

# SCORE

Co-own. Prosume. Renew.

Supporting Consumer Ownership in Renewable Energies

# H2020 Final Report

Consumer Stock  
Ownership Plans (CSOPs)  
- Financing Energy  
Communities



Funded by  
the European Union



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The project "Supporting Consumer Ownership in Renewable Energies" (SCORE) is funded by the European Union in the framework of the Horizon 2020 research and innovation programme (H2020-EE-2016-2017/H2020-EE-2017-CSA-PPI) under Grant Agreement number 784960.



# Table of Content

Executive Summary .....	6
I. Introduction and Background .....	8
II. Overview of the Pilot Projects .....	14
1. Italy, Susa Valley: Regional and Local Energy Communities .....	17
2. Czech Republic, Prague: Prague Renewable Energy Community .....	21
3. Germany, Essen: REC "Franz Sales Haus - Vocational College East" .....	24
4. Poland, Słupsk: Developing the "Assisted" CSOP .....	27
III. Follower City Projects .....	32
IV. Dissemination & Exploitation .....	36
V. Socio-Economic Impact .....	38
VI. Conclusions .....	42
VII. Outlook .....	44
Team .....	48
Glossary .....	50
Publications .....	52
SCORE Advisory Board and Partners .....	54

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This project is funded by the European Union

# CSOP-Financing

## Introducing Consumer Stock Ownership Plans

# Executive Summary

The transition from fossil fuels to renewable energy (RE) sources (RES) requires motivating consumers to change their consumption habits so as to balance demand with a volatile energy supply and to accept new technologies like smart meters. Consumer co-ownership in RE – “Citizen Energy” – has proved successful in engaging consumers in financing RES, thus becoming “prosumers”, which in turn induced positive behavioural changes in energy consumption. “Prosumer” models, however, are still not widely implemented across Europe.

Guaranteed feed-in tariffs have facilitated the repayment of RE installation loans, but a shift to auction systems favouring large-scale projects threatens this powerful incentive to citizens’ investment. Moreover, the typical “prosumer” is still male, middle aged and with a higher income, whereas the participation of women and social groups vulnerable to fuel poverty is uncommon. The rebound effect and insufficient use of ICT solutions are additional problems.

With the passing of the Clean Energy Package at the European level in winter 2018/19 and the subsequent transposition in particular of the Renewable Energy Directive (RED II) and in the Internal Electricity Market Directive (IEMD) into national law, consumer co-ownership in RE – both for individual prosumerism and for Energy Communities (ECs) – received a new EU wide legal framework. In spite of this unprecedented reform, legal uncertainty resulting from the transposition process of these new rules that was still pending at the end of the lifetime of SCORE together with the COVID-19 pandemic somewhat delayed pilot implementation.

Against this background, applying Consumer Stock Ownership Plans (CSOPs), SCORE:

- Facilitated consumers to become prosumers of RE and engage in energy efficiency (EE) measures, firstly in four pilot regions in Italy, Poland, Germany and the Czech Republic, secondly in 31 municipalities across Europe following the pilot projects (Follower Cities).
  - Reached out to more than 700 local authorities and 10,000 consumers demonstrating the positive impact co-ownership has on consumer behaviour and showing the ability of this democratic participation model to include underrepresented groups.
  - Empowered consumers and municipalities in a capacity-building programme with more than 80 events both in the five partner countries and in other EU Members States and through the launch of an interactive online “RE Prosumer Investment Calculator”.
  - Delivered policy recommendations to more than 150 EU and local decision makers to promote prosumerism and to remove barriers for consumers to become active market players at the EU and national levels.
- The SCORE consortium in particular is proud to present five landmark achievements that stand out from the project results:
- (1) The first Italian hydro-power EC in Venaus practising electricity sharing over the public grid operative as of 27 December 2021;
  - (2) The conclusion of an agreement to set up a regional EC in the Susa Valley engaging 31 Municipalities with around 80,000 inhabitants and a total investment of EUR 60 MM.;
  - (3) The setting up of the Prague Renewable EC on 1 October 2021, one of the largest photovoltaic projects in the Czech Republic with a foreseen capacity of 500 MW and an investment of EUR 40 MM. stemming from an ELENA contract;
  - (4) One of the first German ECs in Essen to practice electricity sharing in 2022 embracing an institution for disabled children, a public school and a sports club;
  - (5) The development of an “Assisted CSOP” that permits the residents of homeless shelters in Słupsk, Poland, to become co-owners in RE.

Learning from pioneers: SCORE meeting with Peter Newman of Curtin University at local pilot in Perth, Australia, July 2018.





# Introduction and Background



**SCORE - Supporting Consumer Co-Ownership in Renewable Energies** - is a project funded by the European Union under its Horizon 2020 programme, facilitating consumers to become (co-)owners of renewable energies (RE). Financial, technical and social innovations are essential prerequisites for a successful transition from fossil fuels to renewables. In order to balance demand with a volatile energy supply and to increase acceptance of new technologies like smart meters, it is necessary to build new energy infrastructure and motivate consumers to change their consumption habits. In this context, consumer (co-)ownership in RE has proven to be an essential cornerstone to the overall success of energy transition. When consumers acquire ownership in RE, they become prosumers generating a part of the energy they consume, hence reducing their overall expenditure for energy. At the same time, they receive a second source of income from the sale of excess production. This in turn induces positive behavioural changes in energy consumption.

**Applying Consumer Stock Ownership Plans (CSOPs)** - The aim of SCORE was to facilitate (co-)ownership in RE for consumers first in three pilot regions in Italy, Czech Republic and Germany - and later in various other follower cities across Europe. SCORE particularly highlights the potential of this democratic participation model for the inclusion of women and low-income households. The participation of these under-represented groups as prosumers through financial empowerment is a core element in the fight against energy poverty. We are applying Consumer Stock Ownership Plans (CSOPs) in RE projects, utilising established best practice updated by inclusive financing techniques. As vulnerable groups affected by fuel poverty and usually excluded from RE investments are of particular importance, effective and innovative engagement actions are tailored to their needs. The participating local and regional authori-

ties as well as existing local energy projects receive legal and technical assistance for a tailor-made participation model.

## 1. The EU Paves the Way for CSOPs in the 2018/19 "Clean Energy Package" (CEP)

In December 2018, the European Union passed a corresponding legal framework for prosumership in the recast of the Renewable Energy Directive (RED II) and in the Internal Electricity Market Directive (IEMD) as part of the CEP. Energy communities are mentioned and defined in both the RED II and the IEMD. While the recast of the Renewable Energy Directive focuses on the promotion of RE and thus speaks of "Renewable Energy Communities" (RECs), the Directive on the Internal Electricity Market of the European Union as the more general legal act addresses "Citizen Energy Communities" (CECs). Generally speaking, RECs are a specific form of CECs that are benefitting from an enabling framework promoting and facilitating their development with the specific objective to integrate RES. However, they have an own area of operation not falling under the IEMD as far as other types of energy, i.e., not electricity, are concerned. Both have the explicit aim to provide environmental, economic or social community benefits for their members, but may be profit making. From June 2021 onwards - once the RED II has been transposed into national law - consumers, as prosumers, will have the right to consume, store or sell RE generated on their premises both

- individually, e.g., households and micro enterprises, or jointly acting, e.g., in tenant electricity projects (Art. 21 RED II)
- as well as collectively as part of Renewable Energy Communities (RECs) organised as independent legal entities (Art. 22 RED II).

**Differences and communalities between the two types of energy communities** – RECs members or shareholders are restricted to natural persons, small and medium-sized enterprises (SMEs) and municipalities. CECs have a less rigid governance model and in principle are open to all types of entities. Both require a particular democratic governance model focusing on their stakeholders and (local) partners. The RED II prescribes that in order to qualify as an REC, the effective control, i.e., the majority of voting rights as a rule reflected by a majority ownership stakes, should be held by members based in the proximity of the installations. Furthermore, the

**Table 1:** The new governance model for energy communities under Renewable Energy Directive (RED) II and Internal Electricity Market Directive (IEMD). Source: Lowitzsch, J., van Tulder F.J., & Hoicka, C.E., 2020.

<b>Criteria</b>	<b>Renewable Energy Communities (RECs) pursuant to Arts. 2 (16), 22 RED II</b>	<b>Citizen Energy Communities (CECs) as defined in Arts. 2 (11), 16 IEMD</b>
<b>Eligibility</b>	<ul style="list-style-type: none"> <li>▪ Natural persons,</li> <li>▪ Small and medium-sized enterprises</li> <li>▪ Local authorities, incl. municipalities</li> </ul>	In principle, open to all types of entities
<b>Primary purpose</b>	“environmental, economic or social community benefits for its shareholders/members or for local areas where it operates, rather than financial profits”	
<b>Membership</b>	Voluntary participation open to all potential local members based on non-discriminatory criteria	Voluntary participation open to all potential members based on non-discriminatory criteria
<b>Ownership and control</b>	<ul style="list-style-type: none"> <li>▪ Effectively controlled by shareholders or members that are located in the proximity of the RE project</li> <li>▪ Is autonomous (no individual shareholder may own more than 33% of the stock)</li> </ul>	<ul style="list-style-type: none"> <li>▪ Effectively controlled by shareholders or members of the project</li> <li>▪ Limitation of firms included in shareholders’ controlling entity to those of small/micro size (not medium)</li> <li>▪ Shareholders engaged in large scale commercial activity and for which energy constitutes their primary area of activity excluded from control</li> </ul>
<b>Advantages to qualify as REC or CEC</b>	<ul style="list-style-type: none"> <li>▪ Preferential conditions defined in the “Enabling framework” to promote and facilitate the development of RECs</li> <li>▪ Energy sharing within the REC</li> </ul>	<ul style="list-style-type: none"> <li>▪ Level playing field</li> <li>▪ Electricity sharing within the CEC</li> </ul>

autonomy of the REC from single members is to be upheld by the principle that no single shareholder owns more than a third of the shares. For CECs, there is no limit on the shareholding of eligible individual members, which – as we will discuss more in detail later – makes them attractive for projects where municipalities wish to retain control. A key commonality between the two types of energy communities is that members of both have the privilege of sharing electricity (RECs also of other forms of energy) between members within the community, even when using the public grid. An overview of the differences and commonalities is given in Table 1.

The CSOP is a prototype business model for energy communities – both RECs and CECs – and shows how to implement these new rules:

- CSOPs allow for the inclusion of municipalities and/or commercial investors like SMEs. Moreover, they offer an opportunity of advancing to economies of scale.
- At the same time, they retain the benefits of individual consumer participation. Furthermore, CSOPs specifically facilitate the inclusion of low-income households.

**(Renewable) Energy clusters – the future of the Energy Systems** – RECs can be seen as the archetype governance model of an emerging form of energy systems, that is RE clusters. This concept for the lawful control over and administration of (local) energy generation, supply and management is the mirror image of the technical/engineering concept of RE clusters. Such RE clusters will typically include demand flexibility and energy efficiency (EE) measures, storage and peer-to-peer trading within energy communities, and between energy communities and the market. For the technical solutions existing (e.g., smart meters) and those emerging (e.g., distributed ledger technologies like blockchain) to be functional, behavioural changes of the consumer are indispensable. Therefore, it is crucial to couple technological solutions with good governance as acknowledged by the European legislator in the RED II and the Internal Electricity Market Directive (IEMD) and enshrined in the CSOP.



## 2. Project Objectives and their Relation to the Work Programme

SCORE responds to EE-06-2017 “Engaging private consumers towards sustainable energy” that aims to encourage energy efficiency (EE), energy savings and increased use of locally produced RE, and addresses fuel poverty. SCORE assists consumers in becoming co-owners of RE installations empowering them and their municipalities. Concrete assistance for RE investments employing the inclusive CSOP financing technique aims at motivating citizens to increase EE and triggering a learning process among them. This is key to contribute to mitigate the rebound effect describing the paradox that increased efficiency goes hand in hand with increased consumption: Only when prosumers have the choice between self-consumption and sale of the surplus electricity production, do we observe a statistically significant effect on consumption behaviour. Only when prosumers

have this choice, every kilowatt-hour not consumed is a kilowatt-hour potentially sold providing a strong economic incentive for energy-efficient behaviour. In addition to low-income households, the project addresses women as being underrepresented and often belonging to the former.

**Individual vs. collective empowerment** - Empowerment in a vulnerability context must be more than the provision of consumer choices through access to information and consumption options. Here, the participation of vulnerable consumers in RECs as a form of collective empowerment has benefits beyond individual empowerment. Participating in a RE project may provide access to social groups other than one’s primary group when enshrined in a collective scheme like, e.g., a CSOP. Given that the socio-cultural context shapes, among others, habits, values and norms, which in turn have an impact on individual behaviour, this is of particular importance for vulnerable households to overcome systemic disadvantages (e.g., higher rates of unemployment, lower education) and social isolation but also boosts the mentioned learning process. In this way, individuals benefit from



The SCORE team at the Follower City and Pilot Exchange Workshop in Frankfurt (Oder), March 2019.

the power of collective action to overcome individual obstacles. Here, CSOPs are particularly suitable as a collective instead of individual empowerment in ECs.

**Extending and modernizing the cooperative model** - The cooperative model has been around since the 19th century and, where necessary, can be extended and modernised as a business and organisational model to meet the challenges in the RE sector. In contrast to cooperatives, the CSOP directly addresses the involvement of public authorities, e.g., local municipalities and strategic partners. It avoids obstacles related to the principle of self-governance and to the question of representation of municipalities on the board. At the same time, members of an energy cooperative can participate in a CSOP when expanding an existing facility together with strategic partners, or the trustee entity in turn can be a cooperative. As a rule, the CSOP will hold between 25 and 51% of the shares in the operating company of the RE plant and, depending on the shareholder structure, may have a majority interest. Regarding the exercise of consumer's voting rights, the CSOP offers flexibility: The articles of partnership may stipulate which matters are to be deliberated either by the trustee (e.g., day-to-day business) or voted by CSOP members (e.g., strategic decisions). Again, as the CSOP business model uses the borrowing power of a corporation, it enables the participation of vulnerable consumers that are underrepresented so far.

transposing the Directives, so that rules for ECs will differ to a wide extent depending on cultural, economic and political factors across Member States. Paradoxically, the legal uncertainty during the pending transposition process slowed down pilot project implementation in Czech Republic and Germany and in some cases in Italy even brought it to a halt.

**Impact of the COVID-19 pandemic** - With one of the core elements of SCORE being consumer participation, during the COVID-19 crisis it was very hard to engage with citizens without the possibility of physical events. Moreover, the main target group are vulnerable consumers, who were affected mostly by the COVID-19 situation. Under these circumstances, the required use of virtual and online programs shifted them more towards "social exclusion". Therefore, their already difficult involvement was limited additionally. At the same time, the economic crisis led to a very limited willingness to invest in new projects; consumers were not experienced yet. Together with the regulatory uncertainty described above, this created a situation of doubt and inertia resulting in much longer timelines and limited impact. Due to the unforeseen outbreak of the COVID-19 crisis, SCORE experienced several delays, in particular with regard to consumer engagement, and a cost-neutral project extension of nine months was granted. In summary, while the project impact was wider than anticipated, it should have been deeper with regard to consumer engagement, in particular that of low-income households.

### 3. Regulatory Insecurity due to Pending Transposition of the CEP as Main Obstacle

Although the CEP paves the way to a EU-wide legal framework other than to be transposed into national law, it needs subsequently to be filled with implementing provisions. As pointed out above, SCORE's approach is inextricably linked to the pending transposition of the RED II and IEMD, as consumer (co-) ownership is one – if not the most important – pillar of ECs. In view of the technical and governance-related complexities of transposition, it is expected that the process will last for the next few years. While the RED II and the IEMD provide a common framework, each Member State will pursue different priorities when



Construction site of the Venaus hydro-power plant in the Susa Valley, Italy.

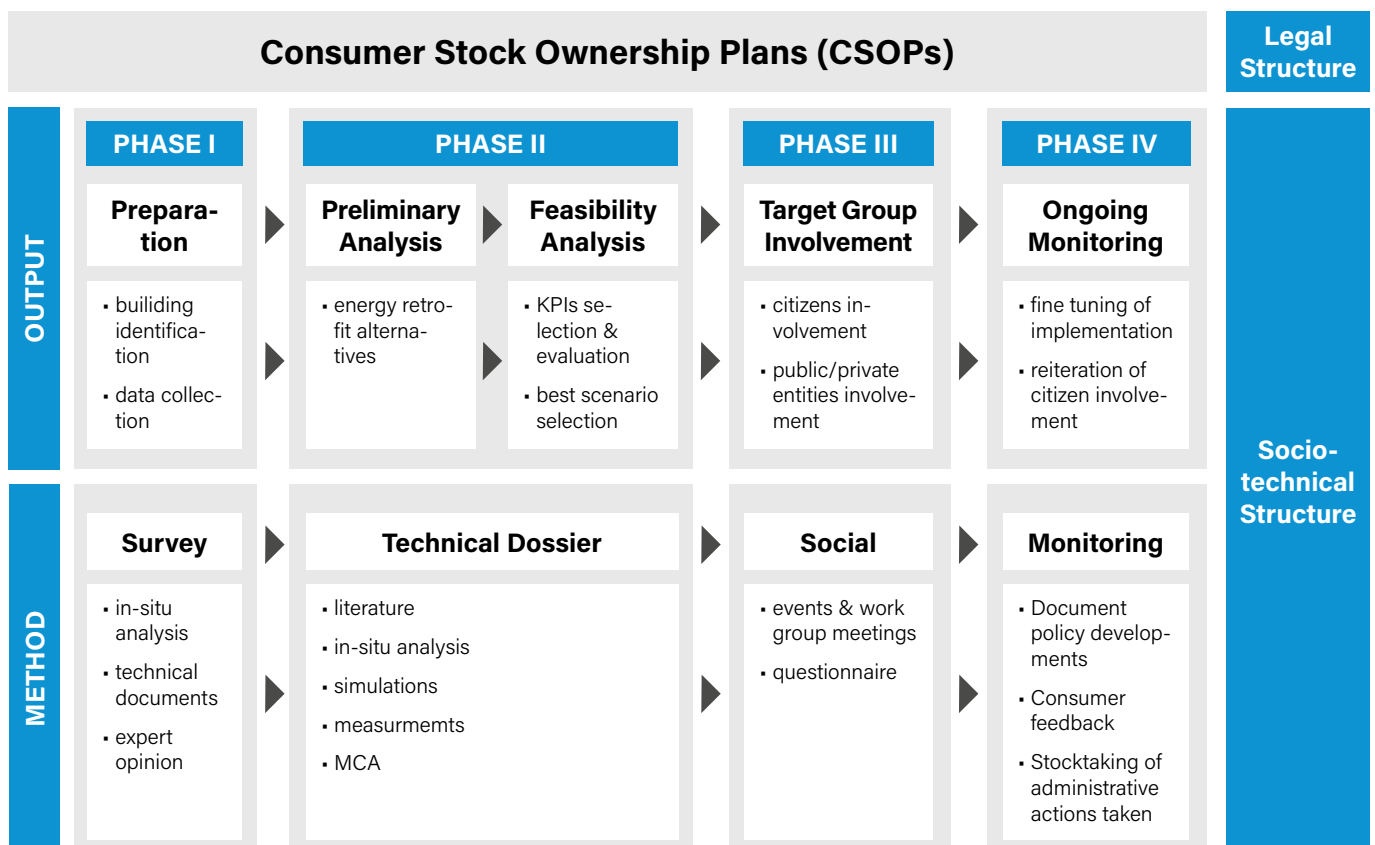
# Overview of the Pilot Projects



Designing and implementing CSOPs to facilitate consumer (co-)ownership in RE follows a process of four main phases (see Figure 1): The first (I) is preparation, including the identification of suitable buildings and data collection. The second (II) embraces a preliminary feasibility analysis exploring different energy retrofit alternatives when shifting from fossil fuels to renewables with the aim to reduce energy consumption and to increase energy efficiency of the building envelope and the energy system; this phase employs multi-criteria analysis (MCA) to select the

best alternative based on the key performance indicators considering different stakeholders' opinions. The third (III) is target group involvement to engage citizens and public and private entities as part of the financing concept. The fourth (IV) monitors ongoing CSOP implementation.

**Figure 1: Overview of the Project phases I-IV**



**Unique features of the CSOP concept** - A CSOP is a financing technique that employs an intermediary corporate vehicle and facilitates the involvement of individual investors through a trusteeship. It is a type of investment transaction that may use external financing, thereby achieving the benefit of financial leverage. The CSOP was applied for the first time in 1958 with spectacular success in the U.S. by its innovator, Louis O. Kelso, a business and financial lawyer turning 4,580 farmers into (co-)owners of the new fertilizer manufacturer Valley Nitrogen Producers, Inc. This involved an investment of USD 120 MM which today inflation adjusted would equal around EUR 915 MM. It is related to Kelso's best-known financial innovation, the employee stock ownership plan (ESOP), that enabled millions of American workers to become (co-)owners of their employer companies. Both plans repay the acquisition loan not from wages or savings but from the future earnings of the shares acquired. Today the ESOP is an integral part of American corporate finance with around 6,660 ESOPs and a little under 3,000 ESOP-like plans in the U.S., about 14.2 MM participating employees holding around USD 1.4 trillion in assets as of 2016. Applied to the energy context, CSOP can buy into an existing or invest in a new RE plant. Designed to facilitate scalable investments in utilities, it is open to co-investments by municipalities, plant engineers, energy suppliers or other strategic partners. Moreover, as a low-threshold financing method, it enables individuals to invest in RE projects.

The renewable energy consumer stock ownership plan (RE-CSOP) as an alternative financing source for sustainable investments is of particular importance for municipalities that are charged with fulfilling EE and climate policy goals but have limited budgets and often lack the funding to make these investments. An objective of this contractual model is, above all, to facilitate single-source financing (i.e., employing one bank loan instead of many micro loans), thus reducing transaction costs. At the same time, individual liability of consumers is avoided, while participating consumers are able to acquire capital ownership, providing them with an additional source of income. Other important issues are easy tradability of shares, deferred taxation for consumer shareholders and pooling of voting rights. Especially, low-income households, who usually do not dispose of savings necessary for conventional investment schemes, are enabled to repay their share of the acquisition loan from the future earnings of the investment: A fiduciary entity that is set up by the local community and managed by an independent director is authorized to take on a bank loan to acquire shares in the RE plant on behalf of the consumers. The shares are allocated among the consumer beneficiaries in proportion to their respective energy purchases. Monies saved by self-consumption and increased EE as well as revenues from the sale of the excess energy production are used to repay the acquisition loan. After amortisation of this debt, profits are distributed to the consumer beneficiaries.







# 1. Italy, Susa Valley: Regional and Local Energy Communities

**Consumer involvement** - Despite the COVID-19 pandemic, SCORE local partners have been carrying an impressive number of activities engaging different groups of citizens and representatives of local organisations, including municipalities, SMEs, NGOs, schools, etc. In total 39 officials, 15 business owners, 100 citizens and about 60 middle-school students were included into different off-line and online events organised between June 2019 – January 2021. However, as mentioned earlier, the uncertainty of the regulatory framework has been a major obstacle to project implementation – especially but not only for bio-mass fed block-heating projects – and consequently for consumer involvement. The problems due to the early but partly contradictory transposition described above pertained by the end of the lifetime of the project, i.e., December 2021. However, as also mentioned earlier, these are transitory problems typical for the transposition of European Directives. In fact, Legislative Decree no. 199 of 8 November 2021 amended Article 42-bis of the so called Mille Prooghe Decree that transposed the RED II already in February 2020 and remedied the most important obstacles. Unfortunately, these new rules will only enter into force on 13 June 2022, with delayed pilot project implementation being expected for the second half of 2022.

## **a) Regional Energy Community “Comunità Energetica di Val di Susa” (CEVS)**

Independently of the implementation of individual SCORE sub-pilots in the Susa Valley, a particularly noteworthy project result was the conclusion of an agreement to set up the regional Energy Community CEVS that succeeded to engage 31 municipalities with around 80,000 inhabitants. CEVS participated in a call to provide financing to RECs and CECs under the National Plan for Recovery and Reconstruction





(PNRR) submitting a project including nZEB buildings, district heating networks and biomass boilers accounting for a total investment of EUR 60 MM. ([https://piemonte2021-2027.eu/wp-content/uploads/2021/05/Next-generation-Piemonte\\_censimento-progetti-6.5.21.pdf](https://piemonte2021-2027.eu/wp-content/uploads/2021/05/Next-generation-Piemonte_censimento-progetti-6.5.21.pdf); see page 67, project number 1234). With regard to the individual pilot projects to be part of the future CEVS, the following four sub-pilots are either completed or currently under implementation:

- The installation on thermal block heating system fed by wood chips in Oulx;
- PV pilot of 20 kW in Oulx;
- PV pilot of 20 kW in Villardora;
- Hydro-power pilot of 20 kW in Venaus.

As part of the “Decreto Rilancio”, a EUR 55 billion post-COVID-19 stimulus programme, the Italian Government launched the so-called EcoBonus110 to facilitate investments in RE and EE measures.



**Mayor Avernino di Croce and engineer Antonino Basile explain the Pelton 20 kW turbine in Venaus.**

Although this program has no collective dimension and families may not pool their boni or contribute installations as in-kind contributions to a REC, they can join a RE-CSOP with the production or storage capacity of their installations. To coordinate individual investments with those under a CSOP in the Susa Valley, it was vital to consult and advise citizens with a view of said investment activities. Therefore, in August 2020, SCORE assigned this task to a special task force resulting in the recruitment of additional sub-pilots to compensate for the described problems in project implementation. Together with the realisation of some of the initial sub-pilots during the next year, we expect newly activated sub-pilots, although it is difficult to assess the exact timelines for the reason given above.

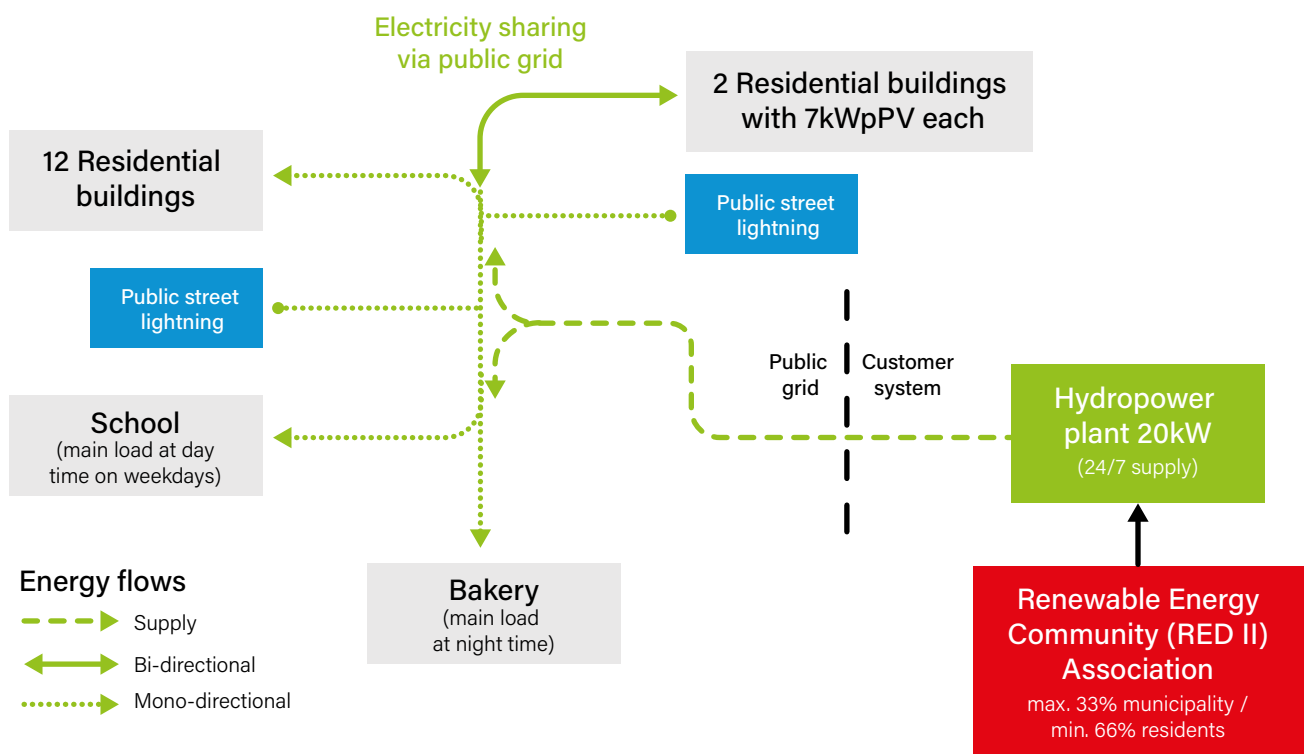
**b) “Venaus Ecosostenibile” - the first Italian hydro-power REC under RED II**

With the Venaus hydro-power plant being already operative in autumn 2021, SCORE launched the first Italian hydro-REC under the RED II legal framework. Set up on 29 December 2021, the Renewable Energy Community (REC) “Venaus Ecosostenibile” (Venaus eco-sustainable) located in the municipality of Venaus counting 882 inhabitants located in the Susa

valley in the Piedmont province of Turin in Northern Italy was established as the first Italian hydro-power REC. “Venaus Ecosostenibile” shares the production of a Pelton 20 kW turbine over the public grid with the accession of small residential PV installations to the electricity sharing concept planned. The overall investment of around EUR 180,000 was financed by the municipality stemming from a grant for the refurbishment of the secondary school building as its main end user. Against the background of a larger REC project involving 31 mayors of the Susa valley (Comunità Energetica della Val di Susa, see below) under the National Plan for Recovery and Reconstruction (PNRR), the implementation of block-heating systems fed by wood chips (either small individual wood boilers or a district heating system) is planned.

**Aims and participatory approach** - The regulatory framework is the early transposition of the RED II by the Italian legislator accompanied by fiscal bonuses and incentives on self-consumption (most importantly a premium of 11ct per kWh shared within the REC). The members of the REC are local citizens, micro enterprises, the municipality of Venaus organised as a non-recognised association with the explicit aim to support self-consumption for the environmental,

**Figure 2 - Renewable Energy Community Venaus - first Italian hydro-power REC pursuant to RED II**



economic and social benefits of the local community. Of the 14 founding members, the municipality owning the hydro-power plant is currently the only RE producer with 10 of the remaining members being private households and three micro businesses, i.e., a bakery, a food store and a restaurant. The municipality-led public relations campaign aims to entice the further participation of individual citizens and the possible inclusion of vulnerable and/or underrepresented groups. With regard to the repartition of the energy sharing incentive, 45% of the benefits are allocated to the municipality as producer (to cover concession fees, amortisation, etc.), 10% to a reserve fund of the CER and 45% to the members actually sharing electricity. Wider aims include territorial energy planning, also for the benefit of other territorial authorities, actions for the promotion of energy policy in the territories and the implementation and assistance of pilot projects for the valorisation of RES.

**Legal aspects** – A so called “non-recognised association” (associazione non riconosciuta) under Italian corporate law is the legal vehicle for “Venus Ecosostenibile”. As opposed to a “recognised association”, this type of entity originally did not possess legal personality. However, doctrine and jurisprudence over time have minimised the differences between the two forms of association, considering even non-recognised associations as de facto subjects of law and keeping them separate from the persons of their members. According to today's opinion, both forms have legal capacity and capacity to act, are holders of personal and property rights and can acquire and dispose of property without any control. They differ with regard to registration and patrimonial autonomy as the directors of recognised associations bear the privilege of being exempt from personal liability connected with the obligations undertaken in the name and on behalf of the entity. The deed of incorporation of a non-recognised association is a contract without formal constraint, i.e., no public deed and not even a written deed is required, unless special laws provide for it.

**Technical aspects** – From a technical point of view, “Venus Ecosostenibile” involves smart-metering providing information about production and consumption in 15-minute intervals embracing 17 points

of delivery (PoDs) located on the same branch of the low-voltage network as illustrated in Figure 2. During an experimental period of 18 months, energy flows are analysed and the possibility to connect at least two small private residential PV installations (around 5 kWp each) to the electricity sharing concept to benefit of synergies of the load and production profiles is explored. During this period, the necessity to employ an IT platform able to manage the local network including bi-directional energy flows, to meter and control installations and to provide flexibility and demand response services is also explored. Analysing consumption profiles, load management, consumption behaviour within the REC and moreover in the territory of the municipality has the objective to improve overall energy efficiency. Grid connection was expected for January 2022, and the project has been also included in a video documenting pilot implementation in order to fully tap into its replication potential. As the first Italian hydro-power REC we expect replication of its CSOP approach also widely across Italy and the EU.



**SCORE site visit with energy manager Jaroslav Klusák in the Czech Republic.**

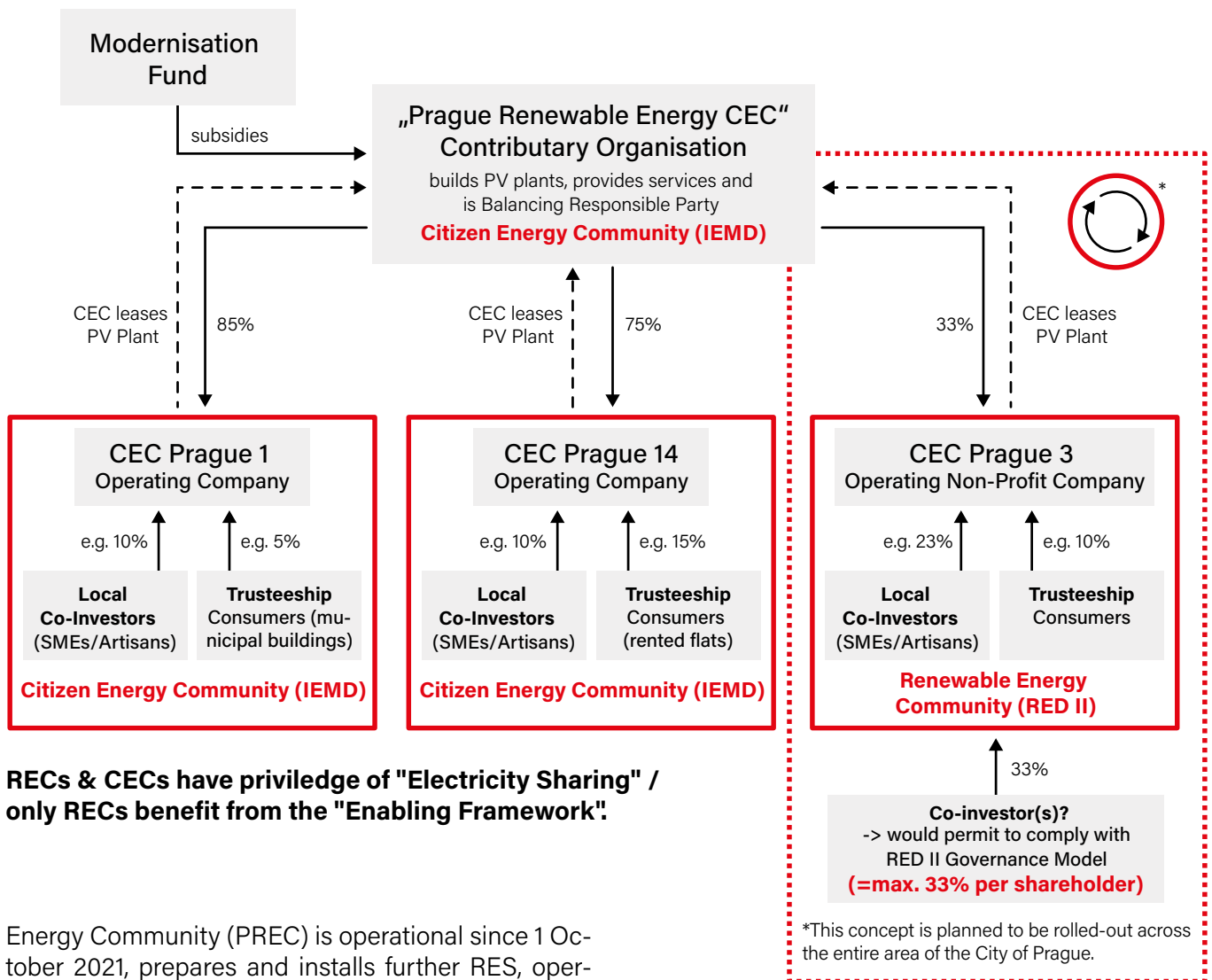
# 2. Czech Republic, Prague: Prague Renewable Energy Community

The City of Prague joined SCORE on 1 January 2021 replacing the City of Litoměřice which withdrew from the consortium in December 2020. Prague became part of the Covenant of Mayors in September 2018 and subsequently developed their Sustainable Energy and Action Plan (SECAP) committing to reduce the capital's greenhouse gas emissions by 45% compared to 2010. The SECAP in combination with the previous strategy for adaptation to climate change

finally led to the adoption of the Prague Climate Plan until 2030 – the key basis for the four fundamental pillars of the city's climate-responsible policy – sustainable energy and building management, sustainable mobility, the circular economy, and adaptation measures. The fundament for pilot project implementation was the creation of an entirely new and dedicated organisation to develop a fully-fledged energy community for the entire city area: Prague Renewable



**Figure 3 - Financing concept for the Prague Renewable Energy Community / Pragues RED II Renewable Energy Communities under the roof of a Contributory Organisation**



**RECs & CECs have privilege of "Electricity Sharing" / only RECs benefit from the "Enabling Framework".**

Energy Community (PREC) is operational since 1 October 2021, prepares and installs further RES, operates the production facilities, and supplies green electricity to interested parties. In this way, SCORE triggered the creation of a one-stop shop to provide appropriate services to support the establishment of energy communities and secure RES financing. Figure 3 illustrates the CSOP-financing concept for the Prague Renewable Energy Community.

**Consumer involvement** - Shortly after the announcement of the establishment of PREC, a unique interactive website [www.pripojdam.cz](http://www.pripojdam.cz) was released to inform the public, liaise with interested citizens and to trigger community investment to the sub-pilots in coming years. In this way PREC introduces and offers financial participation in the local projects under its roof to Prague’s citizenry through a web-based one-stop-shop service anticipating the conditions provided by the new European legal framework for prosumership / consumer involvement. Following

registration, interested citizens obtain basic information about the possible installed capacity on the buildings where they live, payback time, evaluated savings, etc. A strong interest for participation among Prague residents manifested with over 400 households having registered in the first two months of operation of the website (Nov/Dec 2021) to join PREC.

Until Czech legislation is fully in line with the EU Directives and comes into force, PREC is preparing two pilot projects to be followed installing further RES in subsequent pilots: (i) installation of PV on two apartment buildings, already entered the stage of PV supplier selection in January 2021; (ii) a larger group of schools, social care institutions and homes for the elderly, to test PV installations and explore sharing surplus electricity. A second tranche of RE

projects with an installed capacity of 3.9 MWp is to be realised in 2022 on school and social properties in Prague. Detailed dossiers on 37 buildings are under preparation, among them schools, administrative buildings, senior houses and the zoo. More generally, PREC offers to interested citizens: a) to operate the RE production facilities, b) to supply green electricity to interested parties according to current regulations on the principles for buying and selling, c) to support them to become a member of the energy community and d) to invest own funds to become a prosumer.

The project receives co-financing from the State Environmental Fund with the possibility to operate and integrate the projects under the roof of the PREC. An ELENA contract for Prague was signed by the City of Prague and the European Investment Bank on 16 December 2021 with the potential to prepare 100 PV community installations to be realised between 2023 and 2025. The overall targeted investment is

EUR 40 MM. with the ELENA subsidy amounting to EUR 2 MM. An area of uncertainty remains mainly with regard to the transposition of EU legislation (RED II and IEMD) and the related definition of permissible legal forms for ECs, the rules of participation and sharing of electricity with a new Energy Act (NEA) being under preparation. The obligation to obtain an energy trading license is the biggest current obstacle to development, if it is not just a common supply point or a local distribution system. The NEA should be submitted to the government on June 30, 2022. By-laws subsequently should set up market rules (e.g., energy/electricity sharing).



The PREC interactive website [www.pripojdam.cz](http://www.pripojdam.cz) allowing citizens to register for the energy community.

# 3. Germany, Essen: REC "Franz Sales Haus - Vocational College East"

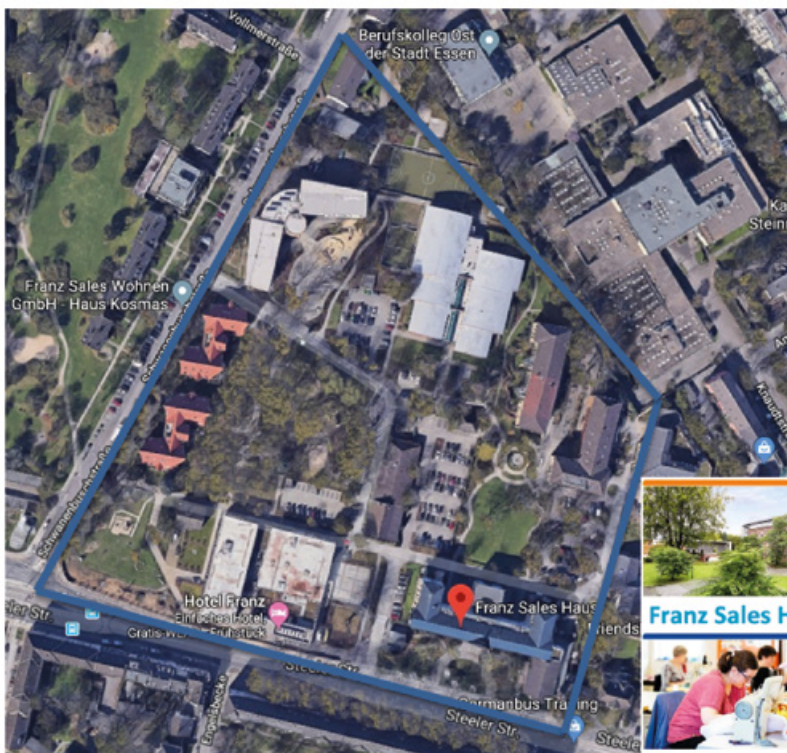
The City of Essen joined the SCORE consortium as a pilot site in February 2020. Until then, belonging to the group of Essen had been one of the follower cities since October 2018. The pilot "Franz Sales Haus - Vocational College East" (FSH-VCE) is designed as a fully-fledged REC with three anchor shareholders each holding 30%: a) the City of Essen on behalf of the VCE, b) the association Franz Sales Haus and c) a club operating the sports centre with swimming pool on the campus; the remaining 10% are earmarked

for citizens in their function as users and vocational school students. The Franz Sales Haus is a Catholic institution for the assistance of disabled people with around 1,500 employees at 40 locations in the city area offering 2,300 care and support places. The main location of the Franz Sales Haus is a centrally located campus with 15 buildings connected to a privately owned electricity grid that only has one connection to public distribution grid and a yearly electricity consumption of ca. 1.8 MM kWh. The Vocational College

## ESSEN – S.C.O.R.E



### Possible scenarios for a successful pilot project in Essen:

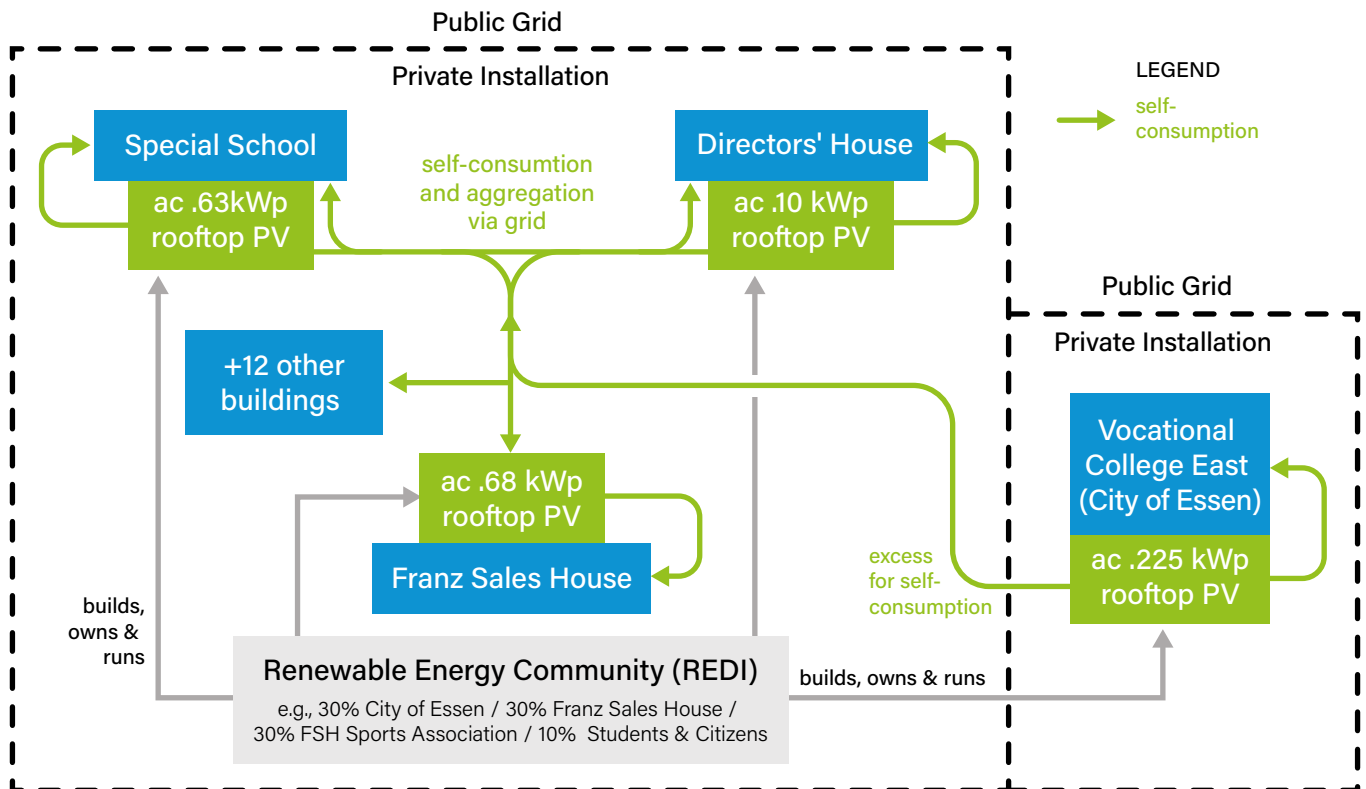


- FRANZ SALES HAUS ESSEN:**  
a social institution for handicapped people, offering...
- assisted housing
  - educational facilities
  - assisted workplaces like bakery, laundry, workshops...
  - therapeutic facilities
  - indoor pools and gyms
  - the 'Hotel Franz'...



The Campus of the Franz Sales Haus comprising 15 buildings 'behind the meter' and the adjacent Vocational College East (BKO) in Essen.



**Figure 4 - Energy sharing concept for the German Pilot in Essen**

East (Berufskolleg Ost) is located in the direct vicinity of the campus of the Franz Sales Haus, currently supervises ca. 4,000 pupils in 39 apprenticeships in fields ranging from wood technology and digital media to economics and politics and has yearly electricity consumption of ca. 500,000 kWh. The initial project design envisaged the installation of around 365 kWp PV power on various roofs of the two institutions corresponding to an annual electricity generation of about 336,807 kWh.

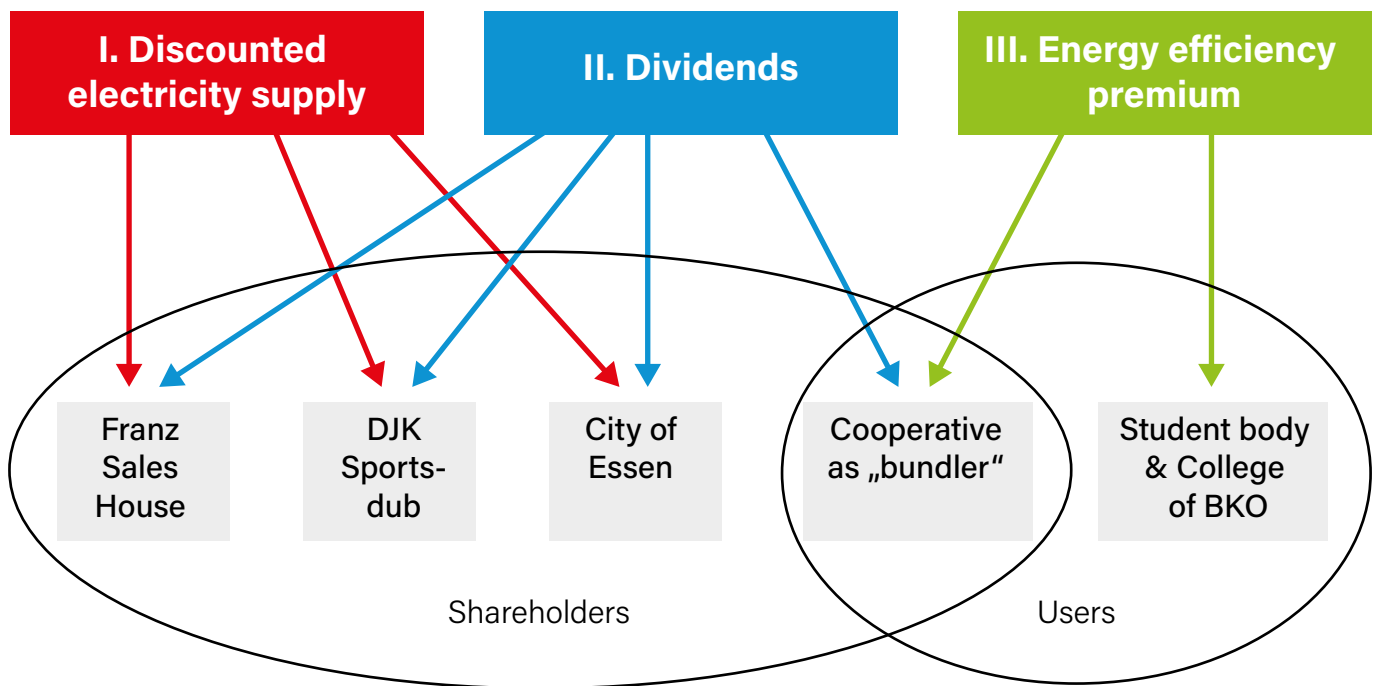
Both the physical connection of the two properties via a private medium-voltage cable (see Figure 4) and energy sharing via the public grid are possible, with a preference for the latter. Within the REC customer system (behind the metering point connecting to the public grid), there are three connection users who generate electricity via a jointly operated photovoltaic system (JPV). The generated power is supplied in equal shares to each of the three partners at a reduced tariff. The contractually guaranteed share of the actual total JPV generation is calculated subsequently. Each partner covers the remaining demand with freely selectable third-party suppliers, who therefore only charge the difference between the total demand minus the allocated JPV generation. However, since each partner is connected via

registering performance measurement (RPM) at the medium-voltage level, they pay a combination of unit rates and a demand charge covering each supply period. Consequently, the electricity purchased from the PV community plants must be shown in this billing scheme in order to be able to calculate the difference vis-à-vis the third-party supplier.

The ideal complementarity of the partners allows constructing a much larger plant with considerable higher electricity production than in the case of individual project planning while still reaching the 100% self-consumption goal. Profitability of the project is based on two pillars:

1. The VCE has very well-suited roof areas for a maximum capacity of more than 300 kWp with comparably low investment costs per kWp. At the same time, the load profile would allow solely a 100 kWp, if 100% self-consumption is aspired.
2. The FSH has a network of 15 connected buildings and a commercial load profile with an enormous electricity demand (approx. 1.4 MM. kWh/year) and the capacity to absorb additionally produced energy from PV installations. However, the investment and operating costs per kWp for installations

**Figure 5: Overview of the levels of participation**



on the own campus are higher due to small-scale and partially unsuitable roof surfaces, and expandable roof surfaces are limited overall.

Following a preliminary feasibility study completed in autumn 2020, the required cost estimates were made available not until October 2021 due to frictions with the public utility commissioned with the project execution by the Green Capital Agency of the City of Essen. Furthermore, the amendment of the Renewable Energy Sources Act in 2021 did not include any new regulations or improvements for the joint generation, consumption and trading of solar power. Failing to respond to the RED II requirements in a timely manner had a negative impact on the practical implementation of the Essen pilot project and its timeline. The main factors hampering faster implementation were uncertainties regarding (i) the transposition of RED II and IEMD – as in CZ and IT, (ii) future energy price developments, (iii) changes in the load profiles of the properties and (iv) the prospect to be able to construct a much larger PV installations of up to 440 kWp on the FSH campus. As of January 2022, the local project partners are still in the process of optimising the project.

**Consumer involvement** - Citizen participation is achieved via two different levers, i.e., capital participation in the operating company of the REC mediated by a cooperative society and an EE premium as incentive to reduce energy consumption as shown in Figure 5. (i) The cooperative is initially founded as a truncated cooperative with only three members, namely one representative each of the city, the VCE and its student body; subsequently, the board of directors is elected to represent the cooperative in the operating company of the REC; finally, the students and other interested persons can become cooperative members. This approach ensures a certain continuity and professionalism regarding the representative of the cooperative in the shareholders' assembly of the operating company. (ii) The EE premium as a second instrument is intended to provide a further incentive for all citizens in their function as users to save energy. Half of the EE gains of the VCE are shared with the student body and the college via the premium enabling also students that do not become members of the cooperative to participate.

## 4. Poland, Słupsk: Developing the "Assisted" CSOP

In early 2018, IKEA Poland agreed with the City of Słupsk as owner of the building in Krzywoustego Street 6 and the charitable association Holy Brother Albert to donate PLN 61,500 (about EUR 14,300) to the latter for the acquisition and mounting of a photovoltaic (PV) installation with a capacity of 10 kW to supply the homeless shelter with electricity and thus to lower its energy bill. The agreement on the use of the building between the city and the charitable association Holy Brother Albert furthermore foresees that the ownership of the installation is transferred to the City of Słupsk as owner of the building without any right for compensation in the event that the activity of the shelter should be terminated. In the donation act, IKEA agrees that "the donee may sell a part of the donation for educational or research-development aims in the context of projects having ecological or social

goals" with the obligation of informing the donor accordingly. Against this background, the mentioned parties have agreed to launch an "Assisted" CSOP:

- selling a maximum of 25% of the PV installation to those of the 70 residents of the shelter willing to participate turning them into consumer co-owners;
- sharing 25-50% of the benefits from electricity savings and EE measures with the "Assisted CSOP" participants through a dedicated expense fund;
- with the aim to entice the new co-owners to save electricity, become more energy efficient and – where possible – to train them as energy consultants.





Mounting of the PV installation on the rooftop of the homeless shelter in Słupsk.

Despite the enthusiasm both of the residents of the shelter and that of its management, pilot implementation was halted in October 2019, just when the shelter residents were expected to sign the contracts of the first CSOP with TPBA in Słupsk. The reason was that following municipal elections in 2019, the new mayor with a thin one-vote majority in the city council facing obstruction and an empoisoned political climate decided to withdraw from the SCORE consortium. However, Słupsk remained follower city within SCORE and the model presented in this section can be reactivated or replicated elsewhere.

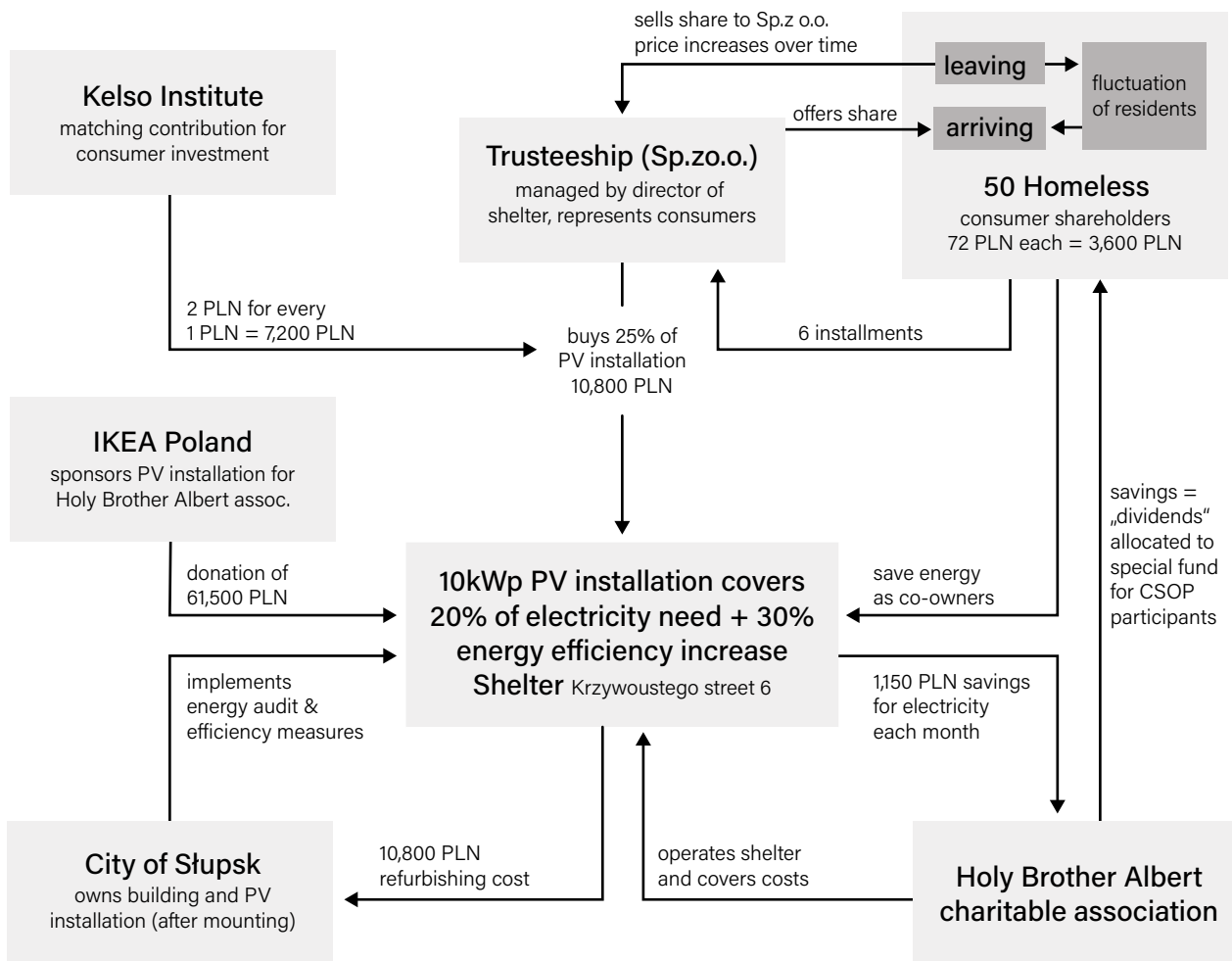
**Difference to the regular CSOP** - Unlike as in a regular CSOP, in the case of an "Assisted" CSOP a) the RE installation is donated, while b) the acquisitions of the equity share by the consumer beneficiaries are additionally facilitated by a matching contribution from a donor. As a result, the joining consumers need an even smaller initial contribution to participate and do not have to wait for the amortisation of the investment before they benefit from revenues. Both elements are of importance with regard to particular vulnerable groups like, e.g., the homeless living in the shelter in Krzywoustego Street 6 run by the charitable association Holy Brother Albert in Słupsk. We assumed that in the best case 50 residents of the homeless shelter participate in the "Assisted" CSOP with an overall contribution of PLN 216 each (about EUR 50); this contribution includes PLN 72 (about

EUR 17) in six monthly installments of 12 PLN as well as a matching contribution of PLN 144 (two for one, about EUR 34) from the Kelso Institute.

The planned overall investment of the 50 "Assisted" CSOP participants amounted to PLN 10,800 (about EUR 2,500), roughly equivalent to 25% of the value of the PV installation. As the investment of the "Assisted" CSOP participants is conveyed and administered by a trustee entity, a limited liability company (spółka z ograniczoną odpowiedzialnością) was to be set up by the local charitable association Holy Brother Albert in Słupsk and managed by the president of the



**Figure 6 - Financing Co-Ownership of a RE Installation for 50 Homeless through an "Assisted" Consumer Stock Ownership Plan**



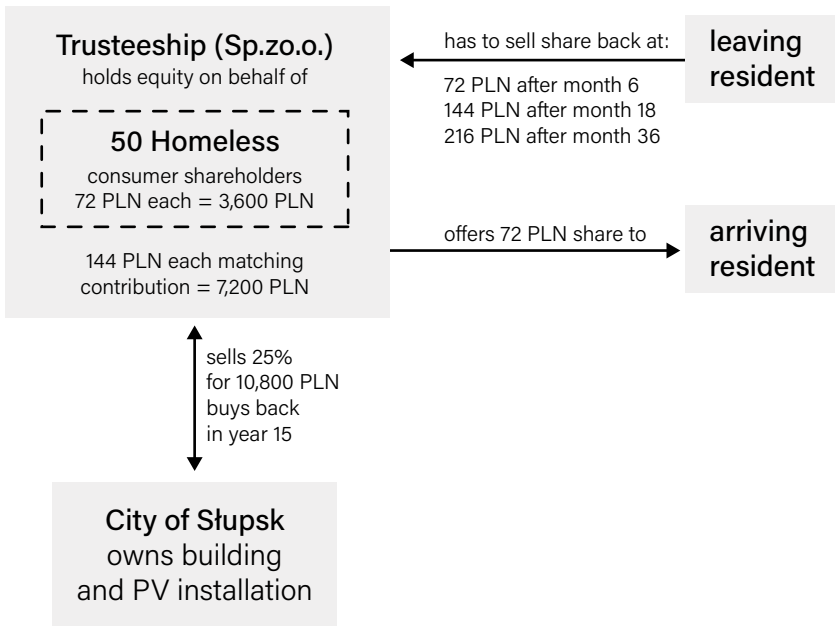
shelter Mrs Joanna Chudzinska. The Trust Ltd. was to collect both the personal installments and the matching contribution, allocating them to each resident's personal account. With these funds, the Trust Ltd. was to purchase subsequently up to 25% of the PV installation from the City of Słupsk (who has become the formal owner once the mounting was completed). The funds the city was to receive were to be reinvested in EE measures estimated to bring down the shelter's electricity consumption by a further 15%. The resulting overall structure of the "Assisted" CSOP for the homeless shelter in Krzywoustego street 6 is shown in Figure 6.

To account for the fluctuation amongst the residents of the shelter, the trusteeship agreement between the residents and the Trust Ltd. foresees a reciprocal obligation of the departing "Assisted" CSOP participants to sell and by the trustee to buy back the individual share. This repurchase obligation secures that the maximum 25% ownership stake is always with

the Trust Ltd. on behalf of the residents of the shelter; at the same time, it prevents ownership becoming dispersed with outsiders while ensuring that new residents have the possibility to buy into the "Assisted" CSOP at the same conditions the initial residents had. The repurchase price for departing "Assisted" CSOP participants increases over time to compensate for the incurred energy savings that the shelter accumulates:

- it is the initial contribution of PLN 72 (about EUR 17) for residents that have been vested, i.e., after making the last of the six PLN 12 monthly installments;
- PLN 144 (about EUR 34) after 18 months of residency, including 50% of the matching contribution;
- and PLN 216 (about EUR 50) after 36 months of residency, thus including 100% of the matching contribution.

**Figure 7 - Ownership structure over time**

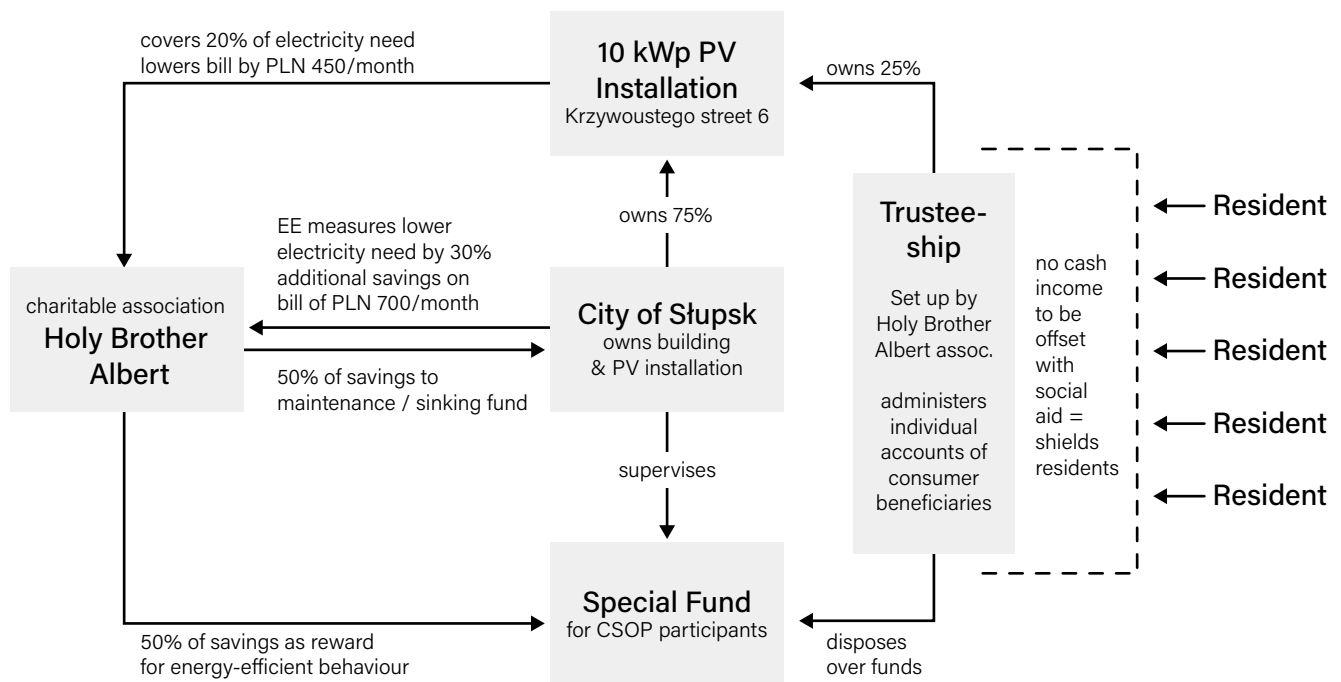


Taking into account maintenance cycles, lifetime as well as depreciation periods of PV installations, we foresee a termination of this first pioneering "Assisted" CSOP after 15 years. To this end, the City of Słupsk as the formal owner sets up a sinking fund to buy out the last generation of consumer co-owners in the year of the termination of the plan; this fund has a maximum volume of PLN 10,800 (about EUR 2,500) or less, depending on the number of plan participants. Against this background, the resulting ownership structure is shown in Figure 7. The "Assisted" CSOP thus facilitates temporary (co-)ownership of the residents of the shelter without impairing their mobility. At the same time, it prevents two "classes" amongst the residents, ensuring that newcomers can take over the shares of departing plan participants. Here, ownership as a learning device has an important function to trigger energy-efficient consumption behaviour of plan participants. Finally, the Trust Ltd. shields residents taxwise: Since they cannot dispose of their share while living in the shelter, an increase in value or any similar benefit is irrelevant during the time of residence. Only when leaving the shelter, taxation may apply with regard to the value of the matching contribution; however, individual tax-free allowances in Poland should be sufficient to avoid taxation.

**Legal aspects of CSOP in Poland** - Given the modest amount of monies invested, an "Assisted" CSOP offers only modest monetary returns. While the savings from reduced electricity consumption of the shelter certainly generate revenues, given the origin of the funds to run the shelter that the charitable association Holy Brother Albert receives, it would be difficult to distribute part of them among plan participants in cash. A related problem is that the majority of residents of the homeless shelter receive means-tested transfers and therefore are only allowed to obtain limited benefits without them being immediately deducted. In this respect, cash payments in the sense of an "energy savings dividend", e.g., are the least feasible as they run the greatest risk of being offset with social aid and therefore would require a disproportionate effort of justification. To avoid such problems, the "Assisted" CSOP foresees a Special Fund for participants set up by the city or the Trust Ltd. and designated to cover expenses for their personal needs; these could be such different items like a new pair of boots, a joint leisure excursion or a musical instrument. This fund is administered for the benefit of the plan participants by the trustee running the Trust Ltd.; it is overseen by the city administration as formal owner of at least 75% of the PV installation and thus as the entity entitled to decide about the use of the revenues (see overview in Figure 8). The fund is fed by 50% of the saved expenses for electricity, while the remaining 50% are earmarked for the sinking fund and possible spend-

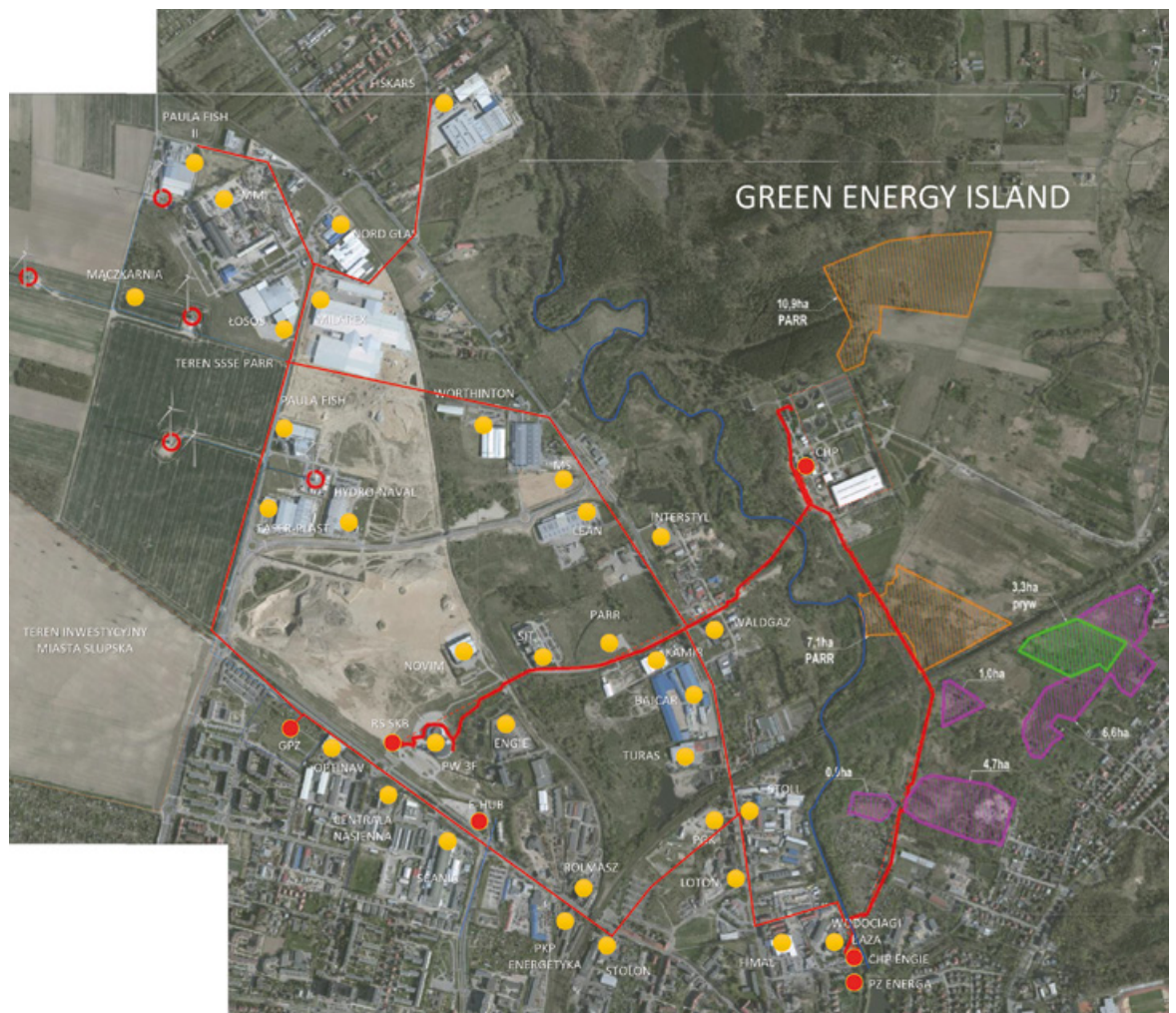
ing for maintenance or further EE measures. In term of bookkeeping, this solution provides a maximum of flexibility, as it should not be difficult for the city administration to justify such reserves for contingencies or other accruals while permitting spending them for social welfare purposes.

**Figure 8 - Distributing benefits through a Special Fund in an "Assisted" CSOP**



**Accompanying EE measures** - In 2018, a 3-year electric revitalisation calendar was prepared with TPBA management and its residents. It has been implemented with project experts' assistance. In March 2019, the first main goal was accomplished: 100% smart LED lighting in the Krzywoustego Street 6 shelter. Prior to the start of EE measures in October 2018, the electricity costs of the homeless shelter in Krzywoustego Street 6 ranged between PLN 2,500 to PLN 3,800 per month, depending on season of the year. First, the substitution of conventional light bulbs with 130 modern LED bulbs resulted in approx. PLN 700 savings per month. Later, in the course of the year 2019, the electricity bill of the shelter amounted to between PLN 900 to 3,300, depending on the season. The production of the 10 kW PV installation covers on average at least 20-25% of the electricity consumed in 2019 to 2021, leading to average savings of around PLN 450 monthly or PLN 5,300 per

year (about EUR 1,230). Additional EE measures, in particular electric revitalisation, like LEDs, movement sensors as well as the replacement of old refrigerators, freezers etc. with new EE appliances, triggered an additional 30-35% of electricity savings, amounting to approx. PLN 700 monthly or PLN 8,600 per year (about EUR 2,000) for EE alone after the 3-year electric revitalisation.



### Słupsk (PL), Bioenergy Cluster Project

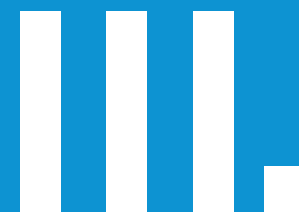
Słupsk Bioenergy Island located on the Baltic Sea is producing energy from biogas, wind turbines and PV installations (rooftop and ground mounted). The overall in-

vestment of EUR 17.5 MM is supported by national and regional funding. It includes digital infrastructure and storage and covers the city of Słupsk and of the municipality of Kobylnica with the aim to become energy-independent and zero-emission. The cluster's

electricity generation potential is over 15 MW, that of RE heat output 1.5 MW. Under a CSOP approach, small/micro enterprises and residents are to participate via trustee entities.



# Follower City Projects



## 1. Large-Scale Projects with Multiple RES

### Endona Energy Cooperative, Heeten (NL), solar parks, storage, aggregation

Endona runs three PV projects with a combined capacity of 5.2 MWp and an overall investment of EUR 3.5 MM financed mostly (90%) by mortgage loans. It made the first steps with a 1 MW storage at the solar park and curtailment and provides aggregation services to be extended. The yield benefits from two subsidies, the SDE++ (>80 Amp grid connection) and the new PCR (postcode rose for households) called SCE, are sold to the coop energy supplier "Energie van ons" via PPA. Residents so far involved as bondholders via the Endona Together



plier "Energie van ons" via PPA. Residents so far involved as bondholders via the Endona Together

Funds contributed some 10% of the investment and are to be involved via a CSOP in the future.



### Island of Krk (HR), PV and wind microgrid project

The REC "Krk Island" is part of the islands agenda to become energy independent and climate neutral. Members of the cooperative implementing the project are to be municipalities, local SMEs and the residents. The electricity is to be traded by the company Otok Krk Energija that buys the surplus production of mostly rooftop PV installations on integrated homes. The first solar plant has been installed in 2021. Future developments include wind power plants, biogas plant, energy storage options and smart meters.

## 2. PV Projects in Municipalities (medium size)



### Urbino (IT), PV with electricity sharing

The REC in Urbino, Central Italy, is to consist of rooftop PV installations on the public swimming pool (50 kWp) and public sports hall (100 kWp). Complementary energy efficiency measures are to be applied in the two buildings. The overall investment is estimated at EUR 375,000, and the setting up of the REC is embedded in the implementation of the Sustainable Energy and Climate Action Plan of the municipality. A digital platform is to guarantee electricity sharing – from July 2022 on also on the medium voltage network.



### Viladecans (ES), PV projects with electricity sharing

The Vilawatt Energy Transition Consortium in Cataluña consists of the Viladecans town council and the Metropolitan Area of Barcelona. The planned projects involve electricity sharing: (i) the REC Plantilla Enxaneta building on existing 100 kWp PV on the roof of a public school with surplus production (EUR 120,000 investment, covering the energy need of 50 families). The investment is estimated at EUR 208,000 for 30 small PV installations with 236 kWp to supply the selected buildings and adjacent ones; (ii) the REC Can Preciós with five rooftop and facade PV installations of 147 kWp and EUR 250,000 investment to cover >25% of the energy demand of the community consisting of 14 areas with 185 residents.

### Orlova & Doubrava (CZ), PV projects

Co-financed by the Czech Modernisation Fund, this municipal project envisages PV installations with a combined capacity of 104 kWp on the roofs of the ice arena and its administrative buildings. 75% of the yield of 100 MWh/year will be used for self-consumption, as Czech law does not allow energy sharing yet. Once the RED II and the IEMD are properly transposed, adjacent buildings are to be connected via the public grid to involve private households and maximise the use of the generated energy. The project is now registered on the regional authority investment platform and is expected to be replicated in Doubrava, where installations with a combined capacity of 24 kWp on a nursery and an elementary school are planned.



### Cascais (PT), PV project with electricity sharing

With a projected capacity of 184 MWp rooftop PV on public buildings, a variety of RECs are planned by the municipality, a frontrunner in climate protection action. Some of the residential buildings under consideration house vulnerable groups, and the future RECs target

them, amongst others, to fight energy poverty. The distributing grid is owned and operated by a private company with concession rights, and local energy providers have updated their metering equipment to digital/wireless structures allowing electricity sharing.



## 3. Small Rural RE Projects

### Magliano Alpi (IT), PV project operating electricity sharing

The REC "Energy City Hall" is a municipal-led PV project organised as an association. The yield of the 38 kWp PV installation is shared over the public grid supported by smart metering and a digital platform embracing 150 points of delivery. The REC includes the municipality, SMEs, and individual households. The EUR 200,000 project is to be expanded by storage and a hydrogen generator. A 2nd REC "Energy Sporting Centre" a 3rd REC "Industrial Facility" are under development.



### Vega de Valcarce (ES), PV project with electricity sharing

Located in the north-west of Spain, the REC is the non-profit association ReViEVAL. 30 kW rooftop PV on a municipal building will serve a school, 15 households and 3 small businesses, with an overall investment of EUR 30,000. The electricity is to be sold via peer-

to-peer trading to REC members with excess fed to the grid. As of January 2022, the local stakeholders are in defining individual contributions with the regulatory framework expected to allow energy sharing soon.



### Cantalupa (IT), PV with electricity sharing

The heart of the REC "Cantalupa Rinnovabile" is a 100 kWp PV plant on the roof of the municipal sport hall to be connected to a 40 kWp plant already installed. The REC has the form of an association, with the investment of EUR 180,000 covered by the municipality and other members SMEs and the lo-

cal citizenry. A digital platform is to guarantee electricity sharing – from July 2022 on also on the medium voltage network. The REC is being developed within a temporary association among 35 municipalities of the Pinerolo area.

### Over 133 publications

- 42 academic peer-reviewed publications
- 67 website articles, blogs, posts on social media, magazines, TV and press releases
- 24 newsletters & the SCORE brochure in 7 languages



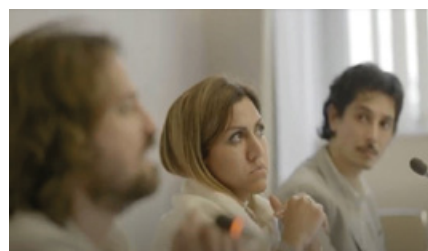
### 8 audiovisual productions

- 6 films dedicated to the pilot projects
- 1 wrap-up of the CSOP model
- 1 general presentation of SCORE



### 83 events organised in 13 countries with worldwide reach

- 16 workshops and 15 meetings co-organised by SCORE
- 3 presentations directed at EU & national policy makers
- 20 SCORE conferences incl. the final conference and
- 27 conference panels with SCORE representatives



# Dissemination and Exploitation **IV.**



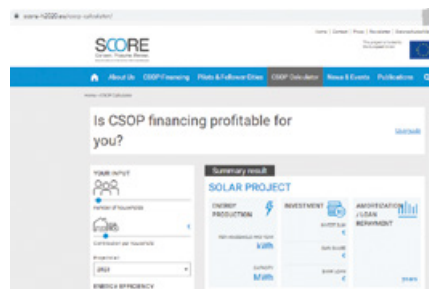
## Outreach to public authorities

Primarily via CA's city network, but also through individual partners' contact SCORE reached out to more than **700** municipalities.

- **31** municipalities became Follower Cities of SCORE

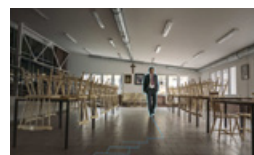
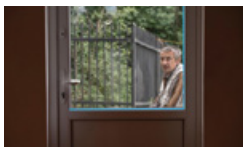
## SCORE website

Access to our information repository incl. an Online Calculator to simulate CSOP-financed PV projects for Germany, Italy and the Czech Republic



## SCORE achievements

- **10,000** individual households reached, engaging more than **2500** consumers in our RE projects
- **123.44 GWh** primary energy efficiency savings
- **29,493 tons** of CO<sub>2</sub> reduction triggered



Engaging the residents of the homeless shelter of the Holy Brother Albert Charitable Association in Slupsk, August 2019.

# 1. Assessment of Consumer Engagement in Pilots and Follower Cities

The feedback received from households and intermediaries in pilots and follower cities underlines the CSOP's potential for inclusion and empowerment: The majority of households is interested in receiving

more information about becoming prosumers. Next to their interest in the financial benefits of consumer (co-)ownership in RE, they report their interest in becoming more independent from energy utilities and being part of an ecological movement. People's motivation or concerns were mostly similar across the SCORE partner countries. Investing in RE projects has proven to be a challenge, especially for low-income households (LIHs) as they lack capital and cognitive as well as social resources, which prevents them from participating or even investing in prosumer models. Without adequate incentives, it is improbable to engage members from the SCORE focus

# Socio-Economic Impact V.

groups. Such incentives need to be tangible, limit co-contributions to a feasible amount and secure a sufficiently short investment amortisation period. Approaching vulnerable groups can be effectively facilitated by people they know and trust, especially with regards to sharing financial information. As a result, identifying, informing and including intermediaries are key structural elements of an effective engagement approach and need to be done before addressing LIHs themselves.

## 2. Focus: Situation of Vulnerable Consumers

One important means of fighting energy poverty would be to increase disposable household income. When consumers become prosumers of RE, they produce a part of the energy they consume, thus reducing their overall expenditure for energy, and the sale of excess production gives them a second source of income. These positive effects on disposable household income further increase when prosumership is coupled with EE. Investing in RE while at the same time reducing consumption by improving EE reduces the amortisation period of the investment, since less money is spent to buy energy and a larger share of (excess) production may be sold to the grid. There is, however, a condition attached in order for these effects to materialise: investment capital, either savings or access to credit. LIHs, as a rule, have neither savings nor access to credit.

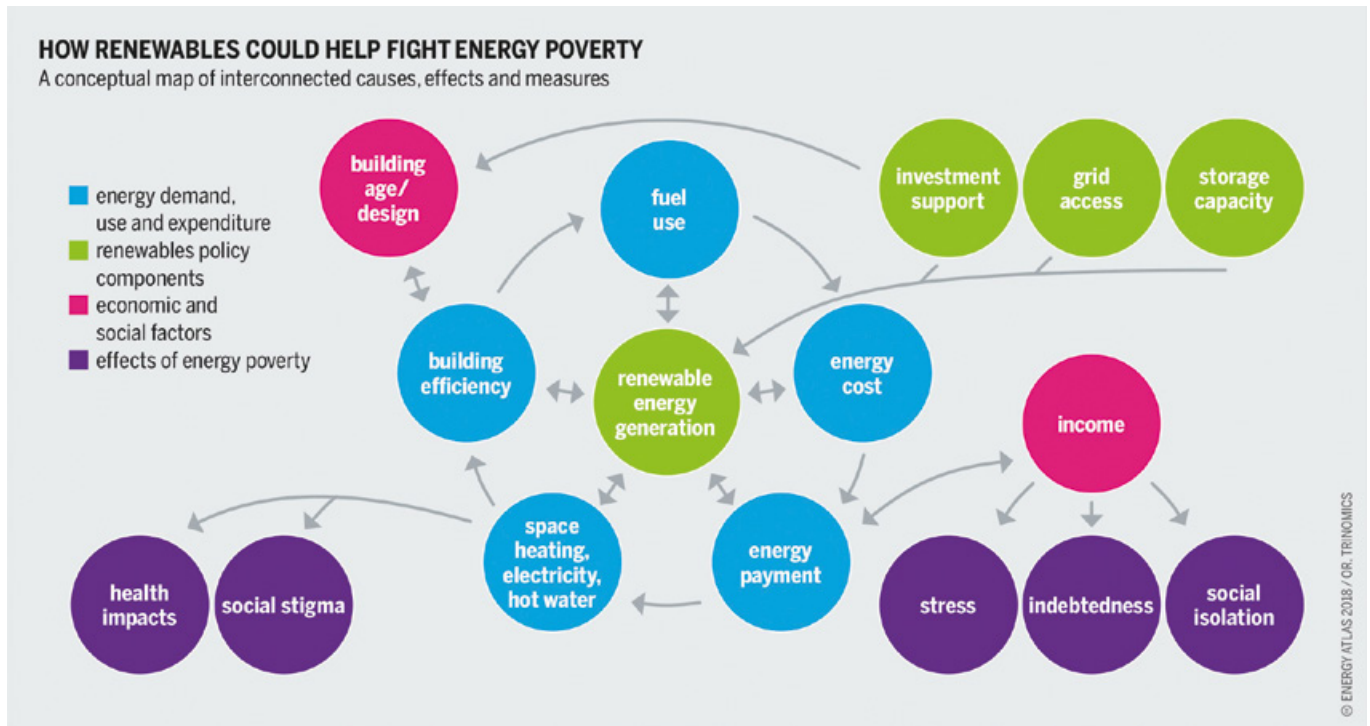
**The “welfare dilemma”** – But even if LIHs manage to raise the necessary funds, the system of redistribution in European welfare states poses a major obstacle to their long-term inclusion. Social policies encouraging asset formation favour middle and

high-income households; means-tested transfers are a barrier to LIHs, since to be eligible for social transfer payments they must liquidate all assets. In spite of the synergies between investments in renewables and in EE, this condition also prevents LIHs from participating in EE investment, especially since capital requirements are large. A further impediment is that financing measures for EE are, as a rule, tied to real estate ownership, which LIHs rarely have. Against this background, enabling vulnerable consumers to become (co-)owners of renewables fostering EE to mitigate energy poverty is caught in a “welfare dilemma”. This problem is exacerbated by the fact that (energy) poverty negatively affects the capacity for sound economic decision-making, complicates trade-offs and leads to short-sighted and risk averse assessments. Carefully calibrated policy action is essential if the notion of the “consumer at the heart of the energy markets” is not to remain an empty slogan. Consumer Stock Ownership Plans (CSOPs) can contribute to and meet the challenges of opening up the existing hermetic system of property ownership.

## 3. Barriers and Obstacles to Engagement

Obviously, the causes and effects of energy poverty are not only complex but interconnected with other economic, technological and social factors. The role of renewables in this setting is illustrated in Figure 9, which provides a conceptual map of interconnected causes of energy poverty, its effects and potential measures to alleviate it. Since RE generation decreases fuel use, and – now that RES have reached grid parity – comes at a lower cost, thus reducing payments for energy use, it has a potentially positive impact on disposable household income. This in turn

**Figure 9: Conceptual map of interconnected causes of energy poverty, its effects and potential measures to alleviate it**



Source: Trinomics 2016; Bartz/Stockmar, CC BY 4.0.

would tend to reduce stress, indebtedness and social isolation. Furthermore, as a form of asset formation, acquiring RE ownership has additional beneficial dynamics with respect to alleviating energy poverty at the household level. If consumers become prosumers of RE, i.e., when they produce part of the energy they consume (self-consumption, Art. 21 RED II), their overall expenditure for energy is not only reduced but at the same time they gain a second source of income from the sale of excess production to the grid. Finally, RE generation itself is also linked to increased building efficiency. Consumption needs in space heating, electricity and hot water are more likely to decrease, in turn mitigating the detrimental effects of energy poverty on health as well as social stigma.

**Asset formation in RE has the potential to alleviate energy poverty** – The cumulative effects on disposable household income further rise, when prosumership is coupled with measures to increase EE. Investing in RE while at the same time reducing consumption by improving EE reduces in turn the amortisation period of the investment. Consumers use less money to buy energy while selling a larger share of the production to the grid. Ownership in RE thus is a secondary incentive mechanism to consume less energy and to apply additional EE measures. As a result,

energy poverty is decreased not only through lower energy supply costs but through lower demand and increased EE in general. Figure 9 summarises these aspects of asset formation in RE coupled with EE investments as a means to alleviate energy poverty. However, there is a condition attached, i.e., the ability to invest in RE and benefit from policies facilitating RE ownership like investment support, grid access and storage capacity. The missing link between RE generation and consumer ownership in renewables especially for LIHs are policies which support asset formation.

As shown in Figure 10, with increasing household income from capital ownership in RE, building efficiency measures also come into reach for prosumers, thus contributing to reduction of energy poverty. Facilitating the ability of vulnerable consumers to acquire ownership in RE therefore is a key element for enabling them to generate RE, invest in the building stock they live in and improve their homes.



# 4. Recommendations

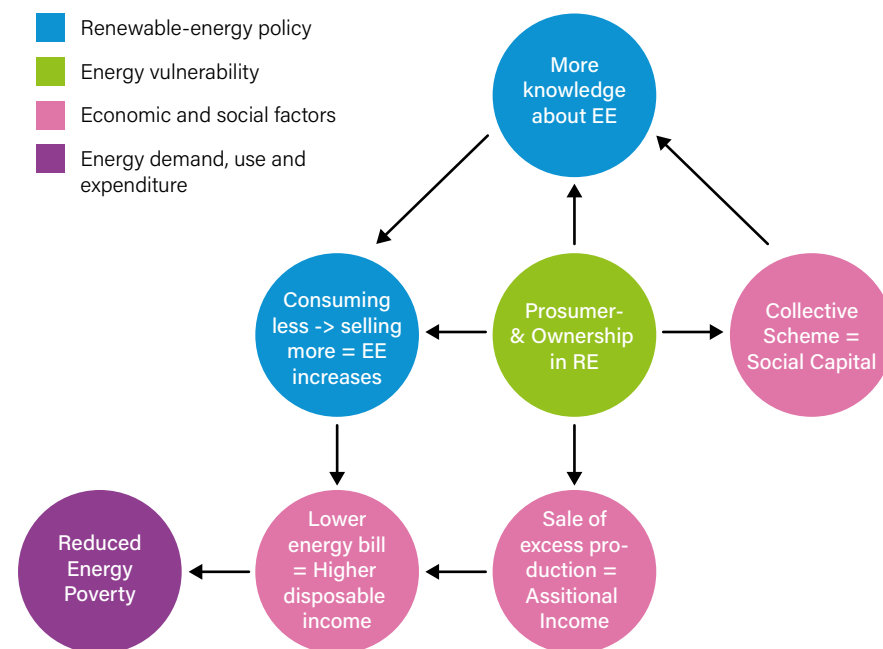
## “A Renewables Asset Formation Agenda for LIHs”

Given that too many choices may lead to decisional conflict and overload the design of the business model facilitating LIHs, participation in ECs should be simple and straightforward, leaving few options for choice. Furthermore, bandwidth is also necessary to understand the usage of new technologies and their adaptation to local circumstances as well as the provision of sufficient self-control and advance planning. Therefore, a design for vulnerable groups, e.g., in the form of a RE project targeting the participation of LIHs, requires either the spending of as little bandwidth as possible or the increase of bandwidth as a base for participation – ideally both. The CSOP as a trustee participation model can mitigate some of these problems and provide a business model with a simplified decision-making process requiring less bandwidth use.

Under a “renewables asset formation agenda for LIHs”, the decision to participate in a RE-project should yield immediate benefits:

- Direct LIH subsidies could be tied to membership in a RE project immediately increasing household income while providing a strong incentive to participate.
- LIHs receiving subsidies for energy expenditures could be automatically enrolled as (co-)owners in newly founded ECs where municipalities are the pacemakers. With convenience being one of the main determinants of consumer choice, auto-enrolment with an opt-out option has shown its benefits in financial empowerment programmes where salaries were only paid out to bank accounts linked to a savings plan and as a result savings increased.
- When linking participation in a RE project with a subsidy scheme where dividends are, e.g., transferred into a savings account for university education, each Euro saved could be matched by the equal amount to allow children of LIHs receiving higher education.
- Investments in RE projects should be exempt from necessity to liquidate one’s assets when applying for social transfers; this exemption could have a cap of at least EUR 1,000 per person per year, which should increase for investments designed to benefit child education and the like.

**Figure 10: How asset formation in RE can alleviate energy poverty**



Source: Prepared by the authors.

More generally, on top of RE-investment exemption, the bracket between the point at which a person receives the maximum of transfer payments (assets and income = 0) and the threshold at which he or she is required to pay taxes (tax-free allowance) should have a floating design. In the lower bracket only a small share of the earned dividend income would be taken into account for the tax-free allowance, thereby strengthening the incentive to receive additional income from capital ownership in RE. If all earned dividend income were to be taken into account in the lower brackets, further investments to generate dividend income from RE-ownership would have no financial benefit.

# 1. The CSOP Challenge: Including Heterogeneous Co-Investors

With regard to ECs, European energy law does not rule out other private-law citizens' or consumer-oriented initiatives than RECs or CECs, which may be supported by and implemented with the participation of municipalities in the Member States. Such projects, while not complying with the RED II/IEMD governance model, would, of course, not benefit from the privilege of energy sharing of IEMD, and in particular the preferential conditions and incentives foreseen in the "enabling framework" under RED II. However, such initiatives could be led and controlled by professional actors on the energy markets, who in RECs would be constrained to remain external investors or minority shareholders. The question whether such professional actors will accept the new governance model and decide to join RECs will depend on two factors:

- (i) the attractiveness and coherence of the RED II "enabling framework";
- (ii) the flexibility of the underlying business model allowing for an adequate division of responsibilities and benefits between the different co-investors according to their expertise and contributions.

The legislative instrument to advance RECs by tying the benefits of the "enabling framework" to the compliance with the governance model can be described as an opt-in mechanism aiming at creating peer-pressure: With a rising number of RECs operating successfully in European municipalities, this new business model will also become increasingly attractive to the incumbents; at the same time, the underlying

governance model, with its emphasis on the prosumer and the active consumer, will become more acceptable. However, the number of RECs set up in turn will depend on their ability to involve heterogeneous co-investors, which is key to the success of RE clusters. Here, trustee investment models and in particular the CSOP as a flexible low-threshold financing method can play an important role as a bridge technology. The capability to align the interests of municipal, individual and commercial investors while mitigating the frictions stemming from inherent limitations of conventional approaches make the CSOP the prototype business model for ECs.

## 2. Functional Context for Prosumership and Energy Communities

While the RED II and the IEMD provide a common framework for ECs prosumership and consumer (co-)ownership in general, each Member State pursues different priorities when transposing the new EU rules with regard to their desired functions. The regulatory framework – although based on common principles – will differ to a wide extent, depending on cultural, economic and political factors across the EU. Likewise, the flourishing movement of ECs, many of which emerged long before the passing of the Clean Energy Package, show a broad variety of patterns involving different combinations of (innovative) organisational and contractual arrangements, (local) identities and (common) interests depending, amongst other factors, on geography. Ultimately, Member States will have to provide a supporting regulatory environment for ECs and thus for consumer (co-)ownership, creating a level playing field with other market participants, in addition to promoting and assisting in the

# Conclusions VI.

development of energy communities and their effective integration in the energy system. With respect to national particularities, support rules must be applied not focusing on the EC's governance, but on its functional context.

## 3. Protected Engagement of Vulnerable Groups via CSOPs

The two-tier level of rule setting “corporate statutes - fiduciary agreement” in a CSOP allows to include objectives unusual to the corporate world. E.g., the company statutes can contain stipulations on board composition (such as gender or income diversity), or on financial assistance for acquisition of shares to specific groups. The individual fiduciary agreements may contain gender-oriented rules for sale. This is an important lever, as there are arguments for gender diversity in leadership in the RE sector to bring about both energy democracy and energy justice, as well as organisational effectiveness. The trusteeship is designed to protect the interests of consumer shareholders while rendering co-investments attractive to other partners. Representation by a trustee makes the consumers' voting behaviour predictable while still ensuring meaningful participation in decision-making. The fiduciary agreement, negotiated at CSOP inception, defines which decisions are retained by the consumer shareholders, and which are delegated to the trustee. It also defines the rights and obligations of the consumer beneficiaries. As a rule, decision-making for day-to-day tasks is left to the trustee jointly with the other shareholders of the REC. This provides stability because it ensures that consumer shareholder participation does not affect the management of routine, day-to-day operations. Strategic decisions are voted

amongst the consumer shareholders. These votes are then represented via the trustee on the board of the operating company. Benefitting from a stronger position relative to the other municipal or corporate co-owners in the CSOP, the consumers can avoid fragmentation of their voting rights. This business model can be additionally leveraged as an “Assisted” CSOP (see above II. 4.)

## 4. No Principal Barriers to Transferability of the CSOP Concept

Identifying impact drivers and barriers of consumer co-ownership from the experience of the SCORE pilot projects and from CSOP-like schemes worldwide allowed to fine-tune prosumer financing. With regard to the transfer of the CSOP-financing technique to other EU-Member States, we investigated similarities, differences and additional specific conditions that may facilitate or hinder a transfer. Based on the analysis of a dataset of 67 best-practice cases of consumer (co-)ownership from 18 countries, we found, above all, the importance of flexibility of business models to include heterogeneous co-investors for meeting the requirements of the RED II and IEMD. In this context and with a specific focus on CSOPs, the result was that they do not require specific national legislation to be transferred to other settings or countries. On the contrary, the modular approach of CSOP-financing – key for its flexibility – is an advantage when transferring the concept to other EU Member States. The only prerequisites for transferring CSOPs are (i) providing different levels for co-investments to maintain its flexibility; and (ii) keeping national approaches for RE-CSOP independent of a specific legal form of incorporation.

**Knowledge transfer to Latin America: Meeting with Roberto Esmeral, Vice-Minister for Environmental Protection, in Bogotá, Colombia, July 2019.**



## 1. Potential of Consumer Engagement and Co-Ownership in RES

The RED II and the IEMD, in addition to the CEP's provisions on energy efficiency, governance, buildings' performance and risk preparedness, are a key instrument for achieving the EU's 2030 and 2050 climate targets, updating its energy policy. They also introduce policy frameworks for new and existing market and system actors that facilitate the further deployment of RE and encourage the necessary private and public investments based on market signals. However, different Member States pursue different priorities when transposing the RED II, in particular with a view to the anticipated role of RECs in their

Energy Transition. Therefore, while the RED II (and the IEMD) provide a common framework, it is already clear from the current transposition process that the rules for RECs are differing to a wide extent depending on geographic, cultural, economic and political factors across the EU. If effectively implemented and transposed into national law, the RED II and the IEMD have the potential to accelerate a more just and sustainable energy transition by facilitating the widespread implementation of Energy Communities – both RECs and CECs. They are part of the rapidly evolving sector of locally-focused distributed energy ownership with a key element being consumer (co-) ownership. The sector is diverse with various interpretations of what form consumer (co-) ownership should take, how decision-making power is distributed, who receives project benefits, i.e., in the form of direct electricity supply or financial returns, and the motivations for the project.

# Outlook VII.

## 2. Challenges Concerning the Transposition

In general, to be defined as Energy Communities, initiatives have some form of inclusive, participatory decision-making, motivations for operation that go beyond profit maximisation and – for RECs – a “local” focus, all criteria that were included in the RED II and the IEMD. These criteria are intended to spur rapid societal transitions to a new energy system by

encouraging public uptake of and support for sustainable energy by a broader constituency, in a way that avoids a reconcentration of political power and wealth in the hands of a few energy companies. As countries transpose the RED II and the IEMD into national law, there is significant value in considering the benefits that substantial support of RECs can provide. Research has shown that community energy has the potential to unlock private investment and financing for RE, provide social benefits, and maximise efficient use of the grid. It can increase public acceptance and installation rates of RE while creating diversified revenue streams and green jobs. By enabling consumer (co-)ownership in RE and redistributing the financial



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Potential pilot site 'Nueva Vencia' in the Ciénaga Grande, Colombia.

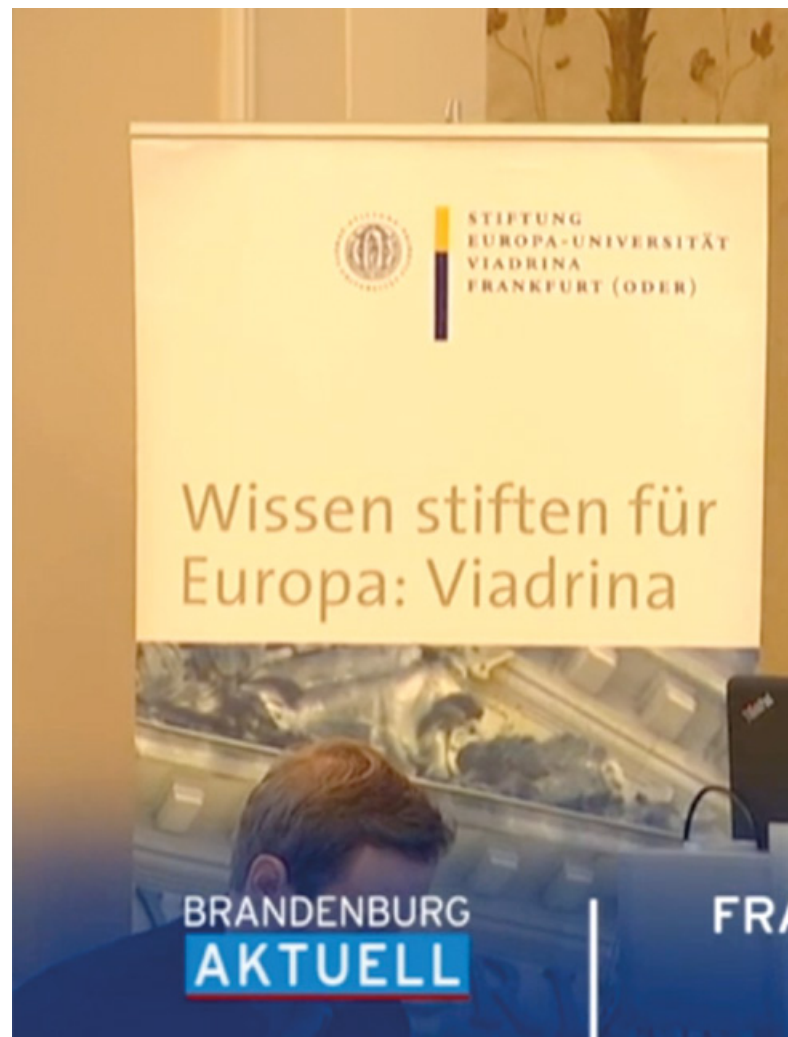
and political benefits of energy asset ownership, Energy Communities have the potential to contribute to the democratisation of RE access and benefits. These dynamics have been addressed in academic literature by work on “energy democracy”. Although the deadline for the 27 Member States of the EU to transpose the new rules into national law elapsed for the RED II in June and the IEMD in January 2021, it is expected that the process will last for the next few years.

### 3. EU and National Flanking Policy Measures Needed

In light of the diversity of the EU 27 Member States and path dependency of sociotechnical settings, one-size-fits-all approaches are obviously no solution. Notwithstanding the importance of best-practice exchange, the applicability at the national level to a large extent depends on regional priorities. Central Eastern European countries geared more towards municipal-led RE cluster projects often pursue the renewal of outdated energy infrastructure as a secondary aim. They have different needs from countries with a strong grassroots RE cooperative movement like Germany or Italy. Business models need to provide some elasticity in order to allow organisational and contractual arrangements to be designed appropriately. While cooperatives have been the prevalent legal form for ECs to date, in particular in the Western Member States, trusted schemes like the CSOP model provide an alternative for situations where upfront capital is limited, membership is heterogeneous or projects are designed to be scalable. CSOPs at the same time are apt in ECs where citizen members are in the minority needing advice to ensure representation vis-à-vis other institutional shareholders (e.g., SMEs and municipalities).

### 4. RED II / IEMD Transposition Guidance

The transposition examples from Austria, Greece, Italy and France exemplify on the one hand the broad range of possibilities and on the other hand the limitations of implementation. It is vital to tailor the “enabling framework” to the most suited (regional) business models, while meeting the challenges of ensuring efficient and complementary design for RE clusters. In conclusion, there are five key aspects of policy advice with regard to transposition (see Hoicka, Lowitzsch, Brisbois, Kumar, Ramirez Camargo “Implementing a just renewable energy transition: policy advice for transposing the new European rules for Renewable Energy Communities”, Energy Policy 2021):



- **Encouraging complementarity amongst RES** in particular via specific incentives as part of the “enabling framework”. To encourage multiple actors as prosumers on a localised grid requires additional efforts, which need to be supported by additional incentives (harmonised with existing ones).
- **Contextualising the interpretation of “local” and “proximity”** as to account for complementary of generation potentials and consumption requirements in urban versus rural areas. The challenge is to strike the balance between simplified rules easy to apply and tailored solutions requiring additional administrative and time effort; standard rules with the possibility to apply for exemptions could be a solution.
- **Supporting electricity and energy sharing** as a new option for ECs that entices complementarity of load profiles and RES with fair rules concerning, e.g., grid fees. In particular, restricting electricity sharing to the low voltage grid is a trap to avoid, as it would arbitrarily set who can join a EC and thus conflict with the principle of “openness of membership”.
- **Ensuring that incumbents are enticed to cooperate with ECs** without allowing them to co-opt the intent of diversified ownership. The legal framework should be kept flexible with regard to the legal vehicles eligible, taking into account the challenge that the heterogeneity of co-investors of ECs poses. At the same time, the participation of incumbents as minority stake co-investors should be facilitated.
- **Ensuring that ECs allow for the full participation of vulnerable consumers.** Ancillary rules should provide target incentives for ECs that effectively include underrepresented groups; vulnerable consumers should be supported directly, e.g., by exempting investments in ECs from the means test for social transfers and/or allowing direct energy subsidies to be capitalised to join an existing or set up a new EC.



German television RBB reporting on the kick-off meeting of the SCORE project at European University Viadrina.



Kirsten Röber // CARITAS



Prof. Patrizia Lombardi // POLITO



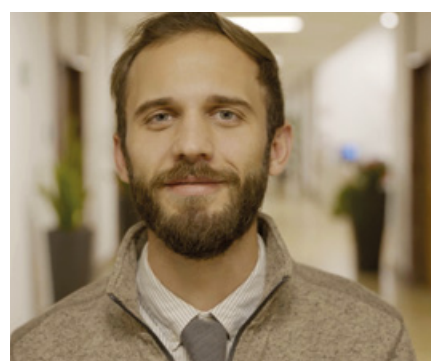
Andrea Carosi // Climate Alliance



Dr Radostina Primova // CSD



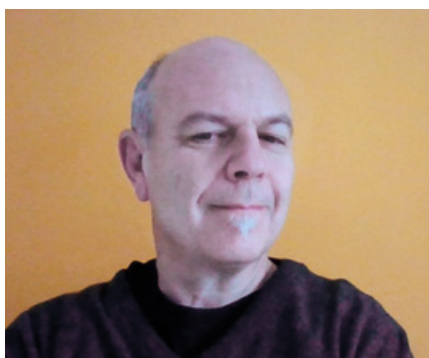
Lena Kleist // Viadrina



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# Team



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**Autonomy of a REC:** Recital 71 RED II stipulates the capability “of remaining autonomous from individual members and other traditional market actors that participate in the community as members or shareholders, or who cooperate through other means such as investment”.

**Clean Energy for All Europeans Package of the European Union:** A package of measures that the European Commission presented on 30 November 2016 to keep the EU competitive, as the energy transition changes global energy markets; this legislative initiative has four main goals, i.e., energy efficiency, global leadership in RE, a fair deal for consumers and a redesign of the internal electricity market.

**Citizen Energy Communities (CECs):** Defined in Art. 2 (11) of the IEMD as a legal entity that “(a) is based on voluntary and open participation and is effectively controlled by members or shareholders that are natural persons, local authorities, including municipalities, or small enterprises; (b) has for its primary purpose to provide environmental, economic or social community benefits to its members or shareholders or to the local areas where it operates rather than to generate financial profits; and (c) may engage in generation, including from renewable sources, distribution, supply, consumption, aggregation, energy storage, energy efficiency services or charging services for electric vehicles or provide other energy services to its members or shareholders”.

**Consumer Stock Ownership Plan (CSOP):** A financing technique that employs an intermediary corporate vehicle, facilitates the involvement of individual investors through a trusteeship and may use external financing, thereby achieving the benefit of financial leverage.

**Demonstration Projects for Innovative Technologies:** Defined in Art. 2 para. 2 (x) of the IEMR as “a project demonstrating a technology as a first of its kind in the Union and representing a significant innovation that goes well beyond the state of the art”.

**Effective control of RECs and CECs:** Defined in Art. 2 pt. (56) IEMD as “rights, contracts or other means which, either separately or in combination and having regard to the considerations of fact or law involved, confer the possibility of exercising decisive influence on an undertaking, in particular by: (a) ownership or the right to use all or part of the assets of an undertaking; (b) rights or contracts which confer decisive influence on the composition, voting or decisions of the organs of an undertaking”.

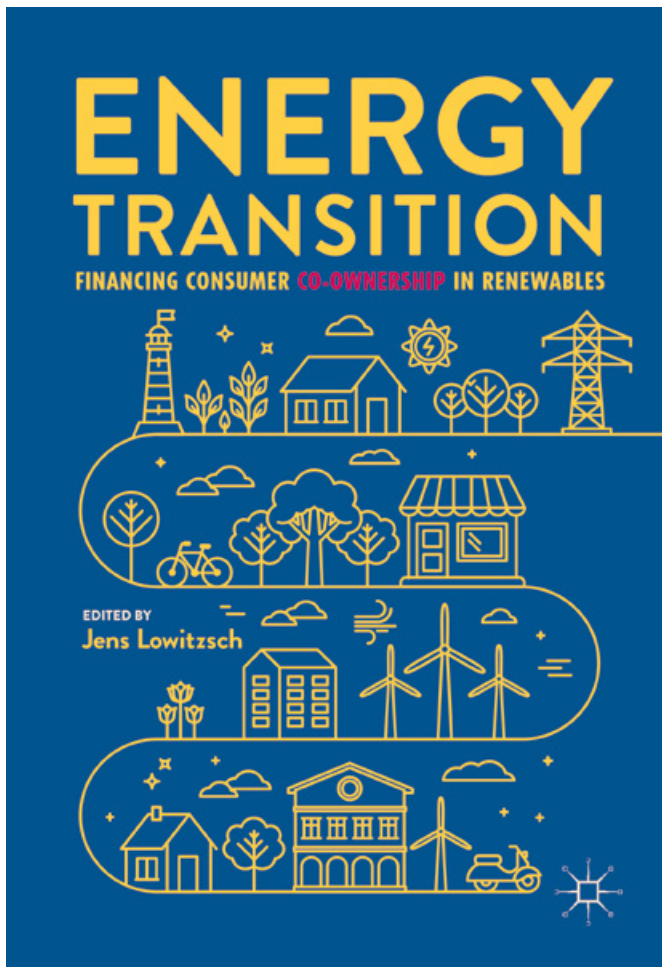
**Electricity/Energy Sharing** (incl. (virtual) net-metering): Recital (46) IEMD stipulates: “Electricity sharing enables members or shareholders to be supplied with electricity from the generation installations within the community without being in direct physical proximity to the generating installation and without being behind a single metering point”. In the context of RECs, this is extended in Recital (71) and Art. 21 para. 6 to energy sharing.

**Employee Stock Ownership Plan (ESOP):** An ESOP can use leverage and enables workers to acquire shares of their employer corporations, repaying the acquisition loan not from their wages but from the future earnings of their shares in the company.

**Enabling Framework:** Art. 22 para. 4 RED II foresees an enabling framework “to promote and facilitate the development of RECs”; furthermore, Art. 21 para. 6. foresees an enabling framework “to promote and facilitate the development of renewables self-consumption”.

**Fiduciary Trusteeship:** A fiduciary, fully fledged trusteeship of a shareholding occurs when a shareholder (here the fiduciary entity = trustee) owns the shareholding for the account of one or more other entities (here individual consumer shareholders = trustors) in the sense that she is entitled to the rights arising from the shareholding only in accordance with a fiduciary contract concluded with the trustors.

# Glossary



**Internal Electricity Market Directive (IEMD):** Defines amongst others “citizen energy communities” (CECs), introducing in Art. 16 a new governance model and the possibility of energy sharing for them.

**Internal Electricity Market Regulation (IEMR):** Mainly focussing on the completion of the internal market in electricity that has progressively been implemented since 1999.

**Investment Agreements:** In the RE-CSOP, these are concluded between CSOP participants and the trusteeship and stipulate the fiduciary relationship including rights and obligations of both parties.

**Leveraged investment:** Financing transaction that uses external financing (debt), thereby achieving the benefit of financial leverage.

**Mirror Loan:** Structure of capital acquisition loan in a CSOP directly to the operating company and then in a second “mirror loan” to the trusteeship resulting in favourable taxation and a stronger position of the lender.

**Renewable Energy Cluster:** (Renewable) energy systems of the future, entailing flexibility, bi-directionality and interconnectivity options between prosumers and producers of energy and the market.

**Renewable Energy Community (REC):** Defined in Art. 2 (16) RED II as a legal entity: “(a) which, according to applicable national law, is based on open and voluntary participation, is autonomous, and is effectively controlled by shareholders or members that are located in the proximity of the renewable energy projects owned and developed by that community; (b) whose shareholders or members are natural persons, local authorities, including municipalities, or SMEs; (c) whose primary purpose is to provide environmental, economic or social community benefits for its members/the local areas where it operates rather than financial profits”

**Renewable Energy Directive (RED II):** Defines amongst others “renewable energy communities” (RECs) introducing a new governance model and in Art. 22 the possibility of energy sharing for them, while providing them with an enabling framework.

**Trusteeship:** Contractual arrangement with a fiduciary (as a rule, a legal entity but also a physical person) to facilitate individual shareholding of the participating consumers in a CSOP.

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Roth, Lucas / Lowitzsch, Jens / Bretzigheimer, Marcel Domenico, *(Co-)ownership in renewable energy production facilities as a driver for energy efficiency – Empirical insights from Germany*, Energy Research & Social Science, under review, 2022 forthcoming.

Roth, Lucas / Lowitzsch, Jens / Hanke, Florian, *How does co-ownership in renewables and socio-demographic background impact consumer willingness to apply energy efficiency measures? – Empirical insights from German households*, has been accepted for oral presentation. Energy Research & Social Science, under review, 2022 forthcoming.

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Lowitzsch, Jens, *Policy brief on the IEMD & RED II Transposition in Croatian for citizen energy policies*, SCORE Website.

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**Lutz Ribbe** chairs the European Economic and Social Committee's Observatory for Sustainable Development. After his studies in landscape planning and ecology, he became vice president of one of Germany's largest environmental NGOs, BUND. Later he switched positions to become department head at the EuroNatur foundation. As a renowned expert on environmental protection and agrarian policy, he was appointed to the European Economic and Social Committee (EESC), where he maintains regular contact with parliamentarians, governance bodies and environmental NGOs. For the EESC he co-authored the study "Changing the Future of Energy – Civil Society As a Main Player in Renewable Energy Creation" in 2015, which reviews the role of civil society in the implementation of the Renewable Energy Directive (2008). In 2017, he was the EESC rapporteur for the recast of the Renewable Energy Directive (2018).

# SCORE Advisory Board

**Patricia Hetter Kelso** is president of the Kelso Institute for the Study of Economic Systems in San Francisco, California, USA. With her late husband, Louis O. Kelso, she pioneered the CSOP and the ESOP. She co-authored with Mr Kelso "Two-Factor Theory: The Economics of Reality and Democracy" and "Economic Power: Extending the ESOP Revolution Through Binary Economics", as well as numerous articles, monographs, occasional papers and congressional submissions. She also served as vice president of Kelso & Company, a merchant bank, which she co-founded in 1971 with Mr Kelso simultaneously with the Kelso Institute. Mrs Kelso holds a BA degree in government and philosophy from the University of Texas at Austin.

**Dr Thomas Engelke** leads the Energy and Construction team at the Federation of German Consumer Organisations. After finishing his PhD in Biology in 1991, he was engaged by the German Regional Government of Schleswig-Holstein and as a national expert by the European Commission. Starting in 2004, he worked for the Hanse Office, the Joint Representation of Schleswig-Holstein and Hamburg to the EU. In 2016, he joined the Federation of German Consumer Organisations. Over the years, Dr Engelke gathered ample experience in governmental institutions and in lobbying work. He initiated, organised and participated in several national and EU projects and is familiar with EU and national energy policies. Recently he has worked on energy efficiency, renewable energies, prosumers and the impact of the energy transition on consumers.

**Dr Jean-Francois Renault** coordinates the strategic team on resource (incl. energy) efficiency at Projekt-träger Jülich. He studied geology, town / country planning and entrepreneurship in France, India and Germany, and earned his PhD in environmental geology at the Berlin University of Technology / Mines Paris Tech. As a project manager, he has been involved in more than 25 international projects dealing with resource management and policy, as well as with capacity building, knowledge transfer, innovation management, financial instruments and business models

for research and innovation. He was the scientific coordinator of the European ECOPOL InnoNet project and is currently leading the study "The International State of the Transition to a Green Economy" for the German Federal Ministry for the Environment, Nature Conservation and Nuclear Safety.

**Pia Saraceno** is the chairwoman of REF-E, a company specialised in regulation and market development in the Italian energy sector. She has a background in macroeconomics and development economics. In the late 1990s, she set up REF-E's (then named Ref. Ricerche per l'Economia e la Finanza) Energy Observatory, a think tank within the company supported by around 30 major players of the Italian market. There, independent research is carried out on a broad spectrum of topics such as technology, regulatory, market/economic issues concerning the energy sector. Pia Saraceno has direct experience with assessing the effects of energy investments on national and local economies. She has participated in academic life teaching courses at a number of universities. Since 2011 she has been teaching energy economics and management of environment assets at the Catholic University of Milan.

**Dirk Vansintjan** is one of the founding members and director of the Belgian RE cooperative Ecopower. He has been working in the renewable energy sector since 1985 and still pushes for an energy transition that leads to energy democracy. During his studies of German philology, he co-founded the Belgic green party's student body. As part of his commitment for (energy) cooperatives, he initiated and leads the Horizon 2020 project REScoop to foster the European-wide communication and cooperation on the topic. He remains an active member of the green party and has served on party positions and public offices for over 20 years.



## The Consortium



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**The project is coordinated by the European University Viadrina Frankfurt (Oder) and supported by the SCORE consortium of the following organisations:**

Centre for the Study of Democracy | Prague | Stadt Essen | Climate Alliance | co2online | Consorzio Forestale, Regione Polveriera | Cooperativa La Foresta | Cooperativa Sociale Amico | Deutscher Caritas Verband (in coop. with Energiereferat, Frankfurt/Main) | Federacja Konsumentów | Politecnico di Torino | Porsenna.



# SCORE Partners



## Our legal partner in the Czech Republic is the law firm Frank Bold Advokáti.

Frank Bold is a purpose-driven law firm with operations in three EU countries. Their aim is to combine best practices from the business and non-profit sectors to support the vision of a free and responsible society on a variety of levels. Their team includes top experts on a variety of areas of law – energy law, science, research and innovation, public law, corporate law, litigations and contract law. In the area of clean-energy business Frank Bold offers deep knowledge of the legislative environment, business practices, and technical issues in energy operations and experience with the procedures of state authorities. The law firm handles the legal needs of dozens of clients – power and heat producers, green-power investors, electricity traders, and associations of all of these. It is the first certificated B Corporation in the Czech Republic – marking them as a transparent, accountable and socially high-performing company.



BECKER BÜTTNER HELD

## Our legal partner in Germany is the law firm Becker Büttner Held (BBH).

Becker Büttner Held (BBH) is a partnership firm of lawyers, auditors, tax consultants and engineers providing comprehensive advice to the public and the private sector in the field of energy, environment and infrastructure. BBH is one of the leading law firms in Germany and Europe in these fields. BBH advises its clients on all issues along the entire energy value

chain. With more than 300 experts and a supporting staff of more than 300 employees, BBH assists its clients from offices in Berlin, Brussels, Hamburg, Cologne, Munich, Erfurt and Stuttgart and also has several partner offices in Europe through its Associated European Energy Consultants e. V. (AEEC) network.



## Our legal partner in Italy is the law firm DRBLEX.

DRBLEX is a boutique law firm specialised in commercial and corporate matters. The firm assists its clients from offices in Milan, Pescara and London and provides a wide range of legal services across the entire energy value chain. DRBLEX offers advice and support to both private clients and public institutions in the field of energy law, dealing with contract drafting, regulatory compliance and litigation. Within DRBLEX, Prof. Andrea Borroni offers leading strategic insight into the digitalisation of the energy value chain through the use of distributed ledger technology and blockchain. In renewables, DRBLEX and its support team represent clients in the development of projects regarding renewables or infrastructure (in particular, renewable power generation projects, energy storage facilities, utility-scale, distributed and residential solar, real estate and project financing).

## Imprint

### **Publisher**

Europa-Universität Viadrina Frankfurt (Oder)  
Große Scharnstraße 59,  
D-15230 Frankfurt (Oder)

In cooperation with the Kelso Institute Europe  
Kreuzbergstraße 76,  
D-10965 Berlin

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### **Date of publication**

April 2022

ISBN 978-3-9821899-6-3 (E-book)

ISBN 978-3-9821899-7-0 (Printed version)

The project "Supporting Consumer Ownership in Renewable Energies" (SCORE) is funded by the European Union in the framework of the Horizon 2020 research and innovation programme (H2020-EE-2016-2017/H2020-EE-2017-CSA-PPI) under Grant Agreement number 784960.



**Funded by  
the European Union**



