PIACER

Piattaforma Progettazione Gestione

Comunità Energetiche Rinnovabili

Business Models Analysis

25/11/2026

State of the art: business models for renewable energy communities

LITERATURE REVIEW 1,340 Scopus records → 16 papers assessed → 5 key references selected

CIELO ET AL. · 2021 · OPEN ACCESS ↗

Renewable Energy Communities business models under the 2020 Italian regulation

3 archetipes of BM

- **REC-owned**: joint investments by members; all the revenues go to the REC.
- **Third-party developer**: developer owns and manages the assets; REC receives a share of the revenues.
- **Hybrid**: CAPEX and revenues split 50/50 between REC and the developer. REC pays fee to developer

PANTAZIS ET AL. · 2025 · OPEN ACCESS ↗

Energy Community Business Models Archetypes

4 archetipe of BM

- **Self-consumption model**: individual or joint investments by members; all the revenues go to the REC.
- **Third-party model**: third party owns and manages the assets; REC receives a share of the revenues.
- **Aggregator model**: a 3rd party manages RECs flexibility. Members need to be equipped with EMSs
- **Integrated energy services & e-mobility**: multi-energy REC

KUBLI & PURANIK · 2023 · OPEN ACCESS ↗

A typology of business models for energy communities: Current and emerging design options

5 BM classification dimensions

- **Community value proposition**
- **Energy community members**
- **Energy value capture**
- **Key function**
- **Network effects**

ART-ER · 2025 · OPEN ACCESS ↗

Comunità energetiche rinnovabili in Emilia-Romagna

3 BMs for the regional context

- **Public-driven**: REC propmoted by public administrations. Often with social solidarity aims.
- **Developer**: developer owns and manages the assets; REC receives a share of the revenues.
- **Collaborativw**: investment by members; all the revenues go to the REC.

BARABINO ET AL. · 2023 · OPEN ACCESS ↗

Energy Communities: A review on trends, energy system modelling, business models, and optimisation objectives

6 archetipes of BM

- **Prosumers**: REC plants are owned by individual prosumers. All the revenues go to the REC.
- **Collective generation**: joint investments by members; all the revenues go to the REC.
- **Local energy market**: physical peer-to-peer energy exchange between REC members, often thorugh blockhain.
- **Cooperative:** The cooperative is the 3rd party who owns the plants and reinvests revenues. Can have social solidarity aims.
- **Aggregator:** DSO is 3rd party who manages RECs' flexibility. Members need to be equipped with energy management systems.
- **3rd party sponsored (Utility/ESCO):** a 3rd party owns and manages the assets; REC receives a share of the revenues

Business model per CER industriali

From literature archetypes to modelled configurations

Synthesis of literature archetypes

Of interest for industrial partners

Collaborative

Members form the REC with or without shared assets investments. Revenues belong to the community and are redistirbuted according to community rules agreed during the formation phase

3rd party (developer)

An ESCo builds and manages REC plants and guarantees a share of the revenues to the REC

Public-driven

REC is promoted by a plublic entity or administration (PA), which directly invests in the plants or at least provides the surfaces where to build them (e.g., public buildings rooftops).

SME doing manufacturing in Emilia-Romagna: 7.172 (50% of enterprises)

Source: Cielo 2021, Barabino 2023, Pantazis 2025, quaderno di ART-ER 2025; ISTAT 2024 (manifattura E-R, imprese con almeno 10 addetti)

4 modelled configurations

3 industrials members (1 office profile, 1 of a manifacturing company and 1 constant load) form a REC with the Collaborative busines model

1.	**PV-only**	BAU / reference case
2.	**PV + LFM**	Participating to Local Flexibility Markets (LMFs), Increases revenues (IoT platofrm needed)
3.	**PV + BESS**	Battery storage (BESS) incraeses self-consumption: higher CAPEX and lower IRR
4.	**PV + BESS + LFM**	BESS increases self-consumption and LFM revenues: IRR > than case 3 (but < than 2)

≥ 8-10% **Activation factor**: According to our simulation, IRR of case 4 overcomes that of case 1 and 2 when LFMs become more established, beyond the current experimental phase, and the activation factor reaches 8-10%.

Solar Photovoltaic (PV) – Battery Energy Storage System (BESS) – Local Flexibility Market (LFM) – Renewable Energy Community (REC)