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e Intervenção Social

# The Social Logics of Energy Transitions and the Making of Renewable Energy Communities

26th October 2026

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# In this presentation...



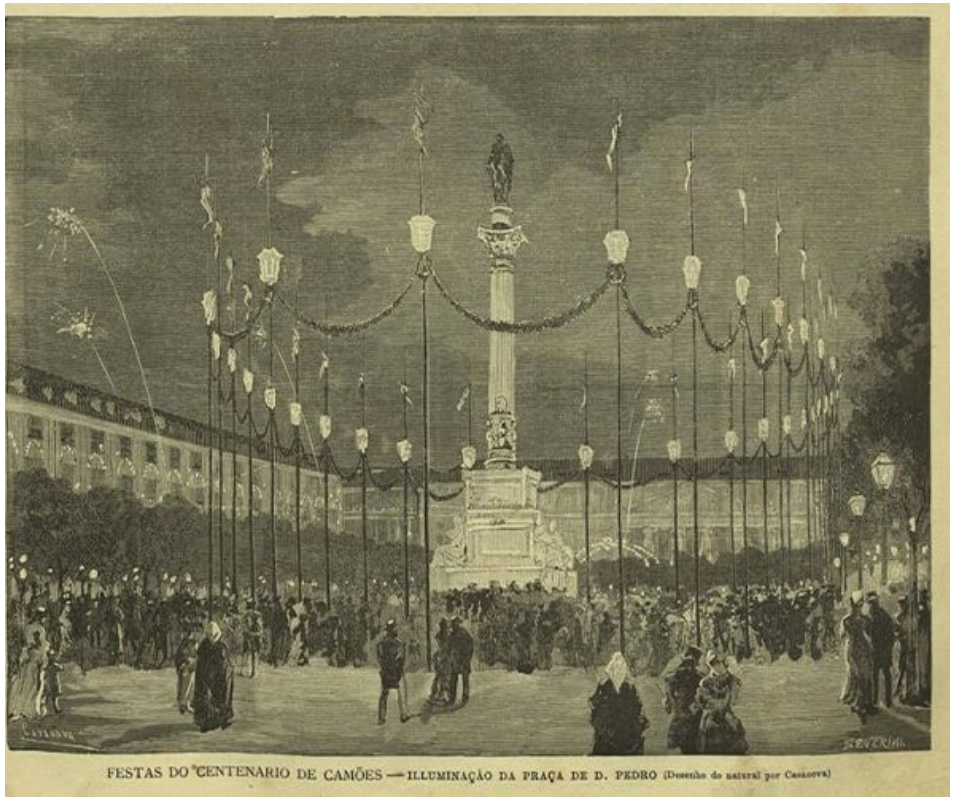
1. **Energy transitions: problems, solutions and sociotechnical imaginaries**

2. **From community energy to Renewable Energy Communities**

3. **The making  of RECs in Portugal**

# Energy transitions as sociotechnical processes

- **Energy systems are socio-technical**
  Technologies, infrastructures, markets, regulations, everyday practices and meanings co-evolve, so changing one means changing the others (Geels 2002).
- **Transitions are shaped by imaginaries, discourses, ideas, norms, values**
  *Sociotechnical imaginaries:* collectively held, institutionally stabilized, and publicly performed visions of desirable futures, animated by shared understandings of forms of social life and social order attainable through, and supportive of, advances in science and technology. (Jasanoff & Kim 2015, p. 4).
- **Imaginaries are plural and contested**
  e.g. Market-led, efficiency-driven transition ↔ civic, decentralised, participatory transition.



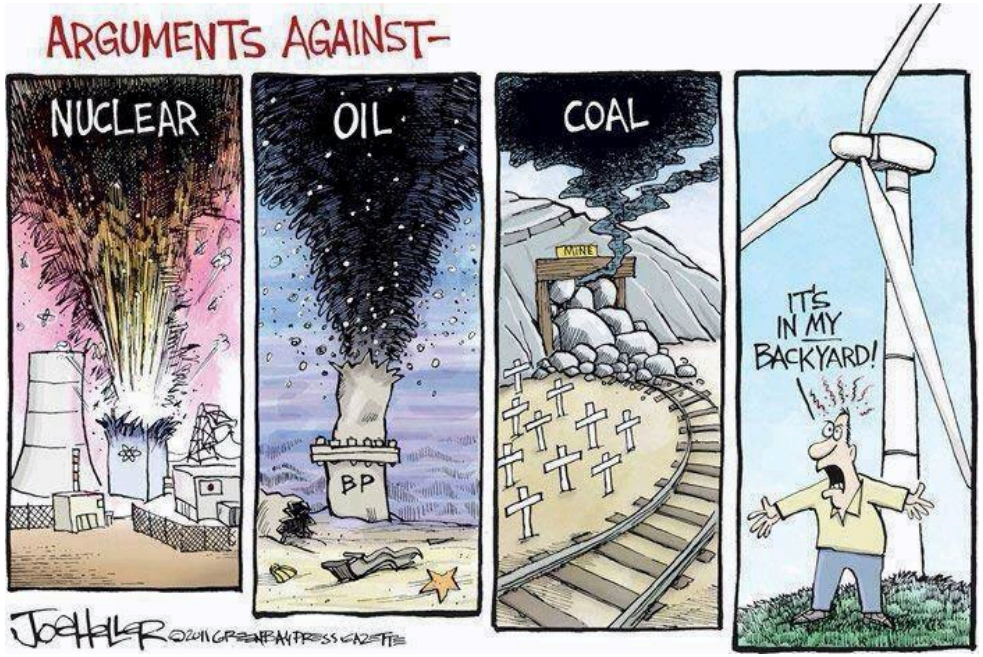
FESTAS DO CENTENARIO DE CAMÕES — ILLUMINAÇÃO DA PRAÇA DE D. PEDRO (Desenho do natural por Cassiano)

https://edp.com/en/media/edp-stories/history-two-centuries-portugal-lights-first-lamp

# Social acceptance of renewable energy technologies

- Renewable energy technologies usually viewed as the main solution to climate change




- Opposition to large-scale renewable energy projects often represented as “NIMBY”

EXCLUSIVE SANTIAGO DO CACEM

# The population of Cercal do Alentejo will have a “sea of crystal” right on their doorstep

Rural communities fear the consequences of the impact that could be caused to the landscape, agriculture and tourism with the installation of six photovoltaic plants in the municipality of Santiago do Cacém alone.



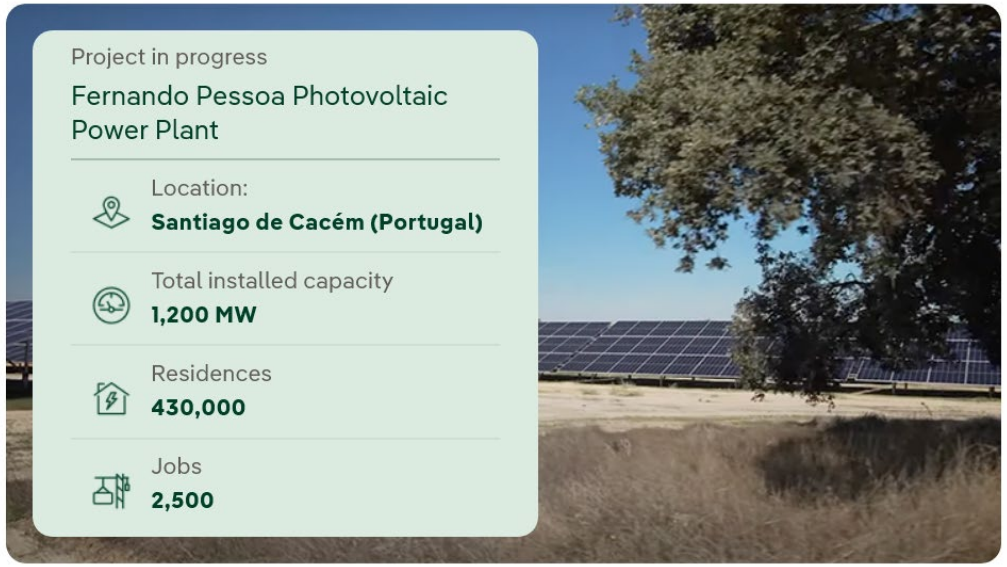



# The future: continued increases in scale...

## Fernando Pessoa, the largest photovoltaic project in Europe.

Iberdrola | Photovoltaic Energy | Projects in Portugal

We are building the Fernando Pessoa photovoltaic power plant in Portugal, the largest photovoltaic project in Europe and the fifth largest in the world. With 1,200 MW of installed capacity, it will be an example of environmental respect and coexistence, and will supply renewable energy to 430,000 homes.




lightsource bp
GLOBAL
About | Sustainability | Buy renewable power | Asset Services

## Sophia Photovoltaic Solar Park



KEY FIGURES

| 1.271.377 | +370.000 | 240.500 | +20.000 |
|---|---|---|---|
| MWh annual production | Households with energy supply per year (equivalent) | Tons of carbon emissions saved | Cars powered by traditional fuels taken off the road (equivalent) |

CURRENT STATUS

Location selection | Preliminary technical definition and environmental | Public Consultation, Preliminary Study, and Obtaining the | Detailed technical and supplementary environmental studies | Public Consultation on Project Implementation and | Construction

# ...and contestation

## Public consultation on the Sophia photovoltaic plant is the most participated ever.

With just hours to go before the public consultation on the Sophia photovoltaic plant closes, it is already the most participated in ever. More than 11,000 people wanted to give their opinion on a project that has been heavily contested by environmentalists and local authorities.

Joana Carvalho Reis - Antena 1 / Updated November 20, 2025, 5:50 PM

## Against mega solar power plants, "the sun belongs to those who earn it, and the land belongs to those who cultivate it."

More than one hundred people demonstrated in Lisbon, heading towards the Assembly of the Republic, against two mega solar power plants in the Beira Baixa region. Among them are current and former residents, who are protesting against the destruction of the landscape caused by the installation of thousands of solar panels and high-voltage power lines.

Gonçalo Costa Martins - Antena 1 / Updated December 13, 2025, 7:51 PM



# Social acceptance of renewable energy technologies and innovation

- Social science enlisted to find ways to increase “social acceptance”
- Often frames citizens as problems & as passive recipients of projects
- But social acceptance is not just about “the public” or “communities”
- Need for a critical perspective on renewable energy deployment
  - *What kind of projects?*
  - *Who decides* and *who benefits* (procedural and distributive justice).
  - Interrelations between dimensions
  - But also foregrounding power and temporal dynamics

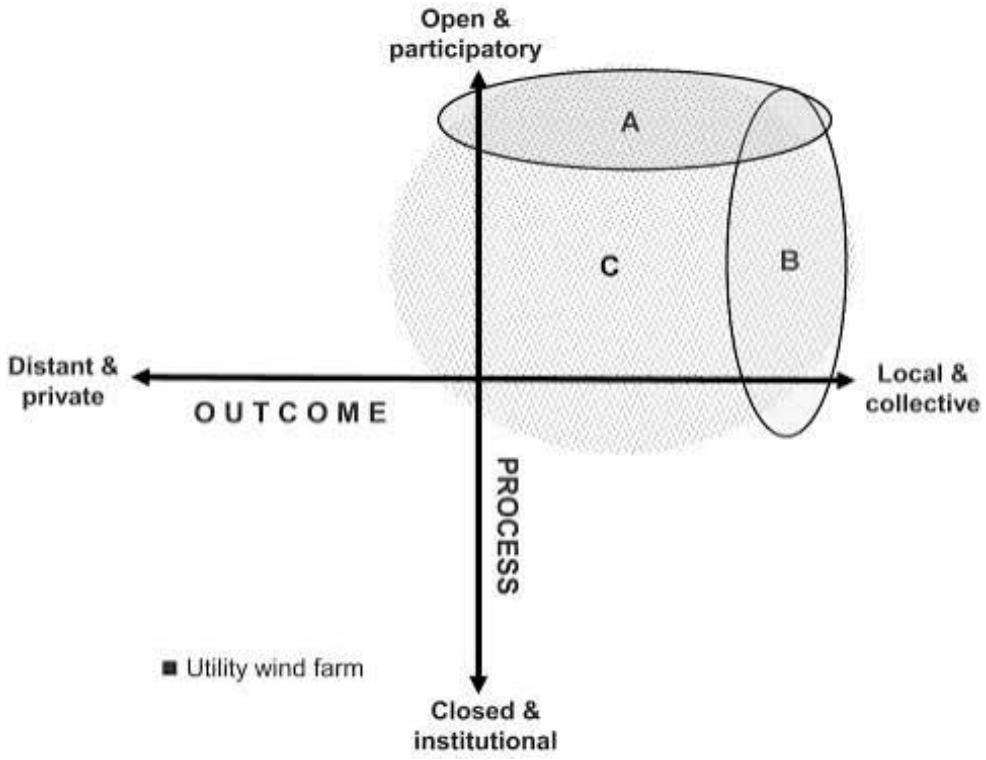
**→ Can citizens move from “accepting” (and opposing) projects to owning and controlling them?**




Wüstenhagen, R., Wolsink, M., & Bürer, M. J. (2007). Social acceptance of renewable energy innovation: An introduction to the concept. *Energy policy*, *35*(5), 2683-2691.

# Community renewable energy
## What should it mean?

- There are a wide variety of community energy practices and models
- **The process dimension ("Who is it by?")**
  - Focuses on *how* a project is developed, run, and managed.
  - Asks who is involved, who holds decision-making power, and who exercises influence over the initiative.
  - Ranges from open, broad, and participatory community-led governance to top-down commercial or municipal control
- **The outcome dimension ("Who is it for?")**
  - Focuses on the distribution of a project's results—both socially and spatially.
  - Asks who benefits in economic or social terms (e.g., local revenue, reduced energy bills, local regeneration, or global carbon reductions) and who might bear negative impacts.
  - Ranges from localized, collective community benefits to wide-scale or purely commercial/state returns.




Walker, G., & Devine-Wright, P. (2008). Community renewable energy: What should it mean?. *Energy policy*, *36*(2), 497-500.

# Community renewable energy: alternative vision of the energy future?






# What are Renewable Energy Communities?

- Introduced by the 2018 **EU Renewable Energy Directive.**
- Originates from grassroots energy initiatives, especially in Northern Europe (Savaresi, 2019).
- **Core principles:** collective ownership, citizen participation, local community benefits over financial profits (Walker & Devine-Wright, 2008)
- **Broader justifications**: RECs are valued for improving system efficiency and public acceptance of renewables (Laes et al., 2023)
- **Critical questions:**
  - RECs as citizen empowerment and or further liberalization of energy sector?
  - Communitarianism vs neoliberalism (Laes & Bombaerts, 2022); corporate capture and co-option (Anfison, 2023)

**REDII (2018) – Art 2.16)** 'Renewable Energy Community':

***What?*** - A legal entity based on open and voluntary participation, which is autonomous and effectively controlled by shareholders or members; and is located in proximity of the renewable energy projects that are owned and developed by that legal entity;

***Who?*** - Natural persons, SMEs or local authorities, including municipalities;

***Why?*** - To provide environmental, economic or social community benefits for its shareholders or members or for the local areas where it operates, rather than financial profits.




# What are Renewable Energy Communities?

1. **Renewable Self-Consumer**
   Individual private users of self-generated renewable energy – the precursor to the energy community
2. **Collective Self-Consumption (CSC):**
   Several of the above entities interact with each other on a voluntary basis in an energy-related manner.
3. **Renewable Energy Community (REC):**
   Independent communities of consumers and plants networked in close proximity to each other with the purpose of saving costs and acting ecologically and regionally. Participation is voluntary.
4. **Citizen Energy Community (CEC):**
   Like No. 3, but not based on spatial proximity and physical networking, but a purely virtual collaboration that is possible across different regions.

**REDII (2018) – Art 2.16)** 'Renewable Energy Community':

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# The development of RECs as a process of socio-legal change

- Member states were required to adopt the concept of Energy Communities in their national laws.
- The broad definition of REC created uncertainty and the potential for conflicting interpretations, especially around concepts of autonomy, effective control and proximity
- And especially in countries like Portugal with less experience of community energy initiatives
- “Scalar bias”: centralized and decentralized are developing at “distinct rhythms” (Sareen, 2022; Campos et al, 2022).

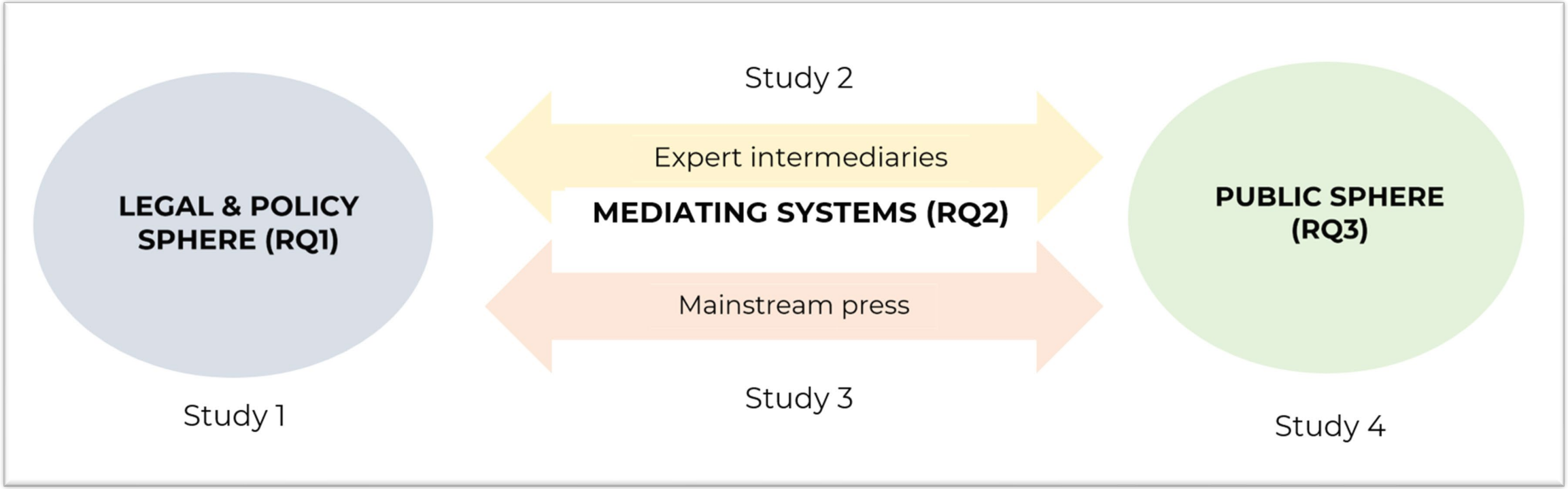
*Expectations of solar PV in the National Energy & Climate Plans (2019 and **2023*)***

| | 2020 | | 2025 | | 2030 | |
|---|---|---|---|---|---|---|
| **Solar Photovoltaic** (GW) | 2 | **N/A** | 6.6 | **8.4** | 9.0 | **20.4** |
| → Centralised | 1.5 | **N/A** | 5.8 | **6.1** | 7.0 | **14.9** |
| → Decentralised | 0.5 | **N/A** | 0.8 | **2.3** | 2.0 | **5.5** |

**2023 includes installed capacity for hydrogen production*

# The development of RECs as a process of socio-legal change

The novelty and diversity of RECs, the uncertainty about their meaning, and their orientation towards the public make them ideal for studying the role of imaginaries, discourses and values in shaping legal and technological change…



# The development of Renewable Energy Communities in Portugal

**Early imaginaries (2016-2018)**

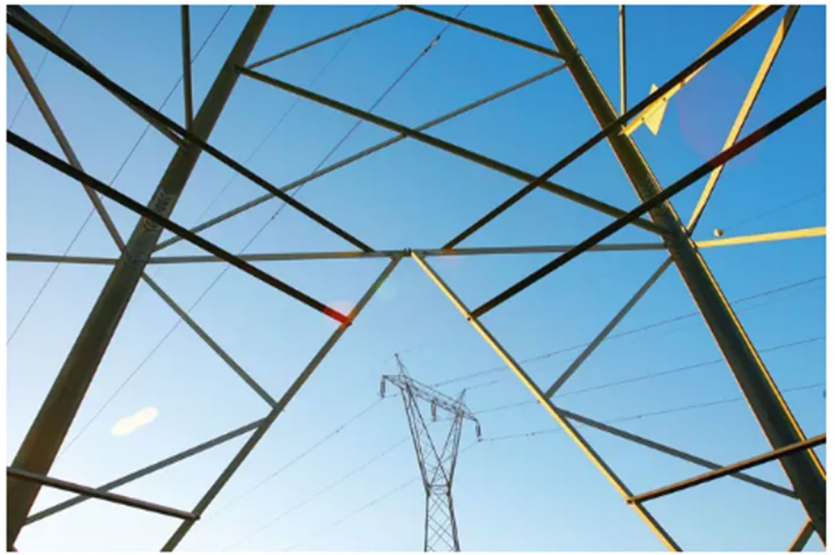
## The solar energy revolution will happen on other people's rooftops.

*t's legitimate to ask: "If the investment is so good, why isn't the country full of solar panels on rooftops?" It's also a question that plagued me every time a plane landed in Portugal.*

May 29, 2017 00:02

EDP OPEN INNOVATION

## What does energy mean in 2028?



Electrification will dominate the socio-economic fabric, so high-voltage distribution channels will become increasingly important and complex. For the future, there is even talk of a "super-grid". José Carlos Carvalho

Change: Electrification, renewables, and digitalization are the main courses on the menu for the sector's next decade.

AUGUST 20, 2018 16:05

cis_iscte

**New policies, laws and regulatory frameworks for self-consumption and energy communities (2019-2021)**

## Citizens in the National Energy and Climate Plan

*One of the (good) measures of the PNEC is to update the legal framework for self-consumption so that, finally, tenants are allowed to share the energy produced on the roof of the same building.*

January 30, 2019, 00:07

## *Democratizing electricity to curb climate change.*

It is possible to accelerate the decarbonization of electricity production to help curb climate change and, at the same time, improve the well-being of populations. The new legal framework for "self-consumption of renewable energy" is a step in this direction, but we need to go further and faster.

## Knocking on the neighbor's door to buy electricity



In São Luís, a village in Odemira, neighbors are coming together to produce and share energy with the aim of being self-sufficient. The new legislation facilitates renewable energy communities and collective production.

**João Pedro Pincha** (Texto) e **Daniel Rocha** (Fotografia)
22 November 2019, 7:23

# Emergence of different projects and models (2021-2023)

First e
in Mira
Goverr
help lo

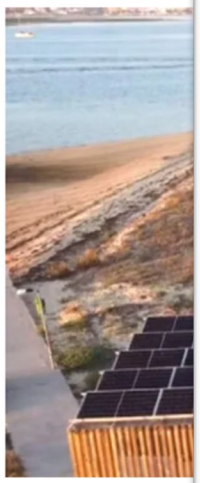
Barbara Silva
August 24, 2021

The first proje
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Photovoltaic panels fo
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Rui Pando Gomes
Journalist



These neighbor
own energy an

Published b



Freepik

In the parish of Lumiar, some neighbors have b
producing and sharing their own energy. Did y
know that this can reduce your electricity bill b
to 30% and lower CO2 emissions? Check out t
guide and inspire the people around you!

TAGUSPARK ANNOUNCE
REHABILITATION CENTER)
SMAR

## Cercal do Alentejo will have a Renewable Energy Community.

This article is over 3 years old.

A two million investment in the Renewable Energy Community will not only supply energy to "40( small businesses," but also reduce the cost of energy bills for participants.



# Inertia and critique (2022-2026)

## Portugal only has three energy communities and 170 are waiting for authorization

Companies complain about difficulties in licensing renewable projects, Government promises more resources for DGEG and a tool to "streamline the process".

**Ana Brito**

26 November 2022, 6:25

ENERGY

## Community-generated energy: EU misses target and Portugal lags behind.

The European Court of Auditors points to legal and technical barriers to the creation of energy communities. Portugal appears at the bottom of the European *ranking*.

**Andrea Cunha Freitas**

March 9, 2026, 4:11 PM

MOST POP

OPINION

## The Delayed Dream of Citizen-Based Energy Communities



Ana Rita Antunes Environmental engineer and coordinator of the renewable energy cooperative Coopérnico.

Portugal is among the European countries with the fewest reported citizen-based energy communities and, consequently, the fewest citizens actively participating in the energy sector and the energy transition to renewables.

MAY 15, 2025 5:49 PM

# How to understand the development of RECs?
## The approach of the sociology of conventions

- Emergence of new laws can be understood through the **ideas, representations, imaginaries or conventions** in which they are anchored…
- Legal rules are **reference points** that help coordination**;** they are "incomplete" – make sense through **conventions**
- Conventions **stabilize expectations** and **coordinate action**; orders of worth used for **justification and critique**

| Order of worth | Market | Industrial | Civic | Domestic | Inspired | Fame | Green | Projective |
|---|---|---|---|---|---|---|---|---|
| **Principle of worth** | Competition | Efficiency | Equality | Tradition | Outpouring of inspiration | Reality of public opinion | Sustainability | Flexibility |
| **Represented subjects** | Competitors, buyers | Professionals, scientists | Collectives, citizens | Superiors & inferiors | Visionaries | Stars and their fans | Naturalist, non-humans | Partners, brokers |
| **Represented objects** | Wealth | Means | Legal forms | Rules of etiquette | Dreams, visions | Names in the media | Nature | Projects |
| **Represented time** | Short-term future | Long-term future | Perennial | Past | Ruptured | Trend cycle | Future generations | Instantaneous |
| **Represented space** | Global | Cartesian | Even, detachment | Local, proximate | Moving | Visible | Planet ecosystem | Network |

# Energy Communities and orders of worth in the media

| Order of worth | Main claims & keywords | Example from mainstream media discourse |
|---|---|---|
| Civic | Energy communities are inclusive: they will provide access to more affordable energy by empowering citizens to become collective producers.<br><br>*Keywords*: Access, inclusivity, empowerment, democracy, justice, fairness, citizens. | *"Energy communities are also a way to guarantee citizens active participation in the electrical system. In other words, they are inclusive and can bring anyone together to share benefits" (#67, Observador).* |
| Domestic | Energy communities will strengthen local communities and help "needy" families by building on traditional community spirit and local ties.<br><br>*Keywords*: Identity, heritage, tradition, local, rural, self-sufficiency, villages, families | *"We know that here and there small producers [...] mobilize in defence of themselves, their past, their food, their references and traditions." (#21, Público)* |

# Energy Communities and orders of worth in the media

| Order of worth | Main claims & keywords | Example extracts |
|---|---|---|
| Market | Energy communities constitute an opportunity for business and will increase the competitiveness of the energy sector.<br><br>*Keywords*: Markets, competition, price, opportunity, profit, businesses | *"Companies have a historic opportunity to actively participate in the energy transition, ceasing to be what the overwhelming majority are today: passive consumers of electricity." (#78, Observador)* |
| Industrial | Energy communities will help meet objectives and increase the efficiency of the energy system, contributing to the security and stability of the grid.<br><br>*Keywords*: Efficiency, stability, predictability, planning, growth, energy security. | *"The small scale is a model with multiple advantages, including technical ones. The production closer to the place of consumption avoids losses in the network." (#11, Público)* |

# The role of policy, law and regulation in shaping RECs: research aims & questions

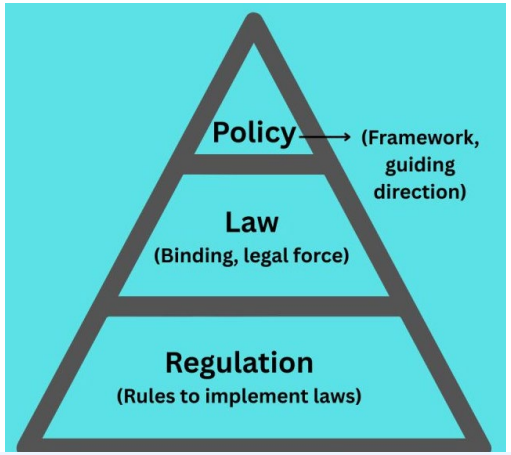
- **Aim:** to understand how Renewable Energy Communities are shaped in the interaction between institutions and 'the public', and what consequences this might have for a fair and inclusive energy transition.

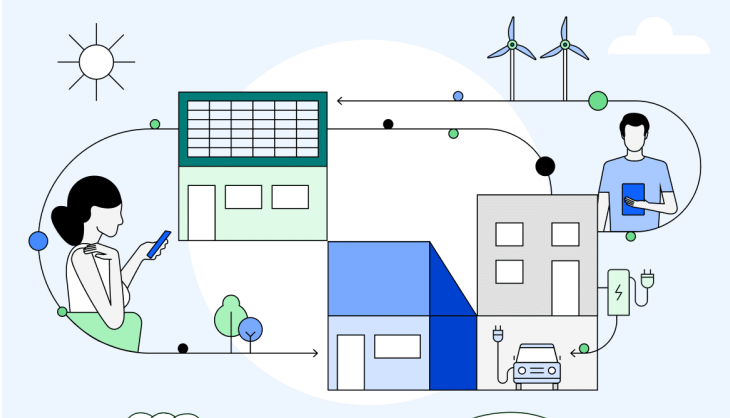
- How was the concept of RECs transposed and implemented in **Portugal?** – country with "low civic participation", financially constrained, policy focus on large-scale renewables, increasing social acceptance issues.

- How does the concept of REC become associated with different conventions as it is institutionalised and taken up by different actors and with what consequences?

- Focus on the issue of **"participation"** – who is expected to participate and how?



# Methods

- Interviews, documental analysis, media analysis, site-visits (2020-2024)
- **Key policy and legal documents** associated with the energy transition and RECs from 2019 until 2023
- **Regulatory frameworks and associated public consultations** between 2019 and 2023.
- **Case studies** of 4 “REC” projects
  - Telheiras – Lisbon; community-led
  - Culatra – Algarve; community-led
  - Calvão - Aveiro; corporate-led
  - Cascais – Lisbon; corporate-led

| Type | Document | Publication Date |
|---|---|---|
| Policy | Roadmap to Carbon Neutrality 2050 (RCN) | 06/06/2019 |
| | National Energy & Climate Plan 2030 (NECP) | 01/12/2019 |
| | | 13/07/2023 (update) |
| Law | Decree Law n.º 162/2019 | 25/10/2019 |
| | Law n.º 98/2021 (Basic Climate Law) | 31/12/2021 |
| | Decree Law.º 15/2022 | 14/01/2022 |
| Regulation | Public consultation 82 (PC82) - Justification document; Responses (n = 37); Report | 20/12/2019 |
| | Regulation n.º 266/2020 | 20/04/2020 |
| | Public consultation 93 (PC93) – Justification document; Responses (n = 33); Report | 19/11/2020 |
| | Regulation n.º 373/2021 | 05/05/2021 |
| | Public consultation 104 (PC.104) – Justification document; Responses (n = 7); Consultation report | 27/10/2021 |
| | Directive n.º 12/2022 | 19/05/2022 |

# Overview of findings

**1) Justification in law & policy**

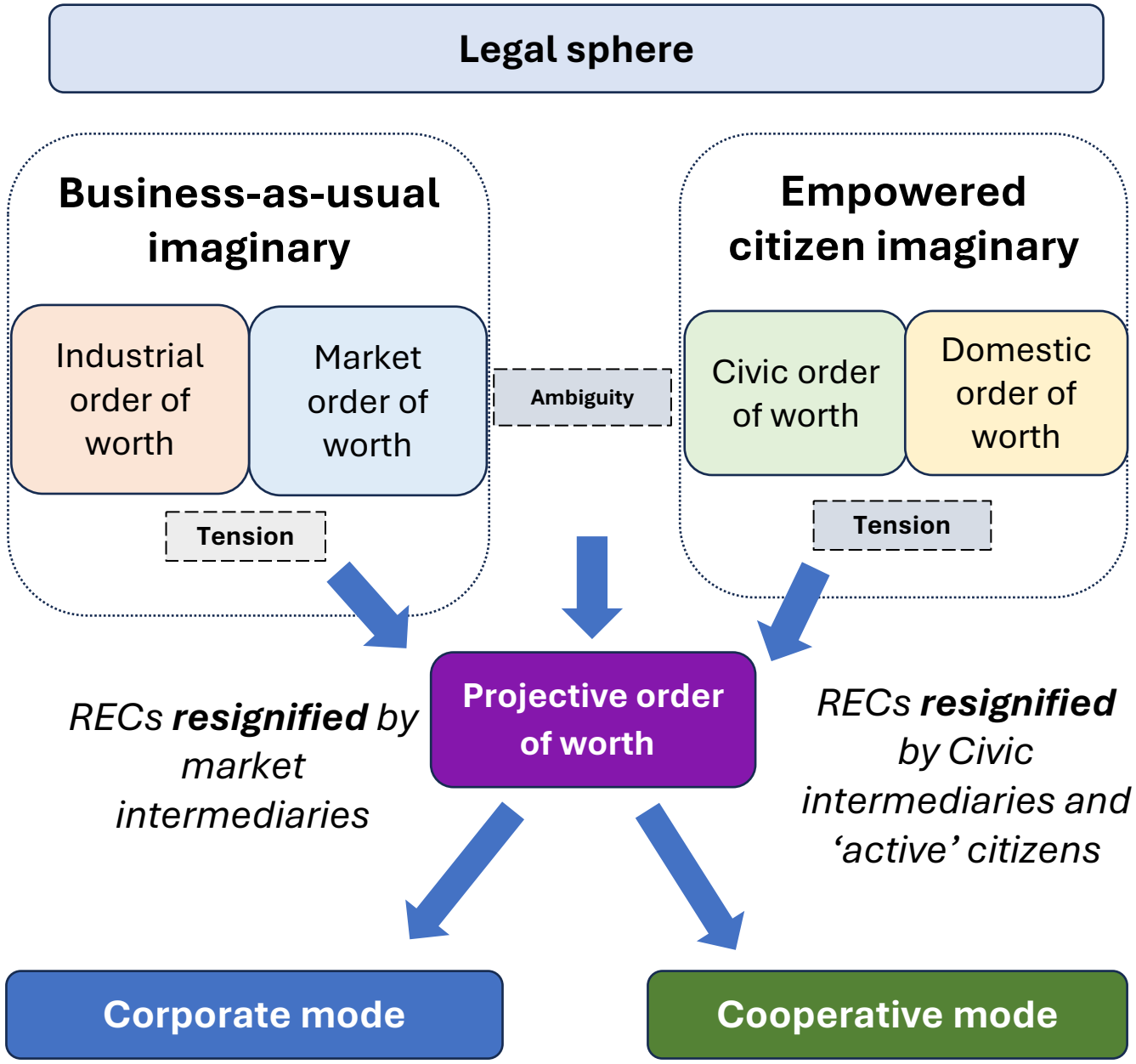
- Ambiguity of the “active citizen”
- RECs copy + paste definition in law
- Anchored in collective self-consumption – the figure of the “managing entity” (EGAC)

**2) Evaluation in regulation and intermediation**

- Cautious & conservative regulation
- Uncertainty over a range of legal concepts and technical issues
- The role of “new” intermediaries and need for expertise – questioning and consolidating EGAC

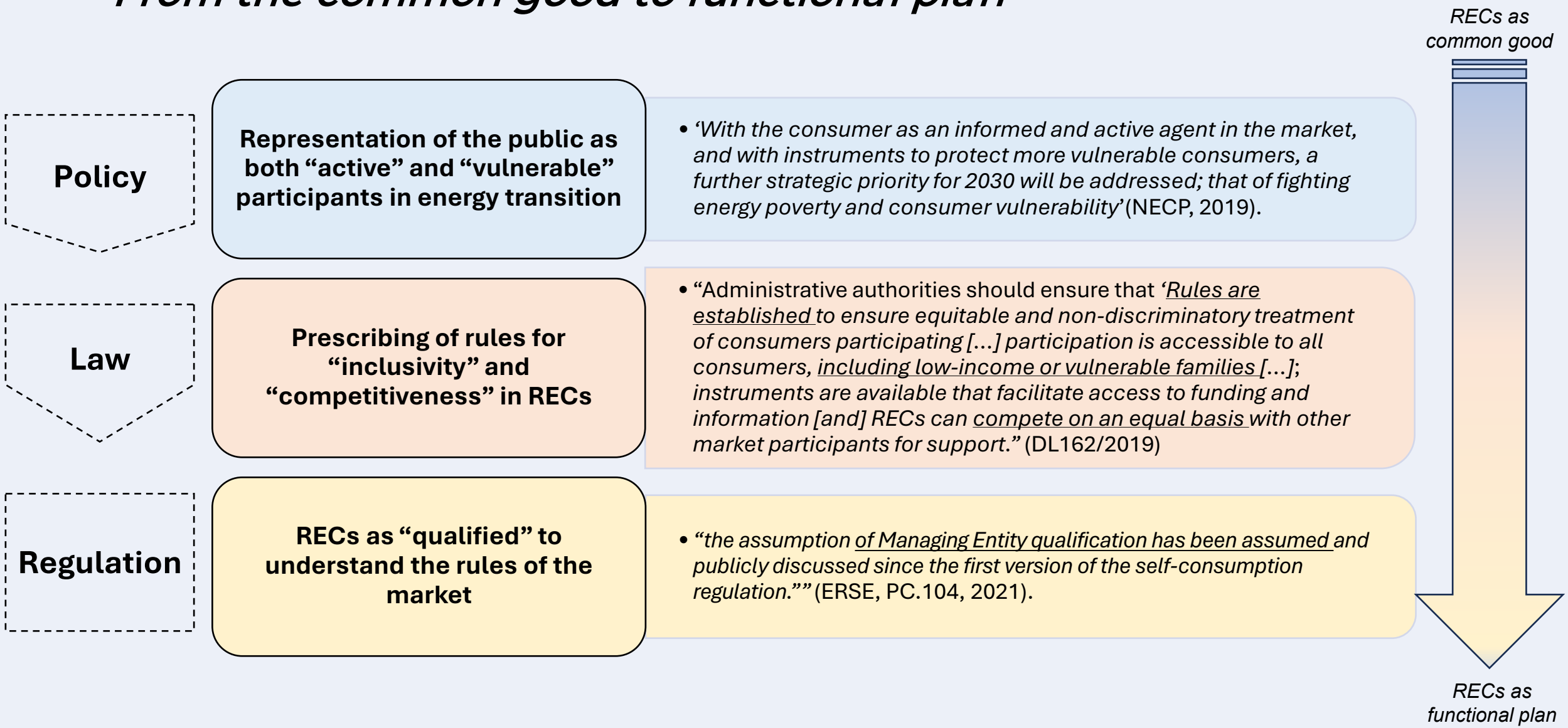
**3) Realisation in projects**

- Two modes of coordinating RECs
- Tensions and “testing moments”
- Participation and recruitment



# RECs in policy, law and regulation

## *From the common good to functional plan*



# An example of tensions in the regulation of rights and responsibilities: *the capability of the public to act in RECs*

***Critique***

*"The majority of the population is unaware of what is stipulated in the applied legislation [...] so legislative indications will not be sufficient [...] the parties are not in balance in terms of knowledge of the agreed rules for the market."*

(Consumer rights organisation, PC.104).

***Institutional response***

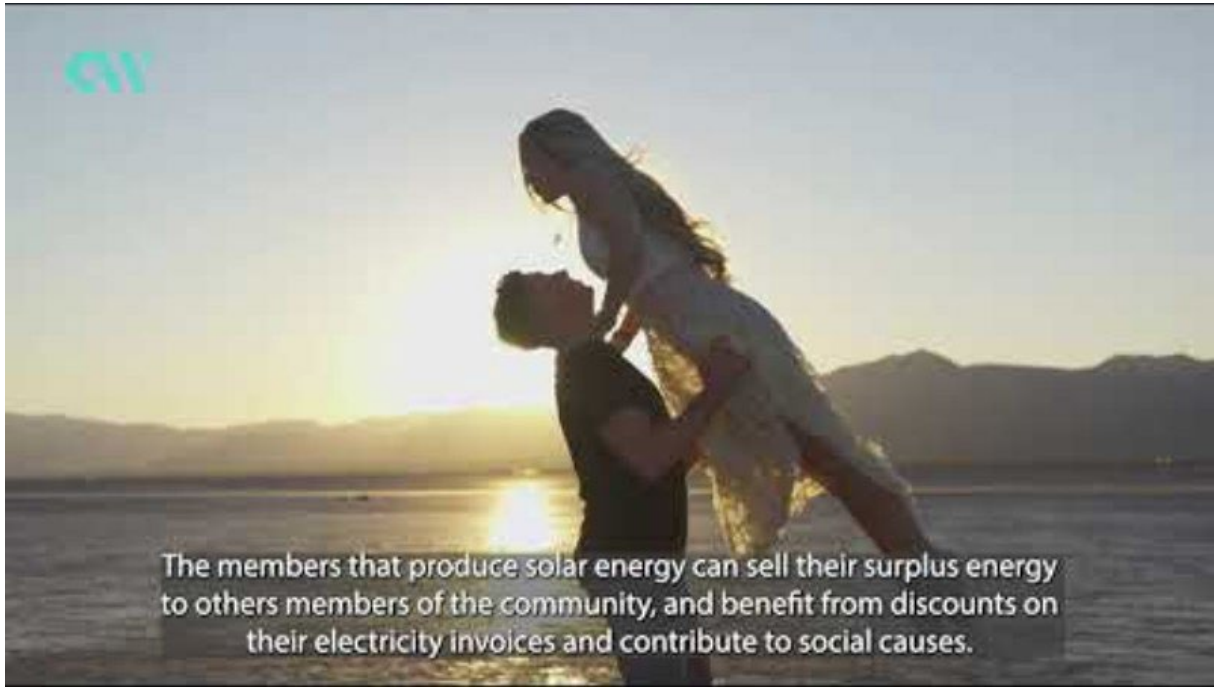
*"Although ERSE recognizes that the Managing Entity function can be performed by entities without any requirement for technical capacity and mastery of the sector's legal and regulatory model, it must emphasize that the assumption of Managing Entity qualification has been assumed and publicly discussed since the first version of the self-consumption regulation."*

(ERSE Consultation report, PC.104).

**Consequences**

- Creates a need for technical expert intermediaries
- Facilitates a more passive role for the citizen
- Managing entity of the REC need not be local community

# Two modes of imagining and coordinating energy communities







## How do the videos compare? What is the role of community?

| | |
|---|---|
| Market opportunity vs citizenship | Technological vs social |
| Individual vs collective | Energy vs sustainability |


NA ROTA DOS FUNDOS EUROPEUS
CULATRA
2030
COMUNIDADE ENERGÉTICA SUSTENTÁVEL
PAT 2030
PORTUGAL 2030

# Participation in the cooperative mode of coordination

- **Civic and domestic orders of worth – active participation, local community and solidarity**
  - "We want to do an energy community that involves everyone, even people that maybe do not have the financial capacity or the knowledge of the topic [...] we need to think*: 'okay, how can we include more people, how can we contribute to energy poverty mitigation?"* (P6, Member of Telheiras REC)

- **The managing entity is a local association, members have decision-making power**
  - "Then we have the national government saying this is too complicated. No, it's not. We are not dumb. We can do it. We know how to do it. We are European citizens. We have knowledge, we know how to make questions." (P4, Renewable energy co-op, engineering)

- **Project financed mainly by participants, 3 places reserved for "social participants"**
  - Civic-projective procedures for recruitment of active citizens
  - Civic procedures for recruitment of vulnerable citizens






***Public session "Renewable energy communities: Why? How? And in Telheiras?" (May 2022)***

# Participation in the corporate mode of coordination

- **Market and industrial orders of worth**
  - "So basically, it's transforming very passive energy consumers into very, very active agents in energy markets, with the support of the technology that we have been developing" (P10, energy company, engineering)
- **The managing entity is a private company**
  - "I think that the figure of the REC has this defect from the beginning. Not only the complexities that they create in terms of governance, but they forget that this implies a whole set of investments, current expenses and commitments that they have to assume, which is very difficult for a non-professional entity to make." (P8, energy company)
- **The member is a passive consumer**
  - "The consumer doesn't want to be active. 99% of the consumers, they just don't want to and that's it [...] I get the idea, but the consumers don't want to change and don't want to get involved. They just want the problem solved" (P15, energy company, engineering).
- **Standardised model of recruitment may struggle to get close and build trust**







*Greenvolt inaugurates 'Inclusive Energy Community' in Bicesse (May 2023)*

# Conclusions

- There are a variety of different ways of representing and regulating RECs, often corresponding to different economic and political interests
- Law and regulation is enabling different modes of coordinating RECs – new meanings and practices emergin; policy is constraining community ownership
- Valorisation and normalization of technical expertise in RECs
- Lack of state support means expert role must be filled by new intermediaries
- **Market intermediaries** maintain the consumer in a passive role
  - Difficulties with local coordination and trust
- **Civic intermediaries** believe that the consumer should be active in decision-making and that RECs should be collectively owned
  - Depends on “active citizens” – time, money and knowledge
  - Opportunities for local authorities to help organize and identify “vulnerable participants”

# Conclusions

- **Institutional reform** – energy law must address the **practical inequity** between public and companies that is masked by formal equality in law.
  - State should provide **capacity building support** for new actors who are following the spirit of the directive and already acting as consultants for citizens
  - **Eligibility criteria** should be devised for *civic* and *domestic* RECs
- **Build the movement** – 'Active' citizens and civic intermediaries should forge relationships with communities vulnerable to energy poverty and energy industrialization, building on place-based knowledge
  - *Civic* intermediaries should **continue to propagate RECs in the press**, taking care to differentiate them from *market* and *industrial* orders of worth and to emphasize their **radical potential**.
  - RECs should be imagined and pursued **as an alternative to large-scale projects,** to improve community acceptance of the energy transition and **fight for a just energy future.**