Energy Citizenship country profiles

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This report is part of a series of country profile reports that can be found at https://www.energyprospects.eu/
For further information about the mapping of energy citizenship and the series of country profile reports, please contact GreenDependent Institute at info@greendependent.org.
For further information about the cases in Germany, please contact the Zentrum Technik und Gesellschaft (ZTG - 'Center for Technology and Society') TU Berlin

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Table of Contents

This project has received funding from the European Union´s Horizon 2020 Research and Innovation programme under Grant Agreement No 727642.

Illustrations

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Introduction and notes on methodology

This report was prepared as part of the 'mapping of energy citizenship in Europe' task within the EnergyPROSPECTS project.

EnergyPROSPECTS (PROactive Strategies and Policies for Energy Citizenship Transformation) works with a critical understanding of energy citizenship that is grounded in state-of-the-art social sciences and humanities (SSH) insights. The project aims to develop a broad understanding of energy citizenship as a policy concept, a sociotechnical imaginary, and a knowing-of-governance – i.e., a social construction of desirable/normal civic agency in future energy systems. The project set out to identify and examine a range of cross-cutting issues in energy citizenship, which informed the iterative typology development and criteria for case selection. Drawing on pre-existing databases and the identification of new cases, the selection of at least 500 initiatives, as well as mapping and typology refinement exercises that demonstrate the depth/breadth of the energy citizenship concept in theory and practice is undertaken.

As part of the energy citizenship mapping task, a methodology was developed for pursuing the overall project aim of identifying the diversity of types and empirical manifestations of energy citizenship. The methodology was created to help answer the main research questions the EnergyPROSPECTS project team intends to answer through undertaking the mapping activity, which are as follows:

- Which forms of energy citizenship (henceforth referred to as ENCI) can be found in Europe today? How can we account for their diversity?
- Can we find the same forms of ENCI in the different regions/countries of Europe?
- In what contexts do different forms of ENCI emerge and develop?

In the current report we present the diversity of forms of energy citizenship identified in one of the project partner countries, Germany. Please note that **the objective was to identify the diversity of forms rather than to ensure representativity. Thus, this report does not aim to present all examples of energy citizenship in Germany, but rather to illustrate their diversity.**

For the definition of energy citizenship we turn to the conceptual framework of the EnergyPROSPECTS project presented in Pel et al., 2021:

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

Building on this definition of energy citizenship, **within the EnergyPROSPECTS project, instances of ENCI are understood as:**

1. constellations of actors (in a context) and how they
   - ✓ enable/support citizens to become active private and/or public energy citizens;
   - ✓ act as collective energy citizens by contributing to changes in the energy system

or

2. including individual energy citizens and how they realize their potential in a private, public or organisational setting.

As indicated by these definitions, and underlined by the agency dimension of the conceptual typology presented in Debourdeau et al. (2021) and summarised in Chapter 3 below, examples of ENCI can involve individuals or be realised in a multitude of collective forms. During the mapping of the ENCI landscape, focus was placed on identifying and collecting data about both types of cases.

Furthermore, as a huge variety of cases and initiatives are available that would fit these definitions, and mapping them all would go beyond the scope and resources of the current project, there was a need to further define what is considered a case within the research focus of the EnergyPROSPECTS project. Thus, the consortium decided at team workshops that the ENCI mapping activity would cover cases that:

- are **based in European countries** (including EU, EEA, and accession countries);
- are **currently active or were concluded no sooner than 2015** when the Energy Union Strategy was published.
  (This is because the focus in this research is not so much the historical forms of ENCI, but rather its current forms and manifestations, and the differences between them depending on the political, socioeconomic, etc. characteristics of their context);
- are **focused on direct energy production and/or consumption** (e.g., in households, organizations, etc.), **mobility** (having a direct connection to energy issues), or with a **more holistic overall focus on sustainable and just energy.**
  This means that in EnergyPROSPECTS a decision was made not to study initiatives that focus solely on nutrition, for example. However, if nutrition is part of an overall strategy for reducing energy use or carbon footprint that also focuses on direct energy use, mobility, etc., then the case could be included *(more details on the sampling strategy can be found in Vadovics et al., 2022).*

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As Pel et al. (2021) indicate, we also recognise that even within the limitations specified for ENCI mapping, "enabling" and "supporting" citizens to become active private and/or public energy citizens can take many different forms. Similarly, energy citizenship itself can take many different forms. Furthermore, in reality many cases enable or support several different forms of energy citizenship in parallel, and often involve less as well as more active forms within the same case (e.g. citizens voluntarily organising carbon reduction groups as a more active form of citizenship, and citizens participating in these groups as a less active form).

As a result, it is expected that a very diverse collection of ENCI cases will emerge as an output of the mapping process. Indeed, it is important to note that although the term *energy citizenship* is often associated with energy communities or community energy projects, the objective in the EnergyPROSPECTS project is to uncover other forms of energy citizenship as well that include both individual and collective forms of citizenship.

As a result of the ENCI mapping activity, the consortium mapped 595 cases of ENCI in Europe. In addition to the country profile reports, we will present them in various forms, including an interactive database on the project website and various analytical reports that will all also be available on the website. For more about our ENCI mapping methodology and sampling strategy, please read Vadovics et al., 2022.

Report Disclaimer

In summary, when reading the following report, please bear in mind the following:

- The mapping of energy citizenship (ENCI) was not conducted to achieve a representative sample of cases in the country, but rather with the aim of providing an overview of the diversity of cases, on the basis of a desk research.
- The analysis is rather descriptive in nature, and further highlights diversity.
- The classification of the mapped cases into the various categories in our analysis does not involve a value judgement, but is rather an indication of diversity, as all types of cases are needed for the sustainable energy transformation to happen.
- Since providing details about the conceptual and methodological underpinning of the work that is presented here would go beyond the scope of this report, this is not attempted in this document, but details are available in other project documents – primarily, the following:
  1. methodology for ENCI mapping and data collection: Vadovics et al., 2021
  2. conceptual framework: Pel et al., 2021
  3. conceptual typology: Debourdeau et al. (2021)

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Part 1: Basic information about energy citizenship in Germany: illustrating the diversity of energy citizenship

Figure 1: Geographic repartition of the German cases

A total of **42 ENCI cases from Germany** were included in the database. As stated in the introduction, the objective of the mapping was not to achieve representativity, but rather to map the diversity of ENCI. A specific attention was given to the innovative dimension of the case, as well as to both the effectiveness and originality of citizens' involvement in the case. Indeed, around 835 energy cooperatives do currently exist in Germany and 2.2 million households and companies

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have installed solar panels on their rooftop or plot of land – and more than 1.4 million households are earning incomes from their solar panels. In such a national context, the cases mapped in Germany were chosen according to the diversity and originality of ENCI forms they rely on and foster.

The 42 cases are well distributed across Germany, with a salient 10 cases in Berlin which has to be attributed to the search for cases that would be adequate for the detailed case study analysis. Only three cases are considered as German-wide cases, since they are active at the national scale or operate in various locations.

A large majority of the cases 66.7% focuses on holistic, broader change, which tends to indicate that the cases that are entailing remarkable forms of ENCI adopt a scope that is broader than energy production or use. A bit **more than one-fourth of the cases (26.2%) are energy-specific initiatives**, which can relate to a large variety of cases, from a joint-stock company such as *Naturstrom AG* to protest movements (No moor Gas) to consultative and informative initiatives (*Bürgerdialog Stromnetz, Durchblick Energiewende*) to cooperatives (*BürgerEnergie Berlin* - BEB) or municipal processes (*Gemeinde Fuchstal*) to artistic performances (*Kunststrom*). This diversity accounts for both the approach undertaken to select the cases and the many sorts of contexts in which citizens engage with energy production and consumption in Germany. Rather few cases are focusing mainly on mobility (4.8%), which can also be explained by the choice to consider mobility-related cases only when the energy issues were very explicitly addressed within the case (*Weiler Mobil*, *Kiez erFahren* in Schöneberg Nord).

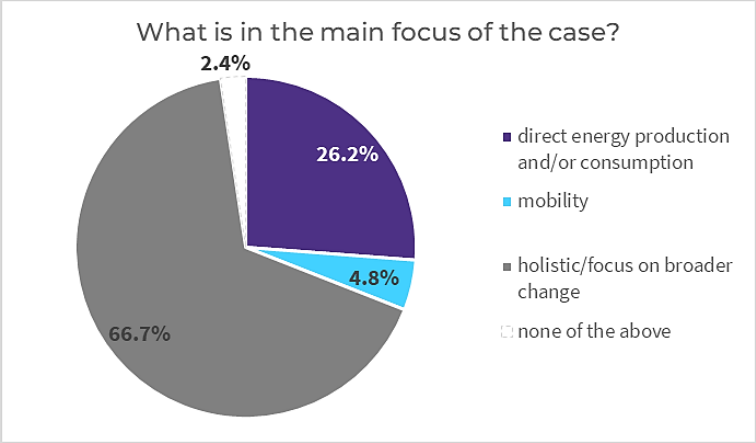

Figure 2: Main focus of the cases

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More than two-third (71.4%) of German cases in the database **are collective** and one-third (28.6%) are individual cases, which is notably due to the fact that the TUB team paid a specific attention to the search for individual cases, to extend the diversity of cases as much as possible.

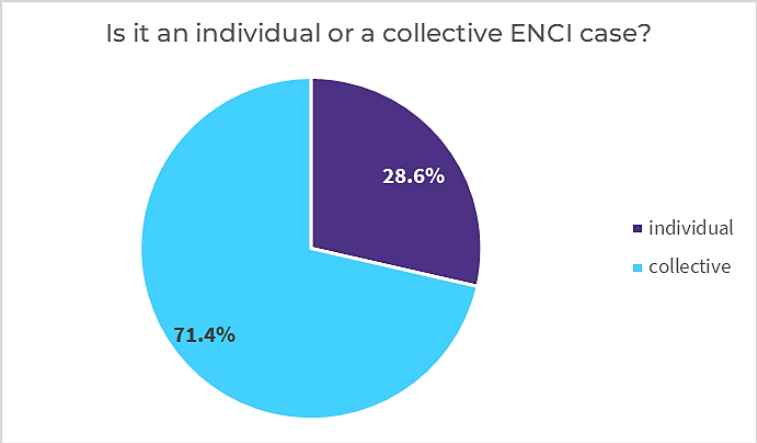

Figure 3: Distribution of the cases according to their Individual or collective focus focus

More than **one-fifth of all cases (21.4%) focuses on issues related to disadvantaged groups,** like those involving energy poverty, gender issues, inclusivity, etc. Basically, the cases that are caring for disadvantaged groups are either dedicated initiatives (e.g. *NRW bekämpft Energiearmut*, *Stromspar-Check*) or energy communities and cooperative that have added this specific focus (e.g. *Heidelberger Energiegenossenschaft*, *EnergieNetz Hamburg e.G., Elektrizitätswerke Schönau (EWS), BürgerEnergie Berlin (BEB)*. Furthermore, a bit less than 10% (9.5%) have a **specific gender focus, which represent only four cases** –; yet, those cases are highly representative, such as the publication of "*Frauen. Energie. Wende!" (FEW),* the women's cooperative created in the early 1990's "*Windfang eG Frauen-EnergieGemeinschaft*" or women housing projects like *FrauenWohnen in der Messe-stadt München-Riem*.

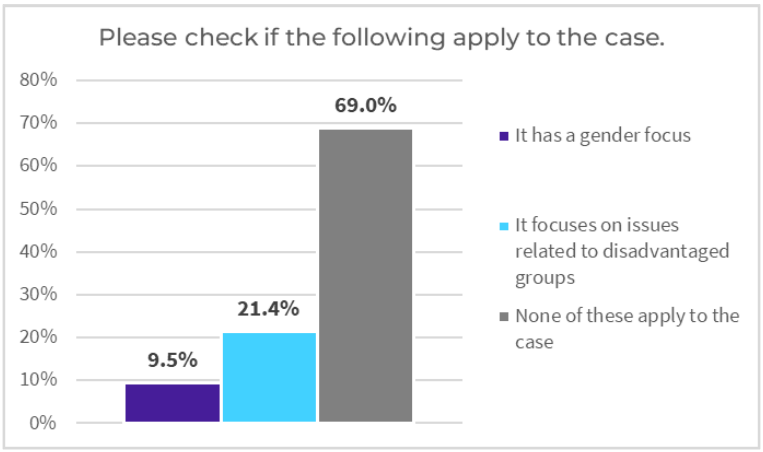

Figure 4: Gender and disadvantaged groups specific focus

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Looking at the mapped cases, **half of the initiatives (47.6%) are based in urban areas** (e.g. *Lavidaverde*, *SoLocal Energie, Möckernkiez Genossenschaft*), a rate that is notably due to the search for cases in the Berlin area for the detailed case studies. Consequently, only a very small proportion (2.4%) are concentrated in suburban, semi-urban areas (e.g. *Klimaschutzbürger 2.0*) and only about 12% of the cases (11.9%) focus on rural areas (including remote communities, islands, etc.) (e.g. *Bürgerinitiative NoMoor-Gas, Gemeinde Fuchstal, Weiler Mobil, Nahwärmenetz in Unterspiesheim*). A large proportion, almost one-fourth of the cases (23.8%), focuses on several of the above areas and has basically a nation-wide and/or online activity (e.g. *Bundesverband der Bürger-initiativen gegen SuedLink, Naturstrom AG, bewirk.sh, Bündnis Bürger-Energie e.V.*).

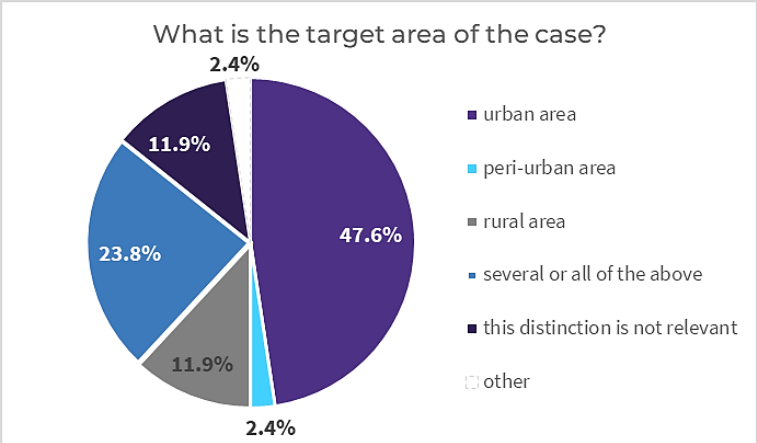

Figure 5: Distribution of the cases according to their target area

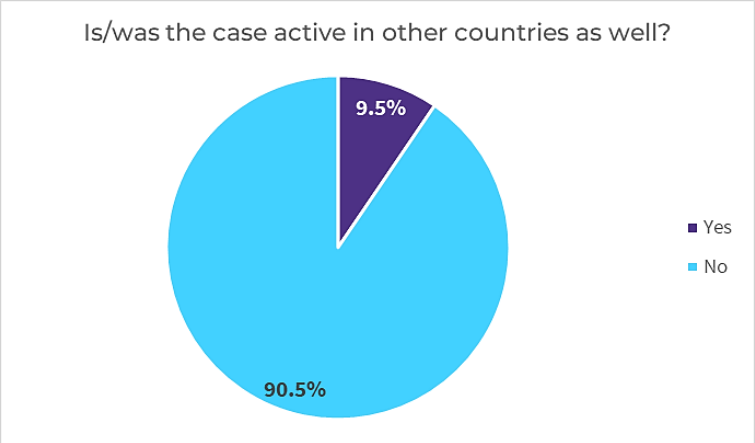

Figure 6: Distribution of the cases according to their activity in other countries

Country	Number of cases	Percentage
Austria	2	4.8%
Belgium	2	4.8%
Czech Republic	1	2.4%
France	1	
Italy	1	2.4%
Netherlands	1	2.4%
Poland	1	2.4%
Sweden	1	2.4%

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A very large majority of the cases (90.5%) that were mapped is active only in Germany, and only one-tenth (9.5%) is now operating or has operated in other countries (*bewirk.sh, Ende Gelände, Kunststrom, Bündnis Bürger-Energie e.V., aWATTar*). Except *Ende Gelände*, which is active in many EU countries, the other countries in which the cases are operating are mostly neighbour countries with a shared language (German), *i.e.* Austria (*Bündnis BürgerEnergie e.V., aWATTar*) and to a certain extend Belgium (*Ende Gelände, Kunststrom*).

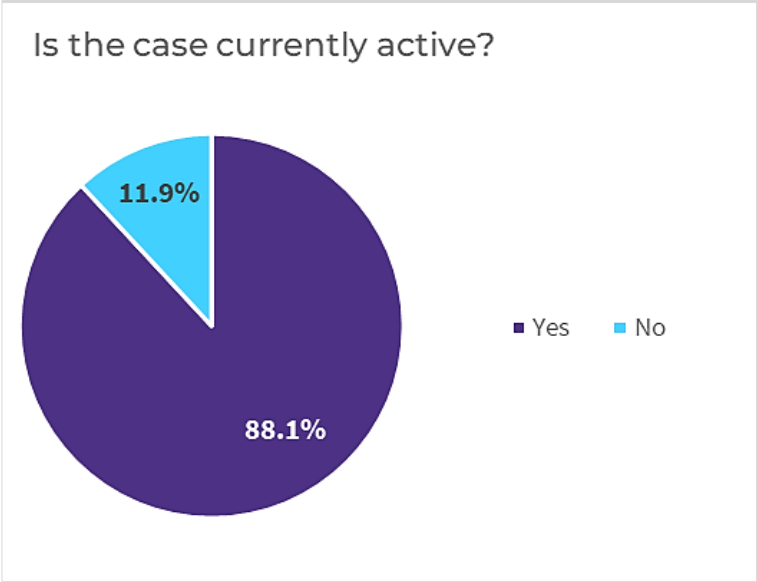

Figure 7: Current activity of the case

In Germany, a bit more than one-tenth of the cases (12%) started before 2000 and can be seen as pioneers of the Energiewende (e.g. *Naturstrom AG, Windfang eG Frauen-EnergieGemeinschaft, EWS Elektrizitätswerke Schönau*). A bit less than 15% (14.3%) started between 2006 and 2010 (e.g. *100 Prozent Erneuerbare Energie Stiftung*, *Heidelberger Energiegenossenschaft*, *Möckernkiez Genossenschaft, FrauenWohnen in der Messestadt München-Riem, Stromspar-Check, UrStrom BürgerEnergieGenossenschaft*). **A majority of the cases that were mapped started after 2010**, with nearly a third starting between 2011 and 2015 (e.g. *Bündnis*

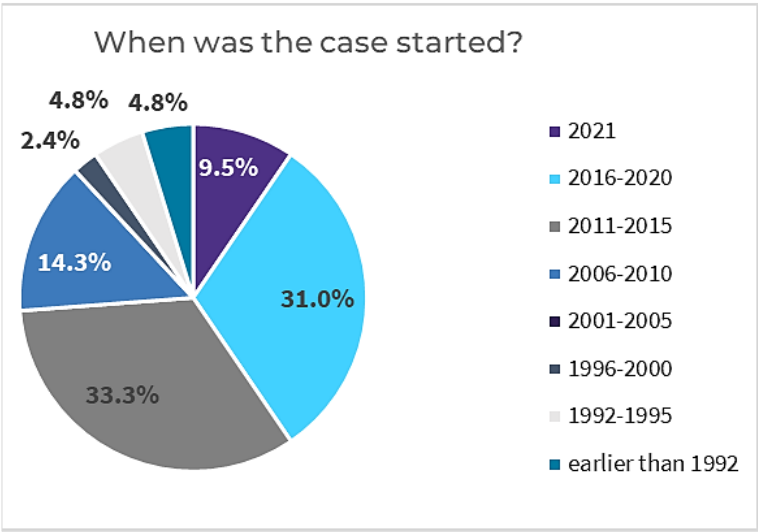

Figure 8: Start date of case

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BürgerEnergie e.V., SmartGridsBW, Lavidaverde, BürgerEnergie Berlin), and more than a third between 2016 and 2020 (e.g. *Futur 2 Festival, Energieland2050 e. V., Neue Kraft mit der Nachbarschaft* - NKMDN).

The large majority (88.1%) of the cases entered in the database is **still active**, and only a small number of cases that were mapped is no longer in operation. The cases that are not active anymore are mostly **campaigns or initiatives planned for a limited period of time** (e.g. *NRW bekämpft Energiearmut, Kiez erFahren* in Schöneberg Nord) and notably public consultations and debates (*Bürgerrat Klima, Wasserstoff-Bürgerdialog*).

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Part 2: Motivation, objectives, actors, operation

2.1 Motivation and objectives

Q24. Why did the case start, what inspired its conception, **what motivated its start?**

Q25. What do the actors involved in the case want to achieve in the first place/most importantly? ***What are/were the main objectives, aims?***[1]

In Germany, the main motivations, which were determining factors in **more than the half of the cases (54.8%), were the willingness to increase public involvement and contribute to the energy transition.** The second most important factors involved a desire for the production and/or use of renewable energy as well as the recognition of the seriousness of climate change, which were the key motivators in one-fourth of cases (23.8%). The third factor, mentioned in a bit more than one-fifth of the cases (21.4%), is the community building, which is also included in the "others" categories with a specific focus (e.g. women community building). This underlines notably the importance of the "*Energiewende*" theme in the German public life, which might also explain that the climate change issues are not given priority amongst the motivations.

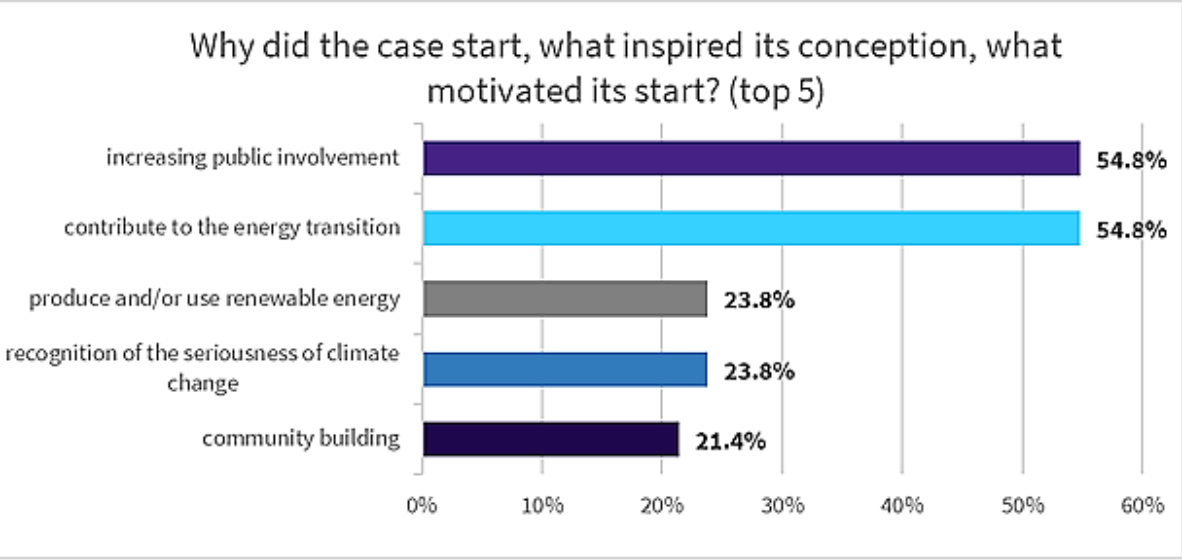

Figure 9: Main motivations that inspired the start of the case (several answer possible)

[1] *Questions from the mapping questionnaire. Methodology and questions are available here:* *https://www.energyprospects.eu/fileadmin/user_upload/ENERGY_PROSPECTS.EU/Deliverables/EnergyPROSPECTS_D3.1_310122_Final.pdf*

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Although all the mapped cases had several sources of motivation for their conception and start, it is interesting to mention some examples of the main ones. Increasing public involvement was/is still an important source of motivation for cases such as *BürgerEnergie Berlin* (BEB) — and also for the other energy cooperatives mapped —, the DIY initiatives *SoLocal Energy*, and of course for information-oriented and consultative process such as *Beteiligungsprozess BEK 2030* in Berlin, *Bürgerdialog Stromnetz, bewirk.sh, Durchblick Energiewende* or *Bürgerrat Klima*.

A desire to contribute to the energy transition was influential in cases like *Bundesverband der Bürgerinitiativen gegen SuedLink*, *Naturstrom AG, Neue Kraft mit der Nachbarschaft* (NKMDN) and most of the energy cooperatives that have been mapped.

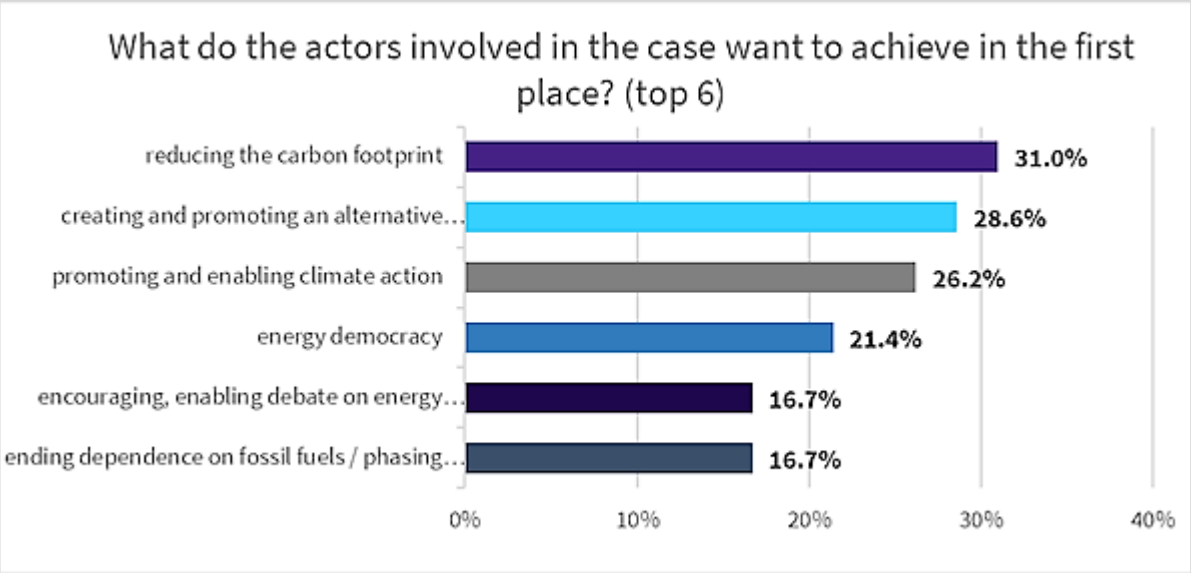

Figure 10: Main achievements expected by the actors at the start of the case

Answers concerning what the initiators want to primarily achieve are in line with the motivations for starting the case, though the climate protection is more clearly addressed in terms of achievements compared to the motivations. The **reduction of carbon footprint was an important source of motivation** for more than 30% of the initiatives (31.0%) such as Team X4S, Holger Laudeley — "the German pope of solar PV" —, Hörmann *Wasserstoffhaus*, *Futur 2 Festival*, *Bürgerinitiative Energiewende Gütersloh*, *Möckernkiez Genossenschaft*, or *Kiez erFahren* in Schöneberg Nord for the mobility side. The **creation and promotion of alternative societal and/or economic models** is also largely underlined, e.g. in *Neue Kraft mit der Nachbarschaft (*NKMDN), *RegHEE - Regionaler Handel von Strom aus erneuerbaren Energien*, but also for the *EnergieNetz Hamburg e.G.* or *Heidelberger*

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Energiegenossenschaft and *UrStrom BürgerEnergieGenossenschaft* cooperatives, or even mobility-oriented cases such as *Weiler Mobil*.

Complementary to this focus on alternative models are also many of the "others" motivations (35.7%), in which the innovation plays a great role, notably in terms of value creation at the local or community scale (e.g. RegHEE - *Regionaler Handel von Strom aus erneuerbaren Energie*, through new technologies and new markets such as hydrogen (*Wasserstoff-Bürgerdialog*) or smart grids (*SmartGridsBW*).

2.2 Actors initiating and involved in the ENCI cases

*Q31. Who or **which actors initiated** the case?*

*Q33. Who and/or **which actors are currently involved** in the case?*

In most German cases, **the initiating actors were two or more individuals: in more than a third of cases (35.7%),** and notably in activist cases (e.g. *Bundesverband der Bürgerinitiativen gegen Sued-Link, Ende Gelände, Bürger-initiative NoMoorGas*) and pioneer cooperatives or housing projects (e.g. *Lavida-verde, Möckernkiez Genossen-schaft, EnergieNetz Hamburg e.G., Windfang eG Frauen-EnergieGemeinschaft, Elektri-zitätswerke Schönau (EWS), Heidelberger Energiegenossen-schaft, UrStrom BürgerEnergie-Genossenschaft*). Other sorts of initiators are then equally distributed among regional government (*Gemeinde Fuchstal, Energieland2050 e. V., Klimaschutzbürger 2.0, Kiez erFahren* in Schöneberg Nord), for-profit companies (*Natur-strom AG, RegHEE*, *SmartGrids-BW*, *Future 2 Festival*), and NGOs (*bewirk.sh, Durchblick Energiewende*).

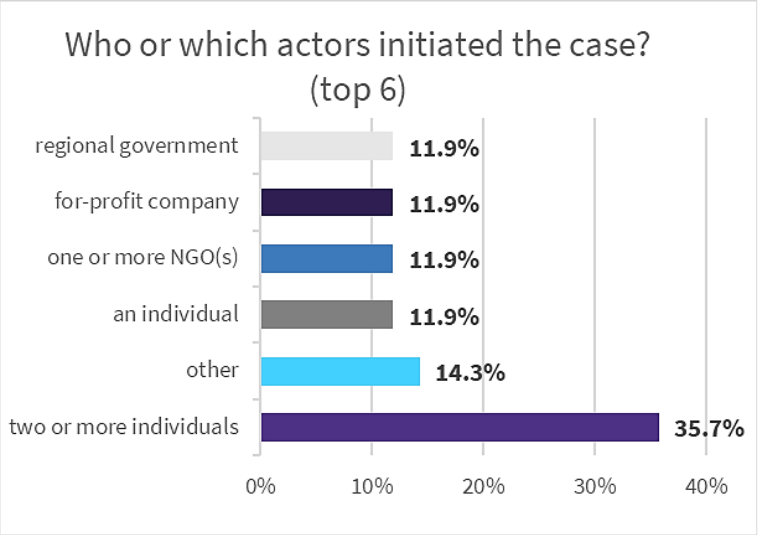

Figure 11: Actors that initiated the case (several answers possible)

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In more than one-third of the cases (35.7%), **NGOs are involved** in the implementation of cases, especially in the activist ones, whether **focusing on energy policy** (e.g. *Bundes-verband der Bürger-initiativen gegen SuedLink, Ende Gelände*), or on **energy poverty and/or gender inequalities** (*NRW bekämpft Energiearmut, Strom-spar-Check, Frauen. Energie. Wende!*). Others are more oriented toward information and public consultation (*bewirk.sh, Durchblick Energiewende, Beteiligungsprozess BEK 2030, Bürgerdialog Stromnetz*) or in the promotion of energy cooperatives (*Bündnis Bürger-Energie e.V., Energieland2050 e. V., 100 Prozent Erneuerbare Energie Stiftung*). The **other main actors involved in the German cases are individuals,** whether in a group (e. g. cooperatives or community such as *Lavidaverde*, *BürgerEnergie Berlin* (BEB), *Gemeinde Fuchstal, BürgerEnergieGenossenschaft Wolfhagen eG* (BEG) or *Weiler Mobil*), in an organisational (*SoLocal Energy, Kunststrom, Neue Kraft mit der Nachbarschaft* (NKMDN) or in a household setting (often referring to local innovative projects such as Hörmann *Wasserstoffhaus*, *SoLocal Energy, RegHEE*) with 28.6% each. Companies are involved in 28.6% of the German cases.

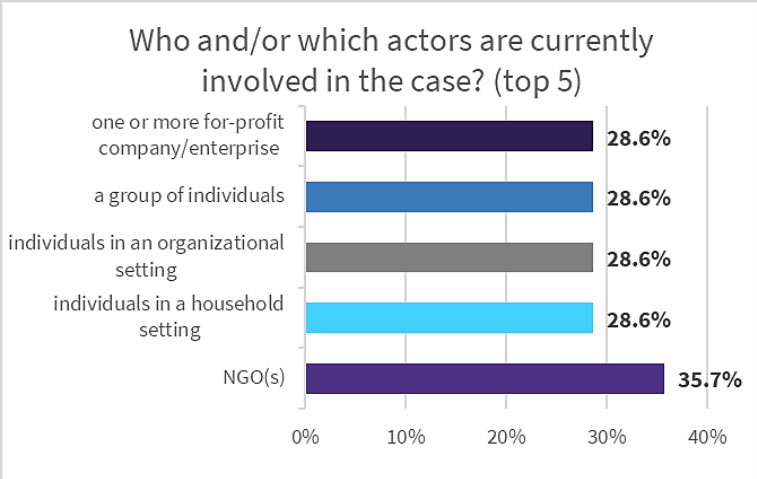

Figure 12: Top 5 actors currently involved in the case

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2.3 Scale of ENCI operations, networks

*Q35. At **which scale** does the case itself currently operate or involve actors?*

*Q36. What is the current **organisational form/structure** of the case?*

*Q39. Is/was the case **part of a network** of similar initiatives?*

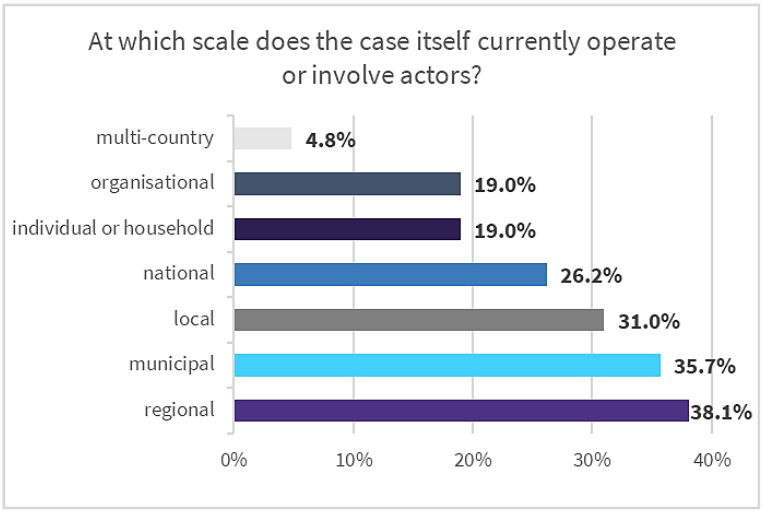

Figure 13: Scale of case operation

The **operational level of German cases is mostly that of a specific territory**, at the regional (38.1%), municipal (35.7%) or local (31%) levels, and often combine two of these scales — especially community-oriented projects such as *SoLocal Energy*, Municipality Fuchstal, Citizen Energy Cooperative Wolfhagen (BEG), *Energie Netz Hamburg* Coope-rative, *Weiler Mobil* or EWS Schönau Power Utility. Only **one-fourth of the cases operates at the national level** (26.2%). Those cases are often national representants of local initiatives, such as *Bündnis BürgerEnergie e.V.*, national campaigns such as *Stromspar-Check* or *Bürgerdialog Stromnetz*, or company-related such as *Naturstrom AG*. Less than one-fifth of the cases is operating at the individual or household level, encompassing mostly individual cases (Holger Laudeley, Hörmann *Wasserstoffhaus*) or cases aimed at addressing energy poverty issues – and therefore focusing on individuals and/or households (*NRW bekämpft Energiearmut, Stromspar-Check*).

A case can operate at several levels (such as *PowerPoor* in Germany, an umbrella organisation for promoting citizens energy, or *Bündnis BürgerEnergie e.V.* operating at the national, regional, municipal, local and organisational level; a campaign against energy poverty such as *Stromspar-Check* operating as well at the individual/household, municipal and national level).

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The **organisational forms of the German cases vary noticeably: one-fifth of the cases is a cooperative** (21.4%) and **one-fifth is categorised as "others"** (21.4%) since it refers mostly to campaigns, event, consultative processes, such as *Bürgerrat Klima, Frauen. Energie. Wende!* (FEW), *Wasserstoff Bürger-dialog, Beteiligungsprozess BEK 2030* or *Bürgerdialog Strom-netz*.

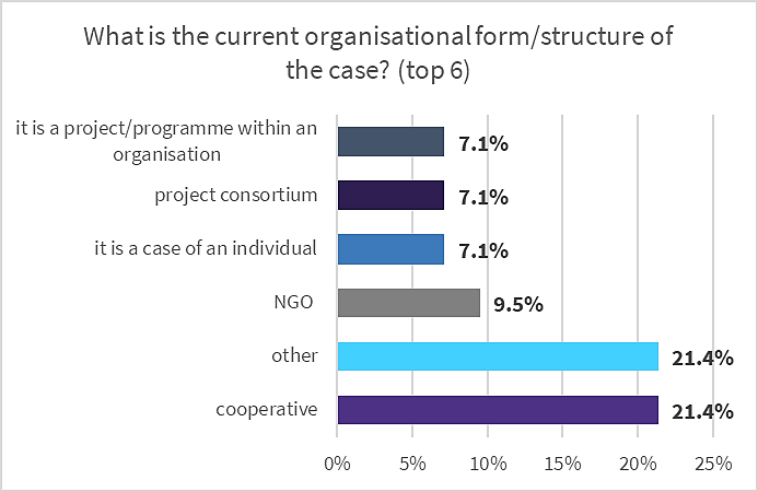

Figure 14: Current organisational structure of the case

A bit more than 35% of the German cases is part of networks or initiatives, whilst 38% is not. For an important proportion of cases (26.2%), there was no information available to answer the respective question. For those cases that are part of a network, the energy cooperative federation *Bündnis Bürger-energie (BBen)* is by far the most cited (7 cases out of the 15 that are part of networks), followed by *Energiewende jetzt!* (3 cases) and REScoop (2 cases). Among others, the following networks were mentioned, which are more case-specific: Entrepreneurs for Future, Energize Co2mmunity, *Mietshäuser Syndikat* (Self-organised living - solidarity-based management), WECF, *Sozial Entrepreneurship Netzwerk Deutschland*, *Bioenergie Kommunen*, *Solaroffensive Hamburg*, Eurosolar, MetropolSolar Rhein Neckar (cited twice). Noticeably, two of our cases are also mentioned as Network animators: *Naturstrom* and *EWS Schönau*.

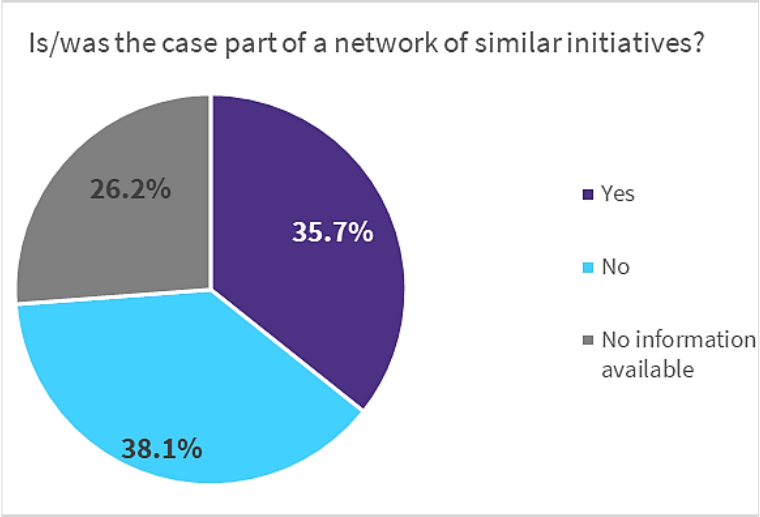

Figure 15: Case´s membership in a network of similar initiative

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2.4 Sources of funding for ENCI operations

*Q46. What is the **primary / main source of funding** for this case?*

*Q47. Are/were there any **other sources of funding** for this case?*

In about **one-fourth of the German cases** (23.8%), **the main source of funding consists in cooperative or community shares**, depending on the specific focus of the cooperative or community on:

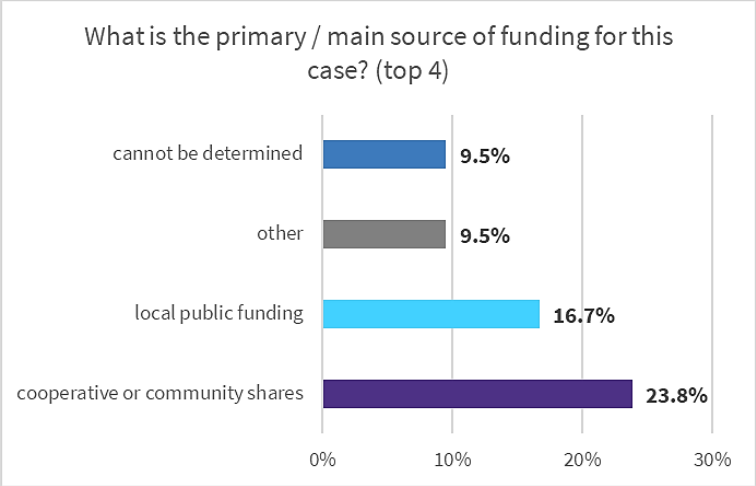

Figure 16: Primary or main source of funding of the case

- **energy production** (e.g. *Bürger-Energie Berlin (BEB), Bürger-EnergieGenossenschaft Wolf-hagen eG (BEG), EnergieNetz Hamburg e.G., WindfangeG FrauenEnergieGemeinschaft, EWS Schönau , Heidelberger Energiegenossenschaft, UrStrom*, mobility (e.g. *Weiler Mobil*),
- **building of a housing community** (*Möckernkiez Genossenschaft, Frauen-Wohnen in der Messestadt München-Riem*).

Local public fundings are the second main source of funding, with 16.7% of the cases, and notably for cases that are **locally active** (*SoLocal Energy, Gemeinde Fuchstal, Futur 2 Festival, Beteiligungsprozess BEK 2030, Kiez erFahren* in Schöneberg Nord).

In 9.5% of the cases, the main funding source was however not identifiable through desk research.

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The situation is more problematic regarding the potential other sources of funding, which cannot be determined on the basis of a desk research in more than 35% of the cases (35.7%), whilst "other" represent 21.4% of the cases. In about 12% of the cases (11.9%), no additionnal sources of funding were identified, within which no primary source of funding was involved for 3 cases out of 5 (e.g. *Bürgerinitiative NoMoorGas, Bundesverband der Bürgerinitiativen gegen SuedLink*)

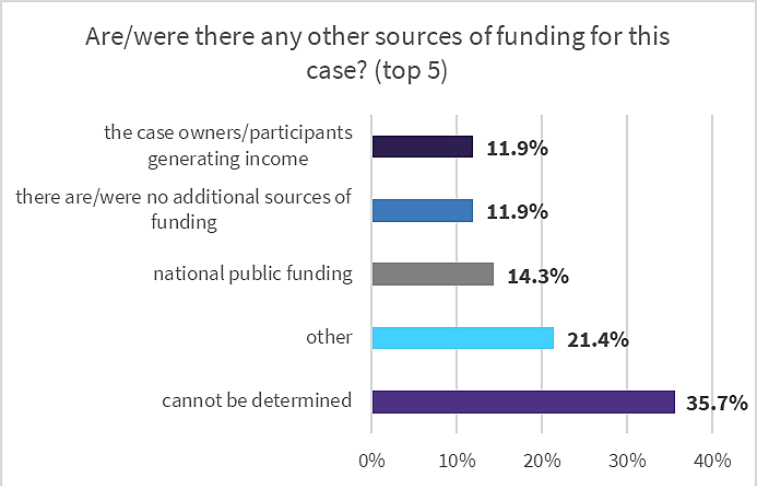

Figure 17: Other sources of funding of the case

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Part 3: Placement of German cases in the typology

Introduction to the EnergyPROSPECTS conceptual typology

In accordance with the conceptual framework elaborated in Pel et al., 2021, the EnergyPROSPECTS conceptual typology seeks to derive from the key conceptual distinctions analytical types and categories that account for the multiple forms of energy citizenship (ENCI). This is a qualitative descriptive typology that is mostly grounded on both a conceptual framework and consistent empirical research. Therefore, a dedicated methodology was elaborated to allow for typologisation that takes into account the specificity of the ENCI as a research object and the provisional absence of empirical input. The conceptual background of the EnergyPROSPECTS typology and its development process is summarized in Debourdeau et al. (2021).

As presented in Debourdeau et al. (2021), the EnergyPROSPECTS conceptual typology has two key dimensions: agency (individual vs. collective), and outcome orientation (reformative vs. transformative), each of which encompasses a variety of forms of ENCI.

The agency dimension encompasses three key distinctions highlighted within the conceptual framework, and primarily aims at addressing basic issues such as: *Who is doing ENCI? To whom can ENCI be ascribed? and Which kinds of configurations of actors can be considered relevant when searching for empirical cases?*

The outcome orientation dimension also encompasses two key distinctions highlighted within the conceptual framework and aims primarily at addressing questions that are complementary to those used for the agency dimension – i.e., *ENCI for what? What are the possible outcomes of ENCI that legitimise it as desirable? What kind of engagements and outcome orientations are to be considered as relevant for the empirical research?*

The matrix that can be constructed considering these two key dimensions is as follows, and allows for the distinction of ten conceptual types of ENCI:

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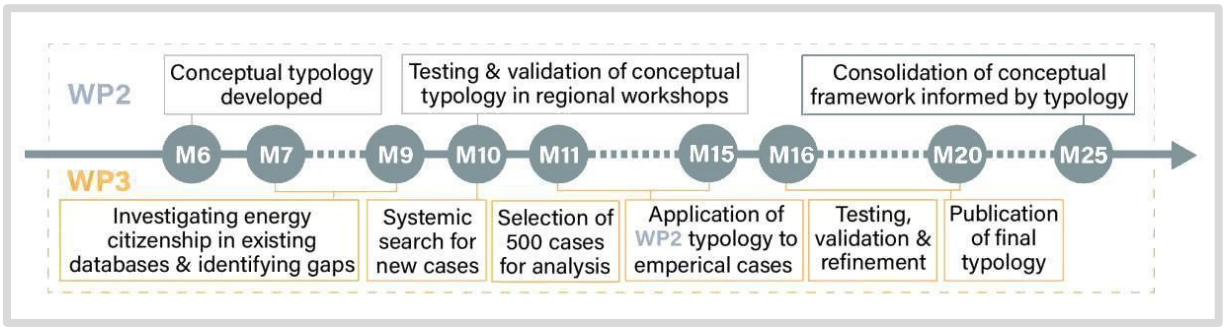
Agency	Individual			Collective	
Outcome Orientation	Private (household)	Organisationally embedded (e.g., workplace)	Public	Citizen-based and hybrid	Social movements
Reformative	1. DO THEIR BIT (in the household) — Complying with the green energy transition	3. DO THEIR BIT (within organisations) — Energy citizenship within organisations	5. MAKE THEIR VOICE HEARD — Participating in societal energy discussions	7. DO THEIR SHARE — Joining green energy projects	9. DO THE JOB — Facilitating the energy transition through alignment activities
Transformative	2. DO THEIR OWN (in the household) — The change-making energy citizen	4. DO IT THEIR WAY (within organisations) — The energy-related change maker in organisations	6. MAKE THEIR VOTE COUNT — Mobilising votes for energy transition	8. GO AHEAD — Building, expanding and linking citizen-based organisational forms	10. MAKE THEIR CLAIMS — Protesting against the current energy system

During the mapping activity, members of the consortium were asked to first identify the main type of mapped ENCI cases according to the typology, and then to identify all remaining types that it shapes, enables, or supports. However, given the conceptual nature of the typology, it was also acknowledged that the mapping – or in other words, the empirical validation of the typology – may uncover ENCI types the typology does not yet include. Furthermore, the iterative typology development process adopted in EnergyPROSPECTS also means that the conceptual typology will be further developed during subsequent stages of the research, as depicted in the figure below.



In our analysis, described below, we present the ENCI cases as they were typologised using the conceptual typology presented above. Any further development of the typology will be reported on the project website.

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3.1 Main types of cases according to the typology

*Q75. Considering the main (or only) type of ENCI the case shapes/enables/supports, which **ideal type of ENCI** would you associate it with?*

Based on the evaluation of the German research team of most of the cases that were mapped, **one-third of them (33.3%) was classified as type 8 according to the "Transformative–Citizen based and Hybrid"** part of the ENCI typology. The category associated with the second largest number of cases was type 10, "Transformative – Social movement", representing one-sixth of cases (16.7%), and the third largest was "Reformative – citizen based and hybrid", representing nearly 12% of the cases (11.9%).

	Individual			Collective		Other
	Private	Organizationally embedded	Public	Citizen-based and Hybrid	Social movements	
Reformative	4 (9.5%)	0 (0.0%)	4 (9.5%)	5 (11.9%)	0 (0.0%)	0 (0.0%)
Transformative	3 (7.1%)	5 (11.9%)	0 (0.0%)	15 (33.3%)	7 (16.7%)	

The **Individual private agency** displays both reformative and transformative cases.

On the **reformative side**, the cases that have been considered as supporting type 1 of ENCI consist mostly of initiatives that are **providing information and eventually financial support to individuals to reduce their energy consumption** and, in some of them, overcome energy poverty issues.

Durchblick Energiewende was initiated by the consumer centre Schleswig-Holstein (*Verbraucherzentrale Schleswig-Holstein e.V.* - VZSH), it helps understanding the options for action and decision making for consumers in regarding the energy transition. The initial focus is on heating networks, local solar energy projects and digitization of the energy supply.

NRW bekämpft Energiearmut has been launched in 2012 by the *NRW Verbraucherzentrale* (Consumers association) and it has been offering budget and legal advice on energy poverty to consumer households as part of the state project "NRW combats energy poverty". The aim of the

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special advice is to secure the energy supply of affected households in the long term and to permanently reduce energy barriers and energy poverty overall.

Similar to the previous, ***Stromspar-Check*** provides advice for people suffering from energy poverty (*Hartz IV, Arbeitslosen*, social aids beneficiaries, etc.) to make a more efficient use of energy, and also free emergency aids such as energy-saving and LED lamps, switchable socket strips, TV standby switches, timers and aerators for taps (more on this here). The emergency aids are also installed immediately. Aid to equip households with buying less-consuming appliances (100 € check or more). Has recently developed an application steckys-spartipps.de.

The ***RegHEE - Regionaler Handel von Strom aus erneuerbaren Energien*** case is of a rather different nature than the three others type 1 cases. The aim of this project is to research, develop and set up a peer-to-peer energy market for decentralised generation and storage units based on a blockchain that simultaneously uniquely identifies the traded electricity. Smart contracts are meant to be developed that represent an automated marketplace for the direct exchange between prosumers and end consumers, as well as complying with the energy industry and regulatory requirements. The target of the regional energy market is still the private energy user, which is mostly thought to be a rational economic user rather than a citizen within this project.

On the **transformative side**, the three cases do also have, at least for two of them, a formative and informative purpose that focuses on the individuals in the household.

Bewirk.sh is an initiative that does educational work regarding the global climate change and possibilities for individual action. The focus is on the individual with their responsibility for living together on earth sustainably. The goal of the initiative is to motivate and enable the individual to be part of a lived democracy and a society with citizens who are active in their community, their city district or their neighbourhood and take action together for the energy transition and protecting the climate.

In the project ***Klimaschutzbürger 2.0*** **(Climate protection citizens 2.0)**, households were sought for a real-life experiment in which sustainable behaviours could be tried out. 18 households from 12 municipalities in the Steinfurt district took part and managed to reduce their ecological footprint by an average of 10 percent. Together with experts, the participants developed measures for climate-friendly behaviour in the areas of nutrition & consumption, mobility and energy saving & living with great events such as a climate cooking course or fuel-saving driving training. Therefore,

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it conduced he people that were taking part in the project "Climate protection citizens 2.0" to experiment more civic and sustainable lifestyle to reduce their ecological impact.

Contrary to the two previous cases, ***Nahwärmenetz in Unterspiesheim*** **(Local heating network in Unterspiesheim)** has been considered as an individual private case since it was launched basically by an individual and it addresses individuals in the households from the neighbourhood. Indeed, Michael Bürger's original concept launched in 2020 is to build and operate a local heating network supplying 80 properties. The Bürger family lives on the same property in Unterspiesheim where the heating centre is located. There are three boilers that are fired with wood chips. Together, the furnaces have a heating capacity of 0.75 megawatts. The buffer tanks right next to them hold 30,000 litres, and another 20,000 litres will circulate in the heat pipes - once they are laid and in operation. The fuel, the woodchips, he gets partly from his own landscape management company; it is the waste wood that accumulates there. He also collects the rest of the wood himself. The customers are bound to him by contract for 15 years - from the time of commissioning. Until then, the customers do not pay a cent.

The **individual organisationally embedded agency** does not entail reformative cases, but only cases that have been considered as **transformative** (5 cases representing about 12%): key individuals within their organisation, such as Kurt Gramlich, Holger Laudeley, or in the Hörmann *Wasserstoffhaus* case; and two cultural and artistic cases: *Kunststrom* and *Futur 2 Festival.*

Holger Laudeley is often described in Germany as "Mr Energy Transition" or as the "Phovoltaic Pope". He´s an engineer that founded in 1982 his company *Laudeley Betriebstechnik* in the field of media technology. In the mid-1980s, the company began to focus on regenerative technologies. Initially, *Laudeley Betriebstechnik* mainly renovated flats and company buildings for energy efficiency. In the early 1990s, the company also built low-energy and passive houses. He´s claiming for more individual energy autonomy for the individuals and launched 25 years ago the first solar PV plug-in modules to install on the balcony that can provide 10% of the electricity consumption of the household and reduce its carbon footprint. The company's self-developed company building is still considered a showcase project today, as it produces virtually no energy costs. Furthermore, Dipl.-Ing. (FH) Holger Laudeley and his team develop state-of-the-art products and services in the field of renewable energies. Due to his involvement in a large number of visionary projects, Holger Laudely can be considered as a pioneer in the field of the development of alternative renewable energy

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solutions that enable people to take part in the energy transition by renovating their house according to high energy efficiency standards and to achieve more energy autonomy - and consequently adopt practices that support ENCI.

Hörmann Wasserstoffhaus case involves concomitantly the Hörmann family and the photovoltaic company they own and in which they work every day to implement the latest technical possibilities in the field of renewable energies. They therefore wanted to build their new private house as energy-efficient as possible and use the solar energy from the summer also in the winter. They implemented a concept for the long-term storage of solar energy using hydrogen. With this concept, it is possible to completely cover the energy demand of the building with photovoltaic systems on the roof and façade and a hydrogen storage unit even in winter. On sunny days, excess solar energy is stored in a battery and hydrogen is produced, which is later converted back into electricity using a fuel cell. The main "waste product" is heat, which is used sensibly in the house for heating and hot water. The heart of the hydrogen house is a module with an electrolyser and fuel cell. The electrolyser produces hydrogen, while the fuel cell generates electricity and heat for the house as needed. To show what the system can do, they decided to do without an electricity connection. The newly built house has been running completely self-sufficiently since December 2018 and there is still enough electricity to power several electric vehicles. This is obviously a type 4 case of ENCI since the Hörmanns have developed a fully autarkic house by combining technologies, and they offer now these solutions to other citizens who would like to follow their example.

Futur 2 Festival is a free of charge and outdoor music festival that took place in 2018 and 2019 in Hamburg. Its organizers see it as a place for testing out sustainable solutions for open air events. There is a big focus on recycling and resources should mainly be produced on site, for example producing electricity with the help of festival visitors riding bikes. The case has been considered as type 4 since the attending people are empowered to individually and collectively find more sustainable ways to attend a music festival.

Somehow symmetrically to the organisationally embedded, the **individual public agency** does not entail transformative cases within the four related cases: *Bürgerrat Klima, Wasserstoff-Bürgerdialog, Beteiligungsprozess BEK 2030, Bürgerdialog Stromnetz*. These four are consultative processes, of which outputs are not considered as compulsory by the initiators of the case.

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Hold in Berlin, the ***Beteiligungsprozess BEK 2030*** was launched in September 2021 by the Senate Department for the Environment, Transport and Climate Protection. This participation process aimed at debating on the further development of the Berlin Energy and Climate Protection Programme (BEK 2030) for the implementation period 2022 to 2026. All Berlin citizens were invited until 3 October 2021 to actively participate in the online process and thus help shape Berlin's development into a climate-neutral city. The comments and suggestions should be incorporated into the update of the BEK 2030. In addition to the kick-off forum, two further expert forums, two workshop series, a further online participation and an additional public event were planned until spring 2022. Furthermore, the further development of the BEK 2030 will be accompanied by a new citizens' council. Yet, the inputs from all participants remained "consultative", i.e. not necessarily taken into account for the next energy and climate protection programme, which makes this case belong to type 5.

A majority of the German cases consist in **collective agencies, since 62% of the German cases** have been placed under this category. Among the 26 related cases, **a wide majority (more than 80%) have been considered as transformative**, whilst only 5 collective cases are categorised as reformative (less than 20%).

On the **reformative side, the collective cases are all characterized by a citizen-based and hybrid agency**: Team X4S - Extension for Sustainability, a project participating at the Solar Decathlon Europe 2021, *Gemeinde Fuchstal* (Fuchstal community), *SmartGridsBW, Möckernkiez Genossenschaft* and *Kiez erFahren* in Schöneberg Nord. Except from Team X4S, all these cases are somehow initiated by a municipality or an organisation, which may lower the citizens participation in comparison with cases that are directly initiated by citizens.

Fuchstal is a municipality in Bavaria, which plans to test the 'power-to-heat' approach which converts excess electricity into heat and attempts to keep it in large storage facilities until it is needed. The **Fuchstal community** also plans to build flexibility into its biogas plant so that it can adapt to fluctuating demand. The community also has photovoltaic systems, hydroelectric power stations, a wind farm and an innovative district heating network. The municipal initiative aims at engaging citizens, the energy transition is furthered on a municipal level and there is a local working group on energy made up of Fuchstal citizens who are shaping these projects. However, the Fuchstal

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community can hardly be seen as a process carried by the citizens themselves, which makes it belong to ideal-type 7.

SmartGridsBW is a platform and network for the energy sector, industry, politics and science. Its purpose is to enhance intelligently networking energies — bringing people together with commitment, in order to work together on the energy future. Founded in 2013, the Smart Grids-Platform Baden-Württemberg e.V. is a network of central stakeholders from the energy industry, research, politics, IT, industry and interested private individuals. The statutory purpose of the association is to promote smart energy grids in order to make the energy transition as efficient as possible. The SmartGridBW team is working on this together with the approximately 80 members - guided by a-member board and with the support of the Baden-Württemberg Ministry for the Environment, Climate and Energy Management. The long-term goal of the platform is to achieve largely CO_2-free energy production in Baden-Württemberg, Germany and the rest of the world. production in Baden-Württemberg, Germany and beyond. Grounded by the association this network is open to all interested people, even individual private ones. Its purpose is to enhance the acceptance and participation in smart grids through intelligent districts, e-mobility, intelligent grid towards CO_2-free society at the regional scale. For that goal it is also supporting citizen energy cooperatives, yet it does not present a sufficient citizen-control to be considered otherwise than type 7.

The project ***"Kiez erFahren in Schöneberg Nord"*** ("Experience new mobility in the neighbourhood" - with multimodality to climate-neutral and liveable urban area) took place from September 2019 to August 2021 in the Schöneberg Nord district region. As a pilot project of the Tempelhof-Schöneberg district office, the dedicated team worked for two years on the local transport turnaround in Schöneberg North. In various event formats, they promoted neighbourly dialogue regarding the traffic and mobility turnaround and thus triggered reflecting the ownership and use of private cars. A centrepiece of the project was the car-free summer street Barbarossa. They also carried out the *Umparkkampagne* twice. Residents could try to life without their own private car for four weeks and in return they received vouchers from numerous mobility service providers. This led to more space on the streets and a higher quality of life in the neighbourhood. Though mobilising the resident citizens in experiencing new and climate-friendly mobility measures, with a strong focus on discussion and debate and several experimentations towards a low carbon mobility at the scale of

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the neighbourhood, this case remains on the reformative side, since it has been only partly re-appropriated by the citizens and did not induce major changes in the energy system.

On the **transformative side, citizen-based and hybrid cases represent the largest part of the mapped German cases, with 15 cases, i.e. 33% of the total.** Hybrid cases are not the most represented among those 15 cases, with only 2 cases presenting a high level of hybridity: *Energyland2050* and 100 Percent Renewable Energy Foundation.

The **association Energyland2050 e.V.** was founded in April 2017 and is based in the Office for Climate Protection and Sustainability of the district of Steinfurt. As an association of 133 representatives from politics, business, science, civil society and the 24 towns and municipalities belonging to the district, it supports the district of Steinfurt in achieving its major goal: To become energy-independent by 2050 - or sooner. It promotes civic engagement, regional value creation and public discourse on social responsibility and sustainable about social responsibility and sustainable and climate-friendly life. This case is a case of ENCI since it sets up a global framing to enable the district to become climate neutral and energy independent in 2050. The case involves a lot the citizens through a series of programs aimed at empowering them to achieve the local energy transition. Energyland2050 presents a high level of hybridity since it associates 133 representatives from politics, business, science, civil society and the 24 cities and municipalities belonging to the district. Nevertheless, the extent to which citizens are involved in and controlling the case, combined with energy justice and deep sustainability goals push the association on the transformative side.

The other hybrid case assigned to type 8 is the **100 Percent Renewable Energy Foundation (*100 Prozent Erneuerbar Stiftung*)**, and here again, it's focus on a transformative ENCI is quite clear. Indeed, the 100% RE Foundation aims at supporting the development of energy citizenship in Germany. The way the foundation describes itself makes it obvious: "Shaping the energy transition according to the citizens´ needs is essential for our work at the *100 Prozent Erneuerbar Stiftung*. What we know: The citizens in Germany want the energy transition. What we don't know: What role can, want and should they play? Will they shape the energy transition? Will they remain supply cases without major changes because „The power comes from the socket"?Do they have to accept everything that the legislator and companies are planning? We must assume that all of these three options describe very much possible and probable roles. Though it's anything but arbitrary who – especially how many people – play which role. It's crucial for the success of the energy transition that the people act a part they feel comfortable in. Anyone who doesn't want to shape the transition

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can remain in the classic role of a consumer. But what about those that are affected but are forced into this role? And what about the people that don't want to be a supply case but a designer for the energy transition but can't just do that? In short: Our central question is "What do the people gain from the energy transition?" The *100 Prozent Erneuerbare Energie Stiftung* works out answers in their projects and cooperations[2]."

The other 13 cases are presenting no or low hybridity. The majority of those cases are energy cooperatives that have set up and achieve broader goals than the "simple" co-ownership of renewable energy plants: ***BürgerEnergie Berlin (BEB)*** is highly politically involved and tried to follow the model of ***EnergieNetz Hamburg e.G.*** for the re-municipalisation of the local grid, ***BürgerEnergieGenossenschaft Wolfhagen eG (BEG)*** is a highly innovative case in which the citizens are also owning 25% of the municipal utility (*Stadtwerke Wolfhagen GmbH*); ***Windfang eG FrauenEnergieGemeinschaft*** and the **Women's housing and building cooperative in Messestadt München-Riem** are pioneer women's cooperatives, ***Weiler mobil*** has extended the scope of the Weiler energy cooperative to a local cooperative electric car sharing system; ***Elektrizitätswerke Schönau (EWS)*** is a pioneer energy cooperative created in 1996 and rooted in the anti-nuclear movement.

The social movement category entails only seven cases, that were all considered as transformative. Three of them are contesting the current energy system, and claiming for alternative: *Ende Gelände*, the citizens' initiative NoMoorGas and the Federal Association of Citizens' Initiatives against SuedLink.

Ende Gelände is a broad alliance of people from the anti-nuclear and anti-coal movements, the Rhineland and Lausitz climate camps and the Hambacher Forest anti-coal campaign. They consist of leftist grassroots climate action groups, large environmental organisations, left political groups and other campaigns, groups and networks. The movement is using civil disobedience as a signal for action "to put our climate before profit". In this case, people from different activist groups and organisations take direct and often illegal action against particular ways of energy production, namely coal and gas for example with blockages.

Less well-known but somehow comparable to *Ende Gelände*, **NoMooreGas** is a citizens' initiative founded in 2018 that is protesting against fracking in the region Unterweser in Lower Saxony. They

[2] https://100-prozent-erneuerbar.de/en/stiftung/

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are doing public relation work, organising protests and bus tours to drilling sites and conveyor systems.

The Federal Association of Citizens' Initiatives against SuedLink is of a rather different nature, since this transnational association of citizens' initiatives aims primarily to protest against the planned direct current lines in Germany to convey the off-shore wind power from the North to the South of Germany. The goal of the federal association is the nationwide networking of citizens' initiatives with one another in order to give the protest against SuedLink a strong voice. They advocate decentralised and citizen-friendly energy planning and energy policy as a viable alternative to the planned electricity highways and call on politicians to rethink. It is a case of transformative energy citizenship in that the association fights against the building of North-south power lines presented as a requirement for the energy transition by claiming for another form of energy transition that would be more local and decentralised, and consequently in the local peoples´ hands.

The four other transformative social movements are networks and associations related to citizen energy transition that take actively part in the political debate. The **CitizenEnergy Alliance (*Bündnis Bürgerenergie*)** is an association of energy cooperatives that aims to promote citizen participation in energy transition. Emphasis is put on co-owning, voting-rights (democratic aspect) and values (participation, initiative, self-help, self-responsibility and self-management) conveyed by cooperatives. This network is engaged in advancing the citizen participation in energy transition by looking for future options (energy share, hydrogen, coupling, etc.). Political engagement also stands for a core value of the network, claiming for a real "green power" energy, i.e. sustainable, ecological and citizen-supported energy supply. It can be considered as a transformative social movement since it is promoting citizens engagement in energy transition " by stimulating, establishing and supporting an energy supply based on regenerative and decentralized structures, which corresponds to democratic, social and ecological values: "In 2020 they contributed to the joint publication of the report "*Frauen. Energie. Wende!*" (Women, Energy, Change!).

This report **"*Frauen. Energie. Wende!*" (Women, Energy, Change!),** has also be assigned to the transformative social movement type considering its claim for a gender-equitable energy transition. Through the possibilities for participation in the process of energy transition seem diverse and multiple in the German democracy, for many marginalised groups in our society, there are questionable and arbitrary, yet systematic, limits and obstacles to meeting their needs as

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consumers and producers of renewable energy, as well as workers and (political) decision-makers in the energy sector. This publication is aimed at all actors in business, politics and civil society who have not previously associated the issues of gender and energy. Indeed, the link between gender justice and a grandchild-friendly energy system becomes more and more obvious. This publication contains a concentrated overview of structural resistances that women in Germany in particular have to overcome in order to bring about a new and just energy system. In 13 interviews with experts, personal light is also shed on these systematic barriers that prevent citizens from building a decentralised, democratic and just energy system. This is a (highly specific) case of ENCI since this joint publication of WECF und BBEn aims at enhancing the role of women in the energy transition, and contributes to a more decentralised and just energy system that is more gender conscious.

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	Individual			Collective	
	Private	Organizationally embedded	Public	Citizen-based and Hybrid	Social movements
Reformative	• NRW fights energy poverty • clear view in the energy transition • Energy-saving-check • RegHEE - Regional trading of electricity from renewable energies	-	• Citizens' dialogue on the power grid • Citizens' Climate Assembly (Germany) • Hydrogen Citizens' Dialogue • Participation process for the further development of the Berlin Energy and Climate Protection Programme (BEK 2030)	• Möckernkiez cooperative • Municipality Fuchstal • New mobility Experience in Schöneberg Nord Neighbourhood • SmartGridsBW • Team X4S - Extension for sustainability	-
Other	-				

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	Individual			Collective	
	Private	Organizationally embedded	Public	Citizen-based and Hybrid	Social movements
Transformative	• bewirk.sh • Climate protection citizens 2.0 • Local heating network in Unterspiesheim	• Futur 2 Festival • Holger Laudeley • Hörmann's Hydrogen house • Kurt Gramlich • Performance Electrics	-	• 100 Percent Renewable Energy Foundation • Berlin Citizen Energy • Citizen Energy Cooperative Wolfhagen (BEG) • Energie Netz Hamburg Cooperative • Energyland2050 Association • Heidelberg Energy Cooperative • LAVIDAVERDE • NATURSTROM AG • Schönau Power Utility (EWS) • SoLocal Energy • UrStrom (UrPower) Citizen energy Cooperative • Weiler Mobil • Windfang Women's Energy Community • Women's housing and building cooperative in Messestadt München-Riem	• CitizenEnergy Alliance • Citizens' Initiative Energy Transition Gütersloh • citizens' initiative NoMoorGas • Ende Gelände • Federal Association of Citizens' Initiatives against SuedLink • New power with the neighbourhood (NKMDN) • Women. Energy. Turnaround/Change! (the term "Wende" also refers to the energy transition - which is unaccountable in english)

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3.2 Other typology types selected

*Q76. If relevant for this case, which **other ideal-type(s) of ENCI** does the case shape/enable/support?*

In the process of characterising cases, it was possible to identify one or more other categories in addition to the main typology type. The **most often selected category was Transformative – Private: almost one-fifth of the cases (19%) is placed here.** This was followed by the "Reformative – Private" type, which encompasses 16.7% of the cases as a secondary type, while the third most often selected secondary type (11.9% of cases) was Transformative – Social movement. "Other" was not selected, showing that all cases could be clearly positioned according to the typology.

	Individual			Collective		Other
	Private	Organizationally embedded	Public	Citizen-based and Hybrid	Social movements	
Reformative	7 (16.7%)	1 (2.4%)	1 (2.4%)	1 (2.4%)	0 (0.0%)	0 (0.0%)
Transformative	8 (19.0%)	1 (2.4%)	1 (2.4%)	2 (4.8%)	5 (11.9%)	

The transformative - individual private as secondary type has been assigned in two main situations:

- First, for reformative cases (mostly reformative – individual private ones) that could potentially entail a transformative aspect or become transformative in the near future, such as ***Durchblick Energiewende*** or ***RegHEE - Regional trading of electricity from renewable energies.***
- Second, for transformative citizen-based and hybrid cases, for which the secondary type aims at underlining the individual – private counterpart of the engagement, such as **Lavidaverde Berlin,** ***Neue Kraft mit der Nachbarschaft (NKMDN),*** **Energyland2050 Association** or the **Women's housing and building cooperative in Messestadt München-Riem.**

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The reformative - individual private has been chosen as secondary type for 7 cases, for which this assignment aims at underlining the individual – private aspects involved in the case. This concerns for instance cases such as **Performance Electrics (Kunststrom), the Municipality Fuchstal, Weiler Mobil or Futur 2 Festival.**

For two cases, **Energyland2050 Association** and **Möckernkiez** in Berlin, both Reformative and Transformative individual -private have been chosen as secondary types. For these two cases, the assignment to a reformative or transformative type at the individual level remained uncertain, mostly due to an absence of precise information to decipher between the reformative-transformative dimension.

The transformative – social movements type is assigned as secondary type to five cases that are presenting the same pattern: those five cases are of transformative – citizen based and hybrid main type, yet they present a certain political engagement that legitimates the choice of transformative social movements as a secondary choice. This is worth for an association such as ***SoLocal Energy*** and highly politicised cooperatives such as **Berlin Citizen Energy (BEB), Citizen Energy Cooperative Wolfhagen (BEG), *Energie Netz Hamburg* Cooperative** and **Schönau Power Utility (EWS).**

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Part 4: Aspects of energy citizenship

4.1 More and less active forms of energy citizenship

*Q48. In terms of the form of ENCI it shapes/enables/supports (or shaped/enabled/supported), please place the case on a **scale of passive-active** below, by moving the slider.*

For this question, responses were collected using a scale of 1 to 100 by the researchers participating in the mapping activity, and then divided into the following five categories: 1-20 very passive, 21-40 passive, 41-60 moderately active, 61-80 active, 81-100 very active. The **more passive a case is, the more it involves energy consumption**, which means that it is not an ENCI yet but rather a passive consumer of energy due to disempowerment, disillusionment, or disinterest. The **more active a case is, the more aware, empowered, and active it is**, which means that it involves not only changing individually and joining others but activating and empowering others and helping others to become active.

On the scale of passive-active, a large **majority of the German cases (59.5%) is classified as "very active"**, and almost 12% (11.9%) of the cases is classified into the "active" category. A bit more than one-fifth (21.4%) into "Moderately active", and a small percentage (7.1%) into "passive" – and none of them into the "very passive" category". In regard to this question, all cases were classified.

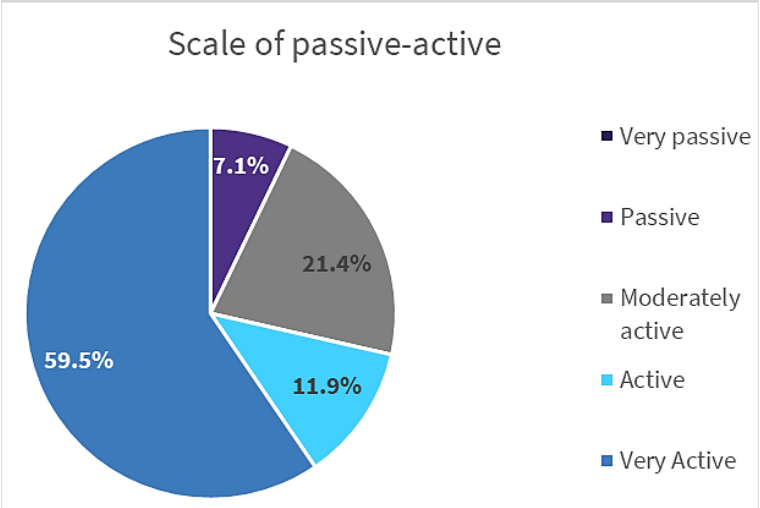

Figure 18: Scale of active-passive

The **passive** category includes three cases that are all addressing the figure of the "energy consumer": **Municipality Fuchstal**'s working group on Energy is very active and empowered, but most citizens have the roles of passive consumers of the produced renewable energy; ***Durchblick Energiewende*** provides assistance to understand the options for action and decision making for

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consumers in regarding the energy transition; ***Naturstrom AG*** claims sustainability as the core of its business activity which consist in providing a 'clean, safe and economical' energy supply on the basis of renewable energy to more than 250,000 households, companies and associations - yet most of them are passive consumers (but there is the possibility to become active in a renewable energy project for which *Naturstrom* offers various support).

The **moderately active** category includes cases for which citizens commitment remains rather uncertain. This is worth for so-called participative or consultative cases, such as **Citizens' Climate Assembly (*Bürgerrat Klima*), Participation process for the further development of the Berlin Energy and Climate Protection Programme (*BEK 2030*)** or **Citizens' dialogue on the power grid (*Bürgerdialog Stromnetz*)**. This category also includes cases in which the citizens involvement is not well described such as **Möckernkiez cooperative** or cases that are focusing on tackling energy poverty such as "**NRW fights energy poverty**" or ***Stromspar-Check***. The **Futur 2 festival** case is located at the upper limit of this category, with 60 on the scale, and does not really fit to the moderately active since at the end of the day, citizens are viewed as visitors or consumers of the festival, but they are actively included in producing the energy for the festival for example at the 'pedal-powered stage' and the festival does try to motivate visitors to use sustainable forms of mobility to get there etc which leads to reflection on the sustainability of various aspects of daily life as well.

The **active** category includes cases such as **Lavidaverde** or ***Weiler Mobil*** which are located on the activation side, whether because the project planning and realisation relies on a high commitment of the involved people (Lavidaverde) or because it enables the inhabitants to register for free and complete the circle by using the extra energy produced by the cooperative to charge the electric vehicles (Weiler Mobil).

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The **very active** category includes protest social movements cases such as ***Ende Gelände*** or **NoMooreGas** through direct actions in the forms of protests and blockages are taken for reaching their goal to stop for example coal mines or fracking. This category also includes highly politicised associations and cooperatives, such as **Berlin Citizen Energy, SoLocal Energy, Citizen Energy Cooperative Wolfhagen (BEG), Citizens' Initiative Energy Transition Gütersloh and *Bündnis BürgerEnergie e.V.*,** which are involved in the democratisation of the energy system.

In the graph (figure 19) we depict the exact placement of the cases on the Passive-Active scale. It is clearly visible that the majority of cases selected for mapping in Germany are located in the Active area of the scale.

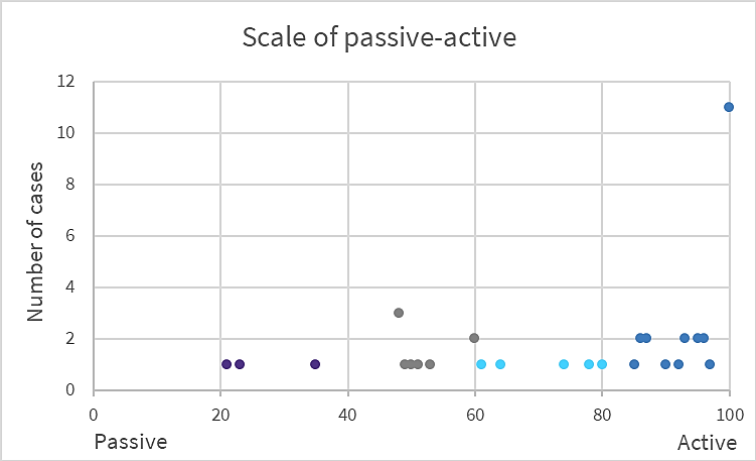

Figure 19: Placement of the cases in the passive-active scale

4.2 Private and public forms of energy citizenship

*Q50. In terms of the form of ENCI it shapes/enables/supports (or shaped/enabled/supported), considering the **private-public distinction**, please select which applies most to this particular case.*

In Germany, the **distribution of the cases mapped on the public-private scale is rather oriented toward the public larger scale which encompasses half of the cases**, whilst the public-smaller scale represents more than 16% of the cases. The third highest proportion (16.7%) involve "private – household level" cases. The other categories (private – individual level and private/public at organisations) can be considered as marginal, with less than 5% of the cases.

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Almost one-tenth of cases (9.5%, or 4 in total) is not classified using this category; the corresponding cases are listed as 'Other'. These three cases are not classified because they are simultaneously distinct in more than one area, like the **New mobility Experience in Schöneberg Nord Neighbourhood (*Kiez erFahren* in Schöneberg Nord)**, of which the latter is focused on activating the inhabitants of the district towards new and low-carbon forms of mobility and on fostering debate, discussion around the mobility alternatives. For this question, as shown above, it was not possible to select more than one response.

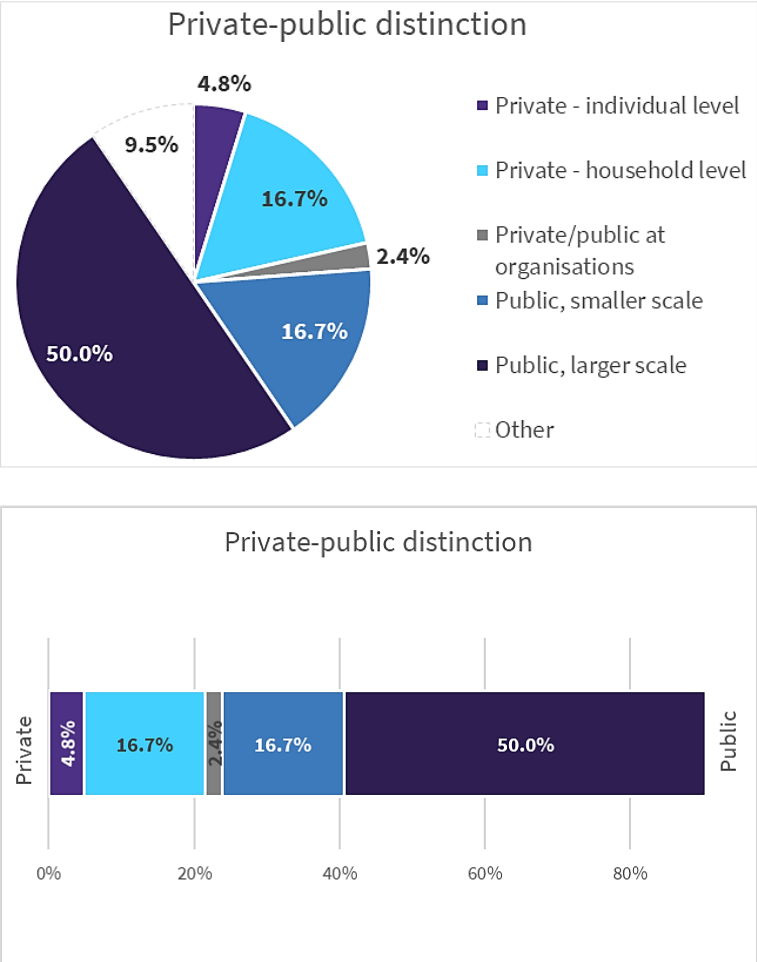

Figure 20: Distribution of the cases with regard to the private-public distinction

Private - individual level action and change means initiative that are directly targeting individual or that are initiated by single individuals. However, this category could hardly be distinguished from the private-household level in the mapping. Only two cases have been assigned to this category such as the **bewirk.sh** case, whose focus is very much on the individual citizen, but the goal is also to connect them and enable them to build networks.

Private - household level action and change means, for example, individual and household-level action, still in the home, including everyday life changes, as well as prosumerism and energy self-sufficiency, like the case of **Climate protection citizens 2.0 (*Klimaschutzbürger 2.0*)**, because its focus is to change the everyday life towards the adoption of a more sustainable lifestyle

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or that of **Hörmann's Hydrogen house**, obviously conceived for enhancing self-sufficiency of private households.

Private/public at organisations has only been chosen for one case, the **Futur 2 Festival**, for which the researcher underlined that this is hard to define, because individuals are motivated to lifestyle change on an individual and household level in regard to saving resources and the festival is generating attention for sustainability issues at a regional or even national level. Nevertheless, the main goal was to change the ways in which festivals are organised and try out new more sustainable approaches. This category cannot be analysed further for Germany.

Public, smaller scale means change and action at the local or regional scale, within housing project (Lavidaverde in Berlin, Möckernkiez cooperative, Women's housing and building cooperative in Messestadt München-Riem), local/regional associations (*SoLocal energy*) or local/regional cooperatives (*Weiler Mobil*, Windfang Women's Energy Community).

Public, larger scale means change and action at the regional level or even a larger scale, including the societal level (e.g. city-level public consultation, protests) like the emblematic case of the *EWS Schönau* that shapes forms of ENCI that range from the private individual level to the public larger scale and for which, considering the range of EWS activities, all categories should be marked, which undermines the significance of the distinction amongst the categories.

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4.3 Level of hybridity in the cases of energy citizenship

*Q52. In terms of the form of ENCI it shapes/enables/supports (or shaped/enabled/supported), please select the **appropriate level of hybridity** for the case…*

In Germany, the **majority of cases mapped, more than the half of them (52.4%), is classified as "low"** in terms of the level of hybridity. One-fourth (23.9%) of the cases is classified into the "no hybridity" category and a bit more than one-fifth (21.4%) into the "high" one. A very small percentage of cases were categorised as "medium hybridity" (2.4%).

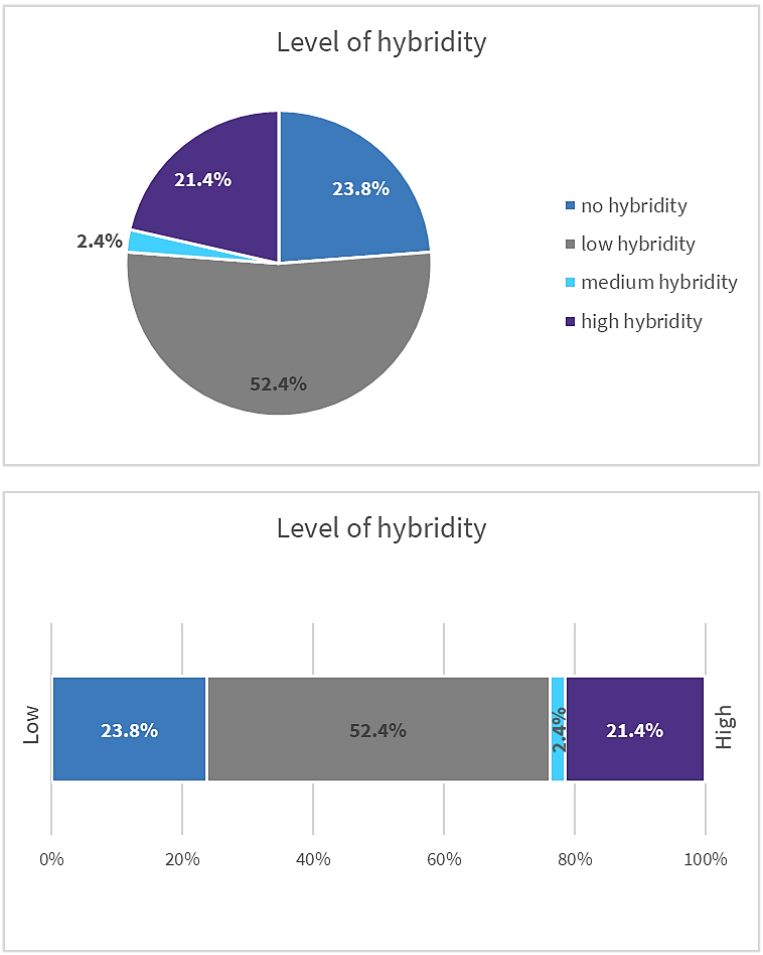

Figure 21: Distribution of the level of hybridity among the mapped cases

For this question, all cases were classified.

No hybridity means that only one type of actor is/was involved or represented in the case, which is worth for individual cases such as **Kurt Gramlich, Holger Laudeley** or the **Hörmann's Hydrogen house**, but also for collective cases: a social movement like **citizens' initiative NoMoorGas,** a company like ***Naturstrom AG***, or several cooperatives such as **Citizen Energy Cooperative Wolfhagen (BEG), Citizens' Initiative Energy Transition Gütersloh, Berlin Citizen Energy (BEB)** or the **Women's housing and building cooperative in Messestadt München-Riems.**

Low hybridity means that two or three types of actors and/or institutional logistics are involved or represented in the case. The low hybridity cases encompass various sorts of cases: social movements such as Federal Association of **Citizens' Initiatives against SuedLink** or ***Ende Gelände***,

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in which there are many actors involved but they are mainly of the same type (local climate action groups or organisations); cases in which the citizens are supported by institutional actors such as **Clear view in the energy transition (*Durchblick Energiewende*), "NRW fights energy poverty", Municipality Fuchstal, Futur 2 Festival, Energy-saving-check (*Stromsparcheck*), Climate protection citizens 2.0**; and lastly cooperative cases such as **Lavidaverde housing community in Berlin, *EnergieNetz Hamburg e.G.,* Windfang Women's Energy Community, *Weiler Mobil*, Schönau Power Utility (EWS)** or **Heidelberg Energy Cooperative** — amongst others —, which are mainly centred on their members but develop some close cooperation with a reduced number of other actors.

Medium hybridity means that four or five types of actors/institutional logistics are/were involved or represented in the case, as in the only case from this category in the German mapping, i.e. that of the **Citizens' dialogue on the power grid** where the federal ministry for affairs and energy is the initiator whilst the operator of the Citizens' Dialogue has been *WIBERA Wirtschaftsberatung AG WPG* since 1 January 2020 (and WIBERA belongs to PwC (Pricewaterhouse Cooper). Some NGOs are also involved in the process. And, of course, the citizens...

High hybridity means that more than five types of actors and/or institutional logistics are involved or represented in the case. This category encompasses mostly cases that take the form of a project/project consortium, as in the case of **Team X4S - Extension for Sustainability, RegHEE - *Regionaler Handel von Strom aus Erneuerbaren Energien***, or that of **SmartGridsBW** considering that since the very beginning, the association is composed of a high diversity of actors, therefore it has a high-level hybridity. Other sorts of highly hybrid cases consist in consultative process, such as **Citizens' Climate Assembly (*Bürgerrat Klima*)** or ***Beteiligungsprozess BEK 2030***, for which as an open participative process, it is highly probable that all kinds of actors will take part in it.

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4.4 Citizen power

Q54. In terms of the form of ENCI it shapes/enables/supports (or shaped/enabled/supported), considering ***effective citizen power/ control,*** *please select which applies most to this particular case.*

In Germany, the **large majority of the mapped cases, almost two-third (59.5%), is classified as "high"** in terms of the citizen power/control dimension of the typology. More than one-fifth (21.4%) of the cases is assigned the "medium" category, and a bit more than one-tenth (11.9%) into the "low" one. None of the German cases was considered as belonging to the "no effective citizen power".

Except the 7.1% of individual cases, all the cases could be classified according to the citizen power categories.

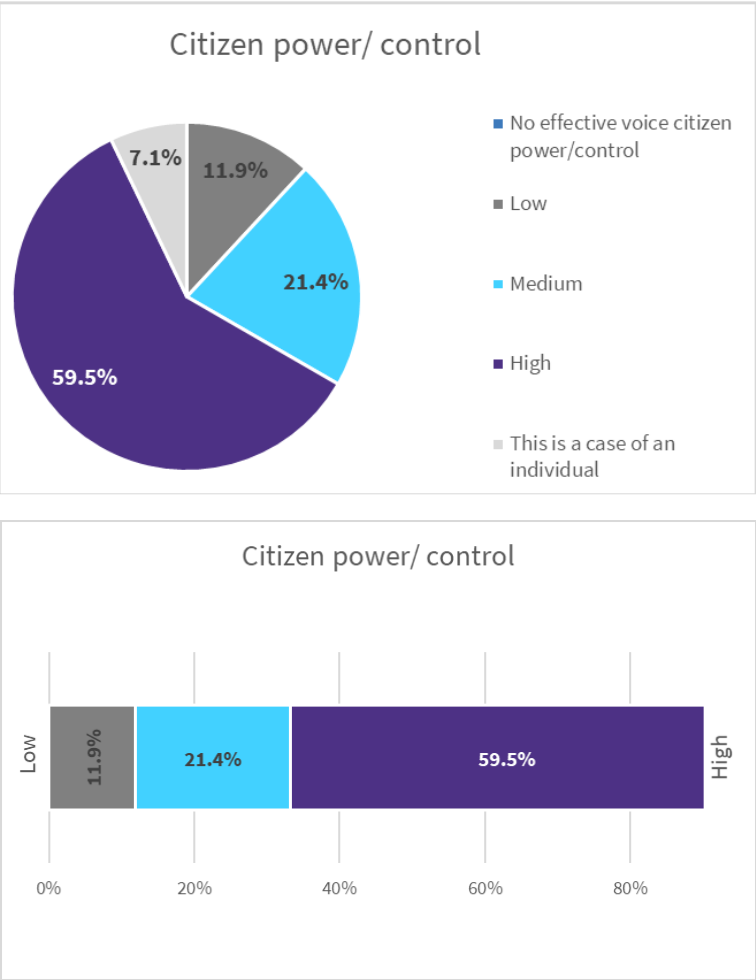

Figure 22: Distribution of citizen power/control among the cases

Low citizen power means that "When expressed (e.g., within "invited" deliberative processes), citizens' voices remain hardly heard or considered. Being in the minority, or considered this way, citizens' voices do not count, or in a voting process the framings tend to limit the possibility of expressing an opinion"[3], as in the case of consultative process such as the Participation process for the further development of the **Citizens' dialogue on the power grid or the Berlin Energy and Climate Protection Programme (BEK 2030)** — for which the two main phases of the public participation process are meant first to

[3] *D2.2. Conceptual typology of energy citizenship*.

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collect citizens views and second to take them into account. As underlined on the institutional website with regard to the first phase: "all citizens were able to participate in actively shaping the process of the BEK, formulate expectations of the process and wishes, and submit suggestions. The suggestions, ideas and measures received will be carefully examined by the expert consortium and, if suitable, will be incorporated into the new Berlin energy and climate protection programme or addressed to other responsibilities"[4].

Medium citizen power means that "Citizens can express their views, but their voices are not included on a compulsory basis (within deliberative, representative or consultative processes). Within organised / participative structures, citizens remain a minority group; i.e. are unable to impose their views on other groups", as it is in some projects for which the citizens participation is not clearly enunciated in the available documentation — such as in cases like **Team X4S - Extension for sustainability, Municipality Fuchstal, RegHEE, SmartGridsBW** or **Climate protection citizens 2.0** —, as well as in a consultative case like the **Citizens' Climate Assembly (*Bürgerrat Klima*)** seen as exemplary of a citizens assembly, in that the output are not compulsory or binding the policy makers. Therefore, its impact remains hard to assess.

High citizen power means that "Citizens exert effective control, and their votes are mandatory. This governance takes place mostly in an "invented" process (as opposed to "invited" ones described by Radtke et al., 2020). Citizens represent a majority group, are empowered enough to control the process, and thus make their voices predominant", as in the case of most of the social movements — e.g. ***Ende Gelände***, where citizens have a high level of control in the protest group, democratic decision making processes of the participants are a core part of the action groups— and in cooperative cases as well, such as **Citizen Energy Berlin (BEB)** of which focus is to place energy in the citizens hand and to allow a more democratic and sustainable management of the energy system by the citizens. The claim for the re-municipalisation of the berlin power grid is a key aspect of the case, along other claim toward increased empowered citizen involvement in the energy transition.

[4] Source: https://bb.mehr-demokratie.de/news/einzelansicht/jetzt-mitmachen-beteiligung-zur-weiterentwicklung-des-berliner-klimaschutzprogrammes

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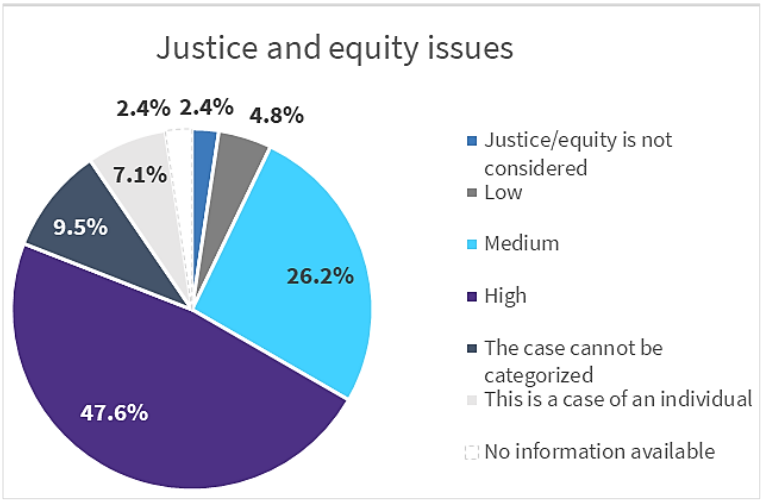
4.5 Justice and equity

*Q56. In terms of the form of ENCI it shapes/enables/supports (or shaped/enabled/supported), considering energy, mobility, or more holistic **justice and equity issues**, please select which applies most to this particular case.*



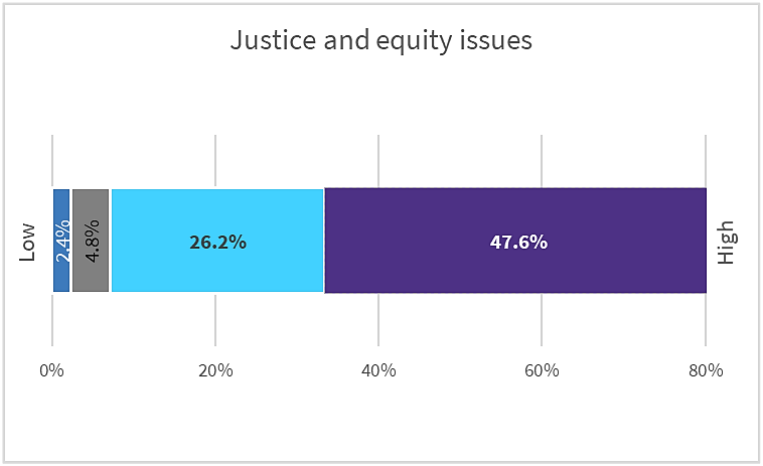


Figure 23: Distribution of justice and equity issues consideration among the cases

Regarding energy justice and equity issues, among the German cases there is an equal proportion of "high" and "medium" cases: the former represents almost the half of the cases (47.6%) whilst the latter represents more than one-fourth of the cases (26.2%). Less than 5% of the cases is classified into the "low" category, and only one case (2.4%) as "justice/equity not considered".

One-fifth of the cases (20.0%) is not classified by researchers. One-tenth of them (9.5%) is not categorised because of another considera-tions/issues and 7.1% deals with individual cases. The remaining small percentage (2.4%, 1 single case) is classified as "No information available", meaning that not enough information and data were available through desk research for the researcher to make an informed decision on this topic (e.g., the case of the **Hydrogen Citizens' Dialogue).**

Low was defined in the project as justice or equity are essentially out of scope, or restricted to equal access to markets" like in the cases of **RegHEE** because it is a case of a market, so the question of equity is not raised here.

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Medium means that equal access is granted to all concerned citizens, but the framings tend to limit them to a certain geographical area or amount of financial contribution, etc. which does not guarantee "real" equity, like in the market-oriented cases that are requiring a certain amount of money — such as *Naturstrom AG*, in which the people need to at least be able to afford the energy supplied by *Naturstrom AG*. The building of an own energy project in the form of solar panels or wind turbines requires specific financial resources as well — or for geographically limited cases such as the housing project Möckernkiez in Berlin where, in principle, equal access is granted to all citizens, but the number of flats in the Möckernkiez is limited and the involvement of citizens is determined by their being citizens in the neighbourhood or the Municipality Fuchstal, of which access is limited to the specific geographical area of Fuchstal in Bavaria and also to those who can buy the produced energy.

High means that involvement is fully open, without specific conditions of participation, and issues such as energy poverty, gender, and inclusivity are considered and foster adaptive measures aimed at guaranteeing more justice/equity like in the case of ***SoLocal Energy*** for which "energy transition is also and above all a social project. "Therefore, we want to use the potential of renewable citizen energy to make our contribution to reducing energy poverty in Kassel. To do this, we want to reach as many different people as possible. For a just energy transition, we need everyone on board, regardless of background and financial means[5]." *SoLocal Energy* offers therefore various options for membership (more or less active), and the fees are determined by the future members themselves according to their financial situation.

[5] Website from Solocal energy: https://www.solocal-energy.de/unsere-vision/

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4.6 Environmental sustainability, recognising carbon and other ecological limits

*Q58. In terms of form of ENCI it shapes/enables/supports (or shaped/enabled/supported), considering **environmental sustainability**, please select which applies most to this particular case*

*Q60. Does/did the case shape/enable/support ENCI that **explicitly recognises the ecological limit** of atmospheric carbon emissions…?*

*Q61. Are there **other ecological limits** (e.g. biodiversity loss, deforestation, freshwater use, chemical pollution, etc.) mentioned and recognised as well?"*

In Germany, among the cases mapped, there is an **equal proportion of "high" and medium cases** with regard to environmental sustainability. 38.1% of the cases is classified into the "medium" and high categories and less than one-tenth (95%) into the "low" one.

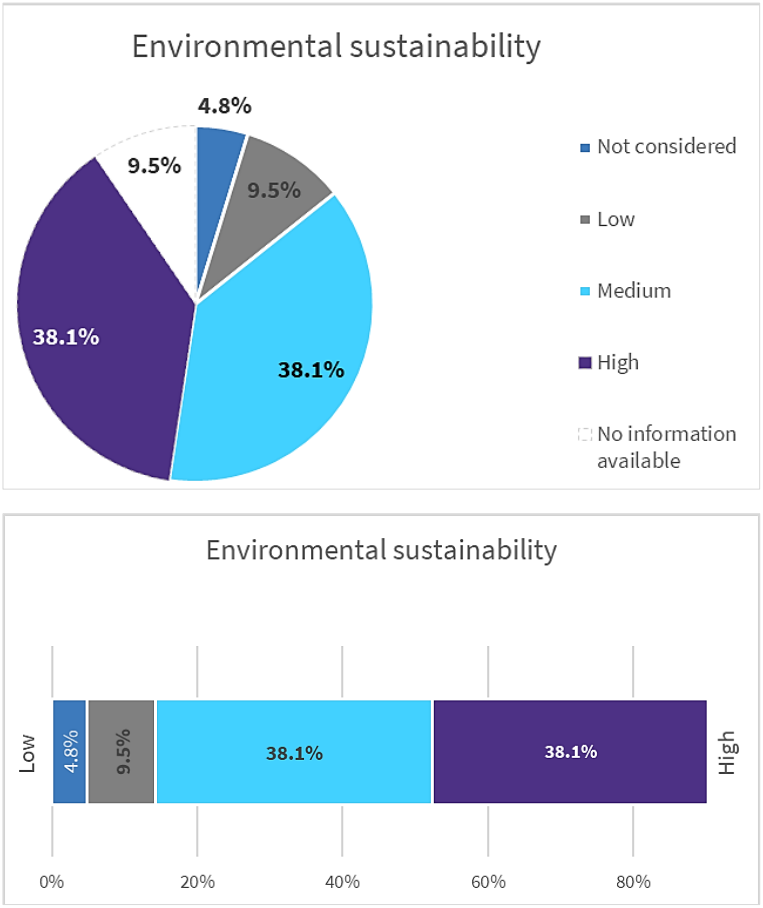

Figure 24: Distribution of the cases with regard to environmental sustainability

15% of the cases could not be classified in this category: 5% for which environmental sustainability is not considered and 9.5% for which no information was available on the basis of a desktop research. The corresponding cases are simply not evoking environmental sustainability and tend to focus solely on energy issues, such as ***Weiler Mobil***, the **Local heating network in Unterspiesheim** or the **Participation process for the further development of the Berlin Energy and Climate Protection Programme (BEK 2030)**.

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Low here means that "if given any consideration, environmental sustainability issues are mostly taken for granted and not explicitly taken into account; in the lowest forms, environmental sustainability tends to be dealt with as a positive or negative externality[6]" like in the market-and-technology oriented cases of **RegHEE - *Regionaler Handel von Strom aus erneuerbaren Energien*** and ***SmartGridsBW*,** for which the contribution to the energy transition and to a CO_2 free energy system is taken for granted but not investigated in depth within the association, even in the smart grid roadmaps. It is also the case for ***Stromspar-Check***, in which the climate issues are encompassed or taken for granted in the energy savings supported by the case.

Medium means that "environmental sustainability is part of the process or initiative, but this concern is addressed superficially and without dedicated assessment, and energy remains the main focus[7]" like in many of the cooperative cases mapped in Germany, such as the **Windfang Women's energy cooperative** where environment sustainability is given a key importance, yet energy remain the main focus, whilst only some information about the avoided CO_2 emissions is provided. More institutional-driven cases were also considered as medium, such as **New mobility Experience in Schöneberg Nord Neighbourhood,** in which low carbon mobility and alternatives to the use of personal cars was the focus of the project, and in that respect, environmental sustainability and climate are at the core of it. However, no assessment seems to be available in terms of avoided CO_2 emissions for instance.

High was defined as "environmental sustainability is a core issue, which is associated with a holistic strategy, and its assessment through indicators is seen as desirable[8]" like in the case of some emblematic energy cooperatives such as the **Heidelberg Energy Cooperative**, of which annual reports provide several details, especially the avoided CO_2 emissions. E.g., in 2020: "The amount of electricity generated in 2020... - can supply around 1,300 people. - saves 520 tonnes of CO_2 compared to the compared to the German electricity mix. It takes more than 40,000 trees to produce this amount of CO_2 — saves 850 tonnes of CO_2 compared to coal-fired electricity"[9]. Environmental sustainability is given a specific attention in this cooperative because the main objective of the case

[6] *D2.2. Conceptual typology of energy citizenship, op. cit.*
[7] *Ibid.*
[8] *Ibid.*
[9] Heidelberger Energiegenossenschaft. 2021. Geschäftsjahr 2020: Präsentation zur Generalversammlung am 22. Juni 2021: https://heidelberger-energiegenossenschaft.de/images/docs/Geschaeftsbericht_2020.pdf

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is to increase awareness about the carbon footprint of various activities, lifestyles, events, etc., and to strongly encourage reducing it and taking responsibility for it.

Related to environmenttal sustainability, we also investigated the cases' approach to recognising and acting related to the ecological limit of atmospheric carbon emissions. In regard to this question, **only a bit more than one-tenth of the cases (11.9%) is classified as "explicit recognition with mention"**. A bit less than one-fourth (23.8%) of the cases is classified into the "explicit recognition" category, a bit more than one-fourth (26.2%) of them into the "implicit recognition" and a bit more than one-fifth (21.4%) of them in the "no recognition" one.

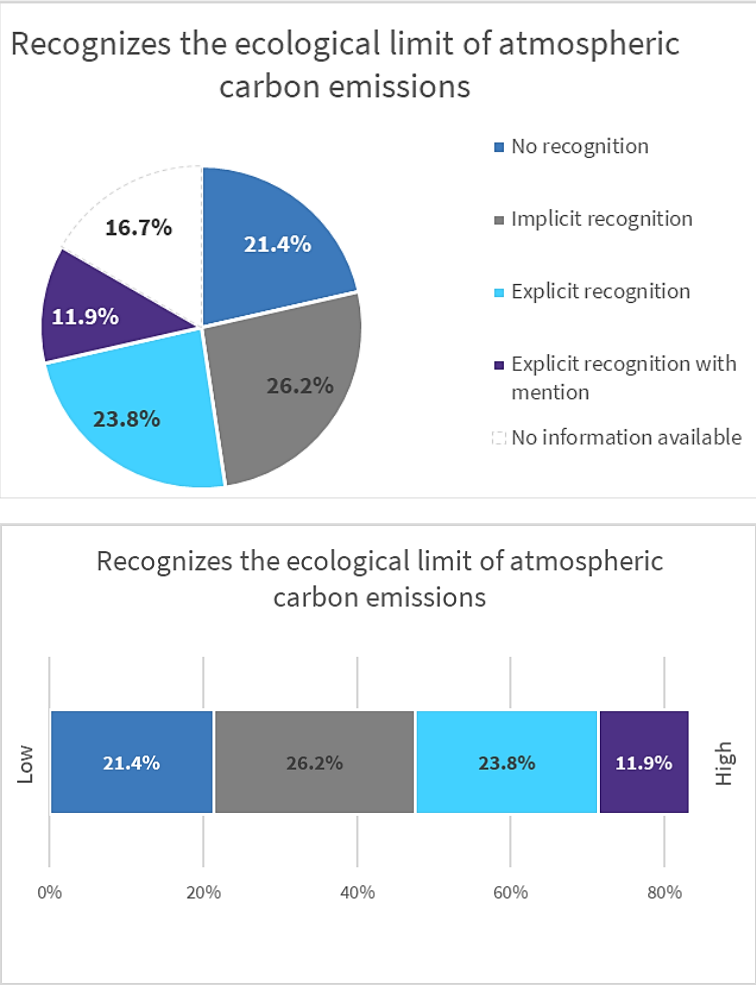

Figure 25: Distribution of the recognition of the ecological limit of atmospheric carbon emissions among the cases

A significant proportion (16.7%) of cases is not classified in this category: as there was no way to make an informed decision about classification, these are listed as "No information available".

No recognition is understood to mean that "there is no mention of carbon limit or sustainable carbon footprint". This category encompasses a very large variety of cases and no pattern can be identified there.

Implicit recognition means that there is "No explicit mention of the ecological limit of atmospheric carbon emis-sions or sustainable carbon footprint, but despite the lack of formal references to either of them, the case is involved in activities aimed at reducing consumption and/or

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the emission of carbon". Here again, no specific pattern could be identified since the category encompasses very heterogeneous sorts of cases.

Explicit recognition is defined as meaning that "the ecological limit of atmospheric carbon emissions or sustainable carbon footprint is mentioned in core documents and the actors involved in the case are engaged in attempts to reduce consumption and/or emission of carbon", like in some highly engaged cooperatives such as **Heidelberg Energy Cooperative, Citizens' Initiative Energy Transition Gütersloh, *Weiler Mobil*, Windfang Women's Energy Community** or **Lavidaverde housing project in Berlin.** For the last one g a research team monitored all the parameters for more than a year. Individual cases of rather prominent personalities are also encompassed in this category, such as **Kurt Gramlich** or **Holger Laudeley.**

Explicit recognition with mention means that, in addition to mentioning the ecological limit of atmospheric carbon emissions or sustainable carbon footprint, the maximum sustainable carbon footprint and/or emissions are also defined in associated documents. This category encompasses a large variety of cases as well, and notably emblematic energy cooperatives such as ***EWS Schönau***, real-life experiments such as **Climate protection citizens 2.0**, individual sociotechnical innova-tive cases such as **Hörmann's Hydrogen house**, companies like ***Naturstrom AG*** or social movements such as ***Ende Gelände***.

Less than 15% of the German cases (14.3%) mentions and recognises other ecological limits as well, while a majority (52.4%) of them does not, and a third of them (14.3%) is not classified according to this category: those cases are listed as "No information available" for making an informed judgement.

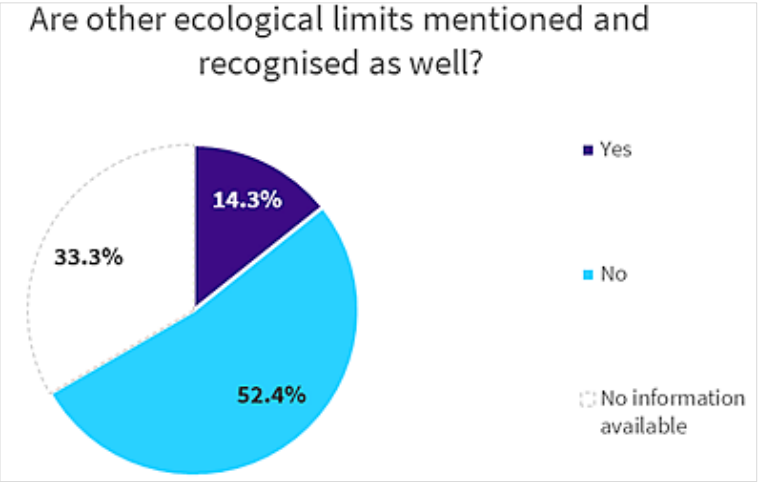

Figure 26: Recognition of other ecological limits among the cases

The cases that are recognising other ecological limits are limited to 6 cases, of very heterogeneous sorts and concerns. A company like ***Naturstrom AG*** underlines for example

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"environment related issues such as the need to change food production and consumption or to increase the efforts for recycling[10]." A social movement such as ***Ende Gelände*** addresses the CO_2 emission limits and the global destruction of nature. A housing project such as **Lavidaverde** aims at reaching more sustainable lifestyles through the use of rainwater for the shared washing machines, grey water for toilet flushing, among other aspects of their resource saving way of life (shared spaces). Lastly, in the individual case of **Kurt Gramlich**, this environmental activist has been recording the fine dust pollution in the air at his house since the end of 2018.

[10] Naturstrom AG. 2020. Nachhaltigkeitsbericht der NATURSTROM AG Berichtszeitraum 2019–2020: https://www.naturstrom.de/Ueber_Uns/Die_NATURSTROM_AG/Nachhaltigkeit/naturstrom_ueberuns_naturstrom_ag_nachhaltigkeitsbericht.pdf

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4.7 Frontrunners, early adopters and laggards

*Q63-Q64. In terms of the form of ENCI it shapes/enables/supports (or shaped/enabled/supported), considering the **laggard - frontrunner distinction**, please select which applies most to this particular case – national and European level context.*

As indicated by the question above, the issue of frontrunners and laggards was investigated at both the national and European levels as the assumption was made that some cases, although frontrunners in their national context, may be considered early or even late adopters, etc. when evaluated at the European level.

At the national level, the **majority of the German cases (71.4%) was classified as "frontrunners",** and a bit less than one-fourth of them (23.8%) as "early adopters" and a bit less than 5% (4.8%) as early majority. None of the cases was considered as "late majority" or "laggard/late adopter". Related to this question, all cases were classified so there were no "No information available" or similar responses by case researchers.

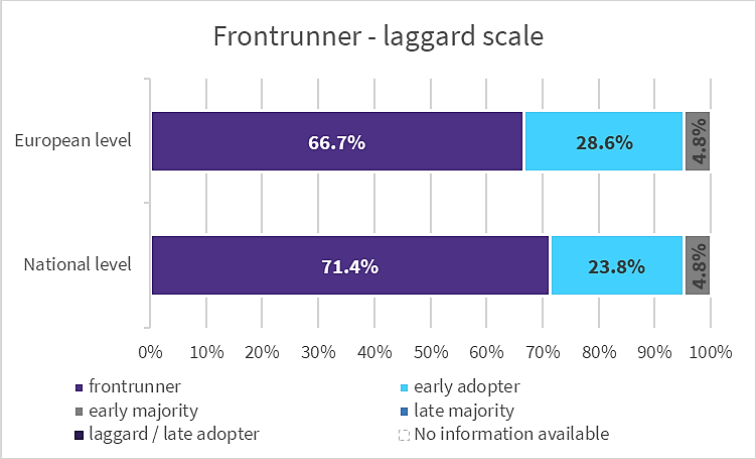

Figure 27: Distribution of the cases on the frontrunner-laggard scale

At the European level, the distribution remains quite similar: **around 5% of the cases switched from the frontrunner (66.7%) to the early adopter (28.6%) category** whilst the early majority cases remain the same (4.8%). The rest of the distribution remains the same as well, since none of the cases was categorised as "late majority", "laggard/late adopter" or "No information available".

Frontrunner means that the case "unleashes the change process, starts the innovation, whether technological or social, and takes it through the first difficult stage, i.e. pioneers

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trendsetters, those who wish to lead and/or have the resources to lead the change process"[11]. Frontrunner examples of cases that were classified as such at both the national and European level (altogether 27 cases) are of various sorts. The Frontrunner category includes for instance social movements such as ***Ende Gelände*** or the **Federal Association of Citizens' Initiatives against SuedLink**, the latter being considered as a frontrunner because it represents a rather new form of protest against the current mainstream views of energy transition, by claiming for a more decentralised and democratic energy system. The category also includes pioneer cooperatives such as the **Citizen Energy Cooperative Wolfhagen (BEG)** — considering the large social movement that locally grounded the cooperative, and also because the cooperative owns 25% of the share of the municipal utility —, the women energy cooperative created in 1992, **Windfang Women's Energy Community**, or an exemplary initiative at the international level such as **Schönau Power Utility (EWS).** The frontrunner category also encompasses highly innovative individual cases such as **Holger Laudeley** who was called in some media the "photovoltaic pope", the 100% autarch **Hörmann's Hydrogen house** or the private individuals who initiated their own local heat network in the **Local heating network in Unterspiesheim** case. Local associative cases such as ***SoLocal Energy*** are also part of this category, in that it developed a rather innovative community based on the DIY principles towards the democratisation of solar energy with balcony panels, neighbourhood projects, etc. Artistic cases are also part of this category with cases such as **Performance Electrics (*Kunststrom*)** or **Futur 2 Festival** — a very unique case in its continuous consideration of sustainability in organising the festival, not only in regard to energy production and consumption.

Early adopters are defined as "opinion leaders who become enthusiastic about new products/ways of doing things/solutions, etc., share their benefits with others and adopt first"[12]. Various sorts of cases have been classified within this category at the national level, such as the ***Naturstrom AG*** — one of the first independent green energy providers on the German electricity market and one of the first to offer power exclusively from renewable energies, or the **Möckernkiez cooperative** housing project in Berlin, one if the first of its kind in Berlin, yet not a unique case. Among the early adopters at the national level, one case is particularly salient, since it was categorised as a frontrunner also at the EU level, bewirk.sh. Similar initiatives can be found at the

[11] *D2.1 Conceptual framework of energy citizenship.*
[12] *Ibid.*

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national level, but the case seems to be to be more innovative at the European level, since it adopts a wider focus compared to similar websites that do exist the EU level.

Early majority means “early adoption, but deliberate, less venturesome and independent than earlier adopters”. This category encompasses only two cases: **Clear view in the energy transition** (***Durchblick Energiewende***), in which individuals who can be considered as the early majority are targeted because it is aimed at 'the ordinary citizen' who is generally interested in doing something for the energy transition but is lacking information for doing so; and the **Participation process for the further development of the Berlin Energy and Climate Protection Programme (BEK 2030)** as a public consultation that tends to belong to the early majority both at the national and EU level.

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4.8 Pragmatic and transformative change

*Q66. In terms of the form of ENCI it shapes/enables/supports (or shaped/enabled/supported), please place the case on a **scale of pragmatic - transformative change**, by moving the slider.*

For this question, responses were collected from case researchers on a scale of 1 to 100, and for the analysis were divided into the following five categories: 1-20 very pragmatic, 21-40 pragmatic, 41-60 moderately transformative, 61-80 transformative, and 81-100 very transformative. A case is understood to be **more pragmatic if it mainly operates using pragmatic involvement,** which often refers to involvement within "concrete projects" or activities, and is often characterised by a preoccupation with technology and efficiency. A case is defined as **more transformative if it is more about transformative involvement,** embraces broader energy transition goals and climate change, and is concerned with and focuses on energy democracy and/or sufficiency.

Using the scale of pragmatic-transformative change, **half of the cases (50%) was classified as "very transformative".** One-tenth of the cases was classified as "transformative" and one-fifth (21.4%) of cases was classified as "moderately transformative". Less than one-fifth of the cases is classified on the pragmatic side, with a bit less than one-tenth (9.5% each) into the "pragmatic" and "very pragmatic" categories. For this question, all cases were classified.

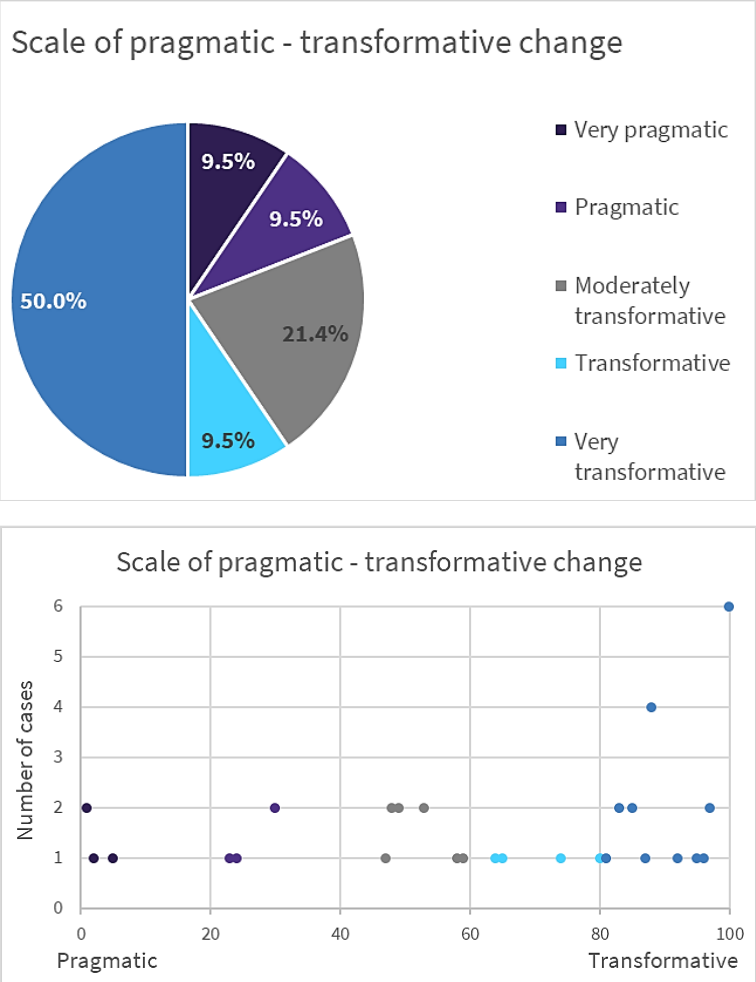

Figure 28: Distribution of the cases according to the pragmatic-transformative change scale

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The **very pragmatic** category entails four cases, which aim at addressing energy poverty issues: **NRW fights energy poverty** and **Energy-saving-check (*Stromspar-Check*)**, which does not really focus on empowerment and citizen-control, but mostly on enhancing the capabilities of the less wealthy to cope with the existing energy system.

The **pragmatic** category includes four cases, and notably some exploratory/research cases such as Team X4S - Extension for Sustainability or RegHEE, in which some system-contesting aspects are part of the process, yet not really appropriated by citizens or considered as a full part of their involvement. Contestation of the system remains "idealistic" or even "utopic", and is not really meant to come into being.

The **moderately transformative** category proves somehow problematic in that it includes cases such as ***Weiler Mobil***, whose focus as delimited by the research is the mobility, so that the case is rather transformative but not to a high extent. However, by considering its integration in the whole range of activities of the cooperative it could be considered as a rather transformative case. Other cases, such as ***SmartgridsBW*** are still problematic, yet fitting to the pragmatic categorisation, since it is technology-oriented and focuses on concrete projects. However, it tends also to be somehow transformative in that it aims at renewing the energy system and especially by supporting energy cooperatives and their further involvement in the energy system.

The **transformative** category includes some original cases such as ***Frauen. Energie. Wende!* (FEW)**, which supports a rather transformative ENCI since it is focusing on gender, democracy and justice aspects; or a case like **Performance Electrics**, an initiative that incorporates very transformative ideas that envisage a different kind of energy production system that is renewable and incorporates art. However, it still lacks a more holistic perspective that considers mobility for example as well as equal participation in energy production and consumption.

The **very transformative** category includes 18 cases of various sorts that are highly engaged or even activist cases, such as ***bewirk.sh***, an initiative whose goal is holistic and transformative since citizens are motivated to actively engage in climate action and furthering the energy transition. The initiative has a very holistic view on climate action and addresses energy transition, mobility, food, consumption and other relevant aspects. Citizens are educated and enabled to act. This category also includes social movements like ***Ende Gelände***, which is focused on broader change in the energy system away from fossil fuels and less unequal in global terms. The protests have the clear goal to protest against the current dominant system of energy production with its reliance on fossil fuels.

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During camps and protests, a holistic view of sustainability is visible with the way mobility, food supply and other themes such as racism are considered. Pioneer cooperatives such as **Schönau Power Utility (EWS)** or ***EnergieNetz Hamburg e.G.*** are also part of this category, because "the form of ENCI supported by the ENH cooperative is definitely on the transformative side, since the goals of the cooperative are to put the energy system in the citizens' hand, and to enhance energy democracy and all aspects of energy transition.

For this question, responses were collected from case researchers on a scale of 1 to 100, and for the analysis were divided into the following five categories: 1-20 very pragmatic, 21-40 pragmatic, 41-60 moderately transformative, 61-80 transformative, and 81-100 very transformative. A case is understood to be **more pragmatic if it mainly operates using pragmatic involvement,** which often refers to involvement within "concrete projects" or activities, and is often characterised by a preoccupation with technology and efficiency. A case is defined as **more transformative if it is more about transformative involvement,** embraces broader energy transition goals and climate change, and is concerned with and focuses on energy democracy and/or sufficiency.

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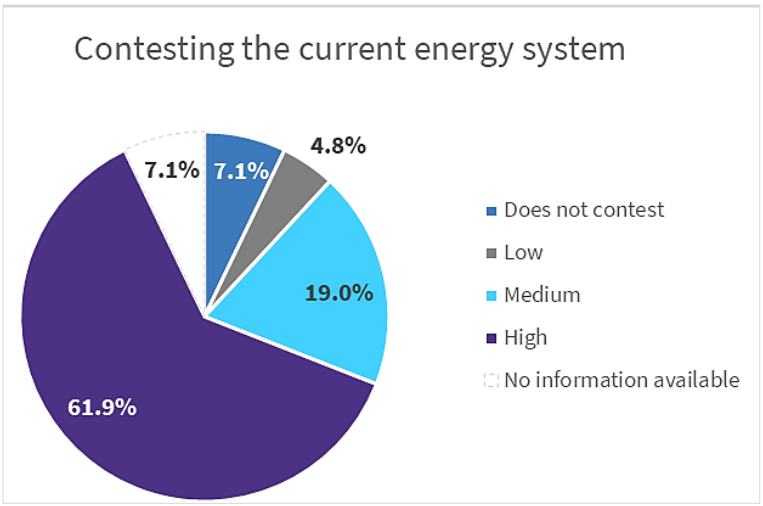
4.9 Contesting the current energy system

*Q68. In terms of the form of ENCI it shapes/enables/supports (or shaped/enabled/supported), please select which applies most to this particular case in terms of **contesting the current energy system**?*

Of the German cases that were mapped, a large majority (61.9%) was classified as "high" and a bit less than a one-fifth (19.0%) as "medium" in terms of at which level they contest the current energy system. Less than 5% (4.8%) was classified into the "low" category, and a bit less than 15% (7.1% each) as not contesting the energy system or unknown since no information was available in relation to this question.



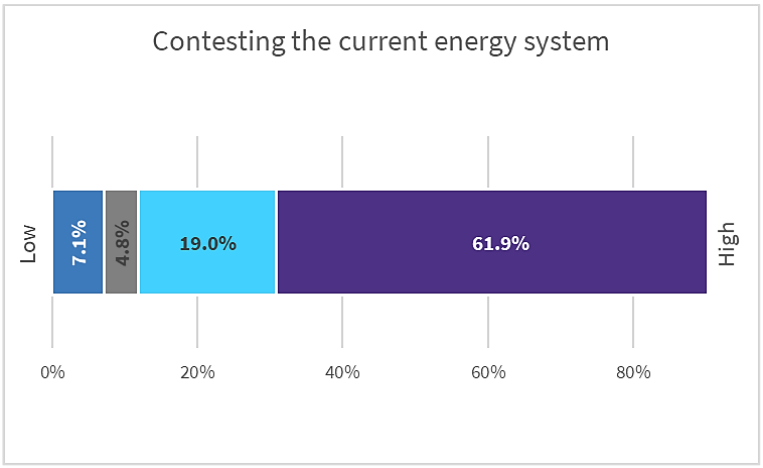


Figure 29: Distribution of the cases with regard to contesting the current energy system

There are some cases, like **NRW fights energy poverty, Women's housing and building cooperative in Messestadt München-Riem** or the **Citizens' dialogue on the power grid,** which **do not contest** the current energy system. In the first case, this is notably because several energy suppliers are involved within it. The second case contributes to the energy transition with solar thermal and photovoltaic, but does not contest the energy system in itself. The third case aims at making the new power lines acceptable by the citizens. In that respect, it is undoubtedly more confirming the current energy system, by planning evolutions that remain in line with the existing status.

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Low in terms of contesting the current system means that citizen involvement/action is essentially system-confirming, which means that citizens generally go along with the basic structures of the existing system, like in the case of **Energy-saving-check** (***Stromsparcheck***) because this is basically system-confirming, though it criticises the emerging and growing energy poverty.

Medium means that some system-contesting aspects are part of the process, yet are not appropriated by citizens or considered a full part of their involvement like in the case of technology-oriented cases such as ***RegHEE*** or ***SmartGridsBW***, since its renewal of the energy system cannot be considered as fully empowering and democratic. The medium category also encompasses top-down institutional cases such as **Municipality Fuchstal**, since there are system contesting aspects when considering the production of renewable energy but there is no democratic involvement of citizens, or that of the **Citizens' Climate Assembly** (***Bürgerrat Klima***), in which some idealistic propositions were made and the general objectives decided by the citizens' assembly were quite idealistic as well. Yet, when concretely discussed, most of the outputs tend to go back to the reformative side.

High means that citizens are committed to deeply renewing and restructuring the system toward a more democratic and sustainable one; additionally, narratives, action, and proposals are part of the contestation of the dominant system, resulting in critique and protest against dominant energy or mobility policies, or support for more holistic sustainability policies and action, as well as forms of engagement that aim at making fundamental change (e.g., achieving autonomy). This category encompasses various sorts of activist, innovative and pioneer cases in which the citizens exert a pivotal role, such as in the social movements like ***Ende Gelände*** or **citizens' initiative NoMoorGas**, in the cooperatives **Lavidaverde** housing project and **Berlin Citizen Energy (BEB), Citizen Energy Cooperative Wolfhagen (BEG), Schönau Power Utility (EWS), Citizens' Initiative Energy Transition Gütersloh, Heidelberg Energy Cooperative, *EnergieNetz Hamburg* Cooperative**, etc. in which putting the energy transition in citizens' hand is a core goal, mostly accompanied with particular social and/or gender concerns.

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Annex: List of the German cases

Title of the case in English *(original)*	**Brief overview**	**Webpage / Facebook**
100 Percent Renewable Energy Foundation (*100 Prozent Erneuerbare Energie Stiftung*)	The 100% RE Foundation aims at supporting the development of energy citizenship in German. The way the Foundation describes itself is pretty clear: "Shaping the energy transition according to the citizens' needs is essential for our work at the 100 Prozent Erneuerbare Energie Stiftung. What we know: The citizens in Germany want the energy transition. What we don't know: What role can, want and should they play? Will they shape the energy transition? Will they remain supply cases without major changes because „The power comes from the socket?" Do they have to accept everything that the legislator and companies are planning? We must assume that all of these three options describe very much possible and probable roles. Though it's anything but arbitrary who – especially how many people – play which role. It's crucial for the success of the energy transition that the people act a part they feel comfortable in. Anyone who doesn't want to shape the transition can remain in the classic role of a consumer. But what about those that are affected but are forced into this role? And what about the people that don't want to be a supply case but a designer for the energy transition but can't just do that? In short: Our central question is „What do the people gain from the energy transition?" The 100 Prozent Erneuerbare Energie stiftung works out answers in their projects and cooperations."	100-prozent-erneuerbar.de/; facebook.com/100Prozenterneuerbar
Berlin Citizen Energy (*BürgerEnergie Berlin — BEB*)	BEB - BürgerEnergie Berlin eG - is a cooperative that brings together citizens to work together for a sustainable, climate-friendly and citizen-owned energy system in Berlin. It is a free, cross-party association of citizens.	buerger-energie-berlin.de/; facebook.com/buergerenergieberlin
bewirk.sh (*bewirk.sh*)	bewirk.sh is an initiative that does educational work regarding the global climate change and possibilities for individual action. The focus is on the individual with their responsibility for living together on earth sustainably. The goal of the initiative is to motivate and enable the individual to be part of a lived democracy and a society with citizens who are active in their community, their city district or their neighborhood and take action together for the energy transition and protecting the climate.	bewirk.sh; facebook.com/bewirk.sh/

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Title of the case in English *(original)*	**Brief overview**	**Webpage / Facebook**
Citizen Energy Cooperative Wolfhagen (BEG) (*BürgerEnergieGenossenschaft Wolfhagen eG — BEG*)	Local renewable energy utility with public-community co-ownership (Germany). The citizen cooperative Wolfhagen (eG) holds 25% shares in Stadtwerke Wolfhagen GmbH. In addition to participating in the municipal utilities, own projects are also implemented. Part of the proceeds goes to the members as dividends - the other part goes to the cooperative's energy saving fund. From this, the Energy Advisory Board develops targeted funding offers to increase the members' energy efficiency. All members of the cooperative can thus reduce their energy requirements, save money in the long term and protect the environment.	beg-wolfhagen.de/
CitizenEnergy Alliance (*Bündnis BürgerEnergie e.V.*)	Association of energy cooperatives, to promote citizen participation in energy transition. Emphasis put on co-owning, voting-rights (democratic aspect) and values (participation, initiative, self-help, self-responsibility and self-management) conveyed by cooperatives. Engaged in advancing the citizen participation in energy transition by looking for future options (energy share, hydrogen, coupling, etc.). Political engagement stands also for a core value of the network, claiming for a real "green power" energy, i.e. sustainable, ecological and citizen-supported energy supply.	buendnis-buergerenergie.de/; facebook.com/buendnis.buergerenergie
Citizens' dialogue on the power grid (Bürgerdialog Stromnetz)	The Citizens' Dialogue on the Power Grid stands for an open and transparent exchange on the complex issues of the energy transition and the expansion of the electricity grid in Germany. To this end, the internet site provides information as a neutral body and offer a wide range of information and dialogue opportunities. The purpose is then to conduct a broad-based dialogue on grid expansion as part of the energy transition.	buergerdialog-stromnetz.de/
Citizens' Initiative Energy Transition Gütersloh (*Bürgerinitiative Energiewende Gütersloh*)	The citizens' initiative Energiewende Gütersloh is working towards a rapid nuclear phase-out. They stand for a local implementation of CO_2 reduction, want to support the conversion of the energy supply to renewable sources and build a decentralized, democratic energy supply. To do so, they have developed multifaceted ideas for action and aim at fostering active engagement of citizens to help shape the energy transition.	energiewende-guetersloh.de/
Citizens' initiative NoMoorGas (*Bürgerinitiative NoMoorGas*)	NoMooreGas is a citizens' initiative founded in 2018 that is protesting against fracking in the region Unterweser in Lower Saxony. They are doing PR work, organising protests and bus tours to drilling sites and conveyor systems.	nomoorgas.de; facebook.com/NoMoorGas/

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Title of the case in English *(original)*	**Brief overview**	**Webpage / Facebook**
Citizens' Climate Assembly (*Bürgerrat Klima*)	The Citizens' Climate Assembly aims to craft a path toward a climate-friendly way of living and doing business. In a non-partisan and open space, the citizens discuss how the climate goals of the Paris Agreement can be reached ecologically (sustainable for the environment), economically (good for our economy) and socially (fair for all). After all, effective climate protection only works if everyone participates! At the end of the Citizens' Assembly, the participants will all vote on the recommendations, which will then be summarized in a Citizens' Report. After the federal elections, this Citizens' Report will be handed over to the parties in the German Bundestag. This way, the recommendations can be taken into account in the upcoming coalition negotiations. The Citizens' Climate Assembly is the third nationwide citizens' assembly in Germany. This has resulted in the four areas of action in which recommendations for climate protection measures are being developed: Transportation, Buildings and heat, Energy production, Food	buergerrat-klima.de/; facebook.com/BuergerratKlima
clear view in the energy transition (*Durchblick Energiewende*)	The project was initiated by the consumer centre Schleswig-Holstein (Verbraucherzentrale Schleswig-Holstein e.V. (VZSH), it provides assistance to understand the options for action and decision making for consumers in regarding the energy transition. The initial focus is on heating networks, local solar energy projects and digitization of the energy supply.	durchblick-energiewende.de
Climate protection citizens 2.0 (*Klimaschutzbürger 2.0*)	In the project "Climate Protection Citizen 2.0", households were sought for a real-life experiment in which sustainable behaviours could be tried out. 18 households from 12 municipalities in the Steinfurt district took part and managed to reduce their ecological footprint by an average of 10 percent. Together with experts, the participants developed measures for climate-friendly behaviour in the areas of nutrition & consumption, mobility and energy saving & living with great events such as a climate cooking course or fuel-saving driving training.	
Ende Gelände (*Ende Gelände*)	Ende Gelände is a broad alliance of people from the anti-nuclear and anti-coal movements, the Rhineland and Lausitz climate camps and the Hambacher Forest anti-coal campaign. They consist of leftist grassroots climate action groups, large environmental organizations, left political groups and other campaigns, groups and networks. The movement is using civil disobedience as a signal for action "to put our climate before profit".	ende-gelaende.org/en/; facebook.com/BaggerStoppen/

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Title of the case in English *(original)*	**Brief overview**	**Webpage / Facebook**
Energie Netz Hamburg Cooperative (*EnergieNetz Hamburg e.G.*)	The initiative to buy back the energy grids was the birth of EnergieNetz Hamburg. Together with other organisations, they pushed for the referendum in September 2013 - and won with the votes of over 400,000 Hamburg residents. Today, the electricity, gas and district heating networks once again belong 100 % to the Free and Hanseatic City of Hamburg. An important part of the regional energy infrastructure is now subject to the common good and democratic control. With the support of their members, they are fighting for the restructuring of the grids and energy generation in Hamburg. Their goal is a climate-friendly, decentralised and social energy supply for all. The energy cooperative claims for the urban heat transition, photovoltaics and tenant electricity for all. As a citizen's energy cooperative, they have realised many projects since 2015 to advance the energy transition in Hamburg in a concrete and practical way. These include heat supply systems for entire neighbourhoods as well as many rooftops photovoltaic projects in all conceivable operating models, e.g. also for the supply of tenant electricity or direct electricity in and around Hamburg.	energienetz-hamburg.de/; facebook.com/Energienetz.Hamburg
Energyland2050 Association (*Energieland2050 e. V.*)	Energieland2050 e.V. was founded in April 2017 and is based in the Office for Climate Protection and Sustainability of the district of Steinfurt. As an association of 133 representatives from politics, business, science, civil society and the 24 towns and municipalities belonging to the district, it supports the district of Steinfurt in achieving its major goal. Steinfurt with its major goal: To become energy-independent by 2050 - or sooner. It promotes civic engagement, regional value creation and public discourse on social responsibility and sustainable about social responsibility and sustainable and climate-friendly life.	energieland2050-dialog.de/; facebook.com/energieland2050/
Energy-saving-check (*Stromspar-Check*)	Advices for people suffering from energy poverty (Hartz IV, Arbeitslosen, social aids beneficiaries, etc.) to make a more efficient use of energy, free emergency aids such as energy-saving and LED lamps, switchable socket strips, TV standby switches, timers and aerators for taps (more on this here). The emergency aids are also installed immediately. Aid to equip households with buying less-consuming appliances (100€ check or more). Has recently developed an application steckys-spartipps.de	stromspar-check.de/; facebook.com/stromsparcheck

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Title of the case in English *(original)*	**Brief overview**	**Webpage / Facebook**
Federal Association of Citizens' Initiatives against SuedLink (*Bundesverband der Bürgerinitiativen gegen SuedLink*)	The Federal Association of Citizens 'Initiatives against SuedLink is the transnational association of citizens' initiatives that was founded primarily in protest against the planned direct current lines in Germany. The primary goal of the federal association is the nationwide networking of citizens' initiatives with one another in order to give the protest against SuedLink a strong voice. They advocate decentralized and citizen-friendly energy planning and energy policy as a viable alternative to the planned electricity highways and call on politicians to rethink.	bundesverband-gegen-suedlink.de
Futur 2 Festival (*Futur 2 Festival*)	The Futur 2 Festival is a music festival in Hamburg that took place in 2018 and 2019 free of charge and outside. It is viewing itself as a place for testing out sustainable solutions for open air events. There is a big focus on recycling and resources should mainly be produced on site, for example producing electricity with the help of festival visitors riding bikes.	futur2festival.de; facebook.com/futur2festivalhh/
Heidelberg Energy Cooperative (*Heidelberger Energiegenossenschaft*)	The Heidelberg Energy Cooperative - HEG for short - has the goal of effectively countering the climate crisis and offering the young generation a perspective on a future worth living. That is why they are doing their part to build an independent and sustainable energy supply - and everyone can join in. As a cooperative, they are oriented towards the common good and sustainable management and act in such a way that there is a long-term benefit for all. Their project has been for long focused on solar power, but it includes now e-mobility and key issues such as tenant prosuming.	heidelberger-energiegenossenschaft.de/; facebook.com/HeidelbergerEnergiegenossenschaft/

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Title of the case in English *(original)*	**Brief overview**	**Webpage / Facebook**
Holger Laudeley (*Holger Laudeley*)	Holger Laudeley is often described as "Mr energy Transition" or as the "Phovoltaic Pope". He´s an engineer that founded in 1982 his company Laudeley Betriebstechnik in the field of media technology. In the mid-1980s, the company began to focus on regenerative technologies. Initially, Laudeley Betriebstechnik mainly renovated flats and company buildings for energy efficiency. In the early 90's, the company also built low-energy and passive houses. He´s claiming for more individual energy autonomy for the individuals and launched 25 years ago the first solar PV plug-in modules to install on the balcony that can provide 10% of the electricity consumption of the household and reduce its carbon footprint. The company's self-developed company building is still considered a showcase project today, as it produces virtually no energy costs. Furthermore, Dipl.-Ing. (FH) Holger Laudeley and his team develop state-of-the-art products and services in the field of renewable energies. Due to his involvement in a large number of visionary projects, Holger Laudeley is called the "photovoltaic pope" by the regional press.	laudeley.de/; facebook.com/holger.laudeley
Hörmann's Hydrogen house (*Hörmann Wasserstoffhaus*)	The Hörmanns are owners of a photovoltaic company and they work every day to implement the latest technical possibilities in the field of renewable energies. They therefore wanted to build their new private house as energy-efficient as possible and use the solar energy from the summer also in the winter. They implemented a concept for the long-term storage of solar energy using hydrogen. With this concept, it is possible to completely cover the energy demand of the building with photovoltaic systems on the roof and façade and a hydrogen storage unit even in winter. On sunny days, excess solar energy is stored in a battery and hydrogen is produced, which is later converted back into electricity using a fuel cell. The main "waste product" is heat, which is used sensibly in the house for heating and hot water. The heart of the hydrogen house is a module with an electrolyser and fuel cell. The electrolyser produces hydrogen, while the fuel cell generates electricity and heat for the house as needed. To show what the system can do, they decided to do without an electricity connection. The newly built house has been running completely self-sufficiently since December 2018 and there is still enough electricity to power several electric vehicles.	hoermannsolar.de/; facebook.com/H%C3%B6rmann-Solartechnik-eK-512625279250354/

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Hydrogen Citizens' Dialogue (*Wasserstoff-Bürgerdialog*)	On 9 June 2021, the three Hessian Fraunhofer Institutes IEE, IWKS and LBF invited to a digital hydrogen citizen dialogue. More than 100 participants took advantage of the opportunity for exchange and discussion. ""We draw an extremely positive balance of our first hydrogen citizens' dialogue. We are very pleased with the lively participation and the great interest in the topic of hydrogen and research on site," says Anke Weidenkaff, Director of Fraunhofer IWKS and initiator of the Citizens' Dialogue. The aim of the event was not only to give an insight into the research of the three Fraunhofer Institutes in Hesse, but also to take up important suggestions and impulses from the population. "It is not for nothing that we conduct application-oriented research with the aim of finding technical solutions for prompt implementation. The dialogue also made it clear once again that the various research foci and competences of the institutes complement each other very well. By no means have all the challenges surrounding hydrogen been solved and all the questions answered - so the need for further research is great. We take this as an incentive," Weidenkaff sums up."	
Kurt Gramlich (*Kurt Gramlich*)	Kurt Gramlich is the spokesperson of the citizens´ initiative Gütersloh; member of the Gütersloh Climate council since 2015, of which he is the chairman since 2019. The way he describes himself offers a clear view on its commitment toward ENCI: "With my commitment to climate protection and a life-friendly environment, I want to inspire others to work for a sustainable, environmentally friendly and globally just world. My goal is to strengthen the environmental movement in Bielefeld and OWL again, which has become small, and to enrich it with my knowledge and experience from the world of Free Software. With this wiki, I want to help build a community that cares about our democracy and future with a long-term perspective in mutual respect for each other. This Renewable Energy Forum is intended to be an information hub for this purpose. On 1.12.2018, I decommissioned my car, which I have driven since 1990, a total of 265 000 km. Now I am registered with car sharing, use my folding bike for train journeys and save car insurance and car tax of about 450 EUR / year. I plan to travel by train with bahn.guru In November 2017, I travelled by ICE/IC from Gütersloh to Freiburg in 5 hours for 14.90 EUR, no car can keep up, not to mention the exhaust fumes"	

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Lavidaverde (*Lavidaverde Berlin*)	With the LaVidaVerde project, a diverse assembly group is realizing a jointly developed idea of future-oriented living in Berlin's Weitlingkiez, thought to be an answer to current ecological and social challenges in the form of a residential project. LaVidaVerde is an energy-plus house for a colourful group of committed young and old people who have consciously decided on a project that enables communal living as well as resource-saving life and political work in and for the neighborhood. The community is not limited to living together in the house, but is also visible in the realization of common goals.	lavidaver.de/
Local heating network in Unterspiesheim (*Nahwärmenetz in Unterspiesheim*)	Michael Bürger's original concept launched in 2020 is to build and operate a local heating network supplying 80 properties. The Bürger family lives on the same property in Schaf-gasse in Unterspiesheim where the heating centre is located. There are three boilers that are fired with wood chips. Together, the furnaces have a heating capacity of 0.75 MW. The buffer tanks right next to them hold 30,000 litres, and another 20,000 litres will circulate in the heat pipes — once they are laid and in operation. The fuel, the woodchips, he gets partly from his own landscape management company; it is the waste wood that accumu-lates there. He also collects the rest of the wood himself. The customers are bound to him by contract for 15 years - from the time of commissioning. Until then, the customers do not pay a cent. Bürger not only finances the grid, but also the transfer stations in the houses. The customers provide - and pay for - the connection to their home grid.	
Möckernkiez cooperative (*Möckernkiez Genossenschaft*)	The initiative was founded by citizens of Berlin, they built the Möckernkiez as a modern city district that functions as a model project. It is ecological, sustainable, accessible, social and is supposed to connect generations and build community. The buildings were finished in 2018. It is the biggest passive house city district that was built by a cooperative in Germany. It guarantees energy supply on site via renewable electricity, heating and e-mobility.	moeckernkiez.de
Municipality Fuchstal (*Gemeinde Fuchstal*)	Fuchstal is a municipality in Bavaria, which plans to test the 'power-to-heat' approach which converts excess electricity into heat which is then stored in large storage facilities until it is needed. The community also plans to build flexibility into its biogas plant so that it can adapt to fluctuating demand. The community also has photovoltaic systems, hydroelectric power stations, a wind farm and an innovative district heating network.	fuchstal.de/

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NATURSTROM AG (*NATURSTROM AG*)	Naturstrom AG aims to provide a 'clean, safe and economical' energy supply on the basis of renewable energy. It claims sustainability as the core of its business activity and more than 250.000 households, companies and associations are using their energy products, which are focused on the areas electricity, heating and mobility and include energy delive-ry, energy production, energy infrastructure and decentralised energy supply.	naturstrom.de; facebook.com/naturstrom
New mobility Experience in Schöneberg Nord Neighbourhood (*Kiez erFahren in Schöneberg Nord*)	The project "New mobility (in the neighbourhood) erFahren" (unaccountable puns that mix the idea of experience and drive) "Experience new mobility (in the neighbourhood)" — with multimodality to climate-neutral and liveable urban neighbourhoods) took place from September 2019 to August 2021 in the Schöneberg Nord district region. As a pilot project of the Tempelhof-Schöneberg district office, the dedicated team worked for two years on the local transport turnaround in Schöneberg North. In various event formats, they promoted neighbourly dialogue regarding the traffic and mobility turnaround and thus triggered a rethink regarding the ownership and use of private cars. A centrepiece of the project was the car-free summer street Barbarossa. They also carried out the Umparkkampagne twice. Residents could try life without their own private car for four weeks and in return they received vouchers from numerous mobility service providers. This led to more space on the streets and a higher quality of life in the neighbourhood.	kiezerfahren.berlin/; facebook.com/kiezerfahren/
New power with the neighbourhood (NKMDN) (*Neue Kraft mit der Nachbarschaft — NKMDN*)	Together with the Bündnis Bürgerenergie, the 100 prozent erneuerbar stiftung has launched the campaign "New power with the neighbourhood" in summer 2019. The aim is to illustrate the advantages and benefits of a decentralised energy system in a communi-cative, scientifically sound and politically applicable way. "Neighbourhood" stands for the many positive aspects of civic participation: for a local energy system, for a sense of com-munity that allows cooperatives and neighbourhood initiatives to make energy history, for closeness that arises when people act together and for manageability that brings products and processes whose development every user can experience. It also stands for self-effica-cy, when every person can use innovative applications individually, and for independence, when the energy comes from next door. The diverse projects within the campaign range from information offers such as webinars and podcasts as well as events, to scientific modelling	nkmdn.de/

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	that describes sensible and feasible steps towards a regenerative and decentralised energy transition.	

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NRW fights energy poverty (*NRW bekämpft Energiearmut*)	Since October 2012, the NRW Verbraucherzentrale (Consumers association) has been offering budget and legal advice on energy poverty to consumer households as part of the state project "NRW combats energy poverty". The aim of the special advice is to secure the energy supply of affected households in the long term and to permanently reduce energy barriers and energy poverty overall.	mein.berlin.de/projekte/weiterentwicklung-des-berliner-energie-und-klimasc/?initialSlide=8;
Participation process for the further development of the Berlin Energy and Climate Protection Programme (BEK 2030) (*Beteiligungsprozess BEK 2030*)	In September 2021, the Senate Department for the Environment, Transport and Climate Protection launched the participation process for the further development of the Berlin Energy and Climate Protection Programme (BEK 2030) for the implementation period 2022 to 2026 with a hybrid kick-off event (presence and online) on the participation platform mein.Berlin.de. All Berlin citizens are invited until 3 October 2021 to actively participate in the process and thus help shape Berlin's development into a climate-neutral city. The comments and suggestions will be incorporated into the update of the BEK 2030. In addition to the kick-off forum, two further expert forums, two workshop series, a further online participation and an additional public event are planned until spring 2022. Furthermore, the further development of the BEK 2030 will be accompanied by a new citizens' council.	performance-electrics.de/de#Projekte; facebook.com/Performance-Electrics-471131236276920/?ref=page_internal
Performance Electrics (*Kunststrom*)	Performance Electrics is an artistic enterprise which operates as an electricity supplier producing and distributing Kunststrom, meaning electricity which is produced through artworks or artistic methods. Kunststrom is produced in different ways, including temporary actions in public space, installations and sculptures. The corporate ethos behind Performance Electrics can be analogised by the metaphor of a network. At Performance Electrics designers, architects, artists and art historians are all involved in the artistic production of Kunststrom at different locations across the globe such as Brussels, Stuttgart or São Paulo. The headquarters, where research and development take place, is located at the former train storage station of the Stuttgart public transport service (Wagenhallen Stuttgart).	reghee.de/

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RegHEE - Regional trading of electricity from renewable energies (*RegHEE — Regionaler Handel von Strom aus erneuerbaren Energien*)	The aim of this project is to research, develop and set up a peer-to-peer energy market for decentralised generation and storage units based on a blockchain that simultaneously uniquely identifies the traded electricity. To this end, available blockchain approaches will first be analysed and evaluated, and a concept for the architecture of the system will be developed. Smart contracts will then be developed that represent an automated market-place for the direct exchange between prosumers and end consumers, as well as complying with the energy industry and regulatory requirements. A centralised comparison system will also be designed and implemented. Both systems will be operated in a field test and then subjected to a comparative evaluation, from which recommendations for action will be derived.	ews-schoenau.de/; facebook.com/ews.schoenau/
Schönau Power Utility (EWS) (*Elektrizitätswerke Schönau — EWS*)	Schönau Power Utility (EWS) has its roots in the anti-nuclear movement and became in the 1990's a pioneer as they succeeded in 1996 in raising the funds for their electricity grid. As a citizen-owned company, EWS is still committed to phasing out nuclear power, protecting the climate and decentralising and democratising the energy industry. The fight for a sustainable energy future shapes its entrepreneurial and social actions. EWS is engaged towards a sustainable energy supply, energy justice and climate protection, against nuclear power and coal-fired powe. EWS is cooperatively structured and its companies combine economy with civic engagement.	smartgrids-bw.net/; facebook.com/SmartGridsBW/
SmartGridsBW (*SmartGridsBW*)	SmartGridsBW is a platform for the energy sector, industry, politics and science. Its purpose is to enhance intelligently networking energies - bringing people together with commitment, in order to work together on the energy future. Founded in 2013, the Smart Grids-Platform Baden-Württemberg e.V. is a network of central stakeholders from the energy industry, research, politics, IT, industry and interested private individuals. The statutory purpose of the association is to promote smart energy grids in order to make the energy transition as efficient as possible. We are working on this together with our approximately 80 members - guided by our 9-member board and with the support of the Baden-Württemberg Ministry for the Environment, Climate and Energy Management. The long-term goal of the platform is to achieve largely CO2-free energy production in Baden-Württemberg, Germany and the rest of the world. production in Baden-Württemberg, Germany and beyond.	SoLocal-energy.de/; facebook.com/SoLocalEnergy

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SoLocal Energy (*SoLocal Energy*)	SoLocal Energy is part of an offensive and progressive energy transition. On the basis of corporate values oriented towards the common good, they intend to simultaneously get people from all population groups on board. For this purpose, they have founded the non-profit association SoLocal Energy e.V.. This serves as an umbrella for their various activities, from the balcony power plants to the neighbourhood circles to the self-build community, supplemented by various workshop and lecture formats.	team-x4s.de/; facebook.com/TeamX4S/
Team X4S - Extension for sustainability (Team X4S - Extension for Sustainability)	Since fall 2019, Team X4S - Extension for Sustainability — of Biberach University of Applied Sciences, is participating in the international competition Solar Decathlon Europe 21 (in 2022). The final of the competition will take place in Wuppertal in June 2022. To create more living space within the city without sealing more land, they are extending the existing building of Café Ada in Wuppertal by adding four additional floors. They will then construct one representative residential unit of their design for the final of the competition. The project's innovations are aimed at drastically reducing carbon dioxide emissions from buildings in urban neighbourhoods while maintaining or improving the socio-cultural environment. For the extension of Café Ada, their sustainability concept is based on sufficiency, efficiency, consistency and resilience. These ideas are pursued in three sub-areas: Architecture, Energy and Construction.	urstrom.de
UrStrom (UrPower) Citizen energy Cooperative (*UrStrom BürgerEnergieGenossenschaft*)	In order to actively shape the energy future, citizens from Mainz and Rheinhessen joined forces in 2010 to form the UrStrom BürgerEnergieGenossenschaft Mainz eG — under the motto "Citizens make energy!" They build and operate photovoltaic systems in their region, producing clean solar power. In the Bürgerwerke eG network, they offer private and commercial customers nationwide 100% green electricity and BürgerÖkoGas from Germany. In addition, they operate car sharing with electric cars at several stations in Mainz, Budenheim and at the TH Bingen. As a community with over 430 members, they inform the public about the opportunities of citizen energy and lobby politicians.	weilermobil.de/; facebook.com/WeilerMobil-1756126501182959/

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Weiler Mobil (*Weiler Mobil*)	Under the motto "We take our energy supply into our own hands", the WeilerWärme cooperative strives for an independent, sustainable and environmentally friendly overall concept in energy production and supply. It began with a heat network and intend to build its own power grid. Of course, the topic of mobility is also an important point. Especially against the background of the question of what to do with the surplus green electricity generated on site, the entry into the areas of electric mobility and car sharing was therefore obvious to the cooperative's board of directors. Without further ado, a third pillar of the cooperative was literally put on the road under the brand name "WeilerMobil". In the summer of 2014, the first electric cars and electric bicycles were purchased and rented to the cooperative members (and all other citizens, albeit at higher prices). In addition, the first four charging stations were installed in the village by the cooperative. Car sharing runs via a simple online booking portal of the cooperative and is very well accepted in the village. Many private households use the cooperative's vehicles as second cars, and many businesses and institutions - such as the local social centre - also regularly use the cooperative's fleet.	s477174211.website-start.de/
Windfang Women's Energy Community (*Windfang eG FrauenEnergieGemeinschaft*)	Windfang is the first women's energy community in the Federal Republic of Germany. It is a group of women who have joined forces to actively promote the energy transition. They want to actively support regenerative energies such as wind, water and sun, but also the economical use of energy such as combined heat and power plants through their own activities. And for that they need women's support. The more women support these ideas financially and ideally and actively help to give the energy turnaround a leg up, the better they can turn our goals into reality.	

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Title of the case in English *(original)*	**Brief overview**	**Webpage / Facebook**
Women. Energy. Turnaround/Change! (the term "Wende" also refers to the energy transition - which is unaccountable in english) (*Frauen. Energie. Wende! — FEW*)	Why we need a gender-equitable energy transition. Ways for participating in the process of energy transition seem diverse and multiple in our democracy. However, for many marginalised groups in our society, there are questionable and arbitrary, yet systematic, limits and obstacles to meeting their needs as consumers and producers of renewable energy, as well as workers and (political) decision-makers in the energy sector. This publication is aimed at all actors in business, politics and civil society who have not previously associated the issues of gender and energy. The link between gender justice and a grandchild-friendly energy system becomes obvious. This publication contains a concentrated overview of structural resistances that women in Germany in particular have to overcome in order to bring about a new and just energy system. In 13 interviews with experts, personal light is also shed on these systematic barriers that prevent us from building a decentralised, democratic and just energy system.	
Women's housing and building cooperative in Messestadt München-Riem (*FrauenWohnen in der Messestadt München-Riem*)	Women's housing and building cooperative in Munich. The residential complex, which was completed in January 2007, is located near the bathing lake in the Riemer Park at Ingeborg-Bachmann-Straße 26/28. 49 apartments from 36 to 78 sqm (subsidized and privately financed), common rooms and a commercial unit for freelance professions form the structural framework for a lively residential project that stands out with its architecture. The ultra-low-energy house (kW 40) with passive house standard has, in addition to controlled living space ventilation, the option of using radiators to adjust the room temperature to individual needs. The following facilities are available to everyone: common room with terrace leading to a large communal courtyard, guest apartment, laundry room and kitchen garden for residents. A lively neighbourhood with a lot of civic engagement has developed here in recent years.	mein.berlin.de/projekte/weiterentwicklung-des-berliner-energie-und-klimasc/?initialSlide=8;

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