dedicated to the development of RECs as examples from COME RES and other projects will show in the second part of this study.²⁰

Then comes the crucial point: the REC needs to access capital to buy the equipment. Key questions suggested by the financing tool Cool kit²¹ that RECs should answer beforehand and in view of the financing plan are:

Need to structure ways to create the right outcome for the REC and for the validity and sustainability of the respective RECs?

1.4.2. What ownership model for the project?

The goal of an energy community should be to remain autonomous and democratic in order to remain transformative. Therefore, the Compile project for example insists that the construction of the ownership structure should be part of the financing discussion.

1.4.3. European funding – a helpful starter

test grounds, pre-design projects, or exchange about build-up, access to EU or national public subsidies and grants can be helpful. The EU 2021-2027 Multiannual Financial Framework and NextGenerationEU Programme provide several options, depending on specific calls for tenders. The Regional and Structural Funds as well as the Cohesion policy funds via the National Operation programmes link the national policies and options with EU funding.²²

Moreover, in May 2022 the EU Commission presented the REPowerEU Plan, as its response to the hardships and global energy market disruption caused by Russia's invasion of Ukraine. The REPower EU Plan might very well strengthen attention to and the role of RECs as well.

The EU outlined major points for the renewable sector which might at least partly be beneficial to the RECs planning as well:²³

²⁰ Good practice examples in: Energycities, How cities can back renewable energy communities?

²¹ Coolkit financing guide, https://www.rescoop.eu/uploads/rescoop/downloads/D4.1.2_Financing_Guide.pdf. Accessed on 30.05.2022.

²² See Coolkit financing guide, with list of EU funding and list of predominant key projects.

²³ https://ec.europa.eu/commission/presscorner/detail/en/IP_22_3131. Accessed on 30.05.2022.

REPowerEU

A massive scaling-up and speeding-up of renewable energy in power generation, industry, buildings and transport will accelerate our independence, give a boost to the green transition, and reduce prices over time. The Commission proposes to increase the headline 2030 target for renewables from 40% to 45% under the Fit for 55 package. Setting this overall increased ambition will create the framework for other initiatives, including:

Initiatives

- A dedication to double solar photovoltaic capacity by 2025 and install 600GW by 2030.
- A Solar Rooftop Initiative with a phased-in legal obligation to install solar panels, but with priority on new public and commercial buildings and new residential buildings.
- Doubling of the rate of deployment of heat pumps, and measures to integrate geothermal and solar thermal energy in modernised district and communal heating systems.
- A Commission Recommendation to tackle slow and complex permitting for major renewable projects, and a targeted further amendment of RED II for the current legislative review process to recognise renewable energy as an overriding public interest. Dedicated 'go-to' areas for renewables should be put in place by Member States with shortened and simplified permitting processes in areas with lower environmental risks. To help quickly identify such 'go-to' areas, the Commission is making available datasets on environmentally sensitive areas as part of its digitalised mapping tool for geographic data related to energy, industry and infrastructure.

Since 2014 and under the Structural/Cohesion Funds programmes of the European Union, the Commission has expanded the role for Financial Instruments (FI) in Cohesion policy delivery. FIs mainly take the form of loans, guarantees and equity. For most national Structural Funds Managing Authorities, FIs were relatively new tools for using within their programmes.²⁴

As outlined above, RED II requires the Commission to support the ambition of Member States in the field of renewable energy through an enabling framework, including through enhanced use of Union funds. This support should help reducing the cost of capital for renewable energy projects and should also open to and increase regional cooperation between Member States, through joint projects, joint support schemes and the opening of support schemes for renewable electricity to producers located in

²⁴ See: European Parliament, Directorate-General for Internal Policies, Policy Department for Structural and Cohesion Policies – Financial instruments for energy efficiency and renewable energy STUDY, Authors: European Policies Research Centre, University of Strathclyde: Fiona Wishlade, Rona Michie, Phil Vernon.

other Member States. At least concerning this Member States cooperation one could envisage cooperation between RECs of two Member States, at least in the regions close to the national borders., Regulation (EU) 2018/1999²⁵ on the governance of the Energy Union and Climate Action with its gap filling instruments in view of reaching the overall binding EU target which depends on the Member States' Plans and the corresponding enabling framework provided for in Directive (EU) 2018/2001, empowers the Commission to adopt implementing acts to set out the necessary provisions for the establishment and functioning of a Union renewable energy financing mechanism. This authority might be helpful in establishing further criteria for financing of RECs in the European Union.

1.5. Outlook: practical call for EU funding for RECs

For quite some time and especially already during the Covid crises, demands²⁶ came up asking the EU Commission to set up a dedicated EU REC financing facility for community energy projects, inspired by the example of the “EU City Facility”²⁷ The idea is, that RECs could apply for funding from this facility to develop the concepts of their clean energy projects in their respective territories. So far, has this been taken up directly, even under the current RePowerEU Initiative of the Commission.

A related idea is a European level revolving fund: The key points for such a fund would be, that projects can apply for a low-interest loan which becomes a grant in the case that the project does not progress to become financially stable but is repaid if the project succeeds. Access to this revolving fund can be facilitated by the REC facility. Obviously, slim, and easy one-stop-shop permitting structures need to be in place in the Member States. Again, so far, we are missing such infrastructures s in many countries.

In order to better enable the use of existing public funds, the European “Covenant of Mayors” provides an interactive funding guide providing an overview of public financing opportunities.²⁸ This could be a good base to work on more EU funding Initiatives in the near future.

1.6. “Traditional” equity funding and its adaptation to RECs projects

Equity financing is a traditional private capital financing method of raising fresh capital by selling shares of a company to private individuals, public actors, institutional investors or financial institutions. The

²⁵ Regulation (EU) 2018/1999 of the European Parliament and of the Council of 11 December 2018 on the Governance of the Energy Union and Climate Action, amending Regulations (EC) No 663/2009 and (EC) No 715/2009 of the European Parliament and of the Council, Directives 94/22/EC, 98/70/EC, 2009/31/EC, 2009/73/EC, 2010/31/EU, 2012/27/EU and 2013/30/EU of the European Parliament and of the Council, Council Directives 2009/119/EC and (EU) 2015/652 and repealing Regulation (EU) No 525/2013 of the European Parliament and of the Council.

²⁶ Financing Community Energy, a position paper from the Community Power Coalition, https://communitypowercoalition.eu/Financing_Community_Energy_Report_FINAL.pdf. Accessed on 30.05.2022.
²⁷ <https://www.eucityfacility.eu/home.html>. Accessed on 30.05.2022. - Set up under the Horizon 2020 Framework Programme for Research and Innovation of the European Union, the EUCF will unlock this local potential and support municipalities, local authorities, their groupings and local public entities aggregating municipalities/local authorities in Europe with tailor-made, fast and simplified financial support (in the form of EUR 60,000 lump sums) and related services to enable them to develop relevant investment concepts related to the implementation of actions identified in their integrated energy and climate plans.

²⁸ Covenant of Mayors Financing opportunities for Sustainable Energy & Climate Action Plans <https://www.covenantofmayors.eu/support/funding.html>. Accessed on 30.05.2022.

persons or institutions who buy shares then are becoming shareholders of the undertaking because they have received ownership interest.

Interesting for RECs is the variation of equity funding via equity capital (share offers - self-financing). Members are invited to purchase shares. This pool of shares establishes the equity capital of a REC, e.g. a cooperative and equals a long-term debt structure that the entity owns to its members and can be reimbursed at fixed points. *“The cooperative can “buy-back” its shares from the members at the same price as they purchased them. In general, shares cannot be sold to another person than the cooperative.”*²⁹

1.6.1. “Traditional” debt funding or debt financing

Debt Funding is a way to raise capital through means of lending/borrowing.

This funding will need to be repaid at an arranged later date, usually through regular repayments with added interest. It is often organised and structured as debt funding include peer-to-peer lending, business loans, asset financing and invoice financing. This type of investment is suitable for projects that do not want to give up ownership shares and decision rights.

It is recognised as being important to adapt to debt and equity financing for small- and medium-scale renewable energy projects and helping to create partnerships among community energy investors.

This type of financing is often more expensive but can be provided by a wide range of actors. Banks and funds are the most common, but we will also provide here other options to source this type of financing.

1.6.2. The access to funding pathways

Meanwhile, a substantial number of research has been conducted on financing advice analysis and rules for sound project design for RECs.³⁰ This research again was often enabled thanks to EU public funding.

There seems to be rather a question on access to this information and exchange of good practices as well as the removal of legal barriers. Again, the REScoop’s Coolkit is the most up-to-date guide at present.

Securing financing from traditional sources still presents a challenge for community energy projects, particularly those that require early-stage support. Community energy projects below a certain size may not attract interest from commercial lenders since they come with increased bank transaction costs and offer a limited return on investment.³¹ RECs build on the local solidarity and often hesitate to access

²⁹ More details in REScoop Coolkit – Financing Guide.

³⁰ A more global survey and analysis can be found under: Czyrnek-Del’etre, J., Leary M., Alsop Eales, A., Marandin, L., Orge, M., Craig, M., Ortiz, W., Casillas, C., Persson J., Dienst, C., Brown, E., While, A., Cloke, J., Latoufis K.- Finding the niche: A review of market assessment methodologies for rural electrification with small scale wind power, in: Renewable and Sustainable Energy Reviews 133 (2020) 110240.

³¹ See IRENA Coalition for Action (2020). Stimulating investment in community energy: Broadening the ownership of renewables, International Renewable Energy Agency, Abu Dhabi: “... Moreover, debt and equity financing are typically extended with a view to earning a profit. A community energy project focused on creating socio-economic and environmental value may not generate sufficient profits to attract debt financing from local commercial

venture capital via equity financing, though there are examples for a mixed structure evolving in the EU Member States.

One interesting example from Central and Eastern Europe underlines that mixed financing models can be and are used: the case of the energy cooperative Spółdzielnia Nasza Energia (Poland) which has the following objectives: Construction of interconnected networks to collect biogas, construction of energy generating units, supply of heat for commercial and residential buildings and self-consumption. According to Reis et al (2021): “This cooperative is the first initiated in Poland and it has 300 members. Currently it is solely involved in renewable heat and electricity generation through biogas power plants. The main goal is to supply electricity and, if possible, heat for public buildings and households. The cooperative owns the local distribution grids, allowing for the energy offered being 20% cheaper than that drawn from the national power system. Part of the required investment came from the cooperative itself through equity funds, resource fund and business revenue, and the rest was covered by subsidies and commercial loans³².” This approach to debt and equity financing for small- and medium-scale renewable energy projects was designed for helping to create partnerships among community energy investors. A good mix of various finance forms and grants are interesting to evaluate, including the local involvement of the municipalities.

1.6.3. Municipal involvement and grants on the level of Member States

Grant aid is financial assistance usually provided to a local government or any other organisation which does not need to be repaid. Member States in various intensities offer various grants dedicated to the development of renewable energy projects, often via national, regional, or local agencies. Grants are often good ways to start an activity, but it is important to be careful of the amount of investment needed in return for the financing secured. The project needs to aim to be financially viable in the longer run without grants.

Municipal grants can be an attractive and simple way to get a community project started. The local municipality in general would be the best situated to support a REC development. Moreover, with the involvement of local governments often opportunities arise that municipal companies or the municipality directly could acquire shares in the REC project and in different ways. According to the REScoop COOLKIT, in many Member States, support schemes depend on municipalities to be delivered. Moreover, municipalities often engage in direct joint ownership models or when a call for tender launched, they might define criteria for a grant scheme for RES development earmarked for local citizen projects.

Interestingly, depending on the autonomy of local savings and loan banks to create financing options for RECs, this could be a strong addition to the local support. But this right of a local agency to engage in such local financing is not ensured as a general rule and some local agencies rely on the authority of the more centralised level to issue finance on local level. The local community needs to be financially

financial institutions. Communities that cannot meet collateral requirements may also find it hard to secure loans from commercial financial institutions.”

³² See Reis et al (2021).

able to engage and to provide with the right resources, which unfortunately is not ensured in all EU Member States.

1.6.4. Crowdfunding with and without community involvement

Crowdfunding is defined as a mechanism by which an energy community can gather equity or debt capital from private persons. Crowdfunding is a way of raising finance by asking many people to contribute to a funding goal with a comparatively small amount of money. It can be seen as part of a broader “alternative finance market”.³³

Crowdfunding is a relatively young form of business finance in renewable energy projects, often linked to the financial crises, subsequent energy poverty and the decrease of public support/(feed-in mechanism etc.) with most crowdfund providers having entered the market within the past twelve years, within the European market alone, which grew from €1.12bn in 2013 to €10.44bn in 2017.³⁴

Through crowdfunding, communities and individuals can reach out to the “crowd” to validate ideas, collect money, and engage with both citizens and decision makers. This relatively new funding tool can also improve the visibility of the specific RECs and, overall, foster an environment of collective decision-making in order to fund socially relevant projects to the benefit of their members.

The number of respective platforms for crowdfunding is still relatively low in the EU: Case studies from 2016 count 13 platforms based in Europe and the two Americas.³⁵

Under the condition that the crowdfunding rules are set in a clear and reliable way and the legal and policy framework is supportive, their local proximity and human dimension is often attractive for citizens willing to crowdfund a small and medium scale community or RECs project. A specific crowdfunding guide is available on EU level.³⁶ The developed guidance is in effect echoing the principles under Art. 22 RED II. A stable and reliable regulatory framework on national level is essential to ensure the viability of renewable energy projects, securing return on investments planned by crowd investors and prevent frustration of citizens on the local level. Specific crowdfunding platforms for advice and guidance are emerging in the EU Member States.

1.6.5. Gaps in Knowledge of crowdfunding and its potential for smaller -/RECs projects

A particular knowledge gap exists regarding perceptions around the crowdfunding of RECs.³⁷ On the other hand, the already mentioned reduction of financial support for RECs and similar small projects in recent years have triggered a growing openness towards crowdfunding.³⁸ While investments in RES have typically involved projects in large scale investments beyond the reach of many of the continent's

³³ Bergmann, Ariel, Burton, Bruce, Klaes, Matthias, European perceptions on crowdfunding for renewables: Positivity and pragmatism, 2020 (online version: <https://www.ncbi.nlm.nih.gov/pmc/articles/PMC7510637/>). Accessed on 03.06.2022.

³⁴ Ibid.

³⁵ Ibid.

³⁶ See eg. crowdfunding renewable energy - A practical guide for Crowdfunding Platforms, Project Developers, Investors and Policy Makers http://www.crowdfundres.eu/wp-content/uploads/2018/02/Crowdfunding-Renewable-Energy_protected.pdf. Accessed on 03.06.2022.

³⁷ Concerning Renewable energy projects in general and smaller projects especially, see Bergmann, Ariel, Burton, Bruce, Klaes, Matthias, *ibid.*

³⁸ Bergmann, Ariel, Burton, Bruce, Klaes Matthias, *ibid.*

existing crowdfunding platforms, smaller projects around the 5MW mark are becoming increasingly attractive, but still could grow much stronger. *“Thus, while the alternative financing sector has a strong prospective role in (renewable energy projects) REPs, with total project financing for the latter reaching €42.7bn in 2017³⁹ only around €300m of this total was provided via crowdfunding⁴⁰ suggesting a significant potentiality gap.”⁴¹*

Guarantees can provide the explicit financial backing for a citizen project.⁴² According to the REScoop Toolkit, crowdfunding and guarantees could be vital to get the last pieces of project financing together and the RECs over the starting line.

1.6.6. Blockchain crowd funding platforms

Together with crowdfunding and the above-mentioned need for clarity, digitalization technologies may have a positive and increasing impact on a cost-effective setup of RECS and especially on crowdfunding. One option to achieve clarity and reliability may be through digital financial formula such as Distributed Ledger Technology (DLT) based crowdfunding for project finance.⁴³

There are interesting combinations appearing such as a cooperative project on the Croatian Island of Krk.⁴⁴

1.7. Preliminary results

One clear result is the growing ambition of the EU Commission on renewable energy targets for the EU by 2030, which sets the tone also for financing of RECs and the local projects of citizens and communities. At least a compromise at around 45% under the forthcoming RED III compared to the currently established 32% seems feasible. A big part of this target could be reached by a strong increase in community and REC projects, especially if they can not only support increase in production/consumption but also an outreach into other areas such as grid enforcement and flexibility options.

It was shown that substantial financing over the coming years must be tapped also for the local and REC level in order to enable this sector to increase its roll-out in the EU.

The established value and role of citizens and RECs under the current RED II and the pressure to act created by RED II on the Member States to support and promote RECs can be a strong impetus on Member States for their enforcement strategies and reporting under the NECPs.

³⁹ See WindEurope; 2018. Wind in Power 2017: Annual Combined Onshore and Offshore Wind Energy Statistics. <https://windeurope.org/wp-content/uploads/files/about-wind/statistics/WindEurope-Annual-Statistics-2017.pdf>

⁴⁰ Candelise, Chiara, Crowdfunding as a novel financial tool for district heating projects , 2018, <https://www.researchgate.net/publication/333105476>

⁴¹ Bergmann, Ariel, Burton, Bruce, Klaes Matthias Ibid.

⁴² See e.g. <https://www.powerfund.eu/collective-finance/invest-citizens>. Accessed on 07.06.2022.

⁴³ Halden, Ugur Cali,Umit, Fogstad Dynge, Marthe, Stekli, Joseph, Baic,Linquan, DLT-based equity crowdfunding on the techno-economic feasibility of solar energy investments.

⁴⁴ http://www.zez.coop/other_projects.html. Accessed on 03.06.2022.

The option to access finance for REC project on EU level has been detailed as well as an overview on reform options. Again, there is quite substantial financial assistance which can be tapped. But the access to EIB lending- even via its partner banks is too restricted and reform options again have been illustrated.

In a next step, national support options have been illustrated, including the relatively new approach to provide funding under the EU Structural and Cohesion Funds regimes.

The regular financing elements for a REC project have been outlined, starting from the more traditional set-up. The possibility to combine funding options and more modern forms of funding, meaning especially crowdfunding and even blockchain-based crowdfunding.

Nonetheless, there is a gap between knowledge of mechanisms and models for financing versus access of RECs to this knowledge pool. Furthermore, this introductory part has shown, that without an increased ambition at Member State level following the RED II especially its provisions for RECs laid down in Art. 22 and the recent communication by the EU Commission in view of the aggressive war of Russia against Ukraine and the need for speeding up energy system change in view of the enhanced climate crisis, we might face in the EU-26 different transposition/implementation dynamics and as the worst scenario a paralysis in terms of ambition on Member States level. The promotion of REC models, particularly cooperatives also in Central and Eastern Europe is important. Moreover, the traditional finance sector needs to be encouraged further to aggregate different smaller portfolios and to engage more smartly in RECs and local smaller projects.

1.8. Presentation of criteria on our work in the project target regions

One of the main parts of this reports contains an analysis of the country specific situations regarding the financing of RECs. Therefore, Task 4.2 established four different sub-tasks, which should give an overview on various financing instruments for RECs. At first, for each country represented in COME RES we will provide a description of their financial needs and barriers, depending on their local conditions. The second part gives an overview on how existing energy initiatives are financed. In the third step, for each country we will illuminate how the RED II is being transposed by national policy makers and authorities. The fourth part assesses the use and distribution of resources stemming from EU programs with regards to community energy such as Next Generation EU, Just Transition Fund, the Cohesion Fund, INTERREG programs etc.

2. COME RES Country overview

2.1. Belgium/Flanders

2.1.1. Financial needs and barriers⁴⁵

- Financial guarantees/resources are needed for community energy to spread on a larger scale.
- Since the profitability of community energy projects is still limited and investors are not always aware of the benefits, funding is not always available. A significant amount of good practices could make these benefits more visible to the public and potential investors.
- If end-users want to invest in energy initiatives or renewable energy, they have to raise a necessary capital upfront and this is not feasible for everyone.
- Existing financial support mechanisms aren't sufficiently adapted to community energy projects which are often small-scale projects and have as a primary aim to share the energy produced amongst their members (and not to maximize the self-consumption of the owner of the roof).
- Smaller players can't take part in community energy projects, especially vulnerable households or households with financing difficulties.

2.1.2. Financing of existing community energy initiatives

Since the majority of existing energy projects are initiated by renewable energy cooperatives, we focus following paragraph on the financing instruments that REScoops in Flanders use⁴⁶.

Renewable energy cooperatives aim for financing the investments in renewable energy production with as much social capital as possible, i.e., capital raised from citizens in the form of shares. Direct participation in the capital of the energy cooperative is also a form of involvement and commitment. Given the purpose of the energy cooperative, collecting capital by means of shares is the preferred mode of financing compared to others such as crowdlending or donations. Social capital is raised by organising a call for capital for (a group of) specific RES projects. Ecopower, as an energy supplier, also has an inflow of shares linked to the closure of an energy supply contract with the end-consumer.

The social capital raised is invested in local, RES production installations that are owned and managed by the energy cooperative itself. Some energy cooperatives create a new company (e.g. a special purpose vehicle) for each of the wind projects (or district heating network) that they develop. This newly created company manages the project and is legally independent from the energy cooperative. The development of the wind turbines is financed by other energy cooperatives that are interested in the project and bring in part of their social capital. By creating a separate company, the results of the wind

45 Possibilities of collective activities in Flanders, Delnooz A., Vanschoenwinkel J., Mou Y., Höschle H., VITO, study carried out for the Flemish Government, November 2020. Summary available at: <https://www.energyville.be/en/press/expert-talk-energy-communities-what-are-they-and-why-can-they-be-meaningful-you>. Accessed on 30.05.2022.

46 Based on information collected in frame of: "Report on comparative case studies", Deliverable 4.2 of the COMETS project funded by the Horizon 2020 Framework Program of the European Commission, grant number 837722 More information: http://www.comets-project.eu/images/deliverables/D42_Comparative_Case_Studies.pdf. Accessed on 30.05.2022.

project do not directly impact the energy cooperative. This can also reassure some cooperants and can facilitate in raising social capital.

In the case of large investments, e.g., in wind turbines or district heating network, some of the energy cooperatives join forces with other energy cooperatives to enlarge the pool of existing and potential cooperants and/or complement the social capital with a bank loan (e.g., bridging credit). In general, the banks grant the energy cooperatives a loan if they have high equity and a clear business case. However, in case of the development of wind turbines, permits are increasingly brought before the Board of Permit Disputes (Flanders) or State Council (Walloon Region/Flemish Region). The appeal process slows down the development of wind projects considerably and can lead to e.g., permit expiration or changed operating and financial conditions of the business case. Also, banks are more reluctant to finance wind projects due to the legal and reputational risks.

Some of the renewable energy cooperatives received subsidies from the municipality or province for covering part of the expenses to start up their activities, e.g., legal and administrative costs, communication (website, logo, flyers).

The more established renewable energy cooperatives apply for grants in the frame of research projects or pilot projects in which they can explore new technologies (e.g., hydrogen, storage) or business models (e.g., shared mobility, collective virtual power plant, flexibility services) that can contribute to their future development. They apply for subsidies at different governmental levels ranging from local (e.g., city or province), regional (e.g., OVAM, VLAIO), national (e.g. King Baudouin Foundation, Energy Transition Fund) to European level (e.g., Interreg, Horizon 2020). In case of larger (European) grants the energy cooperatives join partnerships.

In Flanders (Belgium), owners of installations producing electricity based on renewable energy sources (e.g., wind, solar, biomass, etc.) are eligible for green energy certificates. As such, these subsidies are part of the business model of renewable energy cooperatives. However, for some categories of installations the certificate system has been phased out or replaced by an investment subsidy. In Flanders, for example, wind turbines between 10 kWe and 300 kWe and PV installations between 40 kWp and 2 MWp can apply for an investment subsidy through a call system⁴⁷. The phase-out of the green certificate system has a considerable impact on the profitability of the larger, roof-top PV-installations.

Individuals can obtain a reduction of 30 or 45% on their income taxes if they acquire new shares of a start-up company directly or through a crowdfunding platform.⁴⁸ With this measure the federal government wants to support small companies of up to 4 years old that need capital to finance their start-up. A small company can raise up to €250.000 through this tax measure. Some renewable energy cooperatives make use of this fiscal instrument as the tax shelter can facilitate the raise of social capital

47 More information on: <https://www.energiesparen.be/call-groene-stroom>. Accessed on 30.05.2022.

48 More information: <https://www.vlaio.be/nl/subsidies-financiering/subsidi databank/tax-shelter-voor-startende-ondernemingen>.

during the start-up of the energy cooperative or the first 3 operational years of the energy cooperative when there is no dividend to be paid out to the cooperants.

2.1.3. Transposition of RED II

In Belgium, each region has to transpose the renewable energy community provisions.

In the Flemish Region,⁴⁹ an energy Decree has been approved and published defining energy communities as a single concept, with Renewable Energy Communities (RECs) and Citizen Energy Communities (CECs) being slightly different notions of this concept.

In Advance, a REC is defined as a legal entity based on the open and voluntary participation of its associates or members, whose main purpose is to provide environmental, economic or social benefits for its associates, members or the environment in which it operates, and which has no profit motive or a profit motive that is subordinate to its main purpose. There is no specific legal form chosen for RECs, though most likely only cooperatives and not for profit organizations comply because of the criteria that apply to RECs.

With regards to financing, Art. 22(4) of the RED II states that each Member State should set up an enabling framework in their national legislation to promote and facilitate the development of RECs. Among others, this enabling framework should include tools to facilitate access to finance and information. Although Flanders has progressed with the transposition of the definition for RECs, they have not yet developed such an enabling framework and specific financing tools for community energy initiatives. Thus, RECs have access to finance in the same way as the other (private) market actors.

A new development however is the introduction of a separate budget and separate categories for energy sharing in apartments and energy communities in the call system for PV and wind (see also above). In 2021, the Flemish Government introduced a renewed investment support program for small and medium-sized wind turbines (greater than 10 kW up to and including 300 kW) and with medium-sized PV installations (greater than 40 kW up to and including 2 MW). Support for medium-sized solar energy installations and medium-sized wind turbines is now organized through a competitive tendering system (calls) instead of a feed-in premium system.

Via a decision of the Flemish Government of 10 December 2021, the thresholds for installations based on solar energy were adjusted to greater than 25 kW to 5 MW, so that more installations fall under this scope.

On the 25th of February 2022, the Flemish Council of Ministers decided to adjust the conditions for the solar and wind call, specifically articles 17 and 18.

PV installations in apartment buildings and PV installations installed by citizen energy communities and renewable energy communities will be added as separate installation type. These installations will be

49 For more information on the transposition process in Belgium and in Flanders, you can check the REScoop.eu transposition tracker: <https://www.rescoop.eu/policy#transposition-tracker>. Accessed on 30.05.2022.

part of sub call 1 of the tender system, together with the already existing categories for floating PV installations, PV installations on marginal lands and small and medium-sized wind turbines.

Energy sharing within apartment buildings and energy communities enable the involvement of more citizens in the energy transition. It gives citizens without their own well-located roof more options to keep their energy bill under control, thanks to local renewable energy. To monitor this goal, the applicants for this call should provide at least 1 residential unit or participant of the energy community for a minimum number of kWp. This intention will be added to the application via a declaration of honour and will be enforceable via the agreement applicable to the installation for which subsidies are ultimately obtained. It is proposed to apply a threshold of one participant per 5 kWp for the first call(s). After each call, that threshold, which is set by a ministerial decree, is evaluated and adjusted if desired. The sub call 1 is planned to be organized twice per year. The expected maximum support provided will be 33 EUR per MWh, but according to a competitive ranking system.

2.1.4. Use and distribution of EU resources for RECs

- **EFRE:** in the period 2014 – 2020 no community energy projects were approved within EFRE Flanders⁵⁰.
- **Just Transition Fund:** Flanders does not receive any funding in frame of the Just Transition Fund⁵¹.
- **Next Gen EU:** no funding is foreseen for community energy projects within the Flemish programme “Veerkracht Vlaanderen”⁵².
- **LEADER**⁵³: in the periode 2014 – 2022 no community energy projects were approved within LEADER.
- **INTERREG:** e.g.
 - cVVP project - Community-based Virtual Power Plant: a novel model of radical decarbonisation based on empowerment of low-carbon community driven energy initiatives. Renewable energy cooperative Energent is Flemish partner in this project.⁵⁴
 - RHEDCOOP: renewable energy cooperative Ecopower and the Flemish federation of renewable energy cooperatives (REScoop Vlaanderen) are Flemish partners in this project⁵⁵.
- **Horizon 2020:** e.g.

50 More information: <https://www.vlaio.be/nl/andere-doelgroepen/europees-fonds-voor-regionale-ontwikkeling/ontdek-efro-vlaanderen/overzicht-van> Accessed on 30.05.2022.

51 More information: <https://www.vlaamsparlament.be/nl/parlementair-werk/commissies/commissievergaderingen/1528204/verslag/1532106>. Accessed on 30.05.2022.

52 More information: <https://publicaties.vlaanderen.be/view-file/47970>. Accessed on 30.05.2022.

53 All More information: https://ruraalnetwerk.be/projecten/maatregelen-pdpo-iii?title=&shs_term_node_tid_depth=55&field_project_jaar_value%5Bvalue%5D%5Byear%5D+class%3D=&field_project_provincie_value=All&field_project_locatie_value=&field_local_group_tid=All. Accessed on 30.05.2022.

54 More information: <https://www.nweurope.eu/projects/project-search/cvpp-community-based-virtual-power-plant/> Accessed on 30.05.2022.

55 More information: <https://www.grensregio.eu/projecten/rhedcoop-renovatie-en-hernieuwbare-energie-diensten-via-co%C3%B6peraties>. Accessed on 30.05.2022.

- Joint programming initiative ERA-Net Smart Energy Systems' focus initiatives Smart Grids Plus and Integrated, Regional Energy Systems: renewable energy cooperative ZuidtrAnt is Flemish partner in the project H2 coopstorage⁵⁶.
- Renewable energy cooperative Ecopower is the Flemish partner in **REScoop Mecise**⁵⁷.
- **Urban Innovative Action**: e.g. renewable energy cooperative Ecopower is Flemish partner in the Antwerp Circular South Project. Antwerp is looking for circular solutions for its waste/materials, water and energy streams. ⁵⁸

56 More information <https://h2coopstorage.eu/about/>. Accessed on 30.05.2022.

57 More information: <https://www.rescoop-mecise.eu/> Accessed on 30.05.2022.

58 More information: <https://circulareconomy.europa.eu/platform/en/good-practices/circular-south-antwerp-community-driven-sustainable-area-help-smart-technologies>. Accessed on 30.05.2022.

2.2. Germany

German RECs are in their success and validity highly dependent on external factors, such as a favourable policy framework. Germany experienced a dynamic development of community energy initiatives including energy cooperatives, particularly between 2006 and 2013 and due to a supportive legal and policy framework (including effective feed in tariffs). However, the German Renewable Energy Act is dynamic and has been frequently amended, thus in effect having increased uncertainties about returns on investment for new REC projects⁵⁹.

2.2.1. Financial needs and barriers

- In 2016, in Germany approximately 1,700 community energy initiatives existed, with cooperatives representing slightly more than 50% ⁶⁰. The German law, still lacks a legal definition of RECs as defined in the RED II, although many community energy initiatives fulfil the criteria of a REC, particularly energy cooperatives.
- The German renewable energy market is in a mature state and is highly regulated. Because the RED II with its provisions for RECs has not been entirely transposed into national legislation yet⁶¹, some financial challenges remain. For example, for actors other than energy suppliers, i.e. energy cooperatives and other types of RECs energy sharing is not possible. This implicates that usual charges, taxes apply, such as grid fees (Netzentgelte) and increase the transaction costs ⁶². RECs necessitate a reduction of the said fees in order to be able to work financially sufficient, while generating reserves for potential repair and enhancement work. The usually small size of a REC does not allow to generate sufficient financial means to cover high organizational costs and possibility to increase reserves.
- Whereas financial benefits do not fall within the main interest of the RED II (but socio-economic and local improvements, as well as a decentralization of the energy production), financing plays a vital role in realizing decentral, renewable energy community projects in Germany. As soon as a REC becomes a supplier, next to the financial burdens, bureaucratic burdens increase. RECs have to act according to the Federal Energy Industry Act (EnWG, Energiewirtschaftsgesetz), Market Master Data Register Ordinance (MaStRV, Marktstammdatenregisterverordnung), Electricity Tax Implementation Ordinance (StromStV, Stromsteuer-Durchführungsverordnung)⁶³. The high bureaucratic burden is non-proportional to

⁵⁹ This section relies heavily on Schwarz, L., Di Nucci, M. R. and Krug, M. (2022). Finanzierung als Bürde für die Umsetzung von Erneuerbare-Energie-Gemeinschaften – Status Quo und Handlungsbedarf für die Energiepolitik. *Energiewirtschaftliche Tagesfragen*, 72 (4), 30-35.

⁶⁰ See, Kahla F, Holstenkamp L, Müller JR, et al. (2017). *Entwicklung und Stand von Bürgerenergiegesellschaften und Energiegenossenschaften in Deutschland*. https://www.buendnis-buergerenergie.de/fileadmin/user_upload/downloads/Studien/20210728_IZES_Kurzstudie_BBE_n_RED_II_final.pdf. Accessed on 01.02.2022.

⁶¹ See, Dröschel, B., Grashof, K. and Hauser, E. (2021). *Stand der Umsetzung der RED II-Richtlinie in Deutschland mit Blick auf die Bürgerenergie - Kurzstudie*. Available at https://www.buendnis-buergerenergie.de/fileadmin/user_upload/downloads/Studien/20210728_IZES_Kurzstudie_BBE_n_RED_II_final.pdf. Accessed on 02.02.2022.

Accessed on 01.02.2022.

⁶² *ibid.*

⁶³ *ibid.*

the little economic benefit⁶⁴. In the past additional regulations were present, but those have been abolished for energy cooperatives (e.g. KAGB, Kapitalanlagegesetzbuch or privileges for energy cooperatives have been installed (e.g. VermAnlG, Vermögensanlagegesetz).

- Due to the prevalently low financial revenues (mostly for PV rooftop installations and biogas plants), German RECs are highly dependent on voluntary work⁶⁵. This is directly linked to other lacking resources, such as time, funding, and expertise. Costs for external expertise or institutional costs for supervision fees can therefore present a barrier to the implementation of RECs⁶⁶. Moreover, the professionalization of voluntary work is difficult to finance by a low five-digit annual surplus.
- In the area of wind energy, citizen energy companies enjoy certain privileges under the auction system (uniform pricing, lower security deposits). However, these turned out to be insufficient to compensate for the structural disadvantages (such as legal prerequisites) that energy communities are facing compared to professional developers, energy utilities and institutional investors.
- The phase-out of feed-in tariffs/premiums and the transition to auctions for large PV, wind and biogas plants in 2017 favoured larger actors. The share of successful bids from citizen energy companies in the frame of the wind energy auctions decreased from 13.9% in 2018 to 4.3% in 2020⁶⁷. Moreover, the number of newly established energy cooperatives has significantly decreased⁶⁸.
- Several federal states developed or are developing complementary support schemes targeting RECs and providing risk capital for the start-up phase (e.g. community energy fund in Schleswig-Holstein, see below). The new Federal government plans to examine the possibilities of establishing a similar fund at national level hedging the risks for community energy initiatives.).
- RECs need lower grid fees and concession fees, as well as lower bureaucratic burdens in order to have the potential to generate reserves for reinvesting into the REC. Existing RECs argue in favour of guaranteed feed-in remunerations to be able to proactively calculate and develop the REC accordingly.

⁶⁴ See, WECF e.V. (2020). Energiegemeinschaften: Ein Blick auf die aktuelle Rechtslage in Europa. Available at: <https://www.wecf.org/de/energiegemeinschaften-ein-blick-auf-die-aktuelle-rechtslage-in-europa/>. Accessed on 01.02.2022.

⁶⁵ See, Brummer, V. (2018). Community energy – benefits and barriers: A comparative literature review of Community Energy in the UK, Germany and the USA, the benefits it provides for society and the barriers it faces. *Renewable and Sustainable Energy Reviews* 94: 187–196.

⁶⁶ *ibid.*

⁶⁷ See, FA Wind (2021). EEG 2021: Ausschreibungsspezifische Regelungen für Windenergieanlagen an Land. https://www.fachagentur-windenergie.de/fileadmin/files/Veroeffentlichungen/EEG/FA_Wind_EEG-2021_Ausschreibungen_6Auf1_2021.pdf. Accessed on 02.02.2022.

⁶⁸ See, DGRV (2021). Energy Cooperatives in Germany. State of the Sector 2021 Report. Available at: <https://www.dgrv.de/news/dgrv-jahresumfrage-energiegenossenschaften/> Accessed on 02.02.2022.

- Cooperatives usually do not emphasize profit as a primary motive, nonetheless it plays an essential role in realizing new RECs (Holstenkamp and Kahla, 2016). This is important, as the main motives for renewable energy cooperatives, to meaningfully involve the local or regional population and advance the expansion of the energy transition, should not be hindered by financial matters, thus posing a threat to future REC developments.

2.2.2. Financing of existing community energy initiatives

As the legal forms for RECs are manifold, there are various possibilities to finance RECs. For renewable energy cooperatives private sources are especially important for initial financing. In Germany the state can be regarded as the regulator, whereas investments and financing are carried out by the public⁶⁹.

The following legal forms are often chosen to realize REC projects in Germany: GmbH & Co. KG, civil law partnerships (GbR, Gesellschaft bürgerlichen Rechts), debt-capital-based schemes, mezzanine-capital-based schemes, as well as renewable energy cooperatives. The choice depends on the legal form, motivation and interest in the amount of returns envisaged.

Cooperatives are the most common legal form of community energy initiatives investing in rooftop PV facilities, whereas community energy wind makes use mostly of the legal form of GmbH & Co. KG, a specific hybrid construction of limited liability company and a limited partnership.

Initial financing of RECs is usually carried out via public or private sources, such as local or regional individuals, municipalities or local companies. Membership fees and contributions play an important role, as well as incentives, compensations, grants, subsidies, and loans (e.g., KfW-loans, federal). While the specific amount and composition of financing depends on the legal form, the revenues are usually generated via market premiums determined by an auction system (for open space photovoltaics and wind power plants >750kW, and biogas plants >150kW (BMJV, 2021)). Rooftop photovoltaics are exempt from this system⁷⁰.

While crowdfunding can be regarded as a rather novel mean of financing RECs, there are some notable projects already successfully implemented in Germany. Whereas crowdfunding focused on financing only, the special form of crowd investing focusses on returns as well⁷¹. There are several platforms that enable crowd investing in Germany, such as 'LeihDeinerUmweltGeld' (lend money to your environment) or 'GreenVesting'. Brem et al. (2014) conclude that there is a growing potential for RECs and crowdfunding in Germany.

⁶⁹ See, Elie, L, Granier, C. and Rigot, S. (2021). The different types of renewable energy finance: A Bibliometric analysis. *Energy Economics* 93: 104997.

⁷⁰ See Spasova, D. and Braungardt, S. (2021). Building a Common Support Framework in Differing Realities— Conditions for Renewable Energy Communities in Germany and Bulgaria. *Energies* 14(15): 4693.

⁷¹ See Bundesverband Crowdfunding e.V. (2022). Crowdfunding und Erneuerbare Energien. Available at: <https://www.bundesverband-crowdfunding.de/crowdfunding-und-erneuerbare-energien/>. Accessed on 01.02.2022.

Examples for financing of existing RECs

Where	Sprakebüll (Schleswig-Holstein, model region)
RE	Wind power
Project data	Initial operation in 1998 (five wind power plants, each 1,65 MW); extension in 2011 (three wind power plants, each 2,5 MW); repowering in 2014 (original five wind power plants were replaced, each 3,6 MW)
Legal form	GmbH & Co. KG
Financing	300 local citizens financed the plants with a closed-fund solution
Link	https://sprakebuell.de/ueber-uns/energie/ (co2mmunity.eu, 2019; Reis et al., 2021) ⁷²

Where	Helmetal (Thuringia, target region)
RE	Various (Wind power, rooftop PV, open-space PV)
Project data	One citizen wind park (two wind power plants, each 3MW); multiple PV-rooftop plant (ranging from 10,29 kWp to 239,85 kWp)
Legal form	Energy cooperative
Financing	Citizens can join with shares (each 500€) → not limited to local citizen
Link	https://eg-helmetal.de/start.html

Where	Schlöben (Thuringia, target region)
RE	Bio energy
Project data	Three combined heat and power plants, each 265 kW; additionally, one satellite power plant that is supplied with biogas from the original biogas plant in Mennewitz
Legal form	Energy cooperative
Financing	By local agricultural business, municipality and other local participants
Link	https://bioenergiedorf.schloeben.de/die-vision/genossenschaft/

⁷² See, co2mmunity.eu (2019). Sprakebüll - A Pioneering Energy Community in North Frisia, Germany. <http://co2mmunity.eu/wp-content/uploads/2019/02/Factsheet-Sprakeb%C3%BCll.pdf>. Accessed on 2 February 2022. See also: Reis, IF, Goncalves, I., Lopes, MA., et al. (2021). Business models for energy communities: A review of key issues and trends. *Renewable and Sustainable Energy Reviews* 144: 111013.

Where	Berka/Werra (Thuringia, target region)
RE	Multiple open-space and rooftop PV plants
Project data	Three rooftop PV plants were installed in 2013 (13,5 kWp/ 46,5kWp/ 29,58 kWp); one rooftop PV plant in 2015 (23,14 kWp); one rooftop PV plant in 2016 (59,85 kWp); in 2018 the first open space PV plant was installed (272,6 kWp)
Legal form	Energy cooperative
Financing	Regional actors from Berka/Werra contributed for financing plants
Link	http://www.eg-berka.de/index.php/aboutus

Where	Trennewurth (Schleswig-Holstein, model region)
RE	Wind power
Project data	Installed in 2014; one wind power plant
Legal form	GmbH & Co. KG
Financing	Crowdfunding; not limited to locals
Link	https://www.leihdeinerumweltgeld.de/trennewurth

Overview of existing, public loans or funding opportunities

1. KfW – Kreditanstalt für Wiederaufbau

- E.g. Erneuerbare Energien – Standard:
- Applicable to any kind of RE technology, for private and public actors
- Funding of the installation, connection to the grid, commissioning
- Also funding of storage technologies
- Applicable for renewable energy cooperatives (among other legal entities)
- [https://www.kfw.de/inlandsfoerderung/Unternehmen/Energie-Umwelt/F%C3%B6rderprodukte/Erneuerbare-Energien-Standard-\(270\)/](https://www.kfw.de/inlandsfoerderung/Unternehmen/Energie-Umwelt/F%C3%B6rderprodukte/Erneuerbare-Energien-Standard-(270)/)

2. Landwirtschaftliche Rentenbank (Development Agency for Agribusiness and Rural Areas)

- Low interest loans under the Programme ‘Energie vom Land’ for bioenergy projects and other RES projects including community energy
- <https://www.rentenbank.de/export/sites/rentenbank/dokumente/Energie-vom-Land-Nr.-255-und-256.pdf>

3. Loans/grants provided by Federal state governments or financing institutions of federal states (only COME RES model and target region)

- Loans for projects within the jurisdiction of a federal state of Germany, usually located at the federal banking institution, e.g.
- Thuringia: Thüringer Aufbaubank (Solar Invest, GREEN invest, etc.)
<https://www.aufbaubank.de/Foerderprogramme/Solar-Invest>
- Schleswig-Holstein: community energy fund (*Bürgerenergiefonds*), a revolving fund established in 2018, providing risk capital for citizen/community energy projects to pre-finance their upfront costs in the start-up phase (see <https://www.ib-sh.de/produkt/buergerenergiefonds>)
- Thuringia: the state government of Thuringia is planning to set up a community energy fund following the example of SH).

4. National funds

- Market Incentive Programme (MAP, *Marktanreizprogramm*) → mostly for renewable heating solutions
- National Climate Protection Initiative (NKI, *Nationale Klimaschutz Initiative*) → Funding small installations, not applicable for REC. .

2.2.3. Transposition of RED II

Art. 22 (4) RED II containing the specific conditions for renewable energy communities has not been specifically transposed into Germany's national legislation (Dröschel et al., 2021). It should be noted, that there are already legal entities to which the definition of a renewable energy community as provided in Art. 22 RED II (European Parliament and European Council, 2018), somewhat fits, namely renewable energy cooperatives (Energiegenossenschaften) and in some cases limited liability companies & limited partnerships (GmbH & Co. KG). Transposition is regarded as necessary (cf. Dröschel et al., 2021), especially to facilitate the implementation of Energy Sharing for RECs, thus effectively reducing financial barriers, such as grid or concession fees

- Renewable energy cooperatives <-> REC: Whereas energy cooperatives are usually open to all who want to financially participate, there is a gap detectable to RED II, regarding the spatial proximity principle. The Alliance for Citizens Energy (Bündnis Bürgerenergie, BBEn) proposes a proximity of 25km as well as that all REC that fulfil this criterion shall be exempt from electricity taxes and other charges (e.g. KWK-Umlage, Abschaltbare-Lasten-Umlage)⁷³. The new German government endorses the increasing importance of citizen energy, in form of REC and energy sharing . Although pursuant to RED II, RECs are not supposed to be driven by investment motives, but socio-ecological motives, it is still necessary to provide for a solid financial basis before

⁷³ See, BBEn (2021). Konzeptpapier Energy Sharing: Partizipation vor Ort stärken & Flexibilität aktivieren. https://www.buendnis-buergerenergie.de/fileadmin/user_upload/BBEn_Konzeptpapier_Energy_Sharing_Stand_vom_07.10.21.pdf . Accessed on 01.02.2022.

engaging in a specific project on a local level for a long-term duration. This backs the findings of Fischer et al. (2021) that in Germany the problem is not the willingness to participate, but rather the capability to invest⁷⁴. Especially, the regional disparities are a factor for unequal expansion of REC, which needs to be addressed accordingly⁷⁵.

- The spatial proximity principle laid down in RED II is a problem for German energy cooperatives, if they want to act as REC, as most cooperatives rely on capital from other regions or regions that are further away than 25km. Although most projects usually prioritize regional investors, in the end they turn towards supra-regional or even national investors⁷⁶.

Art. 22(7) RED II: Small RE projects are already exempted from the German auction model. The following limits are defined within the national Renewable Energy Act (BMJV, 2021): de minimis limit of 750kW for open-space PV and wind power plants, and 150kW for biogas plants

According to the draft of the Renewable Energy Law Amendment (EEG 2023), wind and solar projects of citizen energy companies will be exempted from the tenders and can thus be realized with less administrative efforts. This strengthens the diversity of players and local acceptance; cost efficiency is maintained.

2.2.4. Use and distribution of EU resources for RECs

- **EFRE:** A share of a bioenergy project has been funded by the EFRE fund. The aim of the funding is to enable the energy cooperative to install a district heating network. The energy cooperative operates a biogas plant so far in Ebenweiler (Baden-Württemberg) and is organised as a renewable energy cooperative.
- The '**Just Transition Fund**' is used in Germany for the transition of the phase-out of coal production, e.g. in Brandenburg and North-Rhine Westphalia.
- For the '**Next Gen EU**' no specific information on REC projects in Germany were found. Also for **LEADER** and **EFRE** no REC projects were found.
- The '**Cohesion Fund**' does not mention any specific REC support in Germany, just RE technologies in general.
- **INTERREG** does not support any RECs or investments in RE infrastructure in Germany.

⁷⁴ See, Fischer, B., Gutsche, G. and Wetzel, H. (2021) Who wants to get involved? Determining citizen willingness to participate in German renewable energy cooperatives. *Energy Research & Social Science* 76: 102013.

⁷⁵ See Spasova and Braungardt. op. cit.

⁷⁶ See, Schwarz, L. (2020). Empowered but powerless? Reassessing the citizens' power dynamics of the German energy transition. *Energy Research & Social Science* 63: 101405.

2.3. Italy

2.3.1. Financial needs and barriers

Financial Needs

- There is a need of supporting business plans for small municipalities with particular focus on resources collection.
- To overcome energy poverty and to support small local economies it is necessary to support the development and implementation of RECs in marginal areas and urban suburban areas,
- In order to facilitate the development of RECs at a local scale, there must be a focus on the active community's participation and is necessary to set up a collection of clear and effective rules that govern relations between different parties.
- It is important to clarify how RECs can integrate various financial instruments into their development. Also, it must be straightened out, how they can use national, regional and local supporting instruments.

Financial barriers

- The authorization processes and related timelines are protracted and complex, so they need to be simplified and reduced
- REC members must be connected to the same MV/LV substation
- One of the critical issues noted is related to configurations that start with small plants, which often are proven to be sustainable only due to the presence of tax deductions and superbonus 110% incentives⁷⁷.
- There are no sufficient strategies to support local communities. It is essential to support the establishment of RECs all over the whole process, by promotional and information initiatives, training activities and dissemination of technical support tools

2.3.2. Financing of existing community energy initiatives

The National Recovery Plan in support of energy communities provide funding of € 2.2 billion euros for municipalities with less than 5,000 inhabitants

Additionally, also some Regions are taking action to favour the promotion of RECs.

- The Piedmont Region, a COME RES model region, has provided a financial contribution since 2019 to support municipalities in the establishment of local RECs.
- The Apulia region, the COME RES target region, followed Piedmont's example in 2020 and also provided a financial contribution in order to facilitate the implementation of RECs for municipalities.

⁷⁷ Thousands of Italian and foreign homeowners have flocked to access Italy's generous superbonus 110 % scheme, which has so far cost the government about € 21bn (£ 17.5bn) since launching in July 2020 as part of the country's post-pandemic recovery strategy.

Recently, the Lombardy region will allocate € 22 million to support energy communities until the end of 2024.

Furthermore, due to fiscal incentives, private consumers save 50 % of the costs if they put a PV on their roof because.

The incentive is regulated by the Gestore dei Servizi Energetici (GSE). The incentive is recognized for a period of 20 years. The energy tariff amounts to: 110 €/MWh for renewable energy communities to which are added the reimbursement of charges and revenues from the sale of energy produced and not self-consumed to the grid. There are **three different Energy Community Archetypes** in Italy:

Promoter	Financing mechanisms	Description
Model 1 Public or non-profit entity	Non-refundable public financing	Use of municipal, regional, national and/or community funds to finance initiatives without the obligation to repay the capital provided
	Funding from a third sector entity	A non-profit cooperative takes on (typically in part) the investment required to install the enabling technologies.
Model 2 Energy Player	Equity capital (+ possible third-party capital)	The energy player is responsible for supporting all or part of the investment required for the installation of the enabling technologies (the remaining part being born by the members). The energy player's share can be covered by a bank loan
Model 3 Aggregate members	Equity capital (+ possible third-party capital)	The members of the initiative (e.g., private citizens, SMEs) are responsible for bearing all or part of the investment required for the installation enabling technologies (the remaining part is covered by the energy player). The members' share can be covered by bank loans.
	Transfer of credit/discount on invoice associated with tax deductions	Super bonus (110%) or other tax deductions (50%) can be used if particular conditions are met to mitigate the initial investment through credit assignment or invoice discounting.

- Model 1 “PA-driven”: Municipality or other public or non-profit entities promote energy initiatives to generate value in the locality and reduce energy expenditure to fight energy poverty.
- Model 2 “Service provider driven”: Energy players promote energy initiatives for business opportunities and energy efficiency
- Model 3: “Users driven”: Citizens and SMEs promote energy initiatives to reduce energy expenditure and to contribute to environmental sustainability

2.3.3. Transposition of Red II

On 30 November 2021, the Legislative Decree No. 199 of 8 November 2021 implementing Directive (EU) 2018/2001 on the promotion of the use of energy from renewable sources (so-called Red II Decree) was published in the OJ No. 285. The RED II Decree came into force on 15 December 2021.

The enforcement of RED II allowed the completion of the legislation and enabled the development of large-scale energy communities in the country. Two main elements came up with the transposition of the Directive:

1. It increased the power limit of plants eligible for incentive mechanisms. More specifically the power limit goes from 200kW to 1MW.
2. It removed the secondary substation limit, which allows the establishment of RECs with members connected to the primary substation.

Additionally, the conditions of cumulation with tax benefits provided for the construction of plants and storage systems as well as with other support schemes, including those of PNRR (National Recovery Plan), are established considering the different subjective characteristics and of the plants. The cumulation must take place without prejudice the Article 9 of EU Regulation No. 241/2021 - Additionality and Complementary Financing, which outlines, that support under the Facility is in addition to support provided under other Union programs and instruments. Reform and investment projects may be supported by other Union programs and instruments, provided that such support does not cover the same cost.

2.3.4. Use and distribution of EU resources for RECs

- **The National Recovery and Resilience Plan (Piano Nazionale di Ripresa e resilienza, NRPR)**

This Plan is part of the next Generation EU (NGEU) program and provides a sum of € 2.2 billion for the establishment in RECs in municipalities with a population below 5.000 inhabitants. There is an estimated money flow worth up to € 1 million for each city.

The call for proposals for the implementation of the Energy Communities it's currently being prepared by the Ministry of Ecological Transition. Grants of up to 100 percent are provided for the development and use of renewable electrical and thermal sources. Eligible expenses range from technical and technical-scientific assistance to the purchase of all components essential to the realization of the energy production, distribution and sharing facilities; included in the list are the purchase costs of any thermal/electric storage systems and that for technical-legal-administrative assistance for the definition of agreements. Evaluation criteria will reward installations above 1,000 kW, self-consumption, advanced design, involvement of private companies and other municipalities. To apply for aid, applicants will have 60 days from the release of the notice.

- **Partnership agreement for Italy**

Starting from 2019, under the strategic direction and management of the Department for Cohesion Policies of the Presidency of the Council of Ministers, in Italy has begun the planning of cohesion policy for the period 2021-2027. The version of 17 January 2022, at the strategic Objective of Policy 2- A Greener Europe- Energy (Specific Objectives 2.1, 2.2, 2.3) provides support for renewable energy. It focuses primarily on interventions for self-consumption of heat and electricity in public buildings, with integrated energy efficiency, and innovative and experimental interventions, for example green hydrogen. It is also necessary to encourage the spread of district heating and the creation of energy communities, for the environmental, economic, and social benefits expected at the local level. For energy efficiency and the development of renewable energy sources priority is given to interventions carried out through public-private partnerships, energy performance contracts involving ESCOs and/or using financial instruments.

2.4. Latvia

2.4.1. Financial needs and barriers

Because there is a concerning absence of legal definition and a legal framework for RECs adopted in Latvia, there are also no elaborated financial support programs at the moment. It is highly necessary to continue the implementation of pilot projects of energy communities although the RED II has not been transposed and implemented in Latvia yet.

2.4.2. Financing of existing community energy initiatives

There have been two pilot programmes of community energy initiatives in Latvia, which had been financed by EU-funds. More specifically these programmes are named: “Co2mmunity” and its follow-up extension “Energize Co2mmunity”. They were organized in Mārupe, the COME RES model region in Latvia. These projects aimed to co-produce and co-finance RECs energy projects and subsequent implement them in real life. Both pilot programs had been financed by the EU Interreg Baltic Sea Region programme for 2014 to 2020. Thanks to these projects there has been a real installation of roof-top solar technologies in two apartment buildings.

Also, in the future RECs-focused projects could be designed for submission for financing in the EU horizontal programmes, for instance under the LIFE programme's Clean Energy Transition sub-programme. It is essential that in a such way the innovative concepts, solutions and elements for RECs might be tested in practice. At the same time, the EU horizontal programmes may promote some factors of RECs development, however they cannot replace the national programmes which should be particularly focused to RECs support.

Unfortunately, there are no particular investment support programs because Latvia still has not adopted any legal framework for RECs yet. In the following, we will provide an overview on some potential instruments for planned investments in energy communities.

The **EU Cohesion Policy Program for 2021-2027**⁷⁸ had been approved by Latvia's policy authorities on 12 November 2021. One measure of this program is to promote solar PV technologies and storage equipment (measure no. 2.1.4). Beneficiaries of this program are the commercial sector, municipal companies and energy communities. It is planned to establish a financial instrument, which will be administered by the state-owned development finance institution “ALTUM”. The financial instrument will contain grants as well as loans provided by ALTUM and guarantee for loan issued by commercial institutions. The ERDF co-financing is planned around 20 million € in total for all three groups of beneficiaries. Planned announcement of the first open tender is 4th quarter of 2022.

There is the plan to support RECs which cover multi-apartment buildings only. Firstly, by Latvia's EU Cohesion Policy Programme for 2021-2027⁷⁹ planning period, which was already mentioned in the paragraph above. It provides around €148 million for all types of residential building (namely, the

78 Eiropas Savienības kohēzijas politikas programma 2021-2027.gadam . Programmas papildinājums (informatīvs materiāls), <https://esfondi.lv/planosana-1>. Accessed on 30.05.2022.

79 Eiropas Savienības kohēzijas politikas programma 2021-2027.gadam. Programmas papildinājums (informatīvs materiāls), <https://esfondi.lv/planosana-1>. Accessed on 30.05.2022, the measure 2.1.1.

particular sum earmarked for multi-apartment buildings is not published yet). Secondly **Latvia's Plan of EU Resilience and Recovery Facility (RRF)**⁸⁰ provides €57.282 million in total for the period 2022-2026.

The ERDF grant intensity is not less than 49%, so the total investments double. Important is, that the installation of electricity microgeneration technologies could be implemented complementary to the energy efficiency improvement of the building. The condition is, that self-consumption of produced energy should be at least 80% in annual term. The programme will also provide assistance for elaboration of technical documentation (up to 49% of the total costs of technical documentation, but not more than 10 thousand EUR)⁸¹

The programme **“Loans to improve energy efficiency in companies”** is provided by the state-owned development finance institution ALTUM and public and private owned companies can apply. There is a sub-programme related to renewable energy. Currently the general conditions are as follows: loan up to €2.85 million, own participation – at least 10%, pay-back time 15 years, credit holidays – up to 12 months, fixed annual interest rate applied (4.3%-6.5%), reduced collateral requirements (e.g., repayment of the loan from the cost of savings, thus there is no additional burden created on the cash flow)⁸²

All in all, ALTUM has the experience on issuing loans for companies. The amount of the loans coincides well with the financial sources which would be needed for RECs in Latvia for implementing solar PV technologies. This option for the loan could be used by the REC which have the legal form of a company (e.g., non-profit company). However, there is no stated loan, that could be issued for energy communities at the moment. It could be the option for the future to consider the inclusion of energy communities and what loan's collateral energy community should provide. The change in the legal framework for the loan is necessary to provide the extension of this loan programme to the legal forms of RECs such as associations, energy cooperatives.⁸³

80 Latvia's Plan of EU Resilience and Recovery Facility (in Latvian), section 286 in page 75, https://www.esfondi.lv/upload/anm/01_anm_plans_04062021.pdf. Accessed on 30.05.2022.

81 Draft of Cabinet of Ministers Regulation on Energy efficiency Improvement and transition to RES in multi-apartment buildings (Eiropas Savienības Atveseļošanas un noturības mehānisma plāna 1.2. reformu un investīciju virziena “Energoefektivitātes uzlabošana” 1.2.1.1.i. investīcijas “Daudzdzīvokļu māju energoefektivitātes uzlabošana un pāreja uz atjaunojamo energoresursu tehnoloģiju izmantošanu” īstenošanas noteikumi),).

82 <https://www.altum.lv/lv/pakalpojumi/uznemumiem/aizdevumi-uznemumu-energoefektivitatei/aizdevumi-uznemumu-energoefektivitate/> <https://www.altum.lv/lv/pakalpojumi/uznemumiem/aizdevumi-uznemumu-energoefektivitatei/aizdevumi-uznemumu-energoefektivitate/> Accessed on 30.05.2022.

83 Within the another loan programme, the ALTUM has the relevant experience regarding issuing loans for agriculture cooperatives, <https://www.altum.lv/lv/pakalpojumi/lauksaimniekiem/izaugsmes-aizdevumi/par-programmu/>. Accessed on 30.05.2022.

2.5. The Netherlands

2.5.1. Financial needs and barriers

The Dutch Climate Agreement sets out the goal of 50% local ownership in renewable energy projects by 2030. This is to ensure that the burdens and benefits of these projects are distributed. However, there are several issues for energy cooperatives regarding financial participation in especially larger-scale renewable energy projects. Some cooperatives (e.g., Deltawind and Zeeuwind) are now large and have become highly professionalised. Many cooperatives are limited in size and experience. For these cooperatives, the obstacles to invest are often significant, both in terms of organisation and the necessary knowledge:

- An equal partnership with professional developers is often impossible.
- Large renewable energy projects usually require a great deal of upfront investment and involve considerable risks. 10 to 20% of investment usually must come from own funds. That money must be collected from the members of the cooperative, who have to be convinced on an individual basis.
- In addition, for bank loans the bank will look at the energy cooperative's track record when providing the remaining amount in the form of a loan. So, it takes more than a good business case to provide a loan.
- Large solar or wind parks are usually realised in sparsely populated areas. There is less money to be raised among people there.

However, in some regions energy cooperatives are now joining forces at a regional level, for example through a joint project office, and thus raising funds for local financial participation. The Energy Cooperative Development Fund, which facilitates a risk-free loan to energy cooperatives to finance the development costs of wind and solar energy projects, is also an important development in this respect. It helps them to professionalise and thus become mature counterparts for developers.

2.5.2. Financing of existing community energy initiatives

Renewable energy communities are predominantly financed by cooperatives through their members, often in association with a private developer.

There is a specific operational subsidy for renewable energy communities named the **Cooperative Energy Generation (SCE)** subsidy. Its paid out in form of an amount of money per kWh produced. Each year a basic amount is set for each type of installation. (The basic amount is the amount per kWh produced, which is necessary to make the installation profitable. The basic amount for the year in which a cooperative applies for the subsidy is valid for the entire subsidy period of 15 years. Thus there is long-term certainty about the return on investment.

The subsidy per kWh received is the difference between the basic amount and the correction amount. The correction amount is the market price for energy. If the energy price rises, the cooperative will receive less subsidy and if the energy price falls, the cooperative will receive more subsidy. The basic

energy price is the lower limit of the corrective amount. The energy produced must have been certified by CertiQ (Guarantees of Origin) in order to be eligible for subsidy.

Some RECs in the Netherlands also have been supported by European funding from sources such as INTERREG in order to get underway. There are also Dutch municipalities, that provide support schemes including both grants and loans to help RECs get started.

2.5.3. Transposition of RED II

In the Netherlands a subsidy scheme was launched in 2021, that implements the requirements of RED II. It's called the 'Cooperative Energy Generation' subsidy scheme and it makes it possible to provide subsidies to energy cooperatives and House Owner Associations (VvEs) for the local and collective generation of renewable electricity. Therefore, a cooperative must apply the principle of open and voluntary participation as prescribed in the Electricity Directive and the Renewable Energy Directive. The subsidy scheme gives substance to the proximity principle, which applies to renewable energy communities, by using the so-called 'postal code box'. A postal code box consists of a four-digit postal code area plus the postal code areas immediately adjacent to it. According to the Dutch government, this is a workable definition and suitable geographical measure of location. The members of the relevant cooperative or VvE must be located in the postal code box; the proximity requirement is then met.

Based on the RED II Directive, regional and local authorities in the Netherlands can encourage and support energy communities and become members. Furthermore, they can set up their own subsidy scheme. In doing so, attention should be paid to the state aid rules. Support to energy communities is not automatically exempt from the state aid regime. There is an extensive list of exemption rules available.

2.5.4. Use and distribution of EU resources for RECs

- **Just Transition Fund**

In the period 2021-2027 the Netherlands can claim a total of €626 million under the Just Transition Fund.

- **Multiannual Financial Framework (MFF)**

Of this total of €626 million, €274 million comes from the Multiannual Financial Framework (MFF)

- **Next Generation EU (NGEU) Recovery Fund**

Of this total of €626 million, €352 million comes from the Next Generation EU (NGEU) Recovery Fund.

From the EC assessment of economic conditions in the Netherlands⁸⁴, we learn that the main areas of emission-intensive industries in the Netherlands are Delfzijl/Eemshaven in the province of Groningen,

⁸⁴ https://ec.europa.eu/info/sites/default/files/2020-european_semester_country-report-netherlands_en.pdf. Accessed on 03.06.2022

the North-Sea channel area (Amsterdam/IJmond), Rotterdam and West-North Brabant, Zeeuws-Vlaanderen and other zones in Zeeland, and South-Limburg. These areas face important challenges to reduce greenhouse gas emissions in view of the national 2030 and 2050 emission reduction targets, including the shift to energy from renewable sources. Synergies between sectors and companies in these clusters offer, however, good perspectives for innovation to reduce CO₂ emissions and for the development of alternative sustainable economic activities. Transition effects will affect the labour market, notably through employment shifts to upcoming sectors, inducing needs for re- and upskilling. The province of Groningen (comprising the regions East-Groningen, Delfzijl and surroundings and rest of Groningen) include a large carbon-intensive cluster and is likely to be most affected by the climate and energy transition due to the combined effects of the depletion of natural gas extraction and the emission reduction challenges in industry. The energy transition could lead to the loss of 20 000 jobs in the province. This comes on top of the overall social and economic transition challenges that already affect Groningen. For these reasons, the EC advises that Groningen could be considered as the main target area for investments from the Just Transition Fund in the Netherlands.

2.6. Norway

2.6.1. Introductory remark

Norway is unique compared to other countries in Europe because of its high level of RE (about 98% hydro) electricity production. The energy regulator, (a member of COME RES Consortium) identified 30 local energy community projects, of which the majority are only in the concept phase (NVE 2019). Property developers and real estate companies are the driving force behind more than 70% of those projects. Most projects focus on local power production and self-consumption of locally produced energy. Despite limited RECs, ownership of small-scale energy infrastructure, production of electricity and local and regional distribution is often in the hands of farmers, landowners, and municipalities. Up to now the idea of energy communities has not been part of the Norwegian discourse on energy transition or policies. Norway has been a laggard in enabling citizen's and active role in RES energy production. There are only regulations allowing citizens to become prosumers and there are only subsidies to refund up-front costs. Present regulations allow prosumers exemptions from the regulations on metering, calculation of power distribution and billing of grid services. However, prosumers can deliver a maximum effect of 100kW to the grid, and this cap is considered a barrier to further increase in larger installations of solar power in Norway, incl. community energy.

2.6.2. Financial needs and barriers

- Since Norway is not a member of the EU, but only the European Economic Area (EEA), directives and EU policies do not automatically apply to Norway but depend on individual procedures and negotiations between the EU and the EEA/EFTA. RED II is still under review by the EEA/EFTA.
- The Norwegian law still lacks a definition of REC as defined in RED II. RECs have not been formally introduced in Norwegian legislation, and no eligible legal forms have been defined. Examples of existing legal forms of community-initiated RES projects include housing cooperatives and stock based limited companies (see COME RES D.4.1)
- The lack of a legal and regulatory framework for RECs makes it difficult at present to describe specifically the main barriers and financial needs of RECs.
- Here, we only rely on findings from COME RES D2.1 and D2.3 regarding barriers and drivers to the development of RES community energy initiatives more broadly.

Some of the main barriers related to financial energy market aspects include:

- Access to credit and financial resources
- Identifying sound business models for exploring different RES options
- Relatively low costs of energy (historically)

- Regulatory barriers (e.g., Regarding sharing and the 100-kW threshold for electricity fed into the grid. Revised regulations are pending approval, see below)
- Decision-making barriers regarding financial investments (in housing cooperatives, investment decisions require a 2/3 majority vote in the general assembly, which comprises the housing cooperative's residents. Investments entail increases in tenant's rents. high initial investment costs, long term down payment may be a barrier.)

2.6.3. Financing of existing community energy initiatives

In advance it is important to mention that, due to the size of the country and lack of RECs, Norway as a whole is the target region.

Existing regulations for household prosumers, the "plus customer scheme", allow participants to use self-consumed electricity free of charge (exemptions from grid tariffs and taxes on the electricity produced), and to sell excess production to an electricity supplier. Prosumers are currently defined as an end user that consumes and produces energy behind the meter, from which the power put into the grid does not exceed 100kW at any time.⁸⁵ Revised regulations⁸⁶, designed to strengthen the rights of housing cooperatives and self-consumers, are pending approval. The proposal allows electricity sharing between units within the same building, and an increased limit of 500kW. This means that electricity production (e.g., rooftop PV) can be distributed to individual units without being subject to grid tariffs and electricity taxes.

On a national level, the state-owned enterprise Enova SF provides economic support for innovation and technology development for households and businesses. Individual household prosuming is guaranteed support with a refund of part of their investment costs (up to 4,750 Euro)⁸⁷. Enova does not operate with support for the category RES community energy, but private entities can apply for support alongside commercial actors. Per February 2022, Enova also provides funding to housing companies and housing cooperatives to cover expenses associated with mapping and identifying appropriate energy related measures, including local energy production (up to 15,000-52,500, depending on the number of units and the mapping expenses. Further details will be published shortly⁸⁸).

Also on a national level, the state-owned Innovation Norway provides support to farmers to facilitate RES production and consumption. Support may be provided to cover expenditures related to investments, mapping and competence measures. Support includes grants, or a combination of grants and loans. Some municipalities have their own short term support schemes, but information is not as easily accessible and standardized as Enova's.

85 In Norwegian: <https://www.nve.no/reguleringsmyndigheten/regulering/nettvirksomhet/nettleie/tariffer-for-produksjon/plusskunder/>. Accessed on 30.05.2022.

86 In Norwegian: https://www.nve.no/media/12625/forslag-til-forskriftsendring-deling-av-produksjon-3666137_1_1.pdf. Accessed on 30.05.2022.

87 In Norwegian: <https://www.enova.no/privat/alle-energitiltak/solenergi/solcelleanlegg/>. Accessed on 30.05.2022.

88 In Norwegian: <https://www.enova.no/bedrift/bygg-og-eiendom/kartleggingsstotte-til-borettslag-og-boligsameier/>. Accessed on 30.05.2022.

Another financing instrument is the green certificate/electricity certificates scheme Norway has had in cooperation with Sweden since 2012, designed to increase renewable-electricity production capacity. RES electricity producers that were approved for support were awarded certificates for their production up to 15 years. Producers have the right to sell one certificate per MWh delivered to the electricity grid. Sellers of electricity to end consumers must buy a fraction of a certificate, often referred to as a quota, for each MWh of electricity they sell. Prosumers were eligible for green certificates since 2016, but participation fees were too expensive for small-scale producers and therefore not a success (see COMERES Deliverable 2.1). Power plants had to be operational by 31.12.2021 to be eligible (Norway decided to discontinue the scheme per 31.12.2021). The high participation fees present an obstacle for smaller scale projects to take part in the green certificate scheme, as for smaller projects, with less financial resources, the risks of paying participation costs for a program which they might not even get approved for, buries a much bigger danger than for big scale projects. The green certificate scheme could therefore not provide the necessary funding security for small- and middle scale projects.

In Addition, KBN (a state-owned bank offering low-cost finance to the local government sector) offers green loans with discounted interest rates to municipalities, county authorities, municipal companies, intermunicipal companies and other types of company with a municipal guarantee, for projects that help reduce GHG emissions, improve energy efficiency or adapt to climate change. The loans are financed with green bonds. Projects which aim to produce and store RES are eligible.⁸⁹

Recapitulating Overview of existing, public loans or funding opportunities (as mentioned above):

<p>National incentive programs</p>	<ul style="list-style-type: none"> • plus customer scheme”, regulations for household prosumers to use self-consumed electricity free of charge and to sell excess production to an electricity supplier • green certificate scheme, cooperation with Sweden to increase renewable-electricity production capacity. Award system for RES electricity producers approved for support. Producers can sell certificates per MWh. Unfortunately, limited success due to high participation fees, hindering participation for small-scale producers. • municipal short-term support schemes
---	---

⁸⁹ <https://www.kbn.com/globalassets/dokumenter/gronne-lan/criteria-document.pdf>. Accessed on 30.05.2022.

Loans and funding

- fundings by state-owned enterprise Enova SF for innovation and technology development for households and businesses.
- Individual households: refund of part of their investment costs
- Housing cooperatives and companies: coverage of their expenses associated with mapping and identifying appropriate energy related measures, including local energy production

state- owned Innovation Norway, provides support for farmers to facilitate RES production (this includes grants and loans). KBN (state-owned bank) offers green loans, financed with green bonds, with discounted interest rates to municipalities, county authorities, municipal companies, intermunicipal companies, for projects that help reduce GHG emissions, climate change mitigation or energy efficiency.

2.6.4. Transposition of RED II

RED II (Directive (EU) 2018/2001) is still under review by the EEA/EFTA. The government does not take the specificities of RECs into account in support schemes to allow them to compete for support on an equal footing with other market participants. The government, through Enova, provides a very limited economic support for household or commercial prosumers. RES community energy initiatives may apply under the same support scheme as commercial actors.

2.6.5. Use and distribution of EU resources for RECs

There is no involvement from Norway in the various EU support programmes.

2.7. Poland

Introductory remark

The Polish energy communities (energy clusters) are not legal entities but civil law agreements between many partners including local governments, enterprises, municipal companies and individuals. Energy clusters serve as a tool aiding the development of the distributed energy generation concept which in turn is designed to safeguard the energy security of small areas. Hence, ultimately, they contribute to the growth of local economies. The communities started their operation in 2017.

Electricity and heat generators, also being partner of any cluster, could benefit from general RES supporting systems. The main intention that accompanies the support schemes for RES in Poland is to be technology neutral. Therefore, the Polish incentive schemes promote renewable energy generation in general, however, some technologies need dedicated support e.g., biogas, hydropower. PV, which is the technology being considered in the framework of COME RES target region (warmian-mazurian voivodship) is recently the most promising technology.

2.7.1. Financial needs and barriers

- The preparation of the Renewable Energy Sources Act has definitely represented a big facilitator for the creation and operation of energy clusters. However, this first step has unfortunately not been followed by further steps related to an adjustment of the law to the realities of cluster operations. Deficiencies and inadequacies in the law and existing regulations are - next to financial difficulties - the most problematic for operating clusters.
- The development of energy clusters is limited primarily by the lack of appropriate financial mechanisms (lack of invest funds, preferential loans and credits). In this aspect, one can even speak of bitterness among many actors - both public and private - resulting from the fact that initial incentives and promises to guarantee financial support for cluster development have not been followed by further action.
- Among the things that can particularly burden emerging clusters and constitute a major barrier there is the cost of purchasing an energy distribution license. It is therefore much easier to obtain such a concession by an entity participating in the cluster or to attract such an entity to the cluster. The lack of such an entity or its withdrawal from the activities of the cluster can be an insurmountable obstacle. Other items with high initial costs are the energy distribution network and monitoring. For this reason, starting clusters in regions with such infrastructure and a certain energy-related past is a favourable factor.
- A major constraint is the lack of adequate staff in the local government entities (municipalities, counties) with the necessary knowledge and skills related to distributed energy and RES. Local governments lack specialists and operational structures responsible for creating and coordinating local policies related to RES and energy clusters. Insufficient human capital in this field can block cluster initiatives and the development of existing ones.

- RECs need lower grid fees and concession fees, as well as lower bureaucratic burdens in order to achieve the potential to generate reserves for reinvesting into the REC. Existing RECs argue in favour of guaranteed feed-in remunerations to be able to proactively calculate and develop the REC accordingly.
- Insufficient financial resources in municipal budgets for investments in the area of energy generation and distribution is a major constraint. The current relevant Polish cooperative law does not allow cooperative members to sell their shares among themselves or to new members, and this represents a barrier. Furthermore, energy cooperatives in Poland can have a maximum of 1000 members and can only operate in rural municipalities. The lack of opportunities to develop communities in cities is a great barrier that needs to be changed.
- Among other barriers we can distinguish:
 - Lack of tariffs dedicated to clusters (tariffs that take into account the specificity of clusters).
 - Necessity to incur expenditure on cluster operations despite the lack of tangible economic benefits on this account.
 - Unclear benefits resulting from being a member of a cluster.
 - Fear of falling real estate prices after the siting of a wind farm or biogas plant in the vicinity.
 - Lack of incentives for clusters (e.g., exemptions from certain fees).

2.7.2. Financing of existing community energy initiatives

In Poland, there is no funding strictly targeting RECs. The following are financial instruments for RES that can be accessed by part of RECs.

Under the foregoing legislation, the installations generating electricity from renewable energy sources (hereinafter “RES Installations”) may benefit from one of the following incentive schemes, depending on the date of commissioning of the installation:

1) Auction System

This System is applicable to all RES Installations:

- a) Commissioned after 1 July 2016 and upon completion of the pertinent auction.
- b) Commissioned before 1 July 2016 - if the operator of the pertinent RES Installation decided to start in the auction available to such installation and give up the certificate-based incentive scheme upon winning the auction, except for the following types of RES Installations commissioned before 1 July 2016:

2) Certificate-based scheme

This System is applicable solely to the RES Installations commissioned by 1 July 2016. The total

period of support available to the RES Installation under either certificate-based or auction-based schemes cannot exceed 15 years from first electricity generation.

Auction-based support scheme

An auction-based support system was introduced in July 2016 and the tenders are available for all RES technologies. There are tenders for different technological baskets and separate tenders are carried out for installations with an installed capacity above and under 1 MW. The tender has only one stage in a sealed bid format. The winners of the tenders get a guaranteed price (pay-as-bid) for 15 years. Installations below 500 kW have a guarantee of purchase of their electricity by obliged retailers.

The winner of an auction will be the bidder offering the lowest price for electricity and will be awarded a guaranteed price per kWh for the period of 15 years but no longer than until the end of 2039 (RES-Act, Art. 40.1b).

Where	Poland
RE	All RES technologies
Project data	...
Legal form	All
Financing	There are tenders for different technological baskets and separate tenders are carried out for installations with an installed capacity above and under 1 MW. The tender has only one stage in a sealed bid format. The winners of the tenders get a guaranteed price (pay-as-bid) for 15 years. Installations below 500 kW have a guarantee of purchase of their electricity by obliged retailers. The winner of an auction will be the bidder offering the lowest price for electricity and will be awarded a guaranteed price per kWh for the period of 15 years but no longer than until the end of 2039 (RES-Act, Art. 40.1b).
Link	https://www.ure.gov.pl/pl/oze/aukcje-oze

Feed-in premium (FiP)

The feed-in premium is available for surplus unused electricity from biogas and hydropower installations above 500 kW and below 1 MW (RES-Act, Art. 70a.2)). Eligible for a guaranteed FiP are also systems utilising for electricity production biomass only of total capacity above 500 kW and not exceeding 1 MW.

Where	Poland
RE	Biogas and hydropower
Project data	...
Legal form	All
Financing	Eligible for a guaranteed FiP are also systems utilising for electricity production biomass only of total capacity above 500 kW and not exceeding 1 MW

Link

<https://www.ure.gov.pl/pl/oze/systemy-fitfip>

Feed-in tariff (FiT)

A guaranteed price of electricity in the form of feed-in tariffs (FiT) for small-scale and micro-scale biogas, hydro and biomass installations (with a capacity not exceeding 500 kW). The tariff amounts to 95% of the reference price set pursuant to RES-Act, Art. 77.3.1 for a given type of installation and is adjusted annually against the average annual price index of consumer goods and services from the previous calendar year. Eligibility period for support is 15 years, no longer than up to June 2039.

Where	Poland
RE	small-scale and micro-scale biogas, hydro and biomass installations (with a capacity not exceeding 500 kW).
Project data	...
Legal form	All
Financing	The tariff amounts to 95% of the reference price set pursuant to RES-Act, Art. 77.3.1 for a given type of installation and is adjusted annually against the average annual price index of consumer goods and services from the previous calendar year. Eligibility period for support is 15 years, no longer than up to June 2039.

Certificate-based support scheme

The certificate-based incentive scheme is based on tradable certificates of origin whereby renewable energy producers receive:

1. Price for electricity sold at competitive market (with the right of the renewable energy producer to sell the entire generation to the so-called “obligated supplier” at a price equal to the average electricity price in the preceding quarter which is equal to PLN 243,71/MWh (autumn 2021) – approx. EUR 54,16/MWh (based on EUR/PLN 4.5), such right being applicable to all RES installations with installed capacity below 0.5 MW as well as all the biogas-fuelled installations),
2. Price for tradable certificates of origin granted to the operator of the RES Installation (either as the so-called “Green Certificates” granted for RES Installations other than those fuelled by biogas or “Blue Certificates” granted to the biogas-fuelled RES Installations), such certificates of origin to be purchased in particular by suppliers selling electricity to final consumers (or major final consumers) and thus burdened with obligation to obtain and redeem certificates of origin up to the redemption quotas specified in the law.

Overview of existing, public loans or funding opportunities

Where	Poland
RE	All
Project data	...
Legal form	All
Financing	The certificate-based incentive scheme is based on tradable certificates of origin whereby renewable energy producers receive price for electricity sold at competitive market.
Link	https://www.biznes.gov.pl/pl/opisy-procedur/-/proc/207

The Green Energy Investment Loan BNP Paribas	<p>The Green Energy Investment Loan is designed to finance the construction of wind power plants, hydroelectric power plants, photovoltaic power plants and installations for the generation of electricity and/or heat from biomass or biogas.</p> <p>The loan can be used by entities operating or commencing business activity in the field of production of energy from renewable sources.</p> <p>https://www.bnpparibas.pl/przedsiębiorstwa/finansowanie/kredyt-inwestycyjny-zielona-energia</p>
EKO program - company with profit BNP Paribas	<p>EKO programme - company with profit</p> <p>As part of the programme we offer companies a service:</p> <ul style="list-style-type: none"> documentation of energy audits energy expertise additional technical documentation <p>Thanks to the programme the client may obtain financing of 90% of the net cost of the service</p> <p>https://www.bnpparibas.pl/strefa-zielonych-produktow/programy</p>
National Environmental Protection Fund and Voivodship Environmental Protection Funds	<p>Information on calls:</p> <p>https://www.gov.pl/web/nfosigw/informacja-o-naborach-wnioskow-w-roku--2021</p> <p>New Energy - Investment and Innovation Undertakings area of production, transport, storage and use of hydrogen for entrepreneurs.</p> <p>Funding in the form of a loan: up to 85% of the eligible costs with the possibility of obtaining an innovation bonus of up to 20% of the loan principal paid out, but not more than PLN 10 million, reducing the amount of the loan principal to be repaid.</p>

<https://www.gov.pl/web/nfosisgw/nowa-energia>

Agroenergia - The programme aims to increase the production of renewable energy in the agricultural sector.

Form of co-financing:

grant and loan. When applying for co-financing in the form of a grant, it is not obligatory to apply for co-financing in the form of a loan.

<https://www.gov.pl/web/nfosisgw/agroenergia-2021>

Other incentives

The operator of the electricity system is obliged to ensure that electricity generated from RES has priority of transmission.

Also, electricity generated from RES is exempted from excise duty. RES installations of less than 500kW that entered into operation before 1 July 2016 also benefit from a guaranteed off-take regime. "Obligated suppliers" (energy traders with the biggest number of customers within a given territory) are obliged to purchase electricity generated from such installations which is offered to them. These purchases are made at the average price on the competitive market for the preceding calendar quarter determined by the energy regulatory authority. The energy regulatory authority is obliged to announce the average price by the end of the following quarter. Any entity not meeting its obligation to purchase electricity from renewable energy sources is subject to a financial penalty.

2.7.3. Transposition of RED II

Overall, the transposition is regarded as necessary, especially to facilitate the implementation of Energy Sharing for RECs, thus effectively reducing financial barriers, such as grid or concession fees.

Art. 22(4) RED II: The provisions for renewable energy communities contained in RED II have not been specifically transposed into Polish's national legislation. It should be noted that there are already legal terms to which the definition of a renewable energy community as provided in Art. 22 RED II (European Parliament and European Council, 2018), could be seen as sufficient, namely the mentioning of renewable energy cooperatives (spółdzielnie energetyczne) and energy clusters.

2.7.4. Use and distribution of EU resources for RECs

There are some funding opportunities available- at least in the near future. Those include:

1) Poland National Recovery and Resilience Plan 2021-2023

Budget dedicated, among others to Renewable energy sources within energy communities – €97 million. The European Union's response to the corona crisis is the Reconstruction Fund. The largest part of the Reconstruction Fund is the Recovery and Resilience Facility (RRF). RRF is the key instrument at the heart of the Next Generation EU (NGEU) to help EU Member States become stronger in the wake of the crisis by mitigating the economic and social impact of COVID-19. In order to use these funds, each member state had to prepare its own National Recovery Plan (NRP). In Poland, this process is managed by the Ministry of Funds and Regional Policy (MFiPR). The NRP consist of 5 components. component B, on the green transformation of cities to provide them with

growth incentives, improve environmental security, strengthen the resilience of rural areas to crises, including retention and water and wastewater management. Component B applies to improvement of energy efficiency and increasing utilisation of renewable energy sources, and part of this which is B2.2.2 concerns RES installations implemented by energy communities. Possibilities of RES energy communities support from this Fund will be fixed in the near future.

<https://www.gov.pl/web/planodbudowy/czym-jest-kpo2>

2) Special Recovery Programme

The Ministry of Economy Development and Technology prepared a special programme to support the establishment and functioning of energy communities. Stakeholders can count on the support planned as part of the **National Recovery Plan** for the establishment of energy clusters, energy cooperatives and other energy communities.

Support will be provided in three categories: (i) pre-investment support, (ii) investment support, (iii) and horizontal support. For each type of support, the available budget, beneficiaries, procedures for accepting and evaluating applications have been defined. In framework of pre-investment support e.g., the cluster Strategy and Feasibility studies could be financed

- The budget of the program is €97 million.
- The assumed number of supported energy entities/communities is:
 - in the pre-investment part: 139
 - in terms of the investment part: 10.
- The expected level of co-financing is ~50%~85%.
- The last payments under the program must take place by 31.08.2026.
- The first calls for proposals for the program are expected in the first half of 2022.

3) Scope

The scope of support depends on beneficiary category, which are: energy clusters, energy cooperatives, local government units, and is as follows

- clusters: support for statutory tasks, including the development of own competences; operational analyses and documentation; investment documentation.
- energy cooperatives: analyses and operational documentation; investment documentation;
- local government units: development of a concept for the development of civic energy based on RES; support for organizational activities related to the creation of an energy community.

In the case of energy clusters, the scope covers demonstration investment projects carried out by those, including e.g.:

- RES production.
- Energy storage.

- Local energy network.
- Energy planning/management and optimisation systems.
- Additional analyses.
- Information and communication.

The support coordinated by the Ministry of Agriculture and Rural Development will cover e.g.:

- Organization of regular study visits for representatives of energy clusters and energy cooperatives.
- Information meetings and thematic workshops.
- Exchange of information on identified problems and methods of solving them.
- Development of model documents.

4) FEnIKS 2021-2027 (Structural Funds)

This is the successor of National Operational Programme Infrastructure and Environment (POIiŚ).

FEnIKS has a budget dedicated to:

- Promotion of energy efficiency and reduction of GHG emissions – 1326 mln EUR,
- Promotion of renewable energy sources – 599 million EUR.
- <https://www.pois.gov.pl/strony/o-programie/fundusze-europejskie-na-infrastrukture-klimat-srodowisko/zalozenia-programu>

5) Energy Transformation Fund

This is planned to be based on the funds from EU ETS system (estimated for 63 billion PLN) the details are not yet specified as the legislation for its creation is under development.

2.8. Portugal

Introductory remark

In Portugal, local renewable generation, and energy communities, are seen as part of the solution to achieve its national climate and energy targets, incl. a 47% share of RES in the energy mix by 2030 (30,6% in 2019). While currently there are no operational RECs in Portugal, there are several ongoing initiatives which aim at the implementation of RECs – by September 2021, DGEG (entity responsible for the licensing process) has approved 10 RECs. In parallel, there are several projects of collective self-consumption being implemented over the last two years. RECs are mostly considered to facilitate higher PV penetration, due to the cost-efficient potential of small-scale generation in the Portuguese context, in comparison to the other RES technologies.

2.8.1. Financial needs and barriers

Financial needs:

- To support the initial investment in RES generation units, including the technical support and the purchase of the infrastructure, land (when applicable), etc. This is valid for both private and public entities that are not able to cover the initial investment by themselves.
- To finance legal support for the establishment of RECs. which is necessary to define the legal form of the REC, as well as the internal regulation.
- To support the most vulnerable citizens in the establishment of RECs, including investment in the RES facilities and the management and operational structure of the community initiative. Citizens in energy poverty would benefit from the participation in RECs but do not have the financial capacity to invest and implement this type of initiatives.

Financial barriers:

- Difficult access to financing and inability to assume the risk associated with the investment in RES technologies.
- Lack of financing mechanisms dedicated to community energy initiatives and prosumership, and inability of RECs to compete with larger market actors in access to broader financing mechanisms.
- Participation in the different energy markets (including the possibility to provide system services) requires the payment of a large fee, limiting the participation of smaller actors (including community initiatives).

2.8.2. Financing of existing community energy initiatives

A number of RECs are being established under the context of R&I projects, funded at European and national level. Financial support is provided by the EU and national funding, for example EEA grants and projects under the 2020 horizon program.

Some municipalities have applied to the European city facility (EUCF) to finance the development of the investment concept for the implementation of REC initiatives. Under the first and second calls for applications, 9 Portuguese municipalities have been selected for financing.

Another type of financial support are investments by energy service companies. There are already some companies, that support communities in their implementation, also being responsible for the initial investment. These companies may use their own or third-party's capital (through bank loans) and there are some cases where they implement a process of crowdfunding. There are already some example companies⁹⁰.

The largest Renewable Energy Cooperative Coopérnico⁹¹ also provides technical and financial support to entities that intend to establish a REC. Go parity⁹² a financing company, is dedicated to investments in sustainable energy and acts as an intermediary between the investors and the promoters of sustainable energy projects.

In addition, financial support is also provided by large energy suppliers like "bairro solar"⁹³ or "gap solar"⁹⁴. They have been creating services associated with the implementation of RECs and/or collective prosumer ship where they have also financed the upfront investment.

2.8.3. Transposition of RED II

There are some regulations that meant to make available tools that facilitate access to finance and take specificities of RECs when designing support schemes into account. They are applicable to RECs but they are partly implemented and planned as recasts to current regulations.

These regulations intend to provide incentives that foster the implantation of community initiatives, as e.g., Partial tax exemption for RECs and collective prosumers (positive discrimination).

Also, there is the idea of allowing peer-to-peer trading. This would be a transformation of consumers into prosumers, who not only consume energy, but also produce it. It should foster the development of new business models and local markets

Another point is the Designation of dedicated entities that can support the promoters of RECs in the implementation of REC initiatives (as ADENE; Agency of Energy), probably including in the access to finance (possibly by providing information and tools to develop a concrete investment concept). But this is still in development.

Also the use and distribution of resources stemming from EU programs (such as Next Generations EU, Just Transition Fund, Cohesion fund, INTERREG, etc.) with regard to REC by national decision makers is a measure to finance RECs.

⁹⁰ <https://esfondi.lv/planosana-1>. Accessed on 07.06.2022.

⁹¹ <https://www.coopernico.org/pt>. Accessed on 07.06.2022.

⁹² <https://goparity.com/pt-pt>. Accessed on 07.06.2022.

⁹³ <https://www.edp.pt/bairro-solar/>. Accessed on 07.06.2022.

⁹⁴ <https://www.galpsolar.com/pt>. Accessed on 07.06.2022.

2.8.4. Use and distribution of EU resources for RECs

The National Recovery and Resilience Plan comprises funds dedicated to the energy efficiency of the building stock and decarbonization of the industry. In these dimensions, there is a reference to community energy initiatives and collective prosumer ship:

- **Energy efficiency in Residential Buildings (300 M€):** under this dimension, are included actions associated with the implementation of RES electricity generation systems for prosumership and RECs. Currently, there is an open call for building owners, where solar PV generation is eligible. Citizens need to invest upfront and then apply for refund of their investment.
- **Energy efficiency in public buildings (240 M€):** under this dimension, are considered actions to increase the RES energy generation in public buildings. The call currently open is similar to the one applicable to the residential buildings, requiring the initial investment from the applicant. According to a Ministry representative, the release of a new call specific for local authorities is planned for the beginning of 2022.
- **Decarbonization of the industrial sector (715 M€):** under this dimension, it is intended to provide financial support to the industry sector to accelerate the decarbonization of their facilities and processes. Here, investments in RES generation for self-consumption are also eligible.

2.9. Spain

2.9.1. Introductory remarks

In Spain, renewable energy communities are conceived as an integral pillar of the national energy transition strategy. The promotion, development and expansion of RECs is one of the priorities of the current national government, as embodied in the Spanish Recovery, Transformation and Resilience Plan. Many public administrations, including the national one, regions and municipalities, have or are establishing financing mechanisms and assistance infrastructures to incentivise REC developments. Although it is difficult to provide an exact figure, this has led during the last year to a spectacular increase in the number of energy communities in operation or being constituted. Given Spain's climate and geography, the vast majority of RECs generate electricity through PV technology rather than through other RES.

2.9.2. Financial needs and barriers

2.9.2.1. Financial needs:

- To finance the initial investment in electricity generation technologies, including the purchase of equipment and the leasing of land or rooftops. This applies to both public administrations and ordinary citizens that do not have the means to cover the costs and have difficulties accessing traditional financial institutions.
- To finance technical support, feasibility studies and other types of assistance needed for the establishment of energy communities at the early stages of their development.

2.9.2.2. Financial barriers:

- Barriers in accessing traditional lending institutions, such as commercial banks, given the uncertainty and risk that is perceived as being inherent to such an innovative and legally diffuse concept.
- Lack of capacity and/or willingness of ordinary citizens, and especially low-income households, to financially participate in the initial investments necessary for the establishment of the REC.

2.9.3. Financing of existing community energy initiatives

In Spain, financial support for energy communities' initiatives comes mainly from two sources. The first one is public financial support. This includes the national government, which implements various measures to help RECs getting started and to further develop, and public assistance by other public actors, such as municipalities. The second source is private finance. There exist various crowdfunding and crowdlending possibilities. In addition, there is banking, investment platforms and cooperative funding.

The following will give an overview on the different public supporting measures.

The national government has established **reform C7.R3 of the Recovery, Transformation and Resilience Plan**. This plan provides a €100 million support line to RECs administered by the Ministry for the Ecological Transition⁹⁵. It includes 4 lines of financial assistance:

Firstly, the **Community Transformation Offices**. It provides funding for organisations and initiatives that have the aim of publicising the concept of REC and its benefits and accompanying and advising incipient RECs in their development (including general information, first steps, applying for funding, etc.).

The second line is the **CE-Aprende**, which finances initiatives related to the dynamization, promotion and publicity of a specific incipient community with the aim of familiarising people and organisations interested with the concept and to identify and bring in possible partners and members. Funding is allocated through simple procedure (i.e., all applications complying with the requirements receive funding until these are exhausted).

Another line of financial assistance is **CE-Planifica**, which provides funding for the planning and constitution of RECs (including feasibility studies, contract models, technical assistance, legal assistance, etc.). Funds are allocated through simple procedure.

The fourth line of financial assistance for RECs within the Recovery, Transformation and Resilience Plan is **CE- Implementa**⁹⁶. It mobilises €40 million and finances up to 60% of the cost of REC projects in the fields of renewable and thermal energy, energy efficiency and/or e-mobility. The project selection takes into account the innovativeness level, social participation, social benefits, the fight against energy poverty, employment generation, gender perspective, and the combination of different technologies. It is a competitive procedure, with applications evaluated and ranked and funds allocated to projects assessed as best fitting the parameters above.

Other reforms of the Recovery, Transformation and Resilience Plan may not be specifically directed to RECs but can also benefit them. To mention is **MOVES III**, which provides €400million extensible to €800million in funding for e-mobility projects. Another one is **Reform C7.R2**, already in place through RD 477/2021⁹⁷, and that provides €450 million extensible to €900 million in funding for renewable energy self-consumption projects.

Another instrument of public financial support are **renewable energy auctions**, the last of which (19 October 2021) reserved 300MMW for small and local renewable energy facilities coming from citizens initiatives.

Public assistance financial assistance from regional and local governments is also available. Many Comunidades Autónomas (regions) and Diputaciones Provinciales (provinces) provide financial

⁹⁵ https://www.lamoncloa.gob.es/serviciosdeprensa/notasprensa/transicion-ecologica/Paginas/2021/160921-comunidades_energeticas.aspx. Accessed on 30.05.2022.

⁹⁶ <https://planderecuperacion.gob.es/noticias/el-miteco-convoca-una-linea-de-ayudas-para-proyectos-piloto-de-comunidades-energeticas>. Accessed on 30.05.2022.

⁹⁷ <https://news.asociacion3e.org/media/images/ckfinder/files/BOE-A-2021-10824.pdf>. Accessed on 30.05.2022.

assistance⁹⁸ and tax deductions⁹⁹ for renewable energy self-consumption projects which can be applied for by RECs¹⁰⁰. Also, many municipalities have municipal tax deductions for buildings that install renewable energy facilities. In addition, there exist European funds, for example, the REC COMPTM in Crevillent received 75% of funds from a H2020 European project.

The following will now provide an overview on private finance. One way to finance these projects is through **crowdfunding and crowdlending**. Some examples exist in Spain of RECs financed this way, mainly projects with a key social purpose, such as fighting energy poverty.

- For Crowdfunding (€50,000): La Energía del Cole” in Arroyomolinos de León (Huelva) will produce energy in the public school’s roof and distribute it to the most vulnerable families of the village.
- For crowdlending (€100,000): Civic Centre of Covent de San Agustí in Barcelona¹⁰¹.

Other financing instruments include **banking, investment platforms and cooperative funding**. Although it might be very difficult for incipient RECs to access traditional lending institutions, there are success stories, such as the REC COMPTM which received a loan of 100,000€ from a local bank. Ethical Banking may be more receptive to these types of initiatives. More innovative ways of accessing finance include Fundeen, a FinTech investment platform that allows citizens to invest in renewable energy projects, and projects to receive funding from lines alternative to traditional finance. The model is “Energy as a Service Company” (ESCO), in which investors pay for the project that will result in rebates in the energy bill. Investors receive most of the rebate until they have reached the objective return (6-7%), afterwards, the installation becomes the consumer’s property¹⁰². Another way to raise private funds is through a cooperative structure, in which members of the REC themselves pay the installation. The REC COMPTM indirectly works this way (members pay the installation by using the rebates in their energy bill for repaying the loan).

Additionally, several proposals to increase financial assistance to RECs, embodied in the Guide for the Promotion of the Development of RECs (IDAE)¹⁰³, are on the table:

⁹⁸ (a) https://www.gva.es/es/inicio/procedimientos?id_proc=21040&version=amp. Accessed on 30.05.2022.

(b) <https://www.agenciaandaluzadelaenergia.es/es/ayudas-la-financiacion/incentivos-para-energias-renovables-en-autoconsumo-almacenamiento-y-termicas-sector-residencial>. Accessed on 30.05.2022.

(c) <https://arosaid.com/2021/11/08/madrid-incentivos-ligados-al-autoconsumo-y-almacenamiento-con-fuentes-de-energia-renovable-desde-16nov21/>. Accessed on 30.05.2022. Accessed on 30.05.2022.

⁹⁹ <file:///C:/Users/FRueda/Downloads/Directorio-de-ayudas.pdf> pp. 9-10. Accessed on 30.05.2022.

¹⁰⁰ (a) https://www.gva.es/es/inicio/procedimientos?id_proc=21040&version=amp. Accessed on 30.05.2022.

(b) <https://www.agenciaandaluzadelaenergia.es/es/ayudas-la-financiacion/incentivos-para-energias-renovables-en-autoconsumo-almacenamiento-y-termicas-sector-residencial>. Accessed on 30.05.2022.

(c) <https://arosaid.com/2021/11/08/madrid-incentivos-ligados-al-autoconsumo-y-almacenamiento-con-fuentes-de-energia-renovable-desde-16nov21/>. Accessed on 30.05.2022.

¹⁰¹ https://www.energia.barcelona/es/noticia/el-centro-civico-convent-de-sant-agusti-sera-el-primer-equipamiento-publico-financiado-por-un-prestamo-colectivo-ciudadano_798915. Accessed on 30.05.2022.

¹⁰² Fundeen - Crowdfunding de energías renovables - CNMV. Accessed on 30.05.2022.

¹⁰³ <https://www.idae.es/publicaciones/guia-para-el-desarrollo-de-instrumentos-de-fomento-de-comunidades-energeticas-locales>. Accessed on 30.05.2022.

- The first proposal is creating public or private **contingency funds** as collaterals in order for RECs to ask for loans in the traditional private financial system.
- Secondly, there is a proposal to establish **premiums for RECs**. This could be realised by eliminating usage fees for the low-tension grid for RECs, offering bonuses to private distribution companies whose low-tension grid is being used by RECs, etc.
- Fourthly, establishing an **advantageous public loans facility** is also proposed, for example through the Official Credit Institute ((ICO) by its acronym in Spanish)).
- The final proposal is offering **tax deductions** to RECs, for example by eliminating the VAT for REC purchases or by including income tax deductions for REC members.

2.9.4. Transposition of RED II

Individual and collective self-consumption has been regulated since 2015 through a series of laws, being the latest one the Royal Decree-Law 244/2019. Nonetheless, this regulation does not establish many of the elements that would be required to build an enabling framework for RECs. Persisting barriers include limiting the distance between generation and consumption units to a maximum of 500 meters and restricting self-consumption to installations in the low-voltage grid, leaving out a significant number of buildings connected to the medium-voltage grid, thus preventing many buildings used by businesses, the industry or public authorities to utilise self-consumption.

As for transposing EU law, Spain has introduced the REC definition in 2020 through the Royal Decree-Law 23/2020 (the legal text is a literal translation of the EU's definition in Art.2(16) of RED II, without any further specification) and legally incorporates RECs as new market actors, establishing to take particularities of RECs into account when competing for access to remuneration frameworks, on an equal basis with other participants. While the RED II transposition process is expected to continue, the lack of legal clarity on the definition itself, as well as the regulatory absence of specific rights, incentives or support, many RECs are being set up, which are usually promoted or supported to some extent by public administrations.

Moreover, the support to RECs development is included in several national strategic plans. The Spanish National Energy and Climate Plan (NECP) foresees several measures to foster energy communities. RECs are also part of the Recovery, Transformation and Resilience Plan, and the National Long-term Strategy document “España 2050”.

2.9.5. Use and distribution of EU resources for RECs

EU funds for RECs in Spain are mobilised in three ways: through the Recovery, Transformation and Resilience Plan, through ERDF funds administered by regional and local governments, and through European projects.

- **Recovery, Transformation and Resilience Plan:** as presented above, the plan will directly mobilise €100 million through the reform C7.R3 to promote, support and develop RECs through the whole of Spain. Additionally, some other parts of the plan, although not specifically conceived for RECs, can also benefit them.

- **ERDF funds:** many regional and local authorities are utilising ERDF funds to promote and develop RECs in their territories. This assistance normally includes subsidies and/or technical assistance to incipient initiatives.
- **European projects:** some RECs have benefitted from funds coming from European research facilities, including Horizon Europe. An example of this is the REC COMPTTEM, which received 75% of the investment needed from an H2020 project.

3. Lessons learned from Task 4.2

3.1. Which financing instruments are the best?

It can be concluded that there is, not a "one fits all" approach to financing instruments emerging so far.

The preconditions on the ground in the various regions respectively Member States are too different. At present, one could rather foresee a structured approach which tries to model coherent templates depending on the typical national and regulatory situation we could distinguish.

Our view into the project partner regions from the different Member States has illuminated a different set of barriers for RECs in the different regions to access finance and to become economically viable.

There is the observation that countries where RECs have already a certain tradition with increasing numbers, those established projects nonetheless still face specific barriers. But these barriers are obviously different from those for projects in countries where RECs are still not a widely -spread occurrence.

In line, with the findings of our Norwegian partners in this chapter, COME RES highlighted in its work package 2, especially under the deliverables D2.1¹⁰⁴ and D2.2¹⁰⁵ the main barriers to financial energy markets conditions, which include:

- Identifying sound business models for exploring different RES options
- Regulatory barriers (e.g., regarding sharing and the 100-kW threshold for electricity fed into the grid. Revised regulations are pending approval, see below)
- Decision- making barriers regarding financial investments (in housing cooperatives, investment decisions require a 2/3 majority vote in the general assembly, which comprises the housing cooperative's residents. Investments entail increases in tenant's rents. high initial investment costs, long term down payment may be a barrier.)
- Access to credit and financial resources
- Relatively low costs of energy (historically), a point which is now changing drastically and we are aware again of a push for RECs also in order to save energy costs.

We identified the following key points for analysis in our target regions, important to structure before moving on the model financing set-ups in the next work packages, especially under task 4.3.

¹⁰⁴ Standal, Karina, Aakre, Stine, et al.(2021);COME RES Assessment report on technical, legal, institutional and policy conditions. https://come-res.eu/fileadmin/user_upload/Resources/Deliverables/COME_RES_D2.1_Assessment_report_FINAL.pdf Accessed on 03.06.2022.

¹⁰⁵ Laes, Erik, Krug, Michael, Gatta, Vincenzo, Meynaerts Erika, De Luca, Elena, Caliano, Marina, Klavs, Gaidis, Kudrenickis, Ivars, Aakre, Stine, Sælen, Håkon, Standal Karina, Nowakowski, Piotr, Wnuk, Ryszard, Avevedo, Isabel, Maleki Pouyan (2021). COME RES Assessment report of potentials for RES community energy in the target regions. https://come-res.eu/fileadmin/user_upload/Resources/Deliverables/Del_2.2_Assessment_Report_of_Potential.pdf. Accessed on 03.06.2022

3.2. RED II enforcement

The offtake of RECs depends on a supporting and sustainable regulatory framework. The correct enforcement of the RED II provisions is one key factor for progress for RECs, but it is not the only denominator. There are again different observations, when it comes to the regulatory set-up in the different regions.

We can see that for example Germany had a blooming period for RECs development between 2006 and 2013, which was cut short by negative and blocking amendments to the German renewable energy law in the years after 2013. This positive roll-out happened even without a clear definition for RECs in the German law. This may have its reason in the fact, that cooperation models and their regulatory framework for all sort of undertakings on local or citizen level have a tradition in that country.

On the other hand, where such a tradition is missing, lacking transposition, implementation and enforcement of the provisions under RED II with regards to RECs is a specific “showstopper” for development, at least makes it extremely difficult as is the case in Poland and in Latvia still. Equally, Norway, not being member of the EU, still lacks a definition of a REC in line with RED II. Since it has so far not being introduced into national legislation, no eligible legal forms have been identified yet.

3.3. The national regulatory setting – friend or foe

There are strong points under the national regulations, favouring local ownership and RECs. Spain is clearly a frontrunner in a structured approach to support community power as an integral pillar of the national energy transition strategy, linked to the Spanish Recovery, Transformation and Resilience Plan. On national, regional and local level financing and assisting mechanisms are in place, resulting in a spectacular increase in the number of energy communities in operation or being constituted.

With the Dutch Climate Agreement, a specific 50% goal for local ownership in renewable energy projects has been established. The positive goals setting nonetheless could not be translated in financial participation and set up of RECs for larger RES projects. The usual smallness of REC projects is often an obstacle for sound investment, with its reason in a lack of access to knowledge and organisation and access to bank loans, where banks often focus on the RECs “track record which is not available at the start of a RECs.

In Poland, the law rather talks of energy clusters, which could be only partially compared to RECs. Again, the Polish law was first setting a positive and supportive tone for those clusters, but the reality did not proof any concrete follow-up. In consequence there is a clear lack of financial mechanisms (Lack of investment funds, preferential loans, and credits). Another specific obstacle for the Polish situation is the restrictive conditions for setting up a cooperative, exclusively allowed to operate in rural areas only, limited in numbers and, interdiction to sell shares among the members of a cooperative are a further obstacle.

3.4. The burden from regulatory fees

One big obstacle for a sound bankable/finance-sound RECs can be seen in several fees and costs obligations in Poland, Netherlands, Germany from national legislation.

A Polish barrier is the need to purchase an energy distribution license. Unless a cluster can find a holder of such a license as partner and can keep him in this cluster, the license costs prevent the uptake of an energy cluster. In our view this is also a clear breach of the “effet-utile” principle when it comes to enforce EU law in national legislation, by creating a discriminatory effect on clusters. Portugal also demands a special considerable fee to enable the participation in the different energy markets.

Grid fees, concession fees, electricity taxes and various other charges as well as fiscal regulations are obstacles for a viably project set up in many regions.

3.5. Proximity issues

Some national legislation imposes a very tight proximity rule (Germany) of max 25 km for the outreach of a REC. Most cooperatives rely on capital from other regions or regions that are further away than 25km. Although most projects usually prioritize regional investors, in the end they at least also turn towards supra-regional or even national investors. Some Member States, e.g. Italy insists the REC members must be connected to the same MV/LV substation. In Spain, persisting barriers include limiting the distance between generation and consumption units to a maximum of 500 meters and restricting self-consumption to installations in the low-voltage grid, leaving out a significant number of buildings connected to the medium-voltage grid, thus preventing many buildings used by businesses, the industry or public authorities to utilise self-consumption. Again, in our view this could already be an issue of violation of the effet-utile principle by Spain in view of the RED II and the non-discriminatory approach of RED II.

3.6. Size of the REC and access for low-income households and assistance of municipalities

Small size RECs need to rely often on voluntary work which makes sustainability of the project for a longer time frame vulnerable. Costs for external expertise or institutional, legal costs for supervision fees can present a barrier to the implementation of RECs - see the German example,

Low-income households cannot participate in the high upfront costs and are basically excluded or not interested from participation in a RECs even though it would help them to decrease their energy bill.

As much as local communities would be important to assist and engage in RECS, many regions, as in Poland, Latvia, Italy, face a lack of sufficient strategies to support local communities, be it by funding, by promotional and information initiatives, training activities and dissemination of technical support tools. In Italy, the necessity is acknowledged, that in order to overcome energy poverty and to support local economies, specific support for the development and implementation of RECs in marginal areas and urban suburbs needs to be developed still.

4. Conclusions

4.1. Introduction

The whole work package aimed to clear the ground and analyse the different conditions for RECs and the viability of access to financing and support for RECs.

We have found specifically on the finance side many similarities but also strong differences between the regions/Member States. Not surprisingly the work underlined the clear link to the effect, that if the legal and regulatory environment for RECs is clear, the rules of RED II are observed and national legislation is not counteracting, the pathway towards financing is easier. The following take-aways on the finance side from this package will be the base for the next related work packages.

4.2. Access to finance – status quo

RECs often are driven as much by environmental-ethical/socio-ecological motives and often do not see the profit margin as primary interest, nonetheless it plays a role especially when new RECs are to be developed. Access to finance and investors needs a lot of clarity on the objective and design of the RECs. Where this is not established well and where knowledge on the benefits for such projects is limited, the access barriers are high.

4.2.1. EU Funding

The research clearly shows the importance for continued and focussed EU funding. This report outlined under 1.4. proposals to the EU Commission to improve e.g. together with the EIB lending conditions for RECs. This access for funding from the different options is crucial, especially in those circumstances where a lot of entry barriers for RECs still prevail. Latvia and the experience of our partner in that country underlines the important of EU financial support in countries with low participation of RECs in the energy system. Latvia so far has only two pilot projects for RECs and fortunately both could receive EU funding.

4.2.2. National, local and regional funding to support RECs

In its clarity and dedication on all levels of public administration, Spain certainly sets the positive tone forward and provides a blueprint for public finance. Support and funding can be tapped from all levels, from the national to the local part of society. A national framework ensures several credit lines for various supports for RECs in the Recovery, Transformation and Resilience Plan. This plan provides a €100 million support line to RECs in Spain. Under the Italian Recovery Programme, a sum of €2.2 billion is dedicated to support RECs in cities with less than 5,000 inhabitants. It is estimated that each city will get up to €1,000,000. Likewise, in Portugal, local effort and energy communities are seen as part of the solution, but so far there is no RECs operational. Less obvious, than in the other countries, but feasible is support for RECs under the Portuguese recovery programme.

Poland has introduced in this context of EU funding its National Recovery and Resilience Plan 2021-2023 with a dedicated part to Renewable energy sources within energy communities (€97 million). The enforcement is still to be done.

4.2.3. Financing and investment models emerging for RECs

The project will further look in modelling financing solutions (e.g., under Task 4.3.)

First learning points in this respect can be outlined in the following.

It is necessary, that local funds or national or regional funds support the local administration and enable it to engage and support RECS.

The less municipalities -under the legal set-up do not have access to own funding sources, the more revolving funds or guarantees are important.

We could analyse various examples for guarantee or revolving funds in our partner regions:

In Germany and its Land Schleswig-Holstein for example a community resp. citizens' energy fund (Bürgerenergiefonds) was established in 2018 as a revolving fund, providing risk capital for citizen/community energy projects to pre-finance their upfront costs in the start-up phase.

We will look under the next Task 4.3. to draft more general guidelines for such funds also for the other regions of the project.

We could envisage to provide input into a proposal for an EU Revolving fund as was touched upon in the first part of this analysis: projects get a low-cost loan which becomes a grant in the circumstance that the project does not progress to become financially stable but is repaid if the project succeeds. Access to this revolving fund can be facilitated by the EU REC facility.

It would also make sense to look more intensively in the elements of the various direct support mechanisms such as in Italy, where cities with less than 5.000 inhabitants get provided with €50.000 per year for 2022, 2023 and 2024, which can be entirely invested in renewable energy communities and to try to create model templates for communities.

National support programmes are in place in many countries, often administered by public banks and financing agencies. Again, a modelling under the best examples approach could be helpful.

4.2.4. The access to private funds/banking/donations

Under 1.6. we have analysed the private funding approach. The next step would be to try to define rules for e.g., crowdfunding/lending for RECs, municipal involvement rules in RECs, risk profile definition for the general banking sector and ensure a good profile of Members' contribution to the RECs.

CONTACT

COME RES Project
 info@come-res.eu
 www.come-res.eu

PARTNERS



This project has received funding from the European Union's Horizon 2020 research and innovation programme under grant agreement No 953040. The sole responsibility for the content of this document lies with the COME RES project and does not necessarily reflect the opinion of the European Union.