# Renewable Energy Communities and Collective Self-Consumption

Promoting best practices to maximize the environmental, economic and social benefits on the territory

Pedro Verdelho, ERSE

16 November 2021

# Dimensions towards decarbonisation

## 3) Enhance sector integration and energy circular economy

- New actors & technologies
- Whole system approach
- Carbon-neutral society
- Energy efficiency
- Hydrogen

## 1) Continue work on integration of markets

- 1, 2, 3 Packages
- Liberalisation
- Unbundling
- Internal energy market
- New EU entities & NCs

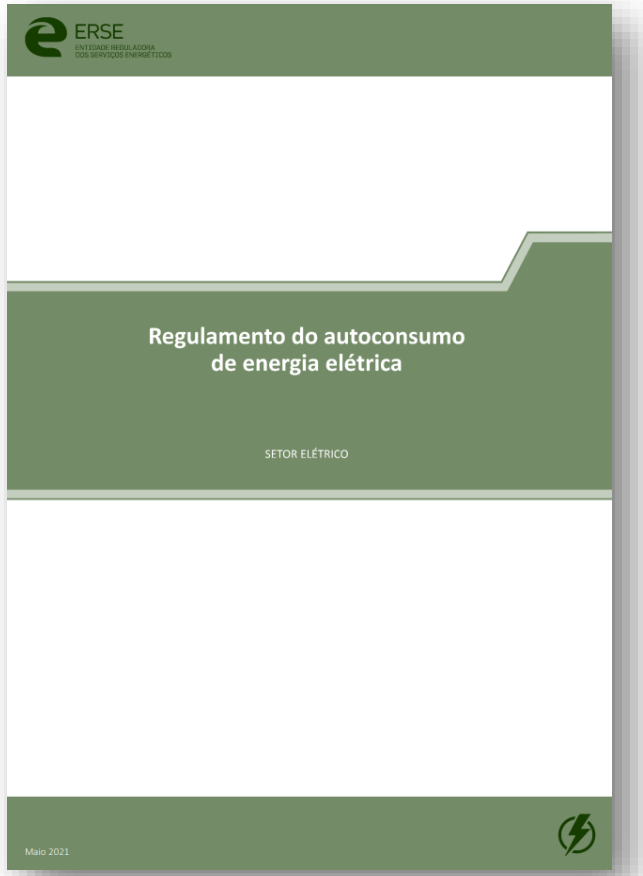

## 2) Foster local and decentralised energy and economies

- Clean Energy Package
- Renewables
- Self-consumption
- Energy communities
- Peer-to-peer

# New legal and regulatory framework in PT to foster local and decentralised energy and economies

New legal & regulatory framework opens the floor for new simplified and low-transaction costs models:

- **Self-consumption**
- **Energy sharing**
- **RES energy communities**
  - Consumers have the **right to produce** (renewable) electricity for self-consumption and sharing with others
  - DSO must install adequate (smart) meters and **handle energy data** (self-cons/supply and sharing)
  - Collective self-consumers nominate an **entity which represents them** in DSO and licencing interactions
  - **Energy sharing rules** are established (fixed/dynamic coefficients)
  - **REC** can do collective self-consumption
  - **Network tariffs** apply to energy sharing through public networks

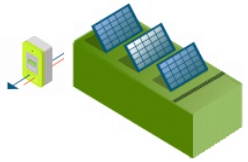


# Practical exemples: description

Residential building

Horizon 2020 - Compile Project (Lisboa)

- 8 apartment buildings in 1 condominium.
- 180 apartments willing to share rooftop PV electricity



Industrial site

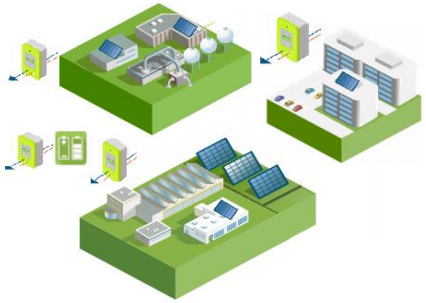
Bondalti, chemical industry (Porto)

- An intensive electricity user is building a 1MWp PV on site (only <1% of current energy consumption)

Neighbourhood energy community

REC Agra do Amial, EEA Grants Project (Porto)

- REC for a public small social housing district (181 apartments) and a public primary school.
- 130 kWp PV, 3 EV charging points and 115 kVA batteries



Industrial neighbourhood

Sonae Maia industrial complex (Porto)

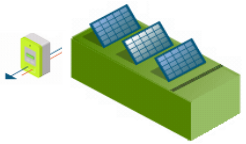
- REC for an industrial area (3 prosumers), one storage unit, EV charging points.

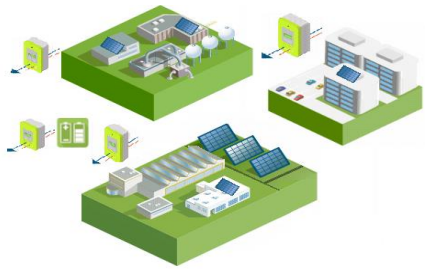
Citywide neighbourhood

POCITYF, Horizon 2020 (Évora)

- REC for a city centre residential area (11 buildings initially but with potential for dozens others)

# Practical examples: challenges





| Residential building | Industrial site | Neighbourhood energy community | Industrial neighbourhood | Citywide neighbourhood |
|---|---|---|---|---|
| Lack of land fit and availability | Lack of land fit and availability | Licencing of REC projects by public entities is more complex (challenges with public tendering processes) | Setting fair energy sharing rules defined by the REC due to different load profiles | Licencing of REC projects with dynamic evolution |
| Large scale renewable projects difficult to licence | Large scale renewable projects difficult to licence | Setting fair energy sharing rules | Better use of energy surplus within the REC | Grid access similar to dedicated generation |
| Big capital needs competes w/ other business needs | Big capital needs competes w/ other business needs | Consumer engagement is low and decisions centralised | Access to individual consumption data | Direct trade (peer-to-peer) and trading platforms |
| Tariff levies' exemption is critical | Tariff levies' exemption is critical | Access to individual consumption data | | Historic centre with construction constraints |
| Injection of energy surplus remuneration is critical | Injection of energy surplus remuneration is critical | Stability of public incentives | | Access to individual consumption data |
| | | Great potential for replication | | |

# Key challenges

- The **creation of energy communities** is showing to be **difficult**, requiring technical and legal skills and goodwill from potential participants
- The adequate **business cases** are **still to be established**
- **Energy communities seek a difficult balance between self-organization** (by passing suppliers) **and sophistication** (new and innovative solutions like storage, complex energy sharing rules and pricing options)
- Much of the **complexity is externalized to the DSO** (greatly impacting its data handling processes)
- Many **barriers relate to procedures and lack of awareness or technical and legal skills** rather than economic business case
- **New actors are emerging** in the implementation of REC projects but market readiness is still a long way to go
- **Impossible to address all approaches for energy sharing ideas**

# Way Forward

- **Empower consumers** for transition **enhancing engagement and awareness** is essential for these solutions to develop
- Adopt a **gradual and flexible regulatory framework** with simplified rules and low-transaction costs
- **Public efforts and administrative decisions** to foster self-consumption, energy sharing and energy communities
- **Standard solutions, sharing of information, contractual templates and other simplifications**
- **Standardise and define administrative criteria** for quick approval, such as same voltage levels or proximity
- **Smart meter rollout** initiatives gives access to **detailed consumption data facilitating implementation**
- **Empower stakeholders** with tools to define the energy sharing profiles

ERSE
ENTIDADE
REGULADORA
DOS SERVIÇOS
ENERGÉTICOS

EDIFÍCIO RESTELO
Rua Dom Cristóvão da Gama, 1, 3º
1400-113 Lisboa
**Portugal**
**Tel:** +(351) 21 303 32 00
**Fax:** +(351) 21 303 32 01 • **e-mail**: erse@erse.pt
**url:** http://www.erse.pt

# Thank you!

For more information on these projects see [PT language only]:
https://www.erse.pt/comunicacao/destaques/webinar-autoconsumo-e-ces/