FACILITATING THE CREATION AND OPERATION OF ENERGY COMMUNITIES

MASTERPIECE

LEARN FROM OUR INITAL RESEARCH PHASE

WP2

MAIN INSIGHTS

KNOW MORE

HTTPS://MASTERPIECE-HORIZON.EU/

Project's objectives

1

To **develop technical and social innovations** to e**mpower traditional energy consumers and to make them active agents** of collaborative energy communities, paving the way towards a new energy market paradigm

2

To **create user-centric solutions** that **based on participatory approaches** such as co-creation and naturally accelerate citizens' involvement

3

To **propose new business strategies and incentive mechanisms that activate the reactions of market participants** craving for business opportunities that imply energy use and cost reduction

4

To **configure a standardised and sound cyber-security infrastructure** so the active citizens are protected against cyber-attacks, at the same time that privacy is defended in accordance with the revised EPBD and the GDPR law

5

To **demonstrate the applicability and replicability of** methodological, technical, and business **innovations in a variety of real-life pilots in different geographical locations**, with heterogeneous social and economic environments and different regulatory/administrative frameworks

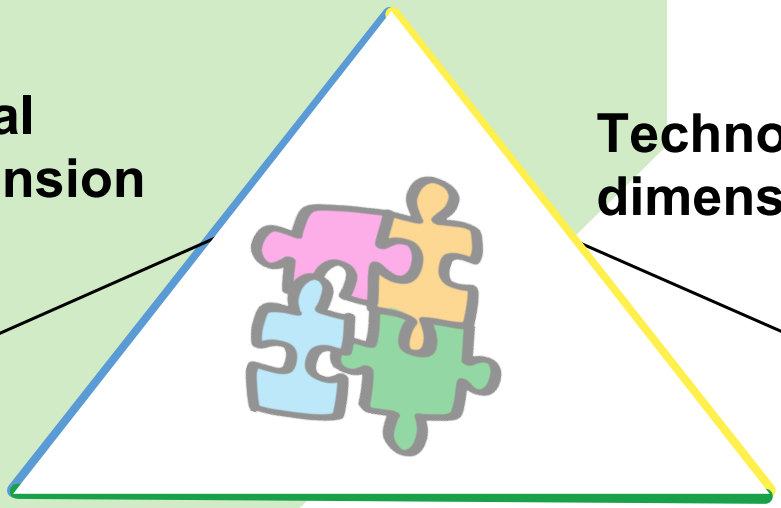
6

To ensure **wide reaching impact** and **use of project methodological, business, and technological outcomes among different stakeholders'** categories

Understanding ECs

within the project's framework

We consider ECs as a multidimensional concept, where **legal, economic, social, and technological aspects match up** with the aim to reinforce collaboration towards energy transition at the local level.



EC TRIANGLE CONCEPT

Distinction between **Energy Community** and **other energy active citizen intitiative**

Initiative's scope and the **legal form**

An **energy communitiy** can be defined as a **legal entity** where **members collaborate** to **generate benefits for the community**

Renewable Energy Communities & Citizen Energy Communities

EU policy framework

Key aspects of RECs & CECs

EU policy framework

Main features	Renewable energy community (REC) Directive (EU) 2018/2001 (RED II)	Citizen energy community (CEC) Directive (EU) 2019/942
Membership Status	**Open and voluntary involvement**; the shareholders or members are individuals, micro, small or medium-sized enterprises (SMEs) or local authorities	**Open and voluntary involvement**; members or shareholders are individuals, local authorities, including municipalities, or small enterprises
Autonomy	**Autonomous**	**Not Autonomous,** (restricted decision making of large energy companies in EC)
Management of EC	**Efficiently managed by shareholders or members that reside close to the renewable energy projects** which owned and constructed by the renewable energy community (REC)	**Efficiently managed by members or shareholders;** the decision-making abilities should be limited to those members that are not connected with large-scale commercial activity
Geographical limitation	Reside **close to** renewable energy community (**REC**)	**No limitation**
Primary purpose	To deliver **environmental, economic or social benefits to EC's members or shareholders** instead of focusing on financial gains	To deliver **environmental, economic or social benefits to EC's members or shareholders** instead of focusing on financial gains
Activities	**Generation, distribution, energy supply, consumption, energy storage, aggregation** and distributing energy-related services	**Generation, distribution, energy supply, consumption, energy sharing, aggregation, energy storage**, energy-efficiency services and EV charging-services

ECs in the national frameworks

Pilots countries of the project

Pilot country	EU directives transposition level	Financing/supporting policy measures	Regulatory limitations
ITALY	**EU Directives fully transposed in 2021**, The two Legislative Decrees adopted the EU definition of REC and CEC as legal entities	**Targeted incentives** (EUR 100-110/MWh) **for shared energy among members** + compensation of grid tariff for instantly self-consumed energy (9 €/MWh). **Direct revenue for energy injected into the grid** 2.2 billion€ in the Italian Recovery and Resilience **Plan in 2021 including the promotion of ECs in small towns with less than 5,000 inhabitants**	**Proximity rules** (EC members must be connected to the main grid through the same primary substation or be part of the same market zone) **Limitation on installed capacity** (1MW) **Regions can legislate** (see Piedmont regulations)
FRANCE	The **RED II and the IEMD directives have been transposed by Ordonnance n° 2021-236** which replaced the previous definitions provided by the French Code of Energy. The French law takes over the same terms and criteria as the EU directives for both REC and CEC	**Bureaucracy simplification** (EC don't need any authorisation from the State or local authorities) **Incentives depending on EC size** (feed-in tariffs or feed-in premium mechanisms) **Different (lower) grid connection tariffs** (for all RES installations under a capacity of 500 kW) **Participatory bonus in calls for tenders**	**Proximity rule** (distance between injection and consumption points to 2 km **Limitation on installed capacity** (3 MW in urban areas and 0.5 MW in rural areas)
SWEDEN	Collective self-consumption is permitted by the Sweden law since 2019. **No transposition of EU directives**. Since 2021, the two EC models suggested by the EU directives, i.e., REC and CEC, now converge under the Swedish Law on Economic Association	**ECs are economic association that can profit from state incentives through tax relief and reduced real estate tax** as all others micro-producers of RES	**Households need to be connected to the same grid point of delivery** Prosumers are exempted from some grid connection fees or are subject to lower rates than larger energy producers and suppliers
TURKEY	**Turkish energy legislation does not directly address RED II and IEMD definitions and regulations.** However, community-driven collective energy generation and consumption has been allowed since 2016	**Bureaucracy simplification** (EC does not need obtain a license from the Energy Market Regulatory Authority) Turkey **provides feed-in-tariff mechanisms for RES generation** to both licensed and unlicensed power plants. Additional support is provided if plant components are manufactured in Turkey	**Proximity rule** (ECs are limited to natural or legal persons or cooperatives in the same tariff group system and using the same connection point, or those whose electrical energy consumption can be monitored with a single common meter) **The unlicensed privilege is limited to energy cooperatives that exceed 5 MW of power installed capacity**

Understanding ECs

within the project's framework

We define ECs as an innovative sustainable business model that **redefines both the organizational form and the concept of value,** aiming to cover both social and environmental aspects, by **giving an active role to citizens in the energy market**

BMs ANALYTICAL FRAMEWORK

Key features

VALUE CREATION

Value proposition & sharing value
Services performed
Key resources
Key partners

VALUE DELIVERY

Customer segments
Multisided interaction
Governance
Value chain interaction

VALUE CAPTURE

Revenues sharing
Network effect
financing mechanisms
Cost (development/management)

Energy communities also **focus** on the **use of energy production systems**, generally sustainable and green, for subsequent use, **with** the main **objective of** **sharing the energy generated within the community**

hardware and **production infrastructures are needed**

Main devices

involved in ECs

MAIN ENERGY INFRASTRUCTURE

Generation

E.g. Solar panels, wind generators, biomass, geotermal, hidroelectric, ...

Storage

E.g. Batteries, ...

Distribution

E.g. grid energy flows, ...

SMART MANAGEMENT INFRASTRUCTURE

Hardware elements

IoT gateways, smart meters, actuators or hardware from upper box

Software elements

Cybersecurity solutions

...

FINAL CONSUMER DEVICES

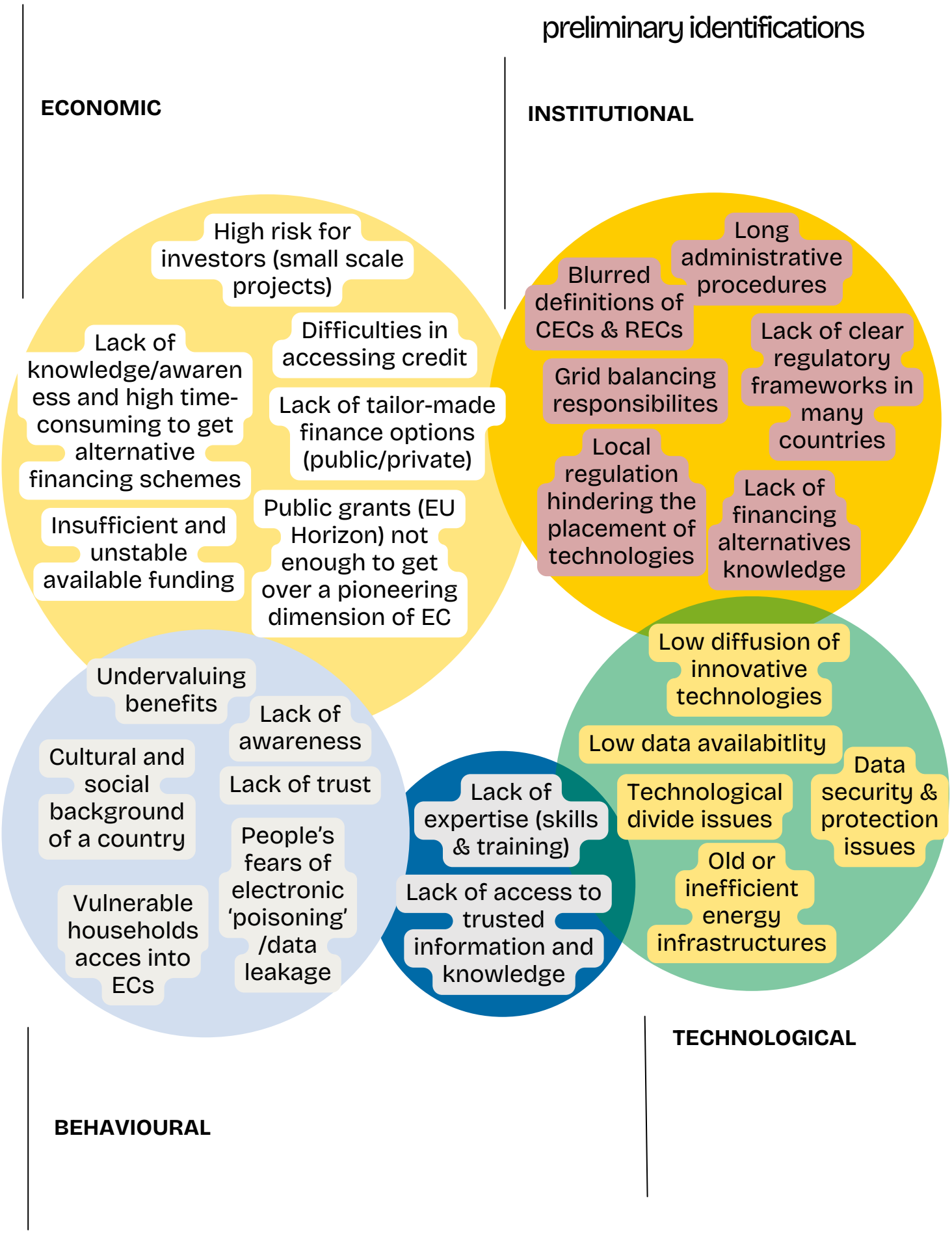
HVAC
Electrical applicances
Litghtining systems
EV chargers
Elevators
DHW
...

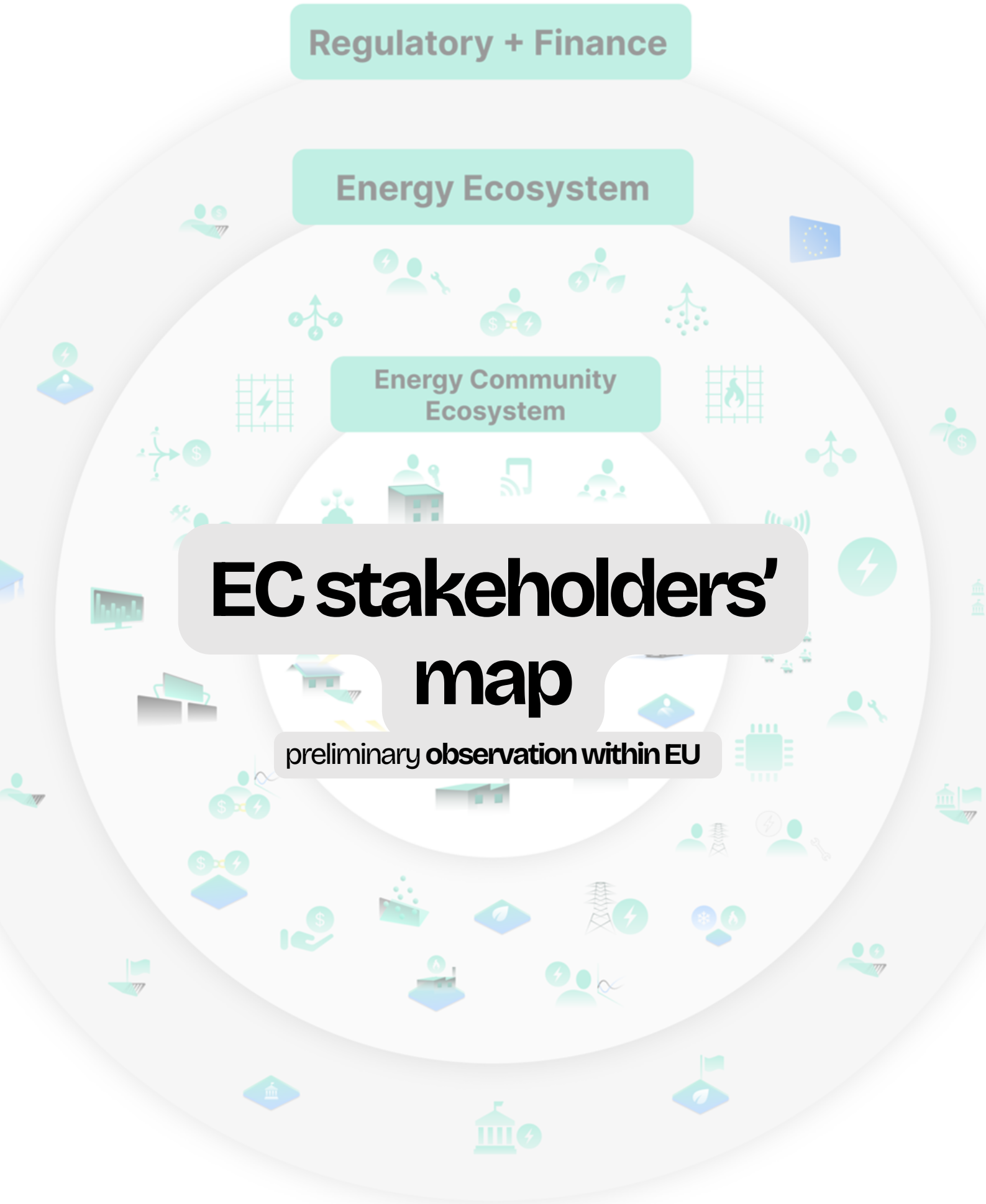
Barriers of EC

preliminary identifications

Barriers of EC

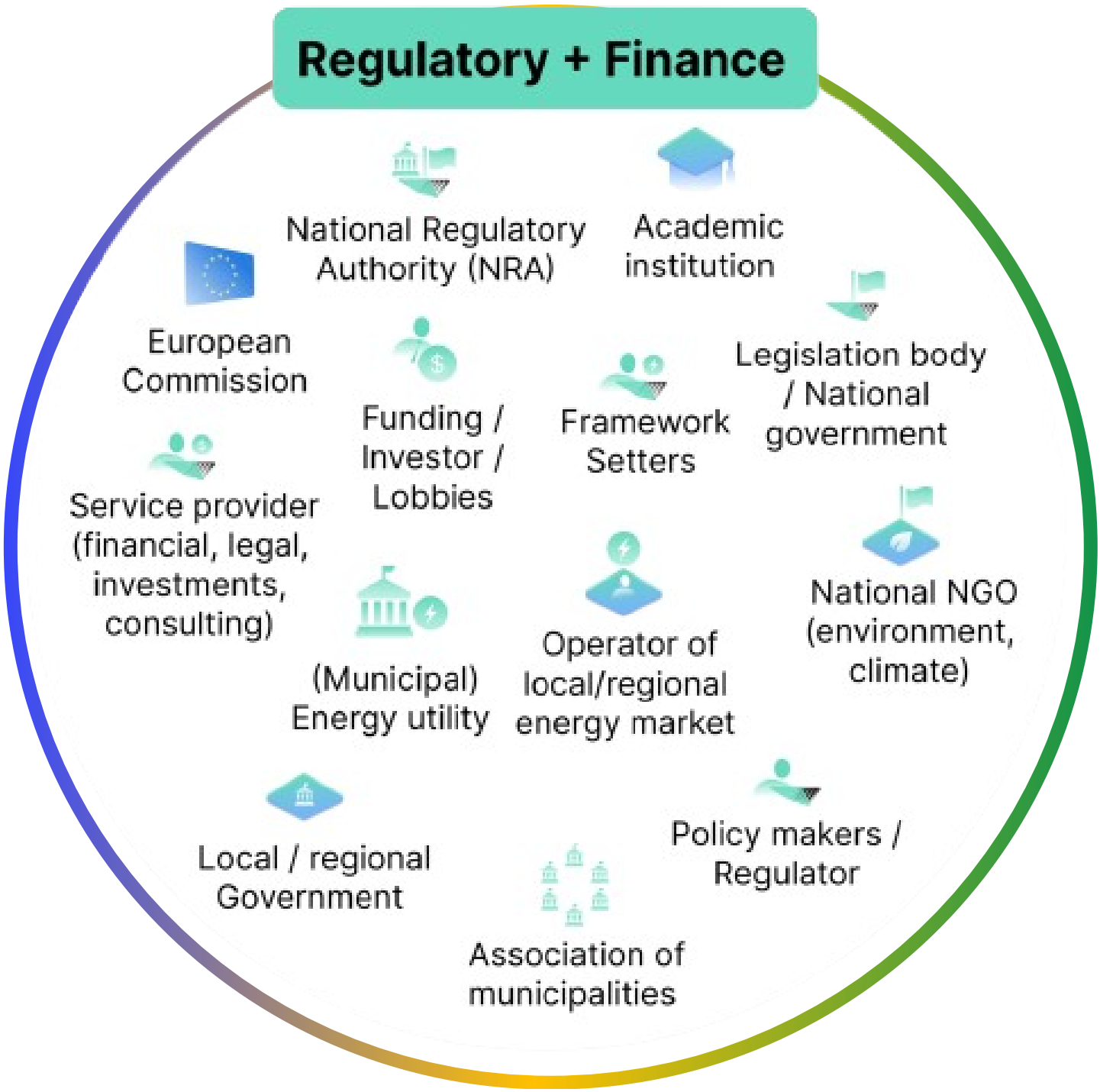
preliminary identifications

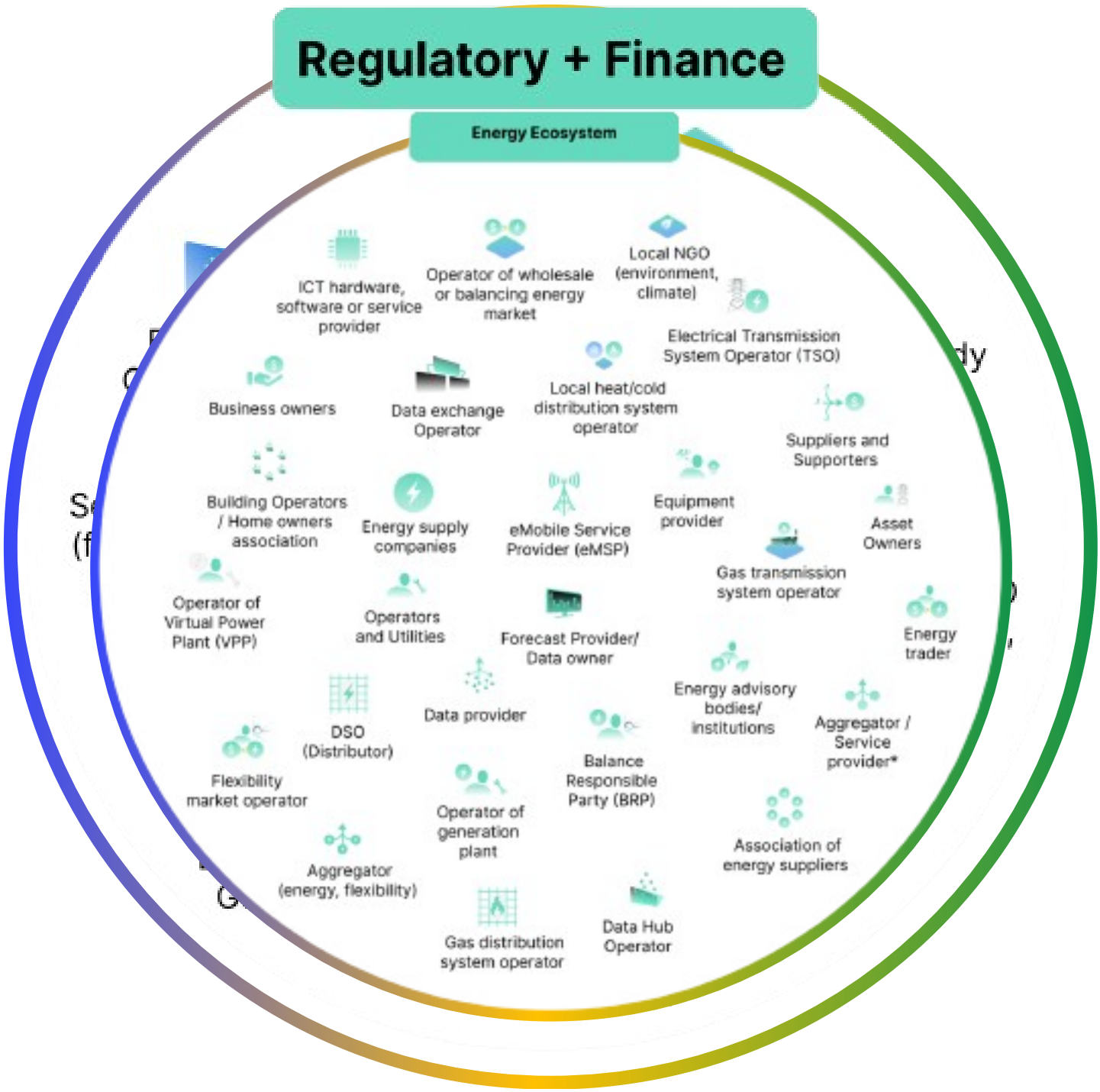


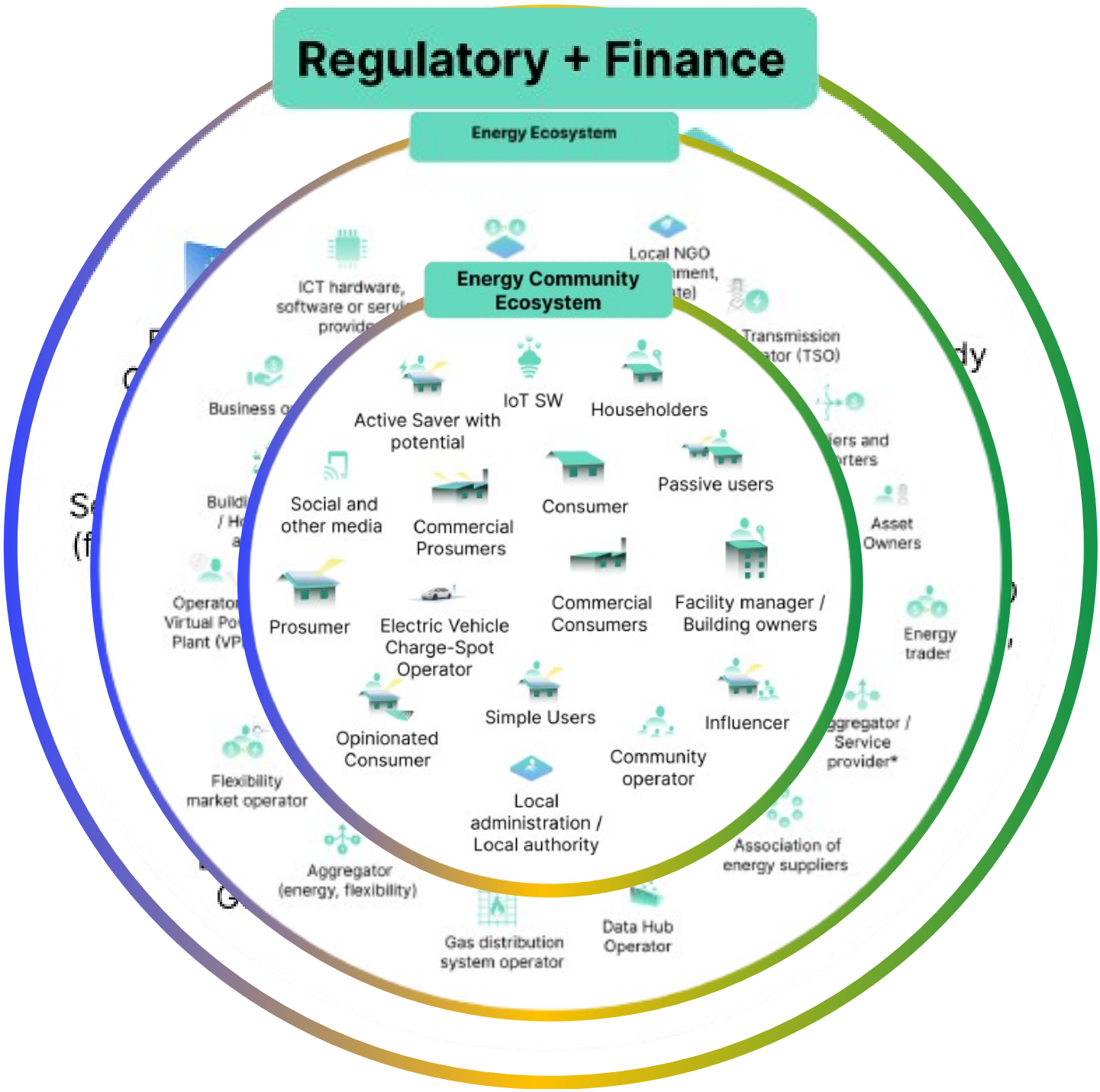


EC stakeholders' map

preliminary **observation within EU**


Regulatory + Finance
National Regulatory Authority (NRA)
Academic institution
European Commission
Legislation body / National government
Funding / Investor / Lobbies
Framework Setters
Service provider (financial, legal, investments, consulting)
National NGO (environment, climate)
(Municipal) Energy utility
Operator of local/regional energy market
Local / regional Government
Policy makers / Regulator
Association of municipalities


Regulatory + Finance
Energy Ecosystem
ICT hardware, software or service provider
Operator of wholesale or balancing energy market
Local NGO (environment, climate)
Electrical Transmission System Operator (TSO)
Business owners
Data exchange Operator
Local heat/cold distribution system operator
Suppliers and Supporters
Building Operators / Home owners association
Energy supply companies
eMobile Service Provider (eMSP)
Equipment provider
Asset Owners
Gas transmission system operator
Operator of Virtual Power Plant (VPP)
Operators and Utilities
Forecast Provider/ Data owner
Energy trader
Energy advisory bodies/ institutions
Data provider
DSO (Distributor)
Aggregator / Service provider*
Flexibility market operator
Balance Responsible Party (BRP)
Operator of generation plant
Association of energy suppliers
Aggregator (energy, flexibility)
Gas distribution system operator
Data Hub Operator


Regulatory + Finance
Energy Ecosystem
Energy Community Ecosystem
ICT hardware, software or servi
provide
Local NGO
ment,
ate)
Transmission
ator (TSO)
Business o
Active Saver with potential
IoT SW
Householders
Passive users
Social and other media
Commercial Prosumers
Consumer
Asset Owners
Prosumer
Electric Vehicle Charge-Spot Operator
Commercial Consumers
Facility manager / Building owners
Energy trader
Simple Users
Influencer
Opinionated Consumer
Community operator
Flexibility market operator
Local administration / Local authority
Association of energy suppliers
Aggregator (energy, flexibility)
Gas distribution system operator
Data Hub Operator

Regulatory + Finance

Energy Ecosystem

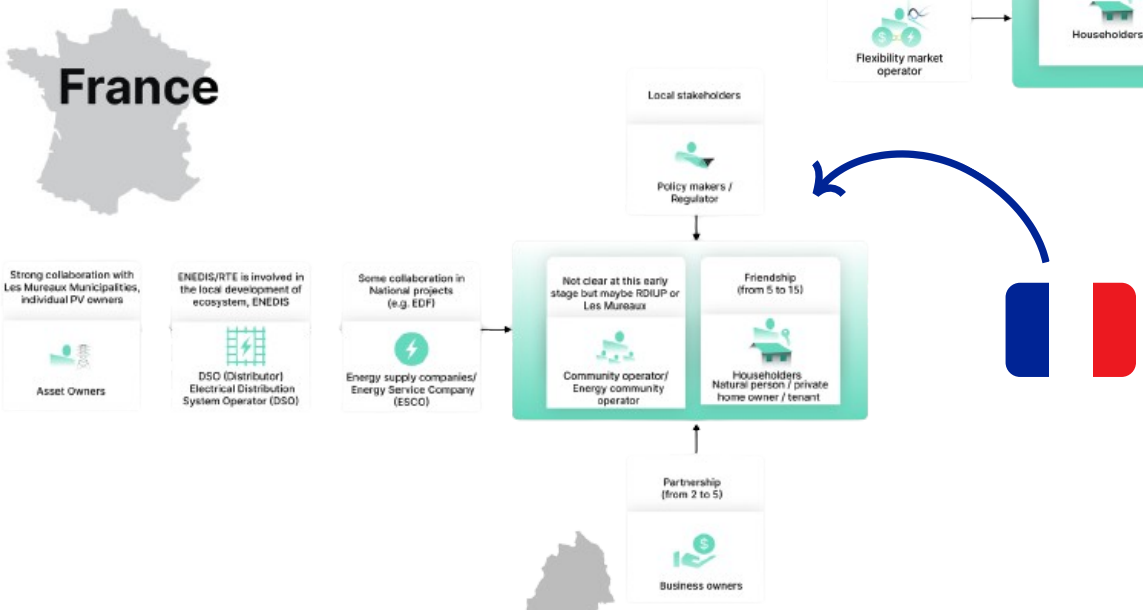
Energy Community Ecosystem

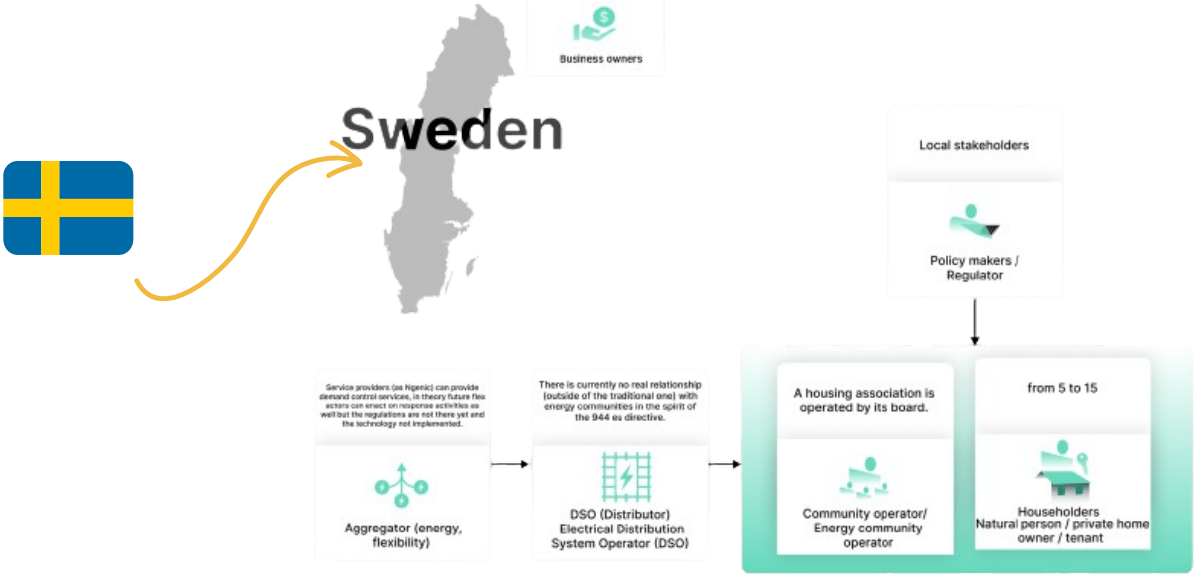
EC stakeholders' map

preliminary **mapping within each pilot**


Italy
Regione Sardegna, Sassari Province will act as facilitator to replicate the potential best practices coming from Berchidda REC
Policy makers / Regulator
ZIV Automation will provide smart meters necessary for REC and any new prosumer
ICT hardware, software or service provider
Berchidda Municipality (industrial site)
Asset Owners
TERNA
Electrical Transmission System Operator (TSO)
AEC (Azienda Elettrica Comunale)
DSO (Distributor) Electrical Distribution System Operator (DSO)
Potential cooperative member
Householders Natural person / private home owner / tenant
Private/public building owners will act as REC member
Facility manager / Building owners
Potential cooperative member
Local enterprises
A2A will manage industrial users when REC established
Operators and Utilities
Public funding, EU funding potential link for creating REC
Funding / Investor / Lobbies
Potential cooperative member
Business owners


Turkey
•Environmental sustainability and energy transition
•Local community engagement and support
•Awareness, culture, knowledge and information
•Local energy, energy sufficiency and secure energy supply
Householders
Finding a fund and exhange rates
Funding / Investor / Lobbies
FM is a new terms for our RECs in Turkey and there is lock of information
Flexibility market operator
Regulations changes suddenly
Policy makers / Regulator


France
Local stakeholders
Policy makers / Regulator
Strong collaboration with Les Mureaux Municipalities, individual PV owners
Asset Owners
ENEDIS/RTE is involved in the local development of ecosystem, ENEDIS
DSO (Distributor) Electrical Distribution System Operator (DSO)
Some collaboration in National projects (e.g. EDF)
Energy supply companies/ Energy Service Company (ESCO)
Not clear at this early stage but maybe RDIUP or Les Mureaux
Community operator/ Energy community operator
Friendship (from 5 to 15)
Householders Natural person / private home owner / tenant
Partnership (from 2 to 5)
Business owners


Sweden
Local stakeholders
Policy makers / Regulator
Service providers (as Ngenic) can provide demand control services, in theory future flex actors can enact on response activities as well but the regulations are not there yet and the technology not implemented.
Aggregator (energy, flexibility)
There is currently no real relationship (outside of the traditional one) with energy communities in the spirit of the 944 eu directive.
DSO (Distributor) Electrical Distribution System Operator (DSO)
A housing association is operated by its board.
Community operator/ Energy community operator
from 5 to 15
Householders Natural person / private home owner / tenant

Enrolment journey

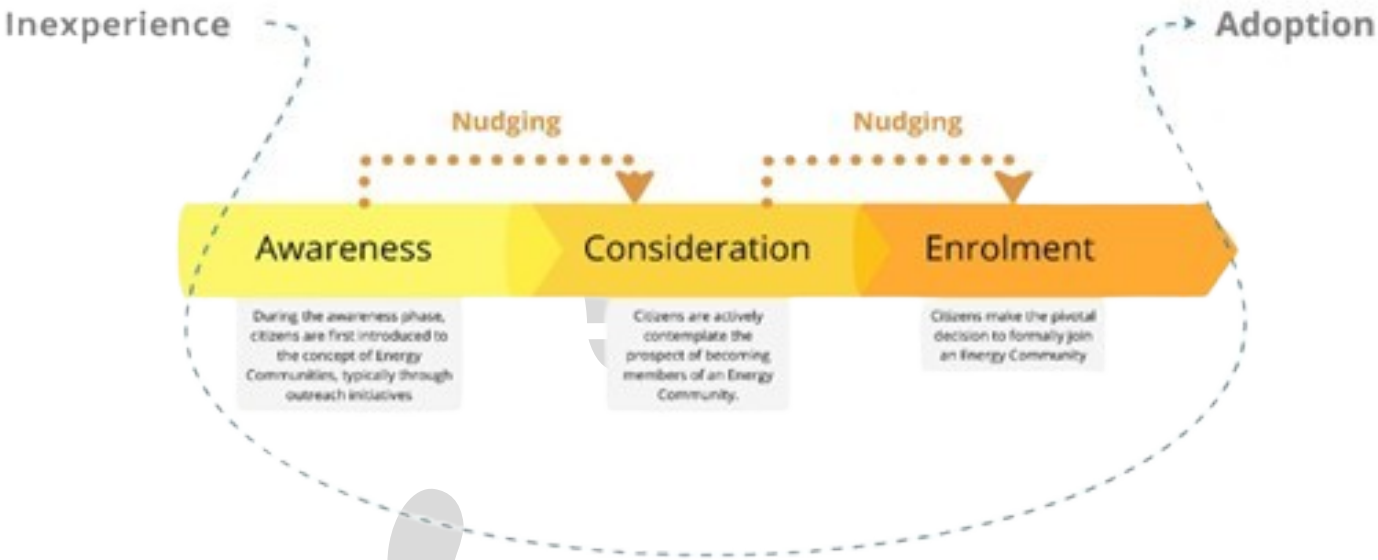
Designing the path

Engagement journey

Enrolment journey

Designing the path

The **path to enrolment** in an **EC** is a **dynamic and multifaceted journey,** characterized by several distinct stages that **individuals traverse on their route to becoming active participants.**



THE IMPORTANCE OF PROFILING

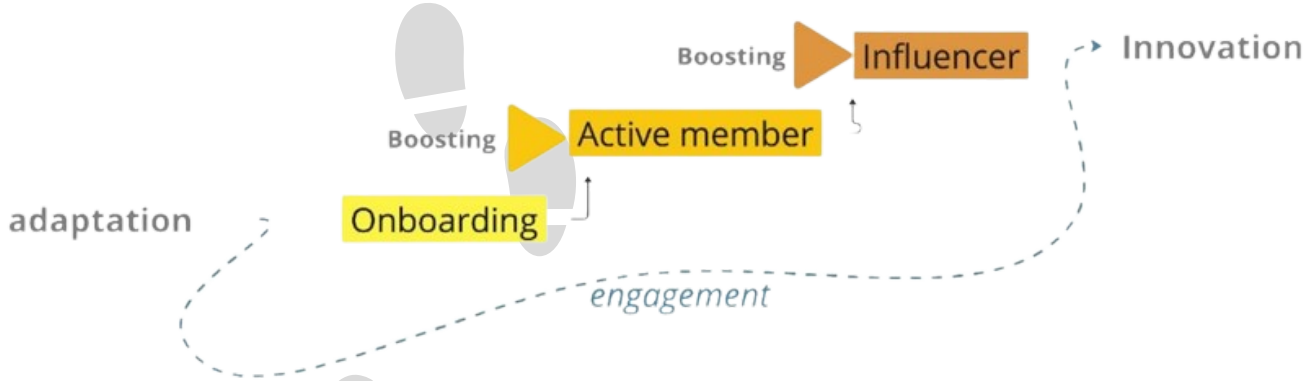
Profiling assumes a significant role in the journey

It gives us valuable insights into diverse profiles and groupings amongst members within the community. This allows us to create messages and nudging strategies that resonate most effectively with each specific type (or cluster), thereby facilitating their progression towards enrolment.

Engagement journey

Designing the path

The **engagement journey** is a structured process. It **starts** with **onboarding new members** to energy-conscious habits, followed by boosting mechanisms to empower them. Then, **members transform into active participants**. During this phase there are active members who evolute into influential figures called "**Influencers**." These i**nfluencers contribute** to the **growth and sustainability of the EC.**

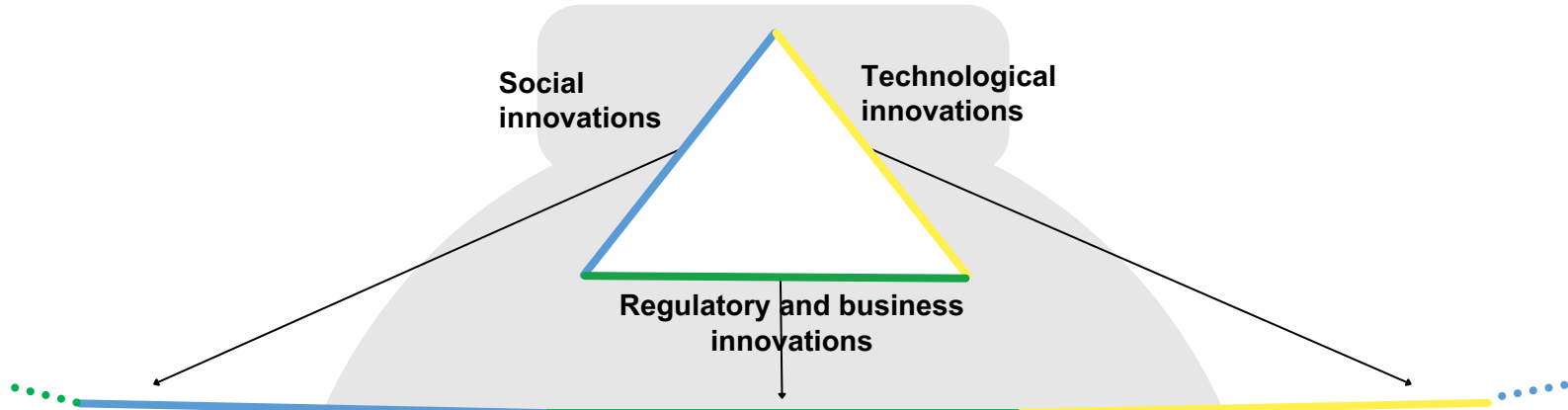


WHAT IS THE ROLE OF THE 'INFLUENCERS' IN THE EC ECOSYSTEM?

- They act as **guides, mentors, and catalysts** for the onboarding process of new members and the progress of innovation in the EC.
- Influencers possess a **pivotal presence and leadership** within the EC.
- **They inspire** the smooth **integration** of **newcomers**.
- They **encourage** higher levels of **innovation, collaboration, and sustainable energy practices** within the entire EC ecosystem.

Identified technologies

Understanding technologies as methods, tools and/ or mechanisms



User need assessment

Behavioural analysis

Role categorization

Community specifics

Readiness and maturity analysis

Agency evaluation

Nudging / Boosting

Bottom-up / Top-down strategy

Incentives

Energy performance contract schemes

Energy network fee deduction

Crowdfunding

Financial plans

Pay-as-you-bid mechanisms

Local carbon/energy efficiency credits

Energy trading mechanisms/platforms

Programming languages

Protocols

Security and encryption

Data storage, management and visualization

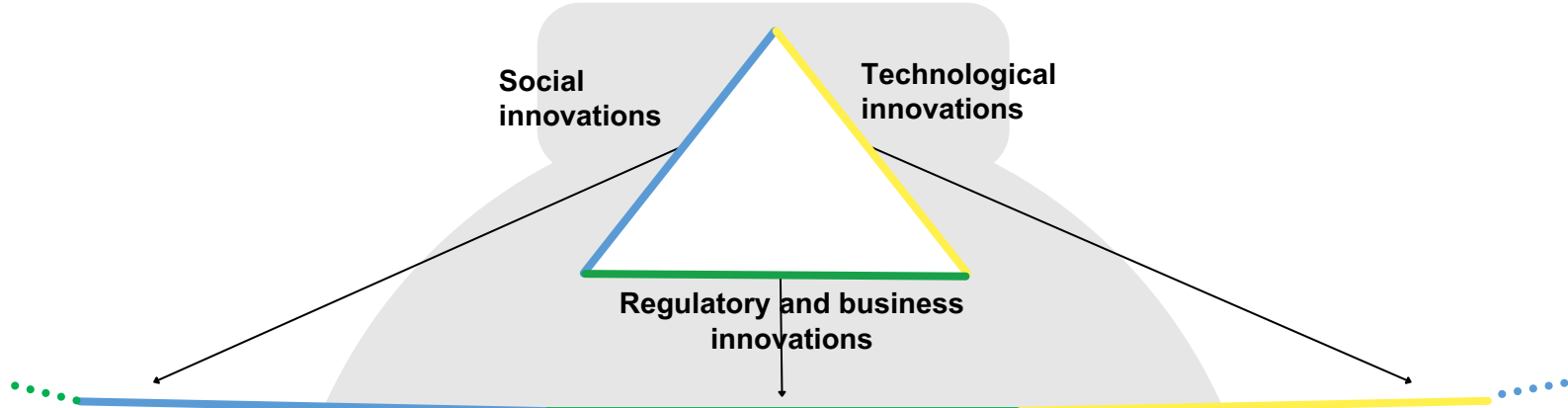
Cloud platforms

Development and editor environments

Web development

Identified technologies

Understanding technologies as methods, tools and/ or mechanisms



User need assessme

Behavioural analysis

Role categorization

Community specifics

Readiness and matur

analysis

Agency evaluation

Nudging / Boosting

Bottom-up / Top-down strategy

Help us progressing in energy communities

Crowdfunding

Financial plans

Pay-as-you-bid mechanisms

Local carbon/energy efficiency credits

Energy trading mechanisms/platforms

Programming languages

Protocols

rity and encryption

ta storage,

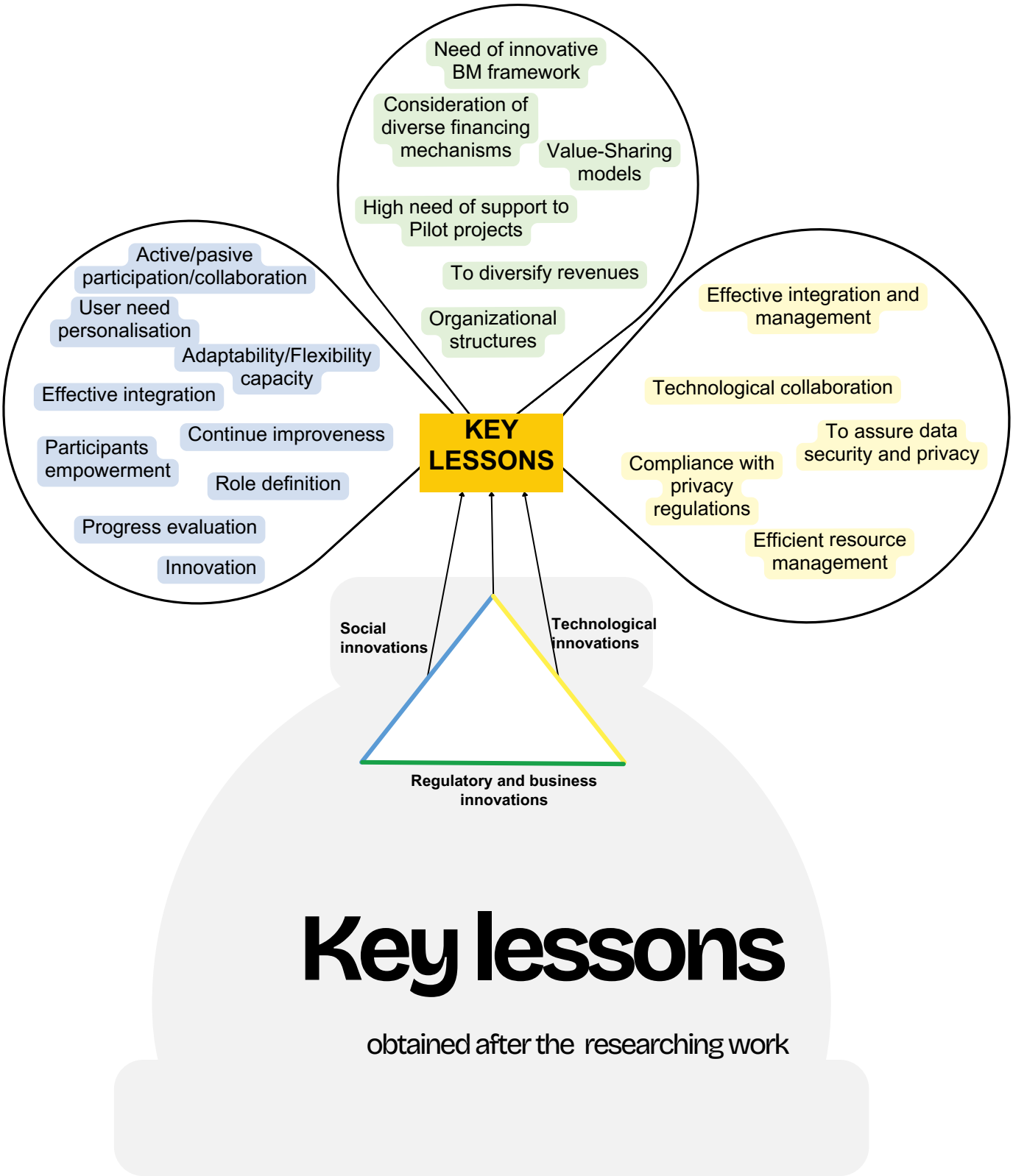
nagement

and visualization

Cloud platforms

Development and editor environments

Web development



Key lessons

obtained after the researching work

KNOW MORE

HTTPS://MASTERPIECE-HORIZON.EU/

D2.1 | D2.3 | D2.5 | D2.7