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Deliverable 3.5

Part 1

Meta analysis of energy citizenship detailed case studies

Description: This deliverable, D3.5, is made up of two parts. **Part 1, the current document,** is the meta analysis of the 40 in-depth cases of energy citizenship from the point of view of transition towards a more just and sustainable energy system.
Part 2 is the depository of the 40 in-depth cases, introducing and providing an analysis of the cases in the form of case summary reports.

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Coordinator: Edina Vadovics (GDI)

Authors: Edina Vadovics (GDI) and Anita Szőllőssy (GDI)

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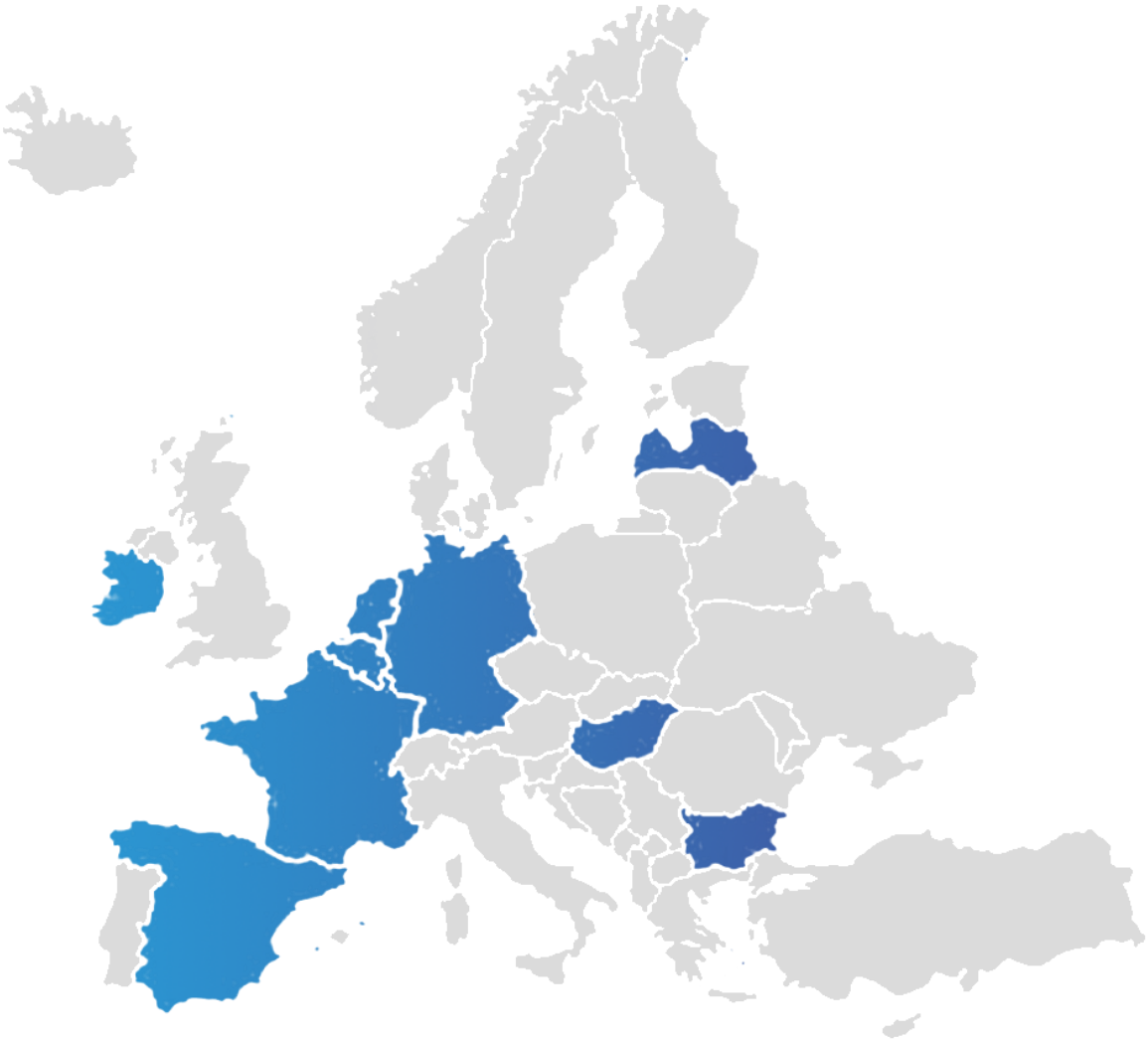
Case study researchers: Adriana Dimova (ARC Fund), Ali Crichton (UM), Anita Szőllőssy (GDI), Ariane Debourdeau (TUB), Benjamin Schmid (GAL), Bonno Pel (ULB), Camille Defard (JDI), Claudia Buse (TUB), Desislava Asenova (ARC Fund), Edina Vadovics (GDI), Erika Lagzdiņa (LU), Eszter Csiki (GDI), Fanny Lajarthe (ULB), Ivars Kudreņickis (LU), Jānis Brizga (LU), Juan Carlos Brenlla Blanco (UDC), Karin Thalberg (JDI), Kristóf Vadovics (GDI), Luisa Losada Puente (UDC), Marianna Markantoni (UM), Marko Hajdinjak (ARC Fund), Myrto Ispyridou (ARC Fund), Nuria Rebollo Quintela (UDC), Orsolya Antal (GDI), Petar Kanchev (ARC Fund), Raimonds Ernsteins (LU), Rasa Ikstena (LU), Ráchel Surányi (GDI)

Design/layout: Laura Kazule (UL) and Anita Szőllőssy (GDI), for Part 2

Reviewers of current and earlier versions of D3.5: Ariane Debourdeau (TUB), Benjamin Schmid (GAL), Bonno Pel (ULB), Frances Fahy (GAL), Karin Thalberg (JDI), Luisa Losada Puente (UDC), Marko Hajdinjak (ARC), Martina Schaefer (TUB), Michael Lydon (GAL), Rasa Ikstena (UL)



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ENERGYPROSPECTS PARTNERS:

University of Galway (GAL),
University Road, H91 TK33, Galway, Ireland

Université libre de Bruxelles (ULB),
Avenue Franklin Roosevelt 50-1050, Bruxelles, Belgium

GreenDependent Institute (GDI),
2100 Gödöllő, Éva u. 4., Hungary

Universiteit Maastricht (UM),
Minderbroedersberg 4-6, 6200 MD, Maastricht, Netherlands

Applied Research and Communications Fund (ARC Fund),
Alexander Zhendov Street 5, 1113, Sofia, Bulgaria

Notre Europe – Institut Jacques Delors (JDI),
18, rue de Londres 75009, Paris, France

University of Latvia (UL),
Raiņa bulvāris 19, LV-1586, Riga, Latvia

Technische Universität Berlin (TUB),
Straße des 17. Juni 135, 10623, Berlin, Germany

Universidade da Coruña (UDC),
Rúa da Maestranza 9, 15001 A Coruña, Spain

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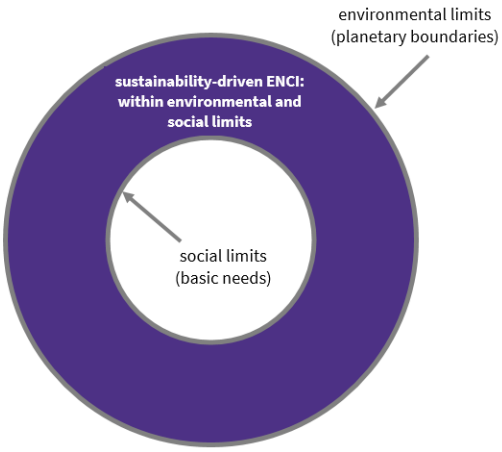
EXECUTIVE SUMMARY

The objective of the work presented in this deliverable was to conduct a sustainability-focused analysis of the 40 detailed cases of energy citizenship (ENCI) that the EnergyPROSPECTS consortium collected. The main research questions we set out to explore were

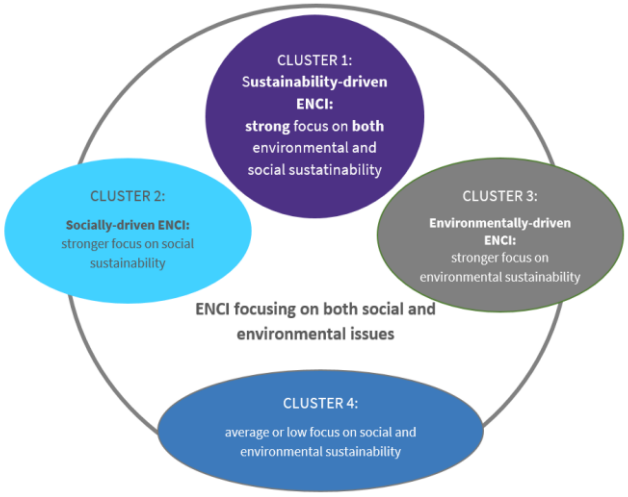
- how aspects of social and environmental sustainability are manifested in the objectives and general operations of cases of energy citizenship, and linked to this
- in which ways energy citizenship contributes to creating a more just, equitable, democratic and (environmentally) sustainable energy system.

In order to do this, we proposed the concept of **sustainability-driven energy citizenship,** energy citizenship that clearly has the objective to enable the energy system, and all parts of the energy system to be

- within the planetary boundary related to climate change, and defined by the equal per capita carbon footprint needed to stay within the 1.5-degree global warming limit defined by the Paris Agreement (IPCC, 2018), with other resource boundaries also considered; and
- satisfy the basic energy needs of each person in a way that they have the right to democratic participation in the energy system (SDG7).



Furthermore, starting from this concept, we placed the 40 cases into 4 clusters based on the extent to which they take into consideration social and environmental issues. We based this on 5 aspects of sustainability we selected to study in the two consecutive stages of the EnergyPROSPECTS case research process. Related to social sustainability, we studied the manifestations of 3 aspects in the cases: energy democracy, citizen power/control and equity justice. In relation to environmental sustainability, we looked at environmental sustainability and the carbon limit. As evident in the figure, the cases that place a strong focus on all 5 of these aspects were placed in cluster 1. Those that prioritise the social sustainability aspects are in cluster 2 and the environmental in cluster 3. Finally, those that place an average or low focus on both are in cluster 4.



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Next, we studied the cases in each cluster, assessing how the 3 aspects of social and 2 of environmental sustainability are manifested in them. We also examined their objectives, the evolution of these objectives, and the general operations of each case.

We found that **even though cases in each cluster show specific trends in what kind of objectives they have and how they approach and connect aspects of social and environmental sustainability (see summary in table below), they also reveal diversity**. This means that all European regions are represented in each of the clusters, and most clusters include cases with different ideal-types of energy citizenship (both agency and outcome orientation dimensions). This diversity is very useful in that it allows for citizens to connect with and get involved in cases at very different levels of awareness and activity in all European regions.

At the same time, the sustainability objectives of the cases, and in which clusters they can be placed, appear to be constant. Of course, there is some change, but it seems to be the exception rather than the norm. Thus**, the start and setting up of the cases seems to be critical in determining their transformative nature and to what extent they will be sustainability-driven**. This then seems to be the best place for strategies and policies to intervene. For example, in the case of funding, they could require that cases and initiatives explicitly connect the social and environmental dimensions of sustainability in both their objectives and planned activities.

In our explorative research, we also identified a multitude of ways – each exemplified by concrete case examples – in which the 5 sustainability aspects studied are manifested in the 40 cases. This collection could be used to provide guidance and support for both newly starting and existing cases of energy citizenship. This guidance can show how to increase their contribution to the sustainable energy transition (see example in box for the aspect of energy democracy).

Manifestations of the energy democracy in cases of ENCI
• Support the democratic functioning of the case internally, but also has an impact externally, serving to change the system
• Create or propose to create new types of organisations/bodies to promote and/or ensure democratic operations (e.g. Citizen Council)
• Practice self-governance
• Go beyond representative democracy: commitment to and/or practice of horizontal and inclusive modes of decision-making and direct democracy
• Create a tool and quality assurance label for energy democracy
• Create a model that can be replicated, and act as a role model
• Enable or expand individual/collective ownership of energy infrastructure
• Create de-centralised, locally controlled production and consumption systems
• Initiate and/or participate in public decision-making processes; and
• Make the voice of various groups and solutions heard in such processes
• Provide a forum for deliberation on energy and/or climate change
• Improve accountability in the energy sector and governance
• Showcase and spread information on energy democracy and its tools/methods

Finally, it is interesting to note that **cluster 1, which includes cases of sustainability-driven energy citizenship, is the cluster where most cases of viable social innovation and business models were found**. This is therefore an illustration of the importance of seeking ways to support the creation of strong connections between social and environmental sustainability in cases.

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Overview description of the 4 clusters regarding their objectives and approach to social and environmental sustainability				
	Objectives	**Social sustainability**	**Environmental sustainability**	**Case types and ENCI ideal-types**
Cluster 1, sustainability -driven ENCI:	• challenge the whole socio-economic system, not only the energy system • cases often connect the more global and local in their approach to change: they have system-contesting principles and overall aims, and wish to put these in practice locally as well	• more varied and multiple parallel manifestations of democracy and equity • move towards democratic self-governance • tendency to go beyond representative democracy • cases tend to be very inclusive, and have a clearly intended focus on accessibility, including disadvantaged groups, gender, etc.	• environmental sustainability is considered in objective setting, and has a more global focus • environmental awareness and priorities go beyond energy and carbon • explicit recognition of the carbon limit, often coupled with clear reduction targets	• tends to be cases with collective agency, but cases with individual agency are also found here • tends to be cases with transformative outcome orientation, but reformative also occurs • cases are varied: they can be social movements, community energy and co-housing cases, social enterprises, future-focused consultations, etc.
Cluster 2, socially -driven ENCI:	• all cases focus on social issues in their objectives, the cooperative form is common, empowerment is visible and disadvantaged groups are also highlighted. • the environmental focus appears in only a few cases, and when it does, it is mainly in relation to renewable energy production	• promoting decentralised production and giving local community and people more control over their consumption and production • specific focus on disadvantaged groups • local development is also linked, as it involves strengthening the local community or, for example, creating local jobs through local projects	• focus on local issues • focus on energy production • but still, acknowledgement of environmental sustainability • the carbon limit is only implicitly recognised	• citizen-based and hybrid cases, with transformative outcome orientation • only cases with collective agency in our analysis
Cluster 3, environmentally-driven ENCI:	• sustainable energy transition and awareness raising appears in the objectives • specific environmental foci (housing, nature conservation issues, circular economy) • (environmental) technology plays an important role	• cases more linked to efficiency also focus on clean production • other cases focus primarily on behaviour and practice change	• a strong emphasis on the local community • empowerment trough awareness-raising	• varied cases in terms of agency: can be both individual and collective (cc. 50-50% division) • reformative and transformative outcome orientation both occur (cc. 50-50% division))
Cluster 4:	• locally, organisationally or case-focused objectives • objectives focused on the energy system or one of its clearly defined components	• less varied expressions of democracy and equity • often clear focus on disadvantaged groups • level of citizen power/control tends to be lower, partly because cases are pre-planned (e.g. part of EU projects)	• average or low level of environmental sustainability where energy remains the main focus • the carbon limit is only implicitly recognised in most cases	• varied cases in terms of agency: can be both individual and collective (cc. 50-50% division) • reformative and transformative outcome orientation both occur, but tendency towards more reformative • cases that are part of EU projects are often in this cluster

1 INTRODUCTION

In this deliverable our objective is to provide a summary analysis of the 40 cases of energy citizenship selected for detailed study in the EnergyPROSPECTS project. As outlined in Chapter 2, the cases were selected via a detailed process from a database of 596 cases mapped by the consortium. The main objective of the analysis conducted in this deliverable is to understand how energy citizenship contributes to the transition towards a more just and sustainable energy system based on learnings from the 40 detailed case studies (see Annex I for the list of cases).

In the deliverable, after providing an overview in the remaining part of Chapter 1 of the concept of energy citizenship as it relates to the EnergyPROSPECTS project, Chapter 2 reviews how we arrived at the 40 cases that we study in the current deliverable. This is followed in Chapter 3 by the introduction and characterisation of the 40 cases, based mainly on the data collected in the mapping stage of our research. In Chapter 4, we present the theoretical framing of the analysis we conducted. In Chapter 5, we present our clustering of the 40 cases in order to analyse them from the perspective of how social and environmental sustainability considerations are manifested. In Chapter 6, we connect these perspectives with detailed analysis. Finally, in Chapter 7 we outline conclusions both for policy, practice and further research.

1.1 WHAT IS ENERGY CITIZENSHIP?

As part of the energy citizenship mapping exercise, methodology was developed for pursuing the overall project aim of identifying the diversity of ideal-types and empirical manifestations of energy citizenship (Vadovics et al., 2022a). The methodology was created to help answer the main research questions the EnergyPROSPECTS project team intends to respond to by undertaking the mapping activity. They are as follows:

1. Which forms of energy citizenship can be found in Europe today? How can we account for their diversity?
2. Do we find the same forms in different regions/countries of Europe?
3. In what contexts do different forms of ENCI emerge and develop?

For the **definition of energy citizenship (ENCI)**, we turn to the conceptual framework of the EnergyPROSPECTS project presented by Pel et al. (2021):

Energy citizenship refers to forms of civic involvement that pertain to the development of a more sustainable and democratic energy system. Beyond its manifest forms, ENCI also comprises various latent forms: it is an ideal that can be lived up to and realised to varying degrees according to different framework conditions and states of empowerment. (Pel et al., 2021:64)

Building on this definition, a case of ENCI in the EnergyPROSPECTS project is understood as

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1. a constellation of actors (in a context) and how it
    - enables/supports citizens to become active private and/or public energy citizens;
    - acts as a collective energy citizen by contributing to change in the energy system

or,

2. individual energy citizens and how they realise their potential in a private, public or organisational setting. (Vadovics et al., 2022a)

As indicated by these definitions and underlined by the agency dimension of the conceptual typology presented in Debourdeau et al. (2021), a case can be centred around an individual or realised in a multitude of collective forms. During the mapping of the ENCI landscape, the focus was on collecting data about both types of cases.

As Pel et al. (2021) indicate, we also recognise that even within the boundaries defined for ENCI mapping in the EnergyPROPECTS project, "enabling" and "supporting" citizens to become active private and/or public energy citizens can take many different forms. Similarly, energy citizenship itself can have many different forms. In reality, many types of cases can enable or support several different forms of energy citizenship in parallel – often more and/or less active forms may be associated with the same case (e.g., citizens voluntarily organising carbon reduction groups as a more *active* form of citizenship, and citizens participating in these groups as a *less active* form).

As a result, a very diverse collection of ENCI cases emerged as an output of the mapping process (Debourdeau et al., 2023).[1] Indeed, it is important to note that **although the term energy citizenship is often associated with energy communities or community energy projects, the objective of the EnergyPROSPECTS project has been to uncover other forms of energy citizenship as well**.

[1] Information about the 596 cases of ENCI that were mapped has been made available in various ways:
- in an online database, available at data.energyprospects.eu/;
- in a public deliverable according to their ideal-types as identified in the conceptual typology (Debourdeau et al., 2023)

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2 HOW DID WE GET TO THIS DELIVERABLE AND THE 40 CASES?

In this chapter we will first briefly summarise the methodology that was used to:

- map energy citizenship in Europe (Chapter 2.1);
- select the cases for the detailed case study research (Chapter 2.2); and
- conduct the detailed case study research (Chapter 2.3).

2.1 THE METHODOLOGY USED FOR MAPPING ENERGY CITIZENSHIP

The 40 cases that are studied in this deliverable, and the data presented on them in Chapter 4, emerged from the energy citizenship (ENCI) mapping process that the EnergyPROSPECTS consortium completed between November 2020 and May 2021. The methodology for the desk-based mapping is described in detail in Vadovics et al. (2022a); here, we provide a very brief summary.

The objective of the mapping process was to capture the diversity of ENCIs in Europe rather than to map all existing cases of ENCI. The definition of ENCI that was adopted in the project is intentionally broad (see Pel et al., 2021) to capture the breadth of ENCI forms, including latent forms. Since a huge variety of cases and initiatives exist that would fit our definition, and mapping all of them would be beyond the scope and resources of the project, there was a need to further define which cases should be included within the research focus of the EnergyPROSPECTS project. The consortium decided that the ENCI mapping activity would cover cases that:

- are based in European countries (including EU, EEA and accession countries);
- are currently active or were concluded no earlier than 2015 when the Energy Union Strategy was published;
- are focused on direct energy production and/or consumption (e.g., involving households, organisations, etc.), mobility (with a direct connection to energy issues), or have a more holistic focus on sustainable and democratic energy.

Furthermore, to ensure that the greatest diversity of ENCIs was captured according to this scope, a sampling strategy that specified 5 categories of diversity that should be covered was developed. The latter included:

- Geographical diversity;
- Diversity in terms of the main focus of the cases (i.e., covering direct energy production/consumption, mobility and holistic cases);
- Diversity in terms of including both individual and collective cases of ENCI;
- Diversity with regard to the ten ideal-types described in the conceptual typology (Debourdeau et al. 2021); and finally,

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- Diversity in terms of cases of ENCI that include a variety of additional foci (such as gender, disadvantaged groups, low-tech/high-tech/behaviour change-based solutions, and rural/urban settings).

With this methodological guidance, the ENCI mapping process resulted in the mapping of 596 cases[2] (Debourdeau et al., 2023). The country-level distribution of mapped cases is shown in Figure 1.

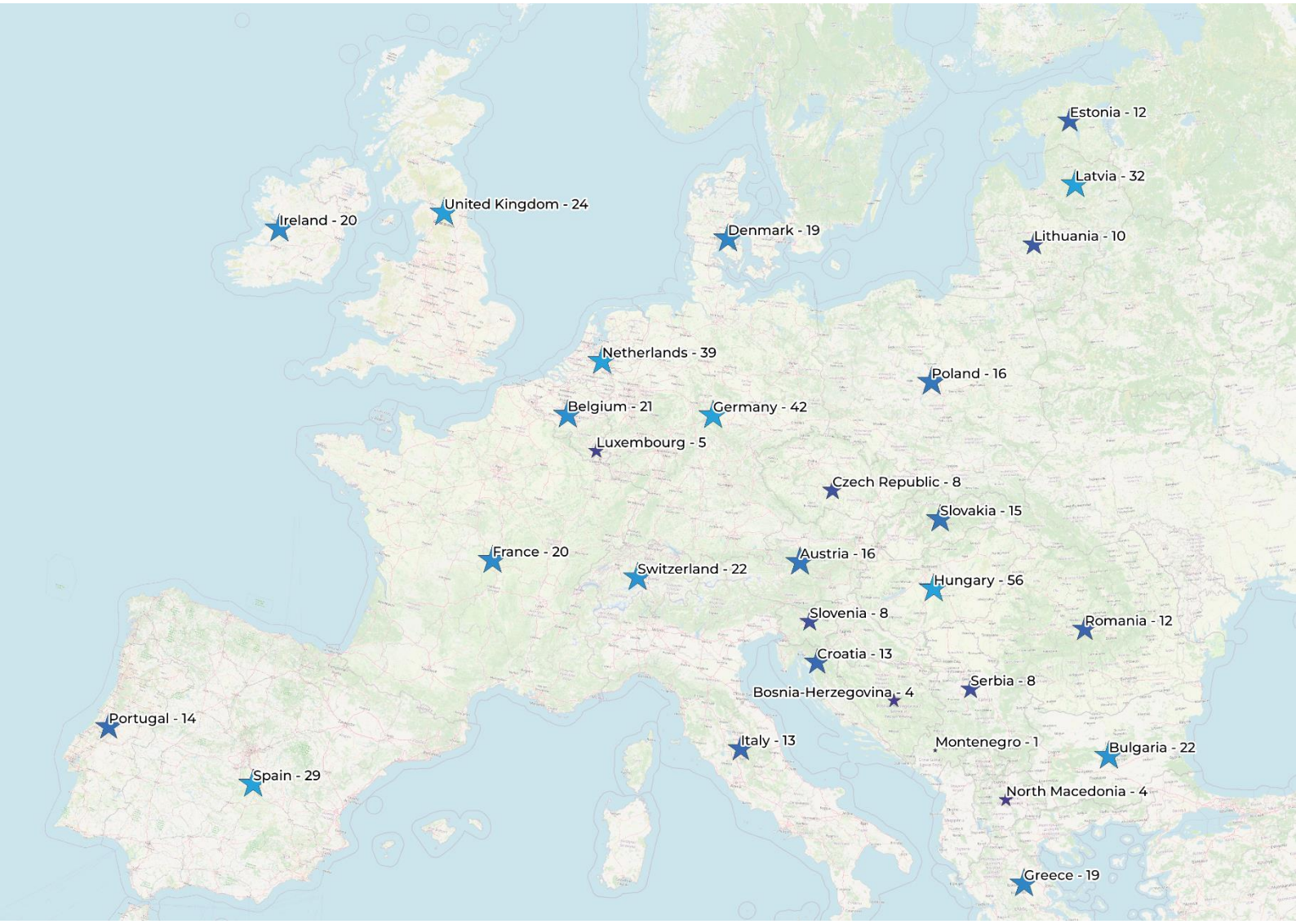

Figure 1: Distribution of cases collected during the mapping stage between countries

[2] An interactive online database of all cases can be found at https://data.energyprospects.eu/

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2.2 SELECTION OF THE 40 CASES FOR DETAILED STUDY

The cases for detailed study in EnergyPROSPECTS were selected from the 596 cases described in the last section. The chosen cases constitute less than 10% of the whole database and were selected using a detailed and specific methodology to ensure they were suitable for further research on energy citizenship related to various topics, including intermediation (Markantoni et al., 2023), social innovation and business models (Debourdeau and Markantoni, 2023), transformative agency (Kemp et al., 2023), and as part of a QCA (qualitative comparative analysis) investigating the conditions for energy citizenship outcomes (Schmid et al., 2023). Thus, it is important to note that **the 40 cases are not representative of energy citizenship in any way**. They are simply a diverse selection of cases, the EnergyPROSPECTS research team chose for detailed study, constrained by the research questions in the project.

The methodology for selecting the cases is detailed elsewhere (see Pel et al., 2022). However, to summarise, the set of 40 cases was chosen through a three-step process primarily designed to support the systematic comparison of (greater and lesser) achievements and conditioning factors of energy citizenship. The steps were as follows:

Step 1: Pre-selection of cases: suitable cases were filtered out from the database of 596 cases with the use of the following criteria:

- nomination by a partner for further study;
- location in a partner country to ensure ease of access to information and interview subjects as well as relevance to other project tasks;
- data availability: sufficient amount of information about the case potentially available, and/or the partner in question is already in contact with the case.

Additionally, as we planned to analyse 20 of the selected cases through QCA methodology, additional filters were applied:

- assignment as main ENCI ideal-types 7 and 8[3] (i.e. categorisation as “citizen-based and hybrid” during the mapping stage);
- diversity in evaluation as “high”, “medium”, or “low” (but not “n/a”, etc.) regarding ‘achievements’ related to citizen power during the mapping stage;
- currently active cases that started operating and engaging in activities no later than 2020.

Step 2: Selection by case researchers: Following the filtering process, the list of suitable cases was presented to project partners along with instructions to select the most appropriate cases for study in their countries. The project partners were advised consider

[3] See Debourdeau et al., 2022 for details on the ideal-types of energy citizenship.

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factors such as the accessibility of the case (e.g., in relation to conducting interviews), diversity among cases, relevance to research objectives, etc.

Step 3: Verification: once partners made their selection of cases, members of the research topics lead team completed a final review.

The map in Figure 2 summarises the final number of cases by partner country. Annex I includes a list of all cases of energy citizenship that were studied.

Figure 2: Number of cases selected for detailed study in each of the project partner countries

2.3 METHODS USED FOR STUDYING THE 40 CASES

To carry out the detailed case analysis, a survey questionnaire with research questions was collaboratively developed by the various research topic leads. The questionnaire or case research template developed along three research topics, focusing on: 1) ENCI achievements; 2) the underlying conditions, intermediaries and empowerment and 3) changes in ENCI over time (see Pel et al., 2022 and Vadovics et al., 2022b for a description of the main research topics, questions, and the final research questionnaire). The analysis presented in the current deliverable builds primarily on data and information provided related to research topics 1) and 3).

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The 40 cases were studied using a mixed-methods approach consisting of document research and case participant interviews, with the following research steps proposed to case researchers:

Step 1: Review data about the case from the mapping stage of the research. This material already included references and links to additional materials.

Step 2: Further document research on selected cases (e.g., the website of the case, founding document(s), other programmatic materials, evaluation reports, annual reports, research reports, media articles, academic papers, etc.).

Step 3: Based on already available information and document research, fill in as much information as possible in the survey questionnaire while identifying pertinent questions for case actor interviews.

Step 4: Conduct interviews with case actors to fill in the missing information as well as expand on and verify what was learned through the documents.

Step 5: Review data and information and submit case information to the research team through the online version of the research survey questionnaire.

In order to standardise the research approach as much as possible, all case researchers were invited to an online training session prior to the case research (Vadovics et al., 2022b). Furthermore, due to the complexity of the research approach, case researchers were also invited to participate in 5 check-in meetings during the detailed case study process. These were organised to focus on the main research topics and increase alignment and understanding of the research concepts, framings, and methods.

Data collection took place between August 2022 and May 2023.

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3 INTRODUCING THE 40 CASES

3.1 DESCRIBING THE 40 CASES: DATA FROM THE MAPPING STAGE OF RESEARCH

In this chapter we are using data from the mapping stage of our research (see Chapter 2.1) to introduce and briefly characterise the 40 cases, and to contrast them with the full database of 596 cases. On the one hand, our aim is to highlight their diversity, and, on the other, we wish to compare them to the full database[4]. It is important to note that the 40 cases are not representative of the full database, as our selection criteria was guided by other considerations (see Chapter 2.2).

The map in Figure 2 (above) shows the distribution of cases selected for detailed study. While in the mapping stage we reviewed cases from all European countries, in our detailed case study work we focused on cases from project partner countries in order to have better access to case data.

In the following comparison, some important features are listed, which illustrate the difference (and in some cases similarity) between the full database and the 40 selected cases analysed in detail. These features show some of the main characteristics of the 40 cases analysed here.

First, we examined the main focus of the cases. As shown in Figure 3, a primary difference here is that among the 40 cases analysed, there is a higher proportion of cases that are not specifically focusing on energy production or mobility, but more holistically on a broader change. This is 52.5 percent of the 40 cases, compared to 45.3 percent for the whole database.

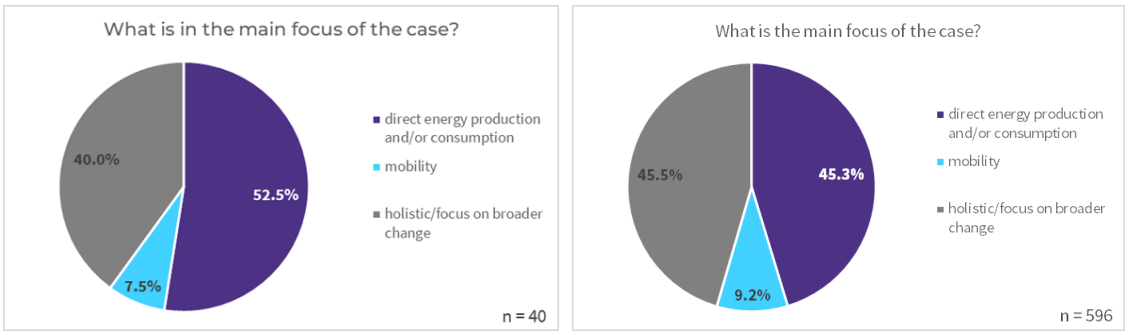

Figure 3: Distribution of mapped ENCI cases based on their main focus (left: 40 detailed cases, right: full database)

[4] To learn about the full database, please consult the EnergyPROSPECTS Energy Citizenship Factsheet series, which are available at https://www.energyprospects.eu/results/energy-citizenship-factsheets/.

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FOCUS ON DISADVANTAGED GROUPS

FOCUS ON GENDER ISSUES

It is also interesting to see how many of the cases have a complementary focus. Figure 4 below shows that among the 40 cases, there is a higher proportion of both those with a focus on issues related to disadvantaged groups (32.5 percent among the 40 cases, compared to 20 percent in the full database) and those with a focus on gender (7.5 percent among the 40 cases, compared to 5.7 percent in the full database).

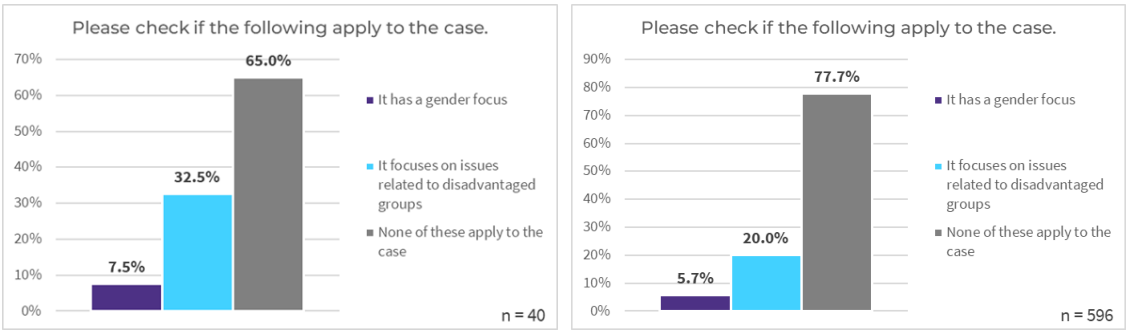

Figure 4: Distribution of mapped ENCI cases according to presence of focus on disadvantaged groups and gender issues (left: 40 detailed cases, right: full database)

It is also worth looking at why cases were started. What inspired and motivated their initial beginnings? The desire to contribute to the energy transition is the main motivation in the 40 cases with the highest proportion, 45 percent (Figure 5). This is followed by 30-30 percent for produce and/or use renewable energy and community building. In fourth place, we have increasing public involvement with 27.5 percent.

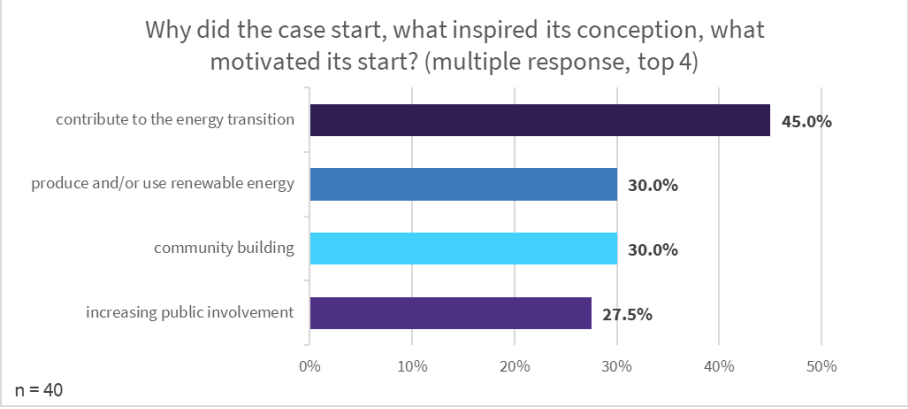

Figure 5: Most common sources of motivation and inspiration (40 cases)

In the full database (Figure 6), contribution to the energy transition is also the top motivation, with a slightly lower share than among the 40 cases (35.4 percent). In second place, with a similar proportion to the 40 cases, is the wish to produce and/or use renewable energy (27.9 percent), in third place is increasing public involvement (24.7 percent) and in fourth place is recognition of the seriousness of climate change (23.2 percent).

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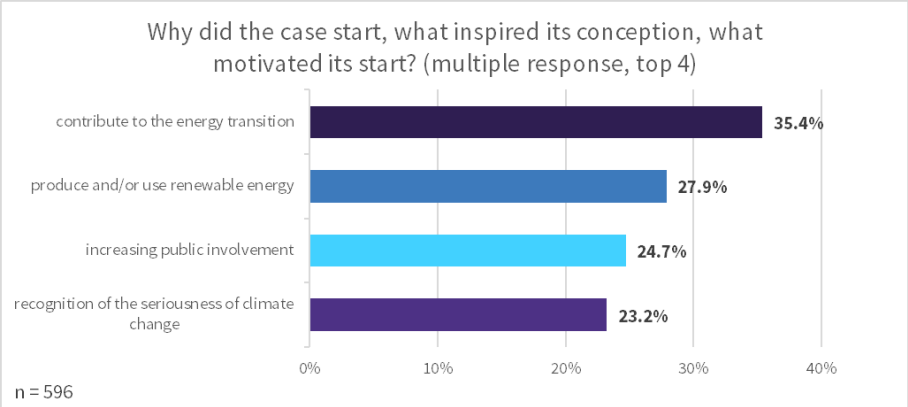

Figure 6: Most common sources of motivation and inspiration (full database)

As shown in the figures above (Figures 5 and 6), the most significant difference in this question is that community building appears among the main motivations and inspirations among the 40 cases, indicative also of our selection criteria with a focus on citizen-based and hybrid cases.

It is important to now examine what the actors originally intended to achieve. In the 40 cases, promoting energy saving is the top priority, with 32.5 per cent of the cases having this objective (Figure 7). Energy democracy and ending dependence on fossil fuels ranked second with 30-30 percent each. This is followed by reducing the carbon footprint with 27.5 percent.

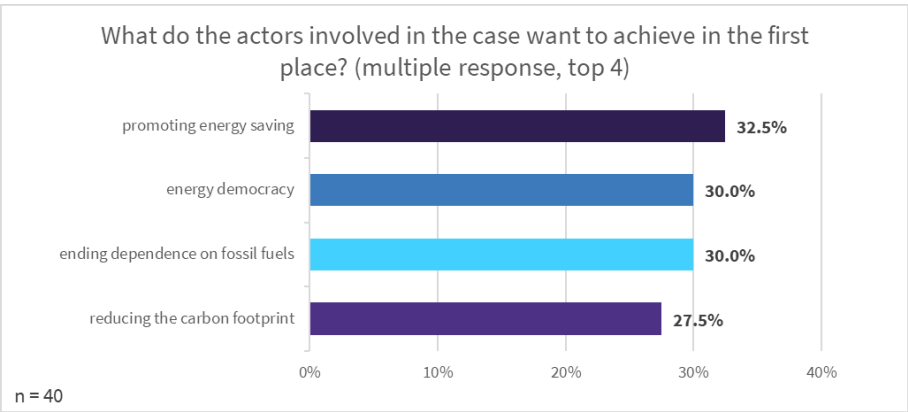

Figure 7: Most common aims of actors (40 cases)

For the database (Figure 8), reducing the carbon footprint is the top-ranked objective (33.4 percent). This is followed by promoting energy saving (25.5 percent), which in turn is the number one objective among the 40 cases. Third, there is promoting and enabling climate action (21.5 percent) and fourth is increasing and/or achieving self-sufficiency (20.8 percent).

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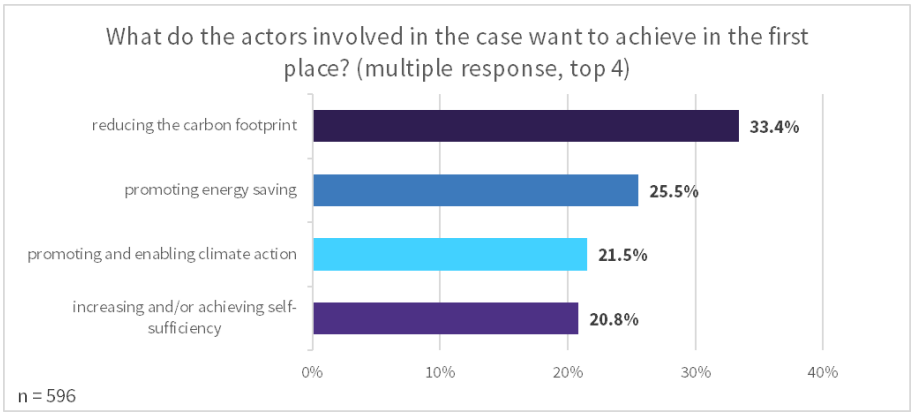

Figure 8: Most common aims of actors (full database)

It is worth pointing out that energy democracy is the second most important reason among the 40 cases, whereas in the database it is not among the most important reasons.

Aspects such as which actors are involved in the cases (i.e. in their creation and currently), and what is their main organisational form are also worth considering. In relation to the actors who initiated the cases, as shown in Figure 13, there are a lot of similarities between the full database and the 40 cases, regarding the three most important actor groups involved in starting the cases. The main difference lies in the role of cooperatives, which are the fourth most important actor group among the 40 cases (12.5 percent). They are not among the four most important actors for the whole database. This again is the result of our specific case selection process (see Chapter 2.3). The individual case summaries in Part 2 of this deliverable provide more details on the role of co-operatives in our detailed case study.

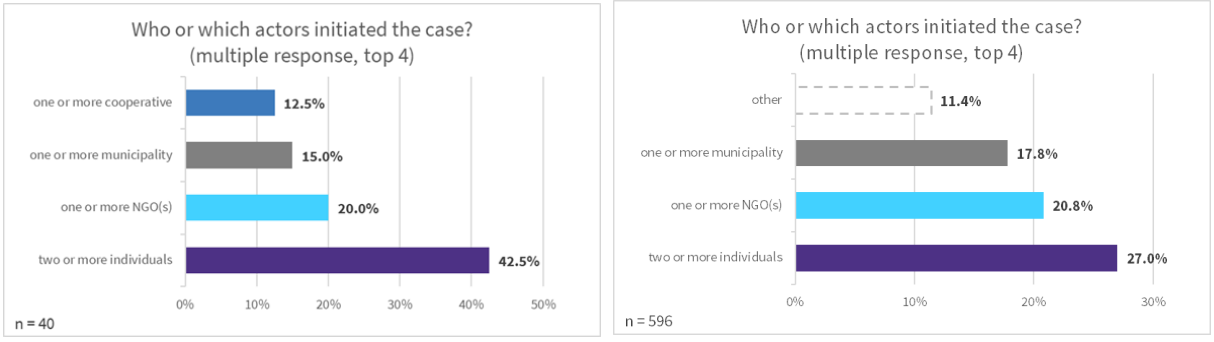

Figure 9: Initiating actors (left: 40 detailed cases, right: full database)

In relation to actors currently involved in the cases, again there are many similarities between the two datasets (e.g. in terms of the two most involved actor types, NGOs and groups of individuals, and to a different extent for-profit companies and municipalities as well). The difference lies in the involvement of non-profit companies, which are the third most involved actor type among the 40 cases (Figure 10).

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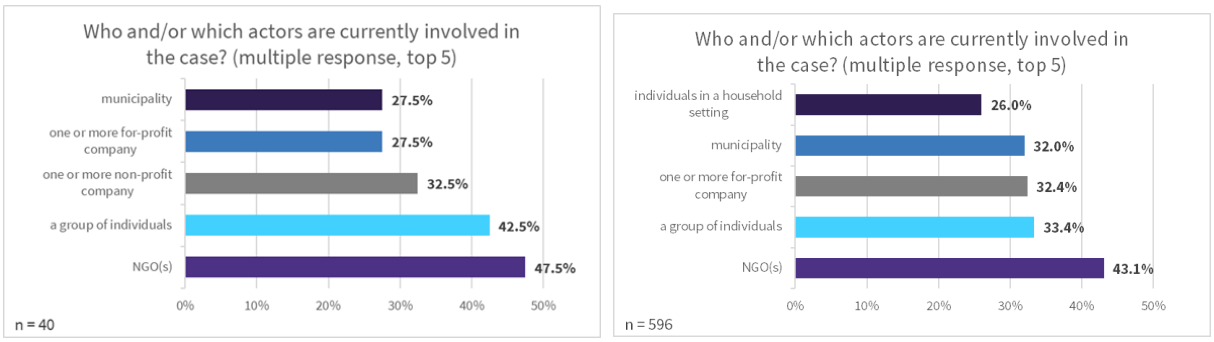

Figure 10: Actors currently involved (left: 40 detailed cases, right: full database)

In terms of organisational form/structure, the 40 cases present a slightly different picture in comparison to the whole database (Figure 11). The cooperative form is in first place and is present in a much higher proportion in the 40 cases (30 percent) than in the full database (12.1 percent). Of note, partnership as an organisational form also appears in fourth place (10 percent of the data, or 4 cases). This form is not among the main organisational forms in the full database.

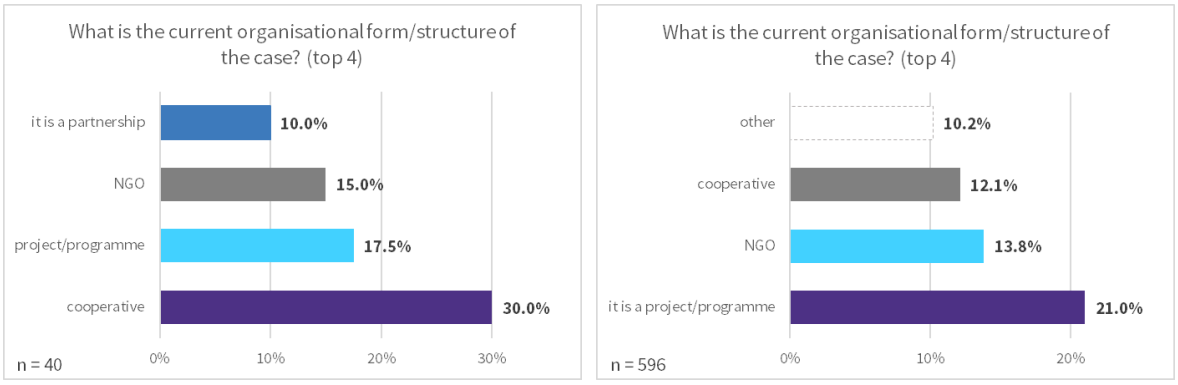

Figure 11: Current organisational form (left: 40 detailed cases, right: full database)

The active or passive nature of the cases was measured on a scale of one to one hundred, as illustrated in Figure 12. It can be clearly seen that among the 40 cases, passive forms of energy citizenship are much less represented, while very active cases are very evident.

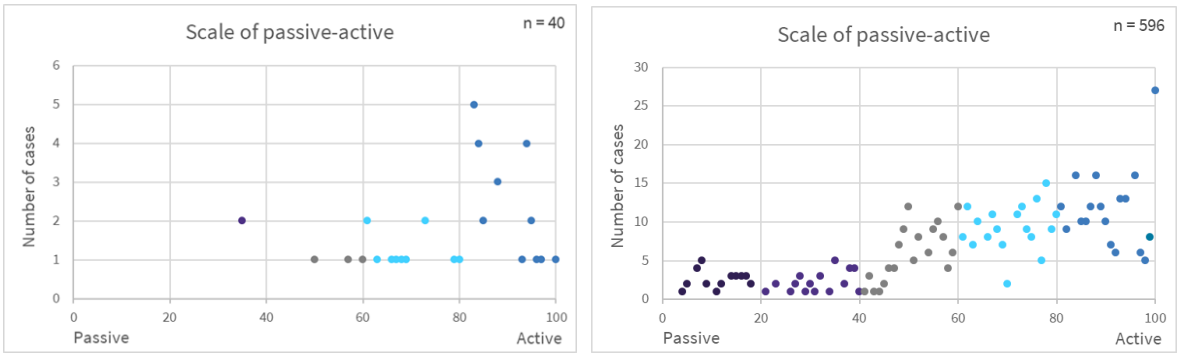

Figure 12: Scale of passive-active forms of ENCI - scaled (left: 40 detailed cases, right: full database)

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The level of hybridity (the number of different types of actors involved) observed in the cases can also be noted here. However, there is no significant difference between the distribution of 40 cases and the full database Figure 13).

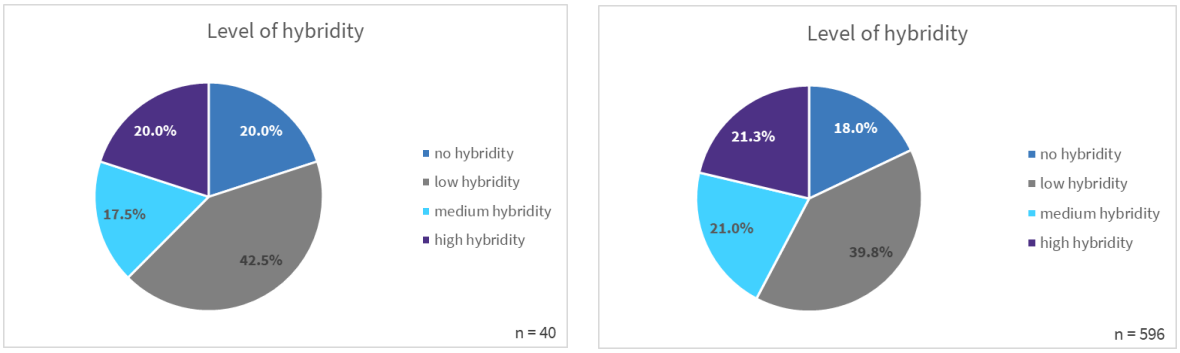

Figure 13: Level of hybridity (left: 40 detailed cases, right: full database)

To summarise, the sample of the 40 cases is not representative of the aspects analysed in the whole database (which is also not representative for all existing forms of ENCI). Nonetheless as indicated above, this was not the aim of our research. However, the aspects presented here do illustrate the character of the selected 40 cases: they represent more active and often collective forms of energy citizenship, with a stronger holistic approach and often also including a specific focus, such as support for disadvantaged groups and gender.

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3.2 COMPLETING THE INTRODUCTION: DATA FROM THE DETAILED CASE RESEARCH STAGE

Table 2 provides a summary of the 40 cases studied in detail based on which ideal-type of energy citizenship they initially support (please see more details of the cases in terms of their assignment according to the conceptual typology in Annex II). It is notable that not all ideal-types of energy citizenship are represented among the 40 cases. Furthermore, 30 out of the 40 cases have a collective agency, and 29 of these can be categorised as "citizen-based and hybrid". Compared to the distribution of ideal-types in the whole database, this reflects a rather different distribution. As noted this is due to the selection criteria used by the EnergyPROSPECTS team (see details in Chapter 2.2), which necessitated that at least 20 of the cases studied fall into this category to enable the QCA analysis (Schmid et al., 2023).

	Individual			Collective		Other
	Private	Organisationally embedded	Public	Citizen-based and Hybrid	Social movements	
Reformative	4 (10%)	2 (5%)	3 (7.5%)	5 (12.5%)	0 (0%)	0 (0%)
Transformative	0 (0%)	1 (2.5%)	0 (0%)	24 (60%)	1 (2.5%)	

Table 1: Distribution of the 40 detailed cases among the ideal-types of energy citizenship

	Individual			Collective		Other
	Private	Organizationally embedded	Public	Citizen-based and Hybrid	Social movements	
Reformative	79 (13,3%)	31 (5,2%)	39(6,5%)	115 (19,3%)	33 (5,5%)	19 (3.2%)
Transformative	33 (5,5%)	27 (4,5%)	8 (1,3%)	136 (22,8%)	76 (12,8%)	

Table 2: Distribution of the 596 mapped cases among the ideal-types of energy citizenship

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4 THEORETICAL FRAMING: TOWARDS SUSTAINABILITY-DRIVEN ENERGY CITIZENSHIP

The current energy system is unsustainable from multiple perspectives. The over-reliance on fossil fuels is one of the main reasons for the urgency of the climate crisis (UNFCCC, n.d.; United Nations, 2022). This has also resulted in calls for moving towards greater energy independence in the light of the war in Ukraine. In a context of an unjust energy system (e.g. Widuto, 2022; Chancel et al., 2023) and the unfair distributed responsibility for carbon emissions (e.g. Ivanova and Wood, 2020; UNEP, 2020), this challenge signals the importance of including everyone – among them citizens - in the energy transition. As recognised by the European Union's objectives, the energy transition needs to be inclusive, just and sustainable (see e.g. European Commission, 2020).

Thus, grand societal challenges (Loorbach et al., 2017) related to the currently unsustainable energy system can be summarised as follows:

- Environmental sustainability oriented challenges:
  - move away from fossil fuels and non-renewable resources;
  - stay within carbon budget/reduce carbon footprint;
  - ensure that the energy system respects other planetary boundaries.
- Social sustainability oriented challenges:
  - increase democratic involvement in and transparency of the energy system;
  - increase participation of all citizens and actors, including disadvantaged groups and gender groups in the energy system;
  - increase justice, including the reduction of energy poverty.

As indicated, our study was explorative in nature as we sought to investigate many different factors related to energy citizenship. We sought to uncover more ways in which energy citizenship can contribute, or does already contribute, to addressing grand societal challenges that relate to the energy system through creating an inclusive, just and sustainable system. For this investigation, however, we first need to define what we mean by "inclusive, just, democratic and (environmentally) sustainable". This is also necessary as energy citizenship, or the change brought about by the various forms of energy citizenship, cannot automatically be considered sustainable, desirable or beneficial to society at large (Loorbach et al., 2017; Vadovics and Milton, 2018), so what is sustainable, desirable and beneficial needs to be unpacked and defined.

To define "inclusive, just, democratic and (environmentally) sustainable", we turn to the concept of the "doughnut" (Raworth, 2017), as it illustrates how the social and environmental aspects of sustainability relate to one another, clearly outlining "the space" where the various forms of energy citizenship should inspire to take individuals,

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communities and ultimately our society. It also highlights the fact that the environmental and social aspect of sustainability cannot be dealt with separately and need to be connected as cases.

In our research, the doughnut represents the overall aim of connecting social and environmental objectives both in the goal-setting and actions of energy citizenship (Figure 14). Thus, we introduce the concept of **sustainability-driven energy citizenship:** energy citizenship that clearly has the objective to enable the energy system, and all parts of the energy system to be

- within the planetary boundary related to climate change, and defined by the equal per capita carbon footprint needed to stay within the 1.5-degree global warming limit defined by the Paris Agreement (IPCC, 2018, and see Figure 14), with other resource boundaries also considered; and
- satisfy the basic energy needs of each person, in a way that each person has the right to democratic participation in the energy system (SDG7).

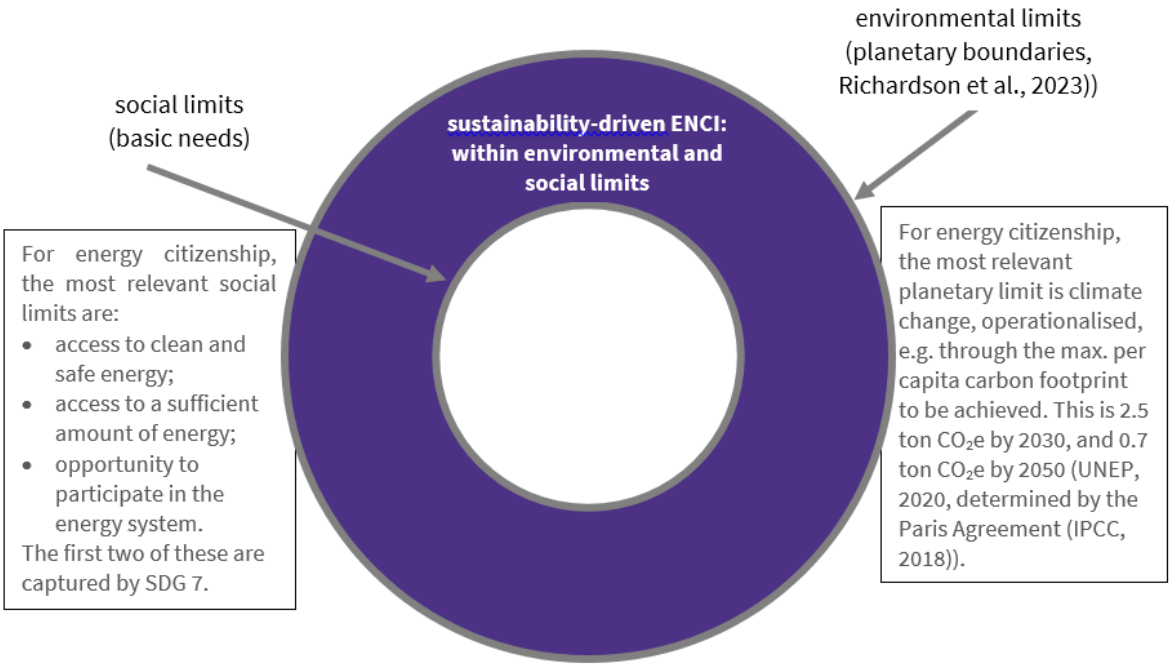

Figure 14: The "doughnut" of transformative energy citizenship (inspired by Raworth, 2017)

At this point, it is important to highlight that justice and equity have a crucial role not only in the social dimension, but they are impacting the environmental as well in several ways. First, Millward-Hopkins (2022) argues that inequality can double the amount of energy required to sustain a decent standard of living. Second, there is a growing indication that sufficient resources are not available to create a renewable energy infrastructure to maintain the current levels of energy consumption (Trainer, 2007; Moreau et al., 2019; Klimenko et al., 2021). Third, initial research highlighted that if distributed equally, *"today's average global energy consumption of 79 GJ person-1 could, in principle, allow everyone on*

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Earth to realize 95% or more of maximum performance across all [well-being] metrics [investigated].” (Jackson et al., 2020:1) However, numerous countries are below this average, and many are above (Jackson et al., 2020). Furthermore, average per capita carbon footprints vary considerably in and across countries (Ivanova and Wood, 2020) as well as between richer and poorer households (Khalfan et al., 2023). This results in unequal responsibility for and bearing the negative impacts of climate change. Thus, there is an urgent need to contract as well as converge our energy use and carbon emissions, ultimately to “move into the doughnut” (Meyer, 2000; Vadovics et al., 2012; Millward-Hopkins et al., 2020).

In the EnergyPROSPECTS project, at an exploratory level, we were interested in seeing to what extent the cases of energy citizenship we mapped (Vadovics and Szőllőssy, 2023c), and then in more detail the 40 cases, connect with the two outlined dimensions of sustainability.

In the project, the conceptual typology of energy citizenship developed by the team (Debourdeau et al., 2021; shown in Figure 15) considered these two dimensions of sustainability in defining reformative/transformative outcome orientation of cases of energy citizenship. Where:

- reformative outcome orientation is defined by
    - lower level of energy democracy aspirations / commitments,
    - lower level of citizen power and control,
    - shallow (weak) environmental sustainability, and
    - striving towards incremental social change; and
- transformative outcome orientation is defined by
    - higher level of energy democracy aspirations / commitments,
    - higher level of citizen power and control,
    - deep (strong) environmental sustainability, and
    - striving towards radical social change.

It must be noted that the reformative and transformative outcome orientations are not always as clearcut in their manifestation in the cases of energy citizenship as suggested by this definition. In Debourdeau et al. (2022), we show that in many cases the reformative and transformative features are mixed in the cases. In other words, there are cases that are transformative in the way they manifest the social sustainability aspects, but reformative in how they treat the environmental; or vice versa. There are also cases where some the social and environmental aspects are transformative, but others are reformative.

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AGENCY	INDIVIDUAL			COLLECTIVE	
OUTCOME ORIENTATION	PRIVATE (HOUSEHOLD)	ORGANISATIONALLY EMBEDDED (E.G., WORKPLACE)	PUBLIC	CITIZEN-BASED AND HYBRID	SOCIAL MOVEMENTS
REFORMATIVE	1. DO THEIR BIT (in the household) Complying with the green energy transition	3. DO THEIR BIT (within organisations) Energy citizenship within organisations	5. MAKE THEIR VOICE HEARD Participating in societal energy discussions	7. DO THEIR SHARE Joining green energy projects	9. DO THE JOB Facilitating the energy transition through alignment activities
TRANSFORMATIVE	2. DO THEIR OWN (in the household) The change-making energy citizen	4. DO IT THEIR WAY (within organisations) The energy-related change maker in organisations	6. MAKE THEIR VOTE COUNT Mobilising votes for energy transition	8. GO AHEAD Building, expanding and linking citizen-based organisational forms	10. MAKE THEIR CLAIM Protesting against the current energy system

Figure 15: The conceptual typology of energy citizenship developed in the EnergyPROSPECTS project (Debourdeau et al., 2021)

Based on how transformative outcome orientation is defined in Debourdeau et al. (2021), in the mapping stage of the EnergyPROSPECTS research we distinguished 5 aspects of energy citizenship that helped research cases in terms of their reformative vs. transformative outcome orientation. These were citizen power/control, equity/justice, and contestation of the energy system relating to social sustainability; while we included environmental sustainability to represent the environmental aspect. Respecting the carbon limit was not originally specified in Debourdeau et al. (2021) as an aspect determining reformative vs. transformative orientation, but was added in the research methodology development stage to further operationalise the environmental sustainability aspect in a way that is most relevant to energy citizenship (Vadovics et al., 2022a). Table 3 (below) summarizes the 5 aspects and the methodology used for studying them in the two research stages.

In researching the 40 cases in more detail, we revisited the 5 aspects. As indicated in Table 3, we made one change: we replaced "contesting the system" with "energy democracy". We recognise that both the 3 social and 2 environmental sustainability aspects are interrelated and not fully distinct aspects. Energy democracy can be seen to include equity/justice and citizen power, while environmental sustainability the carbon limit. However, they are not always aligned and/or develop in tandem or consistently. Thus, we decided to examine both the 3 social aspects and the 2 environmental aspects separately, because this way we could identify connections as well as contradictions between them.

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Sustainability dimension	Aspect researched in mapping stage	Aspect researched in detailed case study stage	Research methodology
Social	Citizen power/control	Citizen power/control	4-level scale and text explanation
	Equity/justice	Equity/justice	4-level scale and text explanation Additional questions related to disadvantaged groups
	Contestation of current energy system		4-level scale and text explanation
		Energy democracy	4-level scale and text explanation Additional questions related to aspects of energy democracy
Environmental	Environmental sustainability	Environmental sustainability	4-level scale and text explanation
	Carbon limit	Carbon limit	4-level scale and text explanation
	Other ecological limits	Other ecological limits	Yes/No question and text explanation

Table 3: Summary of sustainability aspects studied in the mapping and detailed case study stage of the EnergyPROSPECTS project
(See Annex III for the exact questions in the mapping stage, and Vadovics et al., 2022a for the survey used in the mapping stage. Please note that in the detailed case study stage interviews were also conducted in addition to document research, as detailed in Chapter 2.3.)

The first outcomes of our research, are presented in the EnergyPROSPECTS Factsheet Series: focusing on social sustainability (Vadovics and Szőllőssy, 2023a), environmental sustainability (Vadovics and Szőllőssy, 2023b), and contesting the current energy system (Vadovics and Szőllőssy, 2023c). In the current deliverable we present our analysis in Chapter 6 below, following the clustering of the 40 cases based on the extent to which they recognise and treat the various aspects of social and environmental sustainability. In Part 2 of this deliverable, where we also detail the 40 cases in order, we outline the deliverable briefly based on our case research, and assess how each case approaches the 5 aspects. This is summarised also in a spider chart (see Figure 16 below).

Notably, as this research was exploratory in nature, we were able to learn more about the *objectives of cases*. In the detailed case research stage, we also tried to investigate in some detail *how the objectives are put into practice*,[5] but a deeper, more detailed analysis also collecting quantitative data where relevant and in a more systemic way would be desirable in the future.

[5] Please see Pel et al., 2022 and Vadovics et al., 2022b for details of the research methodology.

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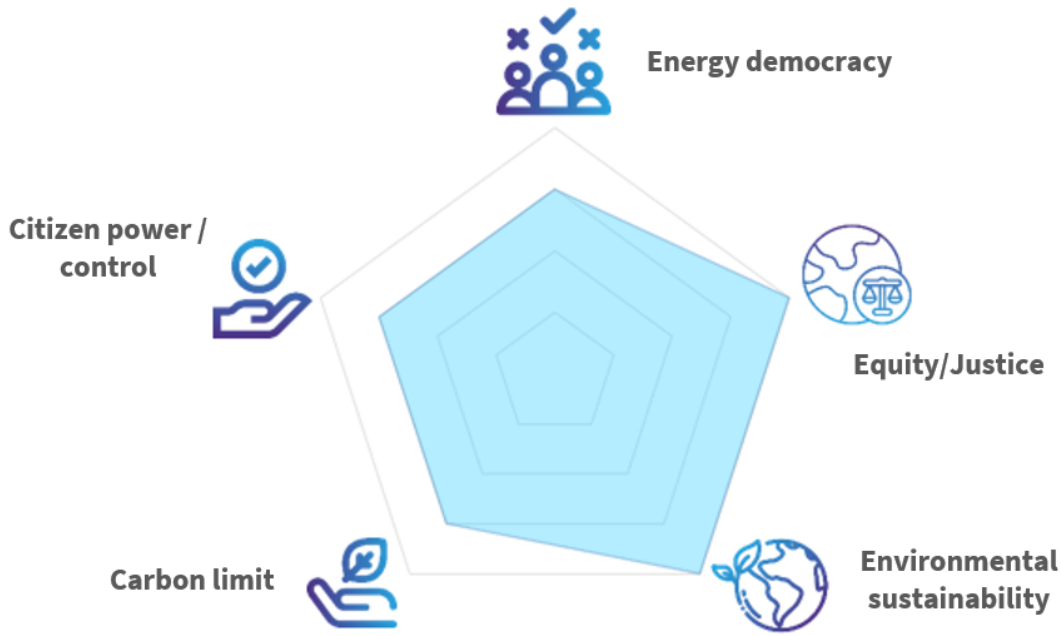

Figure 16: The spider chart used in the EnergyPROSPECTS case summary reports to depict to what extent individual cases consider various aspects of social and environmental sustainability. Fuller charts refer to higher levels of sustainability (for the full description of the various levels for each aspect see Table 4)

In Chapter 5 we follow with explaining the methodology for studying the 40 cases, and then in Chapter 6 we analyse how the 5 aspects of sustainability are manifested in them. Finally, in Chapter 7 we summarise our findings and draw conclusions for future research and implications for policymaking to be further developed under WP6.

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5 EXPLORING THE CONTRIBUTION OF CASES OF ENERGY CITIZENSHIP TO A MORE ENVIRONMENTALLY AND SOCIALLY SUSTAINABLE ENERGY SYSTEM: METHODOLOGY

5.1 CREATING CLUSTERS

This section describes the creation of 4 clusters for the meta analysis in order to understand how cases of energy citizenship (ENCI) contribute to the sustainable energy transition. The creation of the clusters is based on the 5 aspects of ENCI that we studied in our detailed case studies and found the most relevant for moving towards a more sustainable, i.e. more inclusive, just and ecologically sustainable energy system. The 5 aspects are further introduced in Chapter 4, and their description, focusing on the various levels of recognition or consideration in cases (from 1 to 4, or from no recognition to high level of recognition), is summarised in Table 4.

For the creation of the clusters, we looked at the extent to which a case takes into consideration social and environmental issues, based on the 5 aspects, as introduced in Chapter 3. As a result, we can distinguish 4 groups (see also Figure 17 and 18):

- **Cluster 1 (HIGH SOCENV):** high level of consideration given to both environmental and social issues, considering all 5 aspects studied;
- **Cluster 2 (HIGHSOC):** high level of consideration given to social issues, and less to environmental;
- **Cluster 3 (HIGHENV):** high level of consideration given to environmental issues, and less to social;
- **Cluster 4 (NOHIGH):** neither social nor environmental issues are given a high level of consideration.

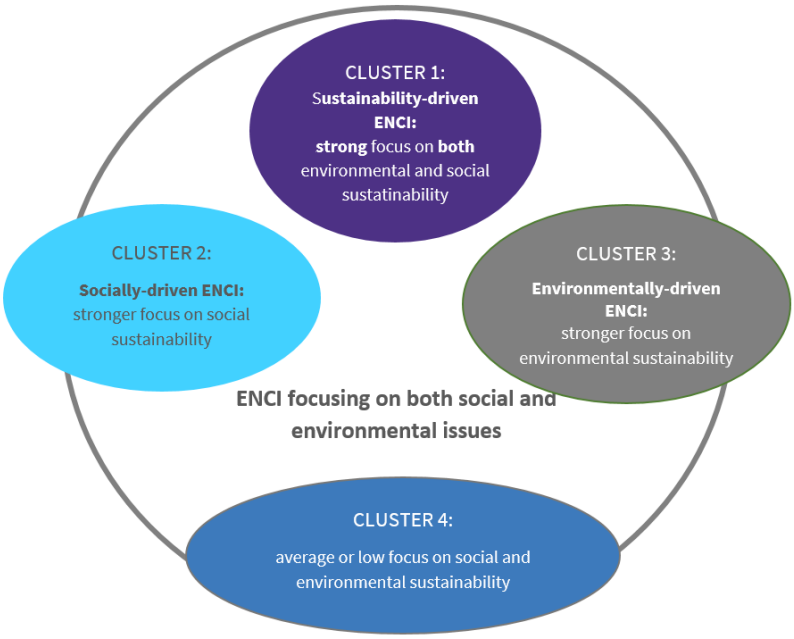

Figure 17: Depicting the 4 clusters

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For deciding which case belonged to which cluster, we considered case researchers' categorisation of them into the 4 levels of importance distinguished for each of the 5 aspects selected.(see Table 4) in the following way:

- **Cluster 1 (HIGHSOCENV)** includes cases where the level of consideration of each of the 5 aspects is
    - "high" for all aspects, or
    - "high" for at least 2 of the social sustainability aspects and one of the environmental sustainability aspects, with "medium" for the remaining ones;
- **Cluster 2 (HIGHSOC)** includes cases where the level of consideration of
    - all social sustainability aspects is "high", or
    - at least 2 of the social sustainability aspects is "high", and the third is "medium";
- **Cluster 3 (HIGHENV)** includes cases where the level of consideration of
    - both environmental sustainability aspects is "high", or
    - one of environmental sustainability aspects is "high" and the other is "medium";
- **Cluster 4 (NOHIGH)** includes cases which do not belong to any of the other clusters, i.e. where neither the social nor the environmental aspects receive a high level of consideration.

It is crucial to note here that this method of clustering does not imply that some of the cases (cf. Cluster 2, 3 or 4) do not have a role to play in the sustainable energy transition. It is simply an indication of where they stand in terms of considering environmental and social aspects at the point of the categorisation conducted by the EnergyPROSPECTS research team. Furthermore, it is also important to remember, that the criteria used for creating the clusters is based on strong environmental and social sustainability, which means that – as shown in Figure 19 –, on average, 40 cases studied consider both aspects of sustainability to some extent, including Cluster 4, but to varying degrees. However, for more transformative change that observes the 1.5-degree objective of the Paris Agreement as well as SDG 7 (access to safe and clean energy and satisfying basic energy needs), cases need to progress from a low level of recognition of both aspects to an explicit recognition with clear objectives. At the same time, all cases are crucial in a societal experimentation towards finding the solutions and approaches that work in various contexts (see also, e.g., Loorbach et al., 2017).

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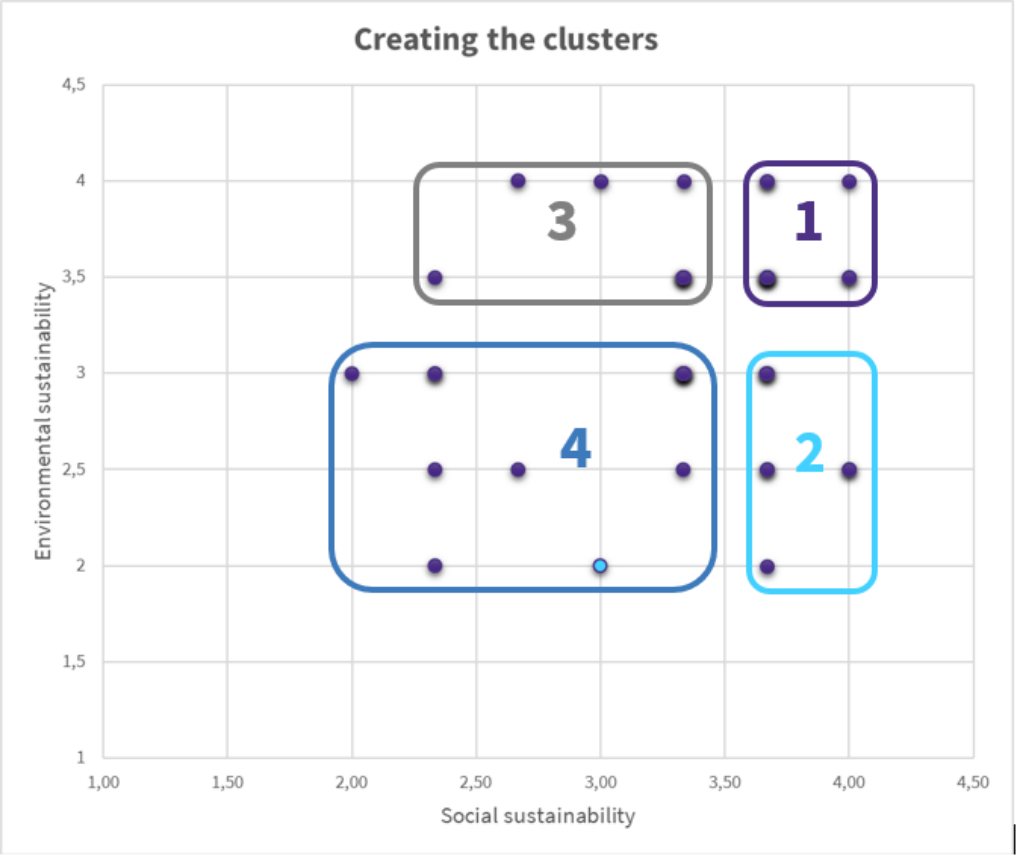

Figure 18: Depicting the clusters in a coordinate system.

The size and shading of the dots is indicative of the number of cases represented by the dot, i.e. a larger dot represents more cases. In order to create the figure, we took the average of the 3 (for social sustainability) and 2 (for environmental sustainability) categorisation values for each case, and then put them on the coordinate system.

Based on this clustering methodology, Table 5 provides a summary of which cases were placed into which cluster.

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Table 4: Summary of the social and environmental sustainability aspects studied in the EnergyPROSPECTS research (Developed based on Debourdeau et al., 2021; Vadovics et al., 2022a and Vadovics et al., 2022b)

	Social sustainability (SOC aspects)			**Environmental sustainability (ENV aspects)**	
Aspects studied	**Energy democracy**	**Citizen control**	**Equity/Justice**	**Environmental sustainability**	**Carbon limit**
1 (not considered)	**Not a goal:** energy democracy has not been among the aims of the case	**No** effective voice citizen power/control	Equity and justice issues are **not relevant** to this case in the sense that they are not addressed by case goals or activities.	Environmental sustainability issues are **not relevant** to this case in the sense that they are not addressed by case goals or related activities	Related to the case concerning case goals and activities, there is **no recognition** or mention of the ecological limit of atmospheric carbon emissions and/or reaching the sustainable carbon footprint
2 (low)	**It is not so important:** energy democracy is considered as a positive value as such, yet the case activities and visions do not really address issues related to energy democracy (whether in terms of democratic participation, inclusive, deliberative and transparent decision-making processes, compulsory and effective decisions).	**Low level:** when expressed (e.g., within "invited" deliberative processes), citizens' voices remain hardly heard or taken into account. Being a minority, citizens' voices do not really count or in a voting process, the framings tend to limit the possibility of expressing an opinion.	Justice or equity are **essentially out of scope**, or restricted to equal access to markets.	Environmental sustainability issues are **mostly seen as self-evident and not explicitly taken into account**. In the lowest forms, environmental sustainability tends to be dealt with as a positive or negative externality.	**Implicit recognition:** there is no explicit mention of the ecological limit of atmospheric carbon emissions and/or sustainable carbon footprint. But despite the lack of formal references to either of them, the case is involved in activities to reduce the consumption and/or emission of carbon.
3 (medium)	**It is important but limited to formal issues:** energy democracy is considered as a positive value that the case intends to support by increasing democratic participation of citizens and improving inclusiveness. Yet, the democratic energy future envisioned remains limited to formal energy democracy (democratic procedures or declaration regarding energy justice).	**Medium level:** citizens can express their views, but their voices are not compulsory (within deliberative, representative or consultative processes). Within organised / participative structures, citizens remain a minority group, i.e., unable to impose their views to other groups.	**Equal access is granted to all concerned citizens, but the framings tend to limit** them to a certain geographical area or amount of financial contribution, which does not guarantee "real" equity	Environmental sustainability is **part of the process or case, but this concern is addressed in a superficial (non-radical) way** (focus on efficiency strategies) and without dedicated assessment. Energy remains the main focus.	**Explicit recognition:** the ecological limit of atmospheric carbon emissions and/or sustainable carbon footprint is mentioned in core case documents and the actors involved in the case are clearly engaged in attempts to reduce consumption and/or emission of carbon.
4 (high)	**It is core concern:** a more democratic energy future is a core concern of the case, and parts of its vision. The case aims at promoting an effective democratisation of the energy system by putting it in citizens' hand, and intends to implement concrete actions to improve access and inclusivity to self-governance.	**High level:** citizens exert the effective control, and their votes are mandatory. This governance takes place mostly in an "invented" process (as opposed to "invited" ones by Radtke et al., 2020). Citizens represent a majority group, empowered enough to control the process, and thus make their voices predominant.	**Involvement is fully open**, without specific belonging conditions. Issues such as energy poverty, gender and inclusivity are taken into account and foster adaptive measures to guarantee more equity.	Environmental sustainability is **a core issue, and it is even considered in goal setting**, which is followed with a holistic strategy (mix of efficiency, consistency and sufficiency measures). Its assessment through indicators is seen as desirable.	**Explicit recognition with mention/objective of reaching the max. carbon footprint:** in addition to mentioning the ecological limit of atmospheric carbon emissions and/or sustainable carbon footprint, the maximum sustainable carbon footprint and/or emissions are also defined.

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Table 5: The 40 cases by the 4 clusters. Note that countries are listed only to help place the cases.
Note that the number of cases from a certain country in a cluster is not intended to suggest that these countries have more cases in a specific cluster than others.

Cluster 1: Sustainability-driven ENCI (HIGHSOCENV)		Cluster 2: Socially-driven ENCI (HIGHSOC)		Cluster 3: Environmentally-driven ENCI (HIGHENV)		Cluster 4 (NOHIGH)	
Name of case	**Country**	**Name of case**	**Country**	**Name of case**	**Country**	**Name of case**	**Country**
Extinction Rebellion Etterbeek	BE	Berlin Energy Citizen	DE	Hydro Electricity Ourthe and Sambre	BE	Energy efficiency mission ULB	BE
SoLocal Energy	DE	Trégor Energ'éthiques	FR	BBL Home renovation campaign	BE	Energy Transition of City of Burgas: Going Smart and Sustainable	BG
LaVidaVerde	DE	Biomass briquettes programme (for the energy poor)	HU	Student Switch Off campaigns in Bulgaria	BG	Student Energy Teams	BG
GoiEner Taldea	ES	Galway Energy Co-operative	IE	Naturstrom AG	DE	Bike Evolution	BG
Railcoop	FR	Energy Communities Tipperary Cooperative	IE	La borda. Housing cooperative in transfer of use	ES	Som Energia – Green Energy Cooperative	ES
Shared Energy	FR	National Association of Active Residents	NL	Zsuzsanna Hojtsy-Keresztény - EnergyNeighbourhoods energy master, local change maker	HU	Couso´s project	ES
TreeDependent	HU	Loenen Energy	NL	Social media influencer "Edgar Fresh"	LT	Hauts-de-France Pass Renovation	FR
Cargonomia	HU	Weert Energy	NL	Drechtsteden Energy	NL	Nagypáli, the renewable energy village	HU
From the Community Energy Programme to Community Energy Service	HU					Consultation: Shaping Our Electricity Future	IE
Aran Islands Energy Cooperative	IE					Installation of solar heat panels in multi-apartment building, complementary with energy efficiency improvement of the building	LT
Citizens' Assembly on 'How the State can make Ireland a Leader in tackling Climate Change'	IE					OFF-GRID: RENEWABLE ENERGY DIY (DO IT YOURSELF) FOR RURAL DEVELOPMENT. (Off Grid project)	LT
						Association "City for people"	LT
						Reindonk Energy	NL

5.2 ANALYSING THE CLUSTERS AND THE 40 CASES

In Chapter 6 below, we explore the clusters and the 40 cases in light of their approach to social and environmental sustainability. In our analysis, we rely on the detailed case research conducted in the project. The methodology used for conducting this research is introduced in Chapter 2.3, and Annex III includes those questions of the detailed case study survey that were considered and analysed for the current work. All quotes, unless otherwise indicated, are from the case researchers conducting the case study in question.

Chapter 6 is divided into four sub-chapters, each focusing on the main characteristics of one of the 4 clusters identified above. In each sub-chapter, we first analyse the cases in the cluster, following the same structure:

- we first provide a general overview and introduction to the cluster and the cases classified there;
- this is followed by an analysis of the objectives of the cases in the light of the main characteristics of the cluster, i.e. how the cases address social and environmental sustainability;
- then we look at the evolution of objectives and whether there was a change especially related to how the cases approach the aspects of sustainability;
- finally, we explore how the 5 sustainability aspects are manifested in the cases.

In addition to analysing the cases in each cluster, we also provide a general overview of all the 40 cases studied in the light of the cluster studied. For example, following the analysis of cluster 1 cases, where those cases are placed that connect social and environmental sustainability most strongly, we examine the connection between social and environmental sustainability in the 40 cases, illustrated by summary cases data.

Finally, it needs to be noted that the consortium concluded detailed cases data collection in May 2023, and case summary reports (included in Part 2 of this deliverable) were last reviewed in November 2023 by case researchers and case owners/participants.

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6 EXPLORING THE CONTRIBUTION OF CASES OF ENERGY CITIZENSHIP TO A MORE ENVIRONMENTALLY AND SOCIALLY SUSTAINABLE ENERGY SYSTEM: ANALYSIS

6.1 CONNECTING SOCIAL AND ENVIRONMENTAL OBJECTIVES

6.1.1 EXPLORING CLUSTER 1

As indicated in the previous chapter, **this cluster includes 11 of the 40 cases** the EnergyPROSPECTS research team studied in detail (Table 6). The cases in this cluster are found in 5 different countries, and based on their main energy citizenship ideal-type, they are mainly citizen-based and hybrid cases (Type 8, see Table 6 and Annex I). There is also one social movement (Extinction Rebellion Etterbeek, Type 10), and one case with public individual agency (Citizens' Assembly in Ireland, Type 5) among them. Except for the latter, they all show collective agency.

Name of case in English	Short name	Country	Main ENCI ideal-type (current)	Secondary ENCI ideal-types (current)
Extinction Rebellion Etterbeek	XR Etterbeek	BE	Type 10	2
LaVidaVerde	LaVidaVerde	DE	Type 8	2,3,4,10
SoLocal Energy	SoLocal	DE	Type 8	2,10
GoiEner Taldea	GoiEner	ES	Type 8	9
Railcoop	Railcoop	FR	Type 8	4
Shared Energy	Shared Energy	FR	Type 8	10
Cargonomia	Cargonomia	HU	Type 8	
From the Community Energy Programme to Community Energy Service	From CEP to CES	HU	Type 8	6
TreeDependent	TreeDependent	HU	Type 8	2,7
Aran Islands Energy Cooperative	Aran Islands	IE	Type 8	2
Citizens' Assembly on 'How the State can make Ireland a Leader in tackling Climate Change'	CA Ireland	IE	Type 5	6

Table 6: The 11 cases in Cluster 1 (see more details in Annex I)

2 of these 11 cases were categorised as "high" for all 5 of the sustainability aspects we studied in more detail in the project: Extinction Rebellion Etterbeek (BE) and SoLocal (DE), a social movement and a citizen-based and hybrid energy citizenship case.

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As a first step in investigating how these cases connect social and environmental objectives, we studied their **objectives**[6] asking whether these two dimensions of sustainability already appear there, and if so, how.

First of all, we have found that, as observed by case researchers, the majority of the cases (7 out of 11) include both social and environmental aims among their objectives. Some in a more theoretical and general way (e.g. Shared Energy in France), others in a much more pragmatic manner (e.g. Cargonomia in Hungary), still others combining the two (e.g. LaVidaVerde in Germany).[7]

Then, there are 4 cases that are slightly different in how the objectives are formulated. On the one hand, there is the Aran Islands Energy Cooperative where the objectives focus on preserving the culture and identity of the islands. On the other hand, there are 3 cases (the Citizens' Assembly in Ireland, GoiEner Taldea in Spain and Railcoop in France) that place the emphasis on the social dimension of sustainability in their main objectives, focusing on energy democracy, empowering and involving citizens. Thus, these cases, even though they clearly connect environmental and social sustainability in how they operate, including the principles of their operation (please see Part 2 of this deliverable for the case summaries, especially the spider charts included in them), their objectives do not explicitly deal with the environmental dimension.

In addition to looking at the objectives of the cases from the point of view of social and environmental sustainability, we also wanted to see whether they are reformative or transformative in nature, in other words, **whether they all challenge the current system, or they also have some less-challenging, perhaps system-confirming goals**. Here, also relying on case researchers' input to the respective questions of our case study survey[8], we find that with the exception of Shared Energy (France), which only has transformative objectives, all the other cases have both reformative and transformative ones. With some of the cases, the reformative objective refers to the pragmatic way the more transformative objectives are put into action. For example, XR Etterbeek is undertaking direct environmental action and activism, or the CA Ireland is using the assembly format, and Cargonomia sustainable mobility (cargo bikes) to communicate as well as to put into practice transformative ideas at a local scale, while also challenging the local system in practice.

Concerning the transformative objectives, it needs to be noted that **the majority of the cases focus mainly on challenging the energy – or related to it, the mobility - system**, and laying down the very transformative principles AND practice for a new energy and

[6] If you wish to study the specific objectives of each case, please refer to the case summary reports in Part 2 of this deliverable, available at https://doi.org/10.5281/zenodo.10265959

[7] For the case objectives, please see the case summaries in Part 2 of this deliverable at https://doi.org/10.5281/zenodo.10265959

[8] Please see Annex III for the relevant detailed case study survey questions.

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mobility system built on democracy with empowered and informed citizens, community, solidarity, sufficiency and remaining within planetary boundaries. Shared Energy and Railcoop (FR), GoiEner Taldea (ES), From CEP to CES (HU) or the Aran Islands Cooperative (IE) are great examples to cite in this regard.

However, there are **cases that go beyond the energy system**, and in their objectives as well as activities wish to challenge the larger system – of which, naturally, the energy system is an important part of. Cargonomia in Hungary, SoLocal and LaVidaVerde in Germany and XR Etterbeek in Belgium are examples of these cases. To illustrate, we quote

- first from Cargonomia, which wishes to create a model for how Degrowth principles can be put into action, according to Lazányi; *"The mission of this group is to contribute to sustainable transformation toward a socially and environmentally just future by questioning the dominant economic system through practical, educational and research activities."* (2022:82).
- and then a SoLocal participant, from an interview conducted: *"In this way, we want to contribute to the global climate change. By this we mean not only the energy transition as an independent project, but also a socio-ecological transformation of the areas of housing, electricity, mobility, food and other consumption. Together, we build small solar systems (as ready-to-plug-in balcony power plants), large solar systems (in community solar self-construction with amateurs) and accompany neighbourhoods in climate protection projects in the neighbourhood."*
- and finally, from XR Etterbeek, one of the main objectives of which is to create a Citizen Council with executive power to steer the country away from the climate crisis: *"equip our regions and communities with the resources and the authority to ensure a managed transition to an equitable post-growth society."*[9]

As a next step, we were also interested to see whether there were **any changes related to the objectives of the cases**, indicating whether their evolution included strengthening the connection between the environmental and social aspect. To find out more about this, we looked at the evolution of the cases concerning the energy citizenship ideal-types, and mainly whether there was a change from a more reformative orientation to a transformative one. In addition, we also looked at whether their objectives changed over time. Regarding the first question, we found that 3 of the cases did indeed change from a reformative to a transformative orientation, all relatively early in their development (From CEP to CES and TreeDependent in Hungary, and GoiEner Taldea in Spain, see Annex II, and also in Part 2, in the individual case summaries.) 2 of these cases, From CEP to CES and TreeDependent, and SoLocal (DE), also broadened the scope of the change their targeted with their activities,

[9] Source: https://www.extinctionrebellion.be/en/#section-demands (Accessed 30.09.2023)

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along with the objectives. In the case of SoLocal, in the wording of the case researcher, *"even the case actors consider the case as an ongoing and evolving process, through which they intend to go ahead towards people´s engagement in the energy transition. Therefore, if some of their activities tend to become "mainstream", such as the balcony solar plants, they intend to use the basic revenue from it to develop further innovative projects."* For most of the other cases, although the overall scope remained unchanged, the objectives also broadened. For example in the case of XR Etterbeek the case researcher observed that *"their joining of the 'Code Rouge' coalition has introduced a certain broadening of objectives beyond the core focus on climate/environmental crisis"*.

There are also cases where both the scope of change and the objectives remained unchanged, as in the case of LaVidaVerde, the CA Ireland and Railcoop. They are similar in that they set very clearly defined aims, but at the same very different in nature, with LaVidaVerde having a longer history and evolving throughout the years of its development, while Railcoop being a young case, and the CA Ireland case setting out and completing its objectives in a shorter, well-defined period of time.

Finally, there is one case, GoiEner Taldea (ES) where both the scope and objectives were narrowed down for a while, mainly to assure the survival of the case. It needed to adapt to the prevalent financial system at the time, rather early in its development, signalled by a change in the main energy citizenship ideal-type as well (Figure 19). However, later on in its evolution, the case returned to its more transformative objectives (please see more details of this process in Part 2, in the individual case summary).

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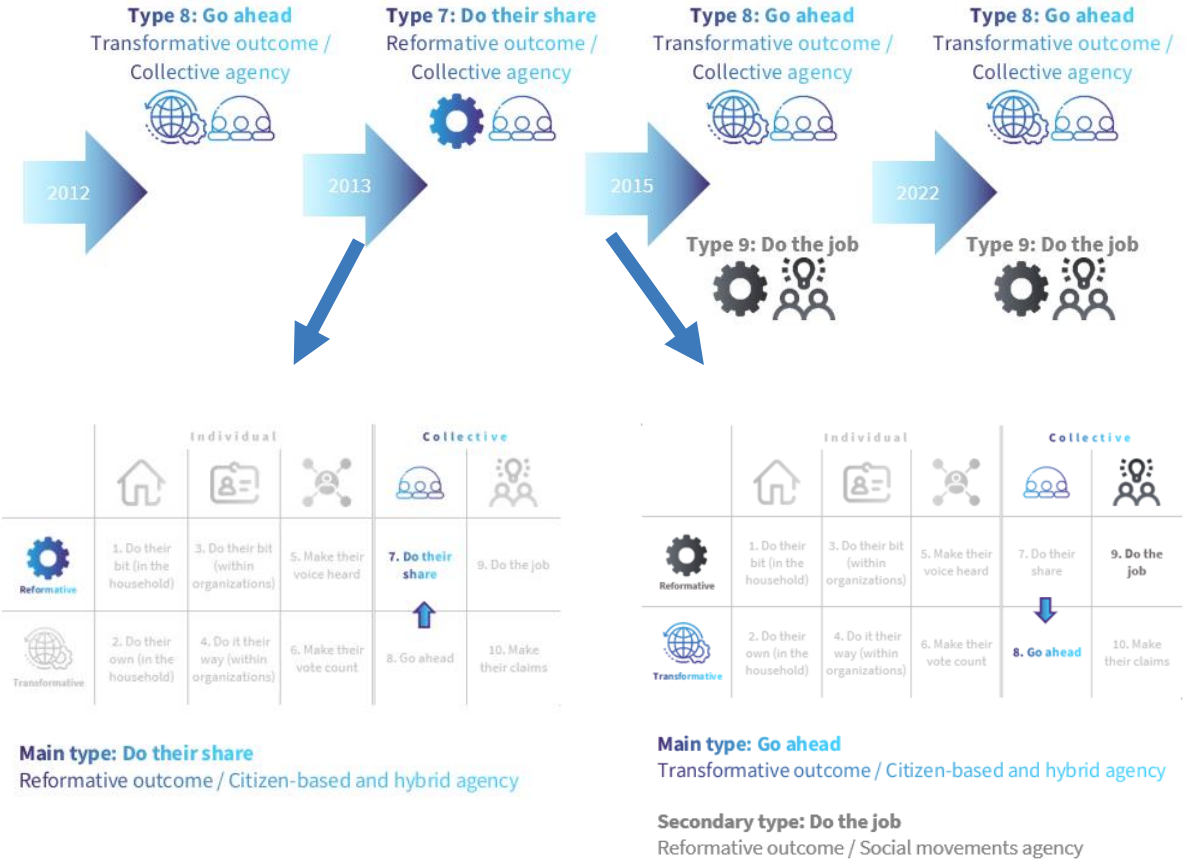

Figure 19: Development of GoiEner Taldea (for further details on the case please refer to the Case Summary Report in Part 2 of this deliverable)

Finally, we examine **how the high level of consideration for both social and environmental sustainability issues is manifested in the cases**. We go through the 5 aspects one by one.

We start with taking a more detailed look at how the 11 cases in Cluster 1 approach **energy democracy**, which is a core concern (i.e. was evaluated as "high" or "4" for all eleven of the cases, i.e. this is the one aspect out of the 5 studied that was evaluated as "high" for all cases.

There are two different ways energy democracy is manifested in the cases, **through their objectives**, on the one hand, and in **how they are implemented and operated**, on the other. For example, one of the objectives of XR Etterbeek (BE) is to create a Citizen Council in Belgium with executive power to ensure decisive climate action in the face of the climate emergency. In the words of the organisation, *"A Citizens' Assembly, equipping our regions and communities with the resources and the authority to ensure a managed transition to an equitable post-growth society"*. XR challenges representative democracy regarding its incapacity to act on the climate/environmental crisis. In doing so, XR is also very strongly committed to alternative, horizontal and inclusive modes of decision-making and direct

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democracy. Their internal decision-making is in line with these principles/objectives. A similar objective is formulated for the Aran Islands Energy Cooperative (IE), which is designed to be *"the vehicle through which all the island residents can share their opinion on the clean energy transition"* and *"acts as an open and island-wide platform that consists of and is supported by actors from multiple stakeholder groups that drive the energy transition process"* (Clean Energy for EU Islands, 2019). Another example is Railcoop (FR), which is supporting a more democratic energy future in two key ways: first, in offering a service that allows citizens to access sustainable rail mobility services, especially in rural regions that has suffered from train station closure policies in the past decades. Second, as an internal aspect, the cooperative is governed democratically, with a general assembly. Cooperative members can establish thematic discussion groups that allow any member to take part in decisions outside the general assembly. Thus, in all 3 of these cases, just like in other cases, such as LaVidaVerde (DE), GoiEner Taldea (ES) and Shared Energy (FR), the **principle of self-governance** very strongly emerges.

The Shared Energy case also introduced a unique, **quality check tool** in the form of the Energie Partagée (Shared Energy) label. Through the label, the Shared Energy case supports strong democratic governance of citizen energy projects, local ownership and limits financial profits to ensure that investments are used for clean citizen energy production, not for speculation.

Furthermore, in some cases, such as SoLocal (DE), energy democracy is considered to be the **basis for democracy in other areas**, and the basis of a solidarity based, decentralised economy. As the case researcher summarised her findings from the case documents and interviews conducted: "*In the association´s view, this [energy democracy] can also provide the impetus for a more decentralised solidarity-based economy that is more closely oriented to the needs of the people. SoLocal energy considers itself as part of the worldwide search movements that develop community-based economy with renewable energies, solidarity-based agriculture and global solidarity, solidarity-based agriculture and global solidarity."*

Shared Energy wishes to ensure that citizen energy projects do not become a subject to financial speculation, and SoLocal is taking a position **against the current economic system** and purely economic interest. LaVidaVerde does the same mainly regarding housing and real estate, GoiEner Taldea regarding the energy market, Cargonomia in their effort to operationalise degrowth and create an alternative societal model. Thus, in these cases **energy citizenship becomes part of a larger effort to create an alternative model to the current capitalist, and highly centralised one.** Notably, energy democracy in several cases is explicitly connected to, or rather, seen as the basis for reaching social and environmental objectives, as well as to ensure sustainable economies at the local level.

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As the cases beautifully illustrate, energy democracy can be approached from various aspects, which are illustrated in Table 7, indicating which aspect of energy democracy each case supports. Under the category "other" for several cases it was mentioned that they are **creating a role model for others to follow,** for example

- CEP to CES in HU has been developing and implementing the first community energy projects in Hungary, and thereby creating something like a template to follow for other communities,
- LaVidaVerde in DE created a socially and environmentally sustainable co-housing project) that others can copy and adapt, especially thanks to the operation model elaborated by an intermediary, the Mietshäuser syndicate cooperative, which is supporting about 200 projects of this kind across Germany,
- TreeDependent (HU) developed a model for carbon-aware events that take responsibility for their climate impact through a reduce-calculate-compensate model, or
- SoLocal (DE) has created a model for inclusivity via a DIY focus.

Short name of case	… by enabling or expanding individual/collective ownership of energy infrastructure	… by initiating and/or participating in public decision-making processes	… by making its voice heard in the public debate	… by providing a forum for deliberation on energy	… by improving accountability in energy sector and governance	… other:
XR Etterbeek	x		x			
LaVidaVerde	x		x			x
SoLocal	x		x	x		x
GoiEner	x	x	x		x	
Railcoop	x	x	x	x	x	
Shared Energy	x	x	x	x	x	
Cargonomia	x	x				
From CEP to CES	x	x		x		x
TreeDependent			x			x
Aran Islands	x	x		x		
CA Ireland	x	x		x		

Table 7: The different expressions of energy democracy in the cases in cluster 1

The aspect of energy democracy is strongly connected to how cases approach and put into practice citizen power/control as well as equity and justice issues.

As for **citizen control**, several cases (XR Etterbeek (BE), LaVidaVerde, SoLocal (DE), Cargonomia (HU)) aim for a kind of democracy that is more horizontal and direct, and **goes beyond representative democracy**. Furthermore, they do not only aim for direct democracy, but put it into practice as well. For example, XR Etterbeek believes that a Citizen Council with executive power should be set-up since the current system, based on representative democracy, is not able to deal with the challenge of climate emergency.

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LaVidaVerde operates based on the principles of direct democracy as well, in the words of the case researcher *"The decision-making process is thus centred on consensus, even beyond the democratic principles, to ensure the cohesion of the community and the adhesion of each member to each decision that is undertaken within LaVidaVerde."*

Another interesting aspect of how citizen control is manifested is that several cases **distinguish between different roles in decision-making and participation** (e.g. SoLocal (DE), GoiEner (ES), Cargonomia (HU), Shared Energy (FR), Railcoop (FR)). Their founding documents or charters, or in the case of Cargonomia, their observed practices, list the roles of members, employees and volunteers, affiliated members, supporting members, etc., all with differentiated roles and rights related to the practice of citizen control. Having founding documents or charters is an important aspect in itself, and something that provides a legal frame for how citizen power is put into practice and is manifested. However, it needs to be mentioned that some cases recognise that **the existing legal framework sometimes puts a limit on how much can be achieved**, and thus Cargonomia, for example, is not a registered organisation partly for this reason, i.e. to eliminate this barrier to exercising a higher level of citizen control.

Concerning **equity and justice**, just like in the case of energy democracy and citizen power, we can talk about the recognition of equity and justice issues in the case objectives, and also in the way cases operate (procedural equity/justice). In relation to the latter, several interrelated aspects of equity and justice emerge when taking a closer look at the cases, as most of the examples we cite below illustrate.

- **Sharing power, giving power to members, inclusive governance;**
  Examples include
  - XR Etterbeek which states on their website that *"6) We welcome everyone and every part of everyone working actively to create safer and more accessible spaces. 7) We actively mitigate for power breaking down hierarchies of power for more equitable participation."*[10]
  - In the Aran Islands Energy Cooperative, membership to the cooperative is open to all residents of the three islands. Everybody is allowed to join the annual meetings as non-voting participants, not just the members.
- **Accessibility of what the case offers, and sharing of "benefits",** the energy resource and infrastructure, the ability to satisfy basic energy needs,
  - ➢ this aspect also includes paying attention to **energy poverty and gender issues related to the energy** (or the larger societal) system;
    - A particularly interesting issue of accessibility is raised by the Shared Energy

[10] Source: https://join.extinctionrebellion.be/starter-kit/our-principles-and-values (Accessed 30.09.2023)

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case where participants mention that they wish to make community energy/citizen energy as such available throughout France, so that citizens everywhere in the country can have access to it and benefit from it, and not just in regions where organisations, including e.g. municipalities, are more supportive and forward-thinking.

- Another example is Cargonomia *"is open to everyone, with a special focus on those who are disadvantaged and marginalized. They hire Roma people at Zsámbok to help out with the land; they have projects with autistic people; they planned two projects with high schools from the [disadvantaged] 8th district, […]; […] and hired an Iranian refugee who is by now well integrated in Hungary and they work closely together with the eco-feminist movement as well."*
- In the case of TreeDependent, which offers a service related to organising carbon-aware events built on the principles of reduce-calculate-compensate for impact, *"the project is paying special attention to social aspects, such as: involving institutions which deal with people with special needs, or coming from disadvantaged background. The trees [planted as compensation] have a fixed price, but the calculation/the service provided by the project is adjusted to the customer – making the project more equal."*
- GoiEner states that *"a fair model of the energy system cannot leave anyone without the basic resources to live a dignified life. […] Its social concern focuses on training and providing tools to different people and groups to tackle energy poverty."*
- Railcoop is open for everyone to become shareholders, and its services will aim at matching the price for car-sharing, hence favouring social inclusion and access to rail mobility for all. It has inclusiveness feature with the rail lines that are to be operated, since it will connect villages and small cities that are not currently part of the rail network anymore.

- **Solidarity and sharing of "burdens"** of energy production and consumption;
  - In the case of CA Ireland *"the deliberation itself followed principles of deliberative democracy, which includes transparency, mutual respect and equality of voice. Finally, issues raised around fairness, climate justice and social justice made up a considerable portion of the public submission and also found recognition into the final recommendations."*
  - As for LaVidaVerde, the solidarity it demonstrates in every-day life as well as through the group fund aimed at helping the residents that would face financial difficulties.
  - A SoLocal interviewee stated that *"we want to use our knowledge and resources for people who are not so privileged and are affected by the power cuts described above. Because we think: there is a basic right to energy. After all, the sun shines down on all of us equally all the time, only a few have the*

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means to "harvest" it. It is precisely this resource that we want to make usable for people with power cuts: A mobile balcony power plant that works as an island system and can be borrowed from the neighbourhood centre. Often, only a few weeks have to be bridged until the mains electricity flows again."

- **Participation and involvement** in the cases, and also issues related to the energy system, and - related to these - **diversity in membership**;
    - In the CA Ireland case this is summarised as *"Although access to assembly is restricted/randomised, it is designed to accurately represent the Irish public through its selection of the 99 members, which includes indicators of age, gender, social class and regional spread."*
    - LaVidaVerde also includes very practical considerations, such as ground floor equipped to welcome a disabled person, as well as mentioning the inclusion of people with non-German origins, and being an intergenerational co-housing project.
    - SoLocal considers that *"Electricity is an important prerequisite for participation in public life. Imagine: No electricity - no mobile phone charging, no cooker, usually no hot water, no light, no computer, no washing machine..."*, which relates to the ability to satisfy basic energy needs, but it is also taken further in that it sees the ability to be part of the energy system as a pre-requisite for public participation in general.
- **Ownership of energy or energy-related resources and infrastructure;**
    - Although several of the cases in cluster 1 are community energy cases, it is mainly LaVidaVerde, a co-housing initiative with shared energy generation infrastructure that explicitly mentions joint ownership as part of dealing with equity and justice issues. Other cases focus more on how community shares could be made more equitable e.g. by limiting one person's ownership (e.g. GoiEner Taldea) or reducing the minimum amount required to allow more people to participate (e.g. Shared Energy).

Only 4 cases were categorised as "medium" (and not "high") regarding their treatment of equity/justice issues. 2 of these because they are place-based cases such as LaVidaVerde and Aran Islands Energy Cooperative, which puts limits on the accessibility of the cases. In the Shared Energy case there is a minimum price to be paid for someone to become a member, and although there is a special, lower price available for disadvantaged members, it still creates a condition on accessibility. Furthermore, as mentioned above, there is a recognition by the case that community energy is at the moment not available everywhere in the country (i.e. France), and thus highlights an additional important, geograrphical/regional dimension of equity. Finally, in the From CEP to CES case, not the case itself, but the national-level legal framework puts limits on equity/justice as not everyone or every community has the opportunity to actually form an energy community.

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Regarding **environmental sustainability**, 9 of the cases were categorised as "high" regarding how they consider environmental sustainability, and the remaining 2 "medium". And, indeed, these cases mostly take a strong environmental sustainability approach (Ekins, 2014; Lorek and Vadovics, 2018) as to both their objectives and operations, and **see their energy and climate change focused activities as part of a broader change process**. This is very well formulated, for example, by SoLocal by one of the case participants: *"… we want to contribute to [mitigating] global climate change. By this we mean not only the energy transition as an independent project, but also a socio-ecological transformation of the areas of housing, electricity, mobility, food and other consumption."* GoiEner Taldea also states in its socio-economic report (Auditoría Social Reas Euskadi, 2021) that they work in the search for sustainable solutions, helping to create sustainable spaces from an energetic, social, vital and ecological point of view. Railcoop is dedicated to make the ecological transition happen while respecting strong social standards and to reduce trains' ecological footprint as much as possible. Thus, they adapt a global perspective to the transformation of our interpersonal relationships and our environment.

Further transformational approaches and objectives are mentioned by several other cases, including even the cases with a "medium" assessment, indicating that energy remains in the focus of the case. For example:

- Shared Energy mentions taking an approach that combines sufficiency and efficiency, and as concluded by the case researcher, "*commits to fostering the reduction of energy needs. Ideally, the long-term objective is that only remaining energy needs should be covered by renewable energy citizen projects."*
- The From CEP to CES case cites the responsibility of rich nations in their leaflet: *"Europe and other industrialised countries are historically, legally and morally responsible for climate change; they have a duty to be the first and fastest to act. Waiting for circumstances to change, or for others to take the lead, is not a responsible and acceptable way forward."* (MTVSZ, 2013:2)
- 2 of the cases, TreeDependent and the Aran Islands Energy Cooperative explicitly connect climate change issues to biodiversity issues, further highlighting the complexity of approaches needed if change is to be transformational. This finding is further supported by the fact that the majority of the cases in cluster 1 not only focus on the carbon limit, but also on other ecological limits in their work.
- Finally, it is important to mention that the Aran Islands Energy Cooperative case also introduces the idea that **nature should be protected for itself**, for its innate value, and we should aim to be *"sensitive to the beauty and richness of the natural environment in which we live"* (CFOAT, 2022).

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In conclusion to this section, it is also important to note that the cases pay careful attention to how their activities are implemented as well, and in this, as mentioned earlier, they **connect more global objectives to local implementation and everyday practices**. A very good example for this is SoLocal transporting balcony solar panels to be installed and the tools needed for the installation by cargobikes.

The **carbon limit** is **recognised explicitly by all cases in cluster 1**. The difference between cases lies in the fact whether this explicit recognition is paired with having concrete reduction objectives, that are ideally also matched with scientifically approved targets (e.g. the 2.5 CO_2e/cap/yr value for 2030 published e.g. in UNEP, 2020; or the 1.5 °C target recognised by the Paris Agreement). XR Etterbeek as well as the CA in Ireland case typically are very vocal about this objective, but several other cases, e.g. TreeDependent and SoLocal also mention this as one the main principles, or even objectives of their operations.

It also needs to be mentioned that many of the cases in cluster 1, including even some of those that were categorised as "medium" use some kind of a **calculation and/or monitoring system** to keep track of their environmental, including climate, impact. In the selection of cases we analysed in the EnergyPROSPECTS project, it is perhaps GoiEner Taldea and LaVidaVerde that implement the most complex reporting by publishing a socio-economic report and detailed data regarding various aspects of their operations. GoiEner also works with the Carbon Footprint Foundation Commission to consider and compensate for their carbon footprint. Furthermore, the example of Railcoop needs to be mentioned as "*The initiative is presented as a response to the climate emergency and has carried out direct and indirect carbon footprint calculations of their freight and planned passanger train services. The analysis showed that with Railcoop services included in the overall rail transport network in France, there is a potential for significant emissions reductions (33-59%).*"

In relation to recognising the carbon limit, it also needs to be noted that several cases explicitly **link their related plans, targets and activities to local and national climate and/or energy strategies** as well. Examples include the Aran Islands Energy Cooperative, which in addition to local and national plans, also explicitly links to the Clean Energy for EU Islands (2019) objectives.

Finally, regarding the carbon limit, several cases also undertake to not just consider it for the case, but also aim to educate and increase the capacity of others related to it (e.g. TreeDependent in Hungary, Shared Energy in France).

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6.1.2 CONNECTING SOCIAL AND ENVIRONMENTAL OBJECTIVES IN ENERGY CITIZENSHIP: EXPLORING ALL 40 CASES

For all the 40 cases, we provide an overview of, and contrast selected sustainability aspects, in order to focus on how environmental and social aspects are connected – or not connected. Based on our preliminary exploration of the same issue in the larger database of 596 cases summarised in the Energy Citizenship Factsheet Series (see Part 7, 8 and 9 specifically) and the Country profile reports, we decided to contrast the equity/justice aspect with both environmental sustainability and the carbon limit, and then did the same with energy democracy. The resulting coordinate systems are shown in Figures 20, 21, 22 and 23 and first just the number of cases in the coordinate systems, and then the names of cases entered as well.

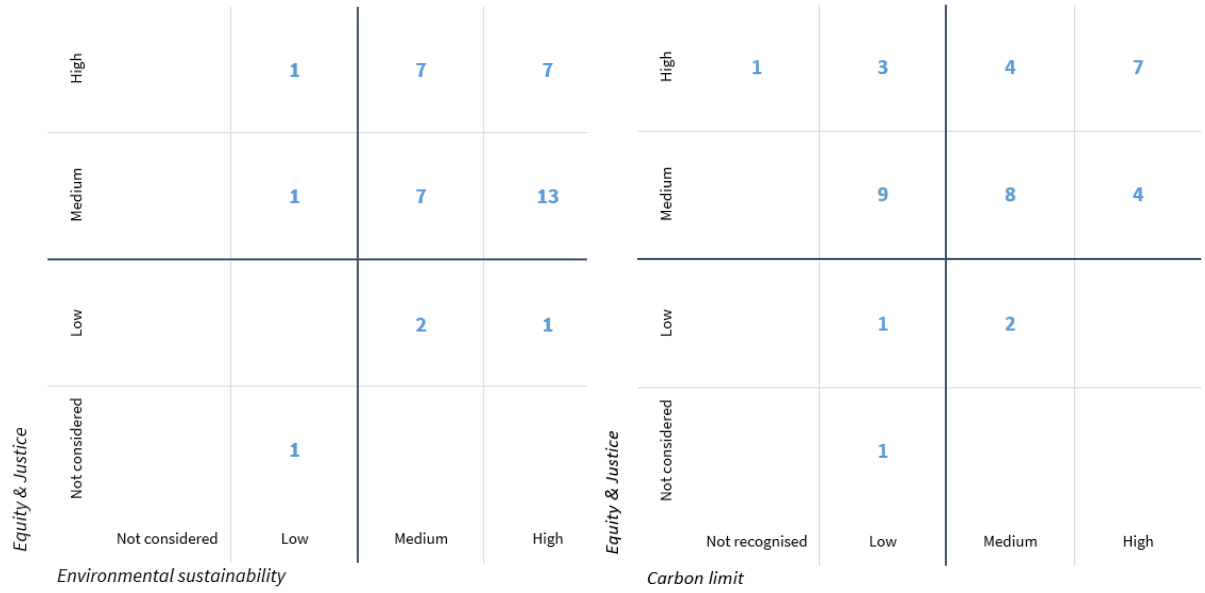

Figure 20: Detailed cases according to their approach to equity & justice vs. environmental sustainability and the carbon limit

As Figures 20 and 21 show, in case of environmental sustainability and either energy democracy or equity/justice, the majority of the 40 cases fall within the top right quadrangle of the coordinate system, which means that they do combine social and ecological aspects in their objectives and activities to some extent. However, the same cannot be concluded about the carbon limit. Many cases fall outside the top right quadrangle in both cases (18 in the case of equity/justice, and 20 in the case of energy democracy, so around 50% of the cases). This suggests that in these cases the 2 aspects of environmental sustainability are not yet connected, and a certain level of awareness raising would be needed to explore the issue. This would be necessary related to (1) the co-dependence of environmental sustainability and the explicit recognition the carbon limit (see more about the latter in Chapter 6.3 below), (2) the very serious (in)equality issues regarding per capita average carbon footprints (Oxfam, 2023) as well as (3) the relationship between energy inequality

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and human well-being (Millward-Hopkins, 2022). Thus, **the cases "movement" towards the top right quadrangle would have multiple positive societal impacts**. In many cases (i.e. the cases that are currently classified as "low" in the second coordinate system in Figures 20 and 21) this would mean making the already existing implicit recognition of the carbon footprint explicit as a first step.

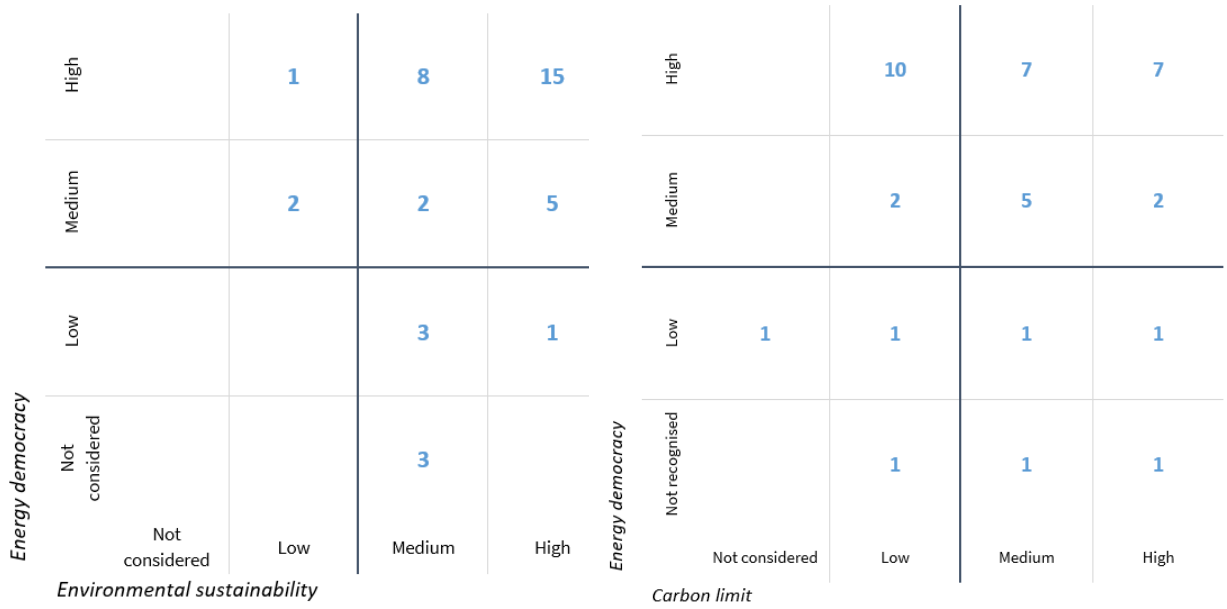

Figure 21: Detailed cases according to their approach to energy democracy vs. environmental sustainability and the carbon limit

At the same time, as many cases already connect the recognition of the carbon limit, action to reduce emissions to the sustainable level and moving towards increased equity and justice, their examples could be used to provide best practice examples as part of any awareness raising activities. There, and, in fact, 4 cases from different regions of Europe (XR Etterbeek (BE), SoLocal (DE), GoiEner (ES) and TreeDependent (HU)) are currently in the top right *small* quadrangle of all coordinate systems (Figure 22 and 23), and many more in the larger top right quadrangle, so their examples and approaches, as described in Part 2 in the individual case summaries, could be used as starting points for a wider discussion in the field.

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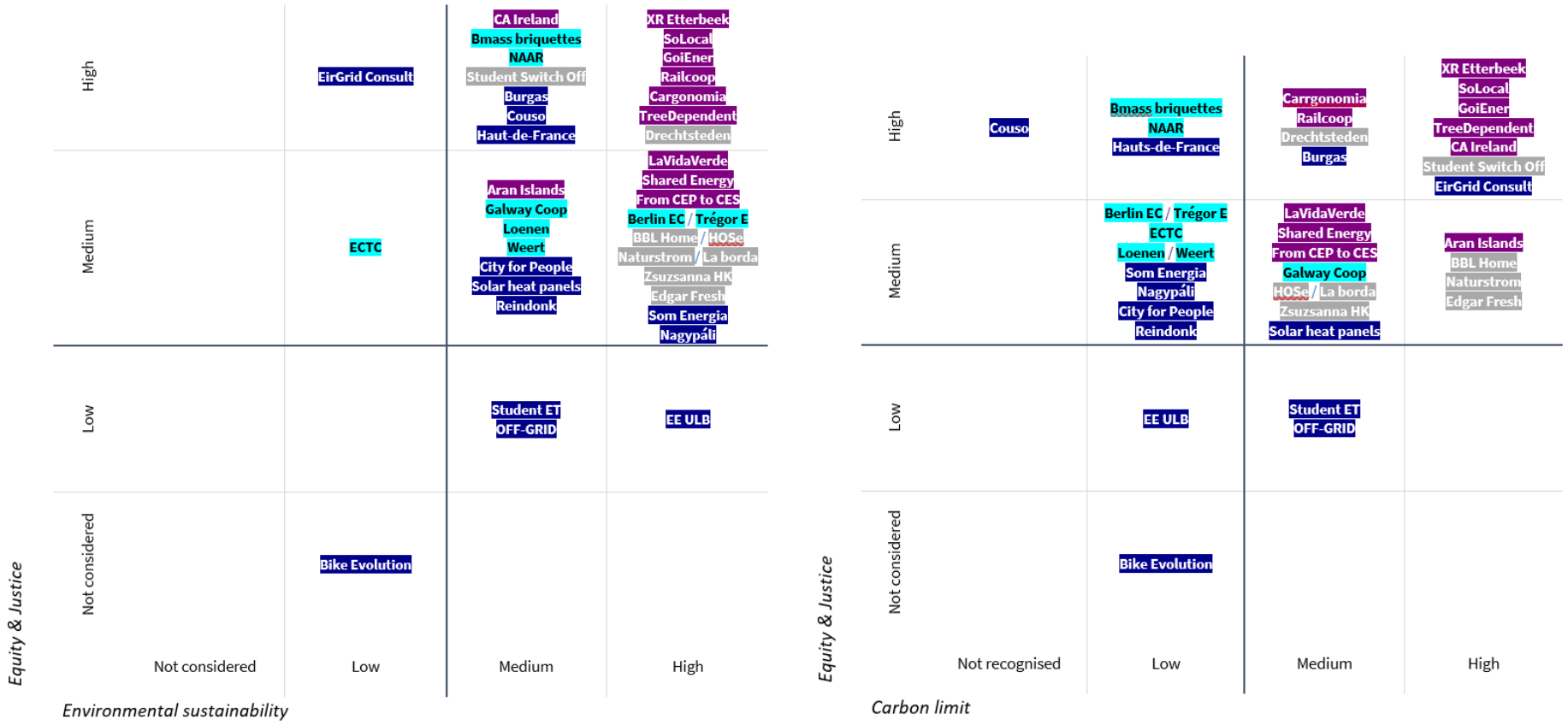

Figure 22: Detailed cases according to their approach to equity & justice vs. environmental sustainability and the carbon limit. The colouring of cases indicates which cluster they are placed in (purple: cluster 1, light blue: cluster 2, grey: cluster 3, dark blue: cluster 4)

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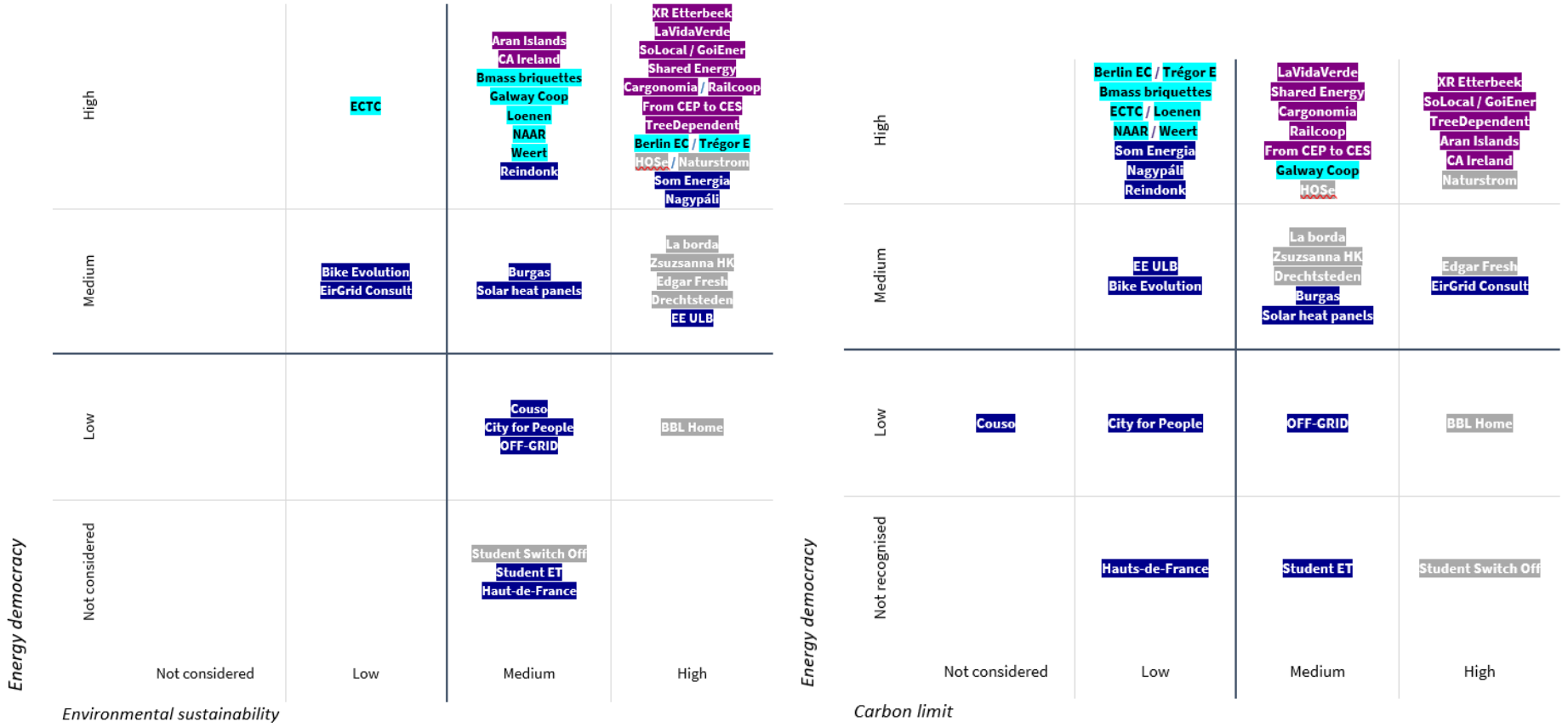

Figure 23: Detailed cases according to their approach to energy democracy vs. environmental sustainability and the carbon limit. The colouring of cases indicates which cluster they are placed in (purple: cluster 1, light blue: cluster 2, grey: cluster 3, dark blue: cluster 4)

6.2 EMPHASISING SOCIAL SUSTAINABILITY OBJECTIVES: CITIZEN POWER, EQUITY/JUSTICE, ENERGY DEMOCRACY

6.2.1 EXPLORING CLUSTER 2

This cluster includes 8 of the 40 cases the EnergyPROSPECTS project research team studied in detail. These cases are found in 5 different countries (France, Germany, Hungary, Ireland and the Netherlands). Based on their main energy citizenship ideal-type, all the cases are citizen-based and hybrid cases (see Table 8 and Annex I). Thus, all cases have collective agency, and also, all cases were categorised as transformative.

Name of case in English:	Short name	Country	Main ENCI ideal-type (current)	Secondary ENCI ideal-types (current)
Berlin Energy Citizen	Berlin EC	DE	Type 8	1,10
Trégor Energ'éthiques	Trégor E	FR	Type 8	1,3,4
Biomass briquettes programme (for the energy poor)	Bmass briquettes	HU	Type 8	
Energy Communities Tipperary Cooperative	ECTC	IE	Type 8	1,4
Galway Energy Co-operative	Galway Coop	IE	Type 8	
Loenen Energy	Loenen	NL	Type 8	
National Association of Active Residents	NAAR	NL	Type 8	3,4
Weert Energy	Weert	NL	Type 8	

Table 8: The 8 cases in Cluster 2 (see more details in Annex I)

All cases in this cluster are rated "high", both in terms of energy democracy and citizen control. However, only 2 cases are rated as "high" from the equity/justice perspective, these are the Biomass briquettes programme (for the energy poor) (HU) and the National Association of Active Residents (NL), thus these 2 are the ones that are rated as "high" for all social aspects.

The first step is exploring **how these aspects of social sustainability are reflected in the cases is to look at the objectives pursued**, and a review of the extent to which environmental aspects are present in this cluster.

Each case in this cluster has some elements among its objectives that aim to promote social sustainability. In some cases, this is aimed at in a more comprehensive way, for example by setting up, maintaining or expanding energy cooperatives (e.g. Berlin Energy Citizen in Germany or Weert Energy in The Netherlands). In some cases, empowerment appears (e.g. ECTC in Ireland), in others greater public involvement (National Association of Active Residents in The Netherlands), still in others democratisation (Galway Energy Co-

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operative in Ireland). There is one case that explicitly mentions reducing energy poverty among its objectives (Biomass briquettes programme in Hungary). There are also cases focusing on awareness raising and education (e.g. Trégor Energ'éthiques in France or Biomass briquettes programme). In addition, local development is also linked, as it involves strengthening the local community or, for example, creating local jobs through local projects (e.g. Loenen Energy in The Netherlands or the Energy Communities Tipperary Cooperative in Ireland).

Cases in this cluster are less likely to include aspects of environmental sustainability in their objectives, and where they do, it is mainly in relation to local, renewable energy production (e.g. Weert Energy "*committed in generating and supplying local green electricity"* or Galway Energy Co-operative which is aims to *develop renewable energy to support climate change mitigation efforts*).

We also examined **which parts of the case objectives are more reformative, and which are more transformative** in cluster 2. Basically, in all 8 cases, both directions can be found just like we found for cluster 1 cases. Reformative objectives include mainly practical elements (e.g. implementing and realising local renewable energy projects, strengthen access to rail outside the big cities) or general goals (e.g. creating visibility, raising awareness), while the transformative ones include longer-term (e.g. using regional resources and residue thereby contributing to a circular economy) or more ambitious goals (e.g. democratise energy production in the sense of increasing the share of locally produced energy in total consumption).

Looking more closely at the transformative goals, it can be seen that they encompass a **challenge and critique of the current, centralised energy system**. The cases provide alternative, innovative solutions to systemic problems related to their own focus, based on practical systemic deficiencies. As the cases in this cluster have a strong social focus, it is not surprising that decentralisation, citizen participation and locality are key issues. For example:

- Berlin Energy Citizen focuses on local energy supply, with a sustainable and decentralised vision. Their initial goals consisted in trying to put the energy supply in Berlin in the hands of citizens with the help of the cooperative by acquiring shares of the grid. Another example is Galway Energy Co-operative where participants are working to move to a model where energy is produced and consumed locally, as energy production in Ireland is currently highly centralised.
- Loenen Energy (NL) also addresses local energy supply issues, with the emphasis on greater local control. Difference is that the central theme here is awareness and control over consumption rather than production. The aim is to increase real citizen participation and gaining control over energy consumption, for example through the

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Community Virtual Power Plant (cVPP).

- The Biomass briquettes programme (HU) offers a low-tech solution for people in energy poverty, also by putting energy production in the hands of local people, thus reducing their dependency. As passive consumers become active participants of the energy system, they also transform it on the local level.

As a next step, just like in cluster 1, we were also interested to see **whether there were any changes related to the objectives of the cases**. In this part of the chapter, we look at the changes in reformative and transformative goals and examine how this relates to the possible changes in the ENCI typology.

In one of the 8 cases in the cluster (Biomass briquettes), there was no significant change in the stated goals in terms of reformative or transformative direction or in terms of broadening and narrowing, and the typology remained unchanged.

In 2 cases there was no reformative/transformative change and the ENCI typology also remained the same, but the scope of the goals has transformed:

- NAAR 's aims broadened, as it extended its focus and announced extra objectives: the case has focused more on environmental sustainability/energy transition and on and support the idea of community enterprises.
- Weert Energy's aims narrowed, as the cooperative started with a broad goal of sustainability and later on it was narrowed down to energy.

There is one case, Trégor (FR), where, although there was no change in the reformative/transformative characteristic or broadening/narrowing of objectives, but the ENCI typology of the case changed slightly: while in the first phase it was organisationally embedded (Type 4: "Do it their way"), from the second phase it is collective, citizen-based and hybrid (Type 8: "Go ahead"). The first phase of the case focused on setting up the organisation. However, once the association was established, the case was able to undertake more collective endeavours.

In 2 cases, the **objectives changed from transformative to reformative**, but in neither of these cases was this change accompanied by a change in the main ENCI ideal-type:

- In the case of Galway Energy Co-operative, the scope of the objective activities has also remained unchanged. The reason for becoming more reformative is that, although the stated objectives have not changed, the operatives are more reformative just like the specific actions.
- In the case of Berlin Energy Citizen, the objectives became reformative because of external circumstances, since direct citizen participation became less possible, at least in the near future, after the re-communisation of the grid. Besides, the scope of the objectives was narrowed too, also as a result of re-municipalisation, as gaining

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shares of the Berlin energy grid and opening it up to citizens directly is not feasible for now (in 2023).

In 2 cases, the **objectives changed from reformative to transformative:**

- For ECTC (IE), there was no change in the overall scope. However, the objectives have changed to more transformative because the case began to explore options for community-owned generation, which represents this orientation. This change is not visible in the typology (it was already transformative from the start), but it has moved from an organisationally embedded case to a citizen-based and hybrid one. Here, too, the creation of the cooperative marked a clear shift from an organisationally embedded agency to a new collective one (such as in Weert Energy mentioned above).
- The most complex change in the cluster is shown by Loenen Energy (NL), where not only the goals have become more transformative, but the typology also illustrates the change, and the broadening of the goals is also reflected (Figure 24).
    - **More transformative:** in the early stages of the initiative, a fund was created to help and finance local energy projects in Loenen. Later on, the actors of the initiative participated in an EU consortium launching a pilot project of a cVPP (community Virtual Power Plant) project, of which Loenen was one of the test villages.
    - **Broadened:** the initial team was set-up to lead a group of enthusiastic residents with their vision of Loenen for 2013-2015. Later on, the vision was expanded to make the village Energy Neutral by 2050.
    - **Change in assigned ideal-type(s):** the case was citizen-based and hybrid from the beginning, with a reformative orientation (Type 7), but changed to transformative in the second phase of its development (Type 8), since from that point local residents could become co-owners and co-investors in the first renewable energy project, as reflected in Figure 24 below.

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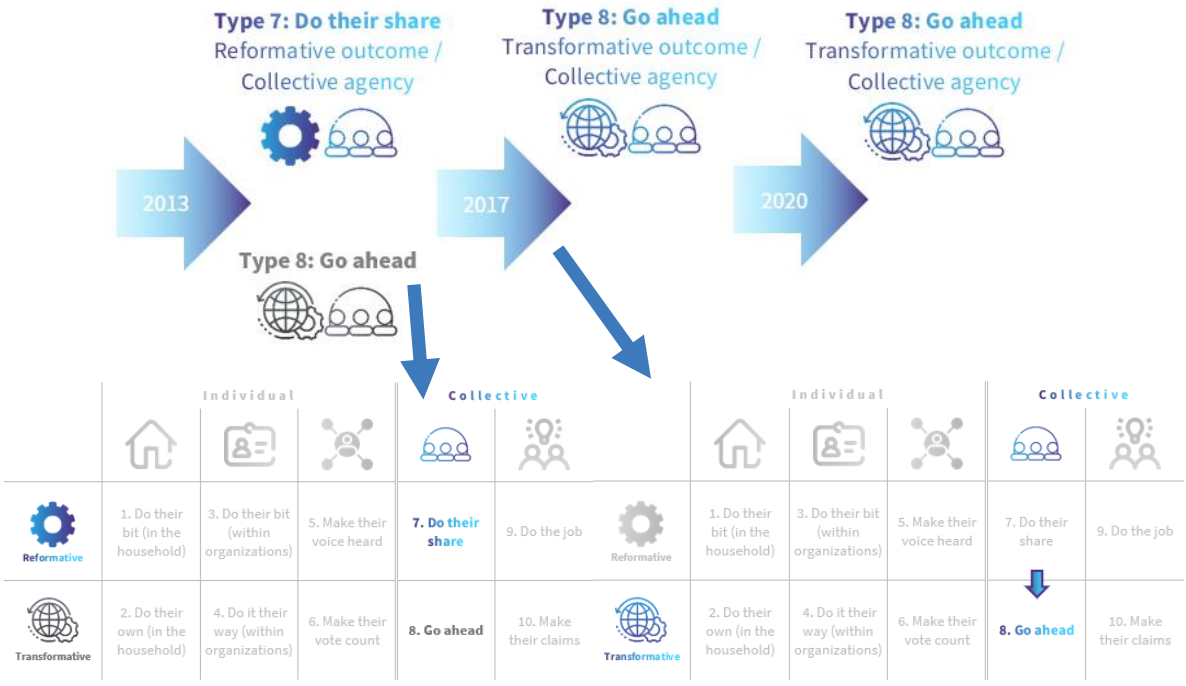

Figure 24: Development of Loenen Energy

In the 2 cases where transformative change has been initiated, it can be seen that the social focus has been broadened further (e.g. ECTC - community-based energy production was introduced), but it's still limited to local residents.

The final section examines how a **high level of consideration of social issues** is reflected in the cases. The 5 aspects (including the 2 aspects of environmental sustainability) are considered one by one.

We first look in more detail at **how the 8 cases in the cluster approach energy democracy**, which is a core concern as it was evaluated as "high" for all the cases.

In this cluster, it can be observed that cases approach the issue from two different angles. On the one hand, there is an externally oriented effort to transform the (energy) system. On the other hand, the internal democratic structure of the cases is also considered, and thus is linked to this dimension. This is, again, similar to what we observed for cluster 1 cases in how their overall objectives and the principles and concrete ways of operating are connected. For example, for Berlin Energy Citizen (DE) a more democratic energy future is

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literally the core goal. From the external side, they want to bring the ownership back to the city of Berlin so that citizens could influence the decision-making process regarding the power grid more easily. Internally, members understand the cooperative itself as a democratic platform because they promote ideas on citizen participation (as a cooperative) in decision making processes on energy infrastructure.

Cases also support a more democratic energy future in many different ways (see Table 11). In several cases, the idea of promoting **decentralised production and giving local community and people more control over their consumption and production** is presented. For example, Trégor Energ'éthiques (FR) promotes the involvement of citizens in the deployment of renewable energy sources through the ownership, control and benefits of energy production. Another example is Galway Energy Co-operative (IE), which is promoting to increase the share of energy consumption that is locally generated from renewable sources, either as self-consumption, by neighbours, or through other local sources. The goal is the same for Weert Energy (NL), that want energy to be controlled by the local level, including the generation, storage and use of electricity.

This is taken further by Loenen Energy (NL), where the aim goes beyond promoting the use of renewable energy to making the whole village energy-neutral. As a member, everyone can think, speak, decide and invest, so that as many Loenen residents as possible can be involved in the energy transition.

Energy Communities Tipperary Cooperative (IE) approaches this local development from the perspective of empowerment, they mainly refer to community empowerment and, to a lesser degree, community self-governance. The main logic is to use energy savings to boost the local economy, keeping money and jobs in the region.

The Biomass briquettes programme is slightly different as it focuses on a deprived area and people living in energy poverty. But, here too, the idea of a democratised and self-governed future is present as they aim to provide power to residents to be able to heat their homes independently from the system.

In addition, the diversity of energy democracy is illustrated in the table below (Table 9), which summarises the many different ways in which a single case can support its promotion.

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Shor name of the case	… by enabling or expanding individual/collective ownership of energy infrastructure	… by initiating and/or participating in public decision-making processes	… by making its voice heard in the public debate	… by providing a forum for deliberation on energy	… by improving accountability in energy sector and governance	… other:
Berlin EC	x	x	x		x	
Trégor E	x		x			x
Bmass briquettes	x					x
ECTC	x	x				x
Galway Coop	x	x				
Loenen	x	x	x	x	x	
NAAR	x	x	x	x	x	
Weert	x			x		x

Table 9: The different expressions of energy democracy in the cases in cluster 2

In this cluster, the other most important aspect is **citizen power/control**, which also received a high rating in all 8 cases placed here.

In this cluster, there is a high proportion of cases **operating in a cooperative form, which essentially promotes citizen control through the strong involvement of the membership** in decision-making, with a non-hierarchical form. In some ways, of course, each case promotes this in a slightly different manner.

- For example, in the case of Berlin Energy Citizen, *"each member of the cooperative has one vote, regardless of the size of his or her shares. This means that every member is equally involved in the fundamental decisions, no matter how much money they bring in."*[11]
- Another good example is the case of Loenen Energy, which is "*a cooperative of and for all Loenen residents. The members jointly own the cooperative. As a member, you can think, talk, decide and invest. In this way, we hope to involve as many Loenen residents as possible in the energy transition."*[12]

Another interesting example is Energy Communities Tipperary Cooperative, where the members of the cooperative are communities and not individuals. These communities are usually represented by local community councils, development associations or tidy town groups. These groups are usually key actors in local governance, and people involved in them are well known in local communities and are known to be local points of contact for local residents. **This case is also a good example of how citizen power/control plays an important role not only in the democratic nature of internal decision-making, but also in the links beyond,** and have an impact on the wider political and decision-making system

[11] Source: website of the case, buerger-energie-berlin.de (Accessed 30.09.2023)
[12] Source: website of the case, loenenenergie.nl/cooperatie/(Accessed 30.09.2023)

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In addition, many of the cases in this cluster go beyond internal decision-making and play an interesting connecting role in **giving a voice to citizens in general**.

- For example, the National Association of Active Residents (NL), as it does not link directly with the energy system but rather indirectly through the various initiatives and organisations that it represents, gives voice to citizens through this intermediary role.
- Another example is Biomass briquettes programme (HU), where citizens are not participating directly in decision-making. It is done by the foundation running programme as the locals, who live in energy poverty, mostly do not have the knowledge and skills that would enable them to participate. Even though the current internal decision-making processes do not seem to be very democratic, decisions are in fact made through registering and considering the attitudes and behaviour of local people and representing them to stakeholders and partners.

Cases in this cluster **obviously also rate "high" for the third social sustainability aspect, equity and justice**. Here, however, only 2 cases are classified as "high" and the remaining 6 as "medium".

The cases that are in the "high" category are accessible to all (although they also involve some territorial delimitation, for example focusing on a village or a region). They address the issue of the accessibility of energy resources, build on inclusion and support and the sharing of burdens. In addition, both cases focus on issues related to disadvantaged groups (e.g. those in energy poverty) and National Association of Active Residents also on gender issues.

- The National Association of Active Residents recognises the energy crisis and that the widening gap between the privileged and the underprivileged is becoming bigger and has magnified during recent year. As a response, it calls for a new form of neighbourhood approach to deal not only with these issues, but also with declining confidence in the government and processes of democratic renewal.
- The Biomass briquettes programme specifically aims to enable reducing energy poverty, but does not have an additional specific gender focus.

The cases that belong to the "medium" category also deal with issues of equality/justice, but in most cases there is a **territorial or/and financial barrier to full openness**. There is a strict territorial limitation in cases such as Energy Communities Tipperary Cooperative as it focuses on the communities in the county of Tipperary; Galway Energy Co-operative focuses on the area of Galway City, and Trégor Energ'éthiques focuses on Trégor, Brittany. There are cases where joining is open, but linked to some kind of membership fee or the purchasing of shares, e.g. Berlin Energy Citizen, Weert Energy, Loenen Energy.

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It is interesting to note that even in this group with “medium” evaluation, there is one case that focuses on issues related to disadvantaged groups (Berlin Energy Citizen).

The first environmental aspect we examine is **environmental sustainability**. In this cluster this aspect only received “high” evaluation in 2 cases, “medium” in 5 cases and “low” in 1 case (see details in Annex I).

Cases that belong to the "high" category focus mainly on renewable energy, but go beyond this scope. For example, Trégor Energ’éthiques, even though energy is the main focus of the case, consistency (developing photovoltaic projects), as well as efficiency and sufficiency (developing educational tools to promote energy sufficiency and efficiency) are part of the case’s goals and vision for the future energy system. As the case expresses, *“This vision consists first of all in reducing needs through sobriety in individual and collective uses of energy. Efficiency then makes it possible to reduce the quantity of energy necessary to satisfy these needs.”*[13]

Cases that belong to the "medium" category mostly focus on some specific energy-related issue, or are local, energy-focused initiatives. It should be highlighted that although the focus of these cases is on energy production, these initiatives also contribute to promoting environmental sustainability. For example, the primary goal of the Biomass briquettes programme is to alleviate energy poverty, but environmental concerns were part of the technology development process, and an ecologically friendly fuel is the outcome (i.e. agricultural waste turned into biomass briquettes). Another example is the Galway Energy Co-operative, where although the main focus is on local communities, the case does acknowledge environmental sustainability, not least by relying on the SDGs for community engagement actions

One case that is in the low category for environmental sustainability is ECTC. Here, environmental sustainability aspects are acknowledged and are part of the mix of motivations for the case, but not the central one. Assumptions on the benefits for sustainability of renewables and energy are mentioned but not considered as primary goals.

It can be seen that in this cluster the other important environmental sustainability aspect, **the carbon limit, is rated much lower**. Only one case was classified as "medium", which in this aspect means explicit recognition; and all the other 7 cases as "low", which in this aspect means implicit recognition of the ecological limit of atmospheric carbon emissions.

[13] Source: website of the case, www.tregor-energethiques.org (Accessed 30.09.2023)

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The only “medium” case is Galway Energy Co-operative as its main objective is to expand local renewable energy sources to improve community resilience, also mitigate carbon emissions and climate change. Furthermore, there is explicit recognition of environmental limits evident in the work of the cooperative, for instance in the involvement in decarbonisation zones.

For the other cases in the “low” category, although there is no formal reference to the carbon limit, their activities clearly contribute to reducing carbon emissions implicitly.

- For example, NAAR does not explicitly mention environmental limits or reducing the carbon footprint despite the fact that one of its focus areas is related to energy transition. But, one of its coalition programmes ‘Switching neighbourhoods’ addresses these areas in more detail. Although the environmental limits are not explicitly mentioned, they are implicitly influenced by their activities, case studies and other areas of work (e.g. their neighbourhood, bottom-up and community approach).
- In the case of Trégor Energ’éthiques, there are no formal references to the ecological limit of atmospheric carbon emissions or the sustainable carbon footprint. They are, however, implicitly recognised both by key figures in the association through interviews (e.g. regarding their personal motivations), and in the preamble of the association’s statues.

6.2.2 SOCIAL SUSTAINABILITY OBJECTIVES IN ENERGY CITIZENSHIP: EXPLORING ALL 40 CASES

In the following, we take a closer look at the aggregated data from the 40 cases for the 3 aspects selected as the focus for exploring how the cases approach social sustainability.[14]

As shown in Figure 26, among the 40 cases, 48 percent of the cases fall into the "high" category in terms of citizen power/control, 45 percent into the "medium" and 8 percent into the "low" one. There are no cases that do not consider this aspect. In terms of equity/justice, 38 percent of cases are classified as "high", 53 percent as "medium" and 8 percent as "low". There is 1 case that does not consider this aspect. Finally, in terms of energy democracy, 60 percent of the cases are in the "high" category (here is the highest percentage), 23 percent are in the "medium" and 10 percent in the "low" one. However, 3 cases were marked as not considering this aspect.

[14] It is important to note here that the specific case selection methodology we used (see Chapter 2.2) may have impacted the outcomes presented in this section. As citizen control and energy democracy are factors that we considered particularly relevant aspects for a different stream of research conducted (cf. Schmid et al., 2023), they were included in the selection criteria. Thus, in the future, it may be interesting to repeat this analysis with a more diverse selection of cases.

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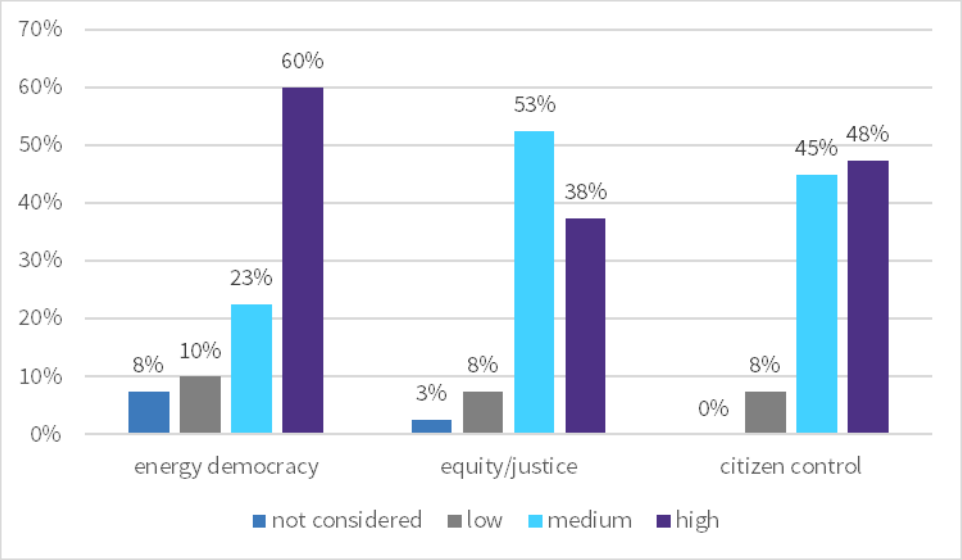

Figure 25: The distribution of the 40 cases according to their level of recognition of the 3 social aspects

Based on our preliminary exploration of the social sustainability aspects in our larger database of all 596 cases in the Energy Citizenship Factsheet Series (see Part 7, 8 and 9 specifically) and the Country profile reports, we decided to contrast the social aspects to each other, and show how they are connected - or how they are not. The resulting coordinate systems are shown in Figures 27, 28, and 29 first just the number of cases in the coordinate systems (left side), and then the names of cases entered as well (right side).

In Part 7 of the Factsheet Series, we identified some discrepancies in the treatment of **equity/justice and citizen power**. Our assumption was that these 2 aspects should be relatively similarly represented, and those cases that score "high" on equity/justice should not really be classified as "not considered" or "low" on citizen power. However, our analysis of the mapping database suggested that this does not appear to be the case – and needs to be investigated further in the detailed cases.

As shown in Figures 27, 28 and 29, the majority of cases fall in the top right quadrant in the case of all the comparisons between the social aspects (equity/justice – citizen power/control: 34; equity/justice – energy democracy: 31 equity/justice – energy democracy: 32). The few cases that do not fall into this quadrant are mainly from cluster 4, and a few from cluster 3.

The figures also show that equity/justice - citizen power/control are the most consistent aspects in terms how the social sustainability aspects are aligned within cases, illustrated by the few cases that are not in the top right quadrant. When these aspects are compared with how Energy democracy is manifested in the cases, there is a slightly higher discrepancy: the cases in the upper left quadrant show that while equity/justice or citizen power/control is emphasised in many cases, but energy democracy is not equally included in their objectives.

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These findings point to the fact that it is not always clear for initiatives to have a more holistic, longer-term goal, such as focus on energy democracy. At the same time, the discrepancy between the treatment of the various social sustainability aspects in cases was found to be lower in the cases we studied in detail than in cases explored in the mapping phase (Vadovics and Szőllőssy, 2023a), which may be due to the fact that these aspects of social sustainability were included as selection criteria.

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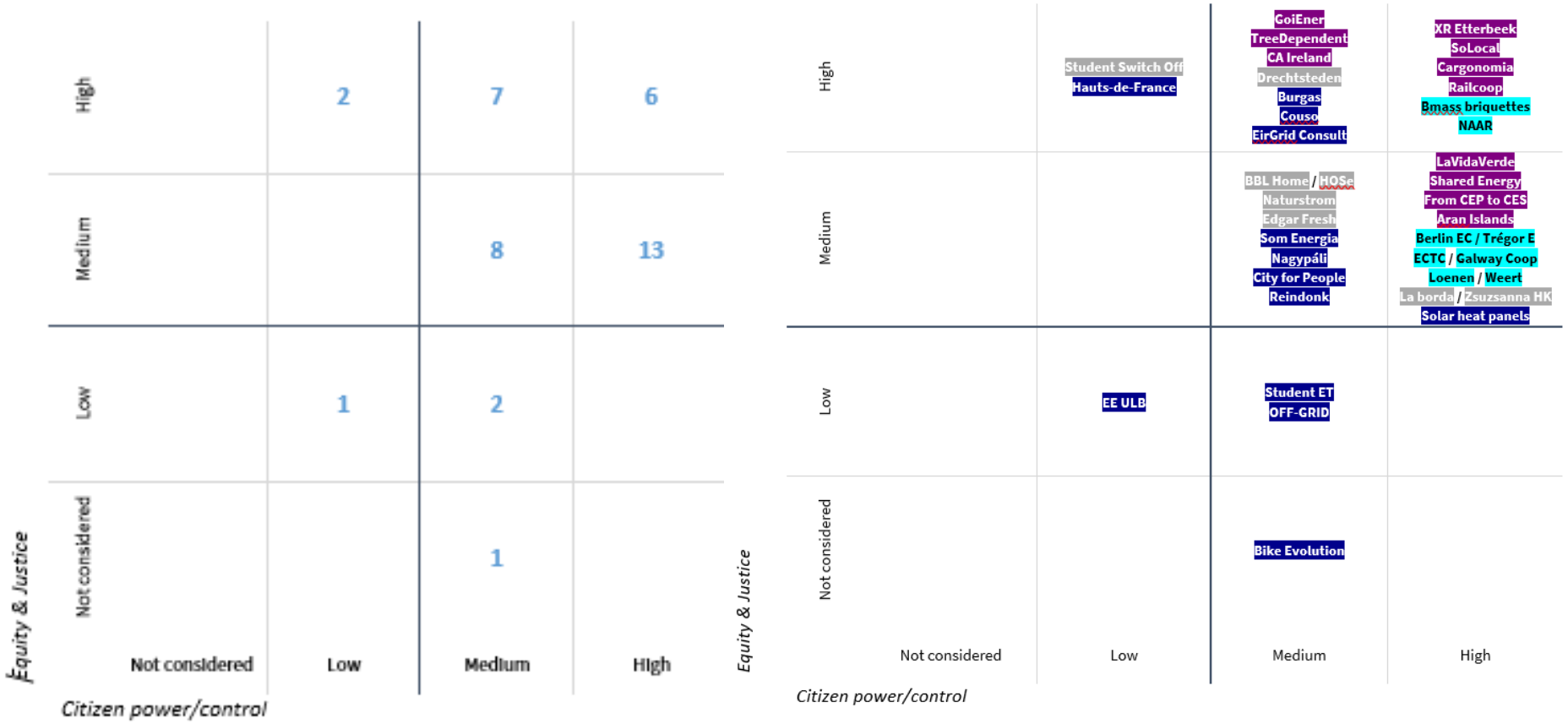

Figure 26: Detailed cases according to their approach to equity & justice vs. citizen power/control
The colouring of cases indicates which cluster they are placed in (purple: cluster 1, light blue: cluster 2, grey: cluster 3, dark blue: cluster 4)

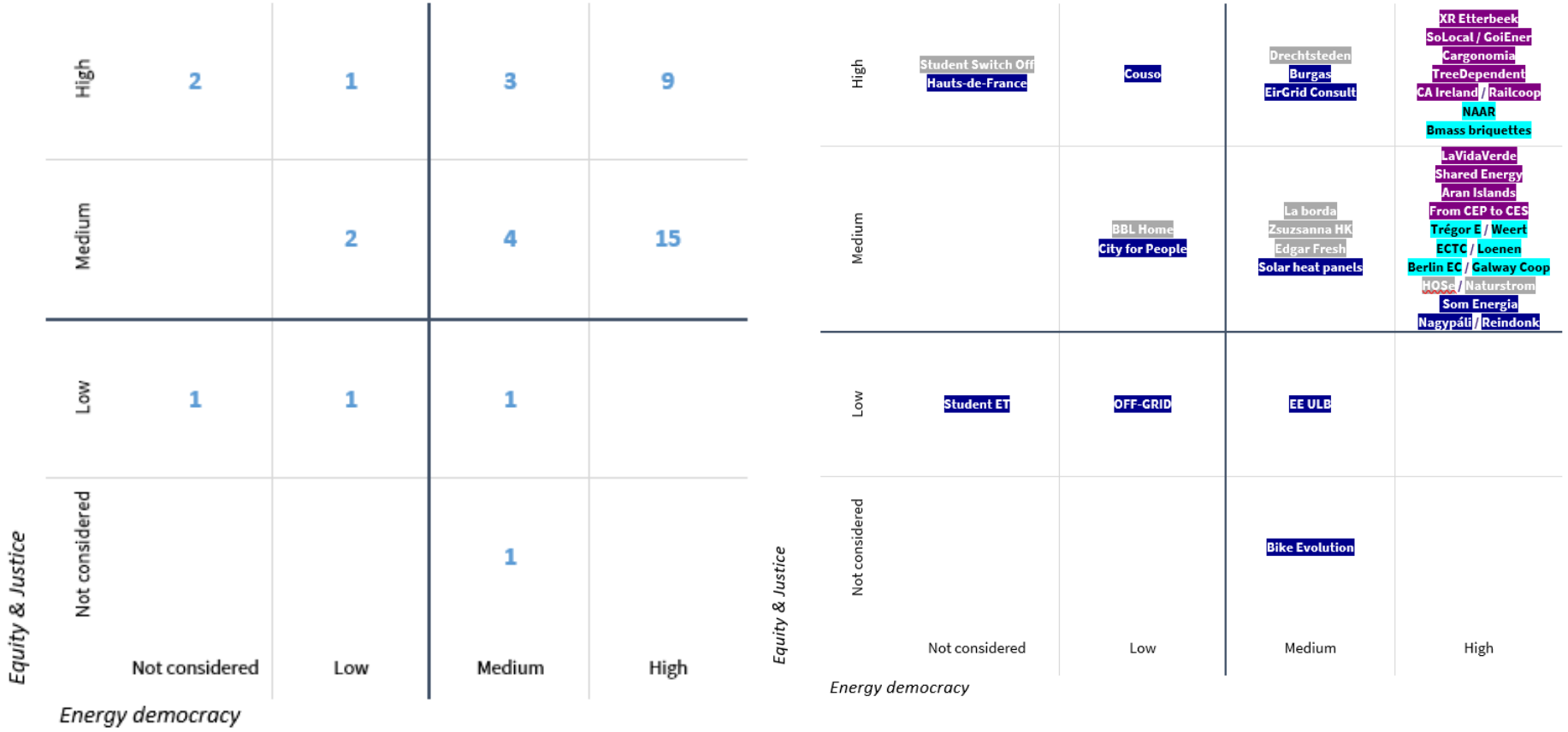

Figure 27: Detailed cases according to their approach to equity & justice vs. energy democracy
The colouring of cases indicates which cluster they are placed in (purple: cluster 1, light blue: cluster 2, grey: cluster 3, dark blue: cluster 4)

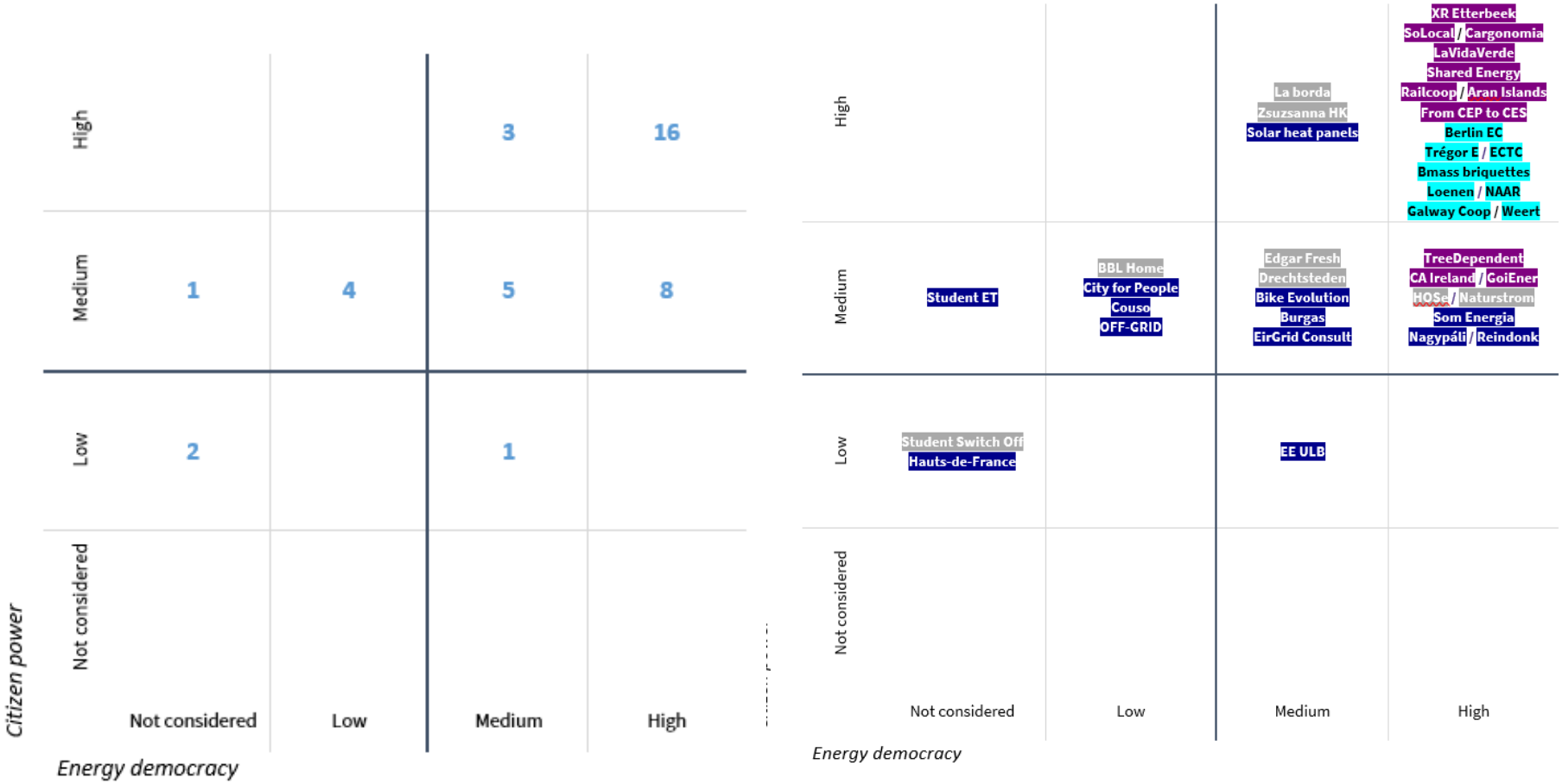

Figure 28: Detailed cases according to their approach to citizen power/control vs. energy democracy
The colouring of cases indicates which cluster they are placed in (purple: cluster 1, light blue: cluster 2, grey: cluster 3, dark blue: cluster 4)

6.3 EMPHASIZING ENVIRONMENTAL SUSTAINABILITY OBJECTIVES: ENVIRONMENTAL SUSTAINABILITY AND THE CARBON LIMIT

6.3.1 EXPLORING CLUSTER 3

This cluster includes 8 of the 40 cases the EnergyPROSPECTS project research team studied in detail. These cases are found in 7 different countries (Belgium, Bulgaria, Germany, Hungary, Latvia, Spain and the Netherlands). Based on their main energy citizenship ideal-type, half of the cases are citizen-based and hybrid cases, one is private in the household, 1 is public and 2 are organisationally embedded (see Table 10 and Annex I). Half of them have collective, half of them individual agency. Half of the cases were categorised as transformative, half of them as reformative.

Name of case in English:	Short name	Country	Main ENCI ideal-type (current)	Secondary ENCI ideal-types (current)
BBL Home renovation campaign	BBL Home	BE	Type 1	2,3,4,9,10
Hydro Electricity Ourthe and Sambre	HOSe	BE	Type 8	7
Student Switch Off campaigns in Bulgaria	Student Switch Off	BG	Type 3	1.7
Naturstrom AG	Naturstrom	DE	Type 4	1,7,8
La borda. Housing cooperative in transfer of use	La borda	ES	Type 8	2,4
Zsuzsanna Hojtsy-Keresztény - EnergyNeighbourhoods energy master, local change maker	Zsuzsanna HK	HU	Type 8	1,2,9
Social media influencer "Edgar Fresh"	Edgar Fresh	LV	Type 5	2
Drechtsteden Energy	Drechtsteden	NL	Type 7	1,5

Table 10: The 8 cases in Cluster 3 (see more details in Annex I)

Of the cases in the cluster, **3 received a "high" rating for both of the environmental aspects**, these are the BBL Home renovation campaign (BE), the Naturstrom AG (DE) and Social media influencer "Edgar Fresh" (LT).

The first step in exploring how these aspects of environmental sustainability are reflected in the cases is to look at **the objectives** pursued, and a review of the extent to which social aspects may also be present in this cluster.

Each case in this cluster has some elements among its objectives that aim to promote environmental sustainability. The issue of **renewable energy production** comes up several times; in some cases, it is more about supporting technologies and producing energy in general (e.g. Hydro Electricity Ourthe and Sambre in Belgium), in others it is more specific

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geographically, and is also about decentralised (local or regional) renewable energy production and supply (e.g. Naturstrom AG in Germany). Some cases explicitly highlight the importance of promoting the sustainable energy transition in their objectives (e.g. Drechtsteden Energy in the Netherlands). Among the cases, a specific recurring theme relates to **housing**, mainly related to renovation, modernisation to increase energy efficiency (e.g. BBL Home renovation campaign in Belgium) or support it with a broader, more social theme, such as creating and promoting an alternative, greener and more sustainable societal model (e.g. La borda - Housing cooperative in transfer of use in Spain). There are 2 cases initiated by one individual, including promoting green lifestyles and raising awareness about climate issues, encouraging climate actions, but also focusing on **green community building** (Zsuzsanna Hojtsy-Keresztény - EnergyNeighbourhoods energy master, local change maker in Hungary, and Social media influencer "Edgar Fresh" in Latvia). There is also one case mentioning the necessity to reduce the carbon footprint and the importance of raising awareness about it (Student Switch Off campaigns in Bulgaria).

In addition to environmental goals, almost all cases in this cluster have some kind of a social focus as well. Examples include La Borda, aimed to guarantee access to affordable and decent housing. There are cases where the elimination of energy poverty appears as part of the objectives, and some where the promotion of civic participation is mentioned, and another where the energy transition with the highest achievable social return is included as an important aspect.

In this cluster, too, we examined **which parts of the objectives are reformative and which are transformative.** In all but one case both directions can be found (Student Switch Off sets out only reformative objectives). As in cluster 2, reformative objectives tend to include mainly practical elements (e.g. implementing local renewable energy projects or providing renewable energy to consumers). There are also some general objectives set here, related to moving towards greener lifestyles, communication and awareness raising (e.g. promoting green lifestyles and opportunities or updating environmental issues by creating several types of cooperation on environmental communication). The transformative aims include larger scale goals (e.g. developing a new model of production, management and ownership of housing or creating and expanding a local, cohesive, green community). We also find more conceptually oriented goals such as increasing public participation in the energy system or furthering the energy transition.

Looking more closely at the transformative goals, it can be seen that they are challenging and criticizing the current, centralised energy system. Despite the environmental focus, it is interesting to see that aspects of social sustainability are also relevant. There is a **repeated emphasis on creating a decentralised energy system**, but also the idea of energy democracy and political participation. The following examples can be mentioned:

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- Naturstrom AG (DE), for example, focuses on local energy supply with a sustainable vision where production is carried out in a transparent way ("*They are working towards a decentralised energy system that is completely based on renewable energies, with energy being produced regionally by local producers and also transparency for the consumers about where the energy is coming from"*). Naturstrom, since it was created in 1998 as the first supplier of "green power", i.e. offering to supply individual households with energy that 100% comes from renewable sources. Currently, it has more than 300,000 customers, and has become one of the key actors of the German energy transition. It has actually contributed to the transformation of the German energy system.
- In the framework of challenging the energy system, Drechtsteden Energy (NL) has highlighted increasing participation as one of its objectives ("*involvement of the public particularly in the pre-implementation stages"*). Although at a more general level, Edgar Fresh encourages its followers to be more active citizens ("*encourages his followers, who are mostly young people, to be interested and actively participate in political processes, not to be afraid to express their opinion"*).
- La Borda, one of the cases with a housing focus, is aiming to become an affordable and sustainable alternative housing model ("*a non-speculative model that focuses on its inhabitants, an alternative model of housing access to the traditional ownership and rent, with a strong commitment with the use value above exchange value"*). It is interesting that the other case related to housing in the cluster, BBL Home renovation campaign, takes a completely different approach, basically aiming at stimulating the renovation wave by creating a better regulatory and financing environment ("*the pleas call for a fundamental reconsideration of rights and responsibilities of home owners, tenants, and government"*).

As a next step, just like in cluster 1 and 2, we were also interested to see whether there were **any changes related to the objectives** of the cases. In this part of the chapter, we look at the changes in reformative and transformative goals and examine how this relates to the possible changes in the ENCI typology.

In this cluster, Student Switch Off is the only case where there was no significant change in the stated goals in terms of reformative or transformative direction or in terms of broadening and narrowing the scope, and the typology also remained unchanged.

In 3 cases there was no reformative/transformative change and the ENCI typology also remained the same but the scope of the goals has broadened.

- In the case of BBL Home, environmental goals remained the leading strategic orientation, but these have been broadened with an increased focus on energy poverty and social equality.

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- Naturstrom broadened its goals as it started to support tenant electricity projects and other projects where energy is consumed on site.
- Drechtsteden Energy changed its narrow focus of energy to including more topics such as mobility.

There is one case, La borda, where, although there was no change in the reformative/transformative objectives, the scope was broadened and the ENCI typology of the case changed towards transformative, citizen-based and hybrid agency (from Type 7: "Do their share" to Type 8: "Go ahead"). The change in the assigned ideal-type(s) was due to a practical reason - the plans could be put into practice in the second phase, and the construction started. However, the ultimate purpose stayed the same (i.e. achieving decent, social, affordable, and ecologically sustainable housing), the scope broadened with *"fostering intergenerational relations and community integration through a fair distribution of reproductive, domestic and care work under the values of feminist and solidarity economy".*[15]

In 2 cases, the objectives changed from reformative to transformative, and the scope was broadened too. The changes are also reflected in the development of typology.

- HOSe involves an interesting institutionally hybrid form of energy citizenship. It is not a pure cooperative because 1) it involves a commercial private sector partner, and 2) it is built up of about a dozen cooperatives.
    - **More transformative:** HOSe worked along cooperative principles, the evolution of it has contributed to the prioritisation of the objectives of energy democracy.
    - **Broadened:** besides environmental issues and profitable energy production, cooperative governance, energy democracy, social learning, and the stimulation of energy citizenship became additional goals.
    - **Change in assigned ideal-type(s):** the ENCI ideal-type changed from organisationally embedded to community-based as the firm became an association (as it was seen in cluster 2).
- Zsuzsanna HK is one of the greatest examples of how a case can evolve. This initiative transformed from an individual to a collective energy citizenship case, with more and more people getting involved in the life of the local community. The initiative has moved from a reformative, household-based energy citizenship ideal-type to a transformative one. The focus at first remained within the household, then became community and settlement-based as the range and depth of issues broadened with the range of participants. Figure 29 depicts this development process, including the changes in the main ideal ENCI ideal-type.

[15] Source: website of the case, laborda.coop/es / (Accessed 30.09.2023)

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- **More transformative:** Zsuzsanna HK worked on greening her own household at home, later growing into a community leader. As a community, they have grown from a team of EnergyNeighbourhoods participants[16] to a grassroot, local community.
- **Broadened:** in the current eco-club, everyone is a volunteer and everyone brings their own topic of interest to the community. As the number of people and therefore resources grow, more and more topics are covered and activities are initiated.
- **Change in assigned ideal-type(s):** first, Zsuzsanna became an energy master in the EnergyNeighbourhoods programme, which is a more transformative form of ENCI, as she became a mentor for others, but in this phase, the main agency was still individual. Later, when the local eco club started on Zsuzsanna's initiative, the case moved in a collective, transformative direction.

[16] EnergyNeighbourhoods is another ENCI case that we mapped in Hungary but was not selectetd to be a detailed case study. However, it provided inspiration and support for Zsuzsanna HK to start her own ENCI initiative.

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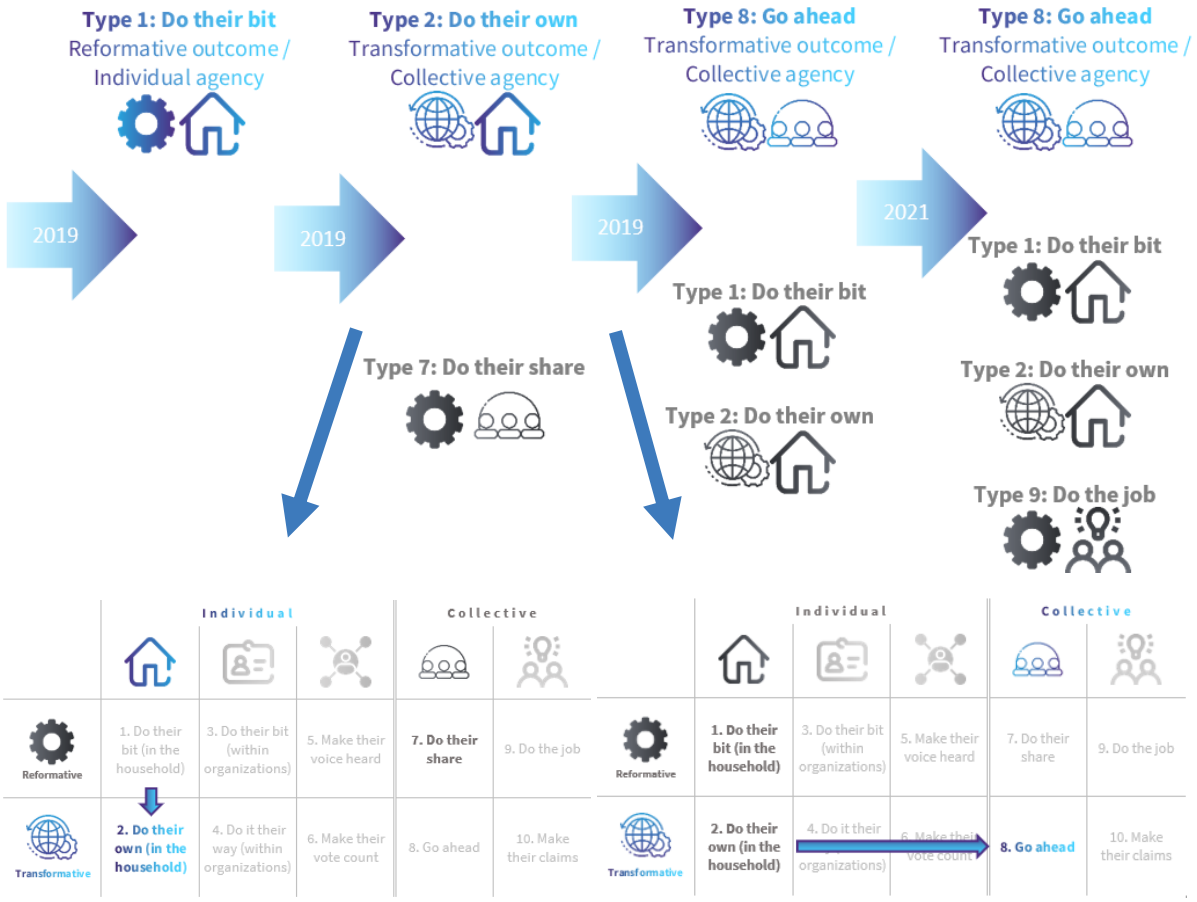

Main type: Do their own (in the household)
Transformative outcome / Private in the household agency

Secondary type: Do their share
Reformative outcome / Citizen-based and hybrid agency

Main type: Go ahead
Transformative outcome / Citizen-based and hybrid agency

Secondary types:
Do their bit (in the household)
Reformative outcome / Private in the household agency
Do their own (in the household)
Transformative outcome / Private in the household agency

Figure 29: Development of the case "Zsuzsanna Hojtsy-Keresztény - EnergyNeighbourhoods energy master, local change maker"

In both the HOSe and Zsuzsanna HK cases, **where reformative goals have moved towards a transformative direction, it can be seen that the cases, both of which had a predominantly environmental focus, social aspects have also been introduced.** HOSe has taken on a significant role through its focus on cooperative governance and energy democracy, while Zsuzsanna HK has taken on a significant role through community building and empowerment, thereby increasing, for example, citizen power.

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In the final section related to cluster 3 we examine how a high level of consideration of environmental issues is reflected in the cases. However, just like with the other clusters, after investigating the environmental aspects, we also examine the 3 social sustainability aspects.

First of all, we take a more detail look at **how the 8 cases in cluster 3 approach environmental sustainability**, which is a core concern as it was evaluated as "high" for 7 cases out of the 8.

As it was highlighted in the objectives, all these cases take a strong environmental sustainability approach. A distinction can be made between cases that focus more on efficiency and those that focus also, or maybe even more so, on sufficiency.

Basically, also due to our general objective in the project to study energy citizenship, most of the cases focus on energy production, thus a **more technologically oriented approach** is dominant. These cases are more linked to efficiency and are also about renewable and clean production.

- One clear case in this context is HOSe, where even the name of the case stands for hydropower. The initiative promotes environmental sustainability and clean energy, made possible by the technological innovation of water turbines.
- Another good example is Naturstrom AG, where environmental sustainability, since their founding, has been at the core of the company. This includes mainly the replacement of fossil fuels and nuclear plants by renewable energy production and delivering it to citizens, or enabling citizens to produce renewable energy themselves. Energy efficiency and mobility are also part its activities, through 'Naturstrom vor Ort".

Cases that are about building a green community and awareness-raising, rather deal with reduction issues, including both efficiency and sufficiency approaches. These cases focus primarily on **behaviour and practice change**.

- Zsuzsanna HK (HU) is building an eco-community, so there is a clear commitment to environmental sustainability. The focus here is on green, sustainable, energy-conscious living, they say that they *"want to create a community of citizens who want to face the current ecological crisis and are willing to learn and apply possible solutions to achieve an ecologically sustainable way of life."*[17]
- Another good example here is Edgar Fresh, social media influencer (LV), who is creating content on environmental sustainability, which is communicated in different forms and about different sectors, as well as setting a good example by acting in an environmentally friendly manner.

[17] Source: website of the case, godiokoklub.hu (Accessed 30.09.2023)

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There are cases where these 2 aspects are combined. The best example is La Borda, where sustainability is seen as one of the keys to the project. It has implemented various measures to reduce the environmental impact of construction and energy consumption.

The only case where the environmental sustainability was categorised as "medium" is Student Switch Off campaigns in Bulgaria. In its objectives, the case aims to reduce students' carbon footprint. Environmental sustainability is also addressed by the campaigns, but energy savings manifested as reduction in use remain the main focus of the initiative. In this case, the emphasis is on sufficiency rather than efficiency.

It should also be highlighted that in some cases there are other specific environmental considerations mentioned in addition to energy or climate related ones, such as nature conservation issues, taking a holistic sustainability approach or adopting a circular perspective.

- Drechtsteden Energy (NL), for example, specifically emphasises that the ecological value of nature reserves should also be recognised when selecting solar fields, in order to protect existing natural values.
- Zsuzsanna Hojtsy-Keresztény's (HU) motivation was specifically to fight against the climate crisis, and it was also mentioned in the interviews that she tries to look at all environmental issues in a holistic way.
- One of La Borda's (ES) founding objectives is to *"give priority to the environmental aspect, economically achievable through homes with a passive design or low energy consumption, with the local, decentralized and self-managed generation of renewable energy. And, in the same sense, promote during the life of the dwelling the achievement of local and closed cycles of energy, water and waste".*[18]

In this cluster, the other important environmental aspect, **the ecological limit of atmospheric carbon emissions and/or sustainable carbon footprint,** is of course also particularly important. Half of the cases in the cluster explicitly recognise the carbon limit, and the other half not just explicitly recognise it, but they mention the maximum sustainable carbon footprint and/or emission reduction objectives are also defined.

Interestingly, for this question, similar types of cases were not grouped together. The focus on reducing carbon emissions and the setting of targets depends on the extent to which cases have quantified reduction targets in their documentation – just like we observed in cluster 1.

[18] Source: website of the case, laborda.coop/es / (Accessed 30.09.2023)

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The cases, which include specific targets (and thus were rated as "high", explicit recognition with mention category), do so in the following ways:

- Reducing the carbon footprint was one of the objectives of the Student Switch Off initiative. By reducing their energy consumption, students managed to reduce their carbon footprint. Measuring the reduction was also an important aspect of the project.
- Naturstrom recognises the 1.5-degree target explicitly on their website. They are vocalising their support of Fridays for Future and their success with their lawsuit against the federal climate protection law (it has to be corrected as CO_2 emission reduction targets need to be more explicit). They are also part of the Entrepreneurs for the Future group.
- BBL Home engages in evidence-based activism in which climate targets, environmental footprints, and quantitative assessments of environmental impacts play a very prominent role.
- Carbon reduction and mobility is one of the current topics that Edgar Fresh includes in his communication. He is in contact with a number of people who are experts on the subject, and he is involved in a number of programmes where carbon emissions reduction is a key issue - and he reflects this in his communication.

The cases that do not include specific targets but still mention the necessity to reduce emissions (and thus belong to the "medium", explicit recognition category), do so in the following ways:

- The case of HOSe considers the carbon footprint of the hydro-electricity production explicitly, as for example members have verified through engineering reports how particular plants would perform in terms of production (under certain weather conditions), and how this performance compares to other forms of green energy production (wind turbines, photovoltaics; biomethanisation).
- One of La Borda's central aims is "*to make the best use of existing resources and to reuse them in an environmentally friendly and sustainable way*"[19], and this was taken into account during construction (e.g. usage of wood in the structure of the entire building as a conscious choice).
- Zsuzsanna HK noticed a reduction in her own emissions since she participated in the EnergyNeighbourhoods programme (an energy savings competition for households). When interviewed, she explained that the issue of carbon emissions is always an important topic in their community and in their external communications, they often consider what might be a better solution in relation to emissions in a particular case.

[19] Source: website of the case at www.laborda.coop (Accessed 30.09.2023)

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- The goals of the Drechtsteden case are tied to the explicit recognition of the ecological limit of atmospheric carbon emissions as it was formed as a result of the Dutch Climate Agreement and the national carbon emission targets for 2030. However, the maximum sustainable carbon footprint for the region is not mentioned explicitly.

The first social sustainability aspect we examine in relation to cluster 3 cases is **energy democracy**. In this cluster this aspect only received "high" evaluation in 2 cases, "medium" in 4 cases, "low" in 1 case and "not considered" also in 1 case (see Annex I for the categorisation of the cases).

In this cluster, this aspect is a core concern ("high" category) in cases where some kind of a large-scale renewable energy production is taking place. E.g. in the case of HOSe (BE) this is explicit, as it has the pursuit of a more democratic future amongst its three main objectives, and its members are very committed to the cooperative model and consensual decision-making.

In those cases where this aspect is important ("medium" category), it is basically linked to some kind of awareness-raising or smaller-scale energy sharing activities. E.g. in the case of Zsuzsanna HK (HU), the democratising factor lies primarily in the education and empowerment of participants, and also in the possibility to rent an energy meter, which greatly increases energy awareness and establishes independence. The case is currently operating as an association, which is democratic by nature, as established in its statutes. Members also have the possibility to implement their own ideas within the framework of the initiative.

BBL Home renovation campaign (BE) has been categorised as not really being engaged in this aspect ("low" category), mainly because although BBL itself deals with a number of broader issues, the home renovation campaign is only one of their projects. It pursues energy democracy only in a certain sense, as its activities are primarily aimed at increasing the energy literacy of citizens, so it is a programme delivered to citizens, not created and defined by citizens.

In the case of the Student Switch Off campaigns in Bulgaria, this aspect is not a goal at all ("not considered" category), mainly because the case is primarily concerned with the education of students. It motivates them to reduce their energy consumption through change in their behaviour and supporting them in minimising their carbon footprint in their university and private accommodation.

Although it is not the focus of this cluster, the idea of energy democracy is still present in several ways in most of the cases, as the Table 14 summarises. It can be seen that they appear in smaller numbers here than in the cases with a particularly social sustainability

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focus (cf. cluster 1 and 2), but it can be highlighted that secondary objectives and operational characteristics also play a role towards establishing energy democracy in these cases.

Shor name of the case	… by enabling or expanding individual/collective ownership of energy infrastructure	… by initiating and/or participating in public decision-making processes	… by making its voice heard in the public debate	… by providing a forum for deliberation on energy	… by improving accountability in energy sector and governance	… other:
BBL Home			x	x	x	
HOSe	x		x	x	x	
Student Switch Off						
Naturstrom	x	x	x		x	
La borda	x	x	x		x	
Zsuzsanna HK			x			x
Edgars Fresh		x	x			x
Drechtsteden	x	x	x	x		

Table 11: The different expressions of energy democracy in the cases in cluster 3

The second social sustainability aspect we examined is **citizen power/control**. In this cluster this aspect only received "high" evaluation in 2 cases, "medium" in 5 cases and "low" in 1 case.

In this cluster, this aspect is a core concern ("high" category) **in cases where a strong emphasis has been placed on the local community** and its development. In La Borda (ES) direct participation is the central axis of the project and this has a lot of influence, from how the building was designed to how they live. In the case of Zsuzsanna HK (HU), in her community, decisions are taken democratically as a rule. The association works on the tasks that one of its members proposes and commits to carrying them out.

For most cases in this cluster, citizen power/control is important ("medium" category). These cases, mainly due to their organisational characteristics, cannot ensure full involvement in decision-making, but they do seek to get to know, understand and incorporate the needs of the citizens into their plans. For example, in the case of Naturstrom AG (DE), employees and citizens can be stakeholders of the company and in this way take part in the internal decision-making, according to their shares of the company. In the case of Hydro Electricity Ourthe and Sambre (BE), the cooperatives (which make up the organisation) have established a consensual mode of decision-making in which the cooperatives retain a minimum of 50% of the votes in the executive board.

Student Switch Off campaigns in Bulgaria was categorised as not really important from this aspect ("low" category), because this initiative was a part of an international project, therefore the students participated in it largely following the instructions and workplan designed by someone else before their involvement.

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Interestingly, **equity and justice, as the third social aspect, is the least divided** among the cases with an environmental focus, with 2 cases in the "high" category and the remaining 6 in the "medium" category.

Similar to cluster 2, both cases with “high” evaluation focus specifically on issues related to disadvantaged groups (e.g. those in energy poverty). The three equity/justice related considereations that appear are the **accessibility of energy sources, inclusion and the sharing of burdens**. For example:

- The aim of the Student Switch Off campaigns in Bulgaria was to reduce students' energy usage as well as their exposure to energy poverty. Involvement in the campaigns was open to all students, moreover, the campaigns have created social media pages where tips for saving energy have been posted regularly, which have remained accessible to the wider public.
- Drechtsteden Energy in the Netherlands is emphatically striving for an energy transition in which the benefits and burdens of energy production and use are distributed fairly and in which no one is left behind. They took more than a year to draw up policy and to go through an intensive participation process to involve residents, entrepreneurs, social organisations and governments in this issue.

For cases classified in the "medium" category, as in cluster 2, the criterion of territorial limitation plays an important role (e.g.: Zsuzsanna HK focuses on the village Göd, La Borda links to its site classified as social housing), and/or some type of financial condition is applied (e.g. in the case of Naturstrom AG, people with low incomes are probably not able to afford the company’s electricity contracts).

6.3.2 ENVIRONMENTAL SUSTAINABILITY OBJECTIVES IN ENERGY CITIZENSHIP: EXPLORING ALL 40 CASES

In the following, we take a closer look at the aggregated data from the 40 cases for the 2 aspects selected as the focus for exploring how the cases approach environmental sustainability. Since these were not included in the selection criteria for the 40 cases, as opposed to social aspects, the distribution of cases is more mixed, especially concerning the carbon limit.

Among the 40 cases, 53 percent of the cases fall into the "high" category in terms of environmental sustainability, 40 percent into the "medium" and 7 percent into the "low" one. There are no cases that do not consider this aspect (Figure 30).

In terms of recognising the carbon limit, 28 percent of cases are classified as "high", 33 percent as "medium" and 15 percent as "low". There is only one case that does not consider this aspect.

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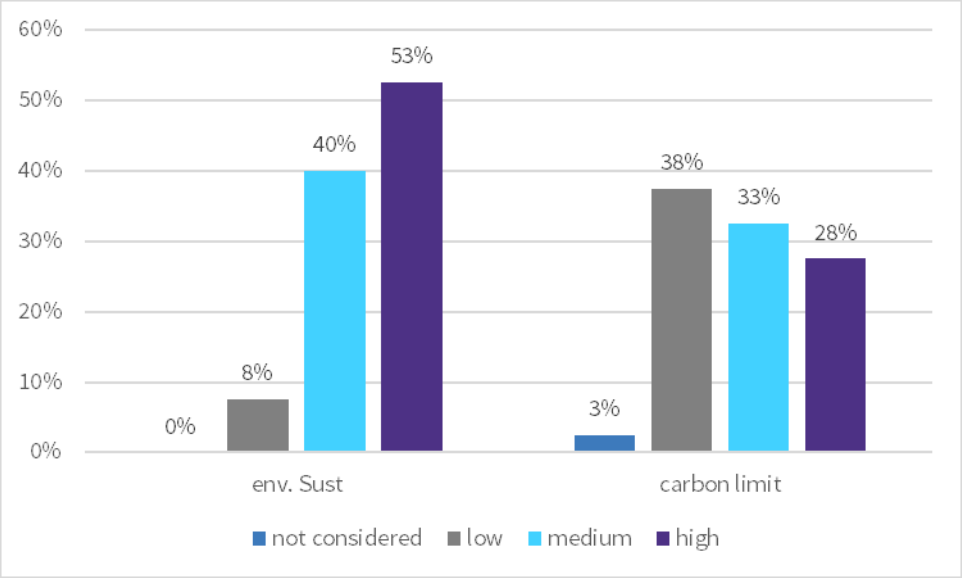

Figure 30: The distribution of cases according to their level of recognition of the environmental aspects

Based on our preliminary exploration of the same issue in the full database of 596 cases that were mapped in the Energy Citizenship Factsheet Series (see Part 7, 8 and 9 specifically) and the Country profile reports, we decided to contrast the environmental aspects to each other, and show how they are connected - or whether this connection is missing. The resulting coordinate systems are shown in Figure 31, first just the number of cases in the coordinate systems (left side), and then the names of cases entered as well (right side).

We already observed some level of discrepancy between the evaluation of environmental sustainability and the recognition of the carbon limit by cases when analysing the data collected in the mapping stage (Vadovics and Szőllőssy, 2023b). Following our strong sustainability orientation in this analysis, our assumption would be that if a case is characterised as "high" for environmental sustainability, it should also be classified as at least "medium" for recognition of the carbon limit, i.e., it should recognise the carbon limit explicitly, as this should be an integral part of environmental sustainability, especially related to cases of energy citizenship. However, our analysis of the mapping database suggested that this does not appear to be the case – and needs to be investigated further in the detailed cases.

When we look at the data presented in Figure 31, we can observe that just over half of the cases, 23 cases, belong to the top right quadrant (where both environmental sustainability and carbon limit are categorised as "high" or "medium"). There are 2 cases to the bottom left (where both the treatment of environmental sustainability and carbon limit are categorised as "low"), which is not questionable from a discrepancy perspective.

However, Figure 31 also shows that a relatively high number (14 cases out of the 40) fall into the top left quadrant, indicating that in these cases environmental sustainability is

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emphasised, but the carbon limit is less considered. This means that overshooting and/or reaching the sustainable carbon limit is not explicitly included among the objectives of the cases, and they only implicitly deal with carbon emissions. These cases are, not surprisingly, mainly in cluster 2 and cluster 4, also indicated by their background colouring.

This finding points to the problem that, although the carbon limit is becoming more widely known, even initiatives with an explicit environmental focus do not necessarily incorporate it into their own agendas. Yet, this would be an important step forward for these cases of energy citizenship, both because of the consistency of their wider theoretical background and also because of the more generic quantifiability.

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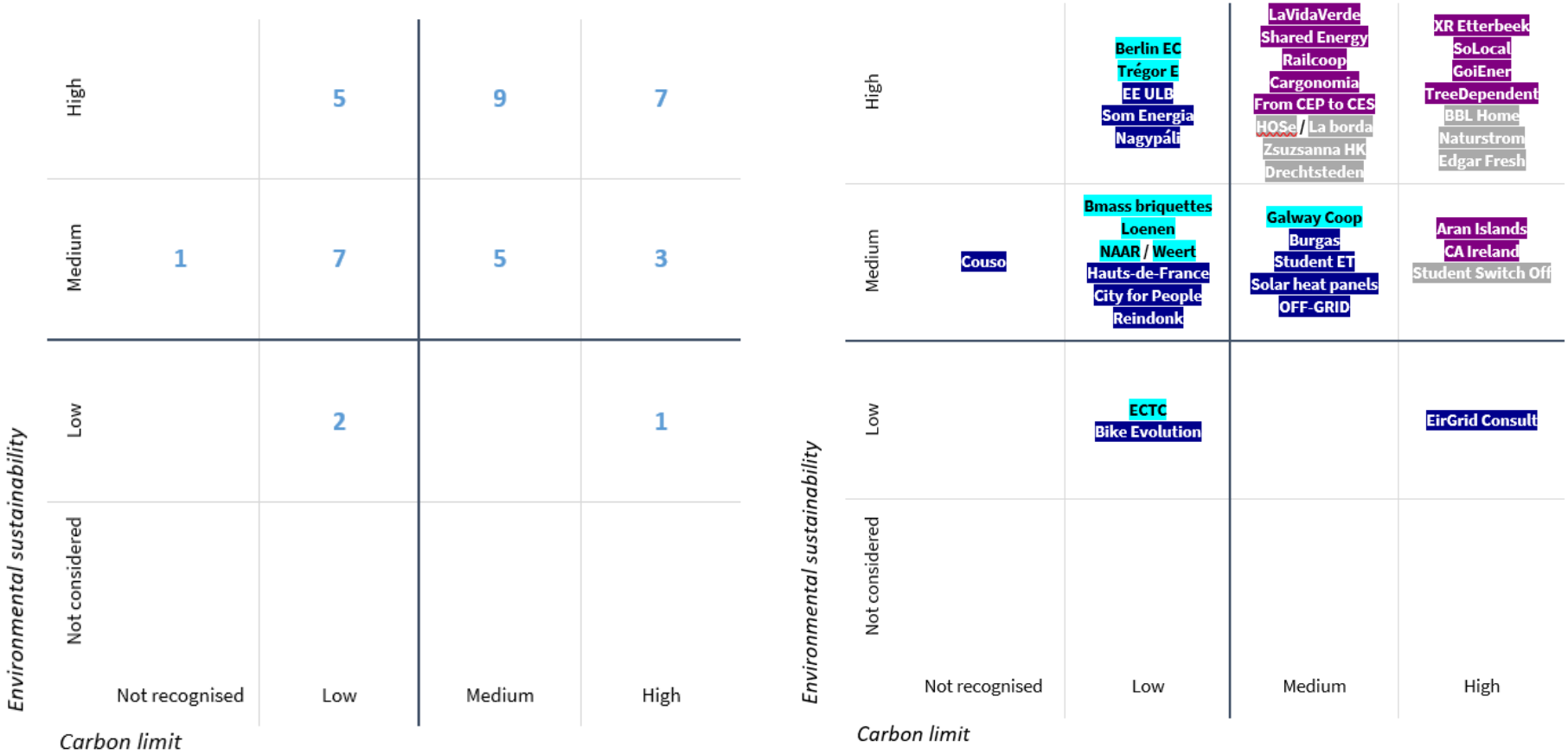

Figure 31: The distribution of the 40 cases according to their approach to environmental sustainability vs. the carbon limit
The colouring of cases indicates which cluster they are placed in (purple: cluster 1, light blue: cluster 2, grey: cluster 3, dark blue: cluster 4)

6.4 AVERAGE OR LIMITED FOCUS ON BOTH SOCIAL AND ENVIRONMENTAL SUSTAINABILITY

6.4.1 EXPLORING CLUSTER 4

There are 13 cases altogether in cluster 4. As a first step of their analysis, we explored the option of **dividing these cases into sub-clusters**. Since the focus of our investigations in the EnergyPROSPECTS project relates more to the social aspect of sustainability, we took the 3 aspects we studied there. We found that 2 sub-clusters could be made:

- **in cluster 4/1** we categorised cases where none of the social aspects were categorised as "not considered" (1) or "low" (2). This resulted in 6 cases placed in the sub-cluster (Table 12), which thus includes cases with a rather developed approach to the social sustainability aspects studied.

In this sub-cluster, most (4) of the cases were typologised as citizen-based and hybrid, and thus have a collective agency. However, 2 of the cases support an individual agency, one of them private (Solar heat panels in Latvia), and the other public (EirGrid Consult in Ireland). As for outcome orientation, the cases are divided equally between reformative and transformative orientation.

Name of case in English	Short name	Country	Cluster	Main ENCI ideal-type (current)	Secondary ENCI ideal-types (current)
Energy Transition of City of Burgas: Going Smart and Sustainable	Burgas	BG	4 / 1	Type 7	1,9
Som Energia – Green Energy Cooperative	Som Energia	ES	4 / 1	Type 8	9
Nagypáli, the renewable energy village	Nagypáli	HU	4 / 1	Type 8	1,2,4
Consultation: Shaping Our Electricity Future (EirGrid Public Consultation: Shaping Our Electricity Future)	EirGrid Consult	IE	4 / 1	Type 5	
Installation of solar heat panels in multi-apartment building, complementary with energy efficiency improvement of the building	Solar heat panels	LV	4 / 1	Type 1	7
Reindonk Energy	Reindonk	NL	4 / 1	Type 8	

Table 12: Cases placed in sub-cluster 4/1 (please refer to Annex I for further details)

- the remaining cases were then placed into **sub-cluster 4/2**, altogether 7 cases, as shown in Table 13.

4 of the cases have a collective agency and are identified as citizen-based and hybrid. The rest support individual agency, either private or organisation-based. With the exception of Couso's project (ES), all cases have a reformative outcome orientation in this sub-cluster.

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Name of case in English:	Short name	Country	Cluster	Main ENCI ideal-type (current)	Secondary ENCI ideal-types (current)
Energy efficiency mission ULB	EE ULB	BE	4 / 2	Type 7	8,4
Bike Evolution	Bike Evolutiton	BG	4 / 2	Type 7	8
Student Energy Teams	Student ET	BG	4 / 2	Type 3	1,7
Couso´s project	Couso	ES	4 / 2	Type 8	
Hauts-de-France Pass Renovation	Hauts-de-France	FR	4 / 2	Type 1	
Association "City for people"	City for People	LV	4 / 2	Type 7	
OFF-GRID: Renewable energy DIY (DO IT YOURSELF) for rural development	OFF-GRID	LV	4 / 2	Type 1	7

Table 13: Cases placed in sub-cluster 4/2 (please refer to Annex I for further details)

As for their **objectives**, all cases in cluster 4/1 have both reformative and transformative ones. In cluster 4/2, most cases are the same; however, Couso only has transformative objectives, while Student ET only has reformative ones. In general, the objectives of the cases are much more focused on the energy system, or different aspects of the energy system than for example in cluster 1 where more global and general system-challenging objectives were also found.

In cluster 4/1, the reformative, non-system-challenging objectives all relate to reducing energy consumption and the associated carbon footprint, switching to renewable energy sources, and preparing the current system (the grid) for a predominantly renewables based system (EirGrid Consult). In cluster 4/2, more varied objectives can be identified. There are 2 cases with objectives relating to sustainable urban mobility (Bike Evolution and City for People), objectives primarily focusing on education and the learning of necessary skills (Student ET, OFF-GRID), and objectives focusing on deep renovation (Hauts-de-France) and improving the energy performance of as well as client satisfaction with the energy system (EE ULB).

As for the transformative objectives, in cluster 4/1 most cases aim for energy self-sufficiency based primarily on renewables, supporting prosumerism as well as developing a more democratic and de-centralised energy system (Nagypáli in Hungary, Reindonk Energy in the Netherlands, Solar heat panels in Latvia, Burgas in Bulgaria). Som Energia (ES) is also in this group of cases with an overall objective *"To encourage the growth of a more social and solidarity-based economy, being an active tool in the transition of the energy model with the capacity to generate social and economic impact, since "we cannot go on growing forever and we have to make this transition"*. In 4/2, some cases have similar objectives to these, e.g. Couso and the OFF-GRID project. The rest of the cases, however, have diverse transformative objectives relating to creating an alternative model, with infrastructure, to

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the one currently dominated by cars (Bike Evolution, City for People), strategic reflection on the organisation-level energy system (EE ULB) or enabling financially-challenged households to carry out deep renovation (Hauts-de-France).

As for **whether the objectives changed during the history and evolution of cases**, on the whole, cases changed comparatively little, and many of them had unchanged objectives, or reformative/transformative orientation. As Table 15 and 16 presents based on changes in the main ideal-type, in general, there are not many changes that occurred in the history of cases we studied.

The cases where there was change in cluster 4/1 are Som Energia, which **moved from reformative to transformative** outcome orientation as well as in contributing to and becoming a social movement related to citizen energy. Other change is apparent in Burgas (BG), where there was no movement to a different ideal energy citizenship ideal-type, but the case **broadened the scope of its activities**, got involved in European projects as well as involved more types of stakeholders in discussions relating to the energy system. A similar process happened in Nagypáli (HU), where the focus of the case was extended to include sustainable tourism and business development in addition to becoming a renewable energy village, and an increasing number of stakeholders were involved as well. In cluster 4/2, a change from reformative to more transformative orientation happened in the Energy efficiency mission ULB case (BE), manifested not in change of the main ideal-type, but the secondary for now: *"The energy efficiency mission is a conscious decision to move deepen, broaden the energy management from mere quick fixes and technical maintenance to a more ambitious energy management. Still, the mission remains a matter of small steps of organizational change and slow institutional change."* Interestingly, 2 cases in this sub-**cluster narrowed their objectives** (Bike Evolution and Couso), both in order to achieve a clearer focus. For example, in the case of Bike Evolution this helps to target some of the root causes of the overall objectives: *"The objectives have been narrowed down from a more general aim of supporting and popularizing cycling as environmentally-friendly and sustainable transport method to a clear focus on development of relevant legislation and proposing amendments to the existing one."*

	Change in main ENCI ideal-type: **from reformative to transformative**	Change in main ENCI ideal-type: **from transformative to reformative**
cluster 1	**3**	**0**
cluster 2	**1**	**0**
cluster 3	**3**	**1**
cluster 4	**1**	**1**

Table 14: Summary of ENCI main ideal-type changes that occurred in the evolution of cases in the 4 clusters

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Another type of change needs to be mentioned as well, exemplified by the Hauts-de-France case, where even though the original objectives (i.e. deep renovation of homes) did not change, **the solution provided has become mainstream**, and accompanying this process the actors involved in the case also changed. Thus, the agency of the case changed from individual organisation-based to individual household level, and its **outcome orientation from transformative to reformative** (Figure 32, and please see further details in Part 2, in the individual case summary report).

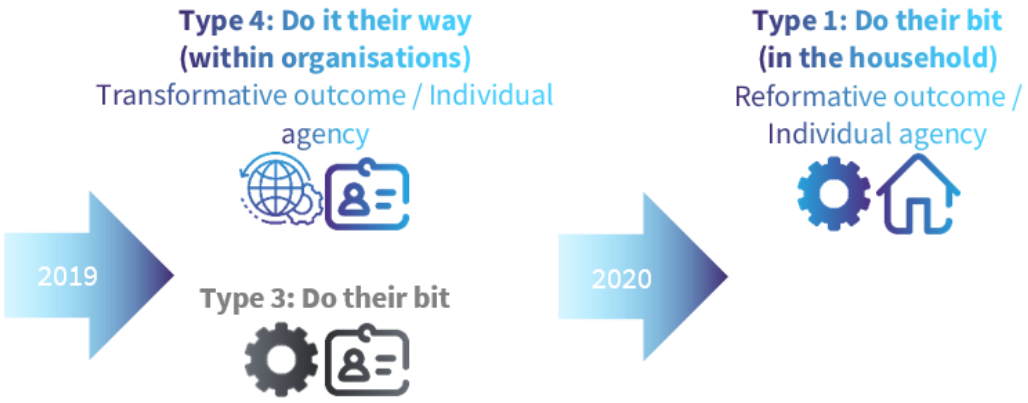

Figure 32: The evolution of the Hauts-de-France case in terms of energy citizenship ideal-types supported

As a final step in our analysis, we look at **the manifestation of the sustainability aspects in the cases**. We start with an analysis of the social aspects as they were used to create the 2 sub-clusters.

Concerning **energy democracy**, the cases in cluster 4/1 are categorised as either "high" (Som Energia, Nagypáli and Reindonk) or "medium" (Burgas, EirGrid Consult, Solar heat panels) in relation to how they treat energy democracy. In fact, the cases categorised as "high" are cases that focus on community or settlement level energy change, and thus aim for energy democracy among participants. On the other hand, the "medium" cases represent cases where the level of change aimed for is different, and citizens typically participate by invitation. Nevertheless, democratic processes are used in how these projects are implemented.

Furthermore, it is interesting to observe that with the exception of the EirGrid Consult case, all other cases in this sub-cluster contribute to the democratisation of the energy system by enabling individual or collective ownership of infrastructure (Table 15).

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Short name of case	Cluster	… by enabling or expanding individual/collective ownership of energy infrastructure	… by initiating and/or participating in public decision-making processes	… by making its voice heard in the public debate	… by providing a forum for deliberation on energy	… by improving accountability in energy sector and governance	… other:
Burgas	4/1	x	x		x	x	
Som Energia	4/1	x		x	x		
Nagypáli	4/1	x					
EirGrid Consult	4/1		x		x	x	
Solar heat panels	4/1	x	x				
Reindonk	4/1	x			x		
EE ULB	4/2		x		x	x	x
Bike Evolution	4/2	x	x	x	x		
Student ET	4/2						
Couso	4/2	x					
Hauts-de-France	4/2						x
City for People	4/2		x	x	x	x	
OFF-GRID	4/2				x		

Table 15: The different expressions of energy democracy in the cases in cluster 4

Compared to cluster 4/1, the level of energy democracy in cluster 4/2 is considerably lower, there are cases where energy democracy is not considered, it is not an objective, and citizens are overall more passive participants. These are cases that were created without the active participation of citizens, like Student Energy Teams and Hauts-de-France Pass Renovation. Nevertheless, they have an important role in informing, educating and activating citizens, and starting them on the path of becoming more active energy citizens.

There are also 3 cases, where the level of energy democracy is categorised as "low", i.e. energy democracy is not an important case objective, but is still considered as a positive value, which for the time being remains limited to formal energy democracy (Couso, City for People, OFF-GRID). Yet, in the City for People case in Latvia, as shown in Table 15, several different expressions of energy democracy can be identified as the Association is active in making people's voices heard and providing an opportunity for people to exchange ideas. Similarly, the Bike Evolution case in Bulgaria, although *"the case is focuses on mobility and therefore does not concern energy democracy as such, but rather the democratic participation and inclusiveness in issues pertaining to sustainable mobility in general and biking in particular"*, it still provides various ways for energy democracy to be realised (Table 15).

Concerning **citizen control**, the majority of cases in both sub-clusters are categorised as "medium". Generally, this means that in most cases although citizens are consulted and included in various processes and activities, their voice and opinion are not compulsory to consider. In cluster 4/1 there is one case with "high" level of citizen control (Solar heat panels in Latvia), where the implementation of the project required consensual decision-making processes. In cluster 4/2 there are 2 cases with low level of citizen control (Energy efficiency mission ULB and Hauts-de-France Pass Renovation) simply because of the nature and objective of the cases.

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As for the treatment of **equity and justice**, there is more variety in the categorisation of cases. In cluster 4/1, although the majority of cases are in the "medium" category (i.e. equal access is granted to all concerned citizens, but the framings tend to limit them to a certain geographical area or amount of financial contribution), there are 2 cases where involvement is fully open (City of Burgas in Bulgaria and EirGrid Consult in Ireland). In Burgas, *"inclusivity and the representation of different stakeholders are noted as priorities in the achievement of energy efficiency. This is most prominently displayed through the public discussions held prior to the implementation of investments, the study of the public opinion, the project's noticeable presence on social media with the intent of providing accessible information and facilitating discussion, and the creation of administrative units in various neighbourhoods across the municipality, with which citizens could consult in regards to the renovation and retrofitting of their housing."* In the EirGrid Consult case *" In the design of the project, EirGrid paid much attention to making the consultation open and accessible. Through the online consultation platform, everybody could participate without barriers."* Furthermore, wide scale inclusion was promoted through partnering with organisations representing and able to reach out to various target groups such as the elderly, the young, those living in the countryside, etc.

In cluster 4/2, there are 3 cases where equity/justice issues are essentially out of scope (EE ULB, Student ET, OFF-GRID), or are not considered (Bike Evolution), even though in the latter there is no restriction on participation.

In general, as compared to cluster 1 and 2 cases, less aspects of equity could be identified by case researchers, and an important aspect, sharing of power and governance, is not discussed explicitly by cases in this cluster. Still, there are many forms of equity and justice appearing in the cases. For example:

- **Accessibility of what the case offers, and sharing of "benefits"**, the energy resource and infrastructure, the ability to satisfy basic energy needs: this aspect is emphasized by several cases, for example,
    - Burgas (BG), especially in relation to accessible expert information about renovation;
    - EirGrid Consult (IE) in making the consultation process accessible to everyone; and
    - City for People (LV), which states that "equal access to safe and diverse in modes mobility (with preference to environmentally friendly modes of travel (bicycles, foot and relevant infrastructure) have to be available for anyone regardless social and geographical restrictions."
- **Solidarity and sharing of "burdens": solidarity, and attention to energy poverty and disadvantaged groups** appears to be important in many cases, and this focus is more explicitly highlighted than in other clusters in general (e.g. by Burgas and Som Energia in cluster 4/1 and by Couso, Hauts-de-France in 4/2). Related to the

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Couso case, for example, one of the founders of the case stated in an interviewee that they *"want to help people who for some personal circumstances are going through a difficult time or social exclusion. We realised that many people who were living on the streets were coming here to try to rebuild their lives or people who had gone bankrupt financially and didn't know where to go. So we decided to get completely involved with this casuistry, to lend a hand as much as we could."*

- **Participation and involvement, diversity in membership:** this aspect is most explicitly mentioned by the Burgas and EirGrid Consult cases both of which also engage with specific stakeholder organisations in order to reach as many and as diverse people as possible.
- Although **ownership of energy related infrastructure** was mentioned by several cases in relation to energy democracy, it was not highlighted with reference to equity and justice issues.
- Finally, it needs to be noted that **transparency and ethical conduct**, which was not explicitly mentioned in cluster 1 cases, was emphasized in cluster 4/1 by several cases, for example, Som Energia *"also incorporates the concern for equity in its Code of Ethics, advocating a close, human, and transparent model."* Also, for Burgas *"equity, transparency and informed involvement became core pillars of the case."*

Following our own definition of the various levels of addressing equity/justice issues in the EnergyPROSPECTS project (see Table 4 above), geography is found to be a limiting factor for equity, for example for Nagypáli, Reindonk and Solar heat panels, where the benefits or the case are largely available for the local population.

Many cases in cluster 4 (altogether 8) consider **environmental sustainability** at a general level, but energy remains the main focus of their work (i.e. this translates to a "medium" level categorisation). This is also reflected in strategic and programmatic documents. In Burgas this is articulated as *"Environmental sustainability, though promoted through the specific actions taken during the implementation of the project - for example, investments in e-powered public transport - was not necessarily regarded as a priority (as implied through its absence from official documents)."*

There are also cases, 3 in total, 2 in 4/1 and 1 in 4/2, that were found to have a "high" level of consideration for environmental issues (Som Energia (ES), Nagypáli the renewable energy village (HU) and Energy efficiency mission ULB (BE)). In Nagypáli *"Sustainability and environmental protection are the basis for all developments. The mayor personally sees future only through sustainable lifestyles and the village represents this to its residents."* Som Energia and EE ULB articulate a similar overall objective, albeit for different target groups.

There are also cases with a low level of manifestation regarding environmental sustainability, EirGrid Consult in 4/1 and Bike Evolution in 4/2. The latter states that

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"Environmental sustainability is not a core issue, and is rather seen as a desired and somewhat logical outcome of the main goal – transport sustainability."

Furthermore, there is a limited mention of environmental limits in this cluster, 6 out of the 13 do not mention paying attention to any limits. The other cases mention some specific concern in this regard, mostly related to counteracting biodiversity loss (Burgas, EirGrid Consult and City for People), other issues mentioned are fresh water loss, pollution and waste, and resource depletion in general.

Finally, the level of **recognition of the carbon limit** is generally rather low (i.e. implicit (7 cases) or the goal is not existent (1 case). However, 4 cases, with a "medium" categorisation, referring to explicit recognition of the carbon limit do also mention already calculating their contribution to reaching the goals set down by the Paris Agreement, or planning to calculate in the near future. Several of these projects are related to European Union funded project implementation, e.g. Solar heat panels, OFF-GRID or Student Energy Teams. The latter comments that *"Among the aims of the project are to contribute to the successful implementation of the Paris Agreement through the engagement of local actors in the face of schools and other educational institutions."*

In cluster 4 there is only one case with a high level of recognition for the carbon limit, EirGrid Consult. *"The background of the consultation process is how EirGrid should approach development of the grid so that the Government's Climate Action Plan can be realised. This includes the ultimate target of net zero carbon emissions by 2050"* (Flynn et al., 2021:8).

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7 SUMMARY AND CONCLUSIONS

To summarise and conclude this deliverable, we organised our findings into different sections.

Clusters

It is notable, that the 4 clusters presented in this deliverable include diverse cases:

- all European regions are represented in all the clusters, so no cluster is specific to certain regions;
- apart from cluster 2, which includes cases that have a strong focus on social sustainability and all cases are typologised as citizen-based and hybrid, all other clusters include cases with different ideal-types of energy citizenship. This is despite the fact that our case selection methodology included a preference for citizen-based and hybrid cases (Type 7 and 8). This is due to the requirements of the QCA analysis we conducted;
- even within clusters and the obvious tendencies (see below), cases find diverse ways to connect social and environmental sustainability considerations and objectives.

This diversity is useful in that it allows for citizens to connect to and get involved with cases at very different levels of awareness and activity in all European regions. It also helps to have diverse examples of how citizens can engage in individual and collective actions that contribute to their empowerment within the energy system[20].

Furthermore, cases, and the clusters they are placed in, appear to be rather constant. This is illustrated by our analysis of change related to the main energy citizenship ideal-type of cases as well as the orientation of their objectives. There is some change, often related to the secondary citizenship ideal-types enabled and empowered by the cases (see Annex II and Table 14), but it seems to be the exception rather than the norm. Thus, **the foundation and early stages of the cases are crucial in determining their transformational nature**. This formative stage is best placed for strategies and policies to intervene.

To conclude this sub-section, we offer a summary description of the 4 clusters in Table 16.

[20] In the EnergyPROSPECTS project, we created an empowerment toolkit based on the analysis of the 40 detailed cases from the point of view of how they empower their participants. The tool can be found at https://www.energyprospects.eu/toolkit/the-enci-concept-and-its-typology-what-it-entails-and-why-might-be-relevant-for-you/

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Table 16: Summarising our findings and description of the 4 clusters

	Objectives	Social sustainability	Environmental sustainability	Case types and ENCI ideal-types
Cluster 1, sustainability -driven ENCI:	• challenge the whole socio-economic system, not only the energy system • cases often connect the more global and local in their approach to change: they have system-contesting principles and overall aims, and wish to put these in practice locally as well	• more varied and multiple parallel manifestations of democracy and equity • move towards democratic self-governance • tendency to go beyond representative democracy • cases tend to be very inclusive, and have a clearly intended focus on accessibility, including disadvantaged groups, gender, etc.	• environmental sustainability is considered in objective setting, and has a more global focus • environmental awareness and priorities go beyond energy and carbon • explicit recognition of the carbon limit, often coupled with clear reduction targets	• tends to be cases with collective agency, but cases with individual agency are also found here • tends to be cases with transformative outcome orientation, but reformative also occurs • cases are varied: they can be social movements, community energy and co-housing cases, social enterprises, future-focused consultations, etc.
Cluster 2, socially -driven ENCI:	• all cases focus on social issues in their objectives, the cooperative form is common, empowerment is visible and disadvantaged groups are also highlighted. • the environmental focus appears in only a few cases, and when it does, it is mainly in relation to renewable energy production	• promoting decentralised production and giving local community and people more control over their consumption and production • specific focus on disadvantaged groups • local development is also linked, as it involves strengthening the local community or, for example, creating local jobs through local projects	• focus on local issues • focus on energy production • but still, acknowledgement of environmental sustainability • the carbon limit is only implicitly recognised	• citizen-based and hybrid cases, with transformative outcome orientation • only cases with collective agency in our analysis
Cluster 3, environmentally-driven ENCI:	• sustainable energy transition and awareness raising appears in the objectives • specific environmental foci (housing, nature conservation issues, circular economy) • (environmental) technology plays an important role	• cases more linked to efficiency also focus on clean production • other cases focus primarily on behaviour and practice change	• a strong emphasis on the local community • empowerment trough awareness-raising	• varied cases in terms of agency: can be both individual and collective (cc. 50-50% division) • reformative and transformative outcome orientation both occur (cc. 50-50% division))
Cluster 4	• locally, organisationally or case-focused objectives • objectives focused on the energy system or one of its clearly defined components	• less varied expressions of democracy and equity • often clear focus on disadvantaged groups • level of citizen power/control tends to be lower, partly because cases are pre-planned (e.g. part of EU projects)	• average or low level of environmental sustainability where energy remains the main focus • the carbon limit is only implicitly recognised in most cases	• varied cases in terms of agency: can be both individual and collective (cc. 50-50% division) • reformative and transformative outcome orientation both occur, but tendency towards more reformative • cases that are part of EU projects are often in this cluster

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Sustainability-driven energy citizenship

Connecting social and environmental sustainability and relevant objectives is crucial for achieving a democratic, just, inclusive and sustainable energy system and society (see also Jackson et al., 2022; Millward-Hopkins, 2022; Westley et al., 2011; Wittmayer et al. 2022).There is an urgent need for such an energy system in order for humanity to be able to face multiple crises. Most cases of energy citizenship achieve this at some level, even if not aligned with the 5 aspects studied here. However, except for cases in cluster 1, this connection is not yet explicit and strong enough.

In our explorative research, it is evident that **there is limited dynamism within cases which impede a move towards being more transformative**: there were 8 cases out of the 40 where we identified such movement, most in cluster 1 and 3 (cf. Table 14). Indeed, in cluster 3 we provided the example of the Zsuzsanna HK and HOSe. These cases had a strong environmental focus and became more transformative by strongly adopting social sustainability objectives. Based on earlier research of a similar nature (Vadovics et al., 2012), we expected to see more examples. Thus, there may be need for further research to specifically focus on motivations and processes related to such evolution, and the connection between social and environmental objectives becoming stronger and more pronounced.

There is further need for educational, managerial and policy driven approaches to encourage such a change to happen.

A desire to **preserve culture and ensure the survival of a culture, settlement and way(s) of living** emerged as an important motivating factor for energy citizenship. This includes, but not limited to, sustainability-driven energy citizenship.This is observed, in the Aran Islands Energy Cooperative (IE); Nagypáli, the renewable energy village (HU); Railcoop (FR); Energy Communities Tipperary Cooperative (IE) or Biomass briquettes programme for the energy poor (HU) cases. These cases show that this type of motivations could be emphasized to increase the involvement of citizens in energy change and energy issues.

Finally, it is interesting to note that **cluster 1, which included cases of sustainability-driven energy citizenship, is the cluster where most cases of viable social innovation and business models were found** (see Table 17, and cf. Debourdeau and Markantoni, 2023). This is yet another reason to find ways to support the creation of strong connections between social and environmental sustainability in cases.

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Table 17: The total number of cases in the 4 cluster vs. how many of these were selected as viable social innovation and business models

	Total no. of cases	BSIM	
cluster 1	11	7	64%
cluster 2	8	4	50%
cluster 3	8	4	50%
cluster 4	13	5	38%

The diverse manifestations of the sustainability aspects in cases of ENCI

In our analysis of the 40 cases of energy citizenship, we have identified diverse ways in which aspects of social and environmental sustainability are manifested. We specifically explored 5 aspects, 3 related to social and 2 to environmental sustainability. In Tables 18 and 19, we summarise the varied and many ways in which cases approached these aspects. Future research, based on the literature and the focused study of further cases could build on and continue this investigation, and could in turn be used to inspire existing and new cases.

Table 18: Manifestations of environmental sustainability aspects in the cases studied

Sustainability aspects:	**Environmental sustainability**	
	Environmental sustainability	**Carbon limit**
Manifestation of sustainability aspects in studied cases:	• Efficiency-related focus and objectives • Sufficiency-related focus and objectives • Combining efficiency and sufficiency • Include behaviour and practice change • Aim for overall reduction of environmental impact • Measure, monitor and repor on environmental impact in a transparent way • Focus not only on energy related environmental impact, but also on other issues (e.g. biodiversity, water scarcity or nature protection) • Take a systemic approach to considering and dealing with environmental impact • Recognise global environmental issues and connect them to local solutions • Aim to satisfy needs in a sustainable way • Consider the environment and nature in all decision made • Recognise “nature” as having value in itself • Accept responsibility for causing environmental harm	• Show awareness of climate change issues • Recognise carbon limit explicitly • Recognition of carbon limit is paired with concrete (science-based) reduction targets • Use some kind of a calculation and/or monitoring system to keep track of their environmental, including climate, impact (such as carbon footprint) • Link plans, targets and activities to local and national climate objectives and/or energy strategies • Aim to educate and increase the capacity of others in recognising and reducing the carbon footprint

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Table 19: Manifestations of social sustainability aspects in the cases studied

Sustainability aspects:	Social sustainability		
	Energy democracy	**Citizen power/controrl**	**Equity/justice**
Manifestation of sustainability aspects in studied cases:	• Support the democratic functioning of the case internally, but also has an impact externally, serving to change the system • Create or propose to create new types of organisations/bodies to promote and/or ensure democratic operations (e.g. Citizen Council) • Practice self-governance • Go beyond representative democracy: commitment to and/or practice of horizontal and inclusive modes of decision-making and direct democracy • Create a tool and quality assurance label for energy democracy • Create a model that can be replicated, and act as a role model • Enable or expand individual/collective ownership of energy infrastructure • Create de-centralised, locally controlled production and consumption systems • Initiate and/or participate in public decision-making processes; and • Make the voice of various groups and solutions heard in such processes • Provide a forum for deliberation on energy and/or climate change • Improve accountability in the energy sector and governance • Showcase and spread information on energy democracy and its tools/methods	• Enable all actors to participate, including those in energy poverty (through invitation, training, support, differentiated, low or no membership or service fee, etc.) • Ensure and define citizen control in founding document • Create different roles for participation, decision-making and responsibility-taking • Have an impact on the wider political and decision-making system • Create or enable the creation of citizen-controlled and managed decision-making structures and processes • Ensure and create structures for transparent operations • Operate in a cooperative form, which essentially promotes citizen control through the strong involvement of the members	• Share power with and giving power to members • Establish inclusive governance structures • Ensure equitable voice for everyone, including the marginalised • Ensure accessibility of what the case offers, thus share “benefits” of case (e.g. access to renewable energy, access to low-energy housing, etc.) • Define access to energy as a basic need • Allow access to energy to those in need (e.g. when access to power is turned off) • Establish co-ownership of energy or housing infrastructure • Solidarity and sharing of “burdens” of energy production and consumption • Ensuring and enabling diversity in membership • Awareness of historical responsibility for climate change • Awareness of the (energy and liveable climate) rights of future generations

Improving the evaluation of the social and environmental sustainability aspects

As it was noted earlier, the research presented here has been explorative in nature. We set out to explore how aspects of social and environmental sustainability are manifested in various cases of energy citizenship, and to what extent and how they have been connected. In our exploration we have identified ways in which the aspects could be operationalised into specific ways of manifestations, e.g. as we have shown especially in the case of energy democracy and equity/justice issues, but to a more limited extent also for the other 3 aspects. Based on these, summarised in Table 18 and 19, as well as similar methodologies developed elsewhere (e.g. Heffron, 2022 and 2023; Lee and Byrne, 2019; Vadovics et al., 2012), a more detailed analysis methodology for the sustainability aspects could be created to discover more about sustainability-driven energy citizenship.

Furthermore, based on the outcomes of our explorative work related specifically to the **equity/justice aspect**, we **propose the reformulation of the definition of "high".** This reformation will allow for a "high" level of recognition of even geographically limited cases, if they otherwise recognise the importance of global equity/justice issues, exhibit a clear awareness of it, and have relevant objectives (e.g. in relation to reducing carbon footprints to a globally fair average size). At the same time, geographic limits/boundaries, as highlighted by the Shared Energy (FR) and SoLocal (DE) cases, may also result in inequalities, notably in the unequal opportunities existing for the population to join energy communities in different regions, or the more well-to-do segment of the population being able to engage and invest in the energy transition while the poorest stay behind.

Finally, it is notable that although in some respects, an ENCI case **being part of an EU project** poses some limitations (e.g. in relation to citizen power/control), in others it apparently supports a **higher level of recognition,** evident in relation to **the carbon limit** and the introduction of related calculation and monitoring tools.

Research limitations and future research

As mentioned, this research is limited in some respects by the case selection methodology used. The methodology had to be suitable to study ENCI from a variety of perspectives, it was therefore limited in relation to complete representation.

The multi-foci nature of the data collection also limited the detail in data that we were able to achieve, so a research project focusing solely on the sustainability aspects may increase the richness of data further, and it may allow for a more detailed study of sustainability aspects.

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Even though we selected cases based on access, we still encountered a level of reluctance from some case participants to participate in interviews. Thus, our data in some cases is limited to desk-research.

Finally, we must acknowledge the benefits and limits presented in having a multidisciplinary research team. It is an asset in that we all brought different knowledge, skills and experience to our joint research. Yet, we encountered obstacles relating to our different levels of knowledge and experience, for example, the sustainability aspects.

Our team made considerable effort to bridge the knowledge gaps by having internal training events prior to both stages of the research as well as standardisation exercises. Furthermore, throughout the detailed case research we held check-in meetings to further increase our knowledge and discuss any emerging issues (see more details in Vadovics et al., 2022a and b).

Policy and practice: A conclusions

Given the relative stability of objectives and outcome orientation that we observed in the cases, we can draw several important conclusions. First, policies related to defining the context in which ENCI operate could actively encourage, enable, and - in the case of funding - require that cases and initiatives explicitly connect the social and environmental dimensions of sustainability in both their objectives and activities. Second, such a requirement could be supported by guidance based on the work presented here (see e.g. Table 18), illustrated by examples from the cases analysed. Third, to expand on this point, cases that currently exist who are applying for further support could be required to conduct a form of self-evaluation exercise. The checklists and guidance of this self-evaluation could be developed based on the findings of this study, and supplemented from similar studies conducted elsewhere.

Finally, in some cases we found that it is existing policies that block a case from becoming more sustainability-driven (e.g. From CEP to CES in Hungary). It is vital that we uncover such situations and modify the policy context so that cases of ENCI can realise their full potential to contribute to a democratic and sustainable energy transition.

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ANNEX I: THE 40 CASES STUDIED IN DETAIL IN THE ENERGYPROSPECTS PROJECT

Name of case in English:	Short name	Country	Cluster	Main ENCI ideal-type (current)	Secondary ENCI ideal-types (current)	energy democracy	equity / justice	citizen control	env. sustainability	carbon limit
Extinction Rebellion Etterbeek	XR Etterbeek	BE	1	Type 10	2	4	4	4	4	4
LaVidaVerde	LaVidaVerde	DE	1	Type 8	2,3,4,10	4	3	4	4	3
SoLocal Energy	SoLocal	DE	1	Type 8	2,10	4	4	4	4	4
GoiEner Taldea	GoiEner	ES	1	Type 8	9	4	4	3	4	4
Railcoop	Railcoop	FR	1	Type 8	4	4	4	4	4	2
Shared Energy	Shared Energy	FR	1	Type 8	10	4	3	4	4	3
Cargonomia	Cargonomia	HU	1	Type 8		4	4	4	4	3
From the Community Energy Programme to Community Energy Service	From CEP to CES	HU	1	Type 8	6	4	3	4	4	3
TreeDependent	TreeDependent	HU	1	Type 8	2,7	4	4	3	4	4
Aran Islands Energy Cooperative	Aran Islands	IE	1	Type 8	2	4	3	4	3	4
Citizens' Assembly on 'How the State can make Ireland a Leader in tackling Climate Change'	CA Ireland	IE	1	Type 5	6	4	4	3	3	4
Berlin Energy Citizen	Berlin EC	DE	2	Type 8	1,10	4	3	4	4	2
Trégor Energ'éthiques	Trégor E	FR	2	Type 8	1,3,4	4	3	4	4	2
Biomass briquettes programme (for the energy poor)	Bmass briquettes	HU	2	Type 8		4	4	4	3	2
Energy Communities Tipperary Cooperative	ECTC	IE	2	Type 8	1,4	4	3	4	2	2
Galway Energy Co-operative	Galway Coop	IE	2	Type 8		4	3	4	3	3
Loenen Energy	Loenen	NL	2	Type 8		4	3	4	3	2
National Association of Active Residents	NAAR	NL	2	Type 8	3,4	4	4	4	3	2
Weert Energy	Weert	NL	2	Type 8		4	3	4	3	2

Name of case in English:	Short name	Country	Cluster	Main ENCI ideal-type (current)	Secondary ENCI ideal-types (current)	energy democracy	equity / justice	citizen control	env. sustainability	carbon limit
BBL Home renovation campaign	BBL Home	BE	3	Type 1	2,3,4,9,10	2	3	3	4	4
Hydro Electricity Ourthe and Sambre	HOSe	BE	3	Type 8	7	4	3	3	4	3
Student Switch Off campaigns in Bulgaria	Student Switch Off	BG	3	Type 3	1,7	1	4	2	3	4
Naturstrom AG	Naturstrom	DE	3	Type 4	1,7,8	4	3	3	4	4
La borda. Housing cooperative in transfer of use	La borda	ES	3	Type 8	2,4	3	3	4	4	3
Zsuzsanna Hojtsy-Keresztény - EnergyNeighbourhoods energy master, local change maker	Zsuzsanna HK	HU	3	Type 8	1,2,9	3	3	4	4	3
Social media influencer "Edgar Fresh"	Edgar Fresh	LV	3	Type 5	2	3	3	3	4	4
Drechtsteden Energy	Drechtsteden	NL	3	Type 7	1,5	3	4	3	4	3
Energy Transition of City of Burgas: Going Smart and Sustainable	Burgas	BG	4 / 1	Type 7	1,9	3	4	3	3	3
Som Energia – Green Energy Cooperative	Som Energia	ES	4 / 1	Type 8	9	4	3	3	4	2
Nagypáli, the renewable energy village	Nagypáli	HU	4 / 1	Type 8	1,2,4	4	3	3	4	2
Consultation: Shaping Our Electricity Future (EirGrid Public Consultation: Shaping Our Electricity Future)	EirGrid Consult	IE	4 / 1	Type 5		3	4	3	2	4
Installation of solar heat panels in multi-apartment building, complementary with energy efficiency improvement of the building	Solar heat panels	LV	4 / 1	Type 1	7	3	3	4	3	3
Reindonk Energy	Reindonk	NL	4 / 1	Type 8		4	3	3	3	2
Energy efficiency mission ULB	EE ULB	BE	4 / 2	Type 7	8,4	3	2	2	4	2
Bike Evolution	Bike Evolutiton	BG	4 / 2	Type 7	8	3	1	3	2	2
Student Energy Teams	Student ET	BG	4 / 2	Type 3	1,7	1	2	3	3	3
Couso´s project	Couso	ES	4 / 2	Type 8		2	4	3	3	1
Hauts-de-France Pass Renovation	Hauts-de-France	FR	4 / 2	Type 1		1	4	2	3	2
Association "City for people"	City for People	LV	4 / 2	Type 7		2	3	3	3	2
OFF-GRID: Renewable energy DIY (DO IT YOURSELF) for rural development	OFF-GRID	LV	4 / 2	Type 1	7	2	2	3	3	3

ANNEX II: THE IDEAL-TYPE STORY OF THE 40 CASES, WITH THE MAIN CHANGES INDICATED

Name of case in English:	Short name	Country	Cluster	Main ENCI ideal-type (current)	Secondary ENCI ideal-types (current)	Main and Secondary ENCI ideal-types through the case history (from current to start of case)								Main ENCI ideal-type change	
						Main	Secondary	Main	Secondary	Main	Secondary	Main	Secondary	Ref > Trans	Trans > Ref
Extinction Rebellion Etterbeek	XR Etterbeek	BE	1	Type 10	2	10	2	10	2						
LaVidaVerde	LaVidaVerde	DE	1	Type 8	2,3,4,10	8	3,4,10	8	3,4	2					
SoLocal Energy	SoLocal	DE	1	Type 8	2,10	8	2	8	1,2	4	8				
GoiEner Taldea	GoiEner	ES	1	Type 8	9	8	9	7		8				x	
Railcoop	Railcoop	FR	1	Type 8	4	8	10								
Shared Energy	Shared Energy	FR	1	Type 8	10	8	10								
Cargonomia	Cargonomia	HU	1	Type 8		8									
From the Community Energy Programme to Community Energy Service	From CEP to CES	HU	1	Type 8	6	8	6	8	6	7	5			x	
TreeDependent	TreeDependent	HU	1	Type 8	2,7	8	2,7	8	2,7	8	2,7	7		x	
Aran Islands Energy Cooperative	Aran Islands	IE	1	Type 8	2	8	2	8	2	8	4				
Citizens' Assembly on 'How the State can make Ireland a Leader in tackling Climate Change'	CA Ireland	IE	1	Type 5	6										
Berlin Energy Citizen	Berlin EC	DE	2	Type 8	1,10	8	10								
Trégor Energ'éthiques	Trégor E	FR	2	Type 8	1,3,4	8	1,3,4	4	5						
Biomass briquettes programme (for the energy poor)	Bmass briquettes	HU	2	Type 8		8									
Energy Communities Tipperary Cooperative	ECTC	IE	2	Type 8	1,4	8	1,4	4							
Galway Energy Co-operative	Galway Coop	IE	2	Type 8		8		8							
Loenen Energy	Loenen	NL	2	Type 8		8		7	8					x	
National Association of Active Residents	NAAR	NL	2	Type 8	3,4	8	3,4	8	3,4						
Weert Energy	Weert	NL	2	Type 8		8									

Name of case in English:	Short name	Country	Cluster	Main ENCI ideal-type (current)	Secondary ENCI ideal-types (current)	Main and Secondary ENCI ideal-types through the case history (from current to start of case)								Main ENCI ideal-type change	
						Main	Secondary	Main	Secondary	Main	Secondary	Main	Secondary	Ref> Trans	Trans> Ref
BBL Home renovation campaign	BBL Home	BE	3	Type 1	2,3,4,9,10										
Hydro Electricity Ourthe and Sambre	HOSe	BE	3	Type 8	7	7	8	8		4	2			x	
Student Switch Off campaigns in Bulgaria	Student Switch Off	BG	3	Type 3	1,7	3	1								
Naturstrom AG	Naturstrom	DE	3	Type 4	1,7,8	4	1,7,8	4	1						
La borda. Housing cooperative in transfer of use	La borda	ES	3	Type 8	2,4	8	4	7						x	
Zsuzsanna Hojtsy-Keresztény - EnergyNeighbourhoods energy master, local change maker	Zsuzsanna HK	HU	3	Type 8	1,2,9	8	1,2	2	7	1				x	
Social media influencer "Edgar Fresh"	Edgar Fresh	LV	3	Type 5	2	5	2	2	5						x
Drechtsteden Energy	Drechtsteden	NL	3	Type 7	1,5	7	1,5	7	1,5						
Energy Transition of City of Burgas: Going Smart and Sustainable	Burgas	BG	4 / 1	Type 7	1,9	7	8,4	3	4						
Som Energia – Green Energy Cooperative	Som Energia	ES	4 / 1	Type 8	9	7	8	7	8	7					
Nagypáli, the renewable energy village	Nagypáli	HU	4 / 1	Type 8	1,2,4	7	1,9	7	9						
Consultation: Shaping Our Electricity Future (EirGrid Public Consultation: Shaping Our Electricity Future)	EirGrid Consult	IE	4 / 1	Type 5		3	1,7	3	1,7						
Installation of solar heat panels in multi-apartment building, complementary with energy efficiency improvement of the building	Solar heat panels	LV	4 / 1	Type 1	7	8									
Reindonk Energy	Reindonk	NL	4 / 1	Type 8		7	3,9	7	1					x	
Energy efficiency mission ULB	EE ULB	BE	4 / 2	Type 7	8,4	4	3								x
Bike Evolution	Bike Evolutiton	BG	4 / 2	Type 7	8	8	1,2,4	8	4	8	4				
Student Energy Teams	Student ET	BG	4 / 2	Type 3	1,7	5		3							
Couso´s project	Couso	ES	4 / 2	Type 8		7		7							
Hauts-de-France Pass Renovation	Hauts-de-France	FR	4 / 2	Type 1		1	7								
Association “City for people”	City for People	LV	4 / 2	Type 7		1	7								
OFF-GRID: Renewable energy DIY (DO IT YOURSELF) for rural development	OFF-GRID	LV	4 / 2	Type 1	7	8									

ANNEX III: DETAILED CASE RESEARCH TEMPLATE – WITH QUESTIONS RELEVANT FOR THE META ANALYSIS

20 July 2022 / final version

Basic information about the case

[…]

Research topic 1: ENCI achievements

Achievements and goals

1. ***What do (did) the actors want to achieve through the ENCI case they are/were involved in?***

Please list the 3 most important goals the ENCI actors want to achieve (a list of short sentences are suitable):

1.

2.

3.

Please provide an explanation for these, and add any other goals (if relevant) in max. 10-15 lines.

[…]

6. ***Do/did the actors envision and pursue a more democratic energy future?***

First, please select the level of energy democracy pursued:

1. **Not a goal:** energy democracy has not been among the aims of the case.
2. **It is not so important:** energy democracy is considered as a positive value as such, yet the case activities and visions do not really address issues related to energy democracy (whether in terms of democratic participation, inclusive, deliberative and transparent decision-making processes, compulsory and effective decisions).
3. **It is important but limited to formal issues:** energy democracy is considered as a positive value that the case intends to support by increasing democratic participation of citizens and improving inclusiveness. Yet, the democratic energy future envisioned remains limited to formal energy democracy (democratic procedures or declaration regarding energy justice).
4. **It is core concern:** a more democratic energy future is a core concern of the case, and parts of its vision. The case aims at promoting an effective democratisation of the energy system by putting it in citizens' hand, and intends to implement concrete actions to improve access and inclusivity to self-governance.

Then, please explain your selection briefly, in cc. 10 lines, and describe how the case wants to (or does not want to) achieve a more democratic energy future.

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7. ***Which, if any, democratic deficits in the energy system do the actors in this case perceive as driving their activities?***

Please respond to this question based also on your responses to Q6, as well as Q1 and Q2.

Reformative and transformative goals[21]

8. ***In which respects do (did) the actors in the case pursue goals that do not require fundamental change and do not basically challenge the current energy system (i.e. have reformative goals)? And in which respects do they challenge the current system (i.e. have transformative goals)?***

In your response please make sure to consider the goals listed in Q1 and Q2.

	Goals that do not challenge the current system (reformative)	**Goals that challenge the current system (transformative)**
Goals		
Brief explanation		

9.A In terms of equity and justice, please indicate the level of equity/justice pursued, as they are defined in D2.2 (pg. 31.):

1. Equity and justice issues are **not relevant** to this case in the sense that they are not addressed by case goals or activities.
2. Justice or equity are essentially out of scope, or restricted to equal access to markets
3. Equal access is granted to all concerned citizens, but the framings tend to limit them to a certain geographical area or amount of financial contribution, which does not guarantee "real" equity.
4. Involvement is fully open, without specific belonging conditions. Issues such as energy poverty, gender and inclusivity are taken into account and foster adaptive measures to guarantee more equity.

Please explain and illustrate your selection briefly, in cc. 5-8 lines, using concrete evidence from the case wherever possible (e.g. examples of activities, numbers illustrating related achievements from reports, pictures, etc.)

[21] **Reformative:** incremental socio-technical change, low energy democracy, shallow environmental sustainability (see more details in D2.2, pg. 29.)

Transformative: radical socio-technical change, high energy democracy, deep environmental sustainability (see more details in D2.2, pg. 29.)

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9.B In terms of environmental sustainability, please indicate the importance thereof, based on the definition of various levels of environmental sustainability in D2.2 (pg. 31.):

1. Environmental sustainability issues are **not relevant** to this case in the sense that they are not addressed by case goals or related activities.
2. Environmental sustainability issues are mostly seen as self-evident and not explicitly taken into account. In the lowest forms, environmental sustainability tends to be dealt with as a positive or negative externality.
3. Environmental sustainability is part of the process or case, but this concern is addressed in a superficial (non-radical) way (focus on efficiency strategies) and without dedicated assessment. Energy remains the main focus.
4. Environmental sustainability is a core issue, and it is even considered in goal setting, which is followed with a holistic strategy (mix of efficiency, consistency and sufficiency measures). Its assessment through indicators is seen as desirable.

Please explain and illustrate your selection briefly, in cc. 5-8 lines, using concrete evidence from the case wherever possible (e.g. examples of activities, numbers illustrating related achievement from reports, pictures, etc.)

9.C Does the case recognise environmental limits and openly talk about a sustainable carbon footprint that is necessary to reach the 1.5 °C target?

1. Related to the case concerning case goals and activities, there is **no recognition** or mention of the ecological limit of atmospheric carbon emissions and/or reaching the sustainable carbon footprint.
2. **Implicit recognition:** there is no explicit mention of the ecological limit of atmospheric carbon emissions and/or sustainable carbon footprint. But despite the lack of formal references to either of them, the case is involved in activities to reduce the consumption and/or emission of carbon.
3. **Explicit recognition:** the ecological limit of atmospheric carbon emissions and/or sustainable carbon footprint is mentioned in core case documents and the actors involved in the case are clearly engaged in attempts to reduce consumption and/or emission of carbon.
4. **Explicit recognition with mention/objective of reaching the max. carbon footprint:** in addition to mentioning the ecological limit of atmospheric carbon emissions and/or sustainable carbon footprint, the maximum sustainable carbon footprint and/or emissions are also defined.

Please explain and illustrate your selection briefly, in cc. 5-8 lines, using concrete evidence from the case wherever possible (e.g. examples of activities, numbers illustrating related achievements from reports, pictures, etc.).

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9. D Does the case mention and/or recognize any other ecological limits (e.g. biodiversity loss, deforestation, freshwater use, chemical pollution, etc.)? Please fill in the table below as relevant, adding more rows if needed.

Which ecological limits are recognised? Please list, putting 1 limit/row.	**Please explain briefly how the limits are recognise, using concrete evidence and examples from the case.**

Effective citizen control: democratisation of the energy system

10. ***Does the case contribute/make achievements to the democratisation of the energy system? If yes, how?***

Please list the ways in which the case contributes to the democratisation of the energy system. Briefly elaborate on how this is manifested in the case and add some quotes if possible. You do not need to provide an answer for each "how", only where it is relevant for your case.

How	**Briefly explain how this is manifested in the case**	***Illustration / quote (from interview or document analysis)***
… by enabling or expanding individual/collective ownership of energy infrastructure		
… by initiating and/or participating in public decision-making processes		
… by making its voice heard in the public debate		
… by providing a forum for deliberation on energy		
… by improving accountability in energy sector and governance		
… other, please specify:		

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11. *How does the internal governance/decision-making within the case relate to its contribution to the democratisation of the energy system?*

Describe your findings in cc. 10-15 lines addressing the following three aspects:

1. In which ways do citizens (or different groups of citizens) participate in different types of internal decision-making in this case?
2. How are those decisions taken? Is this process open and deliberative and how do actors in the case deal with issues for which they cannot reach consensus on (e.g. use voting or defer decision-making)?
3. Are decisions that are based on citizen votes compulsory and perceived as being meaningful/effective?

12. *Does (did) the case exhibit strong elements of effective citizen control?*

You already answered this question in the mapping of this case. Based on the deeper insights into the case that you have now gained, please make the assessment again.

1. **No** effective voice citizen power/control
2. **Low level:** when expressed (e.g., within "invited" deliberative processes), citizens' voices remain hardly heard or taken into account. Being a minority, citizens' voices do not really count or in a voting process, the framings tend to limit the possibility of expressing an opinion.
3. **Medium level:** citizens can express their views, but their voices are not compulsory (within deliberative, representative or consultative processes). Within organised / participative structures, citizens remain a minority group, i.e., unable to impose their views to other groups.
4. **High level:** citizens exert the effective control, and their votes are mandatory. This governance takes place mostly in an "invented" process (as opposed to "invited" ones by Radtke et al., 2020). Citizens represent a majority group, empowered enough to control the process, and thus make their voices predominant.

Marginalised groups, poverty, gender, inclusivity

13. *How does (did) the case take into account poverty, gender, marginalised groups and inclusiveness issues?*[22]

Please elaborate in cc. 15-20 lines, considering issues of energy justice, including global energy justice with consideration of disadvantaged groups in North and South and/or future generations,

[22] There have been critiques of ENCI reproducing various power inequalities in society, and neglecting various marginalised groups. Attentiveness to marginalised groups is very important, as outlined in D2.1 and early WP6 proceedings.

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access to affordable energy and inequalities in terms of climate vulnerability (e.g. rural/remote locations)[23]

14. ***In which way do the actors in the case see themselves as responsible/accountable for such concerns?***

Describe in cc. 8-10 lines whether and how actors in the case see themselves as responsible and/or accountable for concerns related to poverty, gender, marginalised groups and inclusiveness issues. Provide the rationale given for this by these actors.

Research topic 2: Conditioning factors and Intermediation

[…]

Research topic 3: Development over time

Changing Agency, Aims and ideal-types

[…]

28. ***Have the (transformative/reformative) aims of the ENCI case, individual/organisation, changed over time? Has the case moved from reformative to transformative or vice versa? Has it broadened or narrowed its aims/objectives?***

Please select the adequate answers from the lists, and then report the score in the table below and add the required information. **OVERALL**

Related to reformative/transformative change:

0: no significant change in the transformative/reformative aims

1: the case moved from reformative to transformative aims

2: the case moved from transformative to reformative aims

Related to the aims/objectives of the case:

0: unchanged

1: broadened

2: narrowed

[23] Some examples of inclusion of marginal groups are: Reduced membership fees, lower share of prices for vulnerable groups; targeted information and engagement activities; member diversity; energy efficiency services targeted at vulnerable groups; lower energy tariffs for vulnerable groups; knowledge about energy vulnerability, poverty, the preferences, needs and living situations of vulnerable and energy poor households; engagement with energy vulnerable and poor households; addressing energy poverty in organisational statutes (Hanke et al. 2021).

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Sub-question	Score	Description of change	Illustration/example of change
Tranformative / reformative change over time			
Change of aims/objectives			

29. ***Did the trajectory and the evolutions/transformations of the case impact the ideal-types that can be assigned to the case? Did the main ideal-type and/or secondary ideal-type(s) change over time and how?***[24]

Please complete the table below by adding the corresponding numbers (year and ideal-type - put N/A if no type can be assigned). It is, of course, possible that more or less phases can be identified in the development of the ENCI case, so please feel free to add or remove rows in the table.

Development phases in the history of the ENCI case	Main typology ideal-type	Secondary typology ideal-type(s), if any	Please describe what induced the change.
Phase 1: **Creation of the case in XXXX**			
Phase 2 in **XXXX**			
Phase 3 in **XXXX**			
Phase 4: Current/last state (20XX)			

[24] For ideal-types and their definition, please refer to D2.2 and the table provided here in the template.

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