European Commission

THIS MAY SURPRISE YOU

Things we have learnt from talking about energy with 68 initiatives

ENCLUDE
Energy Citizens for Inclusive Decarbonization

Malgorzata (Gosia) Matowska, Christina Protopapadaki, Michael Brenner-Fliesser
ENCLUDE Project, European Commission, DG ENER

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The ENCLUDE project has received funding from the European Union's Horizon 2020 Research and Innovation Programme under grant agreement No 101022791.

Self published by Th!nk E

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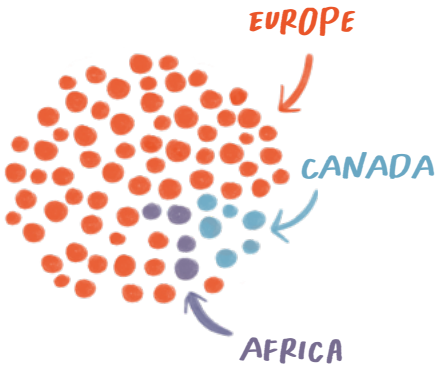
Graphic design: Agata Smok (Th!nk E).

Printed on a wood-free paper in Delft, the Netherlands.

Dedicated to our case studies,
the so-called Collective Energy Initiatives

ENCLUDE
Energy Citizens for Inclusive Decarbonization



↑ In our case studies pool, we have gathered 78 case studies of CEIs from **Europe (68)**, **Canada (six)** and **Africa (four)**. However, in this leaflet, we are presenting the results of our analysis of the **68 European case studies**.

THE ENCLUDE PROJECT

The overall vision of the Horizon 2020 project **Energy Citizens for Inclusive Decarbonization (ENCLUDE)** is to help the EU fulfil its promise of a just and inclusive decarbonization through sharing and co-creating new knowledge and practices that maximize the number and diversity of citizens who are willing and able to contribute to the energy transition.

By establishing a structured and well documented pool of relevant international case studies, the project aims to study energy citizenship from a group-centred sociological perspective, in order to identify the most important processes and factors affecting the emergence and consolidation of energy citizenship groups.

The data collection to create the case studies pool of **Collective Energy Initiatives (CEIs)** was a mixture of desktop research and qualitative semi-structured interviews. Information was gathered for a set of questions concerning the size, age and location of the initiative, the type of participation and governance, the resources, the main activities, goals and impacts, among others. Our approach is based on two theoretical frameworks: *the Energy Cultures Framework and the Socio-Ecological Systems Framework for Integrated Community Energy Systems*. First, information was derived from public sources, such as websites of the cases, study reports, business reports, etc. Then, interviews with a case representative were conducted, when possible, to deepen and supplement the information.

To analyse the obtained information, we used an adapted variant of the grounded theory. We identified categories into which the cases can be split according to the information we gathered for each of the asked questions, by looking both at all cases as a whole and at the details of each case separately, in order to identify patterns. The initial results of our analysis are presented in this leaflet.

While assessing the case studies pool, we decided to **split the cases into four groups** based on their main characteristics.

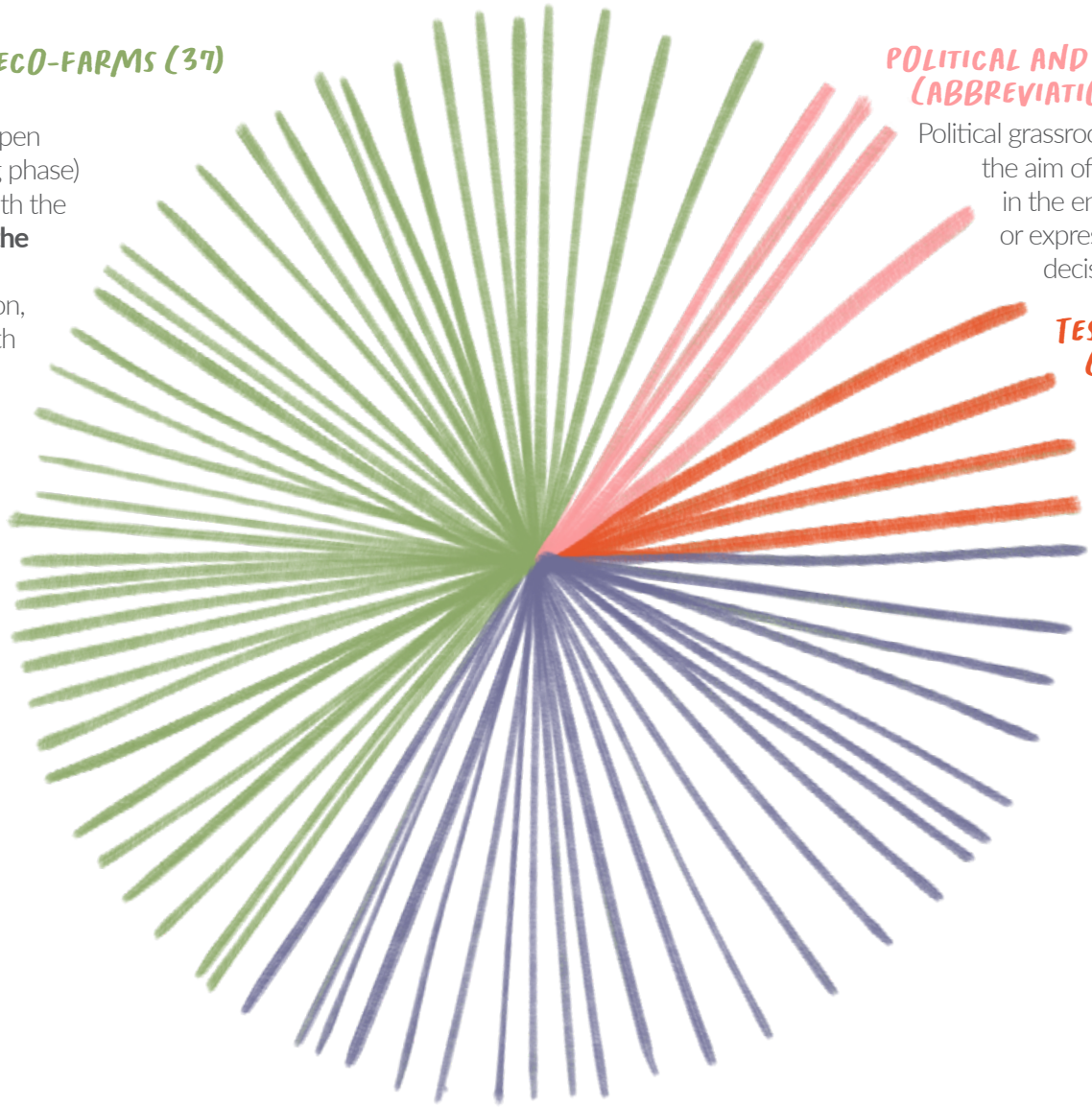
These groups are:

Energy Community and Eco-Farms (37) (Abbreviation: EC)

Associations of citizens based on open participation (at least in the starting phase) and in control by their members, with the purpose of **providing benefits for the community** and engaged with the generation, distribution, optimisation, or storage of renewable energy, with energy efficiency or eco farming.

Collective Targeted Actions (23) (Abbreviation: CTA)

Companies or groups of persons with the aim of supporting communities and/or individuals in **pursuing behavioural and/or technological changes** to reduce energy use, increase energy efficiency, or achieve other such improvements in the field of energy.



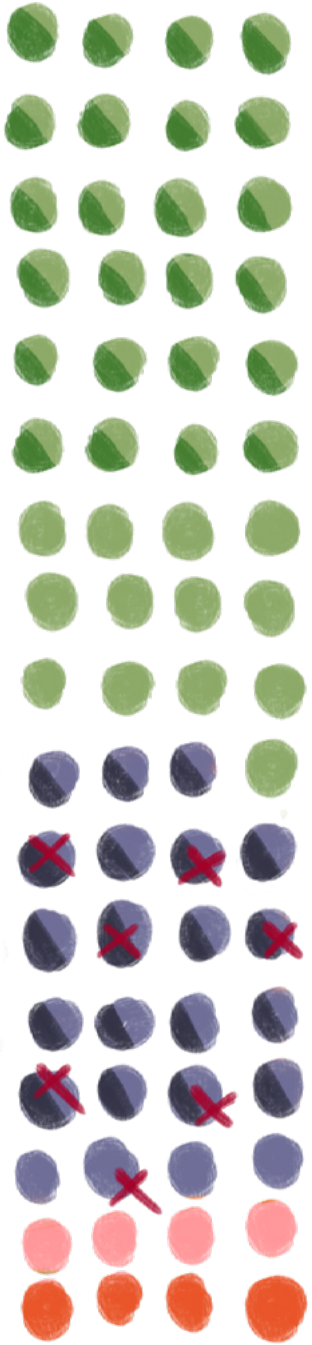
Political and Social Movements (Four) (Abbreviation: PM)

Political grassroot initiatives or protest movements with the aim of **changing regulations and legislation** in the energy sector of a region or country and/or expressing opposition to a particular action/decision.

Testing Conditions (Four) (Abbreviation: TC)

Companies or groups of persons **testing the functioning of social and/or technical innovations** for generation, optimization or storage of energy under real conditions.

- ENERGY COMMUNITY AND ECO FARMS (37)
- CREATED IN THE PERIOD BETWEEN 2011 AND 2020 (24|37)
- COLLECTIVE TARGETED ACTIONS (23)
- CREATED IN THE PERIOD BETWEEN 2011 AND 2020 (19|23)
- DON'T EXIST ANYMORE (7|23)
- POLITICAL AND SOCIAL MOVEMENTS (FOUR)
- TESTING CONDITIONS (FOUR)



Most ECs and CTAs were created in the period 2011-2020. These findings coincide with the research results presented in the scientific literature[1].

IN THE YEARS 2000S

New field of activities popping up: the provision of broadband internet access, e-mobility and car sharing.

2011

Germany saw a boom in the foundation of energy cooperatives in the aftermath of the Fukushima disaster in 2011.

2010

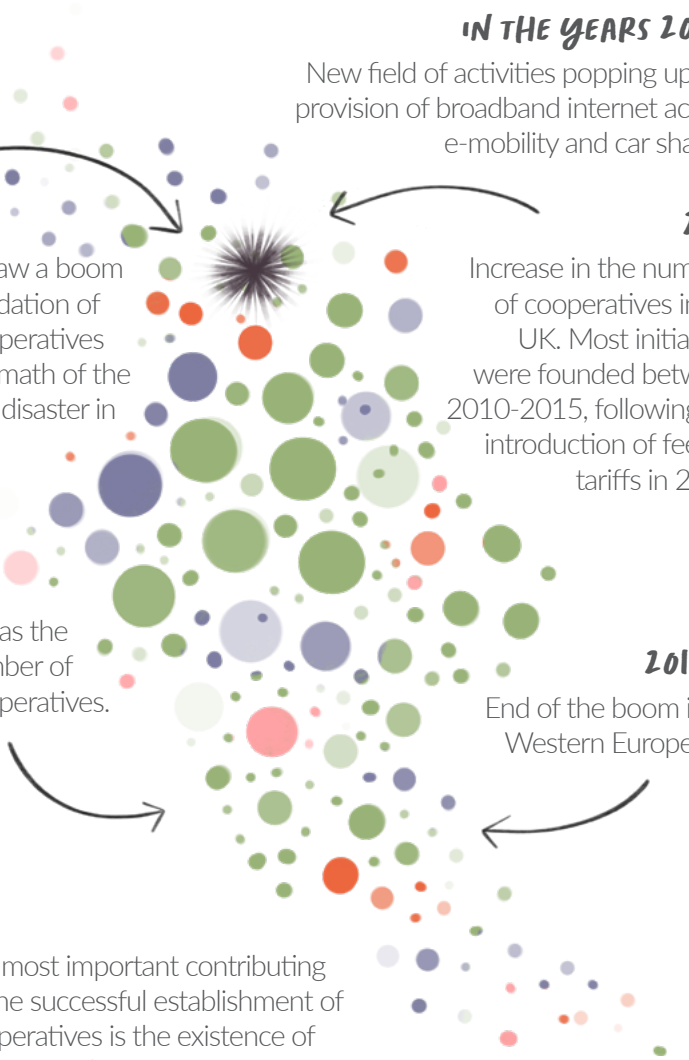
Increase in the numbers of cooperatives in the UK. Most initiatives were founded between 2010-2015, following the introduction of feed-in tariffs in 2010.

2018

Germany has the largest number of energy cooperatives.

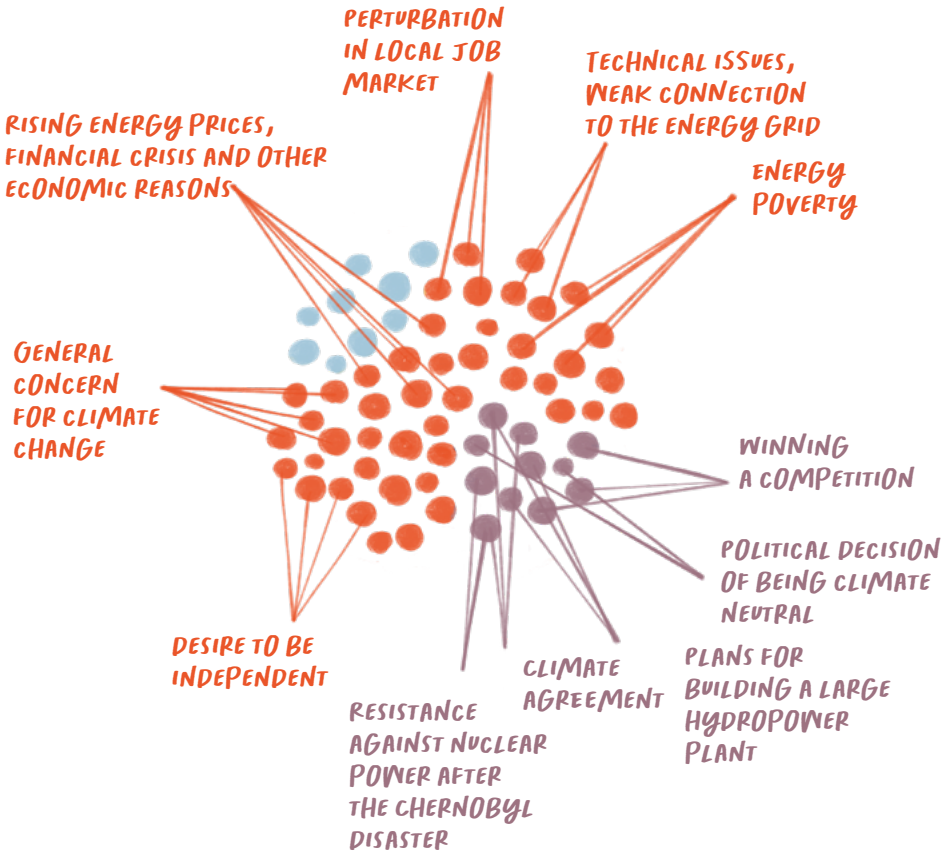
2018

End of the boom in Western Europe .



One of the most important contributing factors to the successful establishment of energy cooperatives is the existence of financial support schemes.

1 "*Statistical Evidence on the Role of Energy Cooperatives for the Energy Transition in European Countries*" by August Wierling, Valeria Jana Schwanitz, Jan Pedro Zeiß, Celine Bout, Chiara Candelise, Winston Gilcrease and Jay Sterling Gregg



INFLUENCING EVENTS

Energy communities vs Collective targeted actions

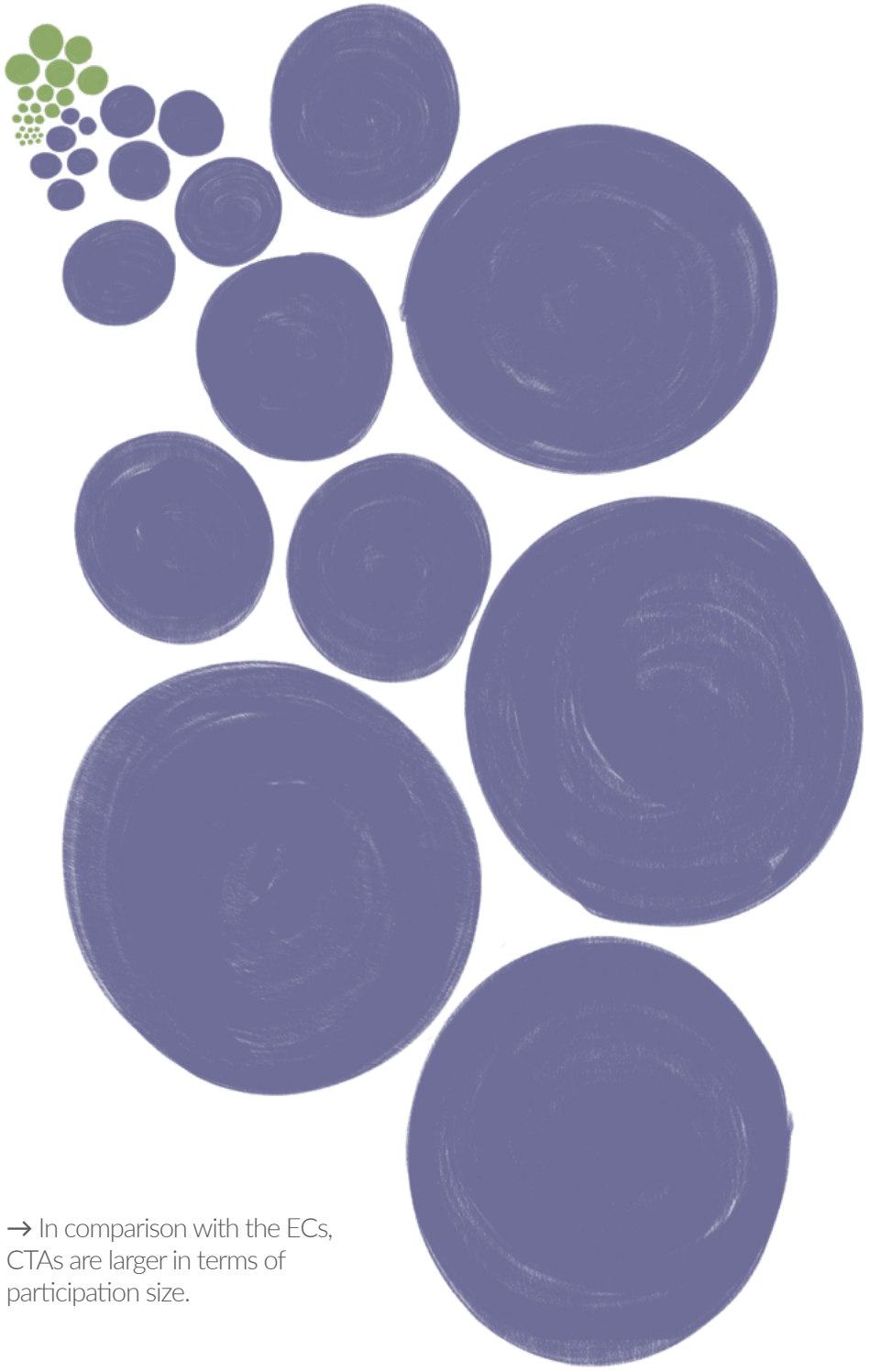
We wanted to understand whether any particular events, such as a flood, heat wave, or natural disaster, might have had an influence on the creation of CEIs. The data we have collected for 68 European case studies shows that:

	11 were influenced by a particular event
	48 were not influenced by any particular event
	9 case studies did not answer the question

Almost ¾ of the European case studies were not influenced by any particular natural or political event. However, five other reasons were listed, the most important of which were "Rising energy prices, financial crisis and other economic reasons".

It seems that while the creation of ECs was influenced by the "Desire to be independent" and by a "General concern for climate change", these factors were not mentioned by the CTAs.

The most important factor for the latter were the "Rising energy prices, financial crisis and other economic reasons".



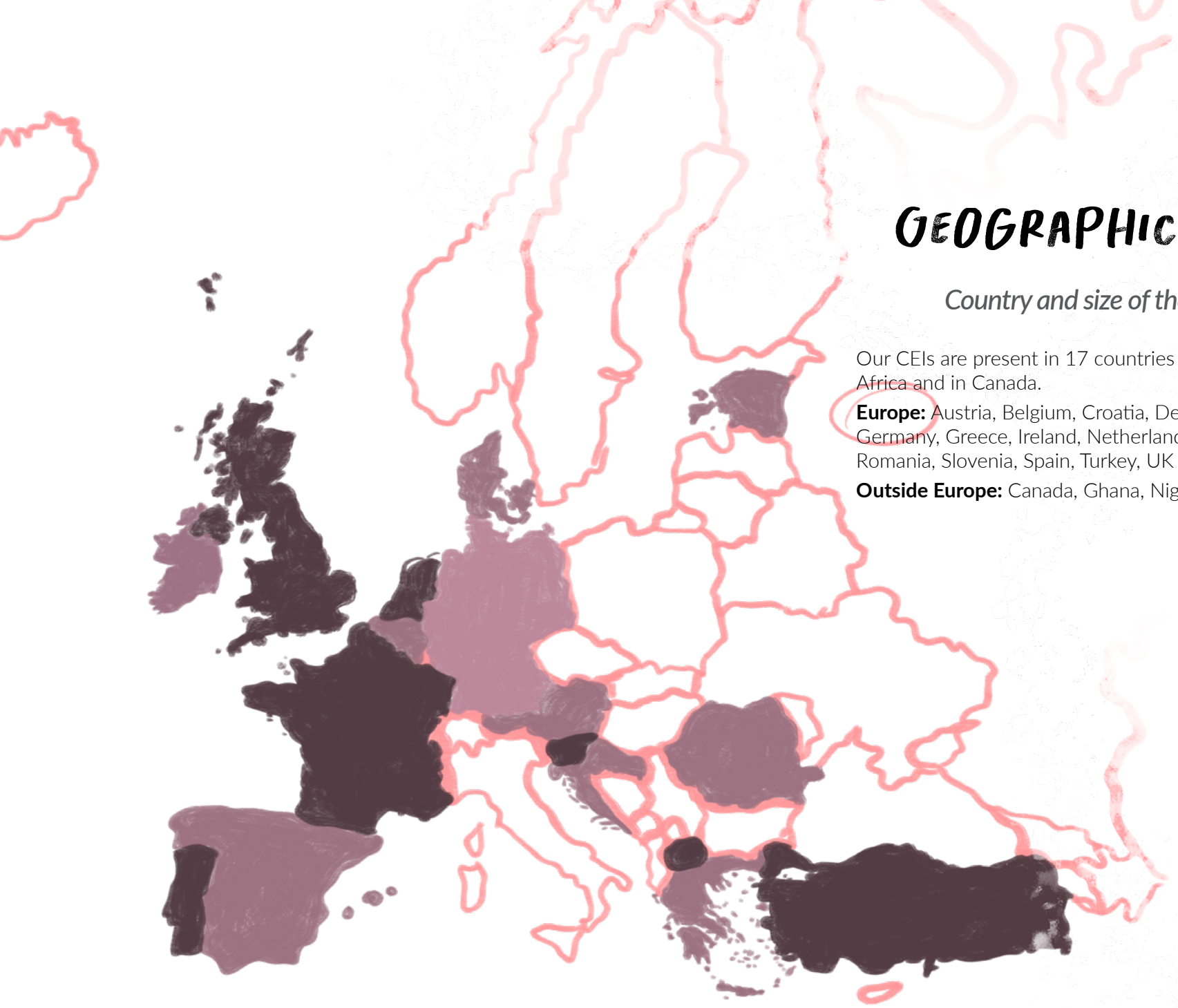
→ In comparison with the ECs, CTAs are larger in terms of participation size.

Size of the group

Members and participants

While analysing the size of the CEI, we have noticed that the **ECs** refer to their participants as **members**, whereas other groups (**CTAs, PMs and TCs**) mostly as **participants** (including customers, residents).

Members	**Participants**
Involved at least partially in the decision-making of the group (e.g., by voting in the general assembly)	Not involved in the decision-making process (only exerting power by threatening to abandon the initiative).
Most **ECs are rather small initiatives** with less than 50 members.	Among the **CTAs group (23 initiatives)**, 19 initiatives declared having participants. 8 of the CTAs have more than 1000 participants.



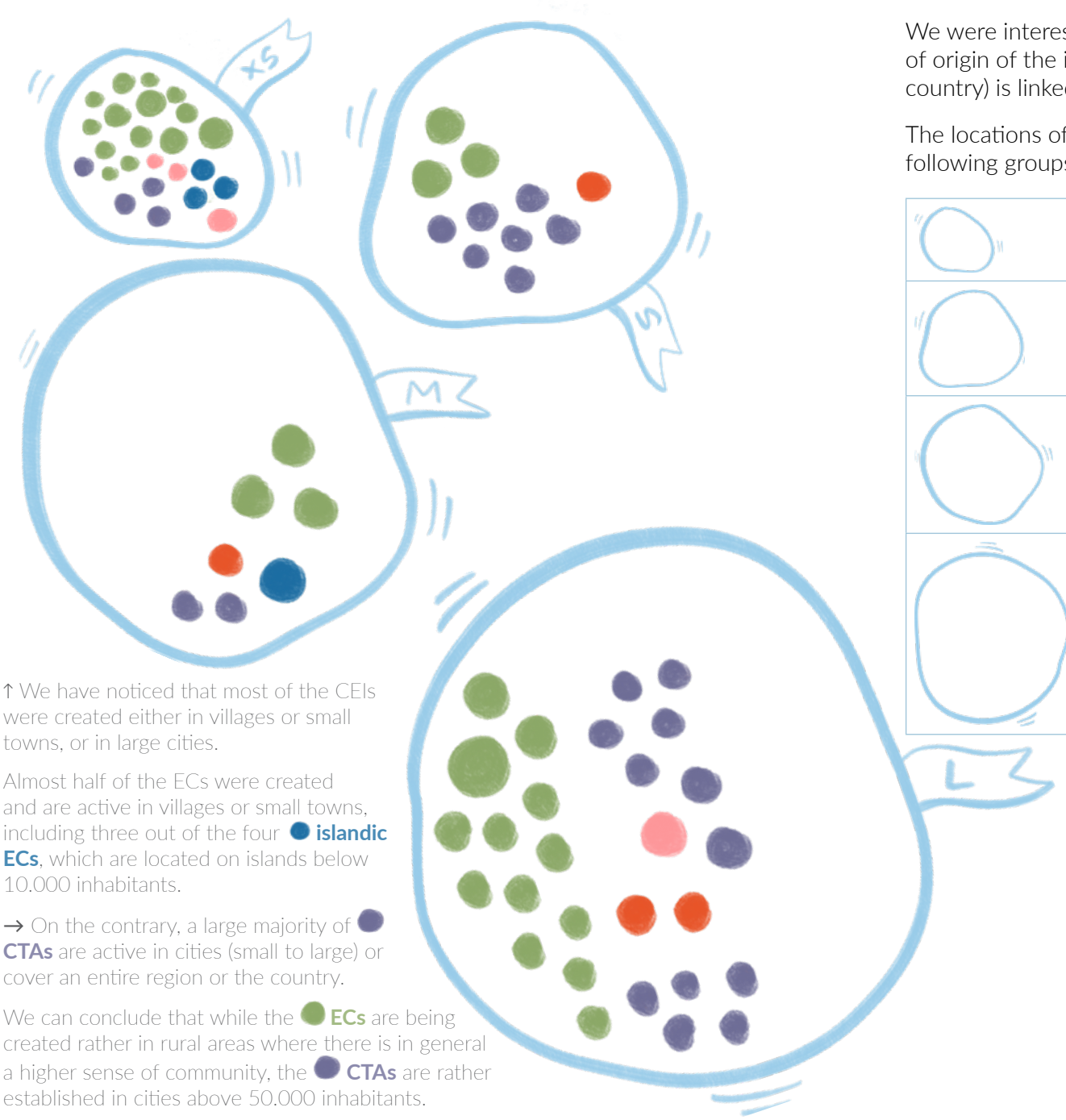
Geographical Aspects

Country and size of the location of origin

Our CEIs are present in 17 countries in Europe, three countries in Africa and in Canada.

Europe: Austria, Belgium, Croatia, Denmark, Estonia, France, Germany, Greece, Ireland, Netherlands, North Macedonia, Portugal, Romania, Slovenia, Spain, Turkey, UK

Outside Europe: Canada, Ghana, Niger, Zambia



↑ We have noticed that most of the CEIs were created either in villages or small towns, or in large cities.

Almost half of the ECs were created and are active in villages or small towns, including three out of the four **islandic ECs**, which are located on islands below 10.000 inhabitants.

→ On the contrary, a large majority of **CTAs** are active in cities (small to large) or cover an entire region or the country.

We can conclude that while the **ECs** are being created rather in rural areas where there is in general a higher sense of community, the **CTAs** are rather established in cities above 50.000 inhabitants.

We were interested in understanding whether the size of the location of origin of the initiative (whether a small village, big city or the whole country) is linked to where CEIs are created.

The locations of origin of the CEIs were therefore classified in the following groups:

	Village or small town: <10.000 inhabitants
	Medium town: 10.000-50.000
	Small to medium city: 50.000-500.000
	Large city: >500.000 / Active in the whole region or country

- Energy Community and Eco farms
- Islandic Energy Community
- Collective Targeted Actions
- Political and Social Movements
- Testing Conditions

- Energy Community and Eco farms
- Collective Targeted Actions
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- Testing Conditions

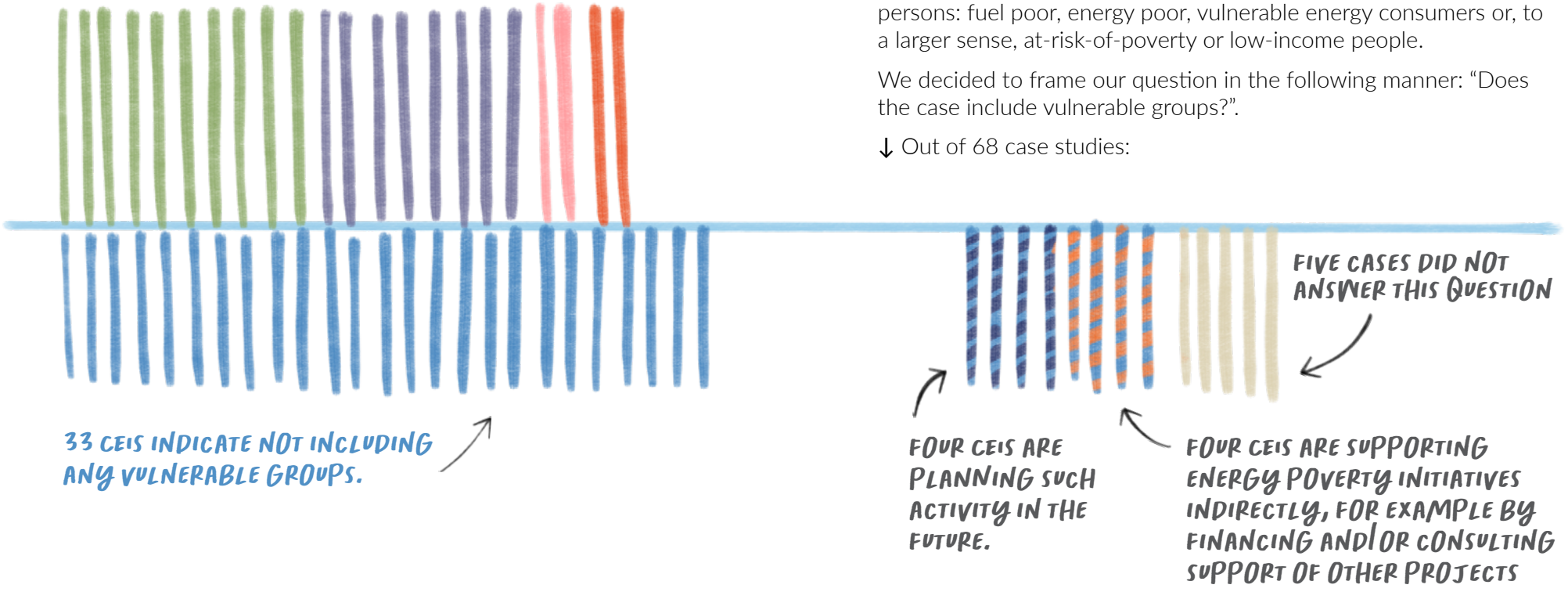
ENERGY POVERTY

Are vulnerable groups included?

We were interested in understanding how many CEIs take into consideration the topic of energy poverty. There is however no common European definition of "energy poverty", even though many Member States acknowledge the scale of this socio-economic situation and its negative impacts that include severe health issues and social isolation. Different terms are used to describe affected persons: fuel poor, energy poor, vulnerable energy consumers or, to a larger sense, at-risk-of-poverty or low-income people.

We decided to frame our question in the following manner: "Does the case include vulnerable groups?".

↓ Out of 68 case studies:

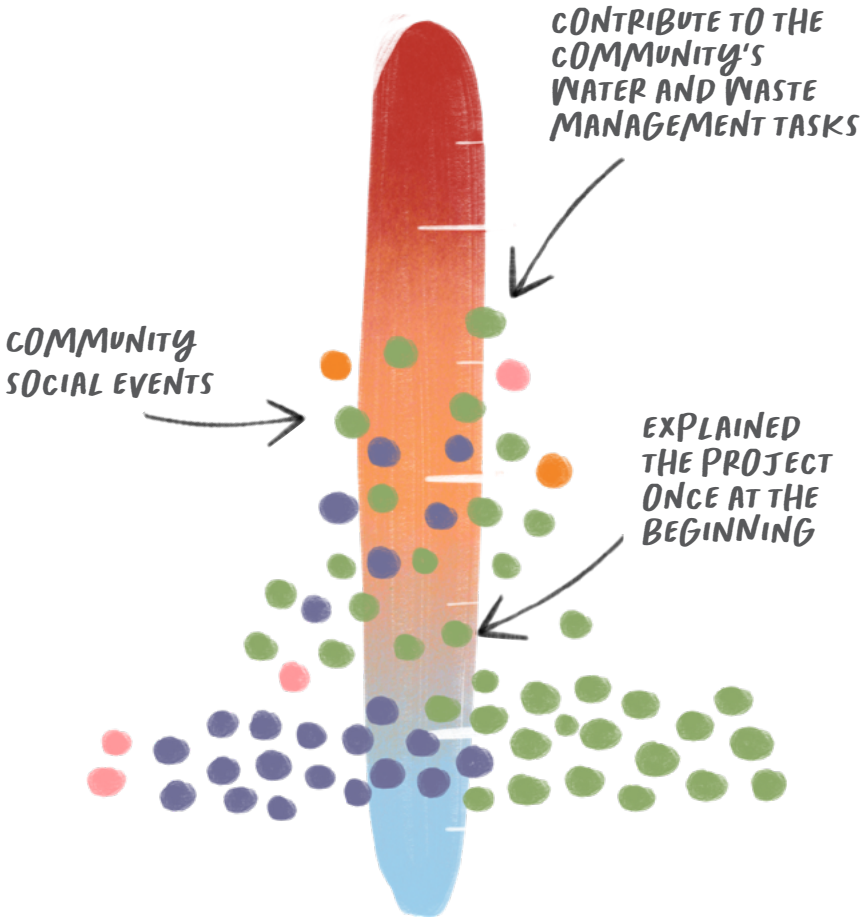


Energy Community and Eco farms

Collective Targeted Actions

Political and Social Movements

Testing Conditions



INTERACTION WITH LOCALS

Which CEIs interact more with the local community?

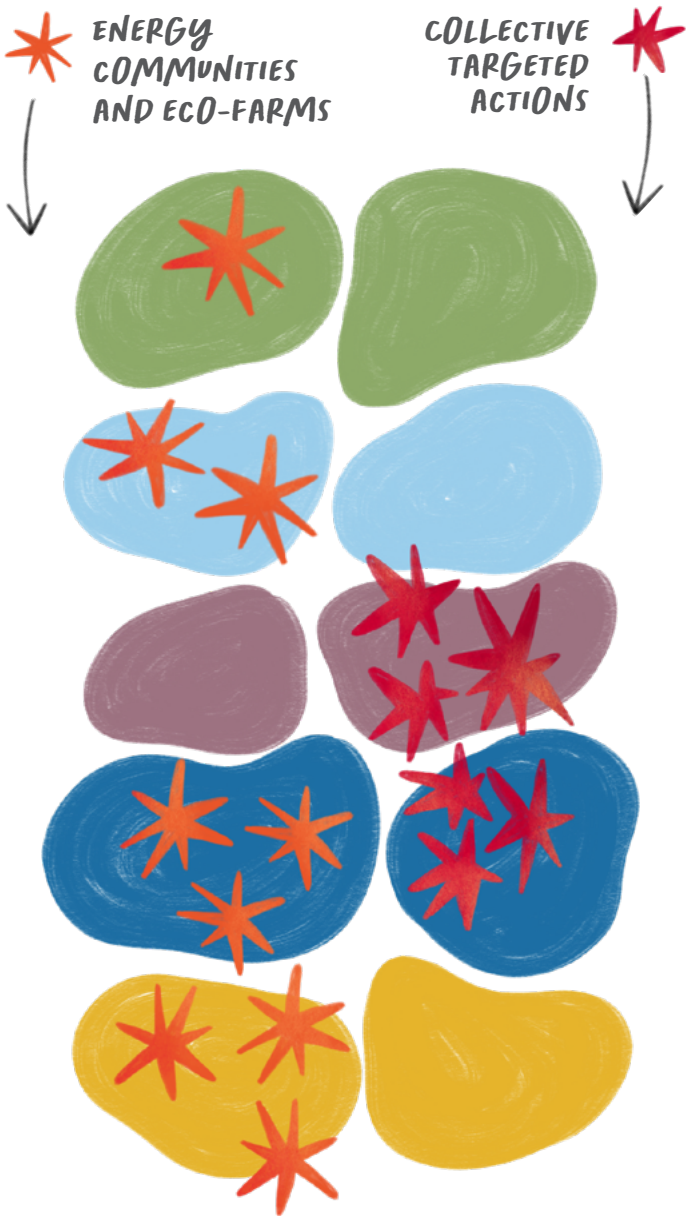
We were interested in investigating how often the cases are in contact with local groups of the population outside their own community. We distinguish between:

High interaction	being in regular contact with more than one outside group.
Medium interaction	being either in sporadic contact with more than one local group or in regular contact with one.
Low interaction	being in sporadic contact with one local group.
No interaction	case does not interact with people outside.

Regarding interaction with the local population, it can be observed that about 75% of **CTAs (16 cases)** have no regular interaction with the local population, versus 60% of **EC (19 cases)** and 50% of **PMs (2 cases)**.

In the case of CTAs, the interaction is sporadic and rather intended to explain the project once at the beginning rather than maintain a constant communication.

Cases with high interaction typically support social events of the community or contribute to the community's tasks (e.g., water and waste management).



↑ Number of conflicts with a certain reason in the different categories of initiatives. It is noteworthy that conflicts in CTAs seem to be more strongly connected to **money-related** issues, which however played no role for ECs.

CONFLICTS

Related to climate, communication, money, organisation and technology

One important aspect for the development of an energy initiative is how well the initiative can solve potential conflicts before they are escalating. We therefore investigate the main topics and the frequency of conflicts, as reported by case study representatives.

We distinguish between conflicts which are:

	Climate-related	Could gas be a relevant source of energy for the initiative?
	Communication-related	Members don't get enough information about what will happen.
	Money-related	Who provides the financial means?
	Organisation-related	Members not satisfied by the way an initiative is managed.
	Technology-related	Where to place windmills and PVs?

Generally, the number of reported conflicts was low: No TC and no PM reports any conflicts between the members.

Nine initiatives from the group of ✶✶✶✶✶✶✶✶✶ **ECs (30%)** and six from the group of ✶✶✶✶✶✶ **CTAs (37%)** report at least one conflict among members.

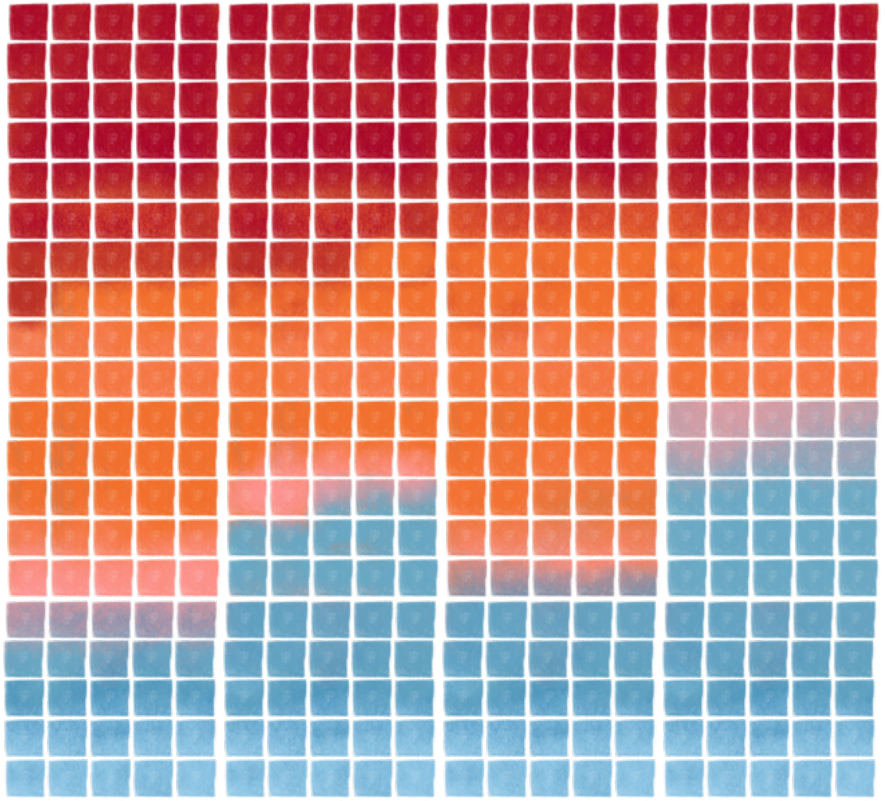
↓ Communication density in different forms of initiatives (%).

Energy communities and eco-farms (36 cases),

Collective targeted actions (21 cases),

Political and social movements (four cases),

Testing conditions (four cases).

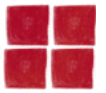


↑ Regarding communication density, **75% of ECs and PMs report a regular interaction with their members/participants**, while for of TCs and CTAs the percentage **drops to 50% and 62%** respectively.
ECs and PMs seem to require very regular engagement of their members to keep participation high. CTAs on the other hand seem to be more strongly divided: Whereas the percentage of **CTAs with high engagement is comparable to ECs**, there is a recognisable **higher number of CTAs, which report only a sporadic interaction**.

INFORMATION SHARING

How do initiatives share relevant information with their members?

We are also interested in how initiatives share relevant information with their (potential) members and users. We distinguish between:

	**High**	Regular with feedback options.
	**Medium**	Regular but still without feedback possibilities.
	**Low**	Only sporadic and unidirectional, meaning that there is no possibility for the members/ users to give feedback.

A typical activity of low-density interaction is sending out sporadic newsletters. Medium density activities are for example regular postings on the website. High density activities are regular meetings and provision of fora.

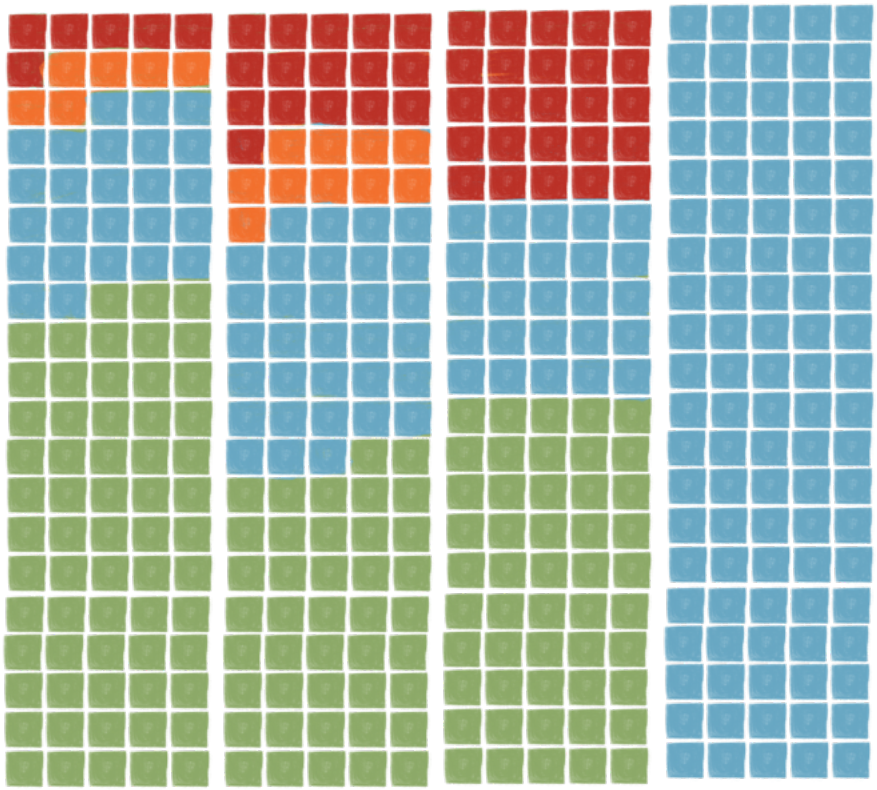
↓ Formalisation varies strongly between different types (%).

Energy communities and eco-farms (36 cases),

Collective targeted actions (21 cases),

Political and social movements (four cases),

Testing conditions (four cases).



↑ While 100% of testing conditions and 89% of ECs have a high or medium formalization of the organization, the percentage drops to 75% for PMs and 65% for CTAs.
This once again emphasises the importance of group and community aspects especially for ECs, whereas CTAs seem to be more result-oriented:
As long as the outcome is satisfying, it is not so important how decisions are made and how leaders are chosen.

ORGANISATION AND DECISION-MAKING

How formalised and transparent are the processes?

The form of decision-making and organization might strongly determine the development of an initiative. We are therefore interested in **how formalised and transparent the processes are**.
To answer this, we use three questions:

Are there specific rules in place on how decisions are made in the initiative?

Are there specific rules in place on how the leaders are determined?

Is there a clear distribution of roles?

If the interviewee answers "**no**" to all three questions XXX we assume there is **no degree of formalisation** at all, if two questions are answered "**no**", XX the **degree is low**, if two questions are answered "**yes**", √√ the **degree is medium** and if all three questions are answered "**yes**", √√√ the degree of **formalisation is high**.

XXX	XX√	X√√	√√√
None	Low	Medium	High

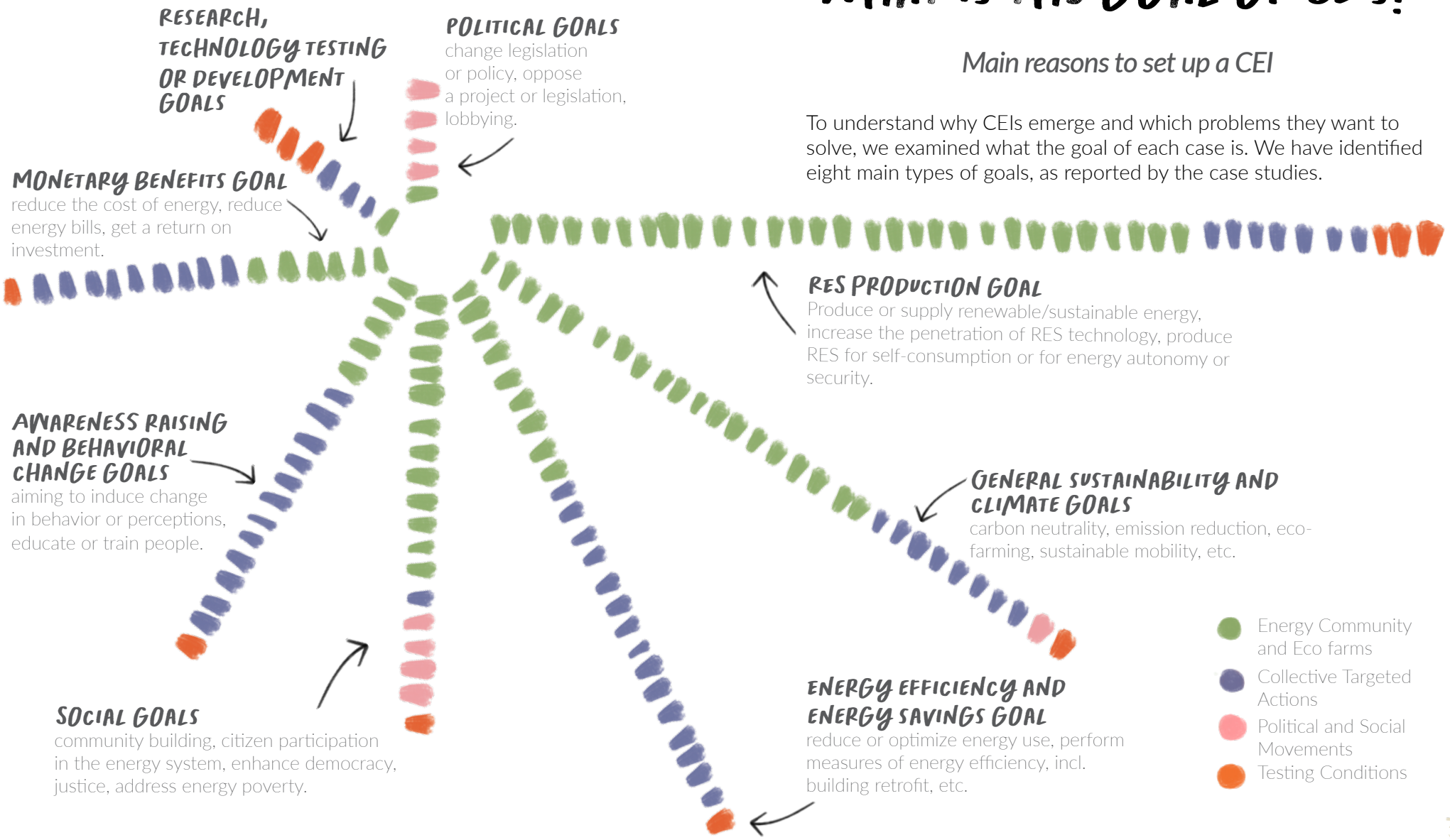
Typical forms of formal decision-making include **a leaders' board**, which governs everyday business, and **an annual general assembly** for basic decisions.
Typical ways to select the leaders is via the general assembly, and a clear distribution of roles means for example that every member of the leaders' board has certain aspects of the initiative under control.

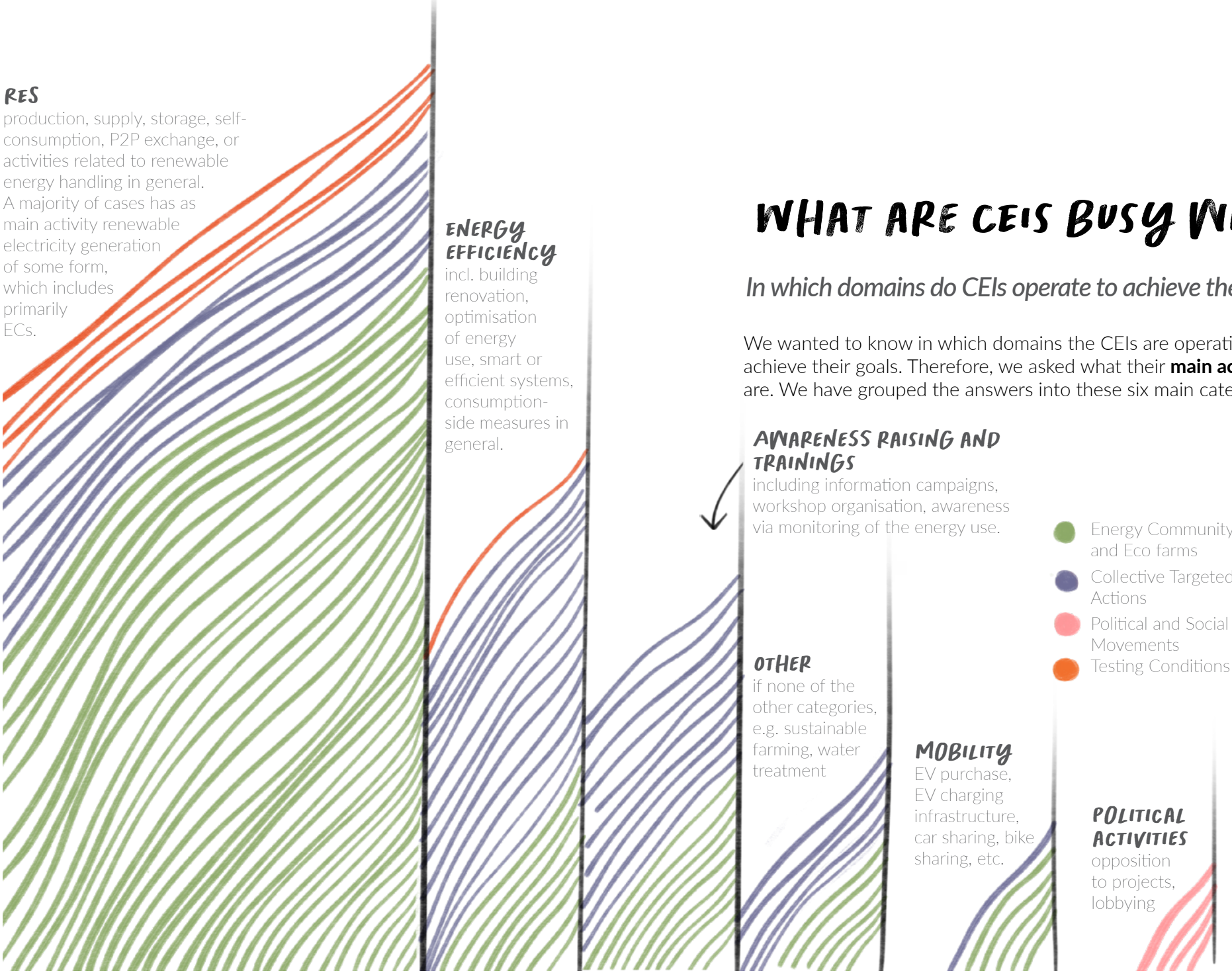
↓ A quarter of cases mention awareness raising and/or aiming to induce behavioural change as one of the goals. Specifically, eight cases aim to **influence the behaviour** of citizens towards energy savings.

WHAT IS THE GOAL OF CEIS?

Main reasons to set up a CEI

To understand why CEIs emerge and which problems they want to solve, we examined what the goal of each case is. We have identified eight main types of goals, as reported by the case studies.

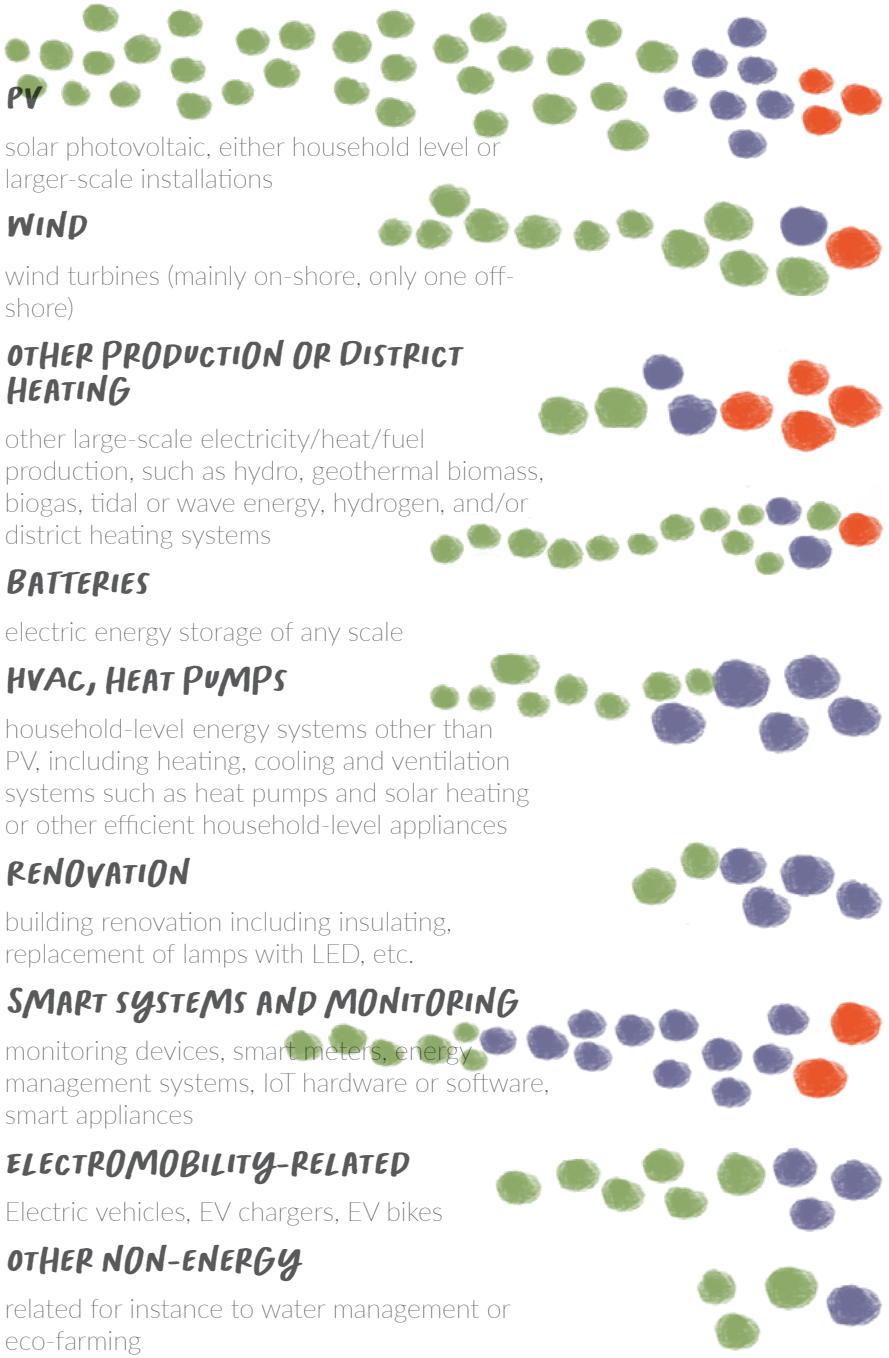




WHAT ARE CEIS BUSY WITH?

In which domains do CEIs operate to achieve their goals?

We wanted to know in which domains the CEIs are operating to achieve their goals. Therefore, we asked what their **main activities** are. We have grouped the answers into these six main categories:



PV

solar photovoltaic, either household level or larger-scale installations

WIND

wind turbines (mainly on-shore, only one off-shore)

OTHER PRODUCTION OR DISTRICT HEATING

other large-scale electricity/heat/fuel production, such as hydro, geothermal biomass, biogas, tidal or wave energy, hydrogen, and/or district heating systems

BATTERIES

electric energy storage of any scale

HVAC, HEAT PUMPS

household-level energy systems other than PV, including heating, cooling and ventilation systems such as heat pumps and solar heating or other efficient household-level appliances

RENOVATION

building renovation including insulating, replacement of lamps with LED, etc.

SMART SYSTEMS AND MONITORING

monitoring devices, smart meters, energy management systems, IoT hardware or software, smart appliances

ELECTROMOBILITY-RELATED

Electric vehicles, EV chargers, EV bikes

OTHER NON-ENERGY

related for instance to water management or eco-farming

WHICH TECHNOLOGIES ARE MOST USED BY CEIS?

How has technology impacted the development of CEIs?

Technology is an indispensable part of many energy activities. As certain technologies become more accessible to citizens (cheaper, easier to find, maintain and operate), a rise can be expected to the development of related collective energy actions. To assess how technology has impacted the development of CEIs, we examined which technologies are more commonly used by CEIs. At a later step we will examine how this relates to the time of creation and operation of the CEIs.

↖ It was found that a large majority of the ECs use solar photovoltaic (PV) systems as main technology. Seventeen cases mention **only** PV as used technology. Additionally, renovations are more common in CTAs than ECs.

← Finally, 19 cases use smart systems or monitoring, out of which 12 cases include different types of smart technologies other than just smart meters The latter cases mainly include CTAs that specifically focused on the implementation of such smart systems or awareness raising via monitoring of energy. It is not as common to find smart technologies in ECs, other than smart meters.

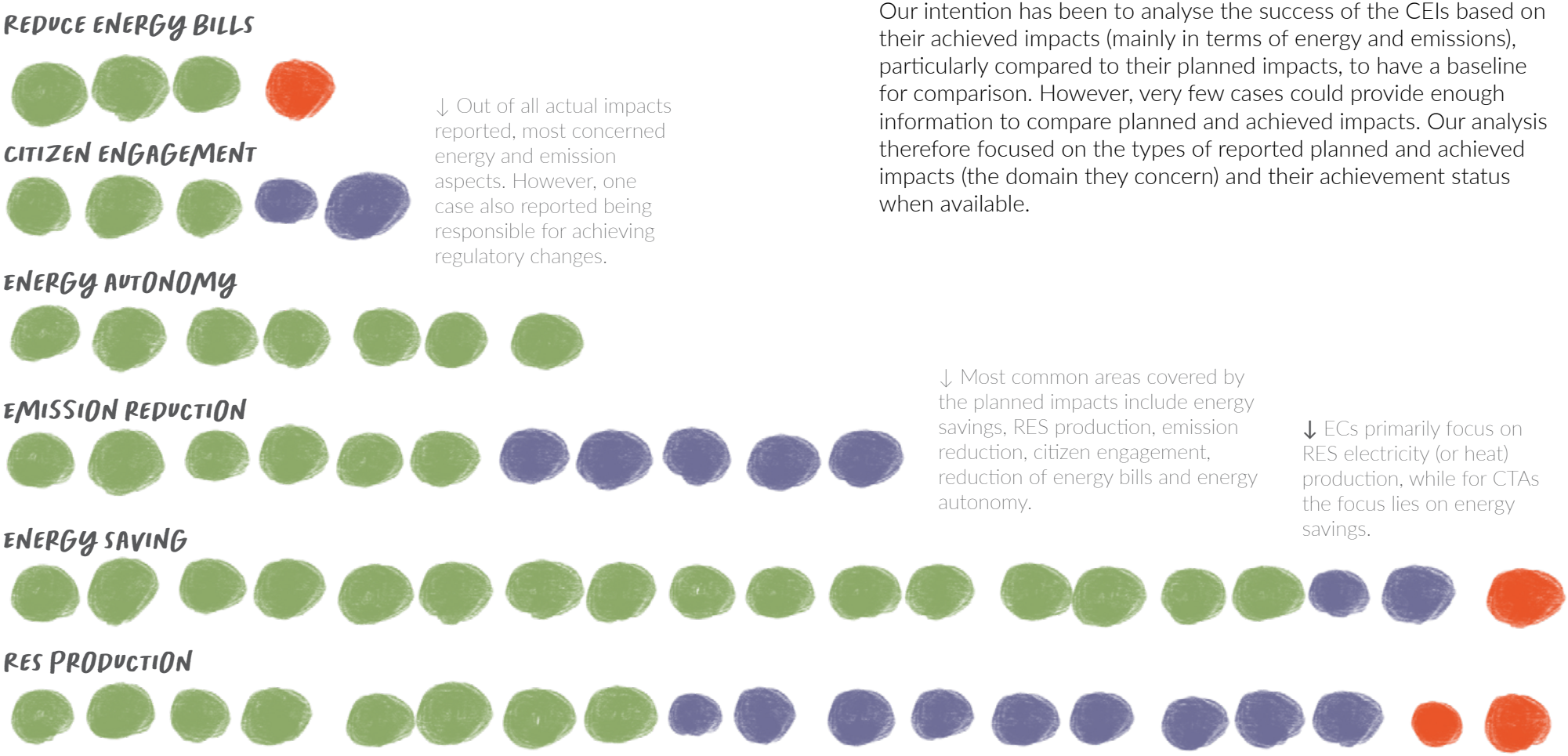
- Energy Community and Eco farms
- Collective Targeted Actions
- Political and Social Movements
- Testing Conditions

↓ Only 16 cases reported **specific targets** (in theory verifiable), nine of which **quantitative** (e.g., energy savings, RES production, specific number of wind turbines, specific amount of PV installed, to cover energy demand with RES, to offset emissions…) and seven **qualitative** (e.g., stop specific project from happening, test a specific technology).
Of the 16 cases with targets, seven were reported to be **achieved**, five **not achieved**, and the rest were not verifiable yet or the answer was unclear.

IMPACTS

What benefits do CEIs create for society?

Our intention has been to analyse the success of the CEIs based on their achieved impacts (mainly in terms of energy and emissions), particularly compared to their planned impacts, to have a baseline for comparison. However, very few cases could provide enough information to compare planned and achieved impacts. Our analysis therefore focused on the types of reported planned and achieved impacts (the domain they concern) and their achievement status when available.



↓ Out of all actual impacts reported, most concerned energy and emission aspects. However, one case also reported being responsible for achieving regulatory changes.

↓ Most common areas covered by the planned impacts include energy savings, RES production, emission reduction, citizen engagement, reduction of energy bills and energy autonomy.

↓ ECs primarily focus on RES electricity (or heat) production, while for CTAs the focus lies on energy savings.

LAST

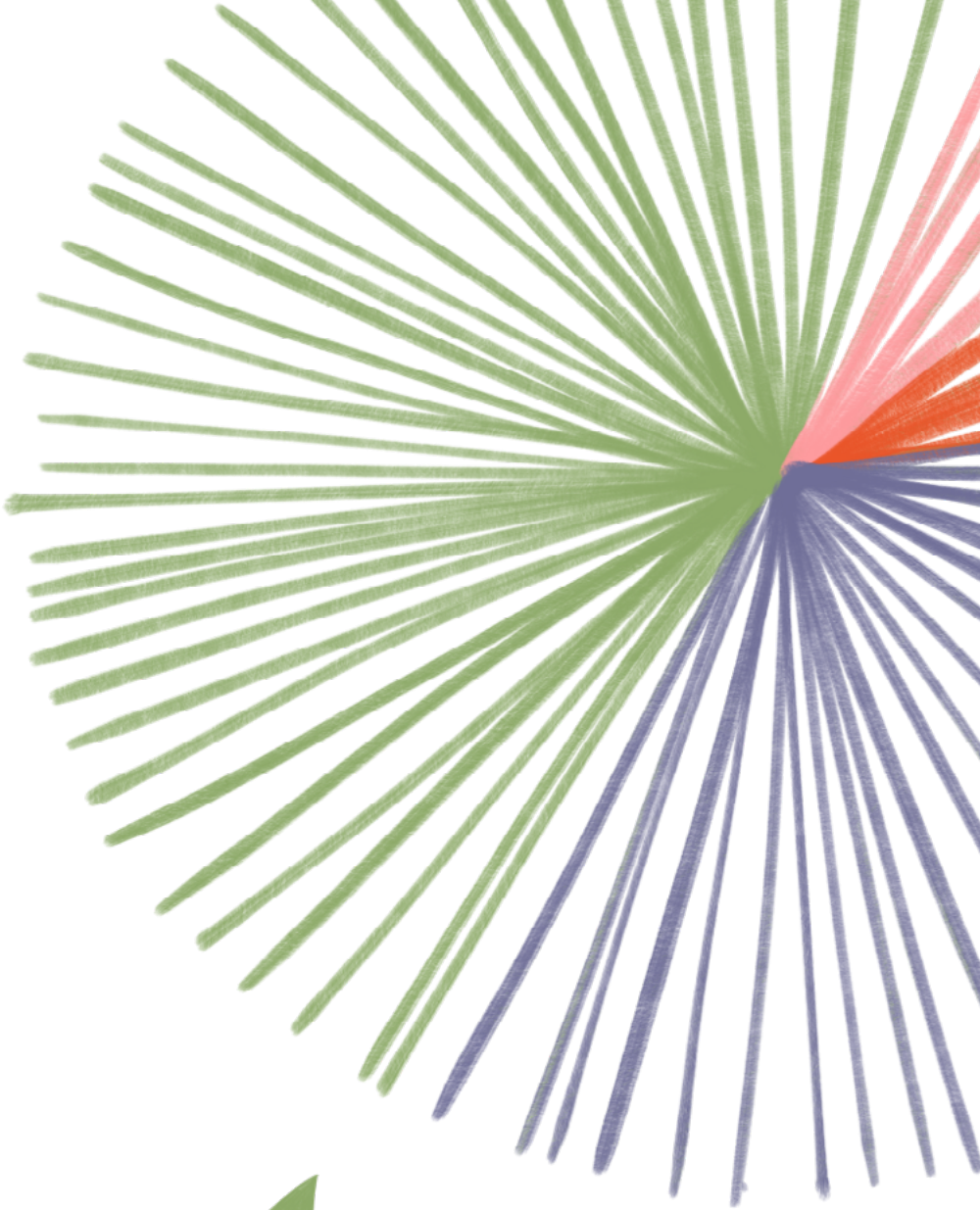
but not least...

ENCLUDE's overall goal is to study energy citizenship, in order to understand which are the most important processes and factors affecting **the emergence and consolidation** of energy citizenship groups.

To do so, we have first identified 78 case studies, the so-called Collective Energy Initiatives, and exchanged with them, whenever possible, to gather their insights.

We use two theoretical frameworks: *the Energy Cultures Framework* and the *Socio-Ecological Systems Framework for Integrated Community Energy Systems* to guide us. And we are certainly not stopping just yet—we have created a survey for the members and participants of the CEIs, so they could **tell us more** about their relationship with energy.

If you are a participant of one of our case studies, please answer to the survey that a case study representative shared with you! And... we will keep you posted with more exciting findings!



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