



Analyzing typologies and determinants of CAIs in the energy transition: a survey.

This document serves as Deliverable D3.3 Report: determinants for CAIs in Energy Transition and comparative case studies.

It is connected to WP3 - Exploring determinants of CAIs development in the energy sector, Task 3.2 Analysing typologies and determinants of CAIs in the energy transition (Months: M14-M17) and Task 3.3 Selecting comparative case studies (Months: M17-M19).

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Abbreviations and acronyms

CAI:	Collective Action Initiative
Coop:	Cooperative
CSM:	Civil Society Mobilization
ECS:	Environmental Care Activities
EES:	Energy Efficiency Services
EM:	E-Mobility
ESC:	Energy Supply Chain
FiT:	Feed-in-Tariffs
K&S:	Knowledge & Skills Creation
LLC:	Limited-liability companies
PV:	Photovoltaic
RE:	Renewable Energy
REG:	Renewable Energy Generation

Contribution history

Date	Comment	Contributors
01/11/2020	First draft version	UNITO; UB
13/11/2020	Internal review I	UNITO; UB; HVL; VITO; DTU
07/01/2021	Internal review II	UB; VITO + contributions from the other partners involved in the survey.
08/02/2021	Final version submitted	

Figure 1 – Contribution History

The COMETS Consortium

Partner number	Short name	Partner full name	Country
1	UNITO	Università degli Studi di Torino (Coordinator)	Italy
2	TECNALIA	Fundación Tecnalia Research and Innovation	Spain
3	HVL	Western Norway University	Norway
4	UB	Università Commerciale Luigi Bocconi	Italy
5	JRC	Joint Research Center – European Commission	Belgium
6	DTU	Danmarks Tekniske Universitet	Denmark
7	VITO	Vlaamse Instelling Voor Technologish Onderzoek	Belgium
8	ECOLISE	European Network For Community-Led Initiatives On Climate Change And Sustainability	Belgium
9	TREA	Mittetulundusuhing Tartu Regiooni Energiaagentuur	Estonia
10	RUG	Rijksuniversiteit Groningen	Netherlands
11	ECN	European Crowdfunding Network	Belgium
12	UJ	Uniwersytet Jagiellonski	Poland

Table 1: COMETS' consortium.

1. Introduction

The project *Collective Action Models for the Energy Transition and Social Innovation* (COMETS) is a three-year interdisciplinary research project investigating how to evaluate the potential of Collective Action Initiatives (CAIs) in the energy transition process with a particular emphasis on Social Innovation.

COMETS' Work Package 3 (WP3), "*Exploring the Determinants of CAIs Development in the Energy Sector*," aims at collecting information on the six countries: Belgium, the Netherlands, Poland, Estonia, Spain, and Italy. Building on Task 3.1, which entailed the survey and the methodology adopted, this deliverable presents Task 3.2, "*analysis of typologies and CAIs in the energy transition*", together with Task 3.3, "*selecting comparative case studies*", in line with the performance indicators defined in Task 6.2. Moreover, the survey database analysis outputs will update and enlarge the inventory developed in Work Package 2.

The deliverable 3.3 analyses the descriptive dimensions and the KPI determinants of CAIs in the energy transition. The present report profiles CAIs to offer survey-based and qualitative criteria to characterize CAIs themselves and their performance in driving technical, economic, and social innovation in the energy transition. Together with the survey analysis, these criteria will support the six countries to (i) select the case studies representing the country under analysis for an in-depth investigation according with Work Package 4 and (ii) understand "successful" CAIs' replication potential (good practice).

The deliverable is structured as follows: Section 2 describes the questionnaire's design and the methodology for the analysis. Section 3 presents the survey results. Here several key dimensions are identified, which will be the basis for building CAI's typologies. Section 4 concludes with the criteria for selecting the case studies. The appendix offers extensive supporting material, reporting further analysis and the survey questions not presented in the main text, Moreover, a codebook, reporting all the detailed survey questions is available for consultation. Finally, an excel file, which contains the dataset of the synthetic variables is made available for COMETS partners to compare and select case studies in view of the case studies to be developed in spring 2021.

2. Methodology

This section describes the methodology applied to the survey analysis that developed along two stages: the detailed description of the survey dataset (section 3) and the provision of a synthetic dataset for profiling CAIs (section 4).

First, we needed to prepare the data for the analysis (section 2.1) through a careful assessment of the data quality and some coding to homogenize the database. We then grouped the questions around four key dimensions (first stage of analysis, section 3). The aim is to describe in details the main features and dynamics of CAIs in the six countries (Dynamics of Creation, Organizational Structure, Financing, CAIs' Activities) with a specific focus on citizen participation. Based on the detailed analysis, we finally move to a refinement of the Dimensions of Analysis (second stage of analysis, section 4) split into seven dimensions to be better synthesized. Merging variables and modalities in few variables, we were able to individually profile CAIs to support the in-depth case studies analysis carried out in Work Package 4. In section 2.4, a table of correspondence among the dimensions of analysis applied in the two stages is provided.

2.1 Preparing data

2.1.1 The database

The survey structure and questions are described in COMETS deliverable 3.1. The survey is structured in six parts: the first one collects inquiries related to privacy issues; the second reports questions on the origin of CAIs, from several aspects such as the idea of forming the initiative and the first supporters. The third part consists of questions on CAIs' activities, from the strictly energy-related ones, such as renewable energy production, to other types of activities, such as promoting environmental awareness and social inclusion. The fourth part collects questions related to participation and the organization of CAIs, such as their legal form. The fifth part is related to the environment in which CAIs develop, especially at the geographical level. Finally, the sixth section concludes with questions related to the support needs of CAIs.

Part 1 (Q1-Q4): Privacy Issues.

Part 2 (Q5-Q12): The origin. Who had the idea, who supported the idea, the beneficiaries, and their involvement level, the first activity.

- Q5: Who was at the origin of the idea;
- Q6: Who were the main parties supporting the implementation of the initial idea;
- Q7: Who were you targeting as beneficiaries of the idea;
- Q8: Did you consult the future beneficiaries about their needs;
- Q9: How demanding were the following steps (e.g., reaching citizens, assessing the economic viability of the initiative)¹;
- Q10: What was the first activity you conducted²;
- Q11: How you financed the first activity (activities);
- Q12: If the first activity was launched thanks to public Funding, which public entity provided that funding;

Figure 1: Questions 1-12.

Part 3 (Q13-Q24): CAIs' activities in the energy transition. Objectives (e.g., democracy), energy production/distribution, RE technology; other activity: mobility services, energy efficiency services, environmental care (e.g., promotion of sustainable behaviors), knowledge and skill creation, civil society mobilization, energy poverty, who benefit from the services/activities today, (if) profits, their allocation.

- Q13: How would you rank the objectives of your initiative, e.g., seeking energy democracy, looking for alternatives to traditional energy model;
- Q14: Are you active in the energy supply chain, and how;
- Q15: Are you active in renewable energy generation, and how;
- Q16: Are you active in e-mobility, and how;
- Q17: Are you active in energy efficiency services, and which are they;
- Q18: Are you active in environmental care activities, and how;
- Q19: If your initiative engages in knowledge and skills creation services/activities, which are they?;
- Q20: Are you active in civil society mobilization, and how;
- Q21: Do you carry activities with the following objectives? (e.g., women empowerment);
- Q22: do you take actions to address energy poverty;
- Q23: to whom are the services/activities provided today;
- Q24: if you make profits, how you allocate them;

Figure 2: Questions 13-24.

¹ Likert scale: Very difficult to Not difficult.

² Open question, it has been re-coded.

Part 4 (Q25-Q39): Organization and participation.

- Q25: the current legal form of the initiative;
- Q26: which areas were important when choosing the legal form?;
- Q27: how many members;
- Q28: how many customers;
- Q29: to what extent members are also clients;
- Q30: how many employees (FTE);
- Q31: do you use external services, e.g., legal consultants?;
- Q32: do you use volunteers, if yes how many;
- Q33: main investors;
- Q34: who is financing the activity today;
- Q35: if using public capital, what are the main providers;
- Q36: Which bodies constitute your organization, and what is their role?;
- Q37: For the bodies constituting your organization, how do each function?;
- Q38: Ratio of women in the executive boards/board of directors?;
- Q39: If you consult citizens or entities in decision-making, which are they?

Figure 3: Questions 25-38.

Part 5 (Q39-Q40): the environment and partnerships

- Q39: the geographical scale of the initiative
- Q40: partnerships and cooperation with other entities/organizations

Figure 4: Questions 39-40.

Part 6 (Q41-Q48): barriers for citizens, attractivity, future developments, support needed (platform)

- Q41: What are the barriers for citizens to become active in your initiative;
- Q42: what citizens/members find most attractive in your initiative;
- Q43: Are you struggling to keep your initiative ongoing;
- Q44: if you have any plan to develop further, what is it;
- Q45: For your initiative to further develop or be sustainable, how difficult are the following statements;
- Q46: supporting platform;
- Q47: Research interest in your CAI + data;
- Q48: something more to add.

Figure 5: Questions 41-48.

2.1.2 Coding

The final database consists of 206 entries (see deliverable 3.2). As a second step, the questions have been coded³ to simplify the database's readability and to handle it in statistical software such as STATA, R, Matlab. Apart from the open questions, the survey allows for multiple answers, which means that each CAI could provide more than one non-ordered answer per question.

Table 2 reports an example. We consider question five on "who had the idea of the CAI at the origin," divided into sub-questions (Q5_1-Q5_10). Each sub-question is coded as a dummy where 0 means that the CAI did not select that option, 1 otherwise. In Table 2, we can compute the total selections by column to understand which answers were the most chosen ones by CAIs. However, CAIs could select more than an answer, i.e. rows represent CAIs' answers.

Q5_1	Q5_2	Q5_3	Q5_4	Q5_5	Q5_6	Q5_7	Q5_8	Q5_9	Q5_10
0	0	0	0	1	0	1	0	0	0
0	1	0	0	0	0	0	0	0	0
0	1	0	0	0	0	0	0	0	0
0	1	0	0	0	0	0	1	0	0
0	1	0	0	0	0	0	0	0	1
0	1	0	0	0	0	0	0	0	0
0	1	1	1	0	0	0	0	0	0

Table 2: Multiple answers: an example.

For example, let's consider the first row where the number "1" appears two times. The CAI here selected two options, Q5_5 (*university*) and Q5_7 (*private energy utility*). For instance, if we look at the last row, the number "1" is repeated three times. In this case, the CAI selected three options, Q5_2 (*citizens*), Q5_3 (*Municipality*), Q5_4 (*local development agency*).⁴

2.3 Survey analysis

The example reported in Table 2 is essential to interpret the survey results in Section 3. For each survey question, generally the discussion is as follows: first, we present the total values by country, i.e., the total number of responses by CAIs for each answer. Then, to isolate CAI results for some key variables, i.e. to know how many CAIs have replied to a specific answer, we present the combinations (also called concatenations in the text) of multiple responses. For example, if we consider Table 2, we can concatenate answers by row to see which kind of answers prevail. Both methods are valuable and adopted in the following sections. Finally, we present some graphs which summarize the survey results.

2.3.1 Defining dimensions of analysis: grouping variables

³ See the codebook in the Appendix.

⁴ The multiple answers are unordered.

To interpret the answers and to characterize the CAIs in our database, we re-organize the survey questions. The questions belonging to the six survey sections are re-organized according to four macro dimensions, namely (i) dynamics of creation, (ii) organizational structure, (iii) financing, and (iv) CAIs' activities in the energy transition, briefly described below.

(i) **Dynamics of creation**, which describes the CAIs' origin such as who had the idea of constituting the CAI, who supported it, the primary targets, the first activity, and the first financing source.

(ii) **Organizational structure**, which discusses if CAIs are informally or formally organized, which legal form (if any) prevails (e.g., cooperative, association, foundation, company), the dimension proxied by the number of members and customers declared, the decisional bodies and processes governing CAIs.

(iii) **Financing**, which investigates the actors financing CAIs (comparing the first funding of the initiatives with today funding sources), surveying the roles and the trends across countries of citizens, municipalities, banks, and other actors.

(iv) **CAIs' activities in the energy transition** which looks into which are the main activities of CAIs within the national energy systems, in particular: looking at which are the main activities along the energy supply chain (e.g. energy production, supply, a combination of both) ; if they are engaged in energy production, which are the energy technologies mostly used; whether the CAIs offer energy efficiency services; whether they implement and offer e-mobility services; and whether, along with the activities above, they also engage in wider environmental and social impact activities such as increasing environmental awareness and citizens mobilization, social inclusion, and empowerment.

2.3.2 Focusing on participation

Then, the deliverable focuses on citizens' participation. This is a cross-dimension, collecting and comparing a bundle of questions across the survey, focusing on citizens' participation and involvement. This dimension is discussed in aggregate terms, considering the overall answers, to study the general trends.

Methodologically, for each question included in the cross-section, we build an *index of propensity*, representing the intensity for each answer's option. Instead of summing the selections across a specific option, we exploit the database's multiple answers structure, building a more reliable measure. The following example clarifies the procedure adopted.

Let's consider again Table 1, showing question five. We construct the Index of propensity in four steps, starting from the individual CAIs' behaviors (answers): (i) we compute the total selections by row, representing the answer by CAI; (ii) we divide the options selected by the row total. For example, if a CAI picked two options, each one is divided by two, obtaining the weight of 0.5. (iii) We repeat the procedure for all the CAIs, answering question five. We then sum the weights for each option by country and then by overall. (iv) we obtain a single number, e.g., the Index of propensity, which considers the heterogeneity of CAIs and is more precise than the summation over

selections. The result of these procedures is summarised with graphs representing the intensity of the Index of propensity.

2.4 Building a synthetic dataset for profiling CAIs

Based on the detailed survey analysis above described, a *naïve* methodology has been applied to provide a synthetic dataset able to play as a profiling tool for CAIs, i.e., to allow for a synthetic description of each of the surveyed initiatives.

For the merging process to be eased, we proceeded in refining the Dimension of Analysis by splitting some of the dimensions adopted from the detailed description of the survey results (section 3) into sub-dimensions as reported in Table 3.

Survey Analysis (Section 3)		Profiling CAIs (Section 4)	
Dimensions	Questions	Dimensions	Questions
Dynamics of creation	Q5, Q6, Q10, Q11, Q12, Q13	Dynamics of Creation	Q6, Q11
		Objectives	Q13
Organizational structure	Q25-Q32, Q36, Q37, Q39, Q41	Organization and size	Q25 Q27
Financing	Q11, Q12, Q33-Q35	Financing	Q11. Q33
CAIs Activities in the energy transition	Q14-Q17, Q18-Q20, Q21, Q22, Q24, Q38	Geographical scope	Q40
		Social Impact	Q21, Q22, Q23, Q24
		Activities	Q14, Q16, Q17, Q18, Q19, Q20

Table 3: Correspondences between Section 2 and Section 3.

The final dataset (see Appendix 1) results from a merging process along with three main steps:

1. **Selecting variables to be merged** or jointly considered to provide a synthetic variable for each of the dimensions considered.

Variables are selected based on two main qualitative criteria: their semantic (what they mean and to what extent they conceptually link to the specific dimension?) and the dataset's completeness.

2. **Merging modalities and reassigning values to CAIs**

For each variable, almost all multiple choices, modalities have been re-coded. The answer of each CAIs reassigned to a specific simplified value to reduce the answers' heterogeneity and make it possible to have single vectors representing the particular questions and the specific dimensions. Again, a semantic criterium has been adopted to recode and reassign the respondent's answers to a simplified set of answers.

Original modality	Recoded modality
Don't know	0
Citizen(s)	BOTTOM
Municipality	TOP

Local development agency	TOP
Universities	TOP
Research centers	TOP
Private energy utility	TOP
Energy-related cooperative	BOTTOM
Energy or environmental NGO	BOTTOM
Other, please specify	OTHER

Table 4: An example of modalities semantic recoding for Question Q6 - Who were the main parties supporting the initial idea's implementation?

3. Merging variables into one (or more) synthetic variable(s)

For each dimension, variables have been merged through the means of simple functions such as:

- **CONCATENATE**, to merge into one value the values of the original variables (e.g., in the case of Activities, the result will be a string reporting separate variables, which originally represented all the activities the CAIs are involved in);
- **CONDITIONAL**, to inspect the content of each of the variables and provide a resulting value based on the different values of the original variable (e.g., Dynamics of creation results BOTTOM in case both the variables considered are BOTTOM and so on)

Detailed about the algorithms adopted for each of the dimensions are provided in section 4.

3. Results

This section describes the survey results in detail.

	Frequencies	Percent	Cumulative
Belgium	44	21.36	21.36
Estonia	27	13.11	34.47
Italy	39	18.93	53.40
Netherlands	47	22.82	76.21
Poland	24	11.65	87.86
Spain	25	12.14	100.00
Total	206	100.00	

Table 5: Total frequencies, percentages, and cumulative by country.

Table 5 shows the final database on which we performed the analysis. It consists of six countries, Belgium, Estonia, Italy, the Netherlands, Poland, and Spain. The first column reports the frequencies by country, for a total of 206 entries. The second column shows the representativeness by country

(percentages), and the third column shows the cumulative distribution. Belgium and the Netherlands have 44 and 47 entries, Italy 39 entries, Poland, Estonia, and Spain, respectively, 24, 27, and 25 entries. The database is balanced, with a slight over-representation of CAIs from Belgium and the Netherlands due to the high numerosity of initiatives in these territories, compared to the other countries surveyed.

3.1 The key dimensions of CAIs

This section presents the key dimensions based on which we grouped the survey questions. The macro dimensions are (i) dynamics of creation, (ii) organizational structure, (iii) financing, and (iv) CAIs' activities in the energy transition. For each dimension, we report the questions included, tables, and graphs. We highlight the overall trends, and we show by-country peculiarities.

A. Dynamics of creation

This dimension collects questions on the origin of CAIs. In particular, it groups from question five (Q5) to question thirteen (Q13). The aim is to investigate the main objectives of CAIs, such as the main scopes declared by CAIs, namely promoting energy democracy, making energy more local, and alleviating energy poverty. Moreover, this dimension investigates who is at the CAI's origin (citizens, banks, local authorities) and who supported the implementation of the idea (citizens, banks, local authorities), comparing the answers across countries. Then, we collected information on the first activities performed by CAIs, such as building a photovoltaic plant or organizing meetings with citizens to inform the audience about the initiative's plans and objectives. Finally, we discuss the origin's financing sources, which will be studied deeply in the dedicated dimension. Accordingly, this dimension is divided into sub-groups called objectives, the origin, and bottom-up versus a top-down approach.

A.1 Objectives

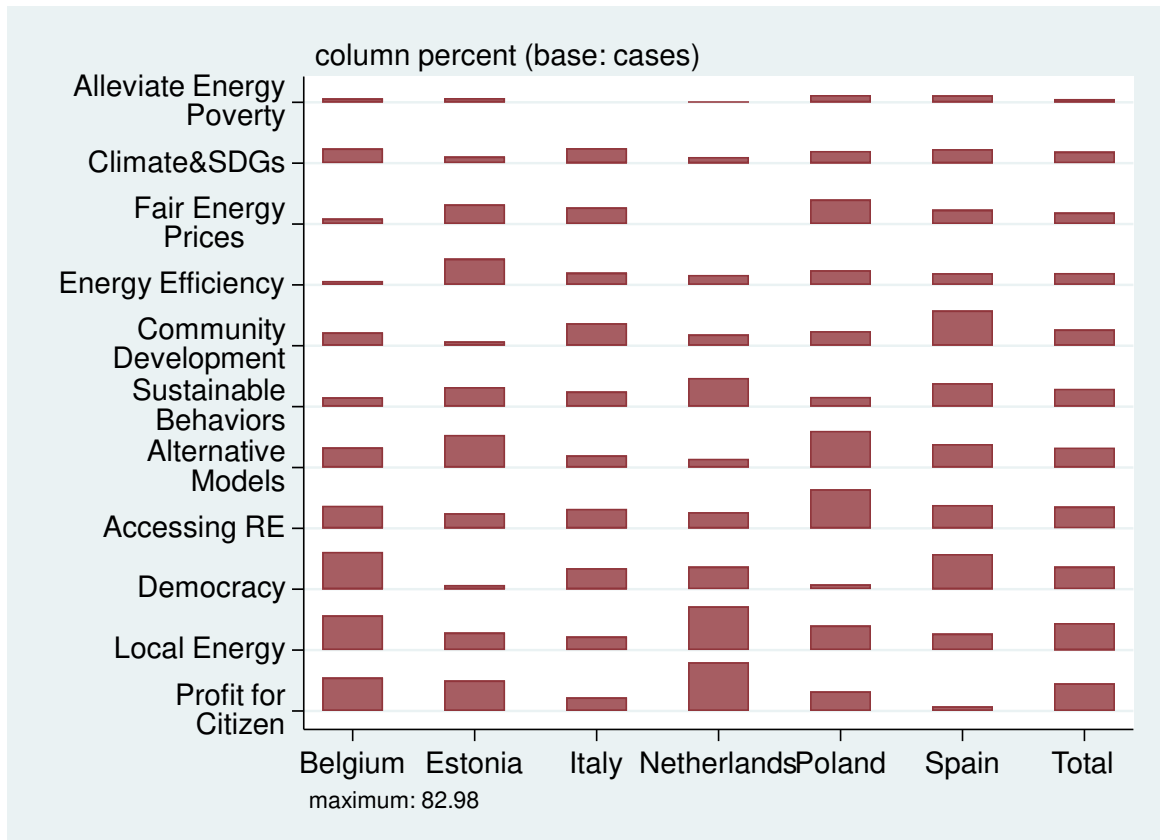


Figure 6: CAIs' objectives.

Figure 6 reports the main objectives of CAIs by country. The answers concentrate on a few options, which can be seen from the rectangles' thickness. The main objectives stated by CAIs that stand out are (energy) democracy, making energy local, creating profits for citizens, and promoting community development. In Belgium, 20% of CAIs selected as the central objectives, energy democracy, gains for citizens, and making energy generation more local. In Estonia, 24% of initiatives chose alternative energy models, accessing renewables, energy efficiency, profits for citizens, and producing energy generation more local. In the Netherlands, 19% of CAIs selected citizens' profits, making energy generation more local and increasing sustainable behavior; 10% selected energy democracy and profits for citizens making energy generation more local. Finally, 13% of CAIs from Poland chose an alternative energy model, access to renewable energy, and making energy generation more local. In Italy and Spain, we see a high heterogeneity. The most selected answers are energy efficiency, alternative energy models, and profits for Italy, while energy democracy and community development are the most chosen answers for Spain. Figure 6 shows that some objectives are common in spirit to all countries: democracy, locality of projects and community development, and the distribution of profits (if any). This result suggests that the CAIs surveyed rely on the strong involvement of citizens. This aspect will be investigated and discussed further.

A.2 The origin

	Belgium	Estonia	Italy	Netherlands	Poland	Spain	Total
Citizen	37	7	18	36	2	16	116
Municipality	5	3	4	5	12	4	33
Local Development Agency	1	2	1	3	0	0	7
University	2	0	2	0	0	0	4
Research Centre	1	0	1	0	0	0	2
Private Energy Utility	2	0	6	0	3	2	13
Energy Cooperative	3	0	7	3	0	7	20
NGO-energy related	3	2	3	1	4	1	14
other	13	16	9	13	10	6	67
Total	67	31	51	62	31	36	278
Total CAIs	44	26	39	47	24	25	205

Table 6: The origin of the idea, absolute values (Q5).

Table 6 reports the answers for the question related to *who had the original idea*, by country. The last two rows offer the country's comprehensive selection (thus including all the answers given by the CAIs in each country, which could be more than one) and the total CAIs, by country, answering this question. The dominant selected options are *citizens* and *municipalities*. The *other* option is selected several times, but we discuss it later.

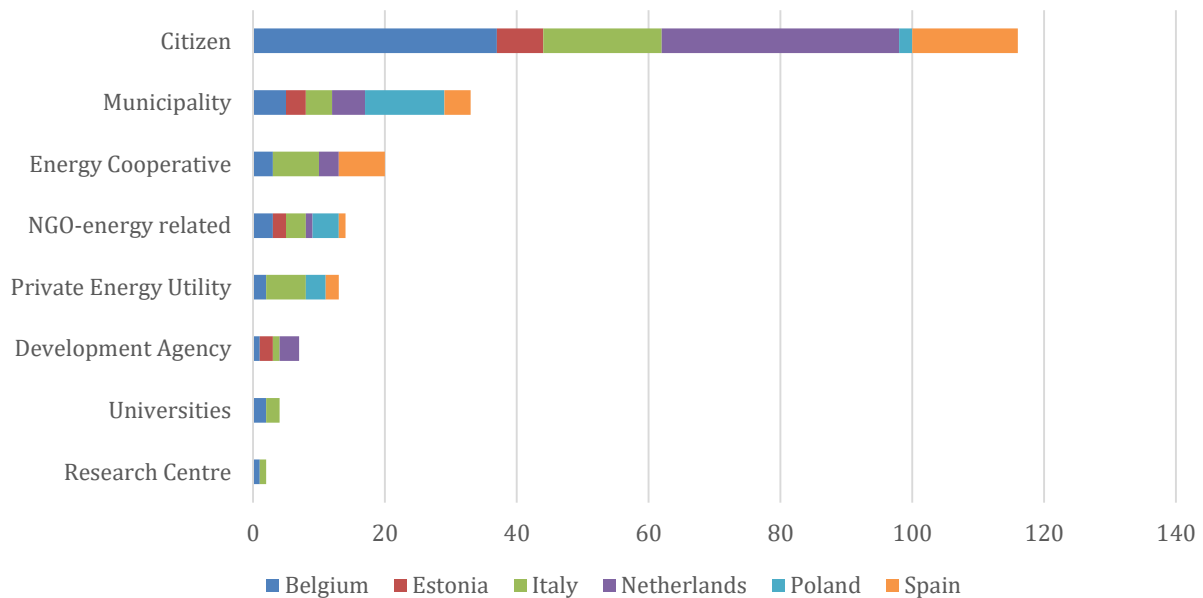


Figure 7: The origin of the idea (Q5).

Figure 7 shows the results of Q5 in a graph⁵. The role of *citizens* in initiating the CAIs is self-evident in every country except in Poland, where *municipalities* have a leading role.⁶ In particular, a deeper inspection of the option *other* for Poland shows that municipal companies and municipal councils are among the actors at the origin of the idea.

⁵ The options *don't know* and *other* have been excluded from the graphical representation.

⁶ See Table 1 and 2 in the Appendix for the combinations, by total and by country.

	Belgium	Estonia	Italy	Netherlands	Poland	Spain	Total
Don't know	0	1	0	2	0	0	3
Citizen	38	10	23	40	2	21	134
Municipality	15	6	9	20	14	9	73
Local Development Agency	2	5	1	2	1	2	13
University	1	2	2	0	2	2	9
Research Centre	1	0	1	2	0	0	4
Private Energy Utility	4	1	8	0	11	4	28
Energy-Coop	13	3	7	15	1	8	47
NGO-energy related	5	0	5	5	6	2	23
other	12	15	8	13	10	6	64
Total	91	43	64	99	47	54	398
Total CAIs	44	27	39	47	24	25	206

Table 7: The initial supporter of CAIs, absolute values (Q6).

Table 7 and Figure 8 shows the results for question six (Q6)⁷, related to the *initiative's supporters*. Still, the options *citizen* and *municipality* are the most recurring ones. We highlight for Belgium and the Netherlands the role of *energy cooperatives*, which will be explained together with the results of question eight (Q8).⁸

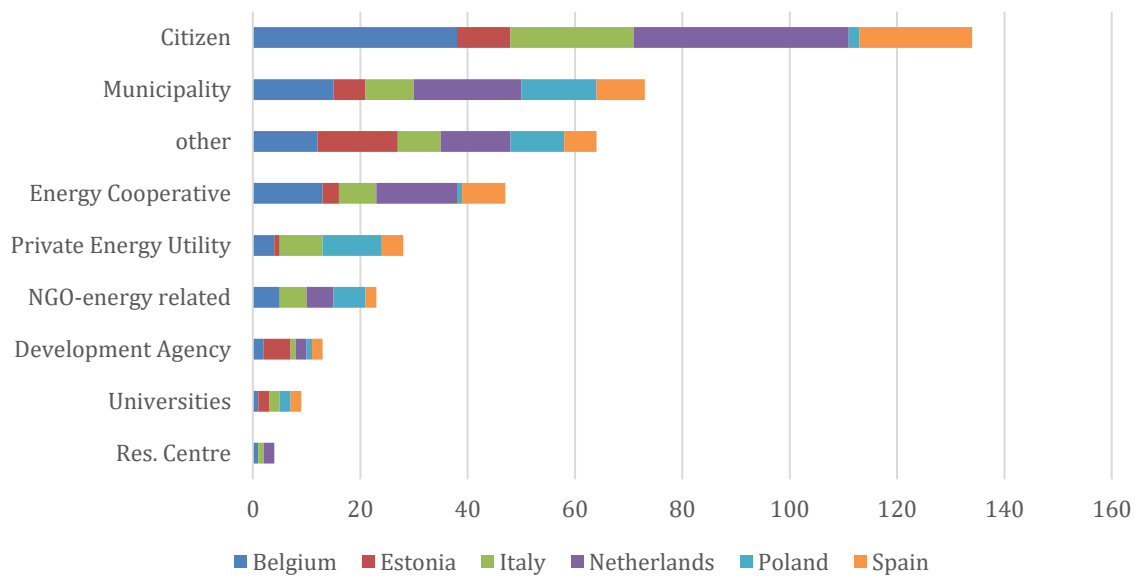


Figure 8: The initial supporter of CAIs (Q6).

Figures 7 and 8 show that citizens are at the origin of the CAIs' formations and are among the initiative's prominent supporters. Citizens' role is crucial in Belgium, the Netherlands, Italy, and Spain. Such countries have a long history in CAIs' development (e.g., Belgium and the Netherlands) and recent legal and administrative premises to develop new initiatives (e.g., Italy and Spain). In particular, the community energy movement is rather large in the Netherlands, and *energy cooperatives* are several, as shown by the data in Table 7 and Figure 8. In such a country, energy cooperatives are included in a national platform to support new CAIs' formation and increase

⁷ We did not plot the option don't know and other.

⁸ In the Appendix, we report the combinations of answers.

Question ten (Q10) collects the description of the first activities performed by the CAIs interviewed. Figure 9 summarizes the answers in a word-cloud and confirms the initiatives' participatory nature: meetings, especially with citizens, are essential activities at the origin of such initiatives. Moreover, the prevalence of the words "plants" and "PV" shows how energy generation plants' development is a common first activity, particularly PV plants. As a matter of fact, in several European countries such as Italy or Germany, CAIs have been focusing on developing photovoltaic (PV) plants. This was possible thanks to the generous Feed-in Tariff schemes supporting the renewable technology implementation in those countries (see Yildiz et al., 2015; Wierling et al., 2018; Candelise and Ruggieri, 2020). Other renewables technologies mentioned by surveyed CAIs are wind plants and/or and hydroelectric plants. The final aspect mentioned in this section concerns the funding sources at the origin of CAIs. Here, we can investigate the economic relevance of citizens and the municipalities.

	Belgium	Estonia	Italy	Netherlands	Poland	Spain	Total
Citizen	34	14	24	26	2	14	114
Crowdfunding	4	3	2	6	0	1	16
Donations	0	0	4	3	1	3	11
Public Grant	13	9	3	29	10	5	69
Public Admin.	2	1	1	4	5	5	18
Public Bank	1	7	2	1	3	0	14
Private Sector	3	0	4	2	3	2	14
Private Bank	7	9	7	3	3	3	32
Cooperative Bank	2	0	9	4	2	2	19
other	9	10	11	11	13	7	61
Total	75	53	67	89	42	42	368
Total CAIs	44	26	38	47	23	25	203

Table 8: The initial investors, absolute values (Q11).

Table 8 shows that the main initial investors are *citizens*, *public grants*, and *banks*. Thus, there is a connection between the first questions analysed, confirming that citizens and public authorities (through public grants), are the main actors also in financing a CAI. The data collected show the relevance of another actor in the funding step, *banks*, showing the ability of CAIs to leverage credit from private institutions.

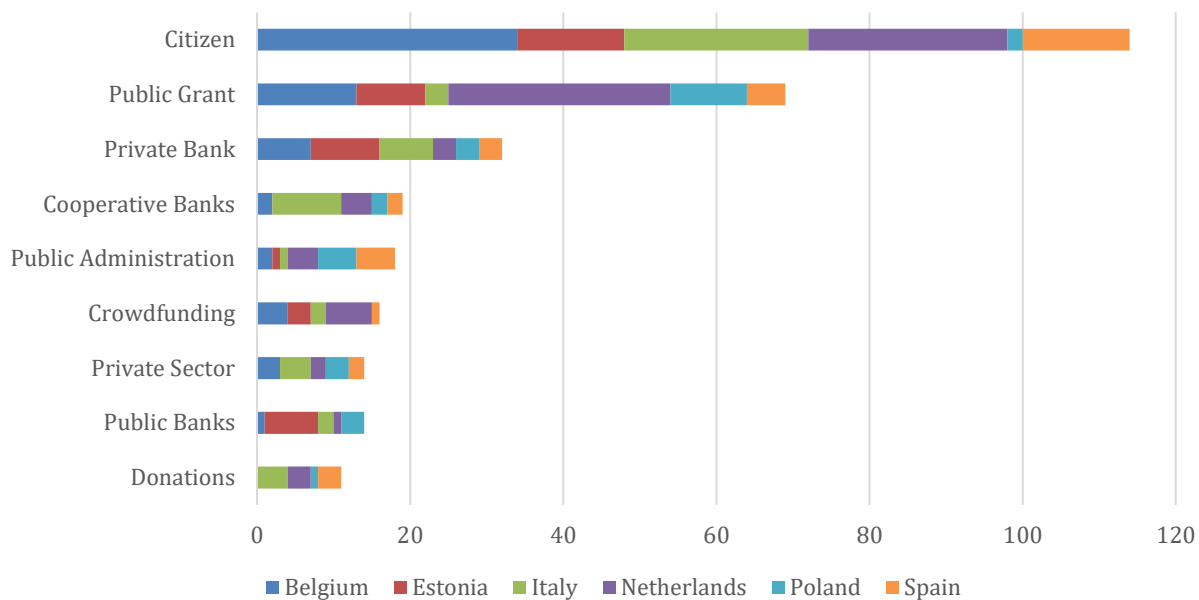


Figure 10: The initial investors (Q11).

Figure 10 underlines the active role of *citizens* in financing the first activity of CAIs. This is true for all countries, except for Poland. Finally, *public grants* are predominant, especially for Belgium, the Netherlands, and Poland.¹⁰

	Belgium	Estonia	Italy	Netherlands	Poland	Spain	Total
NotPublicFunding	12	9	17	7	2	6	53
Municipality	9	3	3	21	9	3	48
Regional	8	0	2	15	2	3	30
National	3	5	4	1	5	0	18
EUFund	1	12	2	0	8	2	25
Another Country	0	0	0	0	0	0	0
nonEUfunds	0	0	0	0	2	0	2
other	1	5	2	4	4	1	17
Total	34	34	30	48	32	15	193
Total CAIs	29	25	27	43	23	13	160

Table 9: Public funding, absolute values (Q12).

To investigate the role of public funding in CAIs' origin, we present Table 9. Notice that 77 per cent of CAIs in our sample answered that question. Nevertheless, two main messages are conveyed: (i) the role of municipalities for the Netherlands and (ii) the role of European Funding for Estonian CAIs.

(i) The role of municipalities is linked with public grants. In particular, in the Netherlands, the provinces and municipalities have supported local RE and provided start-up subsidies for feasibility

¹⁰ See the Appendix for the combinations of Q11.

assessment and setting up a legal entity in many places. These public bodies have also designed various sustainability contests for local energy, for which the prize was a grant.

(ii) Several Estonian CAIs installed PV plants supported by the Kredex foundation. The foundation was established in 2010 by the Estonian Ministry of Economic Affairs and Communications. The aim was to provide financial support to energy efficiency and renewable energy investment. The support scheme is partly financed by the European Cohesion Fund and partly by the state budget. Moreover, some of the surveyed initiatives have received funding under the Horizon 2020 project SmartEnCity, where almost 20 apartment buildings were renovated and turned into "smart-houses" as a pilot project. Poland too benefited from the European Cohesion Fund in the years 2014-2020, and this was the most important source of financing for small scale renewable installations. In particular, 50% of PV installation funds are devoted to local government communities. Almost 23% of funds are directed towards small enterprises, 15% to medium and large-size enterprises, and 6% to associations (including churches). Less than 5% to other units.

A.3 Bottom-up versus top-down dynamics of creation?

From the previous analysis, we learned that the CAIs surveyed are strongly citizen-oriented, with key roles for municipalities and banks, depending on the country considered. We introduce the concepts of bottom-up versus top-down approaches. As in Walker and Devine-Wright (2008) and Candelise and Ruggieri (2020), we define bottom-up approaches characterized by citizens' substantial involvement in the project's initiation and development. Top-down approaches are those where an institution (i.e., a local authority or a private company) leads the process and facilitates citizens' involvement. To understand if the CAIs surveyed tend to adopt a top-down or a bottom-up approach, we correlate question Q5 (who is at the origin of CAIs) with question Q11 (who financed the first activity).¹¹

¹¹ We chose Q5 and Q11 due to the relevance of these answers. Q6 could have been used instead of Q5 too.

	Citizen		Bank		Total
	noCitizen	Citizen	noBank	Bank	
Citizen	28	88	87	29	116
	24.14	75.86	75.00	25.00	100.00
Municipality	26	7	26	7	33
	78.79	21.21	78.79	21.21	100.00
Energy Cooperative	8	12	11	9	20
	40.00	60.00	55.00	45.00	100.00
NGO-energy related	7	7	11	3	14
	50.00	50.00	78.57	21.43	100.00
Private Energy Utility	8	5	8	5	13
	61.54	38.46	61.54	38.46	100.00
Local Development Agency	5	2	5	2	7
	71.43	28.57	71.43	28.57	100.00
University	2	2	3	1	4
	50.00	50.00	75.00	25.00	100.00
Research Centre	2	0	2	0	2
	100.00	0.00	100.00	0.00	100.00
Total	86	123	153	56	209
	41.15	58.85	73.21	26.79	100.00
Total CAIs	92	114	146	60	206

Table 10: who is at the origin and citizen and Banks as investors.

Table 10 shows the total distribution of answers of Q5 (the options are listed in the first column) and Q11 (focusing on citizens and banks as the leading investors). Considering *citizens* at the origin (116 selections), in 76% of cases, CAIs selected *citizens* as investors, while in just 25% of cases, CAIs chose *bank* as an investor. Thus, if *citizens* are selected in Q5, there is a propensity to select *citizens* in Q11, showing a bottom-up oriented approach. Considering *municipality* at the origin (33 selections), CAIs chose equally (21%) *citizens* and banks as leading investors. Thus, if we observe a top-down approach, we cannot highlight a clear trend regarding investment sources. This is because several CAIs are characterized by a mixed-type approach, particularly in the financing structure, where top-down and bottom-up dimensions are interrelated.¹²

B. Organizational structure

This section describes the organizational structure of CAIs and investigates the prevailing legal forms (if any), such as cooperative, foundation, company. We shed some light on CAIs' size, proxied by the number of members and customers. Then, we focus on the functioning of the internal bodies, concentrating on the decisional processes. We study which bodies propose a change, which ones are consulted for opinions, and which ones make the final decision inside CAIs. Accordingly, we grouped the questions in the following subsections: formal versus informal CAIs, the size of CAIs, the decisional bodies and their processes.

¹² See the Appendix for further details.

B.1 Formal versus informal CAIs

The survey investigates how CAIs are organized. Specifically, whether CAIs are *formally organized*, are *in the process of organizing*, or decided not to choose *any specific organization*.

	Belgium	Estonia	Italy	Netherlands	Poland	Spain	Total
Process organizing	2	0	1	1	1	2	7
Formally organized	5	9	2	2	4	5	27
Intent to organize	1	0	2	0	1	4	8
In process of organize	1	0	0	0	0	0	1
Not intend to organize	0	1	0	2	5	2	10
(other) Legal Form	32	13	30	43	11	13	142
Total	41	23	35	48	22	26	195
Total CAIs	44	23	35	48	22	26	198

Table 11: The Process organizing versus in process of organize, absolute values (Q25).

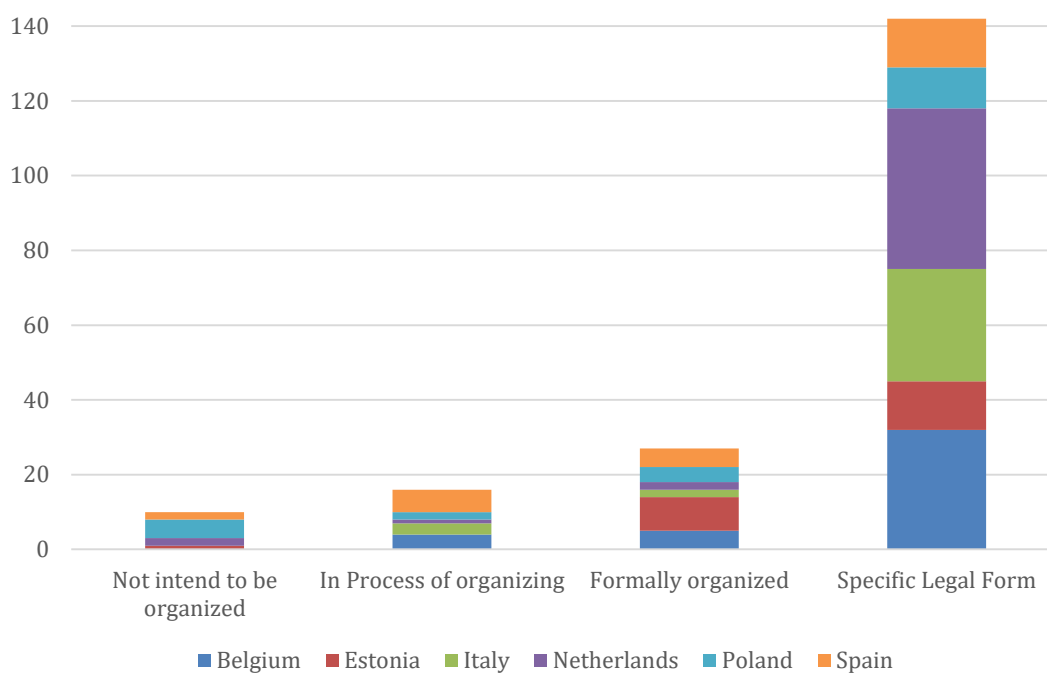


Figure 11: The current Legal Form (Q25).

Table 11 and Figure 11 report the answers by country. They show that 142 CAIs out of 198 declare to have a legal form. Overall, the CAIs that do not have a specific legal form (mainly because they are new initiatives) intend to organize or are currently internally organizing. In particular, 80% of Belgium respondents, 60% for Estonia, 85% for Italy, 90% for the Netherlands, and 50% for Poland and Spain are formally organized.

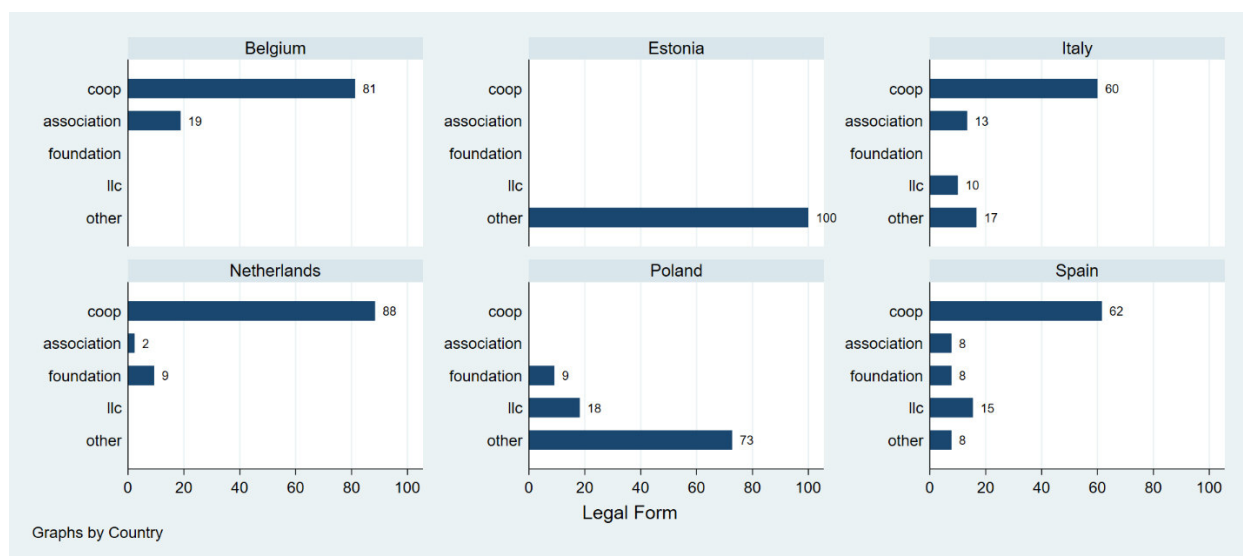


Figure 12: Legal Form by the country, coding (Q25).

Figure 12 is the result of the coding of the open answers (*others*) Legal Form, and shows the dominant legal forms by country. CAIs are mostly organized in cooperatives (63% of the sample), associations, foundations, and limited liability companies (LLCs). Cooperatives are the traditional legal form used by CAIs (see Huybrechts and Wilmars, 2014; Yildiz et al., 2015; Creamer et al., 2019; Rescoop, 2019;) and is believed to provide the best institutional framework for locally owned and participatory approaches to renewable energy projects (Candelise and Ruggieri, 2020). The category *other* collects some residuals.

81% of Belgian CAIs, 60% of Italian, and 62% of Spanish respondents are cooperatives, such as the 88% of respondents from the Netherlands. Respondents from Poland cluster around limited-liability companies (LLC) and foundations, plus 73% of respondents choosing another form called *energy cluster*. Energy clusters are promoted through agreements between several municipalities, together with an energy operator and an investor. Until the end of 2020, in Poland, there were no officially registered energy cooperatives.¹³ In Estonia, 100% of respondents chose *other*.¹⁴ Most of the Estonian initiatives are based on associations and already have a legal form. According to the law, it is mandatory to establish an apartment association as a legal entity in Estonia. Creating a separate legal entity for renewable energy production or other energy-related activities is neither required (as the body already exists) nor economically justified. Therefore, the answer *other* means that Estonian CAIs already have a legal entity.

¹³ The New Renewable Energy Act (2019) includes energy cooperatives as entities. A legal definition a virtual prosumer/collective prosumer is expected too. All the initiatives operating so far use the following regulations: (i) the cooperative law – Act of 16th September 1982; (ii) farmer cooperatives regulation – Act of 4th October 2018 (mostly for biogas); (iii) energy clusters (Renewable energy Act, 2015); (iv) other civil law contracts.

¹⁴ See the Appendix for Q26 on the importance of some areas in choosing the legal form.

B.2 The size of CAIs

The size of CAIs is proxied by the number of members and customers. A member is defined as "a citizen who has an active role in the initiative, investing financially in it, potentially getting returns from their investment, getting other benefits from the initiative, and/or being involved in the decision-making process at different levels." A customer instead is defined as "an individual, organization or group who has an agreement to use CAIs' paid services, sporadically or over time (e.g., buying energy from a CAI)."

The survey divides the size of CAIs into five ranges: less than 19 members/customers, between 20-99 members/customers, between 100-999 members/customers, between 1000-9999 members/customers, and more than 5000 members/ customers.

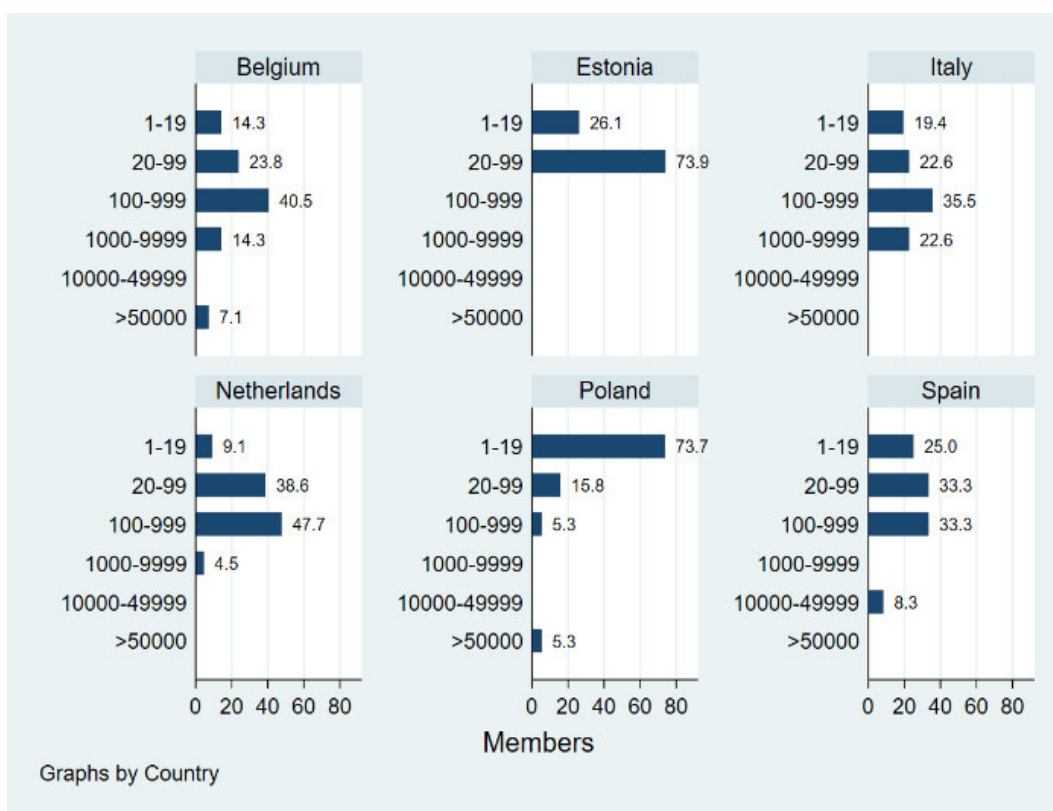


Figure 13: Number of Members (Q27).

As a first step, we check the answers in the overall dataset. We find that 60% of our sample lies in the ranges 1-19 and 20-99 for members. This is confirmed when looking at customers, as 70% of the answers lie in the same ranges. These few numbers highlight that the initiatives we surveyed are, on average, of small dimension.

Figure 13 shows that in Belgium, 40% of CAIs fall in the range 100-999, and 38% of them in the range below 99. This result is similar to the Netherlands, where 48% of CAIs fall in the range 100-999 and 48% in the range below 99. Spain and Italy show the same trend with more than 30% of CAIs choosing the range 100-999, and 50% below 99. In these four countries, there is a tendency to cluster around the range of 100-999. Finally, Estonian and Polish CAIs are smaller, with 100% of

Estonian CAIs falling in the range below 99 and more than 70% of Polish initiatives choosing the range 1-19. This analysis shows that CAIs surveyed in Poland and Estonia are, mostly, of small size. In Estonia (and Poland), collective action initiatives and energy communities are new and at an early developing phase. The vast majority of initiatives rely on housing associations, and the number of members is limited.

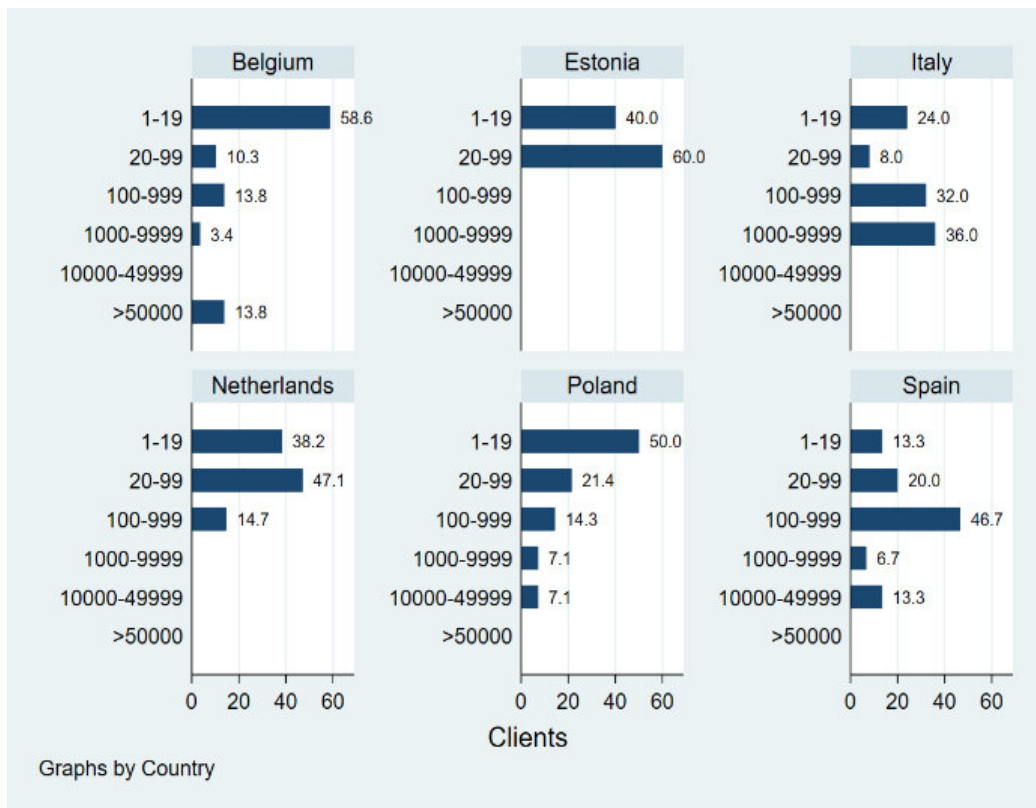


Figure 14: Number of customers (Q28).

Figure 14 confirms the same trends with some exceptions. In Belgium, Estonia, Netherlands, and Poland, more than 50% of initiatives surveyed declare to have less than 99 customers. Italy and Spain show the same trend, even though there are many CAIs, 38% for Italy and 47% for Spain, choosing the range 100-999.

Ex-ante, considering the data on number of members and customers, if a CAI have customers, we expected two possibilities: (i) the number of members coincides with the number of customers; (ii) the number of customers is higher than the number of members. Case (i) means that members are also customers; case (ii) happens when the number of members is limited or a CAI offers some services that citizens can buy without being members of the CAI itself.¹⁵

¹⁵ See the appendix for Q29 on members and customers. We report in the appendix also Q30, even though the quality of the data collected is low, so we could not perform any analysis. Q31 is in the appendix too as it did not give any relevant information.

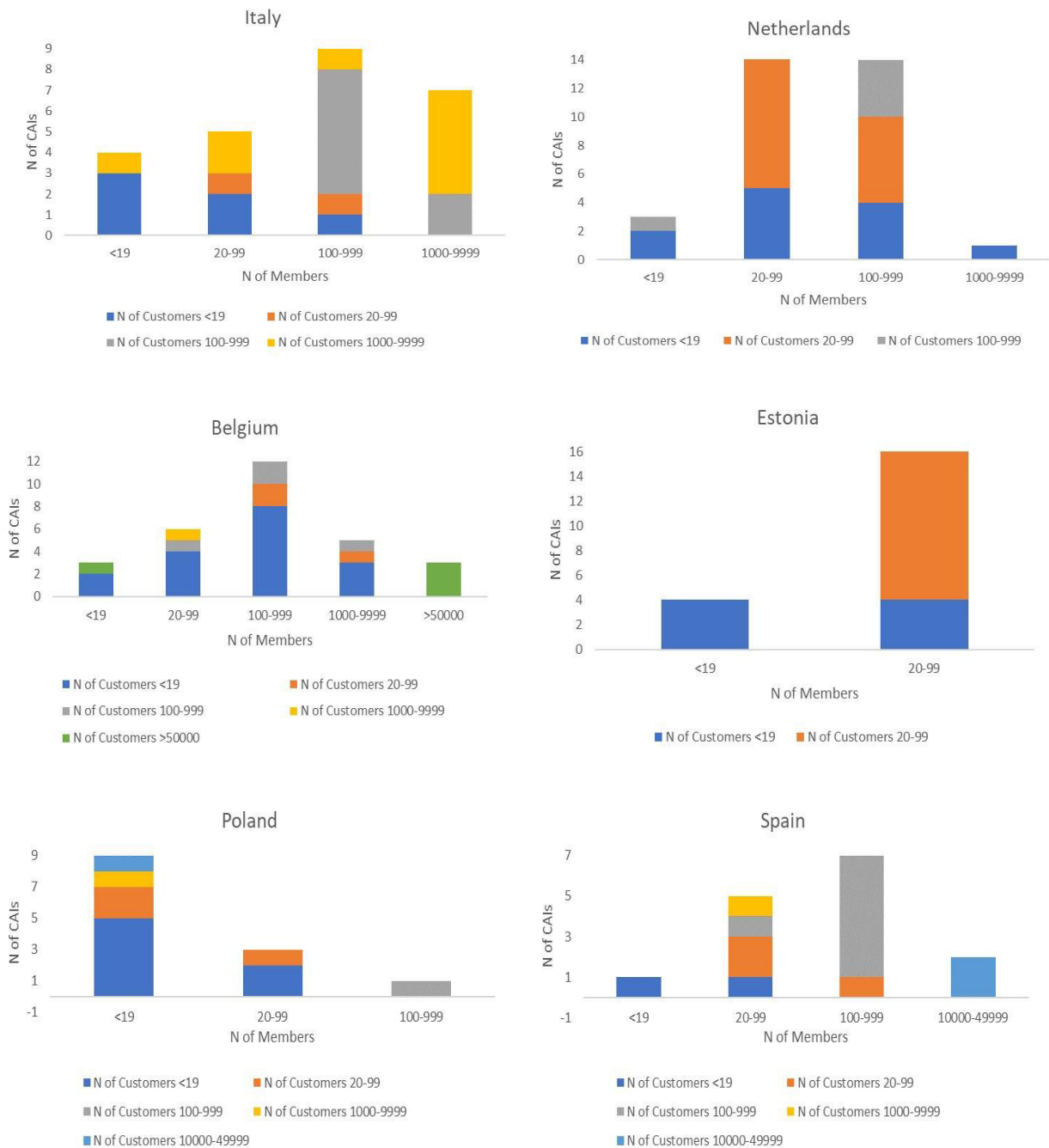


Figure 15: Number of members and customers (Q27,28).

Figure 15 correlates the number of members with the number of clients. On the X-axis, we show the number of members. On the Y-axis, we report the number of CAIs, and the colored rectangles represent the number of customers, as reported in the legend. However, Figure 15 shows that a third case might arise, where the number of customers is lower than the number of members, such as in Belgium, Poland, the Netherlands¹⁶, and Spain. This third case means that CAIs focus on

delivering services just to the members, as in Belgium. In Spain, several CAIs are composed by citizens who are members but not customers of the initiative. They are only supporters of the initiative, as a sponsor.

B.3 The decisional bodies and their processes

This paragraph analyses the bodies in which CAIs are internally organized and the decisional process adopted.

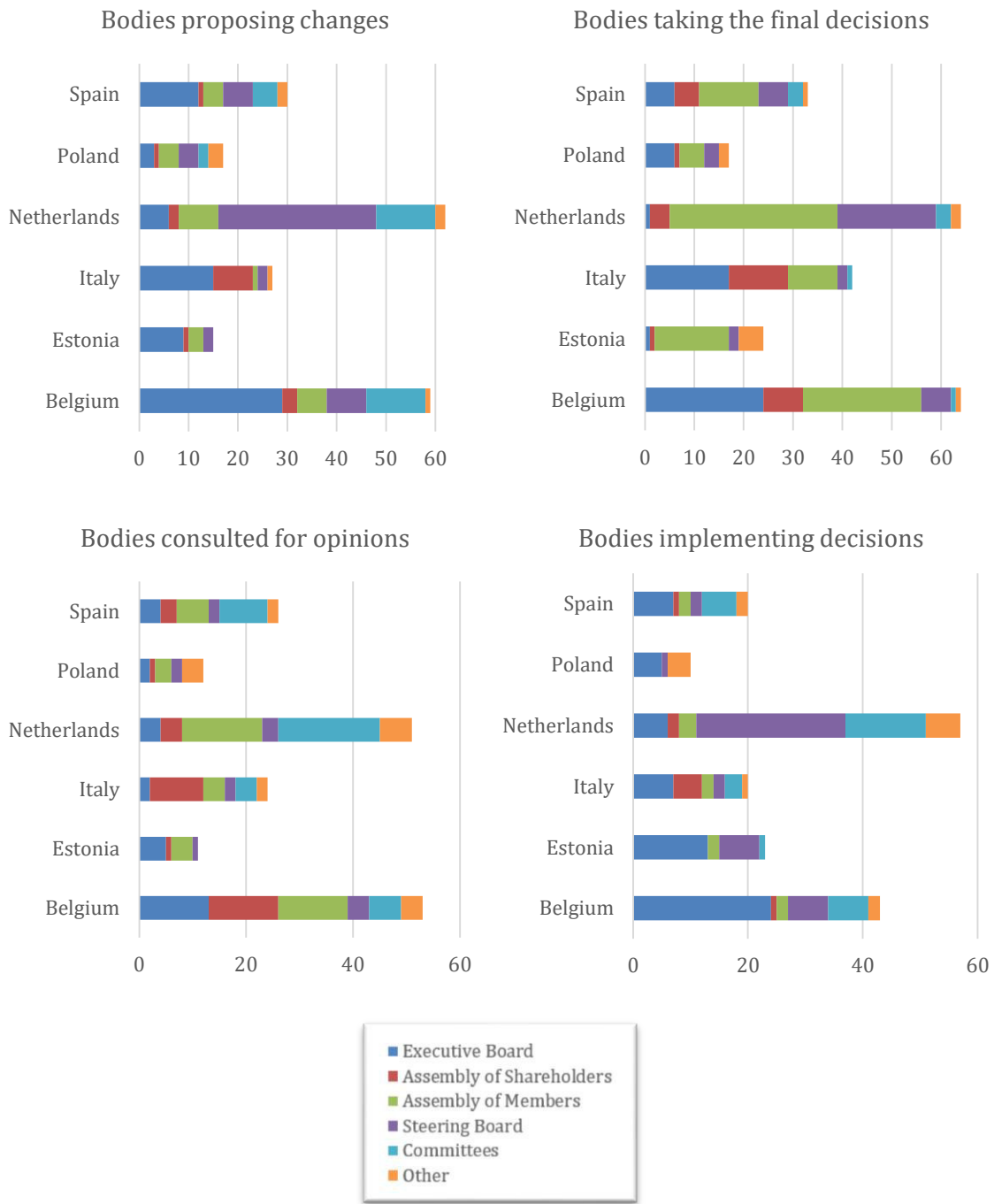
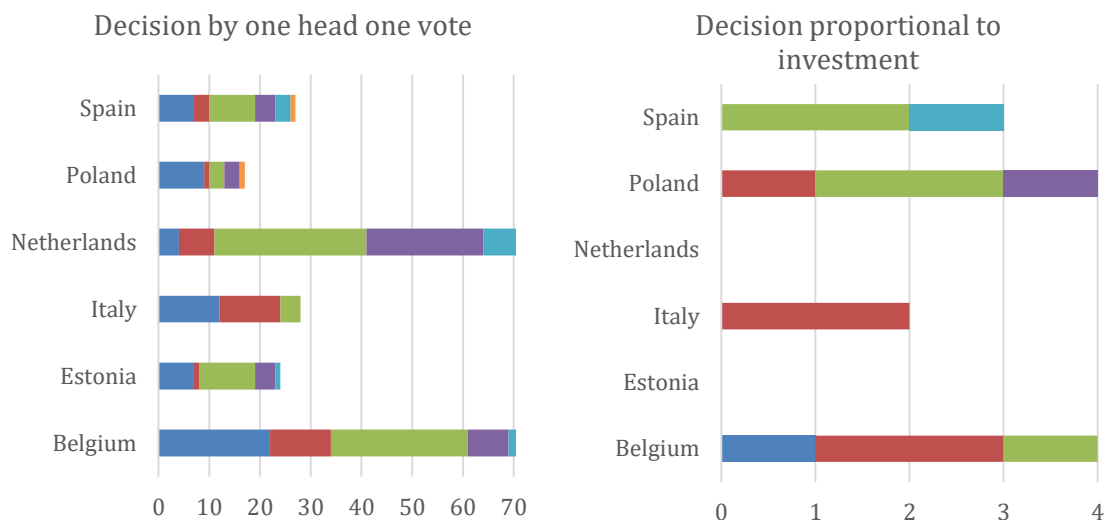


Figure 16: The roles of decisional bodies (Q36).

Figure 16 summarises the CAIs' decision bodies and their roles. We consider five constitutive bodies such as the Executive Boards, the assembly of shareholders, the assembly of members, the Committees, and the Steering Board.¹⁷ Looking at Figure 16, we notice that the decisional bodies are evaluated based on four decisional roles: *proposing changes*, *taking the final decision*, *consulted for opinions*, and *implementing decisions*.

In the Netherlands, the Steering Board has a leading role in making a proposal for change and implementing the final decision. Moreover, the Steering Board and the Assembly of Members are the bodies taking a final decision. In Belgium, the executive Board proposes changes and implements the decisions, while the final decision is mostly taken by the Assembly of members and the Executive Board. In Spain, the Assembly of Members has an essential role in making the final decision. In several Spanish CAIs, the Committees are consulted for opinions, and are also in charge of implementing decisions from other decision bodies.

The Executive Board proposes the change in Italy and takes the final decision with the shareholders' Assembly. Both these bodies also have a leading role in implementing decisions. In Poland, the executive Board and the Assembly of members often decide and implement changes. In Estonia, the executive Board proposes changes and implement the final decision. The Assembly of members is one of the central bodies making the final decisions too.



¹⁷ See the Appendix for Tables and figures.

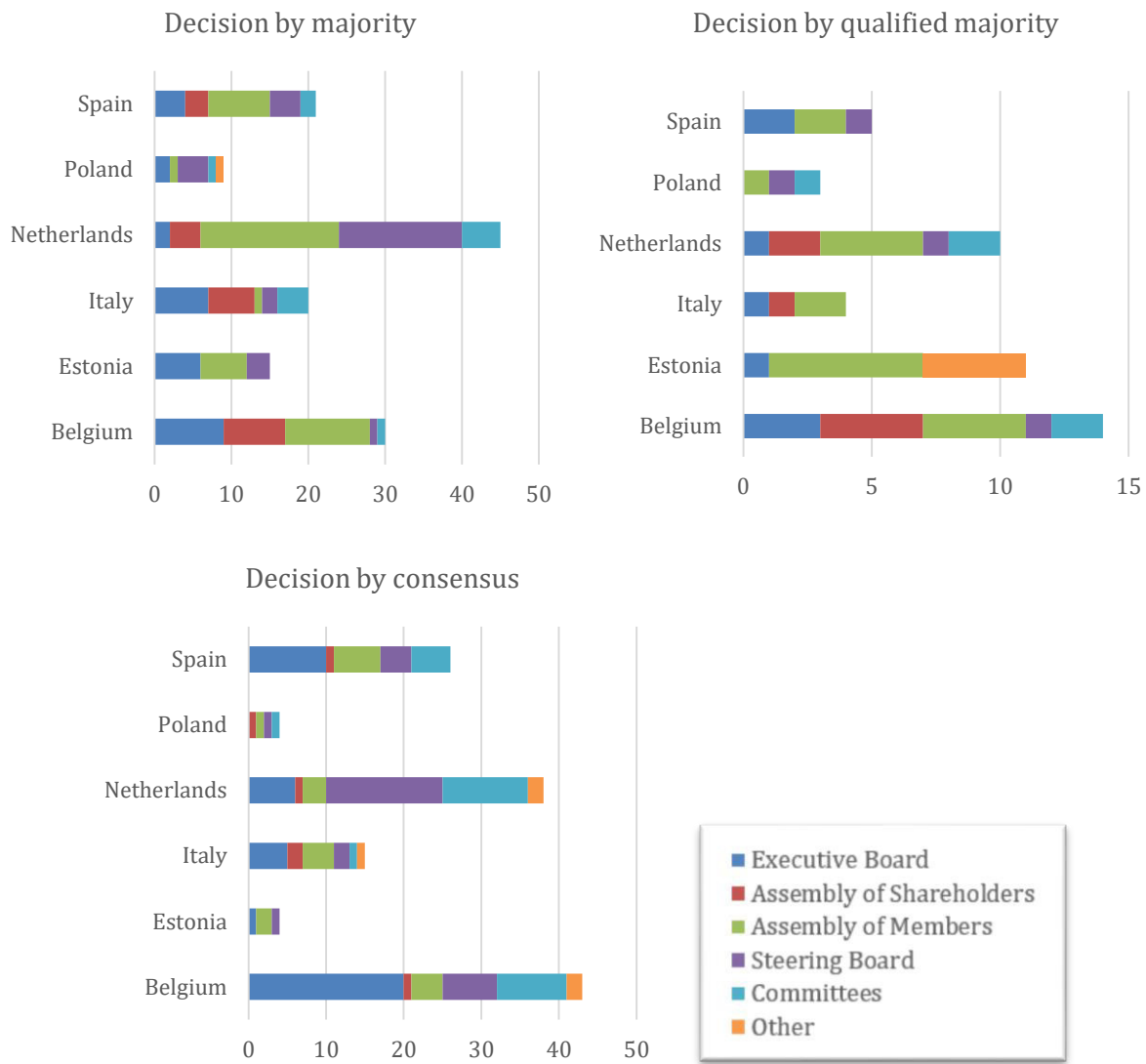


Figure 17: The voting mechanisms of decisional bodies (Q37).

Figure 17, instead, evaluates the same bodies on the voting mechanisms applied to take decisions. In particular, we consider four voting rules such as *one-head-one vote*, *proportionality to investment*, *majority rule*, *qualified majority rule*, and *consensus*.

As most of our sample is constituted by cooperatives, the one-head-one vote mechanism is the most chosen by CAIs. It aims to provide a high co-determination level (See Viardot, 2013; Huybrechts and Wilmars, 2014; Sagebiel et al., 2014; Candelise and Ruggieri, 2020), and we expect the Assembly of members to work with such a mechanism. In Belgium and the Netherlands, this is the case. The proportionality to investment mechanism, instead, is the less selected one. The majority's decision is the second most selected way of voting, together with a qualified majority. The decision by consensus is selected in Belgium, the Netherlands, and Spain, while for Estonia, Poland and Italy are less significant.

	Belgium	Estonia	Italy	Netherlands	Poland	Spain	Total
Not consulting	8	2	12	6	4	8	40
Consulting members	27	15	15	32	11	6	106
Consulting citizens	5	1	0	10	4	7	27
Consulting representatives	11	2	3	6	10	8	40
other	2	8	4	6	1	0	21
Total	53	28	34	60	30	29	234
Total CAIs	39	21	29	44	21	21	175

Table 12: Consultations, absolute values (Q39).

Table 12 highlights the importance of members in the decisional process of CAIs.¹⁸

C. Financing

This section presents the financing sources of CAIs on an evolutionary basis, from the initiatives' origin to nowadays. The aim is to highlight overarching trends. In particular, we first analyze how the primary activity was financed and the role of public funding, discussing the bottom-up (top-down) approach in the dynamic of creation. Here, we investigate how such initiatives are funded today, understanding the role of members, citizens, and banks, among others, in supporting the CAIs. Again, we analyze the evolution of the role of public capital in CAIs' financing.

As shown in Table 8 and Figure 10, *citizen* and *public grants* are the two most selected answers among the entities financing the first activity. *Municipalities* play an essential role in the Netherlands. The provinces and municipalities have supported local RE projects, provided subsidies for feasibility assessment, and set up a legal entity in many places. These public bodies have also designed various sustainability contests for local energy, for which the prize was a grant.

	Belgium	Estonia	Italy	Netherlands	Poland	Spain	Total
Private Banks	1	13	2	3	0	1	20
Cooperative Banks	1	0	2	4	0	1	8
Members	34	20	23	33	0	11	121
Non-member citizens	2	1	0	1	2	3	9
Public authorities	3	3	4	5	10	1	26
Incumbents	0	0	0	1	1	2	4
Non-incumbents	0	1	3	0	1	1	6
Private Corporations	1	0	7	1	0	1	10
other	5	7	4	8	5	4	33
Total	47	45	45	56	19	25	270
Total CAIs	37	22	27	40	15	17	158

Table 13: Citizens or entities investing through capital (equities). Main Investors (Q33).

¹⁸ See the Appendix for Q41.

Table 13, compared to Table 8, specifies who are the leading investors in the initiative. *Members* are confirmed to be the prominent investors in all countries, except for Poland, where *Public authorities* have a leading role. *Private Banks* are relevant too, especially in Estonia.

	Belgium	Estonia	Italy	Netherlands	Poland	Spain	Total
Self-financing	15	7	14	11	6	13	66
Not external financing	11	6	3	10	4	5	39
Crowdfunding	2	6	1	4	0	2	15
Other Donations	1	0	2	2	1	0	6
Loans	12	5	9	7	0	7	40
Public loans	1	0	0	5	2	1	9
Public grant	12	4	2	25	7	9	59
Loans from non-private	2	0	1	1	1	1	6
Other forms of loans	0	0	0	1	0	1	2
other	5	4	8	10	4	6	37
Total	61	32	40	76	25	45	279
Total CAIs	40	22	29	46	19	21	177

Table 14: Other supporters of the initiative today, by country (Q34).

Table 14 highlights other types of financing activities. In all countries, *self-financing* is the most chosen option because citizens-members are among the main investors for CAIs, and most of the CAIs in our sample are characterized by a bottom-up approach. The use of loans in Belgium, the Netherlands, Italy and Spain (only partially in Estonia), highlights the CAIs' capacity in collecting funds from the private sectors. In Poland and the Netherlands, local authorities are oriented towards a top-down approach through public grants.

	Belgium	Estonia	Italy	Netherlands	Poland	Spain	Total
No Activity	16	16	19	9	5	13	78
Municipality	5	2	2	25	4	3	41
Regions	12	0	3	24	3	2	44
National	0	3	2	2	8	0	15
Funds from another country	0	0	0	0	0	0	0
EU	6	4	1	2	8	3	24
non EU	0	0	0	0	0	0	0
other	3	1	3	1	2	1	11
Total	42	26	30	63	30	22	213
Total CAIs	33	23	28	46	20	19	169

Table 15: Main providers of public capital by country (Q35).

Table 15 shows the primary providers of public capital (if any). Municipalities and Regions are confirmed to be the main providers of public capital.

D. CAI's activities in the energy transition

This section describes the activities of CAIs on multiple levels. First, we discuss the geographical location of CAIs and their activities, emphasizing urban (rural) prevalence, local (national) perspective, and the regional scope. Then, we present the activities strictly related to the energy transition, such as energy supply chain activities, renewable, e-mobility, and energy efficiency. Furthermore, we consider energy activities at large, associated with environmental care activities, knowledge and skills creation, and civil society mobilization. Finally, we investigate the impacts of CAIs on social inclusion and empowerment.

D.1 Geographical scope

	Belgium	Estonia	Italy	Netherlands	Poland	Spain	Total
Rural area	3	4	8	18	5	9	47
Urban area	10	18	3	9	8	1	49
Local	27	7	11	26	7	9	70
Regional	22	0	11	7	8	5	53
National	16	0	8	8	2	4	38
International	1	2	1	2	1	1	8
other	4	0	1	6	3	4	18
Total	66	31	43	76	34	33	283
Total CAIs	41	23	32	45	22	24	187

Table 16: Geographical scope, absolute values (Q40).

Overall, Table 16 shows that CAIs are mainly *local*.¹⁹ However, in all countries, there is a presence of *national* CAIs, except for Estonia²⁰. The urban category is relevant for Belgium, Estonia, the Netherlands, and Poland. Nevertheless, several CAIs are in rural areas, especially in Italy, the Netherlands, and Spain. The Regional option, which considers CAIs' activities located inside one region, is relevant for Belgium and Italy.²¹

D.2 Energy-related activities

	Belgium	Estonia	Italy	Netherlands	Poland	Spain	Total
Generation of RE	32	20	24	36	10	10	132
Sell RE to Consumers	11	2	13	13	5	5	49
Operate and energy grid	4	0	8	2	1	2	17
Energy Sharing	11	3	6	7	2	12	41
Other	42	19	24	29	7	14	135
No Activity	5	3	7	7	9	3	34
Total	105	47	82	94	34	46	408
Total CAIs	44	25	36	47	22	24	198

Table 17: Energy Supply Chain, absolute values (Q14).

¹⁹ Locality means that the CAIs and its activities are located in a specific city/municipality.

²⁰As Estonia is small geographically, the administrative division is simpler than in other countries. The geographical levels are local or national, and rural or urban.

²¹ See Appendix 2 and Appendix 3 for the combinations of Q40.

Table 17 shows the distribution of answers related to energy supply chain (ESC) activities such as generating renewable energy (RE), selling RE to consumers, operating an energy grid, and energy sharing activities.²² The following analysis concentrates on the *generation of RE* and *selling RE to customers*. The motivation is that several CAIs' activities are related to hydroelectric, wind, and, mostly, photovoltaic (PV) plants, so the generation of energy is a primary activity of CAIs. Then, the next step is selling the RE produced to consumers, especially members. Figure 18 shows that several CAIs selected the answers *generation of RE* together with the *selling of RE*. Finally, we discuss the answer *operating an energy grid*, particularly relevant for some Italian initiatives.²³



Figure 18: Energy Supply Chain Combinations. Results in percentages (Q14).

Figure 18 shows the combinations of answers related to ESC activities. The following discussion is based on three categories: generation of renewable energy, selling renewable energy to customers, and grid operation. In Belgium, 36% of CAIs perform generation of renewable energy. In Estonia, 52% of CAIs perform production and generation of renewable energy plus other activities, while 8% of the sample do both generation of renewable energy and sell the energy to customers. In Italy,

²² In Figure 18 the category other groups purchase of RE, sell RE to market, sell RE through FiT, crowdfunding, donations as these options obtained few selections.

²³ Historical cooperatives from the Alps.

20% of respondents declare that they do not perform any of the ESC activities mentioned. 17% of CAIs perform production and generation of renewable energy, 8% of the sample do both renewable energy generation and sell the energy to customers. Almost 50% of CAIs in the Netherlands perform generation and production of renewable energy; 8% of the sample, instead, do both renewable energy generation and sell the energy to customers. In Poland, 40% of respondents declare that they do not perform any of the ESC activities mentioned. 14% of the sample perform both generation of renewable energy and sell the energy to customers. There is no clear trend in Spain, even though renewables and energy sharing activities are the most selected options.

	Belgium	Estonia	Italy	Netherlands	Poland	Spain	Total
Wind-OnShore	24	0	3	22	3	3	55
PV-Rooftop	30	25	21	41	9	13	139
PV-Other	5	2	8	18	6	3	42
Biomass/Biofuels/Biogas	8	0	5	2	5	3	23
Cogeneration	8	1	4	0	7	0	20
other	15	2	14	4	7	5	47
No Activity	3	0	4	2	3	7	19
Total	93	30	59	89	40	34	345
Total CAIs	43	26	36	47	22	23	197

Table 18: Renewable Energy Generation, absolute values (Q15).

Table 18 shows the distribution of answers related to renewable energy generation (REG) activities by country, i.e., providing insights on which generation technologies are mostly adopted by CAIs involved in energy production. The analysis concentrates on *Wind-on shore, PV-rooftop, and PV-other* as these are the most selected answers.²⁴ Overall, 37% of CAIs declare activities related to PV generation.²⁵

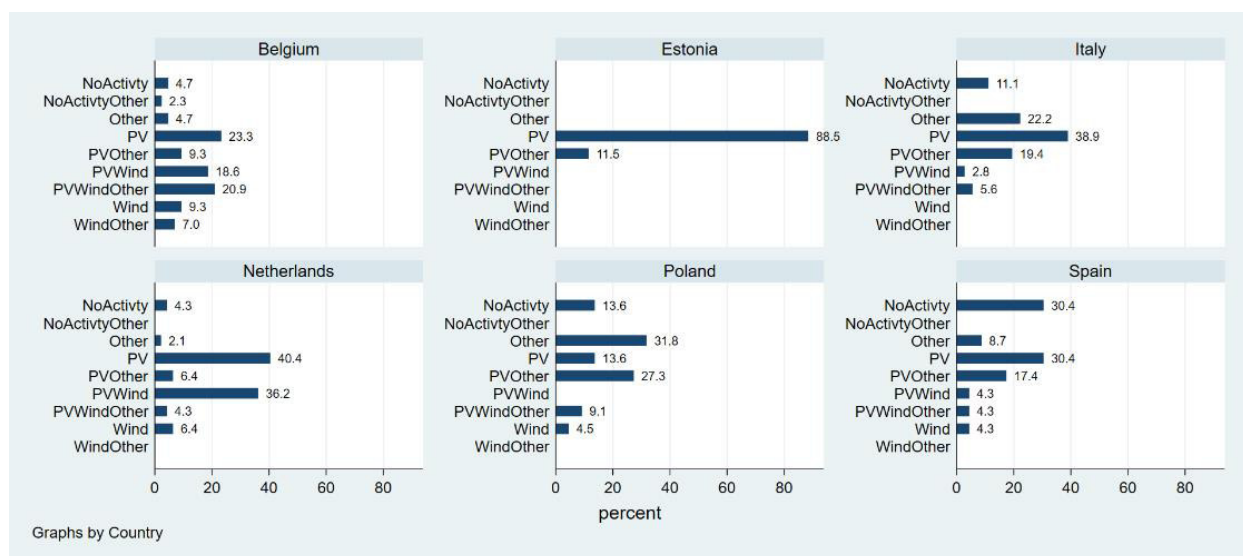


Figure 19: Renewable Energy Generation Combinations. Results in percentages (Q15).

²⁴ In Table 18 we do not discuss the option other.

²⁵ See the appendix.

To isolate the importance of such options, Figure 19 presents the combinations of answers.²⁶ In Belgium, 23% of CAIs perform exclusively PV activities, while 9% perform only wind-on shore activities. Almost 40% of Belgian CAIs selected at least two activities, and PV is always of primary importance. The trend is even more evident in Estonia, where 88% of the CAIs surveyed operate with PV plants. In Italy and the Netherlands, almost 40% of CAIs' activities, in both countries, are related to PV, while in Spain, 30% of CAIs are connected to PV plants. Finally, 27% of CAIs in Poland perform PV activities plus other activities. To better understand this last result, we should consider that the Polish PV market started booming in 2020.²⁷ This increase is based mainly on micro-installations and 70% of the total power installed in photovoltaics. The RES market in Poland in the phase of initial growth²⁸ also explains why CAIs are small in size, namely, few members.

	Belgium	Estonia	Italy	Netherlands	Poland	Spain	Total
E-mobility	10	0	12	8	0	9	68
other	7	0	3	2	3	5	20
NoActivity	33	25	26	36	18	14	152
Total	50	25	43	46	21	28	213
Total CAIs	42	25	35	44	20	23	189

Table 19: E-mobility, absolute values (Q16).

Table 19 shows the distribution of answers related to E-mobility (EM) activities, such as e-mobility sharing, bike-sharing, and charging facilities.²⁹ Overall, 70% of CAIs in our sample do not perform any of such activities. E-mobility is a relatively recent sector for CAIs, and in countries like Estonia and Poland, none or few CAIs are active in that regard. CAIs across Europe, particularly in countries where these initiatives have a long history, like Belgium and the Netherlands, are incorporating e-mobility activities, enlarging their services, which, as we have already seen, are more oriented towards RE generation.

²⁶ Notice that the option Biofuels/Biomass/Biogas and cogeneration have been summed up in a generic option called *Other* and PV-rooftop and PV-other have been summed in a unique option called *PV*.

²⁷ Poland holds 5th place in the EU in terms of growth of new PV capacity.

²⁸ At the end of 2019, Polish energy-mix was based on brown coal (lignite) and hard coal (73.6%). Renewable sources is estimated around 15.4%.

²⁹ See the appendix.

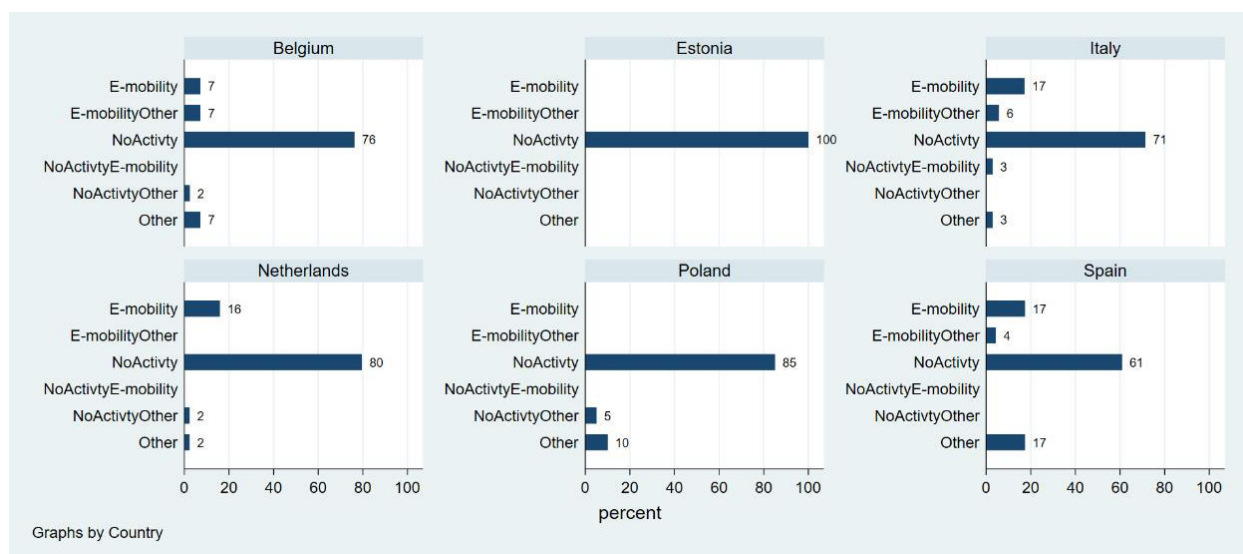


Figure 20: E-mobility Combinations, by country. Results in percentages (Q16).

Figure 20 shows a combination of answers. In Belgium, Italy, the Netherlands, and Spain, we see some attempts to include e-mobility in CAIs' activities. In Poland, CAIs mainly selected the other option, highlighting that few CAIs perform activities related to e-mobility, which are not listed in the survey's option; finally, in Estonia, CAIs are not yet concerned with e-mobility services.

	Belgium	Estonia	Italy	Netherlands	Poland	Spain	Tota
Energy Efficiency building	6	5	7	6	4	4	32
Energy Efficiency Audits	6	0	4	10	4	5	29
Advice on energy consumption	17	0	13	25	6	11	72
Collective purchase of energy products	8	0	4	9	1	7	29
Financing Energy Efficiency products	4	0	2	1	1	0	8
other	8	1	5	6	2	1	23
No Activity	21	20	15	17	14	5	92
Total	70	26	50	74	32	33	285
Total CAIs	44	26	33	47	22	22	194

Table 20: Energy Efficiency Services, absolute values (Q17).

Overall, 40% of CAIs in our sample do not perform energy efficiency-related activities.³⁰ Table 20 shows energy efficiency services/activities by country. A few CAIs in Estonia and Poland selected such services. In Belgium, Italy, the Netherlands, and Spain, these services are quite spread, with many selections on *energy consumption advice*.

³⁰ See the Appendix.

D.3 Single and multiple energy-related activities

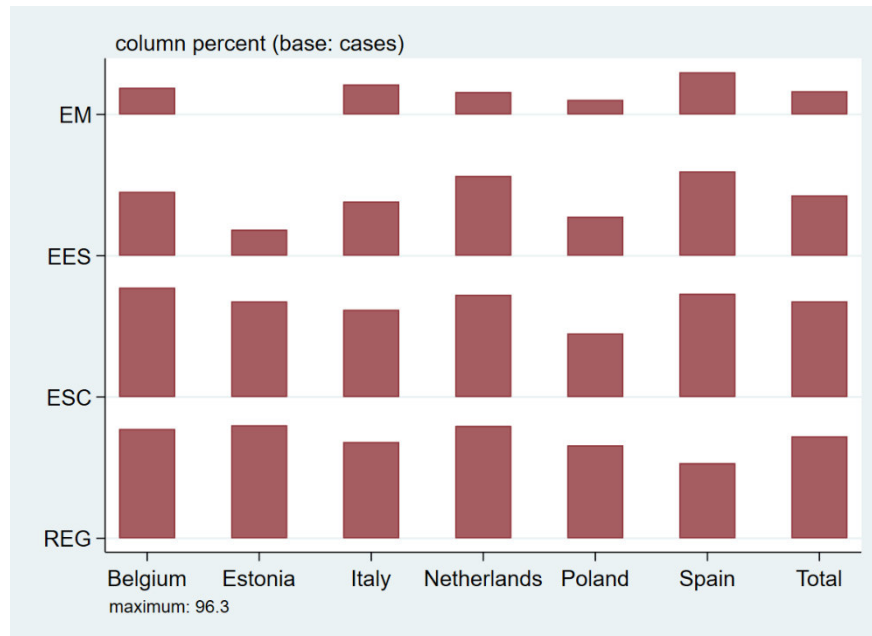


Figure 21: Distribution of energy-related activities by country (Q14-Q17).

Figure 21 summarizes the results of CAIs' energy-related activities. On the vertical-axis, there are the activities: E-mobility (EM), Energy Efficiency Services (EES), Energy Supply Chain (ESC), and Renewable Energy Generation (REG). The Figure can be read horizontally to understand each activity's relevance between countries or vertically, to study the distribution of energy-related activities within a specific country. In the first case, ESC and REG are the most selected activities by CAIs, EES in Belgium, the Netherlands, and Spain. EM is the activity with less selection.

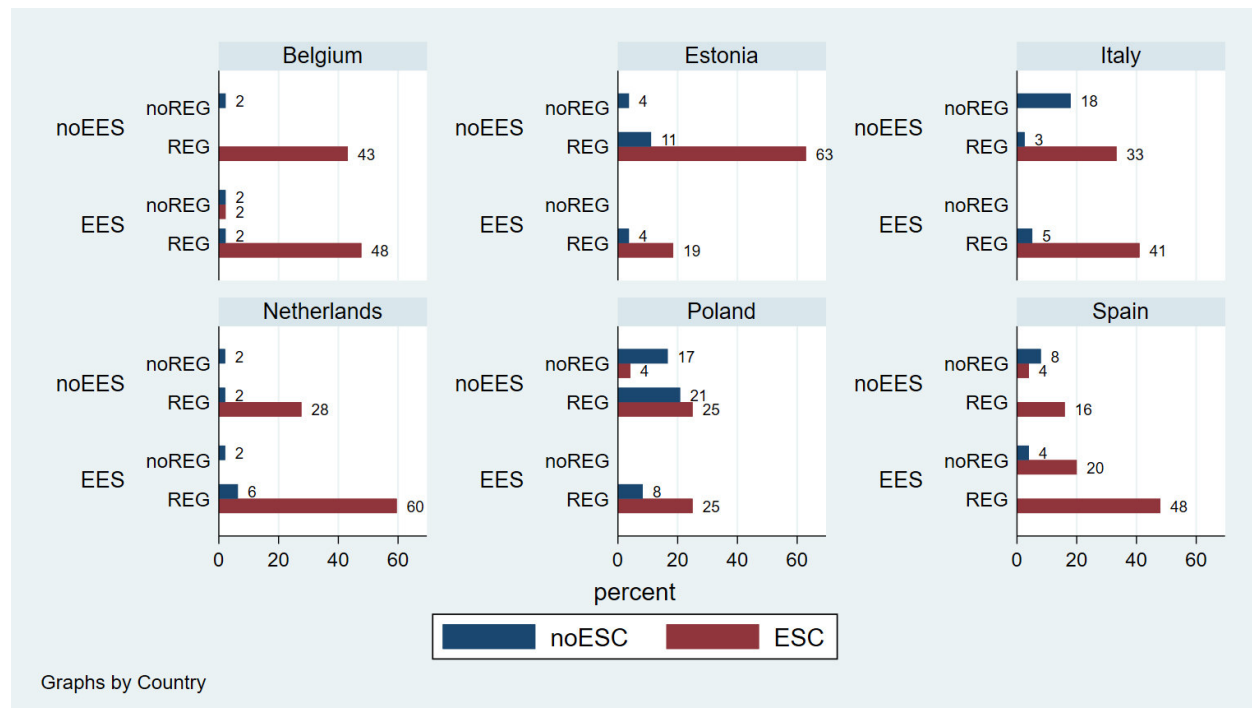


Figure 22: Multiple vs. Single activities by country. Percentages (Q14, Q15, Q17).

Figure 22 considers ESC, REG, and EES together to understand if, on average, CAIs tend to perform single or multiple activities by country. In this analysis, we left aside EM activity due to the low number of answers. The three variables just mentioned are still treated like dummies. The numbers in Figure 22 are percentages.

To understand how to read the Figure, consider this example: in Belgium, 54% of CAIs perform EES, while 45% do not. 48% also perform REG and ESC. In Belgium, 90% of CAIs perform ESC and REG, and 48% perform EES activities. In Estonia, 80% of CAIs perform ESC and REG; 19% also perform EES activities. In Italy, 75% of CAIs perform ESC and REG. Of these, 41% also perform activities related to EES. In the Netherlands, 87% of CAIs perform ESC and REG; 60% also perform EES activities. In Poland, 54% of CAIs perform ESC; of these, 50% also perform REG, and 25% perform activities related to EES. In Spain, 88% of CAIs perform ESC; of these, 64% also perform REG, and 48% of these also perform activities related to EES. Concluding, the CAIs surveyed tend to perform multiple activities in all countries.

D.4 Energy-related activities at large

In this section, we consider the activities related to energy transition at large.³¹ In particular, we investigate if CAIs engage in environmental care activities (ECA), in knowledge and skills creation (K&S), and civil society mobilization activities (CSM).

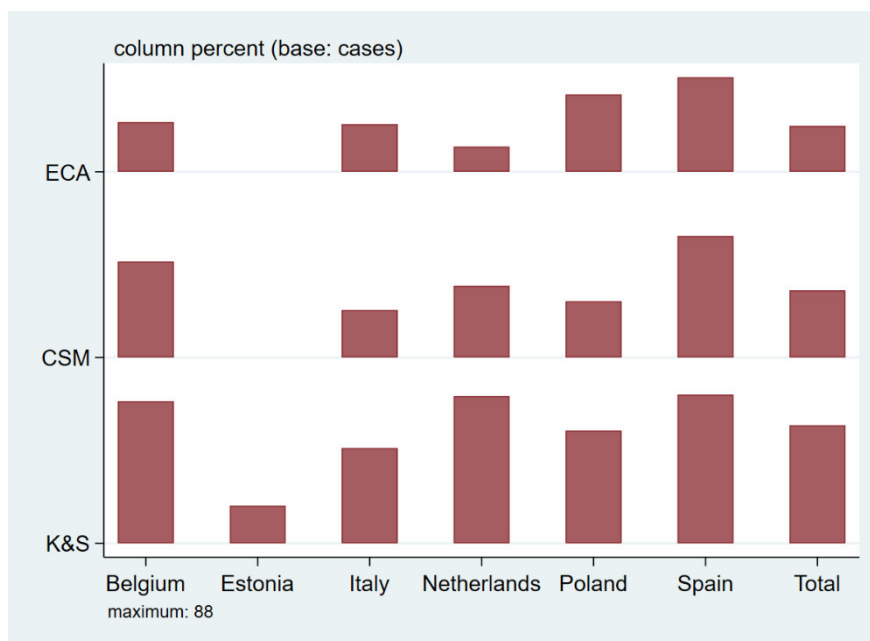


Figure 23: Distribution of energy-related activities at large (Q18-Q20).

Figure 23 follows the same logic as in Figure 21. The activities considered are ECA, CSM, and K&S, as dummies. Except for Estonia, CAIs perform at least one of these energy-related activities at large in all countries.³²

³¹ See the Appendix for further data on these questions.

³² See Appendix 2 for further analysis.

D.5 Social impact (Q21-Q22, Q24, Q38)

	Belgium	Estonia	Italy	Netherlands	Poland	Spain	Total
Reduce Unemployment	1	0	1	2	1	2	7
Empower women	0	0	3	1	0	11	15
Social inclusion genders	8	0	4	2	1	10	25
Social inclusion elderly	4	0	2	2	1	5	14
Empower youth	4	0	7	4	3	7	25
Multiculturalism	3	0	2	1	2	5	13
Local projects	23	5	17	30	7	14	96
Support individuals-groups	6	0	3	4	2	2	17
NoActivity	16	15	9	18	12	1	71
other	4	5	3	2	2	1	17
Total	69	25	51	66	31	58	300
Total CAIs	43	25	32	46	20	23	189

Table 21: Social objectives of CAIs, absolute values (Q21).

Table 21 shows that *social inclusion of all genders* and *promote local projects* are essential objectives of CAIs. Estonian and Polish CAIs are less concerned with these aims.

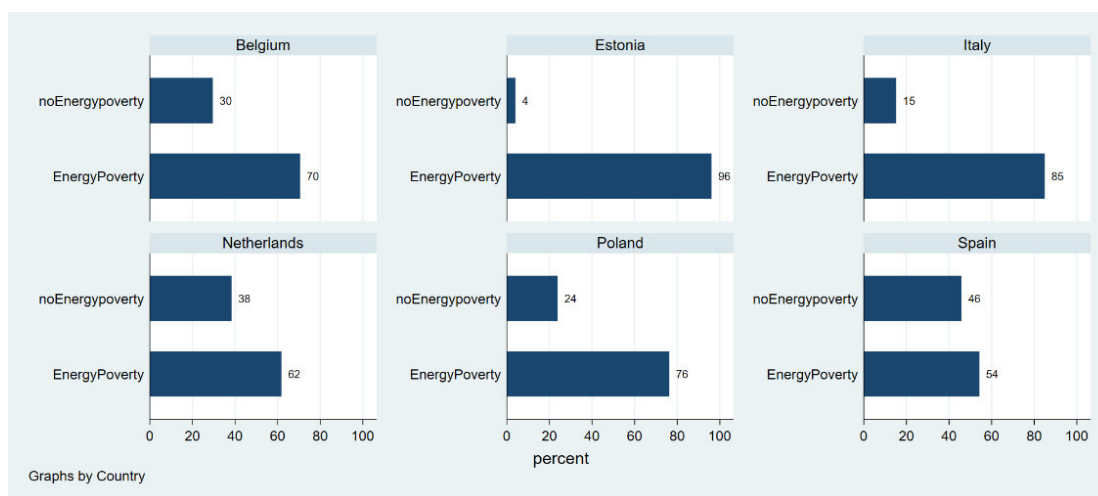


Figure 24: Energy poverty concerns. (Q22).

Figure 24 investigates the activities CAIs undertake to address energy poverty. More than 50% of CAIs surveyed declare to be active in that regard in all countries, adopting and promoting measures to alleviate it.

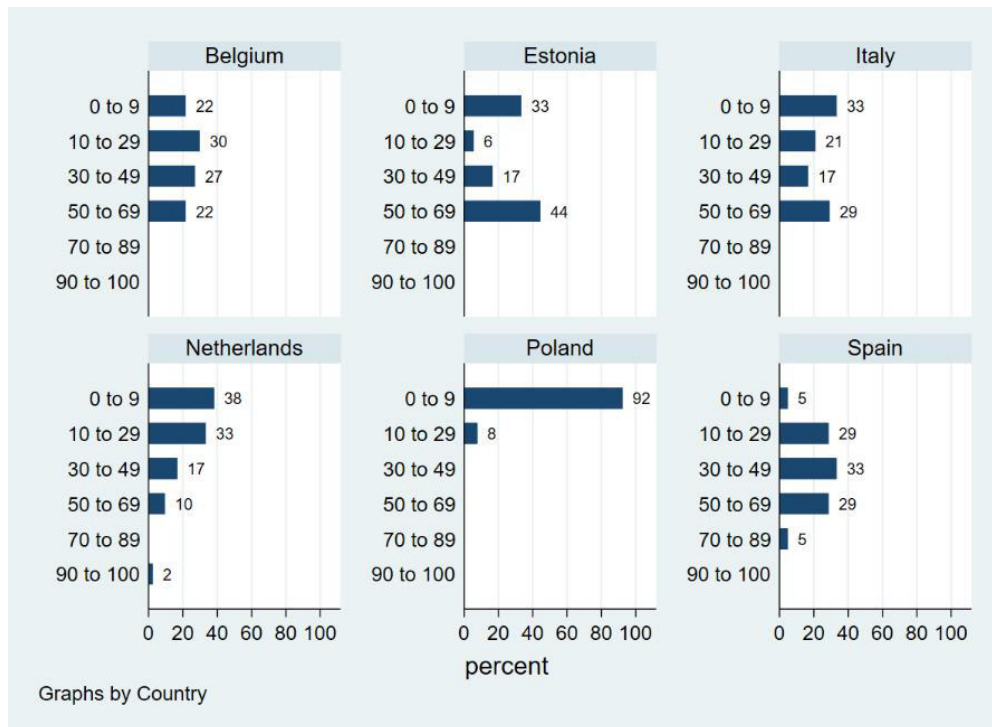


Figure 25: percentages of the woman in the bodies taking the final decision, by country (Q38).

Figure 25 shows the percentages of women in CAIs' decisional bodies. The ranges 0-9, 10-29, 30-49, 50-69, 70-89 and 90-100 are percentages. For example, in Belgium, 30% of CAIs have between 10 to 29 percent of women in the decisional bodies, similar to Spain. In Italy and Estonia, 30% and 44% of CAIs declare to have between 50 - 69 percent of women in the decisional bodies. In the Netherlands, 33% of CAIs have between 10 - 29 percent of women in the key positions, while in Estonia, 92% of CAIs have between 0 - 9 percent of women in their decisional bodies. Overall, women seem to be involved in CAIs activities, and, except for Estonia, CAIs try to keep the gender-balance.

	Belgium	Estonia	Italy	Netherlands	Poland	Spain	Total
No Profits	14	15	10	13	10	10	72
Distrib.toInvestors	21	5	10	18	3	2	59
Reinvest. Initiative Assets	18	4	9	19	6	9	65
Other activities	5	0	3	5	1	8	22
Other activities (community)	8	1	10	19	2	6	46
Other activities (energy transition)	14	0	5	16	0	5	40
Other activities (social)	4	1	8	3	0	4	20
other	6	1	3	3	2	3	18
Total	90	27	58	96	24	47	342
Total CAIs	44	25	32	47	21	24	193

Table 22: Distribution of profits (Q24).

Table 22 shows that several CAIs do not make profits, especially in Poland and Estonia, due to the prevalence of CAIs in such countries (e.g., energy clusters and apartment associations). Conversely, if profits arise from CAIs' activities in Belgium, Italy, Spain, and the Netherlands, these are distributed to investors and/or reinvested in the initiative assets.

3.2 Zooming in on citizens' participation and involvement in CAIs

The role of citizens (members) emerges as essential from the survey analysis. Since the origins, citizens (members) are the key actors of CAIs, contributing to forming the CAI idea and concretely supporting it.³³ This section collects some of the questions already discussed and some not already presented. The results are shown in aggregate terms, and the idea is to give a general overview stressing the role of citizens' participation.

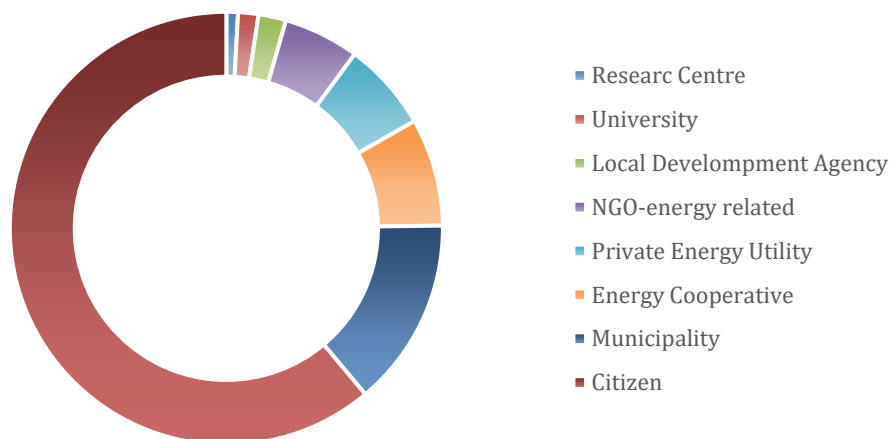


Figure 26: Index of Propensity: the original idea (Q5).

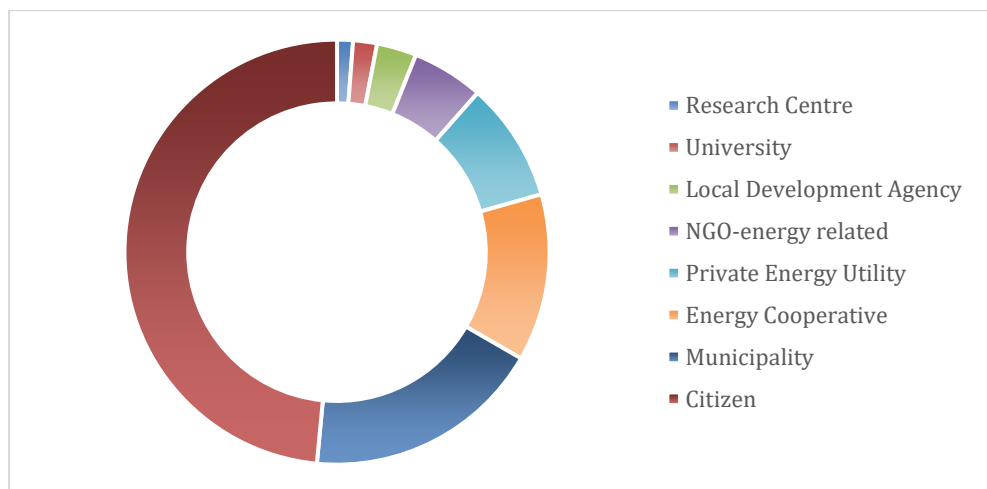


Figure 27: Index of propensity: supporters of the idea (Q6).

Figure 26 and Figure 27 provide the *intensity* of answers by option. Looking at both figures, we can see that *citizens'* role in starting the initiatives is predominant than the other options. As already discussed, these figures show that the role of *Municipalities*, *energy cooperatives* and *private companies* is quite important too, without depriving citizens of their position. Moreover, citizens (members) are among the main targets of CAIs themselves, as noted in describing the CAIs' activities and social impacts.

³³ Most of CAIs in our sample use volunteering work. In particular, 96.5% of Belgian CAIs, 85.2% of the Estonian CAIs, 80% of the Italian CAIs, 98% of CAIs from the Netherlands, 83% of CAIs from Poland, and 88% of CAIs from Spain (see Q32 in the survey).

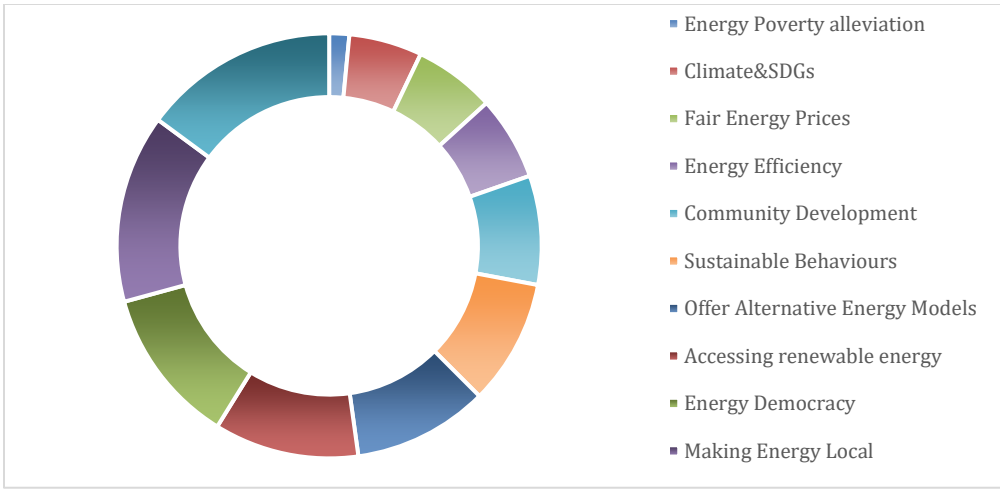


Figure 28: Index of propensity: objectives (Q13).

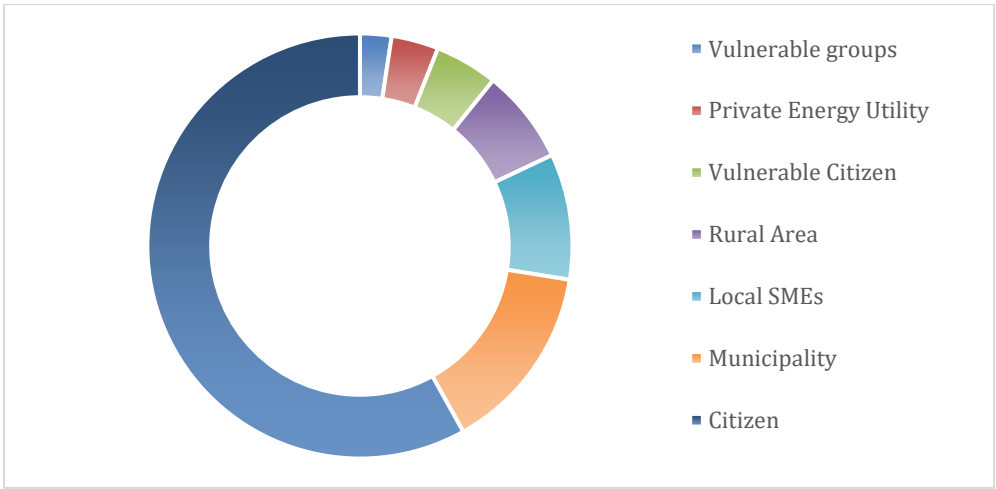


Figure 29: Index of propensity: beneficiaries (Q7).

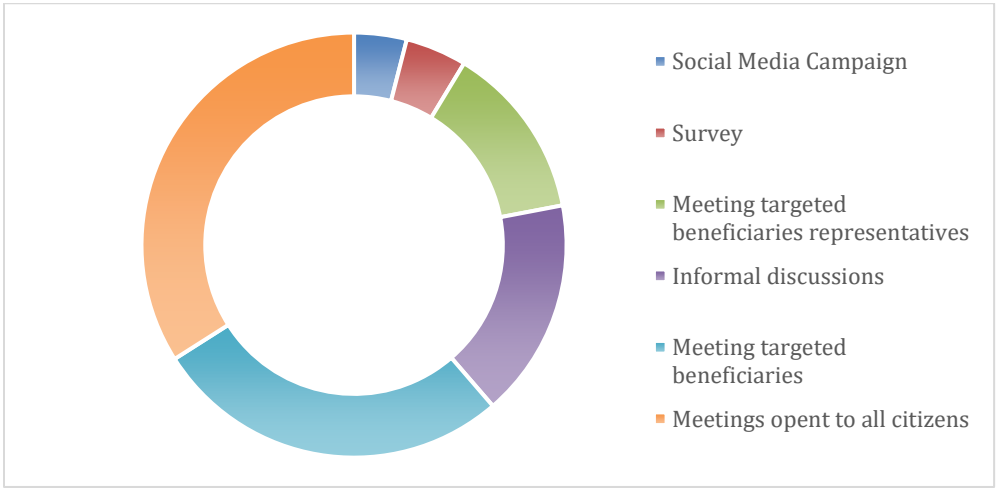


Figure 30: Index of propensity: consulting of citizens during creation phase (Q8).

Figure 28, Figure 29, and Figure 30 consider citizens' role from the point of view of CAIs. In Figure 28, there is not a specific emerging trend. However, objectives related to social inclusion and

participation are prominent, such as *alleviating energy poverty*, increasing *energy democracy*, offer *fair energy prices*, *making energy local*. Along this line, Figure 29 shows that citizens are the primary beneficiaries of CAIs activities and impacts.³⁴ At the same time, Figure 30 confirms that CAIs consult their primary beneficiaries, e.g., citizens, through open meetings to reach as many people as possible and offer a direct channel for consultations.

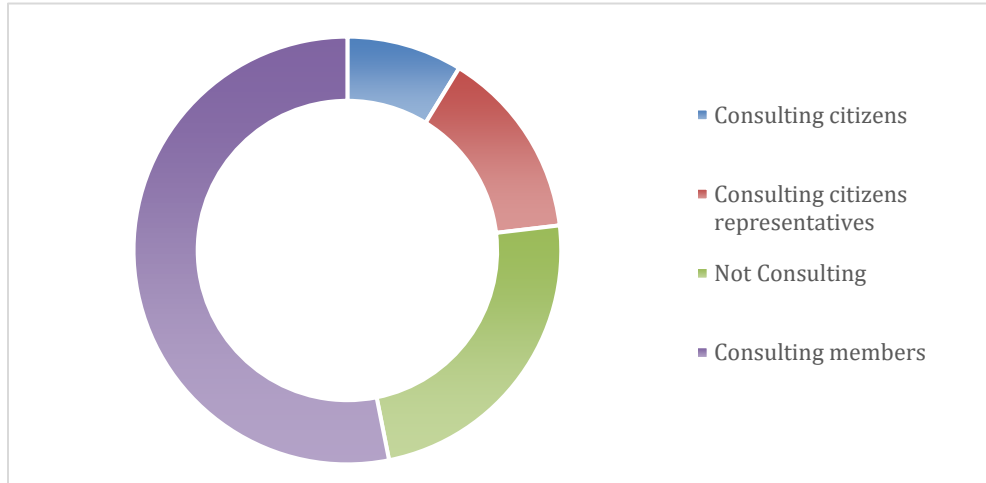


Figure 31: Index of propensity: Do you consult citizens or entities in decision-making? (Q39)

Figure 31 shows that citizens are likely to be involved in CAIs' decision making. Citizens' (members) key-role arises in every dimension of CAIs, such as in their organizational structure. Figure 32 and Figure 33 show the decisional bodies and their functioning.

³⁴ See question 23 in the Appendix. Citizens are currently the main targets for CAIs' services and activities.

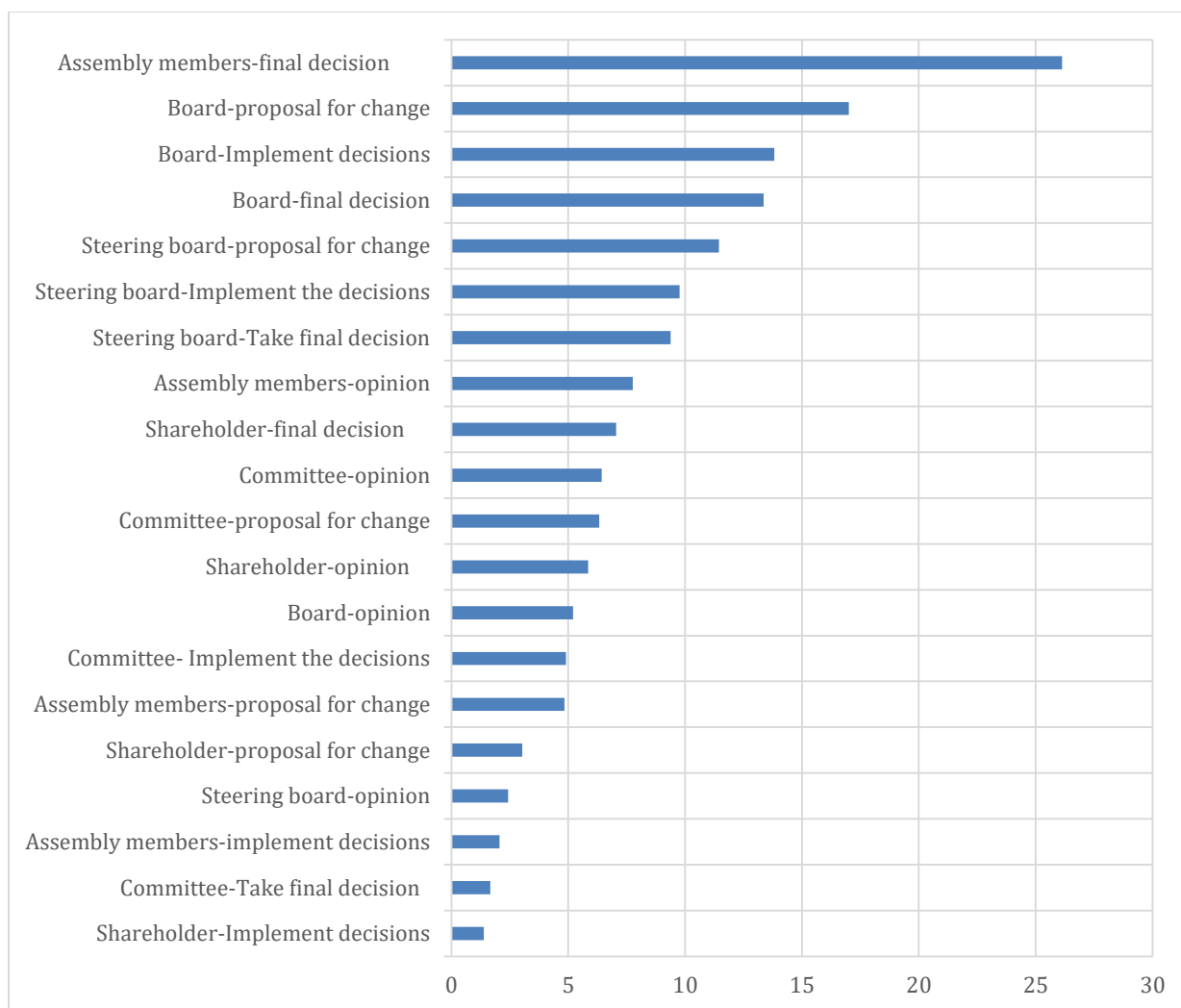


Figure 32: Index of propensity: the Bodies and their roles (Q36)

Figure 32 shows that the *Assembly of members* is the most selected decisional body and involved when dealing with final decisions. It shows that the *executive Board* has a prominent role inside CAIs. It is mainly engaged in every decisional step, from the proposal for a change to the final decisions. Even though other bodies might coexist in a CAI, members participate in CAIs' final decisions.

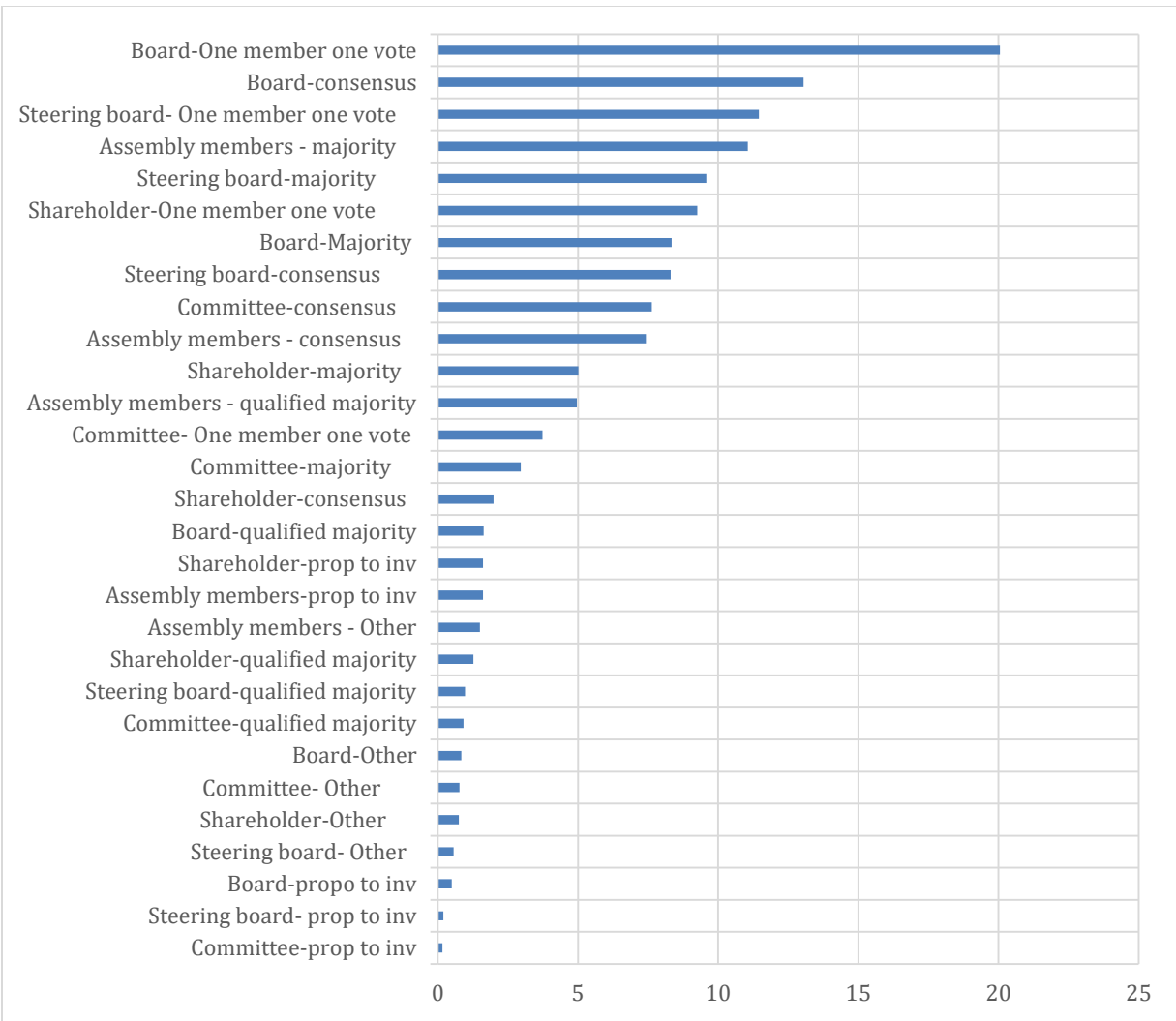


Figure 33: Index of propensity: the functioning of bodies (Q37).

Figure 33 shows the functioning of the bodies constituting a CAI. The *executive Board* follows the rule 'one member one vote,' like the steering board highlighting that participation is a crucial element. The *Assembly of members* seems to work mainly through the majority. This prominent role of members in the decisional bodies goes together with their role in financing CAIs' activities, as shown below.

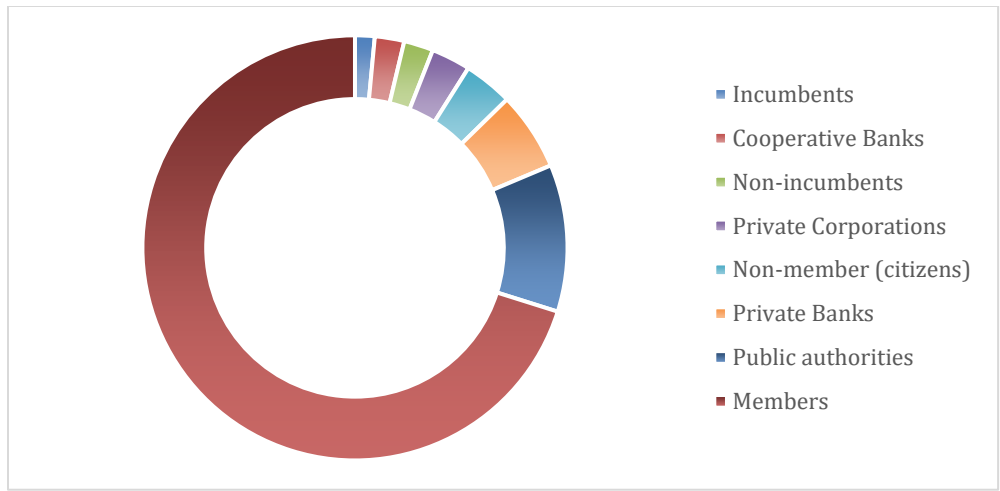


Figure 34: Index of propensity: the investors through equities (Q33).

Figure 34 reports that members' role is striking among the leading investors through capital (equities). The role of *Public authorities* and *Private banks* is significant too.

Until now, we retraced the survey's question, which has been already discussed, to highlight the active role of citizens (members) in CAIs. The following Figure 35 and Figure 36 present two questions that have not been previously discussed. The first one asks the barriers for citizens to join a CAI; the second one asks which elements favor citizens' involvement.

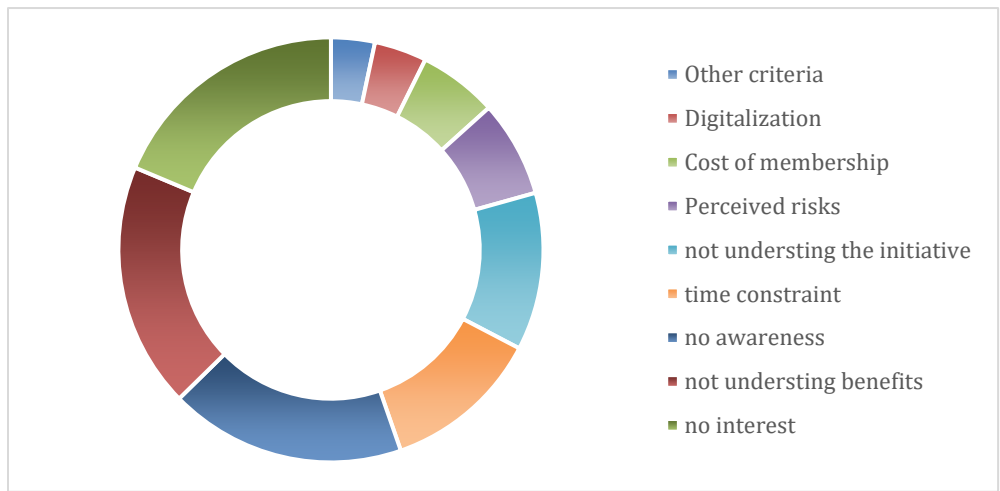


Figure 35: Index of propensity: Barriers for citizens to participate in CAIs (Q42).

Among the most significant barriers, the *cost of membership* is perceived as an issue. Moreover, the technological barrier might prevent citizens from becoming members due to *digital illiteracy*. Finally, the communication problem arises as CAIs are still not well known and/or understood.

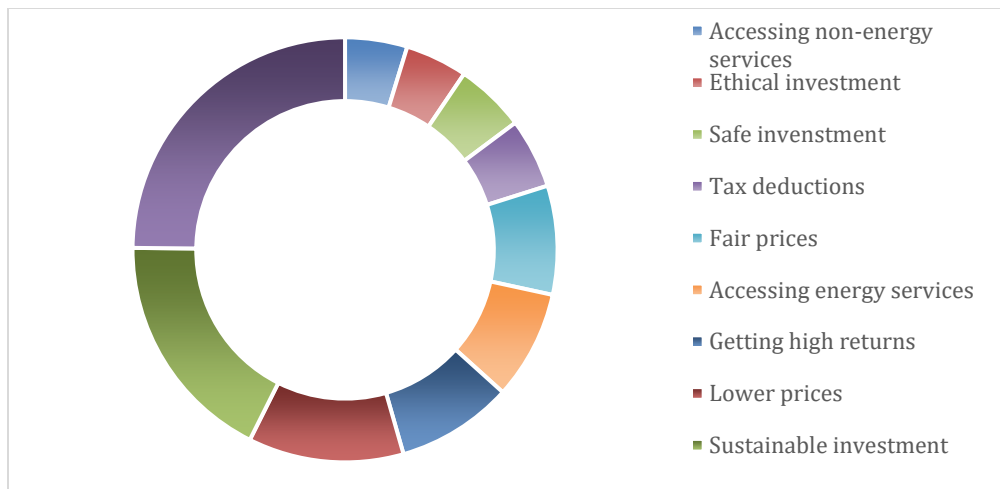


Figure 36: Index of propensity: which elements favor citizens' participation in CAIs (Q43).

Thus, enlarging the participation of new citizens is of primary importance for CAIs' survival. In particular, CAIs could attract new members in several ways. Figure 36 shows that, among the options given, the economic advantages of participating in CAIs are relevant, such as the idea of *making a safe investment, paying lower prices, and getting high returns*. Moreover, the *sense of belonging to the community* is among the main reason for participating in a CAI.

3.3 Future Steps (Q45)

Finally, this section considers the plans for further developments of CAIs. In particular, we consider two questions. The first one is asking if CAIs are currently struggling to survive. The second one asks the future steps planned by CAIs (if any).

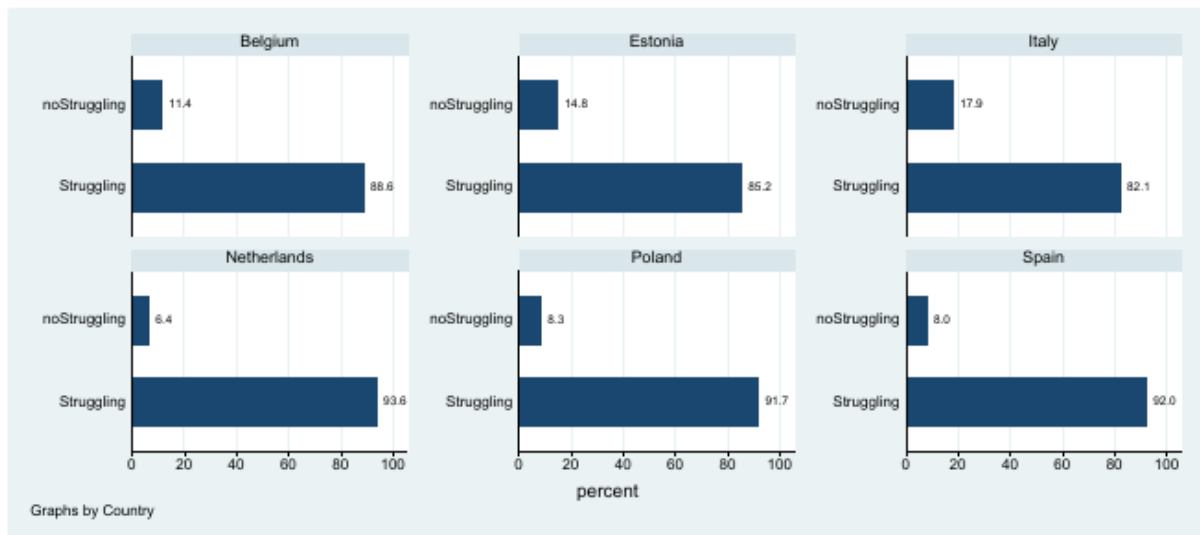


Figure 37: Are CAIs struggling to survive? (Q44).

In Figure 37, most of CAIs are currently struggling to survive in all countries.

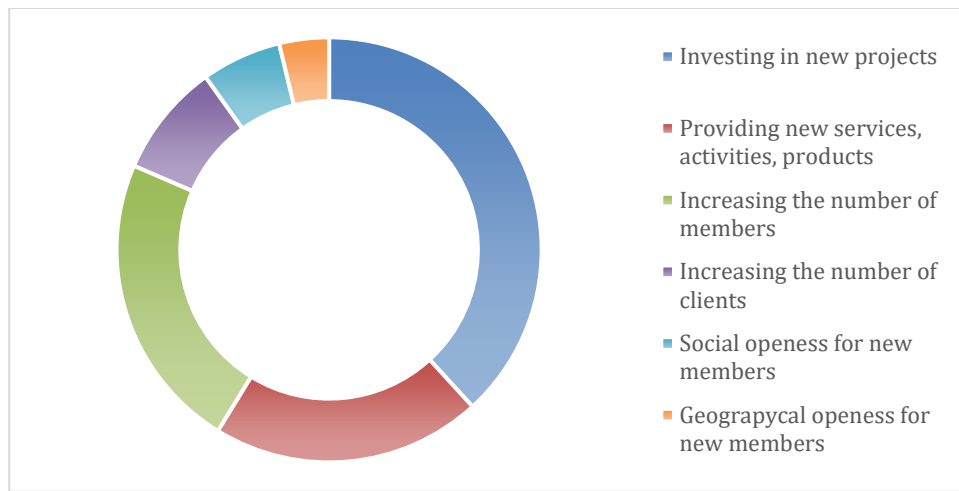


Figure 38: Index of propensity: Future Steps (Q45).

Figure 38 highlights that the CAIs surveyed mainly plan to (i) *invest in new projects, enlarging their activities*, (ii) *increasing the number of members*, and (iii) *increase the geographical openness for new members*. Thus, CAIs plans are all related to improving citizens' participation. Expanding activities through new projects, attracting new members, or enlarge their presence in the territory, are all strategies aiming at a higher involvement of citizens and local communities.³⁵

³⁵ See the appendix for Q46.

4. Profiling CAIs

In this section some of the survey results described in detail in section 3, are synthesized in a few dimensions representing CAIs main features in order to provide an effective and easy to use tool able to discriminate among different ‘types of CAIs’ on the basis of their main features.

As explained in section 2.4, the dimensions considered for profiling in this section only partially overlap with the dimensions considered for the detailed description in section 3, see table X. The aim of providing a synthesis for the survey dataset asked for selected a limited number of variables to be merged. Therefore, some of the dimensions considered in section 3 have been splitted.

For each of the dimension is provided:

- the ‘Methodology’ adopted to merge the variables into one or more synthetic vectors;
- the ‘Results’ with some univariate and contingency tables to show the distribution of the variables and of the synthetic dimension and short highlights.

In Appendix 1 will be then presented the overall list of CAIs described by the 7 dimensions recorded.³⁶

4.2 Determinants and key variables by dimensions

A. DYNAMICS OF CREATION

This dimension aims at representing the extent to which a CAI can be considered a bottom-up Vs top-down initiative, by taking into account the actors that played a relevant role at the beginning of the process (Q6) and the financial support the initiative originally received (Q11)

A.1 Methodology

The merging procedure developed through three steps and resulted in the creation of a synthetic variable Dynamics of Creation.

Step 1 – Recoding answers

For question Q6 and Q11 answers have been recoded as follows

Q6	Who were the main parties supporting the implementation of the initial idea? Please choose a maximum of 3.	
	Answer in the survey	New code
1	Don't know	OTHER
2	Citizen(s)	BOTTOM
3	Municipality	TOP
4	Local development agency	TOP
5	Universities	TOP
6	Research centres	TOP

³⁶ The list, in .xlsx format, has been shared with the partners in charge of carrying out the case studies in the six COMETS countries in order for them to be able to explore the CAIs heterogeneity in their own country.

7	Private energy utility	TOP
8	Energy-related cooperative	BOTTOM
9	Energy or environmental NGO	BOTTOM
10	Other, please specify	OTHER
Q11	How did you finance the first activity (or activities)? Please select a maximum of 3 main sources.	
	Answer in the survey	New code
1	Citizens (e.g. direct financing)	BOTTOM
2	Crowdfunding	BOTTOM
3	Donations (e.g. from not for profit associations)	TOP
4	Public grant or subsidies	TOP
5	Public authorities or agencies (beyond grants, or subsidies or banks)	TOP
6	Public banks	TOP
7	Funding from the private sector (e.g. energy utilities)	TOP
8	Private bank	TOP
9	Cooperative banks	TOP
10	Other, please specify	OTHER

Table 23: Question 6.

Step 2. Assigning recoding answers to CAIs

For both the Q6 and Q11, each of the CAIs were then assigned with one of the following values:

BOTTOM -> if they choose only BOTTOM modalities or more BOTTOM modalities than TOP modalities

TOP -> if they choose only TOP modalities or more TOP modalities than BOTTOM modalities

MIX -> if they choose the same number of BOTTOM and TOP modalities

OTHER -> if they answer don't know/other

Step 3. Creating a synthetic dimension

Q6 and Q11 have then been finally merged into variable "Dynamics of Creation" and CAIs were assigned with one of the following values depending on the answers given to Q6 and Q11 as in table below:

Dynamics of creation	Q6	Q11
BOTTOM	BOTTOM	BOTTOM
	BOTTOM	MIX
	BOTTOM	OTHER
	MIX	BOTTOM
MIX	BOTTOM	TOP
	MIX	MIX
	MIX	OTHER
	OTHER	MIX
	TOP	BOTTOM
OTHER	OTHER	OTHER
TOP	MIX	TOP
	TOP	MIX

	TOP	OTHER
	TOP	TOP

Table 24: Merging of variable Q6 AND Q11.

A.2 Results

	Belgium	Estonia	Italy	Netherlands	Poland	Spain	TOTAL
BOTTOM	29	15	24	30	4	14	116
TOP	6	9	12	3	16	3	49
MIX	9	2	3	13	4	8	39
OTHER		1		1			2
TOTAL	44	27	39	47	24	25	206

Table 25: Recoding Q6 by country.

	Belgium	Estonia	Italy	Netherlands	Poland	Spain	TOTAL
BOTTOM	24	5	15	13	1	11	69
TOP	9	11	15	21	16	9	81
MIX	11	7	8	13	1	4	44
OTHER		4	1		6	1	12
TOTAL	44	27	39	47	24	25	206

Table 26: Recoded Q11 by country

CROSS DISTRIBUTION OF RECODED Q6 AND Q11

		Q11				
		BOTTOM	TOP	MIX	OTHER	TOTAL
Q6	BOTTOM	48	34	31	3	116
	TOP	11	27	4	7	49
	MIX	10	19	9	1	39
	OTHER		1		1	2
	TOTAL	69	81	44	12	206

Table 27: Cross distribution of recoded Q6 and Q11.

Overall, CAIs' start up, table 25, relied on the commitment of bottom-up actors (citizens and/or other energy cooperatives and NGO) in most of the cases (116 out of 206, ca 56%). This is true for all the countries with the noticeable exception of Poland where 2/3 of the CAIs were pushed by top-down public and /or private actors while it is particularly skewed in The Netherlands where the BOTTOM CAIs are 10 times the TOP CAIs. Many CAIs then were created by more heterogeneous groups of actors (MIX) a subset that accounts for ca 19% of the total sample and it is particularly relevant in The Netherlands (ca27%) and Spain (32%).

As for the first financial support, , table 26, the distribution is more concentrated on TOP actors (banks, grants, subsidies and foundations, ca 40%) followed by the BOTTOM actors (citizens and

crowdfunding, ca 31%) with the noticeable exception of Belgium and Spain, where the bottom approach has been chosen by the majority of CAIs.

When looking at the joint distribution of the two recoded variables, table 27, a group of CAIs can be considered strongly BOTTOM (48 out of 206, 23%) or strongly TOP (27 out of 206, 13%) while all the others (more than 2/3) are in some way in the middle, e.g. with a great component of bottom-up CAIs that choose top-down financial support (34 put of 116, 29%).

	Belgium	Estonia	Italy	Netherlands	Poland	Spain	TOTAL
BOTTOM	28	8	21	19	3	13	92
TOP	5	8	11	8	20	6	58
MIX	11	10	7	20	1	6	55
OTHER	0	1	0	0	0	0	1
TOTAL	44	27	39	47	24	25	206

Table 28: Dimension Dynamics of Creation by country.

The final merge of variable Q6 and Q11 allows to highlight that overall most of the CAIs can be considered to some extent BOTTOM up initiatives (92 out of 206, 44%) while TOP CAIs are only the 28% closely followed by that CAIs that cannot be clearly assigned to one of the modalities, the MIX CAIs that account for 21% of the total. Again, a relevant exception is represented by Poland where the 83% of CAIS are to some extent TOP down initiatives.

B. ORGANIZATION AND SIZE

This dimension aims at representing CAIs on the basis of their organizational structure, approximated by their juridical form (Q25) and their size, approximated in terms of number of members(Q27)³⁷.

B.1 Methodology

The merging procedure developed through two steps and resulted in the creation of a synthetic variable Organization and Size.

Step 1 – Recoding answers

Answers for Q25 and Q27 have been recoded as follows:

Q25	What is the current (legal) form of your initiative?	
Answer in the survey		New code
1	We are in the process of organizing	NO FORMAL
2	We are formally organized internally	NO FORMAL
3	We do not have yet a legal form but intent to in the future	NO FORMAL
4	We do not have yet a legal form but are in the process of getting one.	NO FORMAL
5	We do not have a legal form and do not intend to have one.	NO FORMAL
6	We have a legal form or several legal forms, please specify (such as cooperatives, foundations, etc.)	COOP/ NO COOP*
(*) Through a careful text analysis of modality 6 we were able to identify 5 main types (cooperative, association, company, foundation, cluster) that we then reduce to just 2 : COOP (cooperative) Vs NO COOP (all the others)		
Q27	If membership based - How many members does your initiative have?	
Answer in the survey		New code
1	1-19	SMALL
2	20-99	SMALL
3	100-999	MEDIUM
4	1,000-9,999	LARGE
5	10,000-49,999	LARGE
6	>50,000	LARGE

Table 29: Recoded Q25 and Q27.

Step 2. Creating a synthetic dimension

The recoded questions Q25 and Q27 have been then concatenated into the variable Organization and Size so that each of the CAIs has been characterized with one of the following combinations:

- COOP_LARGE -> cooperative with more than 1000 members
- COOP_MEDIUM -> cooperative with 100 – 999 members
- COOP_SMALL -> cooperative with less than 100 members
- NOCOOP_LARGE -> not cooperative with more than 1000 members
- NOCOOP_MEDIUM -> not cooperative with 100 – 999 members
- NOCOOP_SMALL -> not cooperative with less than 100 members

³⁷ As a first hypothesis, we considered to include also the number of customers as a second measure of CAIs' size but given the high number of missing values and the biases detected if cross considering members and customers (e.g. CAIs with less than 9 members and more that 500 customers) we decided to use only the Q27.

NO FORMAL_LARGE -> not any juridical form with more than 1000 members
 NO FORMAL_MEDIUM -> not any juridical form with 100 -999 members
 NO FORMAL_SMALL -> not any juridical form with less than 100 members
 NO ANSWER -> all the other combination where both Q25/Q27 or just Q25 report missing values

B.2 Results

	Belgium	Estonia	Italy	Netherlands	Poland	Spain	TOTAL
COOP	30		18	39		9	96
NO FORMAL	6	9	2	3	10	11	41
NO COOP	6	13	12	4	11	4	50
NO ANSWER	2	5	7	1	3	1	19
Total	44	27	39	47	24	25	206

Table 30: Recoded Q25 by country.

Although a high percentage of the surveyed CAIs still don't have a legal status (ca 20%) the vast majority of CAIs that have a juridical form opted for the cooperative form (2/3). Among the countries there is a wide heterogeneity. Poland and Estonia have a high share of informal CAIs (33% and 40% respectively) and not any cooperative. In the Netherlands and in Belgium there is the highest percentage of CAIs with a legal status (91% and 81% respectively) and the CAIs with a juridical form other than cooperative is just a residual (9% and 16% respectively) while in Italy and Spain the distribution is more balanced. The lack of formalization is a phenomenon that seem to characterize CAIs in Poland, Spain and Estonia.

	Belgium	Estonia	Italy	Netherlands	Poland	Spain	TOTAL
SMALL	16	23	13	21	17	14	104
MEDIUM	17		11	21	1	8	58
LARGE	9		7	2	1	2	21
NO ANSWER	2	4	8	3	5	1	23
TOTAL	44	27	39	47	24	25	206

Table 31: Recoded Q27 by country.

As for the dimension, more than a half of the CAIs have less than 100 members (50,5%) while only a small minority can count on more than 1000 members (10%). The distribution within the countries is less heterogeneous than the juridical form but still there are some interesting differences to be reported. The MEDIUM size CAIs are well represented in Belgium and The Netherlands (38% and 44%) and Belgium is also the country where the share of LARGE CAIs is highest, 20% followed by Italy with the 17% of CAIs over 1000 members. In Poland and Estonia CAIs are almost all below 100 members while in Spain the distribution is more balanced and in line with the entire sample.

Juridical Form	Size	Belgium	Estonia	Italy	Netherlands	Poland	Spain	TOTAL
COOP	SMALL	5		3	19		3	30
	MEDIUM	17		9	17		4	47
	LARGE	8		6	2		2	18
	NO SIZE				1			1
COOP Total		30		18	39		9	96
NO COOP	SMALL	6	13	8		8	4	39
	MEDIUM			2	3			5
	LARGE			1		1		2
	NO SIZE			1	1	2		4
NO COOP Total		6	13	12	4	11	4	50
NO FORMAL	SMALL	5	9	2	2	9	7	34
	MEDIUM				1	1	4	6
	LARGE	1						1
NO FORMAL Total		6	9	2	3	10	11	41
NO ANSWER Total		2	5	7	1	3	1	19
TOTAL		44	27	39	47	24	25	206

Table 32. Dimension Organization and Size by country

By jointly considering the juridical form and the size of CAIs, table 32, it is worth to highlight that quite a strong relationship can be detected among these variables. The medium-large CAIs are in fact almost all cooperatives (68% of the total cooperatives and 82% of the total medium-large CAIs) and Belgium is the country where this phenomenon is more evident (25 out of 30 CAIs and 25 out of 26 medium-large CAIs in the country).

C. GEOGRAPHICAL SCOPE

This dimension aims at representing the space of CAIs activities in terms of type of territory (urban Vs rural) or in terms of the geographical scale that is likely to be affected by CAIs activities (local, regional, national or international).

C.1 Methodology

Only 1 question is considered (Q40) and the procedure consisted in 2 steps.

Step 1 – Recoding answers

Answers for Q40 have been recorded as follows:

Q40	At which geographical scale do the activities of your initiative take place?	
Answer in the survey		New code
1	In a rural area	RURAL
2	In an urban area	URBAN
3	In an area within a municipality (e.g. neighbourhood)	LOCAL
4	In one municipality	LOCAL
5	In several municipalities in the same region	LOCAL
6	In several municipalities in your country	NOT LOCAL
7	In several regions within the country	NOT LOCAL
8	All across the country	NOT LOCAL
9	In several countries in the European Union	NOT LOCAL
10	In several countries internationally (outside EU)	NOT LOCAL
11	Other, please specify	OTHER

Step 2. Assigning recoding answers to CAIs

CAIs were then assigned with one of the following values:

URBAN/RURAL -> if they choose only URBAN or RURAL

LOCAL -> if they choose only LOCAL modalities or LOCAL modalities in combination with URBAN/RURAL

NOT LOCAL -> if they choose at least one NOT LOCAL modality

OTHER -> if they choose only OTHER

C.2 Results

	Belgium	Estonia	Italy	Netherlands	Poland	Spain	TOTAL
RURAL		2	4	8	1	6	21
URBAN	2	14	1	2	4		23
LOCAL	24	5	18	28	13	14	102
NOT LOCAL	14	2	9	5	2	4	36
OHTER	4	4	7	4	4	1	24
TOTAL	44	27	39	47	24	25	206

Table 33. Dimension Geographical Scope by country

While the vast majority of CAIs declared to be focused on the local community (ca 50%) and only the 17% operate at a Not Local level (regional, national or international, the 21% of CAIs were not able to precisely assess if their activity target a local or not local geographical scope. Within this group, CAIs splitted almost equally in two subgroups respectively focused on rural (47%) or urban areas (53%). The 'localness' of CAIs characterize, with a bit of heterogeneity, the distribution of CAIs in all the countries with particular relevance in The Netherlands, in Poland and Spain. Instead, Belgium and Italy a relatively higher share of Not Local CAIs.

	RURAL	URBAN	LOCAL	NOT LOCAL	OHTER	TOTAL I
SMALL	14	19	57	10	4	104
MEDIUM	5	2	35	12	4	58
LARGE			8	13		21
NO ANSWER	2	2	2	1	16	23
TOTAL	21	23	102	36	24	206

Table 34. CAIs by dimension, broken down by Geographical Scope

If we look jointly at the distribution of the geographical scope and the size of CAIs, as expected a relationship between these two characteristics emerges. Just considering the CAIs that expressed a local/not local geographical scope (138 out of 206), the percentage of Not Local CAIs moves from the 15% in the case of SMALL CAIs to 25% for MEDIUM CAIs up to 62% for LARGE CAIs, while if we look at the LOCAL CAIs, 57% of them are SMALL CAIs.

D. FINANCING

This dimension aims at representing the extent to which the needed financial support for CAIs activities is provided by BOTTOM UP Vs TOP DOWN strategies. Jointly with the question about first financial support already considered for dimension A (Q11) the question about the main investors is also taken into account (Q33).

1. Methodology

As for dimension A, the procedure consisted in three steps and resulted in the creation of a synthetic variable Financing.

Step 1 – Recoding answers

Q11	How did you finance the first activity (or activities)? Please select a maximum of 3 main sources.	
1	Citizens (e.g. direct financing)	BOTTOM
2	Crowdfunding	BOTTOM
3	Donations (e.g. from not for profit associations)	TOP
4	Public grant or subsidies	TOP
5	Public authorities or agencies (beyond grants, or subsidies or banks)	TOP
6	Public banks	TOP
7	Funding from the private sector (e.g. energy utilities)	TOP
8	Private bank	TOP
9	Cooperative banks	TOP
10	Other, please specify	OTHER
Q33	If entities or citizens have invested through capital (equities) in the initiative, who are the main 4 investors?	
1	Private Banks	TOP
2	Cooperative Banks	TOP
3	Members (ie membership means also ownership or becoming shareholders)	BOTTOM
4	Non-member citizens (eg as equity- or share-holders)	BOTTOM
5	Public authorities	TOP
6	Energy sector utilities (incumbents)	TOP
7	Energy sector utilities (non-incumbents)	TOP
8	Private corporations (outside the energy sector)	TOP
9	Other, please specify	OTHER

Step 2. Assigning recoding answers to CAIs

For both the Q11 and Q33, each of the CAIs were then assigned with one of the following values:

BOTTOM -> if they choose only BOTTOM modalities or more BOTTOM modalities than TOP modalities

TOP -> if they choose only TOP modalities or more TOP modalities than BOTTOM modalities

MIX -> if they choose the same number of BOTTOM and TOP modalities

OTHER -> if they answer don't know/other

Step 3. Creating the synthetic dimension *Financing*

Q11 and Q33 have then been finally merged into variable "Financing" and CAIs were assigned with one of the following values depending on the answers given to Q11 and Q33 as in table below:

Financing	Q11	Q33
BOTTOM	BOTTOM	BOTTOM
	BOTTOM	MIX
	BOTTOM	NO ANSWER
	BOTTOM	OTHER
	MIX	BOTTOM
	OTHER	BOTTOM
MIX	BOTTOM	TOP
	MIX	MIX
	MIX	NO ANSWER
	MIX	OTHER
	MIX	TOP
	TOP	BOTTOM
OTHER	OTHER	NO ANSWER
	OTHER	OTHER
TOP	OTHER	TOP
	TOP	MIX
	TOP	NO ANSWER
	TOP	OTHER
	TOP	TOP

2. Results³⁸

	Belgium	Estonia	Italy	Netherlands	Poland	Spain	TOTAL
BOTTOM	29	8	12	24	1	11	85
TOP		4	6	4	9	4	27
MIX	5	9	6	7	1		28
OTHER	3	1	3	5	4	2	18
NO ANSWER	7	5	12	7	9	8	48
TOTAL	44	27	39	47	24	25	206

Table 35. Recoded Q33 by country

³⁸ for details about the distribution of Q11 please see dimension a. Dynamic of origin

Differently from the first financial support (Q11) that is mainly provided by TOP down actors, along the CAIs development BOTTOM up actors (citizens, members or not members) result as the first source of support for the 41% of CAIs (54% of the respondents). This proportion is detected (with little differences) for all the countries with the exception of Estonia where less than 1 out of 3 CAIS is supported by members and ,as expected, in Poland where the 37% of CAIs (60% of the respondents) are financed mainly by TOP actors.

		Q33					
		BOTTOM	TOP	MIX	OTHER	NO ANSWER	TOTAL
Q11	BOTTOM	37	7	7	6	12	69
	TOP	25	12	10	10	24	81
	MIX	21	5	11	1	6	44
	OTHER	2	3		1	6	12
	TOTAL	85	27	28	18	48	206

Table 36. Cross distribution of financial variables Q11 and Q33

When looking at the joint distribution of the two financial variables, Q11 and Q33, a group of CAIs can be considered strongly BOTTOM (37 out of 206, 14%) more than double the size of the group that can be considered strongly TOP (12 out of 206, 6%). All the others show an evolution of their financial support from one to the other side of the continuum BOTTOM-TOP or a combination of the two. In particular, while the CAIs that were bottom from the beginning tend to keep this approach (53% were and are BOTTOM), the CAIs that were initially supported by TOP actors differentiate the source of financing along their development (30% moved from TOP to BOTTOM Vs a lower 6% that remained TOP).

	Belgium	Estonia	Italy	Netherlands	Poland	Spain	TOTAL
BOTTOM	33	6	17	17	1	11	85
TOP	5	7	13	11	18	5	59
MIX	6	12	8	19	2	8	55
OTHER	0	2	1	0	3	1	7
TOTAL	44	27	39	47	24	25	206

Table 37. Dimension Financing by country

When merging the financial variables, it is confirmed a relatively higher concentration of the distribution on BOTTOM CAIs (41%) followed an almost equal share of CAIs that rely on the financial support of TOP actors (28%) or on a MIX of top and bottom actors (26%).

In terms of distribution within the countries, Italy and Spain are almost in line with the overall sample, Poland confirms to be characterized by the relevance of TOP actors while Estonia and The Netherlands are a bit skewed towards a MIX condition.

E. OBJECTIVES

This dimension aims at representing the main focus of CAIs in terms of the most relevant objectives they aim at achieving through their activities (Q13).

1. Methodology

Only 1 question is considered (Q13) and the procedure consisted in 3 steps that resulted in the creation of the synthetic variable *Objectives*

Step 1 – Recoding answers

Answers for Q13 have been recorded as follows:

Q13	What are the main objectives of your initiative? Please choose a maximum of 3.	
Answer in the survey		New code
1	Seek energy democracy (e.g. decision making includes citizens)	SOCIAL
2	Give alternatives to traditional energy models	ENERGY
3	Increase access to renewable energies	ENERGY
4	Allow citizens to profit from the returns of investment of renewable energies	SOCIAL
5	Provide fair and/or lower energy prices	ENERGY
6	Alleviate energy poverty	SOCIAL
7	Make energy generation more local	ENERGY
8	Provide measures to increase energy efficiency	ENERGY
9	Increase social buy-in into climate and sustainable goals	SOCIAL
10	Increase citizens sustainable behaviours	SOCIAL
11	Support local community development (e.g rural development)	SOCIAL
12	Other (please specify)	OTHER

Step 3. Assigning CAIs with values of the synthetic variable *Objective*

CAIs were then assigned with one of the following values:

SOCIAL -> if they choose only SOCIAL answers or more SOCIAL answers than ENERGY answers

ENERGY -> if they choose only ENERGY answers or more ENERGY answers than SOCIAL answers

ENERGY & SOCIAL -> if they choose the same number of ENERGY and SOCIAL answers

OTHER -> if they choose OTHER

2. Results

	Belgium	Estonia	Italy	Netherlands	Poland	Spain	TOTAL
SOCIAL	26	6	21	31	2	15	101
ENERGY	13	17	12	11	17	7	77
ENERGY & SOCIAL	5	2	2	5	3	2	19
OTHER		2	4		2	1	9
TOTAL	44	27	39	47	24	25	206

Table 38. Dimension Objectives by country

Given that all the CAIs are active in the energy field and have been founded with the mission of carrying out activities in the energy domain, some differences can be detected in the approach that they apply to this common mission that here is described in terms of the main objectives they fell committed with. For almost half of the CAIs the SOCIAL perspective is the most relevant with 49% of them declaring to be committed with energy democracy and poverty and /or to aim at increasing social involvement in the transition process and/or benefit the society and the local community. A relevant share of CAIs, on the other hand, declare to be mostly committed on mere energy objective with the 39% of respondents declaring that they aim at making energy production and consumption more sustainable and/or efficient and less expensive. Only a residual 9% declared to be committed with both energy and social objectives. With the noticeable exception of Poland and Estonia (where around 70% of CAIs have mostly energy targets) all the other countries show a similar distribution.

F. ACTIVITIES

This dimension aims at representing the main activities currently implemented by CAIs. CAIs are characterized with attention paid to their activities directly linked to the energy supply chain (Q14), to other activities in the energy field (Q16,Q17,Q18,Q19) and to the effort spent in mobilizing citizens (Q20). In order for the dimension to be synthesized in a readable way, it has been operationalized in three different vectors (one per each of the above-mentioned domains) instead of one single vector that would have been resulted difficult to be managed and understood.

1. Methodology

The procedure consisted in 2 steps and resulted in the creation of three synthetic variables:

- Activities_SupplyChain, built on Q14
- Activities_OtherEnergyServices, built on Q16,Q17,Q18,Q19, Q20

Step 1 – Recoding answers

Answers have been recorded as follows:

Q14	If your initiative is active in the renewable energy supply chain, which activities does it carry out?	
	Answers in the survey	New code
1	We do not carry this type of activity	No Supply Chain
2	Generate or produce renewable energy	Generation
3	Purchase renewable energy from individual self-consumer	Sell
4	Sell renewable energy to final customers (energy supply)	Sell
5	Sell renewable energy to the wholesale market	Generation
6	Sell renewable energy through a feed in tariff	Generation
7	Operate an energy grid and/or other form of transport of energy	Grid
8	Financing renewable projects or technologies	OTHER
9	Organize or manage joint self-consumption or energy sharing, such as renewable generation shared amongst neighbours of an apartment block, or sales or share of energy between two consumers	OTHER
10	Other renewable energy services, please specify	OTHER
Q16	If your initiative engages in mobility services, which are they?	
	Answers in the survey	New code
1	We don't offer mobility services	NO
2	Support for electric vehicle purchase (incl. financial support or collective purchases)	YES
3	Electric vehicle sharing	YES
4	Bike sharing	YES
5	Charging facilities	YES
6	Other mobility services, please specify	YES
Q17	If your initiative engages in energy efficiency services, which are they?	
	Answers in the survey	New code
1	We do not offer energy efficiency service	NO
2	Renovation or retrofitting of buildings	YES
3	Energy efficiency audits	YES
4	Advice on energy consumption	YES

5	Collective purchase of sustainable or high -efficiency energy products, including for self-consumption	YES
6	Financing or subsidising energy efficiency products purchases or projects (such as insulation projects)	YES
7	Other energy efficiency services, please specify	YES
Q18	If your initiative engages in environmental care activities, which are they?	
	Answers in the survey	New code
1	We do not organize environmental care activities	NO
2	Regeneration of eco-systems	YES
3	Reforestation	YES
4	Support to sustainable practices in other sectors (e.g. agricultural sector)	YES
5	Waste management	YES
6	Other environmental care activities, please specify	YES
Q19	If your initiative engages in knowledge and skills creation services/activities, which are they?	
	Answers in the survey	New code
1	We do not carry knowledge and skills creation activities	NO
2	Raising awareness on renewable energy and collective actions	YES
3	Technical knowledge on renewable energy	YES
4	Raising skills on digitization of energy	YES
5	Taking part on research projects or other forms of sharing knowledge at large	YES
6	Other knowledge and skills creation services/activities (e.g. presenting in conferences), please specify	YES
Q20	If your initiative engages in civil society mobilization activities, which are they?	
	Answers in the survey	New code
1	We do not carry citizen mobilization activities	NO
2	Organize mobilization campaigns (e.g. petitions, demonstrations, protests)	YES
3	Take part to mobilization campaigns (e.g. petitions, demonstrations, protests)	YES
4	Lobbying	YES
5	Political recommendations and messages through media (press, social media, blogs...)	YES
6	Other activities related to civil society mobilization, please specify	YES

Step 3. Assigning CAIs with values of the synthetic variables *Activities SupplyChain*, *Activities OtherEnergyServices*, *Activities Mobilization*

Through a simple CONCATENATE of the recoded questions the CAIs were finally assigned with a combination of activities for each of the synthetic variables as reported in the Results section.

2. Results

Activty	Belgium	Estonia	Italy	Netherlands	Poland	Spain	TOTAL
Generation	11	13	7	18	3	1	53
No Supply Chain	5	5	10	7	11	4	42
Generation Other	9	6	6	5	2	5	33
Other	6	1	1	2	2	7	19
Generation Sell	2	2	4	5	5		18
Generation Sell Other	6		2	6		1	15
Generation Sell Grid Other	3		4				7
Sell			1	2		2	5
Sell Other	1					3	4
Generation Grid Other	1			1		2	4
Generation Sell Grid			2	1			3
Grid			1				1
Grid Other					1		1
Generation Grid			1				1
TOTAL CAIs by country	44	27	39	47	24	25	206

Table 39. Dimension Activties- Supply Chain by country

While a vast majority of CAIs are active in power GENERATION (65% in combination with other services and 25% only active in generation) 1 out of 5 declare not to have any activity in the supply chain (20%) a share that increase in Italy (25%) and Poland (45%). 25% of CAIs are active in SELL (25% in combination with other service and just the 2,5% only active in selling energy) while only the 5% operate a local GRID (and only 1 is focused just on it).

	Belgium	Estonia	Italy	Netherlands	Poland	Spain	TOTAL
Q16-Mobility	9		9	8	2	9	37
Q17-Energy-Efficiency	23	7	24	30	10	20	114
Q18-Environmental	12		11	6	11	14	54
Q19-Skill&Awareness	37	6	22	41	16	22	144
Q20-Mobilization	25		12	20	8	18	83
TOTAL CAIs by country	44	27	39	47	24	25	206

Table 40. Dimension Activtiers – Othe Energy Services by country (CAIs tha declare to be active in the field)

As for other the other energy services, overall CAIs are primarily active in providing services aimed at shifting Skill&Awareness (70% of the sample) followed by their commitment in promoting EnergyEfficiency (55%) and in mobilizing citizens (40%). The less implemented service concerns Mobility (18%). Blegium and the Netherlands are almost perfectly in line with this distribution while in Italy and Spain Energy Efficiency raise up to 64% and 80% of CAIs respectively. In Spain are also detected the highest share of CAIs involved in Environmental (56%, followed by Poland with 46%) and Mobilization (72%) activities while in Estonia only few CAIs declare to be involved in othe than energy supply chain activities.

Of course these services are almost always jointly provided in heterogeneous assemblages in the different countries, as shown in details in table 41, that shows how the combination Skill&Awareness and Energy Efficiency is the most diffused and is provided (jointly with other services) by the 44% of CAIs, a share that raises up to 57% in The Netherlands and to 76% in Spain.

Energy Service	Belgium	Estonia	Italy	Netherlands	Poland	Spain	TOTAL
Skill&Awareness	8	5	3	5	2		23
EnergyEfficiency Skill&Awareness Mobilization	6		1	9	2	5	23
EnergyEfficiency Skill&Awareness	3	1	6	10	1	1	22
EnergyEfficiency		6	6	3	2	1	18
EnergyEfficiency Environmental Skill&Awareness Mobilization	5		2	1	3	3	14
Skill&Awareness Mobilization	4			6	2	1	13
Mobility EnergyEfficiency Environmental Skill&Awareness Mobilization	2		2	1		5	10
EnergyEfficiency Environmental Skill&Awareness			1	2	1	3	7
Mobility EnergyEfficiency Skill&Awareness Mobilization	2		2	1		1	6
Environmental Skill&Awareness Mobilization	2		1		1	1	5
Mobility EnergyEfficiency Environmental Skill&Awareness	2		1	1	1		5
Mobilization	3		1				4
Environmental Skill&Awareness	1		1		2		4
Mobility EnergyEfficiency Skill&Awareness	1			2		1	4
Environmental			1		2		3
Mobility Skill&Awareness	1		1	1			3
Environmental Mobilization			1			1	2
EnergyEfficiency Mobilization	1		1				2
Mobility Skill&Awareness Mobilization			1	1			2
Mobility Environmental Skill&Awareness Mobilization				1		1	2
Mobility EnergyEfficiency	1		1				2
Mobility						1	1
Mobility Environmental Skill&Awareness					1		1
Mobility EnergyEfficiency Environmental			1				1
<i>No other Energy Services</i>	2	15	5	3	4		29
TOTAL CAIs by country	44	27	39	47	24	25	206
<i>of which Skill&Awareness + Energy Efficiency</i>	21	1	15	27	8	19	91

Table 41. Dimension Activities – Other Energy Services by country (combinations of services)

G. SOCIAL IMPACT

This dimension aims at representing the role of CAIs activities in triggering potential processes of Social Innovation in terms of community development and inclusiveness (Q21, Q22), benefitting specific groups of social actors (Q23) including via economic benefit (Q24). As for the *Activities*, instead of merging all the variables in one synthetic dimension three vectors have been created as explained below.

1. Methodology

The procedure consisted in 2 steps and resulted in the creation of four synthetic variables:

- SocialImpact_SocialAttitude, built on Q21 and Q22
- SocialImpact_Beneficiaries, built on Q23
- SocialImpact_Profit, built on Q24

Step 1 – Recoding answers

Answers have been recorded as follows:

Q21	To achieve the energy transition, do you carry activities with the following objectives? Please, choose a maximum of 3 main areas you are active in.	
	Answers in the survey	New code
1	Reduce unemployment (e.g. hire long-term unemployed)	COMMUNITY DEVELOPMENT
2	Empower women	INCLUSION
3	Promote the social inclusion of all genders	INCLUSION
4	Promote the social inclusion of the elderly	INCLUSION
5	Empower the youth	INCLUSION
6	Promote multiculturalism	INCLUSION
7	Support local community projects	COMMUNITY DEVELOPMENT
8	Financial support to individuals or groups	COMMUNITY DEVELOPMENT
9	We do not carry such activities	NO
10	Other, please specify	OTHER
Q22		
Do you undertake specific actions to address energy poverty or encourage the involvement of vulnerable consumers?		
	Answers in the survey	New code
1	YES/NO	YES/NO
Q23		
To whom are the services/activities provided today ?		
	Answers in the survey	New code
1	We don't provide services or activities yet	NO SERVICES
2	To citizens	BOTTOM
3	To associations	BOTTOM
4	To SMEs	TOP
5	To municipalities	TOP
6	To the energy distribution system operator	TOP

7	Other (please specify)	OTHER
Q24 If your initiative can make profits, what are your priorities when allocating them? Please select maximum of 3.		
Answers in the survey		New code
1	We don't make profits	NO
2	Distribute it to those having invested in the initiative	ECONOMIC
3	Reinvest in the initiative's assets and core activities (e.g. more wind farms)	ECONOMIC
4	Use it for other activities (empowerment, activism, environmental)	SOCIAL
5	Other activities and projects for the local community	SOCIAL
6	Invest in other initiatives related to the energy transition	SOCIAL
7	Investing in other initiatives for social improvement	SOCIAL
8	Other, please specify	OTHER

Step 2. Assigning CAIs with values of the synthetic variables *SocialImpact_SocialAttitude*, *SocialImpact_Beneficiaries*, *SocialImpact_Profit*

For each of the synthetic variables, CAIs were finally assigned with one value among the following:

SocialImpact_SocialAttitude, a simple CONCATENATE function applied to the recoded questions Q21 and Q22 (see section Results for the combinations)

SocialImpact_Beneficiaries, as for dimension Dynamics of Creation and Financing, from the answers given to Q23 the following values have been generated

BOTTOM -> if they choose only BOTTOM modalities or more BOTTOM modalities than TOP modalities

TOP -> if they choose only TOP modalities or more TOP modalities than BOTTOM modalities

MIX -> if they choose the same number of BOTTOM and TOP modalities

NO SERVICES -> if they choose option 1

OTHER -> if they answer don't know/other

SocialImpact_Profit, CAIs were assigned with the following values

ECONOMIC -> if they choose only ECONOMIC modalities

SOCIAL -> if they choose only SOCIAL modalities

SOCIO-ECO -> if they choose both SOCIAL and ECONOMIC modalities

2. Results

DIMENSION *SOCIALIMPACT_SOCIALATTITUDE* BY COUNTRY*

	Belgium	Estonia	Italy	Netherlands	Poland	Spain	TOTAL
Only Community Development	9	4	7	12	3	4	39
Community Development and Inclusion	7		6	4	1	4	22
Community Development, Inclusion and Energy Poverty	3		2	3	1	7	16
Community Development and Energy Poverty	3	1	3	7	1	1	16
Only Energy Poverty	3			8	2	1	14
Other Social Attitude activities		5	1			1	7
Other combinations	5	0	4	2	2	6	19
No Social Attitude	13	15	9	10	10		57
No answers	1	2	7	1	4	1	16
TOTAL	44	27	39	47	24	25	206

(*) In this table the resulting combinations are aggregated. See Attachment "List of CAIs for profiling" for details

Table 42. Dimension Social Impact – Social Attitude by country

As for the Social attitude, more than 1 out of 4 CAIs (27%) declared not to have specific ambition for triggering changes in fields such as Energy Poverty, Community Development and Inclusion. Among the others, the relative majority aimed at fostering Community Development (40% in combination with other impacts and 19% for Community Development only) followed by commitment for addressing Energy Poverty (22% in combination with other impacts and 6% for Energy Poverty only) and Inclusion (18% always in combination with other impacts). The country breakdown doesn't show any relevant difference with the exception of Netherlands that shows a relatively higher share of CAIs dealing with Energy Poverty (38%) and focused only on community Development (25%).

	Belgium	Estonia	Italy	Netherlands	Poland	Spain	TOTAL
BOTTOM	15	6	13	30	8	10	82
TOP	10		5	1	3	5	24
MIX	15	1	13	16	5	6	56
OTHER	1	11	6		5	1	24
No other Energy Services yet	3	9	2		3	3	20
TOTAL	44	27	39	47	24	25	206

Table 43. Dimension Social Impact - Beneficiaries by country

As for the Beneficiaries of the socially oriented Energy Services, around 10% of CAIs declared to not have yet implemented any other services in addition to the energy related ones. Among the others, the relative majority target primarily Citizens and Association (BOTTOM CAIs, 39%), a small group of CAIs target SMEs, municipality or energy companies (TOP, 11%) and a number of the other CAIs target a MIX of beneficiaries (27%). With respect to the country breakdown, Belgium shows a more balance distribution among the groups (34% for BOTTOM and MIXCAIs Vs 23% of TOP CAIs), the Netherlands shows the highest share of BOTTOM CAIs (62%) while the others are almost in line with the sample distribution.

	Belgium	Estonia	Italy	Netherlands	Poland	Spain	TOTAL
ECONOMIC	8	9	6	10	7	1	41
SOCIAL	4	2	6	10		4	26
SOCIO-ECO	19		9	17	2	8	55
NO PROFIT	12	14	9	9	10	8	62
OTHER	1	2	9	1	5	4	22
TOTAL	44	27	39	47	24	25	206

Table 44. Dimension Social Impact – Profit by country

Finally, for what concerns the Profit, it is worth to highlight first of all that CAIS declaring No Profit are the largest group (30%) followed by CAIs that allocate their eventual profit for social as well as for economic aims (SOCIO-ECO, 26,6%). CAIs that declared ECONOMIC allocation of the profits (distribution among the members and/or reinvestment into the initiative) are ca 20% while the CAIs focused on Social aims are the residual 12%. A similar distribution is detected in Italy and Belgium while Spain shows a relatively higher share of CAIs reallocating their profit to SOCIAL and SOCIO-ECONOMIC aims (48%) and Poland and Estonia show a relatively higher share of CAIs using profit to mere ECONOMIC objective (around 30%).

Summary and Conclusions

This Section offers a recap of the survey results by country and by dimension (e.g., dynamics of creation, organizational structure, financing, and CAIs’ activities in the energy transition). For further explanations, we refer to section 3 and section 4.

Dynamics of creation						
	Belgium	The Netherlands	Italy	Spain	Estonia	Poland
Origin of the idea	citizens	citizens	citizens	citizens	municipalities	municipalities
Main Supporters	citizens, municipalities, (energy cooperatives)	citizens, municipalities, (energy cooperatives)	citizens, municipalities	citizens, municipalities	municipalities	municipalities
Initial investors	citizens, public grants, (banks)	citizens, public grants	citizens, (banks)	citizens, municipalities	citizens, municipalities, EU funds	Public grants, municipalities, EU funds

Table 45: Dynamics of creation (Section 3).

Table 45 summarizes the results for the dimension “dynamics of creation,” highlighting the main similarities (differences) across countries. The analysis confirms the strong role of citizens in the initial stages of CAIs’ formation (from the origin of the idea to the investment phase). In Belgium and the Netherlands, municipalities, together with citizens, are the main supporters and investors in CAIs, especially through public grants. In Italy and Spain, citizens invest in CAIs, supported by municipalities and local authorities. In Estonia and Poland, municipalities have a leading role in promoting CAIs, working as intermediaries to collect and distribute European funds as a stimulus for small-scale renewable installations. A further step in the analysis groups CAIs into bottom-up (citizen-led) and top-down (promoted and supported by local authorities, banks, private companies) initiatives. Overall, top-down CAIs, driven by public and private actors constitute one-third of the sample. Most of the CAIs surveyed are bottom-up initiatives triggered by citizens’ direct involvement.

Organizational Structure						
	Belgium	The Netherlands	Italy	Spain	Estonia	Poland
Prevailing Size (number of members)	Medium Size (100-999)	Medium Size (100-999)	Medium Size (100-999)	Small-Medium size (20-99)	Small-Medium size (20-99)	Small size (1-19)
Prevailing (legal) form	Cooperatives	cooperatives	cooperatives	cooperatives	Energy clusters	Apartment associations

Table 46: Organizational Structure (Section 3)

Table 46 summarizes the overall results for the dimension “organizational structure.” Most of the CAIs in our sample are of a small-medium size and declare to be legally organized. In particular, in Belgium, the Netherlands, and Italy, CAIs’ average size is between 100 and 999 members. In Spain,

there is a prevalence of small-medium CAIs, between 20 and 99 members. The preferred legal form is the cooperative, a tendency strengthening the importance of citizens' (members') direct role in CAIs. Instead, in Estonia and Poland, where the municipalities are essential in CAIs' formation, such initiatives are organized in energy clusters and apartment associations.

Financing						
	Belgium	The Netherlands	Italy	Spain	Estonia	Poland
I. Funding sources (through capital)	Members	Members	Members	Members	Members, public authorities	Public authorities
II. Funding sources (other)	Loans, public grants	Public grants	Loans	Loans	-	-

Table 47: Financing (Section 3).

Table 47 summarises the dimension “financing.” Members are the first actors in financing CAIs. However, the results show that public authorities and banks contribute to CAIs' activities. Overall, only a small group of CAIs can be considered purely bottom-up (top-down) financed, while most CAIs in our sample show a combination of the two approaches. In particular, the CAIs showing a bottom-up orientation in the first stages of their formation tend to confirm this approach and are mainly financed by members (citizens). Instead, CAIs showing a top-down direction since the beginning tend to differentiate their financing sources along with their development.

CAIs' Activities in the energy transition						
	Belgium	The Netherlands	Italy	Spain	Estonia	Poland
Energy activities	Generation of RE, PV, and wind, advice on consumption	Generation of RE, PV, and wind, advice on consumption	Generation of RE, PV, advice on consumption	Generation of RE, PV, advice on consumption	Generation of RE, PV, advice on consumption	Generation of RE, PV, advice on consumption
Other activities	Knowledge and awareness, civil society mobilization, environmental awareness	Knowledge and awareness, civil society mobilization	Knowledge and awareness	Knowledge and awareness, civil society mobilization, environmental awareness	Knowledge and awareness	Knowledge and awareness, environmental awareness
Social Impact	Energy poverty concerns, support to local projects, promoting social inclusion of all genders	Energy poverty concerns, support to local projects	Energy poverty concerns, support to local projects	Energy poverty concerns, empowerment of women, social inclusion of all genders, support to local projects	Energy poverty concerns, support to local projects	Energy poverty concerns, support to local projects

Table 48: CAIs' activities (Section 3).

Table 48 summarizes the dimension “CAIs’ activities in the energy transition.” CAIs tend to perform more than one energy activity in each country, with a prevalence of CAIs involved in power generation, producing, and selling RE relying on wind and PV plants. Moreover, CAIs provide further energy services, such as advising members on energy consumption efficiency. As for the other energy services, in all countries, CAIs are primarily active in delivering services aimed at shifting skill and awareness on energy. Activities such as energy society mobilization in the energy transition are performed in Belgium, the Netherlands, Italy, and Spain. Poland and Spain show a tendency to support environmental awareness activities strongly. Finally, CAIs show an interest in increasing their social impact. In particular, all CAIs show energy poverty concerns, suggesting that some activities and services will target such problems in the next future. Moreover, CAIs preserve the attitude in offering services to the local communities. Spain and Belgium go a step further as several CAIs are involved in activities promoting social inclusion of all genders and empowerment of women.

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Appendixes

Appendix 1 – A dataset for profiling CAIs

In the COMETS repository is made available for COMETS partners a dataset reporting the synthetic variables resulting from the merging procedure described in section 4.1., figure below ³⁹

Respondent ID	Country	A. Dynamic Of Creation	B. Organization & Size	C. Geographical_Scope	D. Financing	E. Activities- Energy_Supply_Chain	F. Activities_ Other_Energy_Services	F. Objectives	G. Social Impact Social_Attitude	G. Social Impact Beneficiaries	G. Social Impact Profit
11770613074	Belgium	Mix	No Coop_Small	Not Local	Top	No Supply Chain	Environmental Skill creation	Energy & Social	Community Development	Mix	No Profit
11766365451	Belgium	Bottom	Coop_Medium	Not Local	Bottom	Generation	Mobility	Social	Community Development	Mix	Socio-Eco
11691111688	Belgium	Bottom	No Formal_Small	Other	Bottom	Other	Energy	Community Development Inclusion Energy Poverty	Community Development Energy Poverty	Bottom	Socio-Eco
11884472077	Estonia	Mix	No Formal_Small	Local	Top	No Supply Chain	Energy	Energy	No Social Activities	No Services yet	No Profit
11778052549	Estonia	Top	No Answer_Small	Other	Bottom	Generation Other	No Other Energy Services	Social	Other	Other	Economic
11774164602	Estonia	Top	No Formal_Small	Rural	Bottom	Generation	No Other Energy Services	Energy	No Social Activities	No Services yet	Social
11774051193	Estonia	Bottom	No Formal_Small	Local	Mix	No Supply Chain	No Other Energy Services	Social	No Social Activities	Bottom	No Profit
11771186572	Estonia	Mix	No Answer_Mv	Urban	Other	No Supply Chain	Energy/Efficiency	Energy & Social	No Naswer	Other	Other
11661100839	Estonia	Top	No Coop_Small	Urban	Mix	Generation Other	Skill creation	Social	No Social Activities	Mix	Economic
11649452103	Estonia	Mix	No Coop_Small	Urban	Top	Generation	Skill creation	Energy	Other	No Services yet	No Profit
11648680291	Estonia	Bottom	No Answer_Mv	Other	Other	No Supply Chain	Energy/Efficiency	Energy & Social	No Naswer	Other	Other
11631542429	Estonia	Bottom	No Coop_Small	Urban	Mix	Generation	Skill creation	Energy	Other	Other	No Profit
11631533522	Estonia	Bottom	No Coop_Small	Urban	Mix	Generation	No Other Energy Services	Energy	Other	Other	No Profit
11631523603	Estonia	Bottom	No Coop_Small	Urban	Mix	Generation	No Other Energy Services	Energy & Social	Other	Other	No Profit
11631499516	Estonia	Mix	No Coop_Small	Urban	Top	Generation Sell	No Other Energy Services	Energy	No Social Activities	Other	No Profit
11610250191	Estonia	Top	No Formal_Small	Urban	Mix	Generation Other	Energy/Efficiency	Social	Community Development Energy Poverty	Bottom	No Profit
11609771742	Estonia	Mix	No Formal_Small	Urban	Bottom	Generation	Energy/Efficiency	Energy	No Social Activities	Bottom	Economic
11605588150	Estonia	Mix	No Answer_Mv	Other	Top	No Supply Chain	No Other Energy Services	Energy & Social	No Social Activities	No Services yet	No Profit
11605247294	Estonia	Bottom	No Formal_Small	Not Local	Bottom	Generation Other	No Other Energy Services	Social	No Social Activities	Bottom	Economic
11965864425	Italy	Bottom	Coop_Medium	Not Local	Mix	Generation Other	Mobility	Social	Community Development Energy Poverty	Mix	Socio-Eco
11809028965	Italy	Bottom	No Answer_Mv	Other	Other	No Supply Chain	Energy/Efficiency	Energy & Social	No Naswer	Other	Other
11727573409	Italy	Mix	No Coop_Small	Rural	Top	Generation	Environmental	Energy	Community Development Inclusion	Bottom	No Profit
11683964772	Italy	Top	No Answer_Mv	Other	Top	No Supply Chain	Energy/Efficiency	Energy & Social	No Naswer	Other	Other
11680631509	Netherlands	Bottom	No Coop_Medium	Rural	Mix	Generation	Skill creation	Social	Community Development	Bottom	Social
11675519666	Netherlands	Bottom	Coop_Small	Local	Bottom	Generation	Skill creation	Energy & Social	Community Development	Bottom	Other
11647414917	Netherlands	Mix	Coop_Small	Rural	Mix	Generation	Mobility	Social	Community Development Energy Poverty	Mix	Socio-Eco
11631399840	Netherlands	Mix	Coop_Medium	Rural	Top	Generation Other	Energy/Efficiency	Social	Community Development Other	Bottom	Social
11619591104	Netherlands	Top	Coop_Small	Rural	Top	Generation Sell	Skill creation	Social	Community Development	Bottom	Socio-Eco
11619267904	Netherlands	Bottom	Coop_Small	Urban	Bottom	Generation	Mobility	Social	No Social Activities	Bottom	No Profit
11753227146	Poland	Top	No Formal_Small	Local	Top	Generation Sell	Energy/Efficiency	Energy	No Social Activities	Top	Economic
11733331698	Poland	Top	No Formal_Small	Local	Top	Generation Sell	Environmental Skill creation	Energy	No Social Activities	Mix	Economic
11733171456	Poland	Top	No Formal_Medium	Other	Top	Generation Other	Skill creation	Social	Community Development	Bottom	Economic
11728961798	Poland	Top	No Answer_Mv	Other	Top	No Supply Chain	Energy/Efficiency	Energy & Social	No Naswer	Other	Other
11705723577	Poland	Top	No Formal_Small	Local	Top	Generation	Energy/Efficiency	Social	Community Development Inclusion	Mix	No Profit
11700024882	Poland	Top	No Coop_Mv	Local	Top	Grid Other	Environmental Skill Energy/Efficiency	Energy	No Social Activities	Mix	No Profit

The dataset supports **2 types of analysis:**

A) aggregate analysis to describe and /or assess the relationships among the dimensions at different levels (entire sample or specific country)

ALL SAMPLE						
C. Geographical_Scope						
A. Dynamic of creation	RURAL	URBAN	LOCAL	NOT LOCAL	OHTER	TOTAL
BOTTOM	11	6	49	16	10	92
MIX	7	6	24	13	5	55
TOP	3	10	29	7	9	58
no answer		1				1
TOTAL	21	23	102	36	24	206
ITALY						
C. Geographical_Scope						
A. Dynamic of creation	RURAL	URBAN	LOCAL	NOT LOCAL	OHTER	TOTAL
BOTTOM	3	1	9	5	3	21
MIX	1		5		1	7
TOP			4	4	3	11
TOTAL	4	1	18	9	7	39

³⁹ The dataset will be opened to the wider scientific community following the COMETS disclosure procedure as detailed in the Data Management Plan.

B) individual synthetic description of the CAIs. For each of them the following information are provided

Field	Value
Respondent ID	11965864425
Country	Italy
A. Dynamic Of Creation	Bottom
B.Organization & Size	Coop_Medium
C. Geographical_Scope	Not Local
D. Finanincg	Mix
E.Activities: Energy_Supply_Chain	Generation Other
E.Activities: Other_Energy_Services	Mobility EnergyEfficiency Skill-creation
E.Activities: Mobilization	Mobilization
F.Objectives	Social
G.Social Impact: Social_Attitude	Community Development - Energy Poverty
G.Social Impact: Beneficiaries	Mix
G.Social Impact: Profit	Socio-Eco

that can be easily expanded in a short but exhaustive description by taking into account the methodology described in section 4.2.

In the example above we have

“A cooperative with 100-1000 members created in Italy thanks to the direct engagement of citizens both as main actors and main source of financing. The CAI activities target a wide geographical scope that goes beyond the boundaries of the local community and, along their development, have been financed by a mix of sources where the citizens have been progressively integrated by other actors such as banks and public administrations. In terms of activities they are mostly focused on generation of power for what concern the supply chain and provide also other energy related services aimed at fostering mobility, energy efficiency and increase in citizens skill and awareness about the energy topics. Their objectives are overall focused on social concerns and they are concerned on supporting community development and addressing energy poverty with attention paid to a variety of potential beneficiaries of their services (citizens, SMEs, local administration...). They allocate their eventual profits both for economic aims (such as distributing among the members and reinvesting in the initiative) and for supporting their social impacts ambition.”

Appendix 2 – Relevant combinations (concatenations) of answers

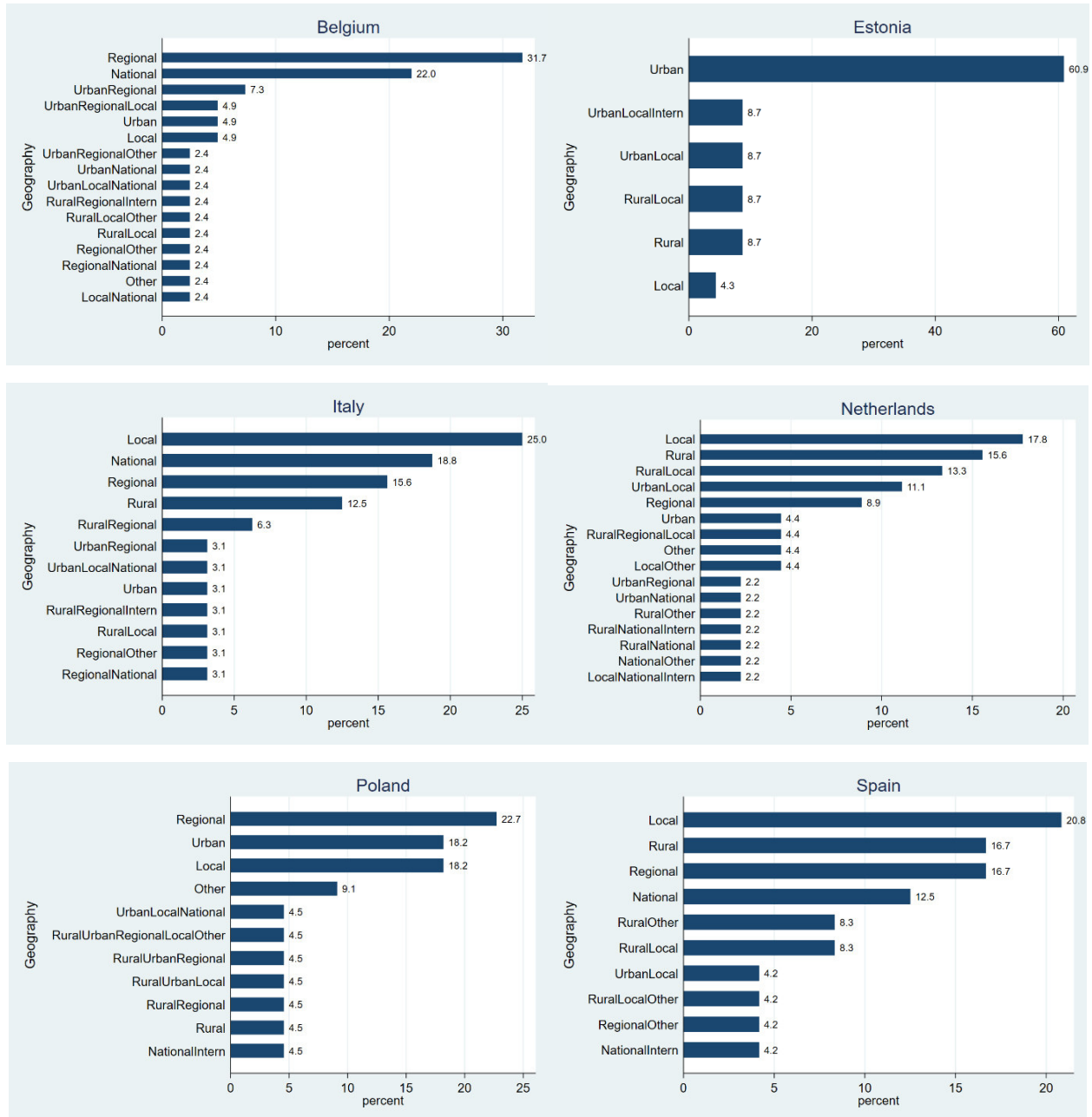


Figure 39: Geographical scope (Q41).

Figure 39 goes a step further and shows the combination of answers by country. i.e. isolating single answers. In Belgium, 32% of CAIs are Regional, while 22% are National. In Estonia, 60% of CAIs are located in an Urban area. In Italy, 20% of CAIs consider themselves local, while 18% as National.; 15% of the initiatives define themselves as regional, and 12% are in rural areas. In the Netherlands, 20% of CAI in the sample are local, and 16% are rural. In Poland, 22% of CAIs are regional, and 20% are in an urban area, while 20% define themselves as local. In Spain, 20% of CAIs are local, 16% of CAIs are in a rural area, and 16% describe themselves as national.

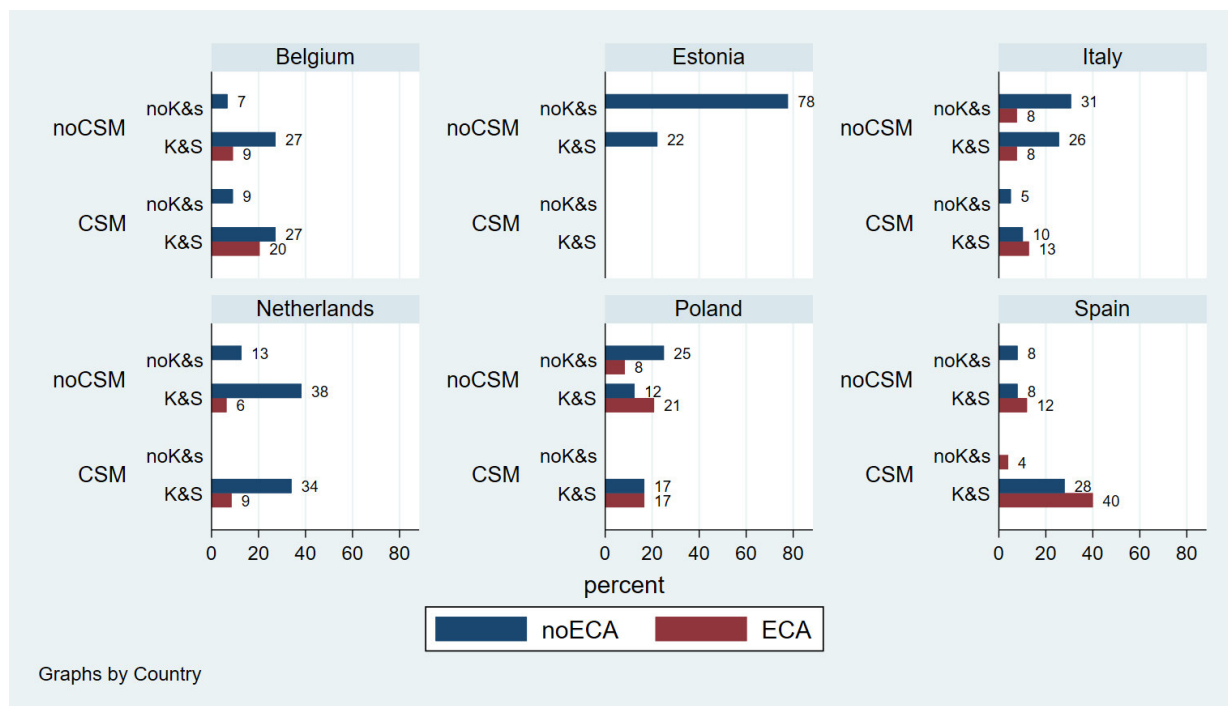


Figure 40: Multiple vs. Single activities at large, by country. Percentages (Q18-Q20).

Figure 40 investigates if CAIs perform, at least, one or more of such activities. In Belgium, 30% of CAIs are involved in K&S and ECA activities; 20% are also interested in CSM activities. In Estonia, 22% of CAIs are interested only in K&S. In Italy, 27% of CAIs are involved only in K&S activities. 28% of CAIs are involved in K&S and ECA activities; 13% of these are also involved in CSM activities. In the Netherlands⁴⁰, 38% of CAIs are involved in K&S activities only; 15% perform K&S and ECA activities, 18% of which also perform CSM. In Poland, 38% of CAIs devote time in K&S and ECA, of which 17% are also involved in CSM. Finally, In Spain, 52% of CAIs do K&S activities, and ECA and 40% are engaged in CSM. In general, the CAIs surveyed are significantly active in activities that could boost the energy transition and benefit the community.

Appendix 3 – further COMETS’ survey results

1 Dynamics of creation

Combinations	Frequencies	Percent	Cumulatives
Citizen	76	36.89	37.07
Citizen _ Enutil	1	0.49	37.56
Citizen _ LocAgency	2	0.97	38.54
Citizen _ Municip	5	2.43	40.98
Citizen_Municip _ LocAgency	1	0.49	41.46
Citizen_Municip _ Other	2	0.97	42.44
Citizen _ NGOcoop	9	4.37	46.83
Citizen_NGOcoop_Enutil_Other	1	0.49	47.32
Citizen_NGOcoop_Municip	1	0.49	47.80
Citizen_NGOcoop_Other	5	2.43	50.24
Citizen _ Other	12	5.83	56.10
Citizen_Rresearch_Other	1	0.49	56.59
Enutil	8	3.88	60.49
Municip	12	5.83	66.34
Municip _ Enutil	2	0.97	67.32
Municip _ LocAgency	2	0.97	68.29
Municip_LocAgency_Other	1	0.49	68.78
Municip _ Other	5	2.43	71.22
NGOcoop	13	6.31	77.56
NGOcoop_Municip	2	0.97	78.54
Other	39	18.93	97.56
Rresearch	2	0.97	98.54
Rresearch _ Enutil	1	0.49	99.02
Rresearch _ LocAgency	1	0.49	99.51
Rresearch_NGOcoop_Other	1	0.49	100.00
Total	205	99.51	
Missing	1	0.49	
	206	100.00	

Table 1: Origin of the Idea. Modes: frequencies, percentages and cumulatives (Q5).

	Belgium	Estonia	Italy	Netherland	Poland	Spain	Total
Citizen	23	5	14	25	1	8	76
CitizenEnutil	0	0	0	0	0	1	1
CitizenLocAgency	0	0	0	2	0	0	2
CitizenMunicip	1	0	0	2	0	2	5
CitizenMunicipLocAg..	1	0	0	0	0	0	1
CitizenMunicipOther	1	0	0	0	0	1	2
CitizenNGOcoop	2	1	1	2	0	3	9
CitizenNGOcoopEnuti..	0	0	1	0	0	0	1
CitizenNGOcoopMunicip	1	0	0	0	0	0	1
CitizenNGOcoopOther	2	0	1	0	1	1	5
CitizenOther	5	1	1	5	0	0	12
CitizenRsearchOther	1	0	0	0	0	0	1
Enutil	1	0	5	0	1	1	8
Municip	1	1	2	1	7	0	12
MunicipEnutil	0	0	0	0	2	0	2
MunicipLocAgency	0	2	0	0	0	0	2
MunicipLocAgencyOther	0	0	0	1	0	0	1
MunicipOther	0	0	2	1	2	0	5
NGOcoop	0	1	5	2	2	3	13
NGOcoopMunicip	0	0	0	0	1	1	2
Other	3	15	4	6	7	4	39
Rsearch	0	0	2	0	0	0	2
RsearchEnutil	1	0	0	0	0	0	1
RsearchLocAgency	0	0	1	0	0	0	1
RsearchNGOcoopOther	1	0	0	0	0	0	1
Total CAIs	44	26	39	47	24	25	205

Table 2: Combinations by country (Q5).

Tables 3 and 4 show, respectively, the results for the beneficiaries (Q7) and the involvement of beneficiaries (Q8). Looking at Q7-Q8, citizens and municipalities are the main beneficiaries of CAIs and they are reached mainly through meetings and informal discussions.

	Belgium	Estonia	Italy	Netherlands	Poland	Spain	
Don't know	0	1	0	0	1	0	
Citizen	39	7	33	41	17	22	
Vulnerable Citizens	10	1	1	5	1	3	
Vulnerable Groups	6	1	0	1	0	3	
Rural Areas	5	0	8	6	2	10	
Municipality	17	1	11	7	17	9	
Private Energy Utility	0	2	3	4	5	1	
Local SMEs	8	1	12	9	6	6	
other	8	19	10	9	5	3	
Total	93	33	78	82	54	57	
Total CAIs	47	27	39	46	24	25	205

Table 3: Beneficiaries (Q7).

	Belgium	Estonia	Italy	Netherlands	Poland	Spain	
No	4	3	4	3	2	4	
Don't know	2	1	4	1	5	3	
Meeting Beneficiaries	18	9	13	18	5	14	
Meeting Representatives	15	5	5	15	6	2	
Open Meetings	21	11	18	32	4	9	
Survey	4	1	4	6	1	2	
Social Media campaigning	4	0	3	7	2	3	
Informal Discussions	15	3	10	13	5	4	
other	6	7	5	3	7	6	
Total	89	40	66	98	37	47	
Total CAIs	44	27	39	47	24	25	206

Table 4: Who was consulted (Q8).

Table 5 shows the level of difficulty (from very difficult to very easy), at the origin of the actions listed in Table 5, such as reaching out citizens, dealing with technical aspects, setting-up decision making process, assessing the economic viability of the initiative is on average moderate, while dealing with technical aspects and legal & administrative procedures are perceived by CAIs as difficult aspects.

	Very Difficult	Difficult	Moderate	Easy	very easy	Don't Know	Total
Reaching out citizens	15	47	59	49	19	7	196
Set-up decision making process	12	43	66	53	16	6	196
Set-up the internal organization	15	37	68	53	21	2	196
Dealing with technical aspects	16	58	65	42	8	5	194
Legal & administrative procedures	40	62	59	25	6	7	199
Assessing the economic viability	16	43	78	42	10	10	199
Finding financial support	41	57	55	34	6	6	199
Other	16	5	5	0	2	6	34
Total	171	352	455	298	88	49	1413

Table 5: Difficulties (Q9).

Table 6 reports the combinations for Q11. In Table 6, we grouped

- Public, private coop banks and we call them "Banks";
- Crowdfunding, Donations, funding from the private sector and other we call them "Other".

	Freq.	Percent	Cum.
Bank	4	1.94	1.97
BankOther	5	2.43	4.43
Citizen	38	18.45	23.15
CitizenBank	12	5.83	29.06
CitizenBankOther	12	5.83	34.98
CitizenOther	16	7.77	42.86
CitizenPubauth	3	1.46	44.33
CitizenPubauthBank	2	0.97	45.32
CitizenPubauthBankOther	1	0.49	45.81
CitizenPubauthOther	2	0.97	46.80
CitizenPubgrant	15	7.28	54.19
CitizenPubgrantBank	8	3.88	58.13
CitizenPubgrantBankOther	1	0.49	58.62
CitizenPubgrantOther	4	1.94	60.59
Other	34	16.50	77.34
Pubauth	4	1.94	79.31
PubauthOther	1	0.49	79.80
Pubgrant	11	5.34	85.22
PubgrantBank	7	3.40	88.67
PubgrantBankOther	7	3.40	92.12
PubgrantOther	11	5.34	97.54
PubgrantPubauth	2	0.97	98.52
PubgrantPubauthBank	1	0.49	99.01
PubgrantPubauthOther	2	0.97	100.00
Total	203	98.54	
Missing	3	1.46	
Total	206	100.00	

Table 6: Combinations (Q11).

1.1 Q5-Q12: Bottom up vs. Top Down Origin and Private-Public vs. citizen-based investment

	Belgium	Estonia	Italy	Netherlands	Poland	Spain	Total
q5_2 Citizen	9	3	1	23	0	2	38
q5_3 Municipality	23.68	7.89	2.63	60.53	0.00	5.26	100.00
	2	2	1	5	5	2	17
q5_4 LocalDevAgency	11.76	11.76	5.88	29.41	29.41	11.76	100.00
	1	1	1	3	0	0	6
q5_8 EnergyCoop	16.67	16.67	16.67	50.00	0.00	0.00	100.00
	0	0	1	1	0	3	5
q5_9 ngo	0.00	0.00	20.00	20.00	0.00	60.00	100.00
	2	1	0	0	1	0	4
q5_5 Uni	50.00	25.00	0.00	0.00	25.00	0.00	100.00
	1	0	1	0	0	0	2
q5_6 ResCenter	50.00	0.00	50.00	0.00	0.00	0.00	100.00
	1	0	0	0	0	0	1
q5_7 PrEnergyUtility	100.00	0.00	0.00	0.00	0.00	0.00	100.00
	0	0	0	0	1	0	1
	0.00	0.00	0.00	0.00	100.00	0.00	100.00
Total	16	7	5	32	7	7	74
Cases	21.62	9.46	6.76	43.24	9.46	9.46	100.00
	13	9	3	29	10	5	69

Table 7: Origin of the idea by CAIs which selected Public Grants as source of financing.

^ In Table 7 we consider Q5, the origin of the idea combined with Public Grant = 1.

2 Organization and structure

2.1 Importance of the following areas in choosing the legal form (if any)

	Belgium	Estonia	Italy	Netherlands	Poland	Spain	Total
Form of governance preferred	37	10	17	39	9	19	131
Distribution of profits	30	2	14	12	1	5	64
Distribution of liability risks	10	2	12	24	1	7	56
No legal form _ complex	0	0	0	0	0	1	1
No legal form _ no unnecessary	0	2	2	3	5	2	14
No legal form _ matching values	0	0	0	0	0	1	1
Credibility	18	0	5	17	0	8	48
other	7	10	6	10	5	4	42
Total	102	26	56	105	21	47	357
Total CAIs	42	23	29	46	19	22	181

Table 8: Absolute values (Q26).

2.2 Are members also clients?

	Belgium	Estonia	Italy	Netherlands	Poland	Spain	Total
Members are clients	0	17	11	5	6	5	28
Members can be clients	20	0	10	23	6	7	66
Clients are members	5	1	2	6	1	4	19
Members & Clients different	11	4	5	6	2	2	30
other	6	0	4	8	3	4	25
Total	42	22	32	48	18	22	167
Total CAIs	37	22	29	43	18	18	167

Table 9: Absolute values (Q29).

^ Table 9 describes the relationship between the status of member and client.

- Members are clients: to be a clients you need to be a member. Probably coops selected this option.
- Members can be clients: you are a member investing in the initiative. In addition, members can use other services (being clients) offered by the CAI.
- Clients are members: also in this case, you need to be a members and you can also be a client.

{ Example: Imagine a CAI doing both production and selling of RE (Q14). There could be founding members investing in the initiative but, not necessarily, they buy other services.

2.3 Bodies of your initiative

	Belgium	Estonia	Italy	Netherlands	Poland	Spain	Total
Board-proposal for change	29	9	15	6	3	12	74
Board- nal decision	24	1	17	1	6	6	55
Board-opinion	13	5	2	4	2	4	30
Board-Implement decisions	24	13	7	6	5	7	62
Shareholder-proposal for change	3	1	8	2	1	1	16
Shareholder- nal decision	8	1	12	4	1	5	31
Shareholder-opinion	13	1	10	4	1	3	32
Shareholder-Implement decisions	1	0	5	2	0	1	9
Assembly members-proposal for change	6	3	1	8	4	4	26
Assembly members- nal decision	24	15	10	34	5	12	100
Assembly members-opinion	13	4	4	15	3	6	45
Assembly members-implement decisions	2	2	2	3	0	2	11
Steering board-proposal for change	8	2	2	32	4	6	54
Steering board-Take nal decision	6	2	2	20	3	6	39
Steering board-opinion	4	1	2	3	2	2	14
Steering board-Implement the decisions	7	7	2	26	1	2	45
Committee-proposal for change	12	0	0	12	2	5	31
Committee-Take nal decision	1	0	1	3	0	3	8
Committee-opinion	6	0	4	19	0	9	38
Committee- Implement the decisions	7	1	3	14	0	6	31
Other-proposal for change	1	0	1	2	3	2	9
Other-Take nal decision	1	5	0	2	2	1	11
Other-opinion	4	0	2	6	4	2	18
Other-Implement the decisions	2	0	1	6	4	2	15
Total	219	73	113	234	56	109	804
Total CAIs	41	22	28	45	18	21	175

Table 10: Absolute values (Q37).

2.4 Functioning of the Bodies of your initiative

	Belgium	Estonia	Italy	Netherlands	Poland	Spain	Total
Board-One member one vote	22	7	12	4	9	7	51
Board-propo to inv	1	0	0	0	0	0	1
Board-Majority	9	6	7	2	2	4	30
Board-quali ed majority	3	1	1	1	0	2	8
Board-consensus	20	1	5	6	0	10	42
Board-Other	1	0	2	0	0	0	3
Shareholder-One member one vote	12	1	12	7	1	3	36
Shareholder-prop to inv	2	0	2	0	1	0	5
Shareholder-majority	8	0	6	4	0	3	21
Shareholder-quali ed majority	4	0	1	2	0	0	7
Shareholder-consensus	1	0	2	1	1	1	6
Shareholder-Other	0	0	3	0	0	0	3
Assembly members-One member one vote	27	11	4	30	3	9	84
Assembly members-prop to inv	1	0	0	0	2	2	5
Assembly members - majority	11	6	1	18	1	8	45
Assembly members - quali ed majority	4	6	2	4	1	2	19
Assembly members - consensus	4	2	4	3	1	6	20
Assembly members - Other	0	0	3	1	0	0	4
Steering board- One member one vote	8	4	0	23	3	4	42
Steering board- prop to inv	0	0	0	0	1	0	1
Steering board-majority	1	3	2	16	4	4	30
Steering board-quali ed majority	1	0	0	1	1	1	4
Steering board-consensus	7	1	2	15	1	4	28
Steering board- Other	0	0	1	1	0	1	3
Committee- One member one vote	7	1	0	8	0	3	19
Committee-prop to inv	0	0	0	0	0	1	1
Committee-majority	1	0	4	5	1	2	13
Committee-quali ed majority	2	0	0	2	1	0	5
Committee-consensus	9	0	1	11	1	5	27
Committee- Other	0	0	1	2	0	1	4
Other- One member one vote	2	0	0	1	1	1	5
Other-prop to inv	0	0	0	0	0	0	0
Other - majority	0	0	0	0	1	0	1
Other - quali ed majority	0	4	0	0	0	0	4
Other - consensus	2	0	1	2	0	0	5
Other - Other	0	0	2	0	1	1	4
Total	170	54	81	170	38	85	598
Total CAIs	42	22	28	45	18	21	176

Table 11: Absolute Values (Q37).

2.5 If you consult citizens or entities in the decision-making, which are they?

2.6 Partnerships

Range	Belgium	Estonia	Italy	Netherlands	Poland	Spain
Total CAIs	42	24	30	46	21	23

Table 12: Q41 - Partnerships.

2.7 Number of employees (FTE)

- Q30 on the number of employees need is not usable. Several answers and interpretations by respon-dents.
- **N.B. Confusion between numbers and hours.**

3 Financing

3.1 To what extent do you use external services?

Range	Belgium	Estonia	Italy	Netherlands	Poland	Spain
Total CAIs	42	24	30	46	21	23

Table 13: Q32 - External Services.

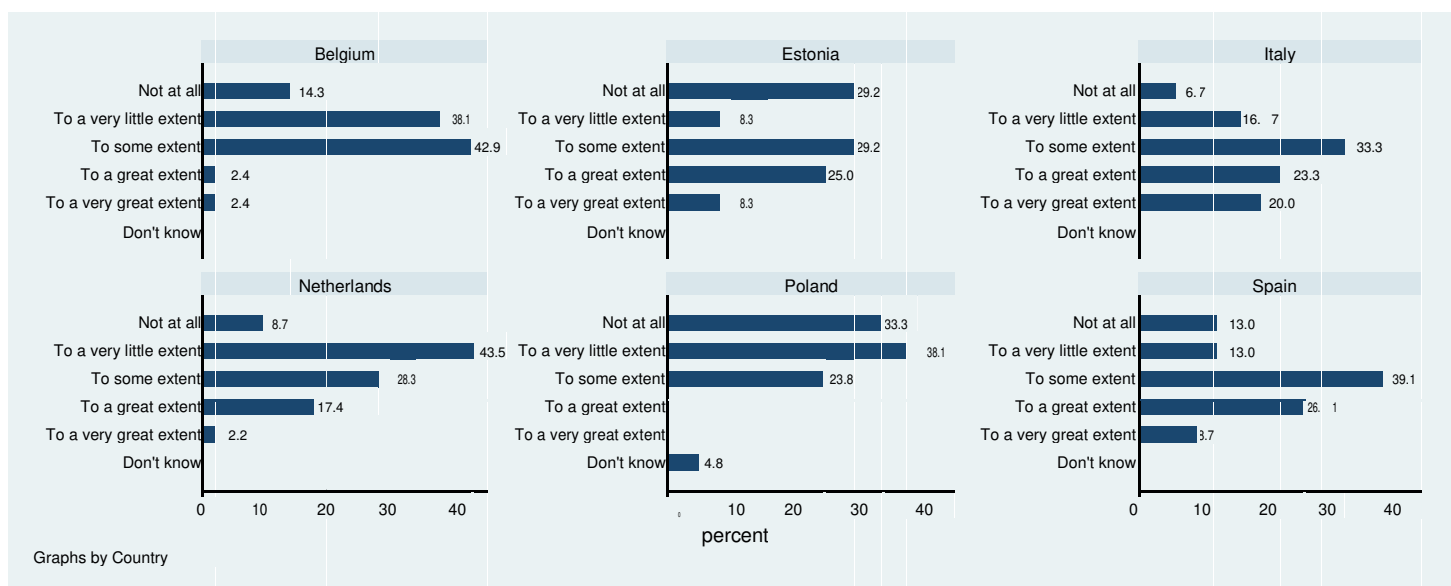


Figure 1: Q31: External Services.

4 CAIs' Activities in the energy transition

4.1 Objectives

	Belgium	Estonia	Italy	Netherlands	Poland	Spain	Total
Energy Democracy	28	2	14	18	2	15	79
Alternative Energy Models	15	15	8	7	15	10	70
Access-RE	17	7	13	13	16	10	76
Citizens profit from RE	25	14	9	39	8	2	97
Provide Fair Energy Prices	4	9	11	0	10	6	40
Alleviate Energy Poverty	3	2	0	1	3	3	12
Make Energy Gen. local	26	8	9	35	10	7	95
Increase Energy Efficiency	3	12	8	8	6	5	42
Social buy-in into Climate&SDGs	11	3	10	5	5	6	40
Citizen Sustainable Behaviour	7	9	10	23	4	10	63
Support Community Development	10	2	15	9	6	15	57
other	3	0	4	3	4	2	16
Total	152	83	111	161	89	91	687
Total CAIs	44	27	39	47	24	25	206

Table 14: Absolute Values (Q13).

4.2 Geographical Scope

	Freq.	Percent	Cum.
Local	28	13.59	14.97
LocalNational	1	0.49	15.51
LocalNationalIntern	1	0.49	16.04
LocalOther	2	0.97	17.11
National	18	8.74	26.74
NationalIntern	2	0.97	27.81
NationalOther	1	0.49	28.34
Other	5	2.43	31.02
Regional	31	15.05	47.59
RegionalNational	2	0.97	48.66
RegionalOther	3	1.46	50.27
Rural	18	8.74	59.89
RuralLocal	12	5.83	66.31
RuralLocalOther	2	0.97	67.38
RuralNational	1	0.49	67.91
RuralNationalIntern	1	0.49	68.45
RuralOther	3	1.46	70.05
RuralRegional	3	1.46	71.66
RuralRegionalIntern	2	0.97	72.73
RuralRegionalLocal	2	0.97	73.80
RuralUrbanLocal	1	0.49	74.33
RuralUrbanRegional	1	0.49	74.87
RuralUrbanRegionalLocalOther	1	0.49	75.40
Urban	23	11.17	87.70
UrbanLocal	8	3.88	91.98
UrbanLocalIntern	2	0.97	93.05
UrbanLocalNational	3	1.46	94.65
UrbanNational	2	0.97	95.72
UrbanRegional	5	2.43	98.40
UrbanRegionalLocal	2	0.97	99.47
UrbanRegional Other	1	0.49	100.00
Total	187	90.78	
Missing	19	9.22	
Total	206	100.00	

Table 15: Combinations (Q40).

4.3 Energy-Related Activities

4.3.1 Energy Supply Chain (ESC)

	Freq.	Percent	Cum.
Enshare _ Other	3	1.46	5.56
GenRE	28	13.59	19.70
GenRE_ Enshare	8	3.88	23.74
GenRE_ Enshare _ Other	8	3.88	27.78
GenRE _ Grid	1	0.49	28.28
GenRE_ Grid _ Enshare	2	0.97	29.29
GenRE_ Grid _ Other	2	0.97	30.30
GenRE _ Other	40	19.42	50.51
GenRE_ sellCust	12	5.83	56.57
GenRE_sellCust _ Enshare	1	0.49	57.07
GenRE _sellCust_Enshare_Other	4	1.94	59.09
GenRE_sellCust - Grid	1	0.49	59.60
GenRE_sellCust _ Grid _ Enshare_Other	5	2.43	62.12
GenRE_sellCust _ GridOther	4	1.94	64.14
GenRE _ sellCust _ Other	15	7.28	71.72
Grid	1	0.49	72.22
Grid _ Other	1	0.49	72.73
NoActivity	30	14.56	87.88
NoActivity _GenRE _Enshare_Other	1	0.49	88.38
NoActivity _ Other	3	1.46	89.90
Other	13	6.31	96.46
sellCust	4	1.94	98.48
sellCust _ Enshare	1	0.49	98.99
sellCust _ Other	2	0.97	100.00
Total	198	96.12	
Missing	8	3.88	
Total	206	100.00	

Table 16: Combinations (Q14).

^ In Table 16 we notice that 14% of the CAIs in the database do generation-production of RE alone, while a total of 50% of CAIs do generation-production of RE plus another activity related to Energy Supply Chain (ESC).

□ 22% of the CAIs do generation-production of RE together with sell to costumers.

4.3.2 Renewable energy generation (REG)

	Freq.	Percent	Cum.
NoActivity	18	8.74	9.14
NoActivity _Other	1	0.49	9.64
Other	20	9.71	19.80
PV	76	36.89	58.38
PV _Other	27	13.11	72.08
PV _Wind	27	13.11	85.79
PV_Wind_Other	16	7.77	93.91
Wind	9	4.37	98.48
Wind _Other	3	1.46	100.00
Total	197	95.63	
Missing	9	4.37	
Total	206	100.00	

Table 17: Combinations (Q15).

4.3.3 E-mobility

	Freq.	Percent	Cum.
E-mobility	20	9.71	10.58
E-mobilityOther	6	2.91	13.76
NoActivity	148	71.84	92.06
NoActivityE-mobility	1	0.49	92.59
NoActivityOther	3	1.46	94.18
Other	11	5.34	100.00
Total	189	91.75	
Missing	17	8.25	
Total	206	100.00	

Table 18: Combinations (Q16).

	Belgium	Estonia	Italy	Netherlands	Poland	Spain	Total
NoActivity	33	25	26	36	18	14	152
E-mobility Purchase	1	0	2	0	0	1	4
E-mobility Sharing	5	0	2	5	0	4	16
Bike Sharing	2	0	3	0	0	2	7
Charging Facilities	2	0	7	3	0	2	14
other	7	0	3	2	3	5	20
Total	50	25	43	46	21	28	213
Total CAIs	42	25	35	44	20	23	189

Table 19: Absolute values (Q16).

^ Table 19 shows the selections related to E-mobility (EM) activities.

o Notice that 152 times CAIs selected NoActivity.

^ We grouped all the possible activities related to E-mobility in E-mobility and Table 18 below reports the combinations considering the total database. 70% of CAIs do not perform activities related to e-mobility, while 10% do.

□ See the main text.

4.3.4 Energy Efficiency Services (EES)

	Freq.	Percent	Cum.
EEbuilding	9	4.37	4.64
EEbuilding_EEconsulting	8	3.88	8.76
EEbuilding_EEconsulting_EEproducts	5	2.43	11.34
EEbuilding_EEconsulting_EEproducts_Other	2	0.97	12.37
EEbuilding_EEconsulting_Other	4	1.94	14.43
EEbuilding_EEproducts	2	0.97	15.46
EEbuilding_EEproducts_Other	1	0.49	15.98
EEbuilding_Other	1	0.49	16.49
EEconsulting	40	19.42	37.11
EEconsulting_EEproducts	10	4.85	42.27
EEconsulting_EEproducts_Other	1	0.49	42.78
EEconsulting_Other	4	1.94	44.85
EEproducts	8	3.88	48.97
EEproducts_Other	3	1.46	50.52
NoActivity	88	42.72	95.88
NoActivity_EEconsulting	1	0.49	96.39
NoActivity_Other	3	1.46	97.94
Other	4	1.94	100.00
Total	194	94.17	
Missing	12	5.83	
Total	206	100.00	

Table 20: Combinations (Q17).

4.4 Energy-related Activities at Large

4.4.1 Environmental Care Activities

	Belgium	Estonia	Italy	Netherlands	Poland	Spain	Total
No activity	31	25	23	40	10	9	138
RegenerationEco-systems	3	0	3	2	1	5	14
Reforestation	2	0	1	2	1	3	9
SustainablePractices	6	0	7	4	2	10	29
WasteManagement	2	0	3	3	7	7	22
other	5	0	6	1	8	3	23
Total	49	25	43	52	29	37	235
Total CAIs	43	25	34	46	21	23	192

Table 21: Absolute Values (Q18).

4.4.2 Engagement in knowledge and skills creation services/activities

	Belgium	Estonia	Italy	Netherlands	Poland	Spain	Total
No Activity	7	19	12	6	6	2	52
Raising AwarenessRE	35	5	16	37	13	17	123
Tech.KnowledgeRE	17	2	7	13	12	11	62
Skills Energy Digitization	8	0	4	0	5	5	22
Research Projects	14	2	11	15	7	12	61
other	5	0	7	8	2	8	30
Total	86	28	57	79	45	55	350
Total CAIs	44	25	34	47	22	24	196

Table 22: Absolute Values (Q19).

4.4.3 Engagement in Civil Society Mobilization

	Belgium	Estonia	Italy	Netherlands	Poland	Spain	Total
No activity	16	25	22	26	13	5	107
Org.Mobilization Campaigns	7	0	3	0	0	3	13
Part.Mobilization Campaigns	11	0	6	5	1	4	27
Lobbying	11	0	5	12	4	4	36
Political Recomm.	13	0	5	12	5	10	45
other	4	0	1	4	2	8	19
Total	62	25	42	59	25	34	247
Total CAIs	41	25	33	46	21	23	189

Table 23: Absolute Values (Q20).

4.5 Social Impact

4.5.1 Do you undertake specific actions to address energy poverty or involve vulnerable customers?

	Yes	No	Total
Belgium	31	13	44
Estonia	24	1	25
Italy	28	5	33
Netherlands	29	18	47
Poland	16	5	21
Spain	13	11	24
Total CAIs			194

Table 24: Dummy variable (Q22)

- The majority of CAIs, in all countries, selected that they undertake specific actions to address energy poverty.

4.6 Beneficiaries of the activities (today)

	Belgium	Estonia	Italy	Netherlands	Poland	Spain	Total
NoActivityYet	3	9	2	0	3	3	20
toCitizens	33	7	29	46	14	21	150
toAssociations	20	0	13	17	0	8	58
toSMEs	21	0	11	17	2	10	61
toMunicipality	28	0	17	13	5	12	75
ToenergyOperator	0	1	3	0	2	0	6
other	5	9	7	1	5	1	28
Total	110	26	82	94	31	55	398
Total CAIs	44	25	35	47	22	24	197

Table 25: Q23 - total answers

5 Citizens' participation and involvement

^ We exclude noActivity from the analysis in Table 26 below

	Belgium	Estonia	Italy	Netherlands	Poland	Spain	Total
Bene t Citizens	31 23.66	1 0.76	29 22.14	41 31.30	11 8.40	18 13.74	131 100.00
Bene t Municipality	26 38.81	0 0.00	16 23.88	11 16.42	3 4.48	11 16.42	67 100.00
Bene t SMEs	20 37.04	0 0.00	10 18.52	14 25.93	1 1.85	9 16.67	54 100.00
Bene t Associations	18 34.62	0 0.00	13 25.00	13 25.00	0 0.00	8 15.38	52 100.00
Bene t other	4 28.57	1 7.14	4 28.57	0 0.00	4 28.57	1 7.14	14 100.00
Bene t energy operator	0 0.00	0 0.00	2 66.67	0 0.00	1 33.33	0 0.00	3 100.00
Total	99 30.84	2 0.62	74 23.05	79 24.61	20 6.23	47 14.64	321 100.00
Cases	39	7	33	41	17	22	159

Table 26: Beneficiaries of activities/services today versus citizen as origin target (q7_2=1).

	Belgium	Estonia	Italy	Netherlands	Poland	Spain	Total
q23_2 toCitizens	12	1	9	6	9	7	44
	27.27	2.27	20.45	13.64	20.45	15.91	100.00
q23_5 toMunic	15	0	9	3	5	6	38
	39.47	0.00	23.68	7.89	13.16	15.79	100.00
q23_4 toSMEs	11	0	3	3	2	5	24
	45.83	0.00	12.50	12.50	8.33	20.83	100.00
q23_3 toAssociations	12	0	3	5	0	0	20
	60.00	0.00	15.00	25.00	0.00	0.00	100.00
q23_7 other	1	0	3	0	5	0	9
	11.11	0.00	33.33	0.00	55.56	0.00	100.00
q23_6 ToenergyOperator	0	0	0	0	1	0	1
	0.00	0.00	0.00	0.00	100.00	0.00	100.00
Total	51	1	27	17	22	18	136
	37.50	0.74	19.85	12.50	16.18	13.24	100.00
Cases	17	1	11	7	17	9	62

Table 27: Beneficiaries of activities/services today versus Municipality as origin target (q7.6=1).

	Belgium	Estonia	Italy	Netherlands	Poland	Spain	Total
Cost of membership	12	4	5	3	0	5	29
ignoring the initiative & benefits	32	10	24	38	24	23	151
Digitalization	4	0	2	3	5	3	17
no interest	19	11	5	32	9	10	86
risks	10	3	3	8	5	6	35
time constraint	15	4	5	16	4	9	53
no awareness	17	8	6	25	6	15	77
other	10	6	12	10	5	6	49
Total	119	46	62	135	58	77	497
Total CAIs	39	20	29	44	19	23	174

Table 28: Absolute Values (Q42).

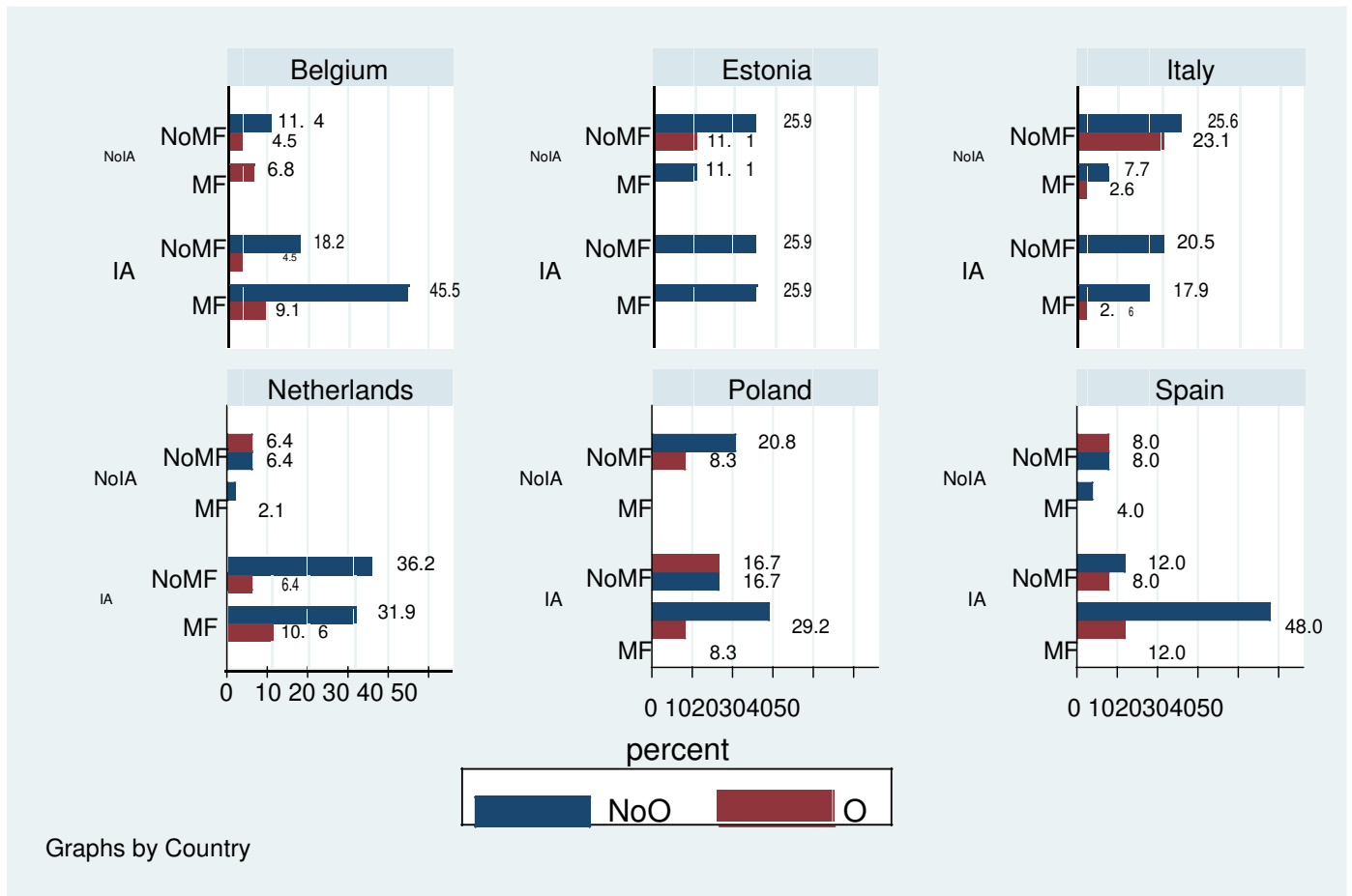


Figure 2: Barrier' analysis. Total CAIs: 174. Results are computed over the total CAIs by country (Q42).

- We group cost of membership, other criteria, risks and time constraint under the acronym "MF" which stand for Membershi Fatigue.
- We group not understanding the initiative, not understanding the bene ts no interest and awareness unedr the acronym "IA" which stands for Information&Awareness;
- we group other and digit in "O", which stands for Other.

	Belgium	Estonia	Italy	Netherlands	Poland	Spain	Total
Fair prices	10	4	4	11	4	8	41
Lower prices	5	11	7	8	15	8	54
Safe investment	6	2	7	13	3	2	33
Return on Inv.	14	4	8	16	8	2	52
access energy services	8	6	7	10	9	5	45
access non-energy services	3	0	9	6	1	4	23
Inv. in sustainable energy	34	8	16	26	5	4	93
Inv. in ethical projects	13	0	6	3	2	4	28
sense of belong. to community	25	6	25	27	8	17	108
Tax deductions	9	6	0	8	4	0	27
other	5	2	5	12	4	7	35
Total	132	49	94	140	63	61	539
Total CAIs	40	23	31	44	22	23	183

Table 29: Absolute Values (Q43).

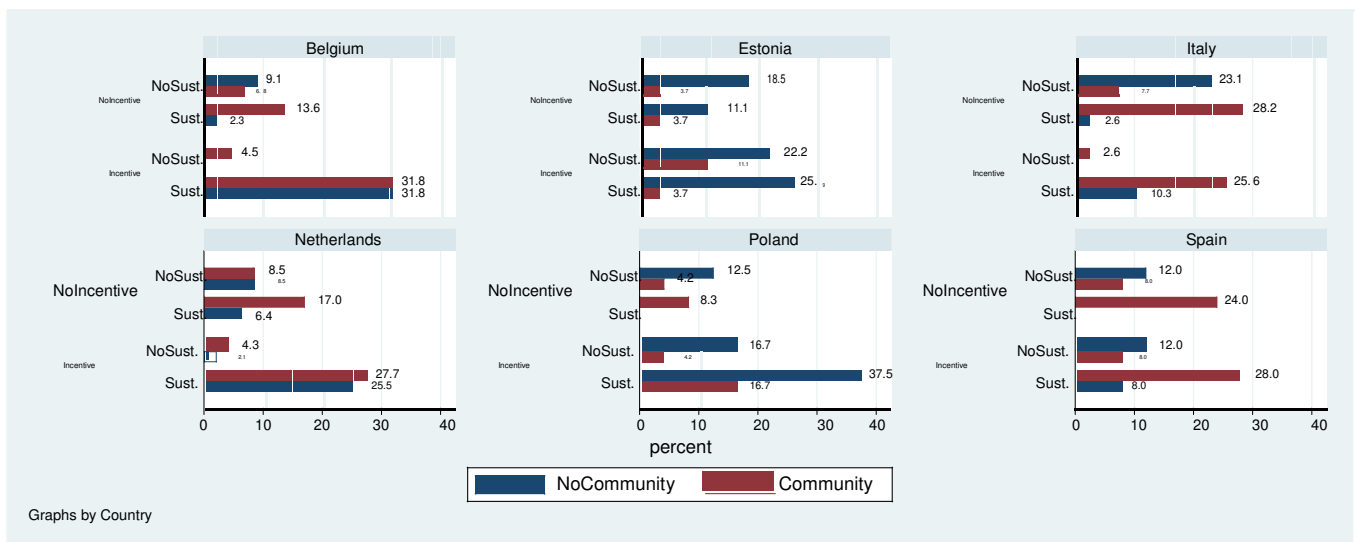


Figure 3: Attractivity Analysis. Total CAIs: 178 (drop Other). Results are computed over the total CAIs by country (Q43).

- We grouped fair prices, lower prices, return on investment, and tax deduction under the category "Incentive" which stands for economic incentives;
- We grouped safe investment, access energy services, access non-energy services, inv. in sustainable energy, inv. in ethical projects under the category "Sust.", which stands for economic sustainability.
- Finally, the category community stands for sense of belonging to the community.

	Yes	No	Total
Belgium	39	5	44
Estonia	23	4	27
Italy	32	7	39
Netherlands	44	3	47
Poland	22	2	24
Spain	23	2	25
Total CAIs			206

Table 30: Dummy Variable (Q44).

6 Future Plans

	Belgium	Estonia	Italy	Netherlands	Poland	Spain	Total
Investing in projects	31	8	20	30	15	10	114
New services, activities, products	19	0	13	19	8	15	74
Increasing the number of members	25	1	12	31	5	12	86
Increasing the number of clients	11	0	1	11	4	7	34
Social openness	10	0	4	5	0	6	25
Geographical openness	6	1	3	2	2	3	17
other	3	12	3	3	3	1	25
Total	105	22	56	101	37	54	375
Total CAIs	40	20	27	41	20	21	169

Table 31: Absolute Values (Q45).

6.1 How difficult are the following statements?

	very difficult	difficult	Moderate	Easy	Not difficult	Total
reaching citizens	8	51	63	34	8	164
participation citizen	5	49	62	33	7	156
access financing	29	55	58	19	1	162
ending political sup	36	54	53	14	2	159
complying with laws	32	51	58	19	2	162
understand&follow admin	29	55	58	16	2	160
skills	4	26	85	36	4	155
partnerships	4	24	82	41	1	152
competition energy pl	34	26	46	25	14	145
competition CAIs	9	21	51	42	16	139
other	8	4	3	0	2	17
Total	198	416	619	279	59	1,571

Table 32: Absolute Values (Q46).

7 The Online Platform

7.1 Which support do you need?

	Belgium	Estonia	Italy	Netherlands	Poland	Spain	Total
contact national _initiatives	15	13	14	9	16	16	83
contact intern _initiatives	3	4	8	3	5	14	37
access best practices	24	10	7	22	13	16	92
access knowledge	28	9	16	21	15	14	103
Financial consulting	12	4	3	10	12	11	52
Legal consulting	22	4	8	14	12	14	74
share knowledge	19	18	20	26	9	17	109
promote cooperation	12	2	11	9	8	16	58
other	8	2	1	8	0	1	20
Total	143	66	88	122	90	119	628
Total CAIs	40	22	30	44	21	24	181

Table 33: Q47

Appendix 4 – The Questionnaire (Codebook)

Q5 ¹	Who was at the origin of the idea? Please include yourself if you were at its origin.	Q5_1	Don't know
		Q5_2	Citizen(s)
		Q5_3	Municipality
		Q5_4	Local development agency
		Q5_5	Universities
		Q5_6	Research centres
		Q5_7	Private energy utility
		Q5_8	Energy-related cooperative
		Q5_9	Energy or environmental NGO
		Q5_10	Other, please specify
Q6	Who were the main parties supporting the implementation of the initial idea? Please choose a maximum of 3.	Q6_1	Don't know
		Q6_2	Citizen(s)
		Q6_3	Municipality
		Q6_4	Local development agency
		Q6_5	Universities
		Q6_6	Research centres
		Q6_7	Private energy utility
		Q6_8	Energy-related cooperative
		Q6_9	Energy or environmental NGO
		Q6_10	Other, please specify
Q7	Who were you targeting as beneficiaries of the idea? Please choose a maximum of 3.	Q7_1	Don't know
		Q7_2	All type of citizens
		Q7_3	Economically vulnerable citizens
		Q7_4	Vulnerable socio-demographic groups (e.g. elderly)
		Q7_5	Rural areas
		Q7_6	Municipality (including local services e.g. schools, etc.)
		Q7_7	Private energy utility
		Q7_8	Local SMEs
		Q7_9	Other, please specify
		Q8	Did you consult the future beneficiaries' about their needs? If so, how?
Q8_2	Don't know		
Q8_3	Meeting targeted beneficiaries (e.g. round tables, focus groups)		
Q8_4	Meeting targeted beneficiaries' representatives		
Q8_5	General meeting open to all citizens and/or representatives		
Q8_6	A survey		
Q8_7	A social media feedback campaign		
Q8_8	Informal discussions		
Q8_9	Other, please specify		
Q9	How difficult were the following steps ?		
		Q9_2	Set the decision making bodies and their participative processes
		Q9_3	Set up the internal organization
		Q9_4	Deal with technical aspects

¹ Questions Q1 – Q4 are about CAIs administrative data

		Q9_5	Comply with legal and administrative procedures
		Q9_6	Assess the economic viability of the initiative
		Q9_7	Find financial support (incl. subsidies)
		Q9_8	Other
		Q9_9	If you chose "other", please specify
		Q9_Rating scale	Very difficult
			Difficult
			Moderate
			Easy
			Very easy
			Don't know
Q10	What was the first activity you conducted?	Q10_1	Open-Ended Response
Q11	How did you finance the first activity (or activities)? Please select a maximum of 3 main sources.	Q11_1	Citizens (e.g. direct financing)
		Q11_2	Crowdfunding
		Q11_3	Donations (e.g. from not for profit associations)
		Q11_4	Public grant or subsidies
		Q11_5	Public authorities or agencies (beyond grants, or subsidies or banks)
		Q11_6	Public banks
		Q11_7	Funding from the private sector (e.g. energy utilities)
		Q11_8	Private bank
		Q11_9	Cooperative banks
		Q11_10	Other, please specify
Q_12	If the first activity was launched thanks to public funding, which public entity provided that funding?	Q_12_1	Not launched thanks to public funding
		Q_12_2	Municipal
		Q_12_3	Regional
		Q_12_4	National
		Q_12_5	From European Union Institutions or funds
		Q_12_6	From another country or countries
		Q_12_7	From international institutions or funds (non-EU)
		Q_12_8	Others, please specify
Q_13	What are the main objectives of your initiative? Please choose a maximum of 3.	Q_13_1	Seek energy democracy (e.g. decision making includes citizens)
		Q_13_2	Give alternatives to traditional energy models
		Q_13_3	Increase access to renewable energies
		Q_13_4	Allow citizens to profit from the returns of investment of renewable energies
		Q_13_5	Provide fair and/or lower energy prices
		Q_13_6	Alleviate energy poverty
		Q_13_7	Make energy generation more local
		Q_13_8	Provide measures to increase energy efficiency
		Q_13_9	Increase social buy-in into climate and sustainable goals
		Q_13_10	Increase citizens sustainable behaviours
		Q_13_11	Support local community development (e.g rural development)
		Q_13_12	Other (please specify)
Q_14	If your initiative is active in the renewable energy supply chain, which activities does it carry out?	Q_14_1	We do not carry this type of activity

		Q_14_2	Generate or produce renewable energy
		Q_14_3	Purchase renewable energy from individual self-consumer
		Q_14_4	Sell renewable energy to final customers (energy supply)
		Q_14_5	Sell renewable energy to the wholesale market
		Q_14_6	Sell renewable energy through a feed in tariff
		Q_14_7	Operate an energy grid and/or other form of transport of energy
		Q_14_8	Financing renewable projects or technologies
		Q_14_9	Organize or manage joint self-consumption or energy sharing, such as renewable generation shared amongst neighbours of an apartment block, or sales or share of energy between two consumers
		Q_14_10	Other renewable energy services, please specify
Q_15	If your initiative engages in renewable energy generation, which technologies does it deploy today?	Q_15_1	We do not engage in this type of activity
		Q_15_2	Wind On-shore
		Q_15_3	Solar PV rooftop
		Q_15_4	Solar PV other
		Q_15_5	Biomass/Biofuels/biogas
		Q_15_6	Cogeneration heat
		Q_15_7	Other renewable energy technologies, please specify
Q_16	If your initiative engages in mobility services, which are they?	Q_16_1	We don't offer mobility services
		Q_16_2	Support for electric vehicle purchase (incl. financial support or collective purchases)
		Q_16_3	Electric vehicle sharing
		Q_16_4	Bike sharing
		Q_16_5	Charging facilities
		Q_16_6	Other mobility services, please specify
Q_17	If your initiative engages in energy efficiency services, which are they?	Q_17_1	We do not offer energy efficiency service
		Q_17_2	Renovation or retrofitting of buildings
		Q_17_3	Energy efficiency audits
		Q_17_4	Advice on energy consumption
		Q_17_5	Collective purchase of sustainable or high -efficiency energy products, including for self-consumption
		Q_17_6	Financing or subsidising energy efficiency products purchases or projects (such as insulation projects)
		Q_17_7	Other energy efficiency services, please specify
Q_18	If your initiative engages in environmental care activities, which are they?	Q_18_1	We do not organize environmental care activities
		Q_18_2	Regeneration of eco-systems
		Q_18_3	Reforestation
		Q_18_4	Support to sustainable practices in other sectors (e.g. agricultural sector)
		Q_18_5	Waste management
		Q_18_6	Other environmental care activities, please specify
Q_19	If your initiative engages in knowledge and skills creation services/activities, which are they?	Q_19_1	We do not carry knowledge and skills creation activities
		Q_19_2	Raising awareness on renewable energy and collective actions
		Q_19_3	Technical knowledge on renewable energy
		Q_19_4	Raising skills on digitization of energy
		Q_19_5	Taking part on research projects or other forms of sharing knowledge at large
		Q_19_6	Other knowledge and skills creation services/activities (e.g. presenting in conferences), please specify
Q_20	If your initiative engages in civil society	Q20_1	We do not carry citizen mobilization activities

mobilization activities, which are they?

		Q20_2	Organize mobilization campaigns (e.g. petitions, demonstrations, protests)
		Q20_3	Take part to mobilization campaigns (e.g. petitions, demonstrations, protests)
		Q20_4	Lobbying
		Q20_5	Political recommendations and messages through media (press, social media, blogs...)
		Q20_6	Other activities related to civil society mobilization, please specify
Q_21	To achieve the energy transition, do you carry activities with the following objectives? Please, choose a maximum of 3 main areas you are active in.	Q_21_1	Reduce unemployment (e.g. hire long-term unemployed)
		Q_21_2	Empower women
		Q_21_3	Promote the social inclusion of all genders
		Q_21_4	Promote the social inclusion of the elderly
		Q_21_5	Empower the youth
		Q_21_6	Promote multiculturalism
		Q_21_7	Support local community projects
		Q_21_8	Financial support to individuals or groups
		Q_21_9	We do not carry such activities
		Q_21_10	Other, please specify
Q_22	Do you undertake specific actions to address energy poverty or encourage the involvement of vulnerable consumers?	Q_22_1_1	yes
		Q_22_1_2	no
		Q_22_2	If you chose yes, can you please explain which they are?
Q_23	To whom are the services/activities provided today ?	Q_23_1	We don't provide services or activities yet
		Q_23_2	To citizens
		Q_23_3	To associations
		Q_23_4	To SMEs
		Q_23_5	To municipalities
		Q_23_6	To the energy distribution system operator
		Q_23_7	Other (please specify)
Q_24	If your initiative can make profits, what are your priorities when allocating them? Please select maximum of 3.	Q_24_1	We don't make profits
		Q_24_2	Distribute it to those having invested in the initiative
		Q_24_3	Reinvest in the initiative's assets and core activities (e.g. more wind farms)
		Q_24_4	Use it for other activities (empowerment, activism, environmental)
		Q_24_5	Other activities and projects for the local community
		Q_24_6	Invest in other initiatives related to the energy transition
		Q_24_7	Investing in other initiatives for social improvement
		Q_24_8	Other, please specify
Q_25	What is the current (legal) form of your initiative?	Q_25_1	We are in the process of organizing
		Q_25_2	We are formally organized internally
		Q_25_3	We do not have yet a legal form but intent to in the future
		Q_25_4	We do not have yet a legal form but are in the process of getting one.
		Q_25_5	We do not have a legal form and do not intend to have one.
		Q_25_6	We have a legal form or several legal forms, please specify (such as cooperatives, foundations, etc.)
Q_26	How important were the following areas when choosing the legal form, or to remain without one? Please choose 3 main reasons for	Q_26_1	To allow the form of governance and decision-making of our preference.

choosing the legal form or forms.

		Q_26_2	To allow the type of distribution of profits we aimed at.
		Q_26_3	To have the distribution of liability risks we aimed at.
		Q_26_4	We don't have a legal form because it was too complicated to set up.
		Q_26_5	We don't have a legal form because it was not necessary for our objectives.
		Q_26_6	There was no legal form matching our values.
		Q_26_7	Credibility to external partners (e.g. some legal forms more seriously taken by external partners).
		Q_26_8	Other, please specify
	If membership based - How many members does your initiative have? We define "member" as a citizen who has an active role in the initiative, investing financially in it, potentially getting returns from their investment, getting other benefits from the initiative, and/or being involved in the decision-making process at different levels.	Q_27	
		Q_27_1_1	1-19
		Q_27_1_2	20-99
		Q_27_1_3	100-999
		Q_27_1_4	1,000-9,999
		Q_27_1_5	10,000-49,999
		Q_27_1_6	>50,000
	If you have direct customers - How many clients does your initiative have? A client or direct customer is an individual, organization or group who has an agreement to use your paid services, sporadically or over a period of time, such as a household buying energy from your initiative.	Q_28	
		Q_28_1_1	1-19
		Q_28_1_2	20-99
		Q_28_1_3	100-999
		Q_28_1_4	1,000-9,999
		Q_28_1_5	10,000-49,999
		Q_28_1_6	>50,000
	To what extent the members are also clients?	Q_29	
		Q_29_1	All members are clients
		Q_29_2	Members can be clients, but they don't have to
		Q_29_3	Clients have to be members
		Q_29_4	The members are different from the clients
		Q_29_5	Other, please specify
	How many full time equivalent employees (FTE), did your organization have on average in your payroll over the last year?	Q_30	
		Q_30_1	Open-Ended Response
	To what extent do you use external services, including, if there is any, from your parent company (for example in accounting, legal advice, IT)?	Q_31	
		Q_31_1_1	Not at all
		Q_31_1_2	To a very little extent
		Q_31_1_3	To some extent
		Q_31_1_4	To a great extent
		Q_31_1_5	To a very great extent
		Q_31_1_6	Don't know
	Do you use volunteer person power to carry your activities/administrative work ?	Q_32	
		Q_32_1_1	No
		Q_32_1_2	yes
		Q_32_2	If so you said yes, can you provide any recent measure on numbers of volunteers and/or man power, e.g. number of volunteer hours provided the last year?

Q_33	If entities or citizens have invested through capital (equities) in the initiative, who are the main 4 investors?	Q_33_1	Private Banks
		Q_33_2	Cooperative Banks
		Q_33_3	Members (ie membership means also ownership or becoming shareholders)
		Q_33_4	Non-member citizens (eg as equity- or share-holders)
		Q_33_5	Public authorities
		Q_33_6	Energy sector utilities (incumbents)
		Q_33_7	Energy sector utilities (non-incumbents)
		Q_33_8	Private corporations (outside the energy sector)
		Q_33_9	Other, please specify
Q_34	Beyond the capital addressed above, what is supporting the financing of the initiative today? Please select a maximum of 4 main sources.	Q_34_1	Self-financing through profit
		Q_34_2	We do not have external financing
		Q_34_3	Crowdfunding
		Q_34_4	Other forms of donations (besides crowdfunding)
		Q_34_5	Private bank loans
		Q_34_6	Public loans
		Q_34_7	Public grant or subsidies
		Q_34_8	Loans from another non-private energy initiative
		Q_34_9	Other forms of loans
		Q_34_10	Other, please specify
Q_35	If your initiative is up and running today thanks to public capital (loans, subsidies or equity), what are the main providers? Please give a maximum of 2 providers.	Q_35_1	We don't run thanks to public support
		Q_35_2	Municipalities
		Q_35_3	Regions
		Q_35_4	National
		Q_35_5	Funds from another country or countries
		Q_35_6	From European Union institutions or funds
		Q_35_7	From international institutions or funds (non EU)
		Q_35_8	Other, please specify
Q_36	Which bodies constitute your initiative and what is their role?	Q_36_1	Executive Board/Board of directors - Make a proposal for a significant change in the initiative
		Q_36_2	Executive Board/Board of directors - Take final decision
		Q_36_3	Executive Board/Board of directors - Is consulted for opinion
		Q_36_4	Executive Board/Board of directors - Implement the decisions
		Q_36_5	Assembly of shareholder or investors in equities (including members if relevant) - Make a proposal for a significant change in the initiative
		Q_36_6	Assembly of shareholder or investors in equities (including members if relevant) - Take final decision
		Q_36_7	Assembly of shareholder or investors in equities (including members if relevant) - Is consulted for opinion
		Q_36_8	Assembly of shareholder or investors in equities (including members if relevant) - Implement the decisions
		Q_36_9	General Assembly of members only - Make a proposal for a significant change in the initiative
		Q_36_10	General Assembly of members only - Take final decision
		Q_36_11	General Assembly of members only - Is consulted for opinion
		Q_36_12	General Assembly of members only - Implement the decisions
		Q_36_13	Steering board - Make a proposal for a significant change in the initiative
		Q_36_14	Steering board - Take final decision

Q_37

For the bodies constituting your organization, how do each function? Decisions do not need to be final.

- Q_36_15 Steering board - Is consulted for opinion
- Q_36_16 Steering board - Implement the decisions
- Q_36_17 Committee(s) (e.g. devoted to specific tasks..) - Make a proposal for a significant change in the initiative
- Q_36_18 Committee(s) (e.g. devoted to specific tasks..) - Take final decision
- Q_36_19 Committee(s) (e.g. devoted to specific tasks..) - Is consulted for opinion
- Q_36_20 Committee(s) (e.g. devoted to specific tasks..) - Implement the decisions
- Q_36_21 Other(s) - Make a proposal for a significant change in the initiative
- Q_36_22 Other(s) - Take final decision
- Q_36_23 Other(s) - Is consulted for opinion
- Q_36_24 Other(s) - Implement the decisions
- Q_36_25 If you chose "other", please explain
- Q_37_1 Executive Board/Board of directors - Weight of vote - One member one vote
- Q_37_2 Executive Board/Board of directors - Weight of vote - Vote proportional to investment
- Q_37_3 Executive Board/Board of directors - Decision- by majority
- Q_37_4 Executive Board/Board of directors - Decision - by qualified majority (e.g two-third majority)
- Q_37_5 Executive Board/Board of directors - Decision - by consensus
- Q_37_6 Executive Board/Board of directors - Other
- Q_37_7 Assembly of shareholder or investors (equities) - Weight of vote - One member one vote
- Q_37_8 Assembly of shareholder or investors (equities) - Weight of vote - Vote proportional to investment
- Q_37_9 Assembly of shareholder or investors (equities) - Decision- by majority
- Q_37_10 Assembly of shareholder or investors (equities) - Decision - by qualified majority (e.g two-third majority)
- Q_37_11 Assembly of shareholder or investors (equities) - Decision - by consensus
- Q_37_12 Assembly of shareholder or investors (equities) - Other
- Q_37_13 General Assembly of members - Weight of vote - One member one vote
- Q_37_14 General Assembly of members - Weight of vote - Vote proportional to investment
- Q_37_15 General Assembly of members - Decision- by majority
- Q_37_16 General Assembly of members - Decision - by qualified majority (e.g two-third majority)
- Q_37_17 General Assembly of members - Decision - by consensus
- Q_37_18 General Assembly of members - Other
- Q_37_19 Steering board - Weight of vote - One member one vote
- Q_37_20 Steering board - Weight of vote - Vote proportional to investment
- Q_37_21 Steering board - Decision- by majority
- Q_37_22 Steering board - Decision - by qualified majority (e.g two-third majority)
- Q_37_23 Steering board - Decision - by consensus
- Q_37_24 Steering board - Other
- Q_37_25 Committee(s) (e.g. devoted to specific tasks..) - Weight of vote - One member one vote
- Q_37_26 Committee(s) (e.g. devoted to specific tasks..) - Weight of vote - Vote proportional to investment
- Q_37_27 Committee(s) (e.g. devoted to specific tasks..) - Decision- by majority
- Q_37_28 Committee(s) (e.g. devoted to specific tasks..) - Decision - by qualified majority (e.g two-third majority)
- Q_37_29 Committee(s) (e.g. devoted to specific tasks..) - Decision - by consensus
- Q_37_30 Committee(s) (e.g. devoted to specific tasks..) - Other
- Q_37_31 Other(s) - Weight of vote - One member one vote
- Q_37_32 Other(s) - Weight of vote - Vote proportional to investment

		Q_37_33	Other(s) - Decision- by majority
		Q_37_34	Other(s) - Decision - by qualified majority (e.g two-third majority)
		Q_37_35	Other(s) - Decision - by consensus
		Q_37_36	Other(s) - Other
		Q_37_37	If you chose "other", please explain
Q_38	Within the body or bodies that take final decisions (e.g. Executive board / Board of directors), what is the ratio of women?	Q_38_1	Open-Ended Response
Q_39	If you consult citizens or entities in decision-making, which are they?	Q_39_1	We do not consult others
		Q_39_2	Consulting your members
		Q_39_3	Consulting other citizens
		Q_39_4	Consulting citizens representatives (eg municipalities, consumer organisations, etc..)
		Q_39_5	Other
		Q_39_6	Tell us more on how you consult these entities and for what type of decisions.
Q_40	At which geographical scale do the activities of your initiative take place?	Q_40_1	In a rural area
		Q_40_2	In an urban area
		Q_40_3	In an area within a municipality (e.g. neighbourhood)
		Q_40_4	In one municipality
		Q_40_5	In several municipalities in the same region
		Q_40_6	In several municipalities in your country
		Q_40_7	In several regions within the country
		Q_40_8	All across the country
		Q_40_9	In several countries in the European Union
		Q_40_10	In several countries internationally (outside EU)
		Q_40_11	Other, please specify
Q_41	How much is your initiative partnering or cooperating with other organisations? Partnerships can be forms of exchanging knowledge, support for reaching out to users, promoting common goals.	Q_41_1	Formal energy related network (e.g Rescoop, Ecolise)
		Q_41_2	Formal network of cooperatives, e.g. International Co-operative Alliance
		Q_41_3	Formal networks set by local, national or international authorities
		Q_41_4	Partnerships with other initiatives in energy-environmental transition
		Q_41_5	Energy incumbents
		Q_41_6	Local businesses
		Q_41_7	Local actors, e.g. local associations, local cooperatives (e.g. non-energy, agricultural), church, sports club
		Q_41_8	Authorities
		Q_41_9	Universities or research centres
		Q_41_10	If you chose "other", please specify
Q_42	What are the barriers for citizens to become active in your initiative ? Please indicate the 4 most important ones.	Q_42_1	Cost of membership (e.g. barrier for the less affluent).
		Q_42_2	Other membership criteria (e.g. minimum credit worthiness, commit for a length of time).
		Q_42_3	Do not understand the way the initiative works
		Q_42_4	Do not understand the benefits the initiative brings to them.
		Q_42_5	Digitalisation of energy and digital literacy (e.g. need an app or online access).
		Q_42_6	Lack of interest in the energy transition.
		Q_42_7	Perceived risks of burden to participate in new energy models (e.g. fear of lack of security of supply).

		Q_42_8	Local action fatigue as a barrier to participate in boards, assemblies and/or volunteering (e.g. time burden)
		Q_42_9	Lack of awareness of the existence of the initiative
		Q_42_10	Other, please specify
Q_43	What do you think citizens/members find attractive in your organization? Please indicate a maximum of 4 most important ones.	Q_43_1	Get fair prices
		Q_43_2	Get Lower prices
		Q_43_3	Access to safe investment
		Q_43_4	Get good return of investment
		Q_43_5	Access to your energy services
		Q_43_6	Access to your non-energy services
		Q_43_7	Invest money in sustainable energy
		Q_43_8	Invest money in ethical projects (other than energy)
		Q_43_9	Sense of belonging to the community
		Q_43_10	Tax deductions
		Q_43_11	Other, please specify
Q_44	Are you struggling to keep the initiative ongoing? (ie keeping the business as usual)?	Q_44_1_1	No
		Q_44_1_2	Yes
		Q_44_2	If you chose yes, can you please explain what the difficulties are.
Q_45	If you have any (formal/informal) plan of further development, what is it? Please choose a maximum of 3.	Q_45_1	Invest in new projects and/or increase production
		Q_45_2	Provide new services, activities and products
		Q_45_3	Increase number of members
		Q_45_4	Increase the number of clients
		Q_45_5	Bring in new types of members. e.g. from different socio-economic, cultural, gender backgrounds than you have now
		Q_45_6	Increase the reach of your membership geographically
		Q_45_7	Other, please specify
Q_46	For your initiative to further develop or be sustainable, how difficult are the following statements?	Q_46_1	Reaching out to citizens
		Q_46_2	Ensuring participation of citizens in decision making
		Q_46_3	Accessing finances, including subsidies
		Q_46_4	Finding political support
		Q_46_5	Complying with existing laws and regulatory rules
		Q_46_6	Understanding and following the administrative procedures (e.g. permitting)
		Q_46_7	Finding or developing the relevant skills
		Q_46_8	Finding partnerships
		Q_46_9	Competition from long-established energy players
		Q_46_10	Competition from other energy initiatives
		Q_46_11	Other
		Q_46_12	If you chose "other", please specify
Q_47	We are developing a web platform aimed at providing support (information and services) for you and other initiatives to start, become sustainable, and to further develop. What kind of support you would find most helpful?	Q_47_1	To be in contact with other national initiatives
		Q_47_2	To be in contact with other international initiatives
		Q_47_3	Access to guidelines, best practices and know how (e.g. best practices to involve citizens)
		Q_47_4	Access to an updated and easy to use knowledge base on the regulatory framework

- Q_47_5 Financial consulting
- Q_47_6 Legal consulting
- Q_47_7 To share knowledge among initiatives
- Q_47_8 To promote other types of cooperation among initiatives
- Q_47_9 Other, please specify

- Have you, are you planning or would you like to conduct research about your CAI ? In particular, do you have any quantitative information on your activity that we can add? Please tell us more and/or share links or ways to access any information that you would want to share with us.
- Q_48 Q_48_1 Open-Ended Response
- Q_49 Do you want to add anything to your response? Q_49_1 Open-Ended Response