



ReDREAM  
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# D6.3: Portfolios of funding and financing schemes (Demo 2) [M16]

Identification, presentation and selection of funding  
and financing schemes

[31<sup>st</sup> of May 2022]

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## Technical References

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## Review

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V2	15-01-2022	Angelo Giordano	Second draft elaborated after the 1 <sup>st</sup> round of meetings with BIO for data collection
V3	29-02-2022	Angelo Giordano	Third draft elaborated after the 2 <sup>nd</sup> round of meetings with BIO
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V7	31-05-2022	Angelo Giordano	Final version elaborated after the final review of COMILLAS



## Summary

### ReDREAM Project

The energy market is rapidly transforming and so is the role of the consumer. Yesterday's passive consumers are central actors in today's energy markets. As new prosumers, energy markets can benefit from their generation, consumption, and storage capabilities. The EU-funded ReDREAM project will enable the effective participation of consumers and prosumers in the energy market. The project will develop a strategy for the creation of a value generation chain based on a revolutionary service-dominant logic in which services are exchanged. The project will foster the demand response tools and energy/non-energy services that enable consumers to participate in the energy market. This will lead to the establishment of a new concept: a connected user-centred energy ecosystem.

### Executive summary

Deliverable 6.3 has the aim of illustrating how the application of a series of pre-selected innovative business models could impact the BIO community established at Gallese Municipality.

Starting by the foundations of REDREAM project, which is the REDREAM Business Model user centric-ecosystem for consumers, D6.5 resumes how all the key players are involved into the REDREAM demonstrations in BIO and what are their respective expertise and expectations from the project outcome. The Service Dominant Logic (SDL) approach is at the base of all demonstrations of REDREAM project and all the applicable business models, already mapped in D6.1 Library of Bankable Business Models.

D6.3, then, illustrates the methodology that has been followed by CIVI, as Deliverable leader, in elaborating the content of this deliverable: a methodical process has been followed for identifying the applicable Business Models, always considering the individual business strategy, the local value chains and the local eco-system and partnerships, already present at BIO.



#### The selected funding opts related to task 6.2

1. **Investment Disposal Strategy exploiting and securitizing the Energy Performance Contract (Optimal case)**
2. **Crowded schemes: funding and lending (2<sup>nd</sup> Best case)**
3. **Other suitable funding and financing mechanisms (Best case)**
4. EU ETS carbon emission trading systems
5. Sustainability-linked bond
6. **Equity loans (3<sup>rd</sup> Best case)**

Following the process of screening, selection, and application of the two selected Business Models for BIO, namely the Energy Community (solar fields and extra services), D6.3 roughly shows the economic impacts of those applications, always taking into account the REDREAM Business Model ecosystem and the estimations of the technology costs not yet in the market.

Finally, D6.3 concludes with a selection of funding and financial mechanisms as well as financing tools that can be supporting the expansion plans of BIO through the application of those new models, establishing the link with Task 6.3 on the Scalability and Replicability Analysis, that will give all the necessary instruments for allowing both BIO and technological partners to exploit their plans of respectively growth and market entry.



## Table of acronyms

Acronyms	Description
RED	Renewable energy directive
DR	Demand Response
EPC	Energy Performance Contract
ESCO	Energy Service Company
TSO	Transmission System Operator
DSO	Distribution System Operator
IRENA	International Renewable Energy Agency
PSF	Power System Flexibility
VRE	Variable Renewable Energy
MVP	Minimum Viable Product
3PF	Third Party Financing
IEA	International Energy Agency
BRP	Balance Responsible Parties
DER	Distributed Energy Resource
EE	Energy Efficiency
EV	Electric Vehicle
RES	Renewable Energy Sources
BESS	Battery Energy Storage Systems
CaPex	Capital Expenditure
Opex	Operational Expenditure
PED	Positive Energy District
V1G	Vehicle To Grid – unidirectional
V2G	Vehicle To Grid – bidirectional
V2L	Vehicle To Load
SES	Smart Energy System
SMES	Smart Multi-Energy Systems
ESS	Energy storage system
IoT	Internet of Things
DLT	Distributed Ledgers Technology
IP	Intellectual Property
SPV	Special Purpose Vehicle
EMP	E-Mobility Provider
SDG	Sustainable Development Goals
ESG	Environmental, Social and Governance
mSMEs	micro, Small and Medium Enterprises
AI	Artificial Intelligence
O&M	Operation and Maintenance
EIB	European Investment Bank

### Disclaimer

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# 1 Introduction

The current Deliverable (as part of a set of deliverables under the task 6.2) is a technical document that is associated with the development of a methodology to identify, present and select business models that supports the delivery of the energy services. Therefore, the content of the Deliverable is strongly related to the content of the D6.1 and how to implement in the Demos. Afterwards, the Work Package will perform the Scalability and Replicability Analysis of DR solutions deployed, namely the task 6.3 where the four case studies as early adopters will be demonstrated in terms of effectiveness, scalability and replicability of the selected business models and of the optional funding and financing schemes. The combination of the D6.1, the D6.2-5 and the SRA would be supportive tool for policymakers. Aim of this deliverable is to explain (1) how to craft business models adapted to the features and ecosystem from demos blueprint, and (2) how to build a library of business models of affordable funding disposal strategies, for each demo to EU scale. The first objective is covered in Section 2, whereas the latter is addressed in Section 3.

## 1.1 What is REDREAM Business Model user centric ecosystem for consumers?

Based on set of the exploitable results identified in REDREAM, an innovative business model (BM) has been defined that focus on the commercialisation of the REDREAM ecosystem:

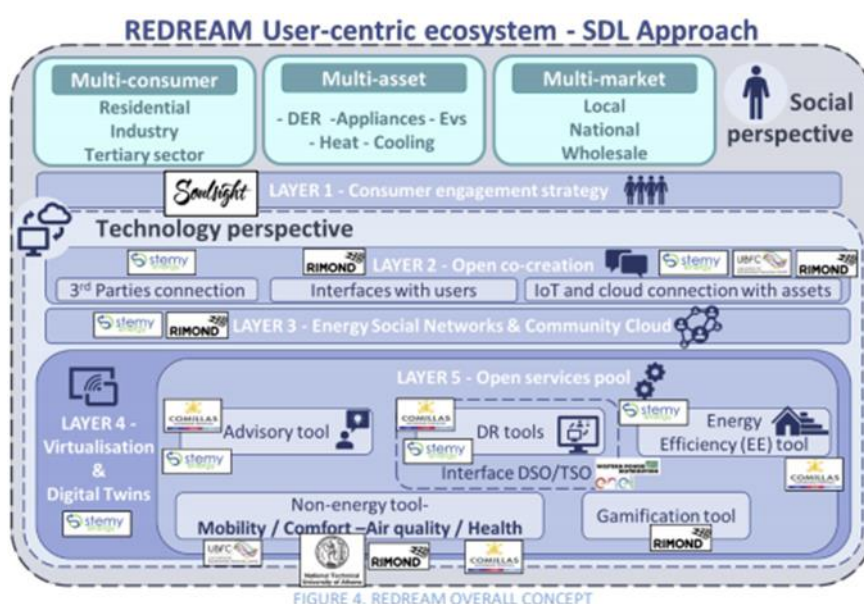


Figure 1 REDREAM User-centric ecosystem

The REDREAM user centric ecosystem for consumers with a settle ecosystem running around a portfolio of smart devices embedded to the DR interoperable platforms. As such, all partners will benefit from the sale through direct fees from the clients (users) or through internal fees among the partners under an exploitation agreement. The SDL approach will act as umbrella enabling several scalable business models as showcased in the D6.1 and here refined in the chapter 2.



The commercialisation envisioned relies on a portfolio of functionalities that can be layered upon one another to produce incremental service packs that match each target user's requirements, needs and investment potential. STEMY, RIMOND and SOULSIGHT oversee the commercialisation of the technology, creating a joint task force, by the exploitation of a SaaS business model, chosen as the most suitable model for revenue maximisation.

In a nutshell:

- STEMY a start-up, supported by a financial plan certified in the due diligence carried out by the European institution KIC-Innoenergy, in the start-up boost program, and it is in advanced conversations with committed Venture Capital (VC) funds to attract a second round of investment. Additionally, they are considered an innovative SME by the Spanish government (NEOTEC 2019).
- RIMOND is already present worldwide with special emphasis on European market commercialising ICT solutions.
- SOULSIGHT is a Strategic Creative Agency, with a solid background with the industry: banking (BBVA, ABN Amro), automotive (VW, Audi, BMW), technology (Square, Diebold Nixdorf, Siemens). Its expansion to energy sector will be smooth taking advantage of these previous experiences.

The strategy for this new jointly distribution is principally based on Partners' commercialisation channels:

- Business Development Department: sales teams offer a tailored customer service, as well as a post-sale service, considering both its direct and final customers as key actors for an exponential future company growth.
- International Distribution Network: As previously remarked, REDREAM's target market is clearly international. That is why, international distribution sales teams is involved to easily place its service within the market.

The rest of partners involved with the solution development (COMILLAS, TIMELEX, NTUA, OMIE and OLIVO) receive fees from STEMY, RIMOND and SOULSIGHT for each contract involving REDREAM ecosystem, upon the signature of an exploitation agreement.

## 1.2 Brief description of the deliverable

### T6.2. Identification, presentation and selection of funding and financing schemes (L: CIVI; P: COMILLAS, ENER, BIO, GALLESE, ZEZ, BWCE) (M7 - M20)

The task will work in order to deliver innovative funding and financing schemes supporting the scalability and replicability strategy of the project. The methodology will adopt as a key driver the exploitation of the revenue schemes as a proper underlying. In that way, the project proposition of business models will comply with the investors' expectation in terms of "capital requirements". This rationale, by leveraging the prosumers' empowerment, will ensure a holistic financial planning framework: all stakeholders could access and use the schemes for fund or finance the project follow-up or ramp-up phase in a de-risky way. This financial planning framework will pave the way for the design of new economic models as viewed by utilities, regulators and policymakers, as well as the end-user investors themselves. In this sense, innovative financial schemes for investment will be investigated based on promising forthcoming trends: ESCo hybrid models, Energy Performance Contracts and Power Purchase Agreements, crowdfunding/crowdlending cases, cooperative initiatives with centred revenue sharing mechanisms. Expected result: The set of schemes assessed will defined



for each demo. According to the different features, tailored economic and financial KPIs will be settled for each demo.

### Set of deliverables

**D6.2: Portfolio of funding and financing schemes (Demo1)**

**D6.3: Portfolio of funding and financing schemes (Demo2)**

**D6.4: Portfolio of funding and financing schemes (Demo3)**

**D6.5: Portfolio of funding and financing schemes (Demo4)**

The set of schemes assessed will be defined for each demo. According to the different features, tailored economic and financial KPIs will be settled for each demo.

## 1.3 Market Status: how does the capital flows?

“Green financing<sup>1</sup> is to increase level of financial flows (from banking, micro-credit, insurance and investment) from the public, private and not-for-profit sectors to sustainable development priorities. A key part..... is to better manage..... both a decent rate of return and environmental benefit and deliver greater accountability”.

The question mark is how to enable the green financing and how to promote it thanks to the game-changing rules given by new regulatory frameworks, new public financial incentives schemes, increased investment in clean and green technologies.

As indicated by the Q1 2022 report issued by the AFME<sup>2</sup>, there is a long-lasting trend on the rapidly growing Sustainable Finance market in Europe. Indeed, even if in 2022 the market conditions have been unfavourable for ESG bonds, Global ESG and Carbon Emission prices, the EU and UK forward curves continue to anticipate long-term increase. In addition, the favourable EU regulatory update and high volatility of the energy-as-a-commodity price would determine the Green Finance to be mainstream into the financial system. This means in brief that the Market status is turning more and more toward the green financing aims to mobilize private capital flows in green investments.

As well, taking a look at the Global investment Market through Crowdfunding it could be noted there is the same trend of ESG Investment.

<sup>1</sup> The United Nations Environment Programme (UNEP), the global authority promoting the environmental agenda, its coherent implementation for the sustainable development within the United Nations system declares the Green Financing in this way.

<sup>2</sup> The Association for Financial Markets in Europe (AFME) is the voice of Europe’s wholesale financial markets, providing expertise across a broad range of regulatory and capital markets issues. We represent the leading global and European banks and other significant capital market players. AFME’s members are the lead underwriters of 89% of European corporate and sovereign debt, and 75% of European listed equity capital issuances.

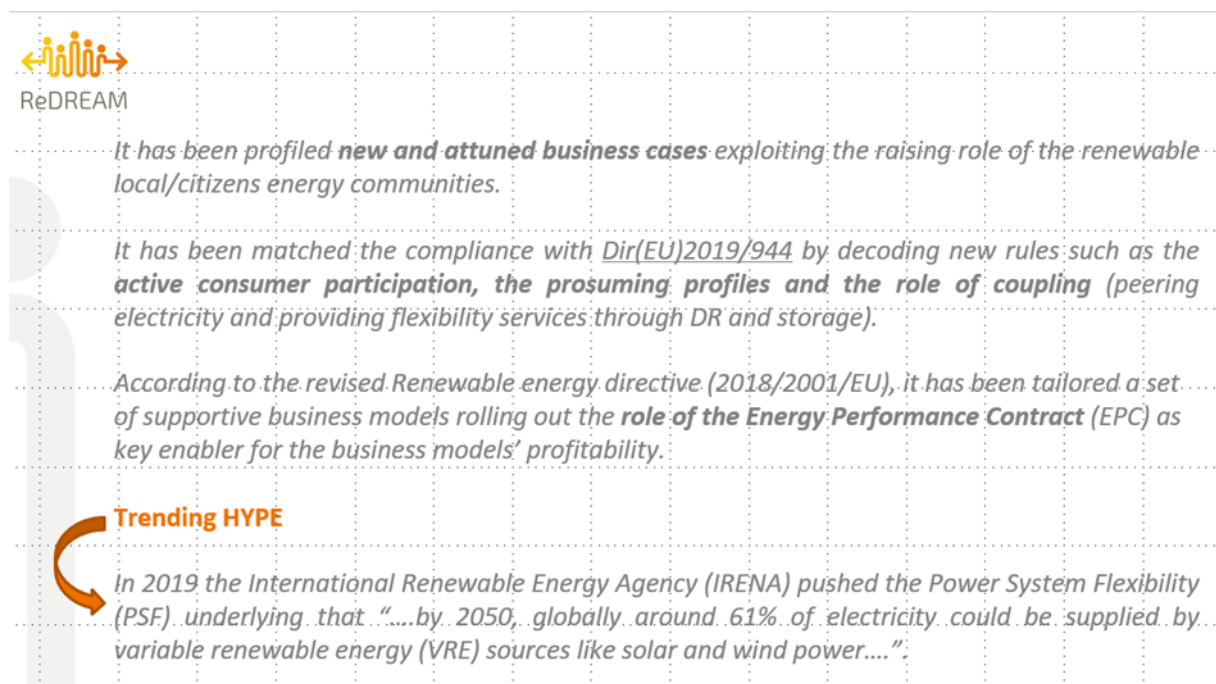



## 1.4 The Collaborative intra-project activities

Starting from the results of the D6.1 related to “Library of bankable business models. Identification, presentation and selection of business models”, the report has underpinned the proposed BMs to Demos. As such, it is useful to explore the matrix co-designed with demo partners: compared to the previous deliverable, the matrix has been focused only on demo cases. Indeed, the methodology adopted for the matrix has followed the co-design and the co-decision process. At the beginning more than twelve relevant business models exploiting the energy efficiency, the flexibility, the demand-response, the blockchain and the crypto assets were presented to demos. The comprehensive list has been redefined with demos according to the most relevant business models, as such the following matrix has been created to map the six selected BMs to match with each Redream Partners, including non-demo partners.

During the first physical Consortium meeting in Madrid it has been done a workshop with all partner to fine-tune the matrix and to match each BM with each involved partner. Beside the first two business models concerning non-core activities, it has been asked to demo to evaluate each proposed BM taking care of their:

- individual business strategy
- local value-chain
- local eco-systems and partnership.




  
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*It has been profiled **new and attuned business cases** exploiting the raising role of the renewable local/citizens energy communities.*

*It has been matched the compliance with Dir(EU)2019/944 by decoding new rules such as the **active consumer participation, the prosuming profiles and the role of coupling** (peering electricity and providing flexibility services through DR and storage).*


*According to the revised Renewable energy directive (2018/2001/EU), it has been tailored a set of supportive business models rolling out the **role of the Energy Performance Contract (EPC)** as key enabler for the business models' profitability.*

 **Trending HYPE**

*In 2019 the International Renewable Energy Agency (IRENA) pushed the Power System Flexibility (PSF) underlying that “...by 2050, globally around 61% of electricity could be supplied by variable renewable energy (VRE) sources like solar and wind power...”.*

Figure 2 Focus on topics discussed during the Workshop on Business Modelling organized in Madrid

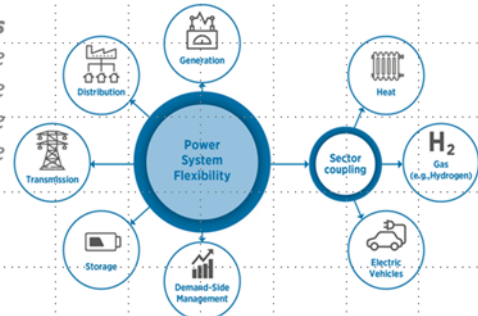




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**Power System Flexibility**

Is the ability to demand and generate **side resources connected to the network** of a utility grid to mitigate the system changes and uncertainties. This indicates the capability of the network of the power system to manage the variability and uncertainties of variable renewable energy generation.



**The paradigm**

In ReDREAM we would change in the paradigm from the **Centralized approach** (demand-supply model where the energy is a commodity) to the **Decentralized approach** (demand-centric model, where the energy is a service).

Figure 3 Focus on topics discussed during the Workshop on Business Modelling organized in Madrid



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Enablers are **flexibility and Demand Response**, thanks to the **energy digitalisation**. The proposed Business model will generate **value for the communities and the stakeholders** and not maximising value for the shareholders.

**The game changer**

ReDREAM promotes the **monetization of the energy savings to stimulate virtuous behaviour within the citizens community**. As such, it has underpinned the monetization process of virtuous energy behaviours through the systematic use of EPCs by fixing the floor beyond which savings become revenue for the user. It is crucial the involvement of 3PF in the form of ESCOs.

**The more you save, the more virtuous you are the more you earn.**




Figure 4 Focus on topics discussed during the Workshop on Business Modelling organized in Madrid

The results are in the D6.1, while for the purpose of this deliverable, it has been looked at the emerging trends and defined a set of viable and sustainable business models pointing out that they should be from the one side coupled with innovative public/private funding schemes and from the other side adapted to the four ReDREAM demonstration sites.





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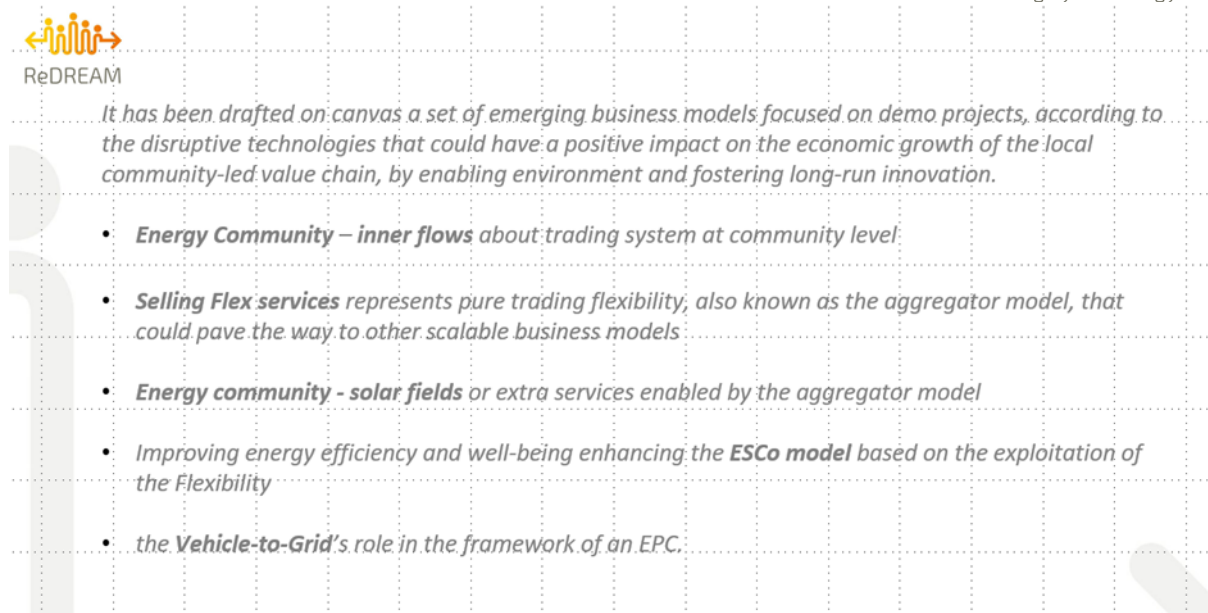


Figure 5 Focus on topics discussed during the Workshop on Business Modelling organized in Madrid

The report has looked at the emerging trends and defined a set of viable and sustainable business models pointing out that they should be from the one side coupled with innovative public/private funding schemes and from the other side adapted to the four ReDREAM demonstration sites.

Being in the ReDREAM second and third steps of a stepped methodology, and in the middle of an iterative and shared path, this report is considering the second chapter of fourth, being integrated with the funding side, the assessment side (task 6.3), and the exploitation strategy (task 6.4).

Indeed, this deliverable is focused on the business intelligence activities for market up-scaling: it will be coupled with a catalogue of viable and proper funding and financing scheme (Task 6.2 and deliverables 6.2, 6.3, 6.4 and 6.5). Afterwards, the Work Package will perform in the task 6.3 the scalability and replicability analysis of DR solutions deployed: if they could be scaled-up and replicate, and what if in case of different use cases. In a nutshell, there will be space for gathering real data on the assumptions and on the business model structure and verify whether the funding disposal strategies could comply with the economic assessment of each single use case. In addition, the Blueprint model will host a template used with demos to create assumptive dataset to populate each selected BM and to be verified, the consistency and the profitability, during the forthcoming months. As such, the data has been gathered from the demo partners based on the guidelines provided by Stemy in terms of Capex and mostly Opex.





Figure 6 Exploitation Strategy Roadmap





## 2 Demo blueprint model: features and ecosystem

As the main object of Chapter 2 is to describe the economic impacts of the application of the Business Model selected by the Italian demo within the proposals made through Deliverable 6.1, estimations of the cost of technology provided by STEMY (in terms of equipment and installation costs) are needed.

Nevertheless, the consistency of the model (**standalone**) is ensured by the Public Incentives scheme currently lasting **20 years after the Energy Community establishment**. Cashable benefits are:

- REC self-consumption value (electricity produced by PVs used directly in the EC by the same members of the REC) – **16 €Cent \* kWh**
- Ministry (MISE) incentive (feed-in premium) – **11 €Cent \* kWh**
- Cash back of ARERA charges (valorizzazione oneri sistema, share of network charges that the Authority recognizes to REC members) – **8 €Cent \* kWh**
- Sale of energy at market price (green energy fed into the network grid) – **5 €Cent \* kWh**

For the specific case of the **Energy Community Solar Fields and extra services (ref. XX of the Del6.1) Business Model**, it has been used the 3PF scheme to face with the upfront costs and the dPBT has been established in 8 years.

### 2.1 Features of the Business model: Italy

Italian demonstration in Gallese decided to focus on the BM of **Energy Community (solar fields and extra services)** (ref. 3.7 of the Del6.1) and would be able to deploy the following main features:

1. Thanks to the 2019 EU Electricity and the Renewable Energy Directives, BIODISTRETTO can take the initiative of leading the generation of a mixed model of renewable energy community (both physical and virtual). It must be a legal entity with a legal authorized representative; this possibility has been enlarged to a group of individual shareholders (the cooperative) or to an aggregator. Principal activities are responsibility for remote control, for the billing, and for market participation or grid service provision. Since the core is the community concept a shared use of large standalone PV system, large battery storage, or a combined fuel cell system is more viable in the business plan and economic multiplier rather than single individual process. The focus of this BM will be on community's business ability to use their local links, trust and track record to increase number of prosumers engaging with platform and offering flexibility. Income for community business to deliver service comes from a share of flexibility income and householder subscription with platform.
2. The Biodistretto, through the creation of a Special Purpose Vehicle (SPV), whose shareholders will be the following: public Municipality of Gallese, local Gallese citizens, local entrepreneurs in the food and agricultural sectors, and BIODISTRETTO. The scope of generating renewable energy locally, sharing it and selling it through the energy community members promoting a community-based approach, has the possibility of generating precious local value, not only in economic and environmental terms but also, and especially, in social terms. Strengthening the concept of local community, transforming citizens into energy prosumers and consumers, can



generate new value chains and new jobs and have a positive impact on the local economy and society.

The generation of the local renewable energy community has the possibility to undertake the following actions: generate, distribute, supply, consume, aggregate and store energy. Within the plan of the energy community to be generated in Gallese, there is to supply energy to the local electrical mobility network through e-vehicles charging and dis-charging services.

The initiative of providing extra services to the community, such as electrical mobility, can be the ideal instrument for enlarging the participation to the REC (Renewable Energy Community), strengthening the offer of the Community to the local citizens.

As per the on-going demonstration action, the Italian demo is focusing on prosumers such as households and local farmers with roof-top PV systems in place with the scope of monitoring the consumption through STEMY devices.

Concerning the planned Stakeholders engagement for the application of the above selected Business Model, it has been considered three main typologies of actors:

- **Prosumers** (households, farmers, local entrepreneurs in the agricultural and food sector, public entities (other cities of the Biodistretto out then Gallese Municipality))
- **Consumers** (households, farmers, local entrepreneurs in the agricultural and food sector, public entities (other cities of the Biodistretto out then Gallese Municipality))
- **Service providers:** energy community providing mobility services to the local community

**Key target - 200 users** engaged and involved in the demo as part of the community

It has been considered even a broader list of potential and targeted benefits leveraging the size and the weight of the value proposition. There are three families of beneficiaries: TSO/DSO, Consumers, Others. Every family of beneficiaries has its own list of possible benefits. As such:

#### **TSO-DSO**

- Exchanging self-generated energy locally will allow DSOs to reduce tariffs raising profit, as there will be a minimization of the use of higher voltage levels of the network

#### **Consumers**

- Encouraging the uptake of the installation of energy technologies and therefore de-carbonising the grid
- Greater understanding of what energy market and flexibility means to help grid congestion and to avoid financially and environmentally costly grid upgrades
- Saving money on optimising consumers electricity consumption
- Earning revenue from selling produced energy
- Savings/benefits from P2P trading and engaging with local generation.

#### **Others**

- Raising awareness of energy use with installers
- Increasing the business opportunities for technology providers
- Increasing the business opportunities for construction companies
- Supporting Public Authorities in developing and supporting decarbonization initiatives through the dissemination of local energy communities all over the territory



Concerning the description of the key costs structure and the revenue streams characterized for the consumers involved in the pilot, the demo leader has analysed the model.

#### Key costs:

- installation of smart (Stemy) equipment to enable data monitoring and data interface with trading platform (Stemy's SPLORDER)
- data aggregation services and billing services
- consumer support services (including for mobility services)
- additional insurance for community aggregator
- additional investments for increasing local renewable energy production
- additional investments for providing additional services (electric mobility)
- monitoring and maintenance fees

#### Revenue streams:

- energy saving (especially for Public Authorities)
- monetization of data
- provision of additional services (mobility)

Together with Bio-district and the Gallese Municipalities it has been started a Renewable Energy community and it has been created a potential Operational Statements of Benefits and incomes to be distributed among the members and with the third party financing, in this case a pure ESCo, or a SuperESCO according to what has been described in the D6.1 and defined by IEA.



Figure 7 Super ESCO model

The prospect of monetizing energy savings aims to stimulate virtuous behaviour within the community, as showed in the figure above. In summary of the proposed architecture and in relation to the monetization process of virtuous energy behaviours, the systematic use of EPC (Energy Performance Contracting) contracts that fix the floor beyond which savings become revenue for the user is crucial the involvement of 3PF (third party financing) in the form of ESCos (Energy Service Companies), below the ESCo model scheme as sourced from IEA.

It has been profiled new and attuned business cases exploiting the raising role of the renewable local/citizens energy communities. It has been matched the compliance with Dir(EU)2019/944 by decoding new rules such as the active consumer participation, the prosuming profiles and the role of coupling (peering electricity and providing flexibility services through DR and storage). According to the revised Renewable energy directive (2018/2001/EU), it has been tailored a set of supportive business models rolling out the role of the Energy Performance Contract (EPC) as key enabler for the business models' profitability. Currently, in Italy it is possible to establish a self-consumption



community according to the “1-to-1” scheme or a Production Unit serving a Consumption Unit and to the “1-to-many” collective self-consumption model (one PU and several CUs).

The latter complies with two different configurations:



Figure 8 Models of Physical and Virtual Energy Communities

- Physical self-consumption scheme (direct private connection between the generation plant and domestic/common users, with a single access point (POD - Point Of Delivery) to the public network)
- Virtual self-consumption scheme on an extended perimeter (use of the public network for the exchange of energy between generation and consumption units).

In the REC Gallese, the renewable power plant (the CAPEX) is funded by the 3PF (the ESCo) and acquired by the REC without immediate payment but by transferring the larger part of the Operational Cash Flows also covering additional costs (OPEX) for a fixed time period (dPBT).

In the executive business plan of this business model, the Capex represented by the PV plant is covered by a 3PF. The REC gets the plant without upfront costs, but operative incomes will go to the 3PF covering the dPBT. As such, there are two operational periods:

- Period A: pre-settlement of the debt with 3PF;
- Period B: post-extinction of the debt with the 3PF.

### Period A - the amortizing period

- 90% of the Benefits will repay the CAPEX to 3PF
- 10% left distributed within the REC according to the quotas:
  - 10% allocated to a OPEX fund managed by the REC
  - 10% equally among each member
  - 80% divided among REC members based on the Energy shared by each shareholder



### Period B – the operational phase

- 25% of the Benefits goes to the whom hosts the PV plant (the roof owner)
- 75% divided as follows:
  - 10% Opex fund
  - 10% equally among each member
  - 55% divided among REC members based on the shared energy.

Eco-Indexes		
Number of members	80	nr.
Power Plant	200	kWp
Production	263.650	kWh/y
Self-consumption	17.920	kWh/y
Shared Energy	81.090	kWh/y
Renewable fed into the Grid	245.730	kWh/y
REC self-consumption value	2.867,2	€/y
Ministry incentive (feed-in premium)	8.919,9	€/y
Cash back of ARERA charges	6.487,2	€/y
Sale of energy at market price	12.286,5	€/y
<b>Operational Incomes</b>	<b>30.560,8</b>	<b>€/y</b>

Period A - the amortizing period – 8 years		
Benefits to repay CAPEX to 3PF	90%	27.504,72 €
Distributed within the REC	10%	3.056,08 €
OPEX fund managed by the REC	10%	305,61 €
Equally among each member	10%	305,61 €
Among REC members based on the Energy shared by each shareholder	80%	2.444,86 €



Period B – the operational phase from the 9 <sup>th</sup> year		
To PV plant (the roof owner)	25%	7.640,2 €
Divided as follows:	75%	22.920,6 €
Opex fund	12,5%	2.865,08 €
Equally among each member	12,5%	2.865,08 €
Among REC members based on the shared energy.	75%	17.190,44 €



# 3 Library of affordable funding disposal strategies

## 3.1 The funding strategy rationale

Given the Energy Service Company (owned by a joint stock bank) experience, it has been underpinned some concerns on the banking system side. As such, it has been proposed a powerful approach developed the energy efficiency and the renewable energy systems applied in private and public projects through the Energy Performance Contract. Thus, to enable the banking system to figure out the role and the value of the energy savings.

Having assess the possible business cases, it is strongly suggested to divide the development project in two stepped phases:

- The funding scheme (harmonization of three main sources: non-refundable rewards, loans and equity) and the implementation
- The long-term securitization of Energy Performance Contract.

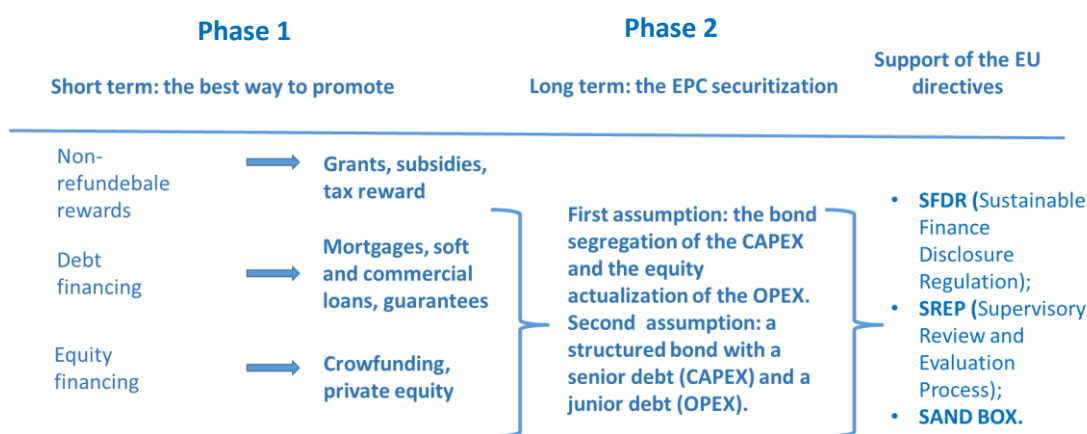


Figure 9– Funding Strategy Rationale

The second step is the capstone because it will "strip" the contract clearly distinguish CAPEX from OPEX. This scheme represents a game changer while reducing the cost of funding compared with a possible larger scheme, such as a green bond emission. In this sense the latest legislative novelties the SFDR<sup>3</sup> directive and the ESG SREP<sup>4</sup> by EBA, are following the green transition pathway. Indeed, thanks

<sup>3</sup> Regulation (EU) 2019/2088 of the European Parliament and of the Council of 27 November 2019 on sustainability-related disclosures in the financial services sector (Text with EEA relevance) <https://eur-lex.europa.eu/legal-content/EN/TXT/?uri=celex%3A32019R2088>

<sup>4</sup> The European Banking Authority (EBA) published today its final revised Guidelines on common procedures and methodologies for the supervisory review and evaluation process (SREP) and supervisory stress testing. The revisions aim at implementing the amendments to the Capital Requirements Directive (CRD V) and Capital Requirements Regulation (CRR II) and promoting convergence towards best supervisory practices. [https://www.eba.europa.eu/sites/default/documents/files/document\\_library/News%20and%20Press/Communication%20materials/Infographics/ESG%20disclosure/1026178/EBA%20summary%20of%20ESG%20disclosures%20-%20Pillar%203.jpg](https://www.eba.europa.eu/sites/default/documents/files/document_library/News%20and%20Press/Communication%20materials/Infographics/ESG%20disclosure/1026178/EBA%20summary%20of%20ESG%20disclosures%20-%20Pillar%203.jpg)



to enter into force of the Taxonomy and to the introduction of the European directive SFDR (Sustainable Finance Disclosure Regulation) the financial originators are asked to declare in their financial product whether ESG principles are present and in which percentage. This is a first step against “greenwashing”. As well, EBA (European Banking Authority) will introduce the ESG principles in the SREP (Supervisory Review and Evaluation Process).

### 3.2 Investment Disposal Strategy

As such, it has been created an investment disposal strategy, capitalizing what it has been already profiled for the complex Positive Energy Districts development under the Smart City scenario<sup>5</sup>. It has been assumed that despite of the overall amount of the gross investment, the rationale could be sized according to the 4 demo needs.

A derivate part of the retail investments should be able to finance the equity in phase one, after that the securitization of the debt in phase two ends with the segregation of the assets in a long-term investment product, like in a pension plan scheme.

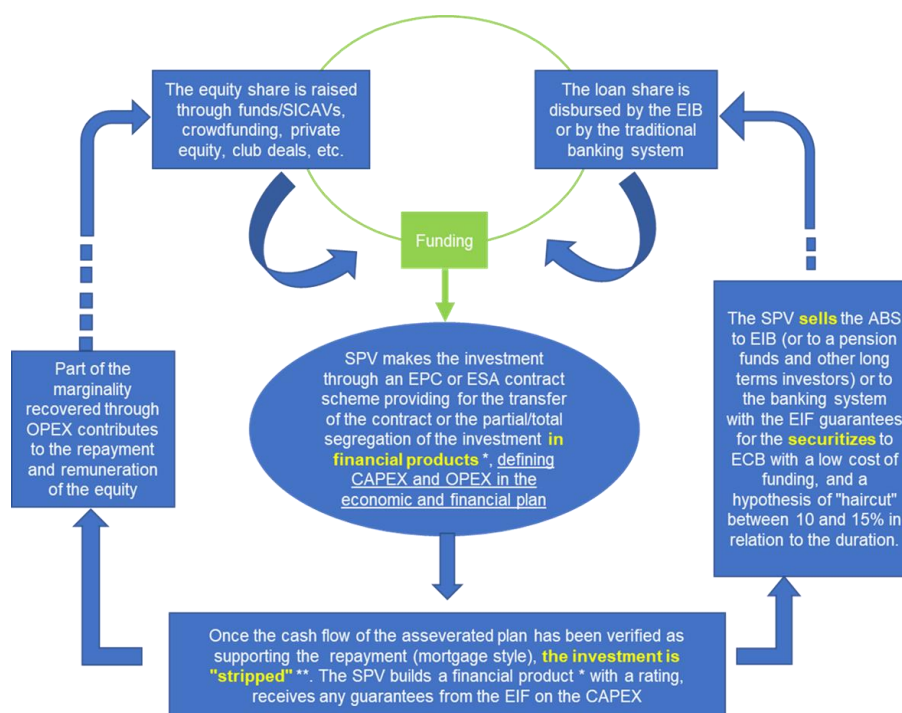


Figure 10– Investment Disposal Strategy

As explained in the following sub chapter, the turnkey for ReDREAM is to leverage the so called “fixed coupon”: a floating premium based on savings and a capital fully protected at maturity. Indeed, the envisaged funding scheme gives the investor, thanks to the creation of a solid community for which energy is the pivotal element, the possibility to fully exploit the regulatory innovation, given by the EU Directive 2001/2018 (RED II) on energy communities.

<sup>5</sup> [https://www.sparcs.info/sites/default/files/2020-11/D7.1\\_BusinessModelsAndFinancingMechanismsForWideUptake.pdf](https://www.sparcs.info/sites/default/files/2020-11/D7.1_BusinessModelsAndFinancingMechanismsForWideUptake.pdf)



The prospect to monetize energy savings aims to stimulate virtuous behavior within the community. In the proposed architecture, and in relation to the monetization process of virtuous energy behaviors, the systematic use of EPC (Energy Performance Contracting) contracts that fix the floor beyond which savings become revenue for the user is crucial, through the involvement of 3PF (third party financing) in the form of ESCos (Energy Service Companies).

### 3.3 Crowdfunding<sup>6</sup>

Over the past years, and especially during the pandemic period, the public sector finance has been stressed without possibility to Fund and Finance any “low income or long-term returns project”. Nevertheless, crowdfunding has the potential to offer a new model of finance via an investment-based business model that generates social, environmental and economic returns. Indeed, on 10 November 2020, The European Commission issued the new Regulation on European Crowdfunding Service Providers (ECSP)<sup>7</sup> for business, creating uniform rules across the EU for the provision of investment-based and lending-based crowdfunding services related to business financing. It is addressed to the growing market of Investment Crowded platforms with an EU passport based and it allows them to offer their services across the EU with a single authorisation.

Two financial considerations for equity crowdfunding:

- Risk differences between equity and loan. If it will be used a strict process of evaluation, the difference is only on the lasting side
- Whether the above assumption is basically true, it should be possible to give guarantees on the equity crowdfunding through the platforms, when related to the rating systems

If we look at the energy demand response and the flexibility investment projects, those based on crowdfunding schemes shows several features:

- citizens/households/consumers (they will become Prosumers) invest in their own social dimensioned district, even with a focus on renewable energy sources and low pollutant activities
- new financially viable business cases generating green local jobs
- new use of abandoned and brown field public and private spaces

For ReDREAM it has benchmarked the crowdfunding instruments for deploying energy community or more generally local equity projects. Apart from the result that the crowdfunding would be a new tool of civic engagement with local residents and service users, it has been investigated the average size of several crowdfunding campaign for projects deployment.

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<sup>6</sup> The assumption is that new use cases can be covered, in financial coverage terms, through crowdfunding or fintech closing the loop of the capex with investors, who could cover the opex needs. For instance, the adoption of decentralized ledger technology (DLT) for green bonds can lower the costs for municipal green bond issuance and increase investors' confidence in investing in green projects for their local communities. Considering how sensitive millennials and generation Z are to climate and environmental issues and how eagerly they use digital devices, there is an opportunity to foster sustainable investing through digital channels.

<sup>7</sup> <https://eur-lex.europa.eu/legal-content/EN/TXT/?uri=CELEX:32020R1503>



It must be underlined that the sector is yet to make the most of crowdfunding and to realise the financial and non-financial benefits it has been shown to generate. When looking at the 4 ReDREAM demo cases the possible cap for their demo district demonstration is around 350k € for each of the district.

The commitment will be addressed, according to the benchmark, to the Institutional public investors/authorities for the 45% and to the private investors for the 55% equally split between Institutional Private Investors and small-retail-crowded investors. Below three best practices.

Aruka Midway <sup>8</sup> , USA	An investment opportunity in the Aruka East Baltimore Midway revitalization project. Urban revival. Investing in the community, block by block.	213.500 \$ raised open to everyone, with 100% of 100,000 \$ goal raised and with 21% of 1.000.000 \$ goal raised. 66 investors. Ongoing campaign.
De Nieuwe Meent <sup>9</sup> , The Netherlands	de Nieuwe Meent organised around the principles of communing. Combining affordable housing, shared living, social care and solidarity economy, we intend to contribute to a sustainable, inclusive and fair society.	Closed campaign with 450.000 € of Funding Goal of which 439.609 € of Funds Raised 97.69%
Homes4all <sup>10</sup> , Italy	A programme with the aim of reducing the housing emergency through a process of urban regeneration that combines demand and supply of properties on the market by providing services and financial and social tools aimed at reducing the rental risk.	Two rounds of raising, the first has collected 399.500€ the second 300.00€. Campaign closed

When the objective is to increase private/citizens contributions in energy efficiency, it should be considered that embracing the paradigm from commodity to service, the financial “bottom up” should be surfed: the renewable energy systems are more efficient when producers/prosumers are closed to consumers: that means talking about small amounts. As such, and considering the demos’ size, a green bond emission could not be the best/optimal idea to accelerate the energy efficiency transition.

Especially now, because the interest rates are negative or near to zero but as soon as the inflation increases, the interest rate curve will be steeper than now, and the financial costs will be unsustainable, or the amortization period will be so long to be very expensive.

<sup>8</sup> <https://www.smallchange.co/projects/aruka-midway>

<sup>9</sup> <https://nieuwemeent.nl/en/crowdfunding/dashboard/>

<sup>10</sup> <https://homes4all.it/>



To ping-pong this strategy, it must be considered the impact in the reduction of the Greenhouse Gas Emissions in the financial revenues: as such, the ETS system is necessary, better if more like the Italian White Certificates for financing the no direct revenues and the role of crowdfunding paves the share of the targets in a community and the closure of the cleavage between finance and economy.

### 3.4 Other suitable Funding and Financing mechanisms

The EU Commission and the EIB group settled a “Coordinated economic response to the Covid-19 outbreak” and additional EIB measures. The financial impact and the budgetary effort amounts €40bn of additional support to SMEs and mid-caps and €2.5bn from the EU budget (repurposing of the EFSI guarantee). The support to companies is for:

- expansion and improvement of conditions of existing EIF loan guarantee schemes for SMEs (COSME LGF and InnovFIN SMEG) with additional €1bn from EFSI to support COSME LFG and InnovFin SMEG. The risk coverage is up to 80% (as opposed to standard 50 %), while the minimum guaranteed cap rate (COSME) increased from 20 to 25%. The novelty is represented by a simplified and fast approval process by the EIF Board, a more flexible terms, including postponement, rescheduling or payment holidays
- €5bn from EIB own resource to expand existing EIB framework loans and lending facilities to banks. Goal is to expand liquidity of banks to ensure €10bn additional working capital support for SMEs and mid-caps
- €1.5bn of EFSI guarantee to the purchase of asset-backed securities from banks. The aim is to allow banks to transfer risk of existing SME loans to the EIB, freeing up €10bn for new SME loans.

Following this approach, the national development banks of Italy (Cassa Depositi e Prestiti) and Spain (Instituto de Crédito Oficial) mobilized several guarantee schemes. Apart from them, even the national development bank of Croatia (HBOR) expanded the credit guarantees with a risk coverage of up to 90% for SMEs, but also to larger companies. These are financial schemes targeted for the so-called green transition.

### 3.5 EU ETS

Emissions trading system is a market-based approach to controlling pollution by providing economic incentives for reducing the emissions of pollutants. The EU emissions trading system (EU ETS) is a cornerstone of the European Union's policy to combat climate change and its key tool for reducing industrial greenhouse gas emissions cost-effectively. During the first months of Q2'22, spot prices have increased EuA prices have recovered from €55 in March 2022 to €82 in mid-May 2022. A similar volatility was observed in the UK.

### 3.6 Sustainability-linked bond - SLBs

Looking at the development of mid cap demo development and quite in line with the accountability of the energy saving and of the flexibility, the Sustainability-linked bonds are bonds whose financial and structural characteristics (the coupon) are linked to pre-established sustainability objectives. These objectives are measured through the definition of Key Performance Indicators (KPIs) and evaluated against predefined Sustainability Performance Targets (SPTs).



The demo leaders mostly have not a single project to deploy but an overall energy transition strategy. Indeed, the SLBs are not tied to the implementation of a single energy/sustainable project. The proceeds from the issue of the security can in fact be used for more general purposes, linked to an entire strategy centred on the Sustainable Development Goals of the UN 2030 Agenda, with measurable targets from year to year. As such, Green Bonds has been discarded due to their size, too big for demo purposes.

More in detail, SLBs are recognized at the monetary policy level: as such, ECB established (since Jan 2021) SLBs with coupons linked to sustainability objectives can be used as collateral in Eurosystem credit operations; and they are suitable for securities purchase programs, including the extraordinary one related to the pandemic response.

Operationally, the International Capital Market Association drawn up non-binding guidelines for the issuance of financial instruments that incorporate the achievement of future sustainability objectives for Sustainability-linked bonds.

The principles (SLBPs) are best practices focused on clarity and transparency, which investors can use to understand the financial and structural characteristics of a given product. These are five:

- Selection of Key Performance Indicators (KPIs)
- Calibration of Sustainability Performance Targets (SPTs)
- Characteristics of the bond
- Reporting
- Verify.

### 3.7 Equity loans

This scheme is used to be adopted by private companies of all sizes, especially those expanding their market status or entering a foreign market. As such, the classical example of Stemy in the ReDREAM consortium: being a partner of each demo would mean enter in four different markets with the possibility to activate local territorial debt partner for the Capex needs. But the equity loan could enable companies in providing resources for the Opex, for example.

It is an instrument that works via national development or commercial banks: they provide direct equity partnership, with a medium-long term. The stake could be settled in the constitution phase (greenfield initiatives) (by sharing capital increase) or in M&A transactions. This scheme is compatible with additional financial resources by granting loans.



## 4 Conclusion

The assumption drafted in the docs must be verified and to be implemented more in detail in the Scalability and Replicability related task. Indeed, once the estimation will turn in to consistent data, it will be possible to avoid the granularity and to populate the business plan. This could give the operational revenues a push-up and could settle the dimension of the Capex and Opex, as well.

The theoretical assumptions drafted in the business plan seem to be well settled and prudential in terms of overall investments and possible revenue streams. As considered before, the estimated business plan drafted for the selected business model is a low-mid-size but with high impacts on the consumers. The big role played by the incentives scheme are game-ruler and fixed for 20 years the floor for the “minimum-viable” operational revenues. As such, and standing for the finetuning in task 6.3, the most adaptable financing method to be adopted by BIO and to be enlarged to other towns of the district is the 3PF, the third-party financing. It includes all those financing methods in which a third party is involved, for example an Energy Service Company. As such, the EPC as form of ‘creative financing’ for capital improvement which allows funding energy upgrades from cost reductions, seems to be the most adaptable funding scheme. Under the EPC arrangement an external organization (ESCO) implements the energy community to deliver energy efficiency and uses the stream of incomes from the cost savings, the renewable energy produced, the share of the incentives to repay the costs of the project, including the costs of the investment. As described in the business plan, the ESCo obtains the larger amount of revenues in the amortizing period. Nevertheless, BIO after the real dimension of the demo to be performed in task 6.3, could go the extra mile embedding in the energy community additional and attuned services (such as the electro mobility as a services) to augment the pipeline of the revenues. It means that BIO could use the Crowdfunding scheme or the Equity loan scheme, but even the funds related to the National Recovery and Resilience Plan.



### The selected funding opts related to task 6.2

1. Investment Disposal Strategy exploiting and securitizing the Energy Performance Contract (Optimal case)
2. EU ETS carbon emission trading systems
3. Sustainability-linked bond

### Best case - funding opt related to UK demo after the full Scalability and Replicability Analysis

1. Other suitable funding and financing mechanisms (Best case)
2. Crowded schemes: funding and lending (2nd Best case)
3. Equity loans (3rd Best case)