



THIS *may* SURPRISE *you*


THINGS WE HAVE
LEARNT FROM
TALKING ABOUT
ENERGY WITH
68 INITIATIVES

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Michael Brenner-Fliesser
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ENCLUDE
Energy Citizens for Inclusive
Decarbonization





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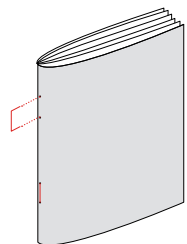
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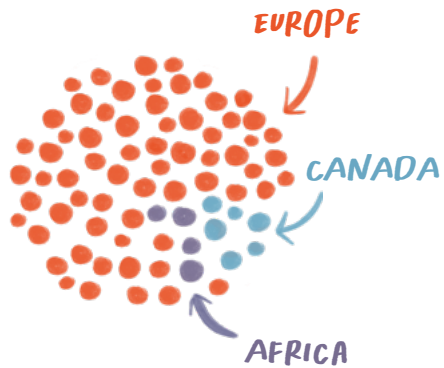
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DEDICATED TO
OUR CASE STUDIES,
THE SO-CALLED
COLLECTIVE
ENERGY
INITIATIVES





↑ 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 fulfill its promise of a just and inclusive decarbonisation 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 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 creation of case studies for Collective Energy Initiatives (CEIs) was a comprehensive process that used both desktop research and qualitative semi-structured interviews. In addition, we collected valuable insights through a survey conducted with members of selected initiatives from July to October 2022. Further enriching our understanding, we conducted interviews with various stakeholders involved in or connected to these initiatives.

Our approach is based on two theoretical frameworks: *the Energy Cultures Framework and the Socio-Ecological Systems Framework for Integrated Community Energy Systems*.

To analyse the obtained information, we used an adapted variant of the grounded theory. We categorised the cases based on the information gathered for each of the posed questions. This categorization involved an analysis of all cases collectively and a detailed examination of each case individually. The goal was to discern patterns and trends within the collected data. The 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.

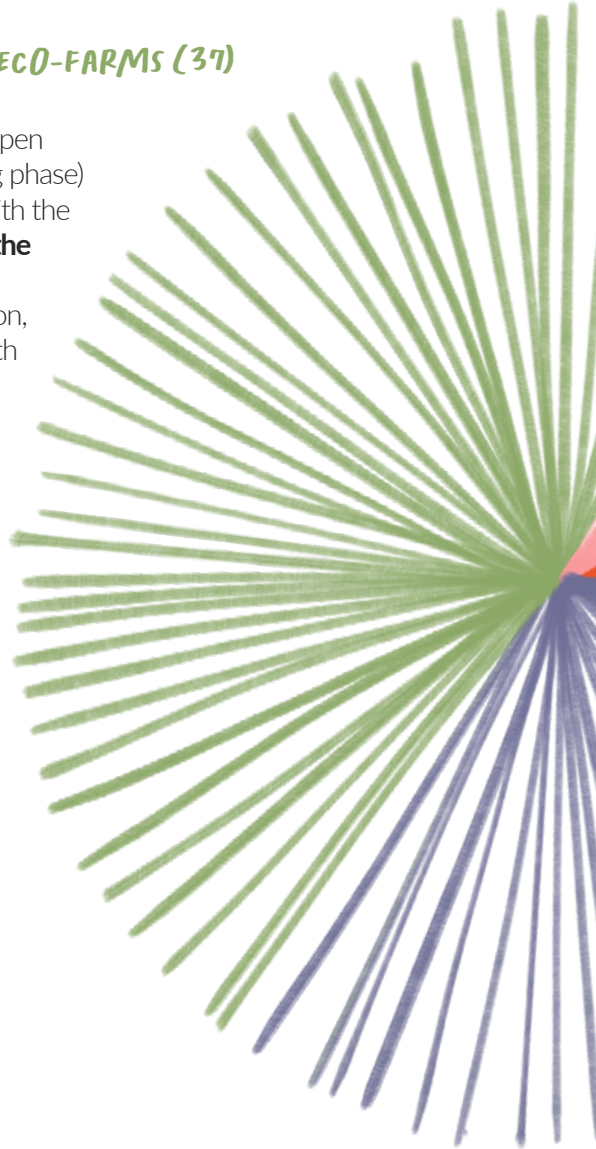
These groups are:

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.





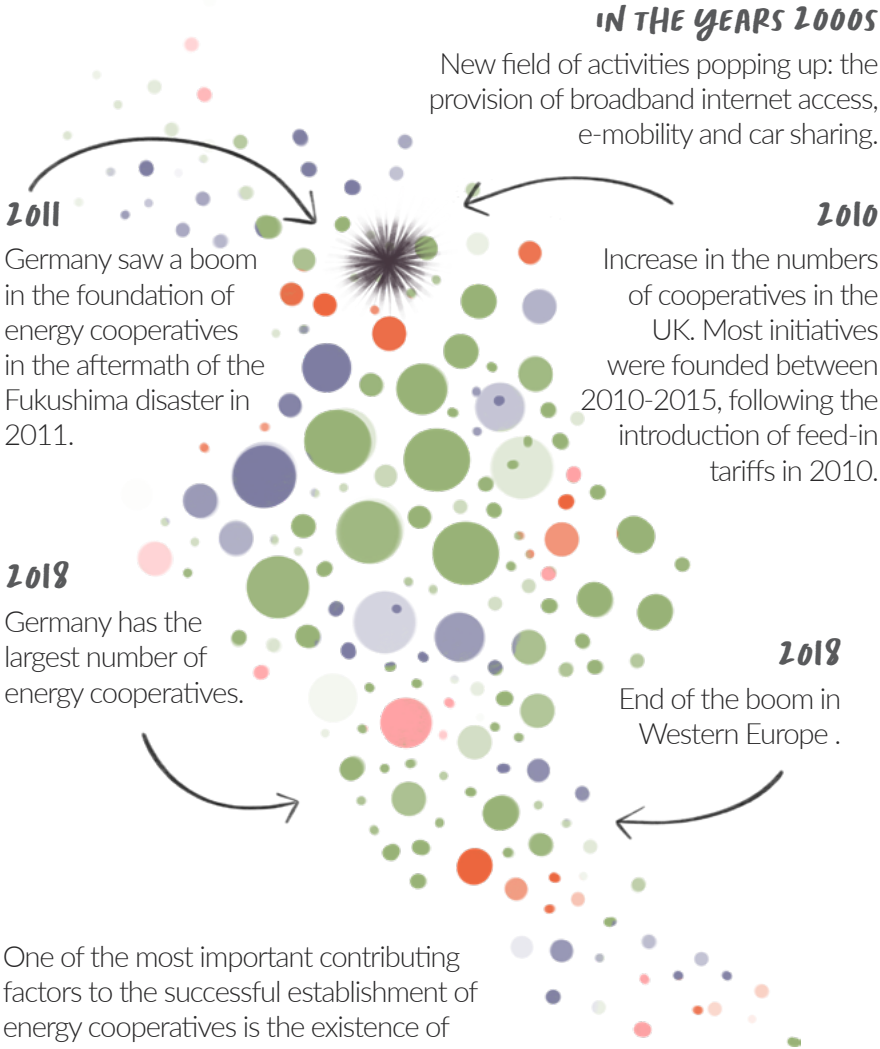
POLITICAL AND SOCIAL MOVEMENTS (FOUR) (ABBREVIATION: PM)

Political grassroots 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)

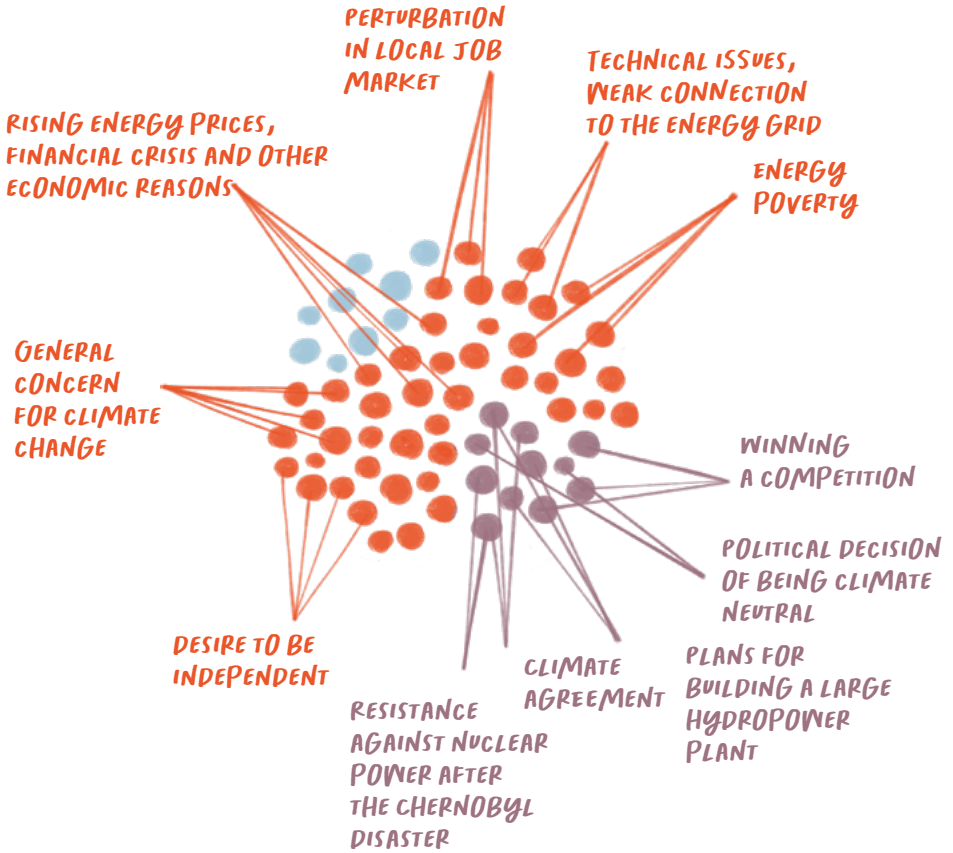
Companies or groups of persons **testing the functioning of social and/or technical innovations** for generation, optimization or storage of energy under real conditions.

Most ECs and CTAs were created in the period 2011-2020. These findings coincide with the research results presented in the scientific literature¹.



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



REASONS FOR THE CREATION OF CEIS

Energy communities vs Collective targeted actions

We aimed to understand the reasons behind the establishment of various Collective Energy Initiatives (CEIs), particularly exploring whether specific events such as floods, heat waves or natural disasters played a role in their creation. 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 and named other reasons
	9 case studies did not answer the question

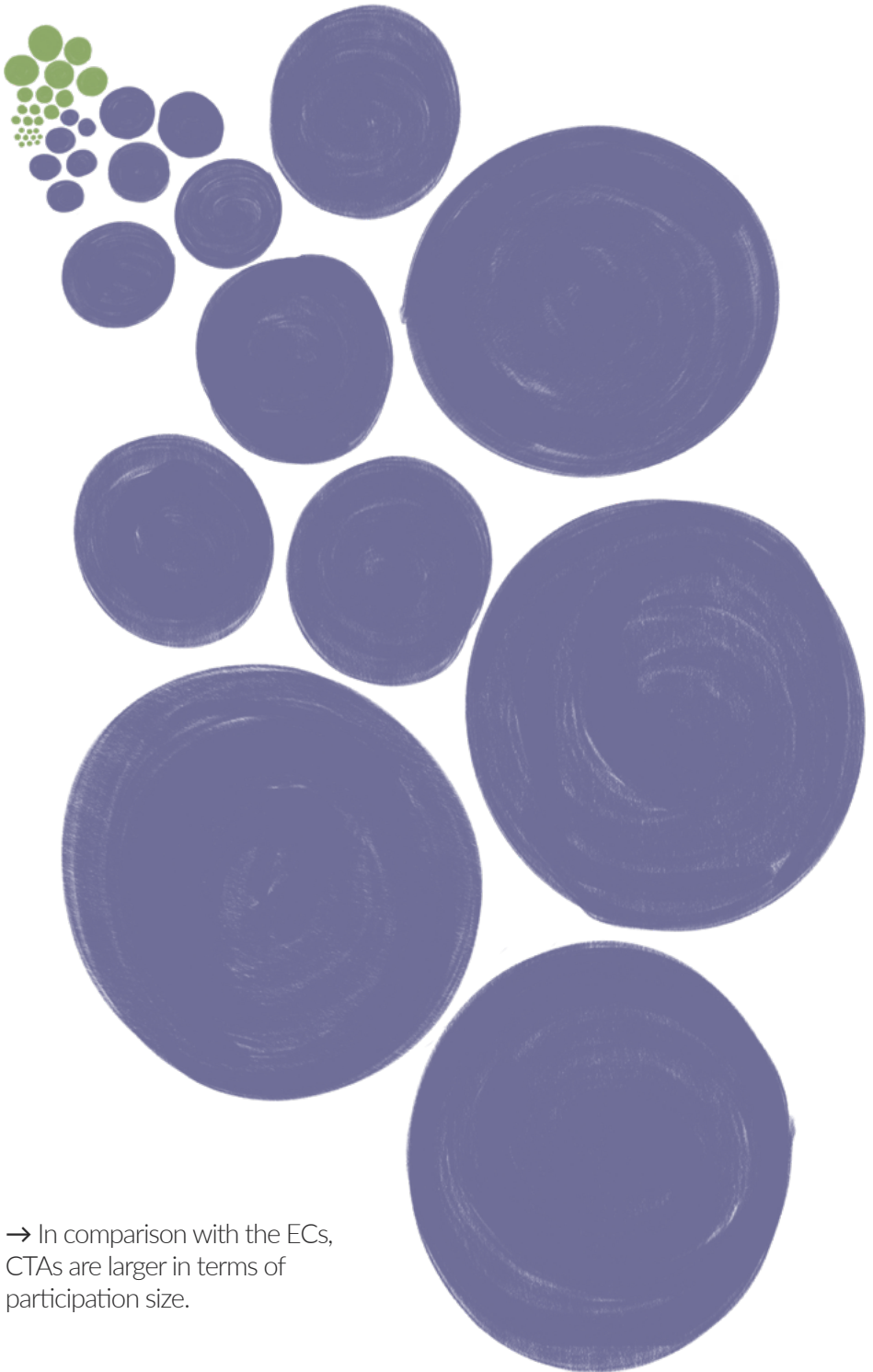
Almost $\frac{3}{4}$ of the European case studies were not influenced by any particular natural or political event. However, five other reasons were listed, the most important of which were “**Rising energy prices, financial crisis and other economic reasons**”.

A remarkable difference thereby can be observed: It seems that while the creation of ECs was strongly 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**”.

This was partially echoed in a survey conducted with case-study members. In the case of ECs, **contributing to climate-change mitigation** was identified as the most important motive. **Saving money** and **achieving self-sufficiency** were also mentioned. However, members highlighted the significance of “**doing something together with other members**” as one of the main motives, emphasizing the central role of community aspects for ECs.

In contrast, for CTAs, further analysis confirmed the stronger role of **personal benefits**.



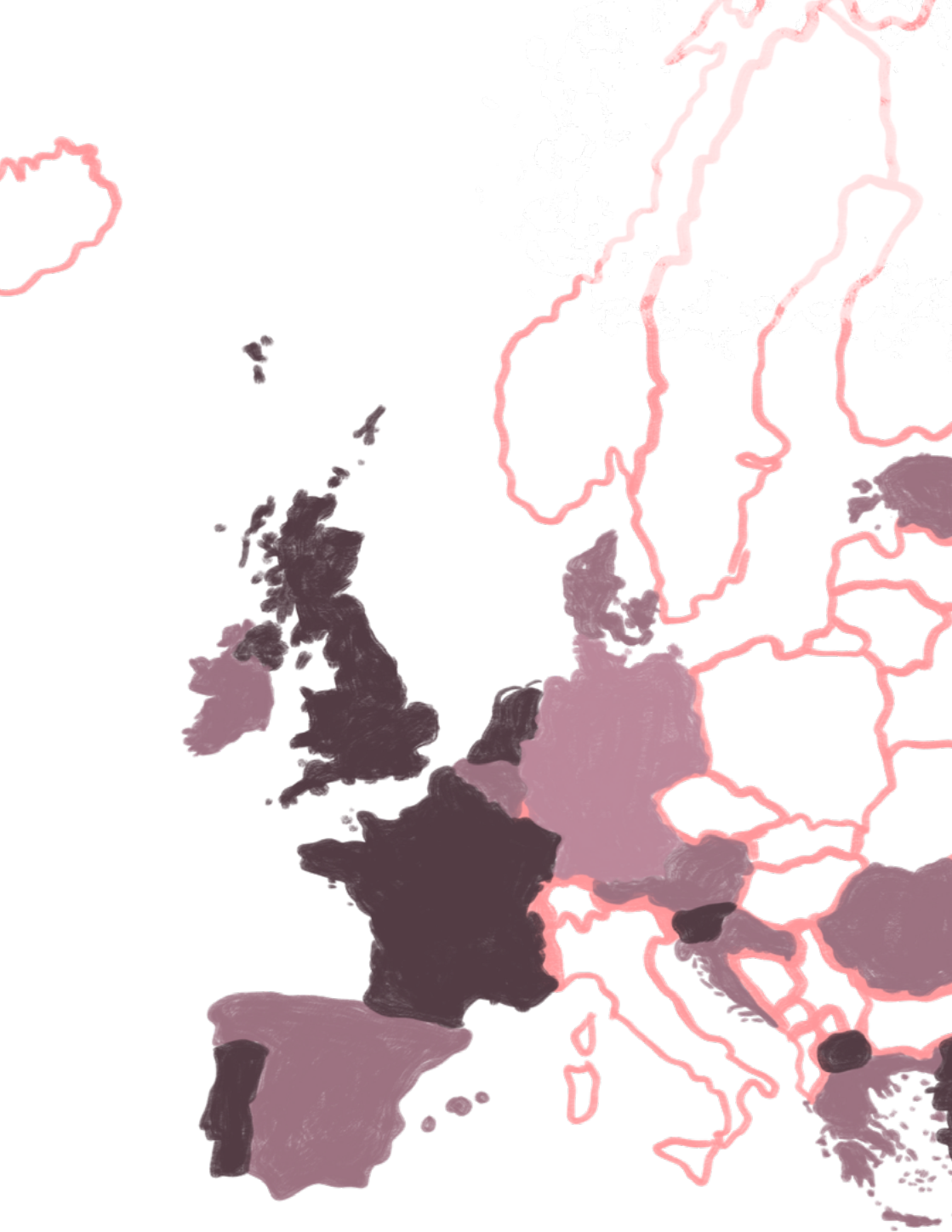
→ In comparison with the ECs, CTAs are larger in terms of participation size.

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.



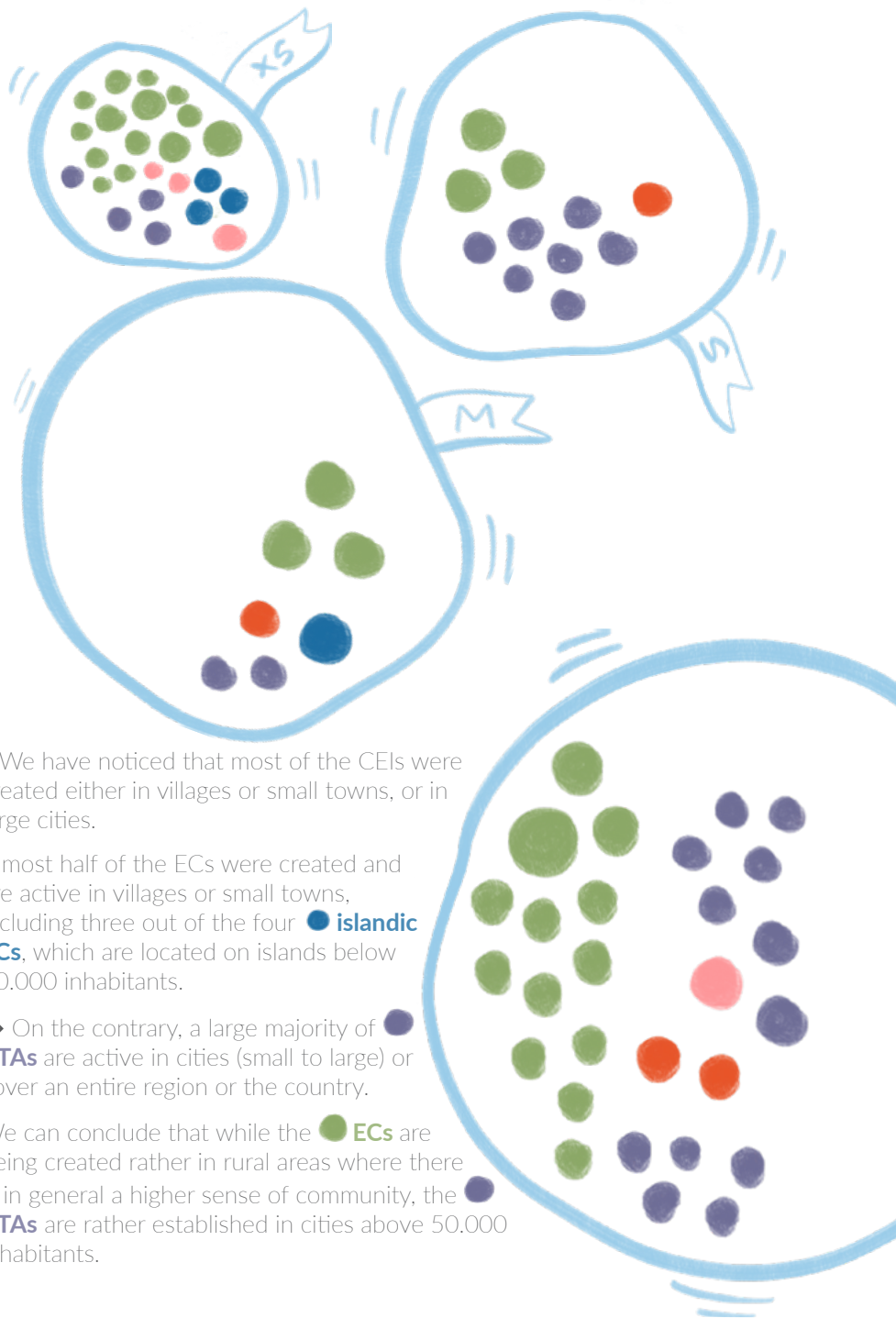


GEOGRAPHICAL ASPECTS

Country and size of the location of origin

Our CEIs are present in 17 countries in Europe.

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



↑ 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.



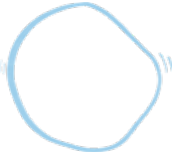
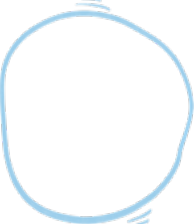
→ On the contrary, a large majority of ● **CTAs** are active in cities (small to large) or cover an entire region or the country.

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.

SIZE AND LOCATION OF CEIS

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.

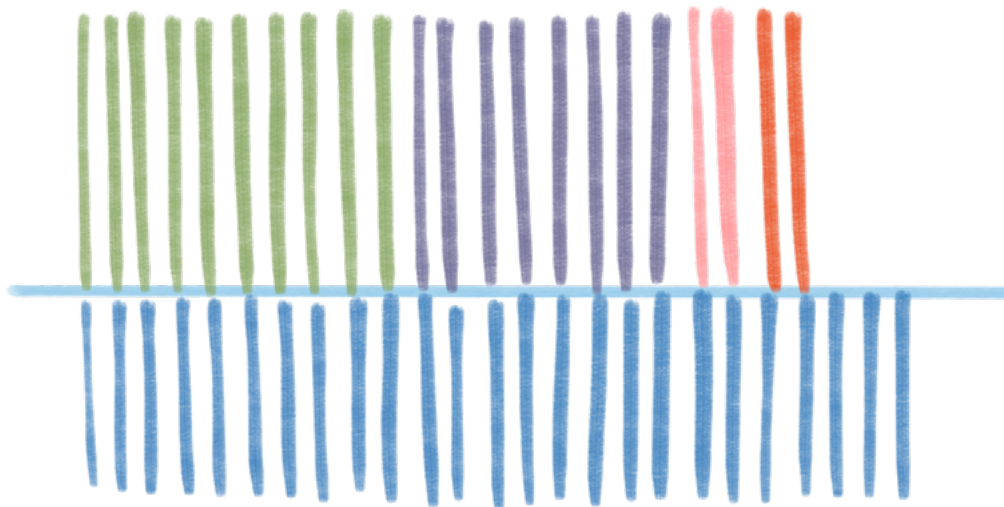
The locations of origin of the CEIs were therefore classified in the following groups:

	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
- Political and Social Movements
- Testing Conditions

22 CASE STUDY REPRESENTATIVES ANSWERED THAT THEIR INITIATIVES INCLUDE VULNERABLE GROUPS.



33 CEIS INDICATE NOT INCLUDING ANY VULNERABLE GROUPS.



ENERGY POVERTY

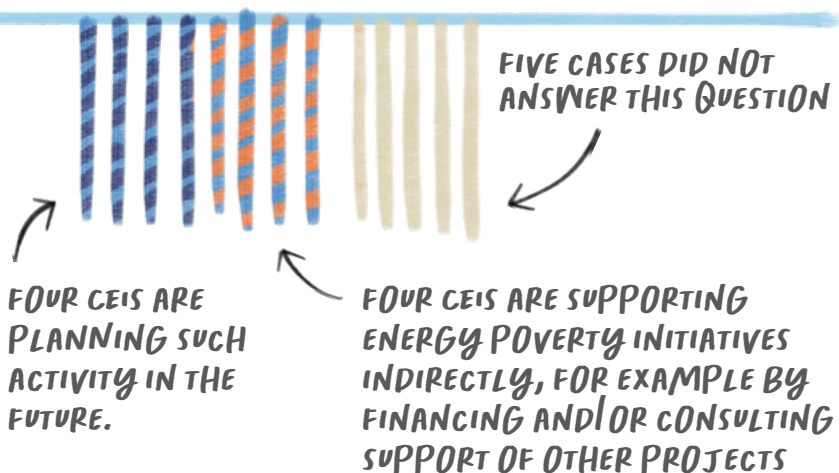
Are vulnerable groups included?

We aimed to assess how many CEIs consider energy poverty. Different terms describe affected individuals, such as fuel poor or at-risk-of-poverty. The question framed for investigation was: “Does the case include vulnerable groups?”. The results are presented in the visual below.

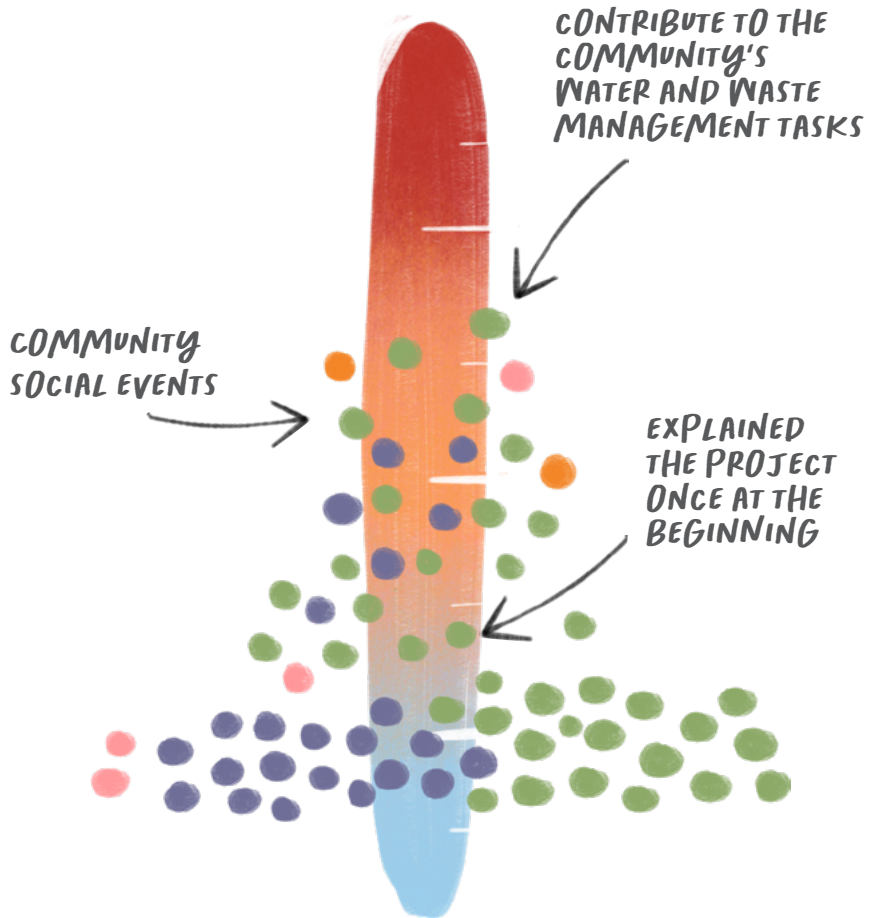
Further, the information we gathered in the last phase of the study indicates that energy poverty is not the primary motivation for ECs and CTAs. ECs are linked more to energy transition.

While CTAs focus on reducing energy expenses, they don't always provide financial support for those facing energy poverty challenges.

↓ 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:

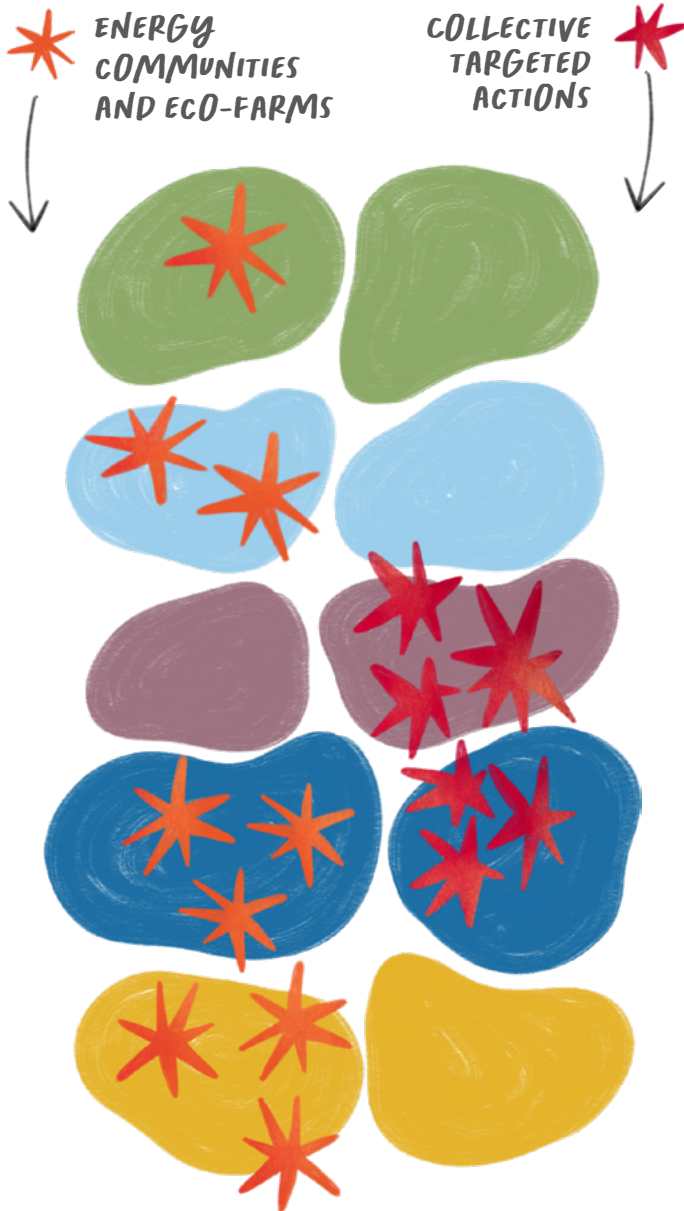


High interaction	being in regular contact with more than one outside group.
Medium interaction	being either in sporadic contact with more than one local group or in regular contact with one.
Low interaction	being in sporadic contact with one local group.
No interaction	case does not interact with people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

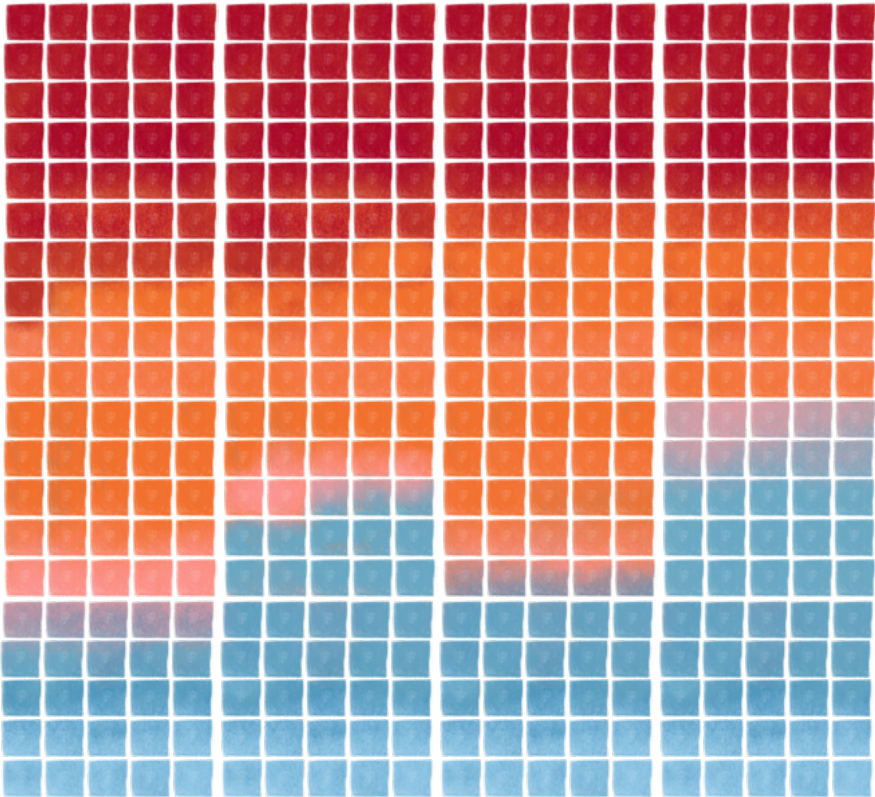
↓ Communication density in different forms of initiatives (%).

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

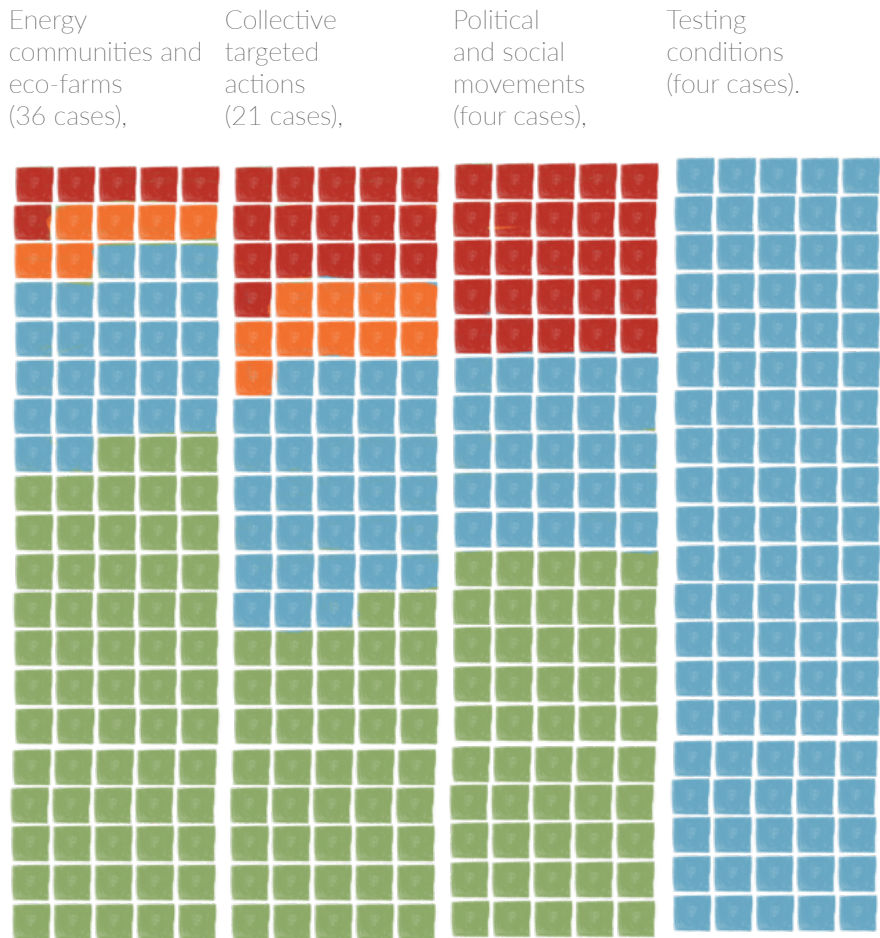
How do initiatives share relevant information with their members?

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 (%).



↑ 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, DECISION-MAKING AND COMMUNITY CULTURE

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?

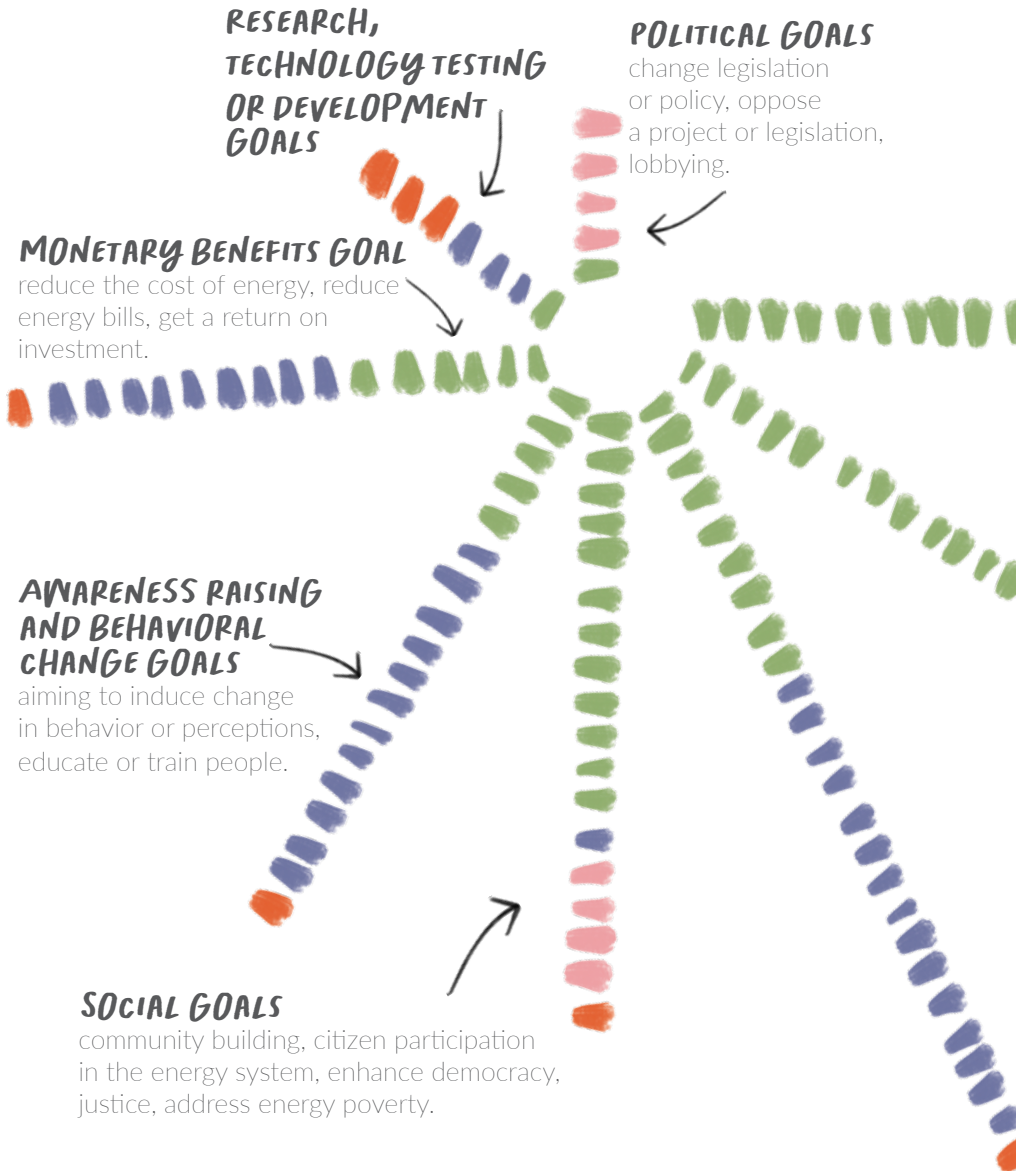
If the interviewee answers “no” to all three questions **XXX** we assume there is **no degree of formalisation** at all, if two questions are answered “no”, **XX** the **degree is low**, if two questions are answered “yes”, **√√** the **degree is medium** and if all three questions are answered “yes”,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

In the further analysis we discovered that **social links and interactions hold greater importance for EC members compared to those in CTAs**. In terms of community engagement, various degrees are identified within the studied ECs. Core group members are highly engaged, others are less in-vested but still involved, and some act as observers. **ECs express intentions to enhance member engagement through information sharing, events, voting, and incentives**. In the case of CTAs, less organized community engagement results in a noticeable **absence of a shared sense of belonging among citizens**.

↓ 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?

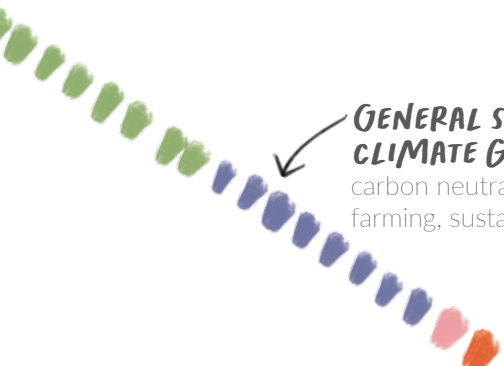
Main reasons to set up a CEI

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.



RES PRODUCTION GOAL

Produce or supply renewable/sustainable energy, increase the penetration of RES technology, produce RES for self-consumption or for energy autonomy or security.



GENERAL SUSTAINABILITY AND CLIMATE GOALS

carbon neutrality, emission reduction, eco-farming, sustainable mobility, etc.

ENERGY EFFICIENCY AND ENERGY SAVINGS GOAL

reduce or optimize energy use, perform measures of energy efficiency, incl. building retrofit, etc.



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

RES

production, supply, storage, self-consumption, P2P exchange, or activities related to renewable energy handling in general. A majority of cases has as main activity renewable electricity generation of some form, which includes primarily ECs.

ENERGY EFFICIENCY

incl. building renovation, optimisation of energy use, smart or efficient systems, consumption-side measures in general.

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:

AWARENESS RAISING AND TRAININGS

including information campaigns, workshop organisation, awareness via monitoring of the energy use.

OTHER

if none of the other categories, e.g. sustainable farming, water treatment

MOBILITY

EV purchase, EV charging infrastructure, car sharing, bike sharing, etc.

POLITICAL ACTIVITIES

opposition to projects, lobbying

- Energy Community and Eco farms
- Collective Targeted Actions
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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.

↪ 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.

The further analysis revealed that both CTAs and ECs acknowledge the advantages of PV panels, citing easy installation, minimal maintenance, and adaptability to local conditions. **CTAs highlight funding availability** as a crucial factor influencing the choice of PV technology, while **ECs show greater technology diversity**.

Despite a willingness to explore new technologies, CTAs note the scarcity of information and discussions as obstacles to improvement, a concern not explicitly raised by ECs during interviews.

-  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.

REDUCE ENERGY BILLS



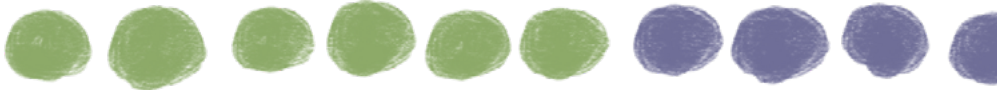
CITIZEN ENGAGEMENT



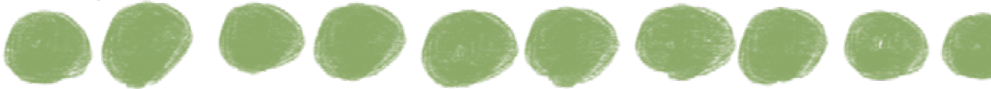
ENERGY AUTONOMY



EMISSION REDUCTION



ENERGY SAVING



RES PRODUCTION



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

IMPACTS

What benefits do CEIs create for society?

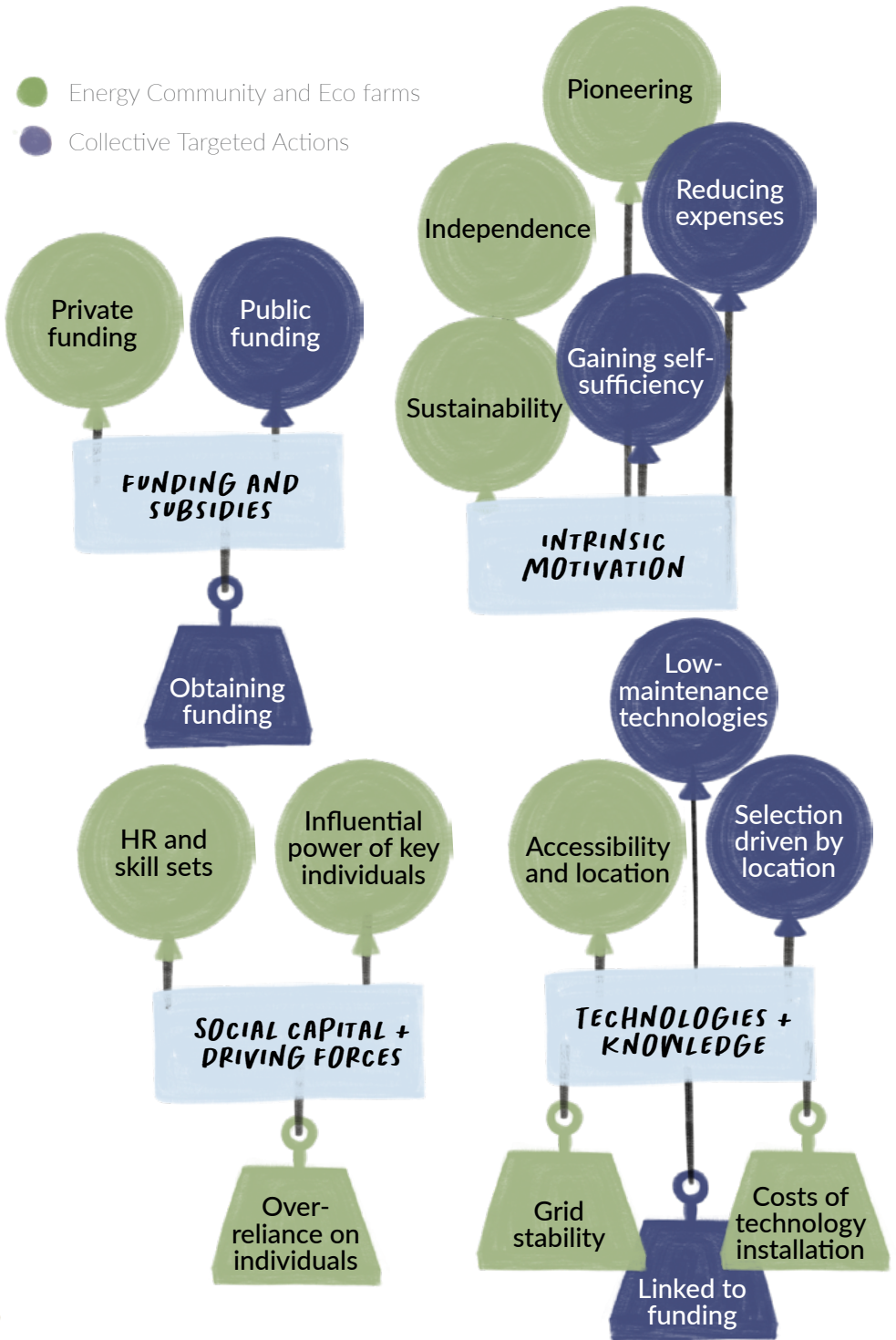
Our intention has been to analyse the success of the CEIs based on their achieved impacts (mainly in terms of energy and emissions), particularly compared to their planned impacts, to have a baseline for comparison. However, very few cases could provide enough information to compare planned and achieved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

↓ 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.



- Energy Community and Eco farms
- Collective Targeted Actions

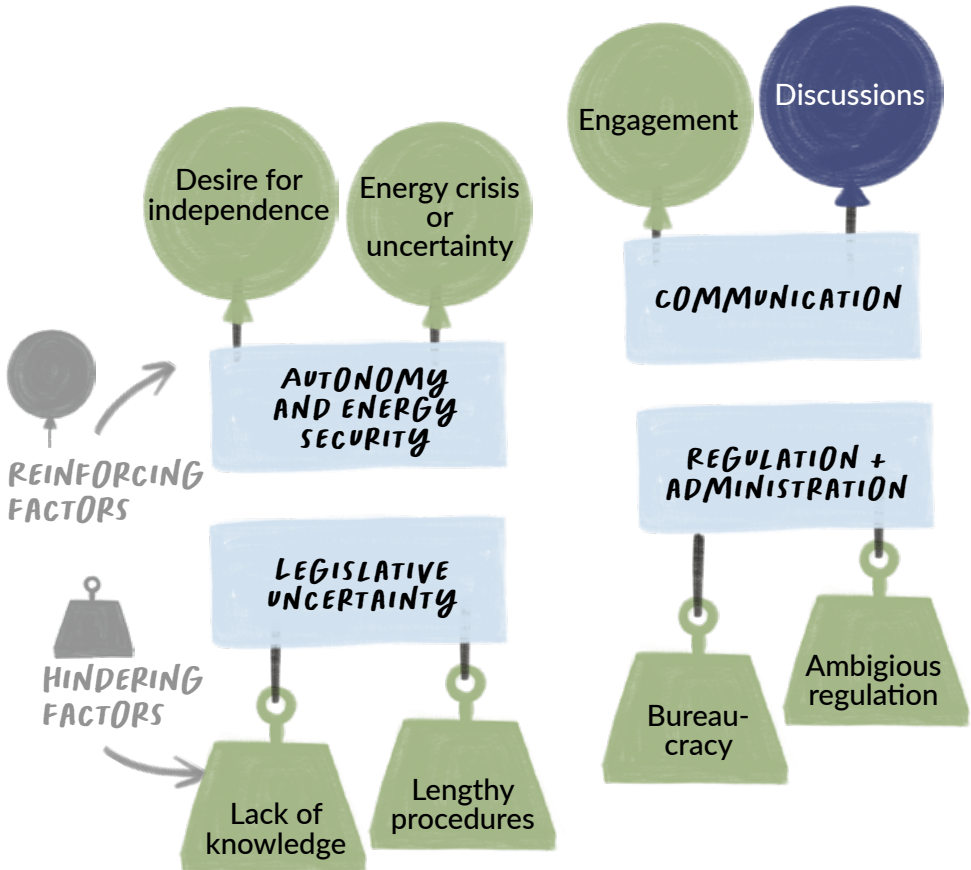


EMERGENCE

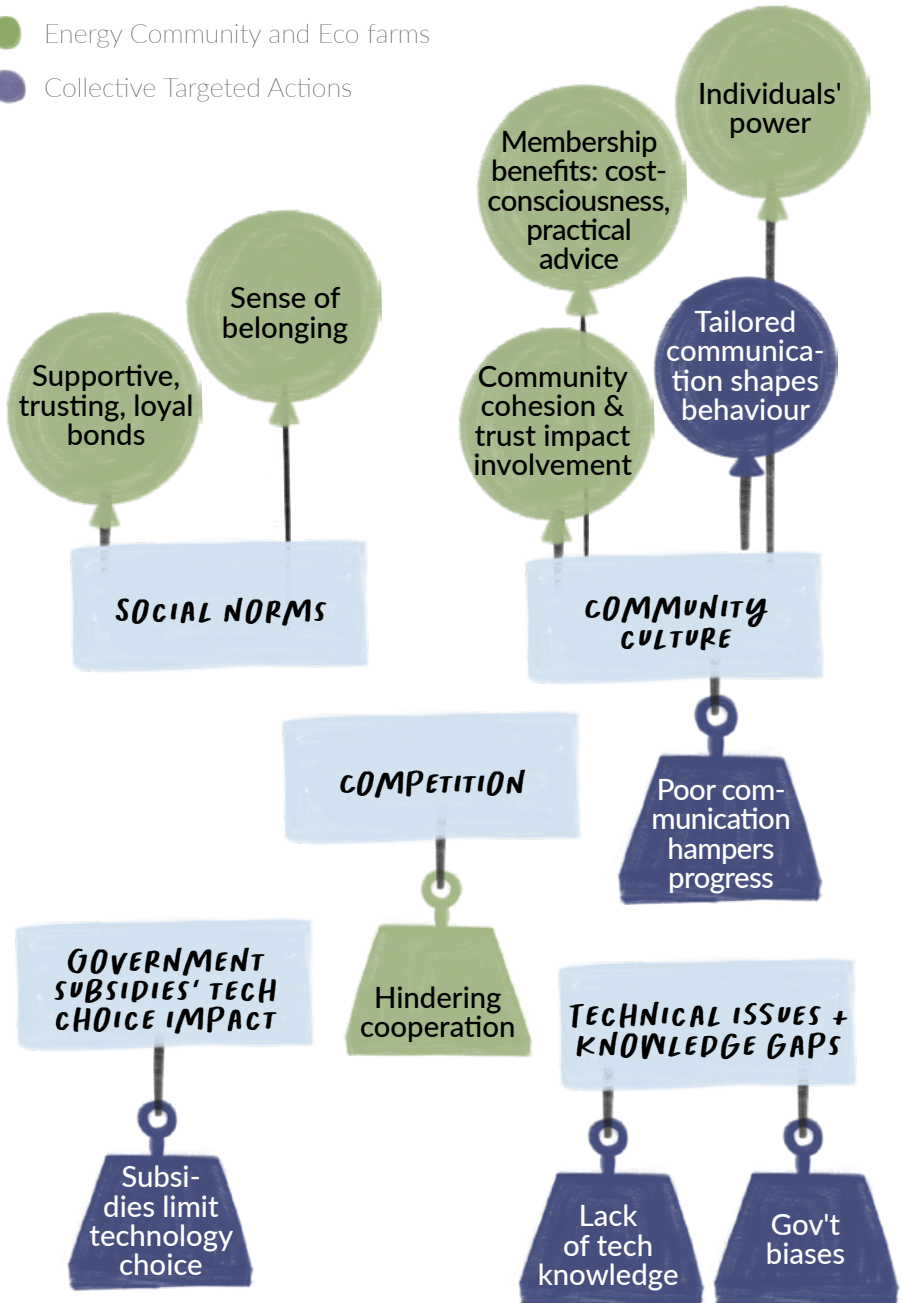
What are factors influencing emergence of CEIs?

Our research aims to uncover factors shaping collective energy citizenship emergence and consolidation.

Our study provides nuanced insights into positive and negative influences on collective energy initiatives, contributing to strategies for expanding and accelerating new initiatives.

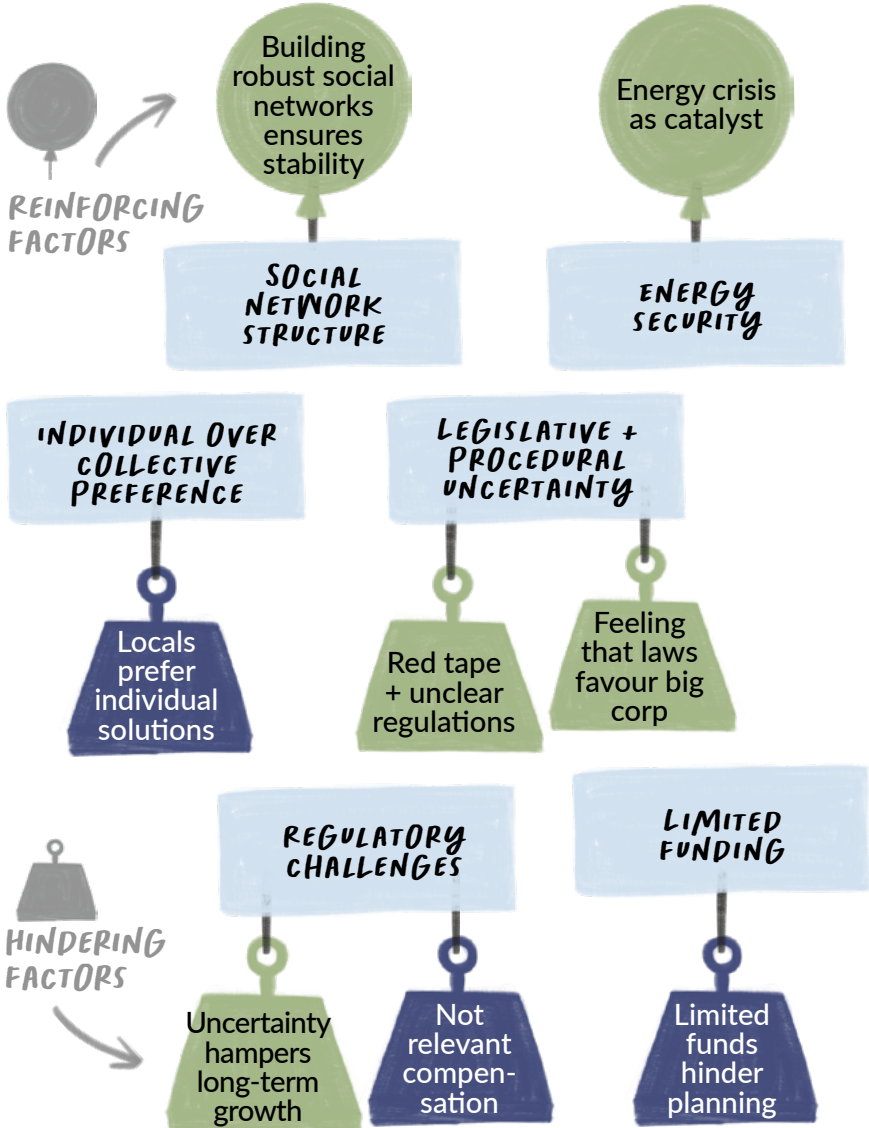


- Energy Community and Eco farms
- Collective Targeted Actions



CONSOLIDATION

What are factors influencing consolidation of CEIs?





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