



# **Innovative, Consumer-centric Business Models for Energy Communities: Introducing a New Business Sandbox**

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# Energy Communities

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## CEC (Citizen Energy Communities)

- **Legal entity** based on voluntary and open participation
- **Controlled by members and shareholders** (natural persons, local authorities, municipalities, small and micro enterprises)
- **Primary drive:** support environmental, economic or social community benefits for its members
- **Engagement:** energy generation, distribution, supply, consumption, aggregation, storage, energy efficiency services , mobility services and energy services for its members and shareholders.

# A traditional Business Model approach and Energy Communities

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## What BMs are?

- a mean for understanding the logic behind the operational aspects of a business, focusing on resource management for profit maximization.

## What BMs do?

- detect and explore the different dimensions (main activities, key partners, channels, cost structure, revenue streams, customers relationship) of a business and clearly define how value is generated across each dimension and how all these dimensions interact with each other.

# A traditional Business Model approach and Energy Communities

## The Concept of BMs in Energy Communities

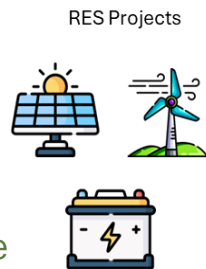
- capture multidimensional flows of energy and money between the involved actors and identify potential sources of benefits and revenues **for the community**

## What are BMs missing when applied to the concept of Energy Communities?

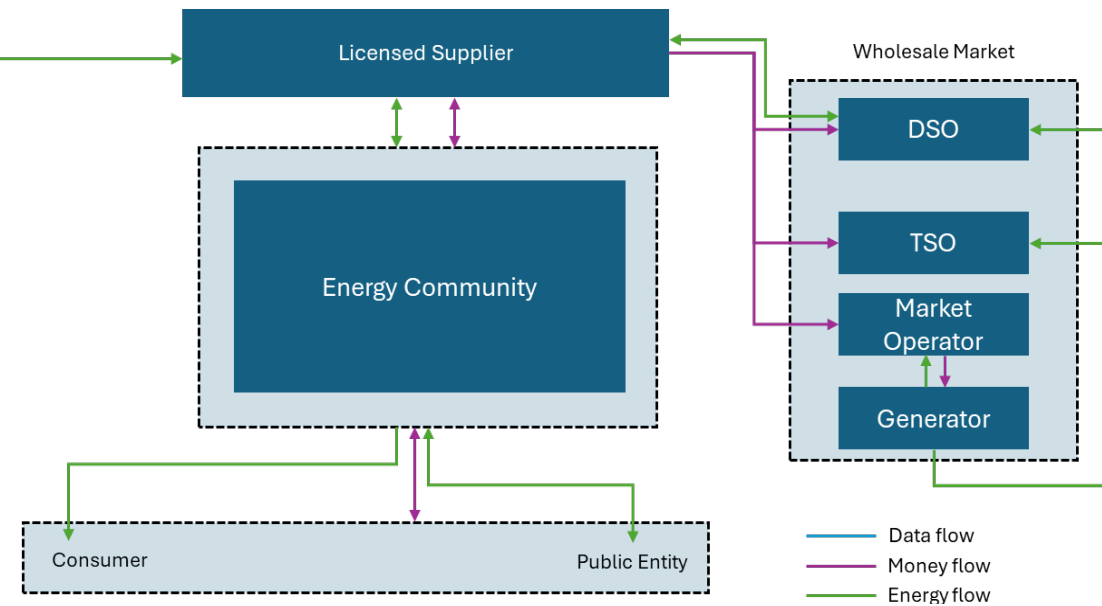
- are self-indulgent

- what is the impact of their value on socio-technical systems

- what is the added value of the involved citizens not only as Community members but as individuals with separate needs, acting for their own interest



## Example of a Traditional Business Model Archetype

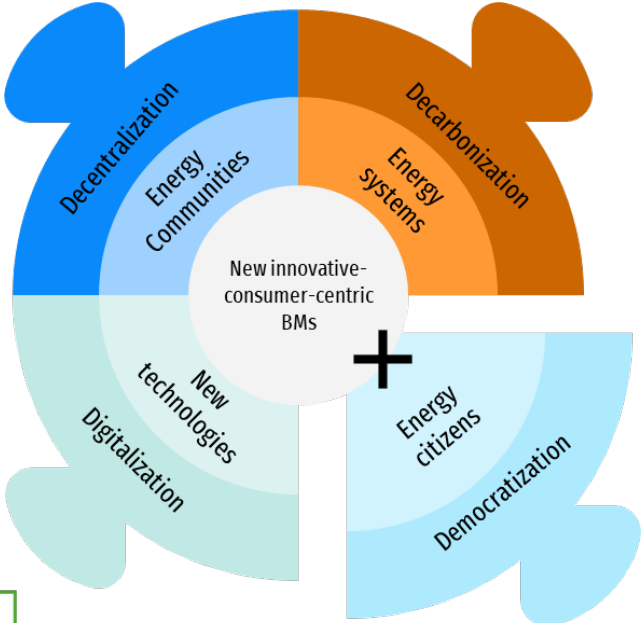
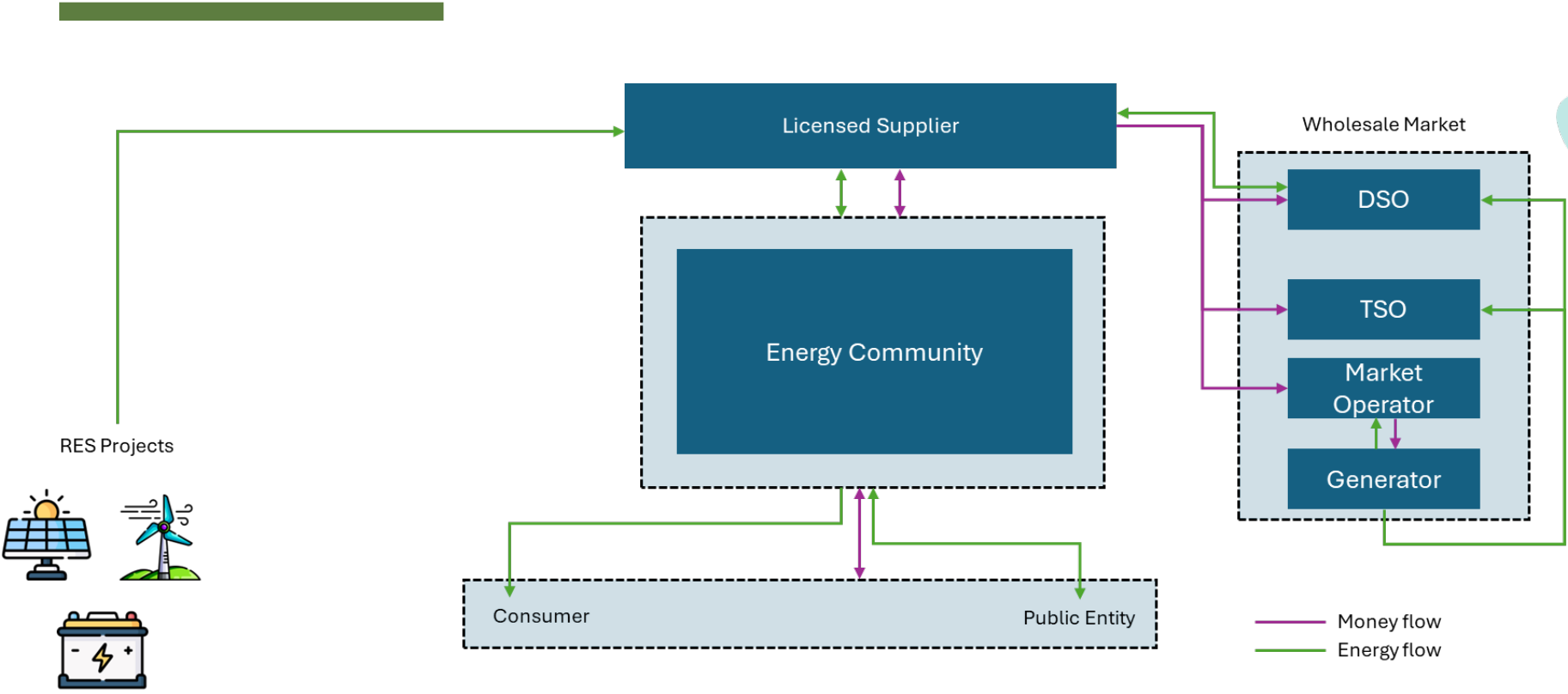


# Problem Statement

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- The citizen's involvement as a decision-maker within the EnCs and the identification of their level of participation is an untapped area.
- The **current BMs, fail to value the active behavior of individuals as self-imposed actors** and to quantify/count the added value that arises from their actions within the Community framework.
- In this paper, **energy citizens** are approached both as a **collective concept** (Community members), as well as **individuals**. Digital, innovative technologies enable them to transition from passive energy consumers to active energy citizens (participating in all energy processes), empowering in that way the concept of **Energy Democratization**.

# Problem Statement





# Methodology

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The paper is based on a mixed-methods approach to develop BM for each of ENPOWER's six (6) pilot cases, with primary sources of information as follows:

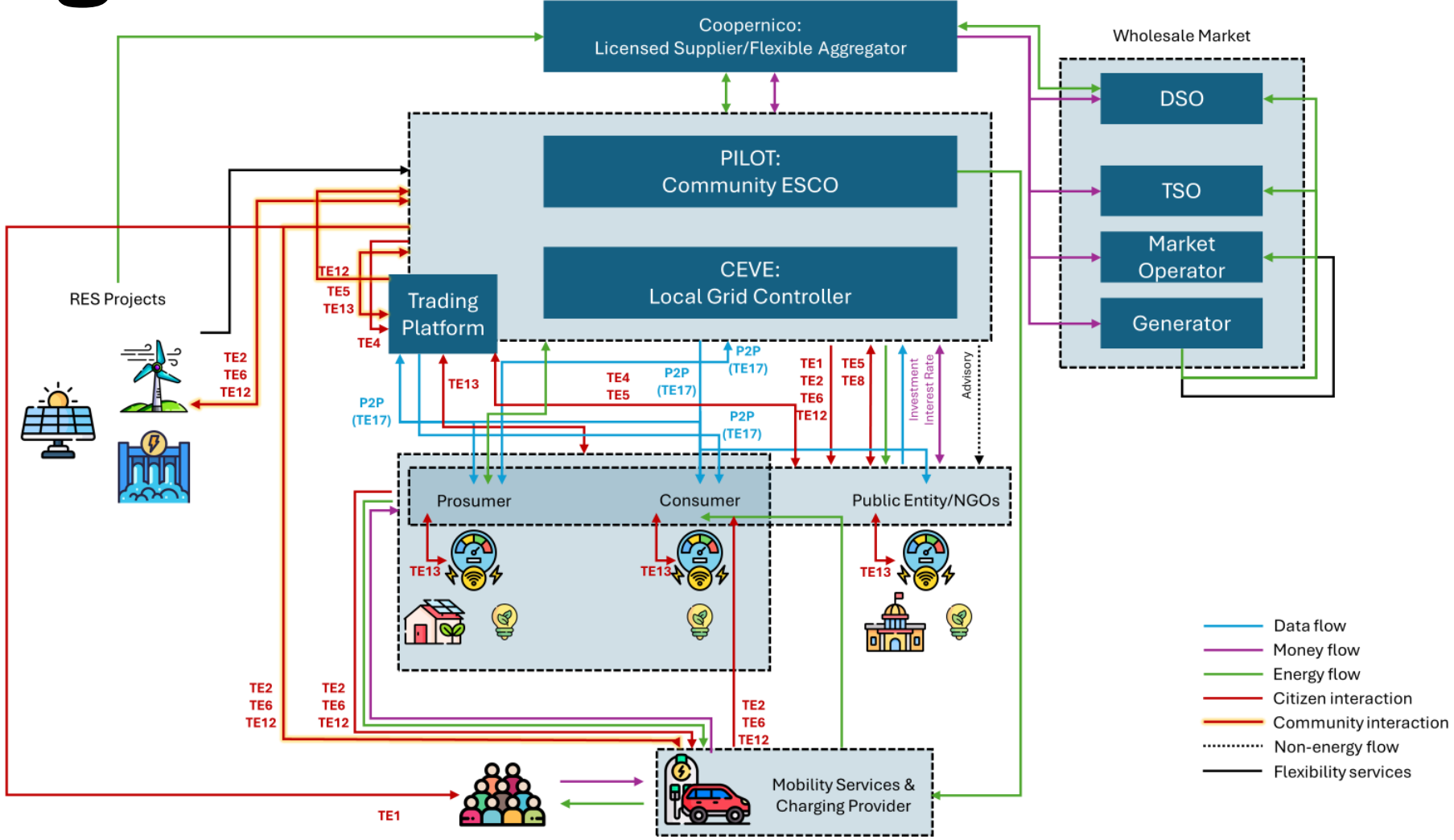
- Literature review on EnCs BMs,
- Extended discussions with partners involved in the development of each pilot case, to establish a baseline understanding of them, and explore stakeholders' vision and mission,
- Semi-structures questionnaire filled by partners involved in the development of each pilot case (the most important primary data source).

## What we did?

- Create BMC for ENPOWER's six pilot cases,
- Develop BM archetypes for each pilot case
- Re-order and re-design the existing flows of energy, and money by adding flows of data and flows arising from energy citizens' increased powers
- Observe and explain the impact and the potential of technological tools to enhance the power and influence of energy citizens, other individuals, and the Community itself.

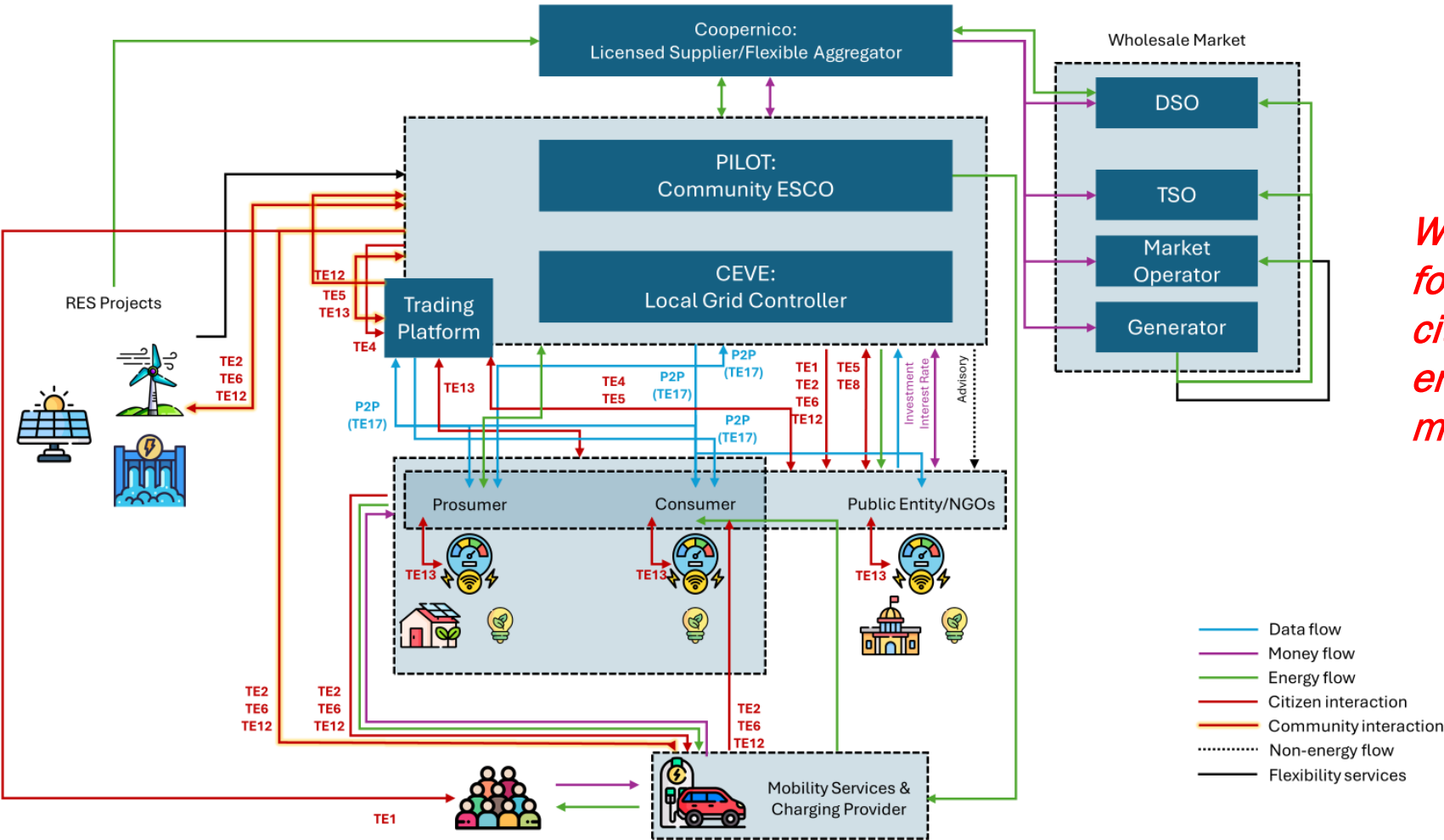


# Paradigm of a Business Model



- Data flow
- Money flow
- Energy flow
- Citizen interaction
- Community interaction
- - - Non-energy flow
- Flexibility services

# Paradigm of a Business Model



*What is the tool, the driving force that empowers the energy citizen's capabilities or enhances their role in decision-making within the EnCs?*



# Technical Enablers

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- *Interactive decision support tool for EnC planning (1):* consumers and external citizens get economic, social, and environmental benefits of becoming an active Community member, enabling them to take the leap and make the individual decision to actively participate in energy activities
- *DLT/Blockchain/smart contracts multi-purpose marketplace for increased Trust & Sovereignty and for P2P tokenised assets sharing and compensation (5):* enables increased end-user participation in personal energy data sharing, individually or within the framework of Data Cooperative (will protect data transfer and security while increasing the participatory levels of citizens in the procedures)
- *Self-consumption optimization tool(9):* real production of RES plants is compared to their real production, allowing the increase of accuracy of different production prediction models. The ability to optimize self-consumption will bring added value to energy citizens' behaviors and decisions and will draw meaningful connections between real-life situations/events and their response to them (direct form of participation)

# Technical Enablers

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- *V2G-based flexibility management platform for providing incentives to communities of EV drivers (11)*: provides real-time data and future reservations related to charging stations (publicly accessible), implementing smart charging module depicting load management patterns. V2G transactions will also be available, incentivizing users to shift their charging or discharging schedule of their EVs to support the (local) grid.
- *AI-Powered Virtual Energy Manager (WIS4Households)(13)*: members of the EnC using the AI-Powered Virtual Energy Manager platform will be given their own energy consumption patterns, benchmarks similar to their peers, recommendations regarding energy efficiency and optimal solutions for becoming a prosumer, information the participant regarding energy sharing, empowering not only their individualistic identity but also their dynamic integration in alliances and sub-groups within EnC

# Technical Enablers, Energy Citizens and Energy Democratization

- TE-1
- TE-5
- TE-9
- TE-11
- TE-13

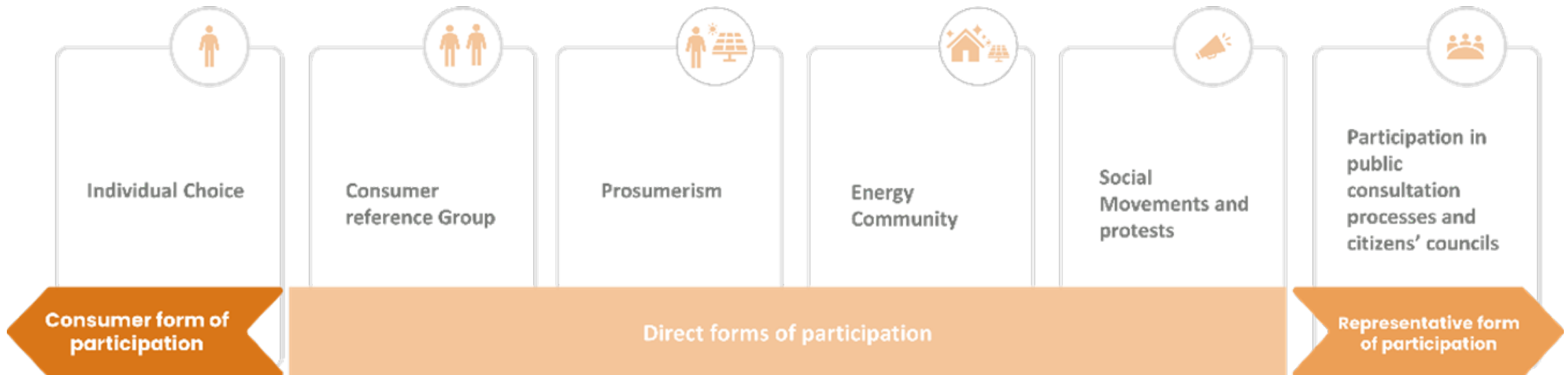
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- TE-11



# Final takeaways

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- Consumer-centric business models were designed, not only combining different concepts of EnC BMs but also implementing the technical enablers, fostering a diverse and inclusive ecosystem involving stakeholders and innovative technologies.
- Consumer-centric business models can be used as a tool to identify the strengths that arise from the will and the actions of individual energy citizens and foster the concept of democratization.

As shown by the study of Consumer-centric business models, innovative technologies enable not only individualistic forms of participation but also direct actions from the consumers and representative forms of participations.

**Thank you**

