ENCLUDE

Energy Citizens for Inclusive Decarbonization

D2.1 Report on intersectional analysis of emerging examples of energy citizenship

WP2 – Characterizing and conceptualizing both individual and collective expressions of energy citizenship

16.01.2023

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Preface

The overall vision of ENCLUDE is to help the EU to fulfil its promise of a just and inclusive decarbonization pathway through sharing and co-creating new knowledge and practices that maximize the number and diversity of citizens who are willing and are able to contribute to the energy transition. Motivated by achieving an equitable and sustainable future and the fulfilment of individual potential, ENCLUDE will contribute to the upcoming transformation of energy use by: (1) Assembling, aligning, and adapting disparate energy citizenship concepts for diverse communities of citizens and for different scales of policy making, lowering the barrier for action. (2) Operationalizing the energy citizenship concept at all scales of policy making for decarbonization. (3) Catalyzing a chain reaction of decarbonization actions across the EU.

1. Changes with respect to the DoA

Ethical approval for the fieldwork which fed into this report took longer than expected, due in large part to a backlog in research ethical evaluations (arising from the large number of applications for research delayed by the pandemic). This led to a delay in fieldwork and thereafter in the preparation of the report[1] this resulted in the deliverable being submitted *c.* six weeks later than envisaged.

2. Dissemination and uptake

This deliverable presents a treatment of existing and emerging ideas of citizenship in the energy system and around energy more generally. An analysis of modes of (citizen) participation and related manifestations of energy citizenship is forwarded. This report – the first of two on characterizing and (re)conceptualizing expressions of energy citizenship – will both contribute to the ongoing discourse on the place of the citizen in the energy domain[2], and feed into the development of an energy citizenship typology to be presented in the second report from this package of work. Acknowledging that privilege(s) shape the type of relationships particular individuals and groups might have with energy, this report opens a discussion on the type(s) of energy citizenship experienced by those at the margins. In this way an understanding of multiple (sometime overlapping) expressions of citizenship around energy is forwarded. This report will be of interest to both researchers and practitioners interested in transforming the currently energy system (and its implications for the way we live our lives.

3. Short Summary of results

There are many existing and emerging modes of participation (including non-participation), which are manifested in multiple expressions of energy citizenship. However, not all views on energy citizenship are equally supported. There is support amongst traditional energy system powerholders for certain expressions of energy citizenship. The more 'acceptable' expressions are those that do not threaten the status quo. Other expressions which challenge incumbents or government policy are not so welcomed, and indeed such energy citizens are often marginalized by the incumbent powerholders.

4. Evidence of accomplishment

This report serves as evidence of accomplishment.

[1] Additionally, as the Christmas holidays fell as the report was ready for review, this caused a further short delay in its finalization and submission.

[2] Including discourse within and between the sibling projects working on this particular call topic.

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Executive Summary

This deliverable presents a treatment of existing and emerging ideas of citizenship in the energy system and around energy more generally. An analysis of modes of (citizen) participation and related manifestations of energy citizenship is forwarded. This report – the first of two on characterizing and (re)conceptualizing expressions of energy citizenship – will both contribute to the ongoing discourse on the place of the citizen in the energy domain, and feed into the development of an energy citizenship typology to be presented in the second report from this package of work. Acknowledging that privilege(s) shape the type of relationships particular individuals and groups might have with energy, this report opens a discussion on the type(s) of energy citizenship experienced by those at the margins. In this way an understanding of multiple (sometime overlapping) expressions of citizenship around energy is forwarded. This report will be of interest to both re-searchers and practitioners interesting in transforming the currently energy system (and its implications for the way we live our lives.

Acronyms and abbreviations

CEC	Citizen Energy Communities
CEP	Clean Energy for All Europeans Package (Clean Energy Package)
IEMD	Internal Electricity Market Directive (EU) 2019/944
LNG	Liquefied Natural Gas
REC	Renewable Energy Communities
RED II	Revised Renewable Energy Directive (EU) 2018/2001
RES	Renewable Energy Source(s)
SEAI	Sustainable Energy Authority of Ireland
SME	Small and medium-sized enterprise
SSH	Social Sciences and Humanities

Contents

1 Introduction

1.1 Background

'ENCLUDE – Energy Citizens for an Inclusive Decarbonization' is a collaborative research project[3] funded under the Horizon 2020 program. The project was developed in response to a call topic on energy citizenship which sought to harness the concept to achieve energy and decarbonization goals in the European Union and Associated Countries. The project's research (like that of its sibling projects) is intended to achieve this through developing "*a better understanding of socio-economic, gender, socio-cultural, and socio-political factors, their interrelations with technological, regulatory, and investment aspects, yield practical recommendations for harnessing energy citizenship*" [4].

The transdisciplinary project coordinated by TU Delft is being delivered by a consortium comprising leading universities, research institutes, small and medium-sized enterprises (SMEs), and non-governmental organizations from a range of countries[5]. Cognizant of the fundamental importance of the human dimension, the ENCLUDE project is built on the premise that the role of citizens around energy and the energy system is key to the ongoing energy transition. This transdisciplinary project aims to contribute to achieving a just and inclusive decarbonization pathway through co-creating and sharing knowledge and practices that maximize the number and diversity of citizens who are willing and able to contribute to the energy transition.

The ENCLUDE project will create a typology of energy citizenship applicable to diverse communities of citizens. It will do this by exploring real life case studies of people's relationship with energy, including but not limited to existing decarbonization efforts such as renewable energy projects. Drawing from knowledge derived in such explorations insights about who is affected by (different conceptualizations of) energy citizenship and how they might affect decarbonization pathways will be incorporated into agent-based models and integrated assessment models. In this way the project aims to operationalize energy citizenship at multiple scales of policy and decision making.

The project has created the ENCLUDE Academy for Energy Citizen Leadership, an online program for leadership development and civic engagement for decarbonization. In the ENCLUDE Academy newly developed knowledge about energy citizenship, opportunities for the energy transition, along with strategies for collaborative decision making and joint problem framing are shared with citizens and non-governmental organizations across the EU (and further afield). The aim is to help mobilize citizen actions for decarbonization, including (and indeed importantly) amongst communities that normally do not, or are not able to, participate in such civic processes. In this way, the ENCLUDE Academy aims to launch a bottom-up mobilization of energy citizenship by training influential individuals that can help change energy behaviors and engage other citizens in the transition.

[3] ENCLUDE project fact sheet on Cordis: https://doi.org/10.3030/101022791

[4] Extract from the Energy Citizenship theme of call topic LC-SC3-CC-1-2020 Social Sciences and Humanities (SSH) aspects of the Clean-Energy Transition.

[5] Austria, Belgium, Canada, Greece, France, Ireland, Netherlands, North Macedonia, Romania, Switzerland and the United Kingdom

1.2 Context

The work reported in this deliverable was conducted in the context of WP2 of the ENCLUDE project, which aims to characterize and conceptualize both individual and collective expressions of energy citizenship. This work package aims to explore meanings and attributes attached to the concept in different contexts, capturing and characterizing the diverse forms of energy citizenship emerging within the European energy domain as well as in other regions of strategic importance to Europe. This package of work has three over-arching objectives, namely to:

- Document varying conceptualizations of energy citizenship found in different contexts.
- Map patterns of (emerging) examples of citizenship participation found in Europe's energy domain.
- Develop a typology of energy citizenship which will connect the different ways in which citizens around energy.

This work package is divided into three tasks: T2.1 considers different conceptualizations of energy citizenship and seeks to map existing patterns of citizen participation and energy citizenship; T2.2 explore people's relationship with energy and attempts to understand their perspectives on energy 'citizenship'; and T2.3 comprises the development of a detailed typology of energy citizenship drawing together the results of the previous two tasks. The work collectively undertaken in these tasks will be presented in two parts. The first part comprising this report constitutes a treatment of existing and emerging ideas of citizenship in the energy domain generally. In this first report drawing from the work of tasks 2.1 and 2.2, different modes of citizen participation around energy are characterized and connected expressions of energy citizenship conceptualized (or re-conceptualized). The nature of the manifestations of energy citizenship emerging from the research is analyzed and its meaning for the development of the typology discussed. A second subsequent report will build on the work of this deliverable and drawing from all three tasks in the WP forward a typology of energy citizenship connecting the different ways in which citizens act in, or on, the energy system noting the socio-political structures that shape their action, and the discourses which act to (in)validate such actions.

1.3 Structure of the report

This report is divided into six sections as outlined below:

1 – Introduction, presents an overview, details the background to, and provides context for, the work undertaken, describing the aims and objectives and presents the structure of the document.

2 – Methodology, outlines both the research strategy and subsequent research methodology that has been designed for this package of work.

3 – Understanding energy systems, provides an overview of the energy system (providing an overview of the main technologies used across the generation, transport, and distribution of energy), its regulatory context and makes an argument for the importance of the social dimension of energy. In doing so, it establishes the context for the consideration of the human aspects of the energy system in section 4, and for the formulation of energy citizenship(s) in Section 4.

4 – Energy and the citizenry, explores energy-related cultures, practices, and behaviors. Drawing on sociological and human geographic perspectives, it considers energy through three lenses: in 'making of home', in the 'making of place', and finally in the making of a just transition. These particular areas were selected as they offer distinct and complementary (albeit sometimes overlapping) views of people's relationship with energy and the energy system. This consideration of energy-related cultures, practices and behaviors provides important insights into the lived experience of people

around energy. These insights serve to contextualize and inform the discussion on energy citizenship(s) in Section 5.

5 – Energy citizenship(s), examines the very idea of citizenship in the energy domain, it looks at mode of energy participation and considers the energy citizen in all its varied manifestations. This section builds on, and is informed by, the discussions on the energy system and people's relationship with energy in Sections 3 and 4 respectively. It both returns to the classical origins of the idea of citizenship and argues for a more inclusive conceptualization of citizenship in the energy domain.

6 – Conclusions, summarizes the key findings of the report and position them in relation to related ongoing work and to the work of the ENCLUDE project as a whole.

2 Methodology

2.1 Research philosophy

This section outlines the methodological approach selected for the research undertaken in ENCLUDE WP2 – Characterizing and conceptualizing both individual and collective expressions of energy citizenship. As alluded to in the previous section a common methodology was adopted for the research which feeds into this report and the forthcoming companion report[6]. This section aims to communicate what Crotty (1998, 3) refers to as "*the strategy, plan of action, process of design lying behind the choice and use of particular methods and linking the choice and use of methods to the desired outcomes*". All research – but especially that involving study of the social world – is inherently based on certain assumptions[7,8], including *e.g.,* on the nature of reality (ontology), on the nature of knowledge (epistemology), and on the ways in which methods might be grouped to provide a coherent approach (methodology). Indeed, the importance of considering ontological and epistemological issues at the starting point in a research process is often stressed (Johnson 2014). The research being undertaken within this package of work is fundamentally about appreciating the human understandings, perceptions, attitudes and practices around the energy system and indeed energy itself – in other words it is the epitome of a study of the social world. Many social scientists hold a positivist world view and maintain that there is a social reality to be observed which can be considered independently of both researcher and subjects. We however would agree with the critique that such approaches aim to reduce "*qualities of human experience to quantifiable variables*" (Charmaz 2003, 83). While many of the tools employed in research into topics like climate change and the energy transition have traditionally been quantitative in nature, there is now greater recognition of the value qualitative methods bring to such challenges (Cohen 2021), and this is of course particularly reflected in social sciences and humanities (SSH) energy research. In simple terms, quantitative research relies on numerical data, that relates to quantities associated with a study subject or phenomenon. This type of

[6] Deliverable 2.2 Typology of Energy Citizenship – expected mid-2023.

[7] Even in the so-called scientific method (or hypothetico-deductive method) such assumptions are made *i.e.,* that the world we observe is real, in so far as it exists independent of our senses (objectivist ontology) and is capable of being objectively described and interpreted (positivist epistemology) (Hammond & Wellington, 2013).

[8] Indeed for many scientists, the assumptions inherent in the scientific method are so deeply ingrained that it is (almost) inconceivable that there is another way of viewing the world. Indeed, Weinberg (1995) posits most scientists do not understand the scientific method, they just do it – likening it to someone riding a bicycle: "*if they think too much about it they are likely to fall off*".

research is generally associated with deductive approaches, "*developing a hypothesis*[9] *(or hypotheses) based on existing theory, and then designing a research strategy to test the hypothesis*" (Wilson 2010, 7). In contrast, qualitative research is generally more inductive, with theories being developed from the analysis and interpretation of collected descriptive data. For this research, we have adopted a social-constructivist epistemic view of knowledge, viewing the world as a social construction[10] that needs to be interpreted.

2.2 Methods of collection and analysis

The WP2 research aims to better understand energy citizenship. In short, it asks in what contexts is meaningful citizen participation in the energy system to be permitted and who is to be allowed participate? To this end it aims to identify and characterize examples of the concept found in different contexts[11], to map patterns of citizen engagement around energy; and to develop a typology of expressions of energy citizenship. As mentioned above, a social constructivist research paradigm has been chosen for this research. The approach to this work holds that (social) reality does not exist independently of the observer (anti-foundationalist ontology) and that the socially constructed world needs to be interpreted (constructivist epistemology). Mindful of the thick, rich data[12] required to appropriately explore this topic and appreciate the informants' contributions a qualitative methodological approach has been adopted for this work.

Bearman (2019, 73) describes qualitative research as "the systematic study of social phenomena, expressed in ways that qualify – describe, illuminate, explain, explore – the object of study". Qualitative research can have several different functions including e.g., describing the nature of what exists (contextual); discovering the reasons of what exists (explanatory); evaluating the effectiveness of what exists (evaluative); and generating theories for what might exist (generative) (Ritchie & Ormston 2013). While in some respects, the research within this work package may be aligned with all four of these, it is perhaps fair to say that it is most aligned with the contextual function – in that is seeks to characterize expressions of energy citizenship (in this report), and thereafter develop a typology of citizenship around energy (in a subsequent companion report). Some qualitative methodologies have a specific focus e.g., Grounded Theory (seeking to build theories) and Ethnography (focusing on culture). Merriam (1998 cited in Ibid.) observes that – unlike those with a more specific focus – generic qualitative methodologies epitomize qualitative research by seeking "... to discover and understand a phenomenon, a process, or the perspectives and worldviews of the people involved." Generic qualitative methodologies are so-called as they are "not guided by an explicit or established set of philosophic assumptions in the form of one of the known qualitative

[9] A hypothesis is a tentative, testable explanation for a phenomenon. Hypotheses are formulated in advance of data collection based on previous work and current theories and as such can be a considered an informed guess.
[10] In such an anti-foundationalist ontology, social reality is seen as being subjective to the observer(s), and/or as being negotiated within groups.
[11] The research being conducted in ENCLUDE WP2, of which this is the first output, does not aim to (or indeed claim that it will) result in a comprehensive mapping of energy citizenship in all contexts. Even if such comprehensiveness was possible, its value would be marginal especially given the resources that would be required. Rather, the research is aiming to capture (a wide as possible) diversity of the energy citizenship expressions across different contexts, such that the analysis is appropriately informed.
[12] Containing a lot of sometimes multilayered information.

methodologies" (Caelli, Ray, & Mill, 2003) [13]. The research in this work package, and specifically that which feeds into this report, is being undertaken through such a generic qualitative methodology.

The considerable overlap among qualitative approaches has led to it being viewed as a "family" approach whereby the similarities shared by the different methods are more important than their differences (Vaismoradi *et al.* 2013), and the approach chosen to answer a particular research question will often depend on the level of participation or input the situation requires (Mukherjee *et al.* 2015). Face-to-face interactions may be chosen in-depth discussion of topics is desired; other approaches may prove more useful when it is not possible to gather large amounts of people (Mukherjee *et al.* 2015; Quinlivan & Dunphy 2023). In realizing this research, a mixed-methods approach was chosen involving the use of several methods for the gathering and analysis of data. The objective of this approach was principally about capturing different insights; however, the use of different methods does of course offer a degree of cross verification and in this way might also be considered a form of triangulation.

- A literature review was used to explore existing knowledge (and emerging concepts) on energy citizenship and cognate topics.
- Surveys were selected as a means of capturing perspectives and opinions from a (relatively) large number or people.
- In-depth interviews were used as they provide so-called rich, thick data, analysis of which can offer valuable in-sights.
- A modified Delphi Panel approach was used for asynchronous structured dialogues, as it provided a good means of incorporating external expert opinion.
- Thematic analysis is used as a means of describing, interpreting and theorizing the resultant transcripts and records as it offers a good approach to 'making sense' of the collected data.

2.2.1 Literature Review

The review of literature is a foundational research method. Consideration of prior, relevant literature is a fundamental part of any research project. It enables the researcher to map and assess the research area motivating the particular study, which in turn justifies the research question or hypotheses. This foundation of knowledge is often termed a "literature review" (Snyder 2019). A literature review can be considered a systematic means of exploring existing knowledge, theories, and practices in the relevant areas (Webster and Watson 2002), through the collection and synthesis of previous research (Baumeister & Leary 1997; Tranfield *et al.* 2003).

While considered by many as simply a prelude to 'actual' research, we agree with Onwuegbuzie and Freis' (2016) proposition that a literature review can produce new knowledge and deliver new insights. A literature review may serve as a research method, in its own right, through advancing knowledge and facilitating theory development, through an effective, well-conducted review (Webster & Watson 2002). The integration of findings and perspectives allows for the addressing of complex research questions, bringing together research which may be disparate and interdisciplinary; the synthesis of research findings on a meta-level further reveals 'gaps' in the literature where further research is

[13] Although, as Ormston *et al.* (2013) note this does not necessarily mean a lack of theoretical and philosophical basis to the research design.

needed, contributing to the creation of theoretical frameworks and conceptual models (Snyder 2019). Where literature reviews are conducted with a lack of thoroughness or not undertaken systematically (Tranfield *et al.* 2003) researchers may build their research on flawed assumptions of what the literature is, or is not, saying. Accordingly in this research, the review of academic literature and so-called grey literature[14] is consider a key research method.

We adopted a scoping review approach to carry out the literature review process. Scoping reviews provide the means to consider existing evidence around a field of research in a way that is more systematic and that accounts for the larger body of research available rather than summarizing a pre-selected and unrepresentative sample of literature. Systematic reviews involve a number of steps that in some ways parallel primary research procedures (Mullen and Ramírez, 2006). These include an outline of specific aims, the establishment of inclusion and exclusion criteria, the design of a strategy to search and retrieve data, a pre-set screening process, a plan to assess and represent findings, the coding of studies, analysis, and display of data, and finally the development of multilateral interpretations and conclusions (Mullen and Ramírez, 2006, Arksey and O'Malley, 2005). As such systematic reviews allow researchers to deal with the 'information mountain', common in many fields of research, in a way that makes it possible to distil and manage these large volumes of information (Petticrew and Roberts, 2008). Critically it also makes this process more transparent and inclusive. The framework we employ to carry out the literature review was originally developed by Arksey and O'Malley (2005). The scoping process includes the use of a transparent and methodical system of literature search, screening and analysis followed by a structured presentation of results that considers emerging themes and knowledge gaps. Although the scoping process follows a set of similar steps to those applied in a systematic review the process, it is less exhaustive (Arksey and O'Malley, 2005) and hence we seek with this approach to offer a representative sample of the literature available but do not claim to capture all available articles and reports in this space. Scientific insights achieved through more systematic review processes have increased over the years and are particularly useful to capture reliable, unbiased assessments of past research (Mullen and Ramírez, 2006). Keeping pace with research in a timely fashion is increasingly important and bring added benefits in terms of responsible research and innovation aspects that help accelerate change while engaging with any tensions in emerging bodies of knowledge (Skjølsvold and Coenen, 2021). The review followed a staged process that included the development of search terms, and the use of inclusion and exclusion criteria to screen through materials. The databases[15] used included Scopus, Annual Reviews, Applied Social Sciences Index & Abstracts, JSTOR and Project Muse databases. Search terms used were TITLE-ABS-KEY (Energy Citizen*) In TITLE OR ABSTRACT OR KEY. The timeline included articles from 2000 to (16 May) 2022. After preliminary review of borderline articles and removal of duplicates we identified 66 articles for in-depth review. The Inclusion/Exclusion Criteria comprised:

1. Title/Abstract/Key Words (Energy Citizenship)
2. Any type of study (peer-review and grey literature)

[14] Research published outside of the traditional commercial or academic channels – including for example, reports, working papers, government documents, white papers and evaluations.

[15] Scopus was selected as it is a source-neutral abstract and citation database curated by independent subject matter experts who are recognized leaders in their fields. Produced by Elsevier, the Scopus database is extensive with *c*. 85 million records covering more than 25,000 active titles from over 7,000 publishers. Other databases were used to supplement and complement Scopus to over the weakness inherent in relying on any one individual service.

3. Focused exclusively on literature related to 'energy'
4. Timeline 2000-2022

Search results in each database were sorted by relevance and key articles were identified manually using a pre-defined protocol, which looked for papers that offered empirical evidence concerning practices of energy citizenship. This was carried out by screening through titles, abstracts and methods sections to identify further texts for elimination. For instance, several articles emerged in the area of energy and citizenship which provided limited insight into what these mean either conceptually or in a more applied sense and therefore they were excluded from the review. Furthermore, the screening involved a review of 'borderline' articles and reports which appeared to have some adjacent connection to the theme and required more careful consideration for either inclusion or exclusion.

To analyze the data a preliminary synthesis approach was adopted, followed by a more in-depth thematic analysis, in which we utilized the NVivo software. The NVivo software is an effective tool for open coding and for the refining of the thematic process through the identification of relevant sub-themes and to explore relationships between themes (Creswell and Creswell, 2017, Min *et al.,* 2017). The initial thematic analysis was performed by one researcher, where an independent exploratory analysis was carried with no predefined structure. Themes were identified and coded as they emerged in the various articles. This was subsequently refined with the feedback of the wider research team.

As an inherently gendered policy domain we wish to understand how energy citizenship perspectives address these often-overlooked dimensions of energy system change. A content analysis of the literature was also performed exploring gender and intersectional issues associated with citizenship. We further used NVivo to conduct a content analysis of retrieved literature delving deeper into questions of gender, intersectionality and the way it is addressed in the literature. This involved running queries and text searches, to determine how and where gender appears in this body of research.

To refine the findings, we also looked at wider debates on citizenship within contemporary discourses that go beyond energy specific discussions and include a broader reflection on how this applies to specific issues such migration, disability, young people's participation as well as wider debates regarding capitalism and it relationship to trends such as (neo)colonialism, globalization and neoliberal governance. This piece follows a more traditional outline of relevant debates (*i.e.,* not a systematic process) and is used to help determine the contribution, influence and/or specificity of energy citizenship relative to other entry points and debates on citizenship. Relevant findings from the literature review have incorporated into this report particularly in sections 3-5. This process of reviewing literature will continue in parallel with the preparation of D2.2 Typology of Energy Citizenship. The complete literature review will both inform and be included as an Appendix of D2.2, the second report from this work package.

2.2.2 Surveys

Survey research was used to gather information on individuals' relationships with energy and the energy system, their perceptions of participation within the system, as well as their knowledge and understandings of energy citizenship. The collected data complemented the literature review but also offered an opportunity to capture alternative perspectives and emerging concepts not necessarily captured in the literature. Check & Schutt (2012) define survey research as "*the collection of information from a sample of individuals through their responses to questions*". Surveys may employ both quantitative (*e.g.*, questionnaires with numerically rated items) and/or qualitative (*e.g.*, open-ended questions) research strategies (Ponto 2015), frequently as a means of investigating human behavior within the social and psychological research disciplines (Singleton & Straits 2009). Survey research has been undertaken for decades, ranging from a few targeted questions posed to individuals on the street to more rigorous studies using numerous survey instruments (Ponto 2015). Understandably, therefore, the term "survey" can often reflect huge variety in terms of research aims,

recruitment and sampling strategies, instruments for data collection and survey administration methods (Ponto 2015).

Online surveys have seen huge growth in popularity over the past few decades as technologies have advanced beyond the first e-mail and web-based surveys of the 1980s and 1990s (Schonlau *et al.* 2002). They offer numerous strengths for any research strategy, offering global reach, flexibility, convenience, easy follow-up, low administrative costs, question diversity, and controlled sampling, among other advantages (Evans & Mathur 2005). We opted for the use of an online survey (using both closed and more opened queries), a copy of the survey questions is included as Appendix 1. Over the lifetime of this task, a target of 500 survey responses has been set for this report. Already, at the time of writing this report a total of 200 survey responses had been received. The results collected from this first batch of responses has informed, and is reflected in, this report. The full survey results will feed into, and be reported in an Appendix of, D2.2, the second report from the work package.

2.2.3 Interviews

To build on the literature review and the insights emerging from the surveys, selected informants were engaged through semi-structured interviews as a means of gathering data with more depth (so-called rich, thick data). An interview has been described as a "*conversation with purpose*" (Webb & Webb 1936 quoted in Legard *et al.,* 2003, 138)[16]. The purpose of these semi-structured interviews was to gain an appreciation of the perspectives (and experiences) of interviewees about the focal matter, namely citizen participation around energy and citizenship within the energy domain. The social sciences have long recognized the usefulness of the interview as a central factor in research design. Interviews are considered to provide a holistic snapshot of a subject matter, as well as enabling the analysis of words, reporting on detailed views and perspectives, and a means of facilitating interviewees to speak in their own voice. Building a rapport with the interviewees is a vital part of the interview process and Gill *et al.* (2008, 292) argue that doing so in advance of the interview "*can have a positive effect of the subsequent development of the interview*."

The interactive nature of interviews allows interviewers to press for clear, complete responses and probe emerging topics of interest, as well as ensure mutual understanding (Dörnyei 2007). These characteristics contribute to the image of the interview as a technique useful for broadening the depth of understanding of the investigated phenomena. As part of this research, interviewees were selected purposefully in accordance with the research question; the aim in this scenario was to effectively illuminate both potential group differences and similarities and intra-group variation (Joffe, 2012). A copy of the Interview schedule is included as Appendix 2. Potential interviewees were identified through a scoping exercise, which included a combination of literature review and referrals from colleagues and partners. Subsequently, prospective respondents were contacted by email to introduce the project, to explain the particular study being undertaken, and to invite them to participate. All interviews were held remotely using video conferencing. Over the lifetime of this WP, a target of 50 interviews has been set for this activity. Already, at the time of writing this report a total of 42 interviews had been conducted, transcribed, and analyzed (as outlined in Section 2.2.5 below). The findings emerging from this first analysis of the interview transcripts has informed, and is reflected in, this

[16] And while it may be important for interviewees to feel that way, this perhaps belies the effort involved both in the preparation and conduct of the interview (not to mention the subsequent analysis). Furthermore such a label without context risks minimizing the value that can emerge from such "conversations".

report. The full analysis of the interviews will feed into and be included in the second report from this work package.

2.2.4 Asynchronous structured dialogues

A modified Delphi panel approach (after Revez *et al.* 2020; Quinlivan & Dunphy 2023) was employed to gather expert perspectives specifically on the concept of energy citizenship, what constitutes energy citizenship and how it might develop, as well as investigating the relationship of the citizenry with the energy system itself. The Delphi method has remained one of the most widely used tools for foresight and forecasting activities (Bañuls & Turoff 2011; Hussler *et al.* 2011; Landeta 2006; Marchais-Roubelat & Roubelat 2011; Ribeiro & Quintanilla 2015), having been used extensively within the literature on energy technologies and transitions. The traditional method consists of a structured, anonymous, and iterative survey of 'experts', through which they contribute towards participatory decision-making (Crabbe *et al.* 2009; Swor & Canter 2011). Two or more rounds of structured questionnaires are distributed to participants, each of which is closely followed by an aggregation of both responses and anonymous feedback to all participants (Mukherjee *et al.*, 2015). The questions included as part of the first-round questionnaire may be open-ended, aiming to gather opinions and information from participants, or semi-structured, having drawn from the published literature on the subject matter (Powell 2003). Both scenarios offer flexibility to the researcher in terms of the approach's application to the research question (Hasson & Keeney 2011).

Considered especially useful for enabling structured communication on complex issues (Hasson *et al.* 2000; O'Faircheallaigh 2010; Martin *et al.* 2012; McBride *et al.* 2012), the technique is commonly employed as part of generating consensus on issues which prove difficult to resolve in-person (Lemieux & Scott, 2011). It has also been seen as a useful approach to the evaluation of policies (MacMillan & Marshall 2006; Orsi *et al.* 2011), and pooling inputs from multiple disciplines to address multifaceted challenges. In recent years the use of the conventional Delphi method has reduced in place of more modified approaches; as well as this, there has been a diversification of the scenarios where the method is commonly applied. Many have argued for the use of more modified approaches (Quinlivan & Dunphy, 2023; Rowe & Wright, 2011; Tapio *et al.* 2011), including Revez *et al.* (2020) who saw benefit from the method's use as a means of exploring visions of energy transitions. The asynchronous structured dialogue approach employed as part of this research differed from the conventional Delphi method in several ways, namely the definition of participation criteria, which is of critical importance to traditional approaches. Studies to date have used certain criteria – number of years in specific practice, publication in prestigious research journals, holding certain credentials, *etc.* – as proof of 'expert' qualification and thus ability to participate in the panel (Avella, 2016). Participants were recruited based on their work in a cognate subject area as well as their availability at the time. This form of asynchronous dialogue seeks not to see what will be but rather represents an "envisioning tool" that collaboratively seeks to explore the way something (perhaps an energy system) "could be," or even "should be" (Revez *et al.* 2020).

The realization of the asynchronous structured dialogues involved three important stages. The first involved the development of the research instruments. The information to be shared with the panel in the first round (as the second round would be informed by the initial responses) was developed and ethical approval obtained for this engagement. A copy of the initial round of questions is included as Appendix 3. The second stage involved recruitment of the panel members. In agreement with best practice guidelines, a purposive sampling strategy was used to achieve greater diversity (Revez *et al.,* 2020). The completed panel was composed of eight academics / researchers from different backgrounds including: engineering, energy, human geography, sociology, political economy, and history (of technology). The members of the panel came from a range of countries comprising, Ireland, Norway, Spain, Sweden, the UK, and the USA. The final stage involved the delivery of the two survey rounds and analysis of the responses. First round responses have been received and great deal of

insight has been obtained from analysis of the contributions to date. This initial analysis has informed the development of this report, in particular Sections 4 & 5. These engagements continue and the full results of the dialogues following the second round will be used to inform the typology of energy citizenship which will be presented as D2.2

2.2.5 Thematic analysis

Qualitative data analysis – such as the examination of interview transcripts or other texts – typically involves 'making sense' of the data collected through describing, interpreting, and theorizing. It is often an iterative process, characterized by back-and-forth movement between data and ideas. Thematic analysis[17] – along with content analysis – are sets of qualitative research techniques used to analyze textual data and elucidate theme (Forman and Damschroder 2008). The dominating characteristic of these methods is the systemic process of ordering, coding, interpreting meaning and theorizing through the creation of theme (Zhang & Wildemuth 2009; Saldaña 2013). Thematic analysis will serve as the research method used to analyze the qualitative data collected in this task.

The concept of thematic analysis was developed by Gerald Horton (Merton, 1975) as a means of uncovering more implicit, tacit themes and thematic structures beyond the plainly obvious. While rooted in the older, quantitative tradition of content analysis, thematic analysis shares many of the same principles (Smith 2000) it offers the researcher an additional advantage by incorporating the subtlety and complexity of phenomenological pursuits. Thematic analysis is commonly used to identify and analyze patterns of meaning in a data set (Braun & Clarke 2006), outlining the most salient themes present when describing the phenomenon under study. 'Theme', in the context of thematic analysis, generally refers to '*a specific pattern of meaning found in the data'* (Joffe 2012) and may be present as manifest content – something directly observable, such as clear mentions of barriers to participation in the energy system – or latent content – that is, more implicit references to certain barriers to participation. Thematic analysis thus draws on both explicit and implicit content to deduce the latent meanings underpinning sets of manifest themes (Joffe & Yardley 2004). Furthermore, thematic analysis typically draws from both deductive and inductive themes *i.e.*, theoretical ideas brought by the researcher to the research versus the raw data itself. This enables the researcher to both examine preconceived categories derived from theories, while remaining open to new concepts that may emerge to revolutionize knowledge of the research topic (Joffe 2012).

Vaismoradi *et al.* (2016) describe the process of theme development in thematic analysis in terms of four general phases: (1) "initialization"; (2) "construction"; (3) "rectification"; and (4) "finalization". As the primary step, initialization involves the transcription of the data and the taking of detailed notes by the researchers. These notes are read over several times and direct quotations from the transcription identified as appropriately describing the trend in the participants' perspectives. These quotations are carefully compared in terms of their similarities and differences during the construction phase, whereby the goal remains to use the initial research question to assign a place to each cluster of codes (Vaismoradi *et al.* 2016); with "*comprehensiveness and mutually exclusiveness*" in mind, the diversities between codes in terms of their meaning can be discovered and labels assigned to clusters with similar codes. Theme begins to emerge and develop from the rectification phase in which the researchers reappraise the analysis process multiple times, retaining sensitivity to the data and reducing the chance of premature or incomplete data analysis through 'distancing' themselves from

[17] This is a term used to refer to systematic analysis that does not follow one of several specified methods *e.g.,* grounded theory-based analysis; conversation analysis; discourse analysis; narrative inquiry.

the data for periods of time. This process aims to illuminate more obscure aspects of the analysis and subsequent theme development. This phase may also be termed "verification", in that it ensures a relative certainty about the themes developed. Theme development culminates in the finalization phase in which the researchers have evolved a narration outlining and connecting various themes through a "story line", which ultimately, and holistically, answers the study question. Though theme development, as a process, is rarely finite, the 'storyline' aspect is useful for convincing both the researchers and readers of possible theoretical data saturation, which underpins the principle of finalizing data collection and analysis in qualitative research (Vaismoradi *et al.* 2016).

Thematic analysis has been used extensively in the public and mental health arenas, for example when examining public conceptualizations of Ebola (Joffe & Haarhoff 2002), MRSA (Washer *et al.* 2008), as well as exploring social representations of mental illness (Morant 2006). This task uses it as a means of examining public conceptualizations of energy citizenship. The interview transcripts collected to date have been analyzed through thematic analysis[18]. This is an ongoing, iterative process and will involve several rounds. Once conducted the transcripts of the remaining interviews will be added to the data set and analyzed. The analysis conducted thus far was conducted manually (often physically with pens and paper) – in this way the researchers became even more familiar with the material, and as a result were reacquainted with the coding process (with guidance provided as required), and importantly coordinated their approach to coding, through coding workshop. Qualitative data analysis software is often used for such analysis[19], and while such software, specifically NVivo (which was mentioned previously as being used within the literature review) may be used as a supplementary approach, *e.g.,* to assist in visualization *etc*., it is intended to continue with the manual coding approach. The analysis process involves the text being coded *i.e.,* themes in the text are tagged and relationship between themes considered. The material is then reviewed, and the process repeated in a reflexive manner, refining, rearranging and consolidating themes, developing insights, and further exploring the relationships between emergent themes. Such analysis can be approached with some preconceived themes based on theory or existing knowledge (deductive approach) or by allowing the data to determine themes (inductive approach). In this research, the literature review and survey informed the analysis and so some themes were defined *a priori*, while other emerged over the course of coding the interview transcripts. Key themes emerging from the analysis and feeding into this report (see Section 5 in particular), include:

- Consumerism
- Communitarism
- Investment
- Climate change
- Public policy
- Decision-making
- Rights
- Responsibilities
- Future
- Exploitation
- Protest
- Exclusion

A full report on this iterative and ongoing process will be presented, once concluded, in the second report from this work package.

[18] It is a truism that the first round (and an important round) of analysis is in the transcription process. Listing to interviews while transcribing interviews (or correcting transcripts) give a researcher an opportunity to become (more) familiar with the material, useful even in cases where the same researcher conducted the interviews. Even at this stage emergent (prospective) themes will be evident to the researcher.

[19] Of course even when using such software the analysis remains 'manual'. Such software does not automate the analysis but rather facilitate organization, with the coding remaining very much in the hands of the researcher.

3 Understanding energy system(s)

3.1 Introduction

In this section we posit that the energy system, long considered a technological construct is, in fact, a socio-technical system (and in many respects an inherently social one). It provides a treatment of traditional understandings of what constitutes the energy system, namely: its technical elements. Building on previous work (*e.g.*, Landini *et al.* 2016 within the ENTRUST H2020 project[20]), and taking a supply chain approach, it provides an overview of the main technologies used across the generation, transport, and distribution of energy, and largely corresponds with Bruckner *et al.*'s (2014) definition of the energy supply sector. Where appropriate, consideration of technologies of relevance to energy end-users are also incorporated in this section.

> *"A complex system is typically adaptive or evolutionary and influenced by social and political, as well as physical, processes"*
>
> (Bale *et al.* 2015, 152)

Along with food production, energy is best understood as a fundamental human activity. The primary role energy has in shaping modern life can be characterized by its ubiquitous presence in every aspect of our lives, so much so that it can be best understood by what Kemp refers to as "*invisibility through omnipresence*" (1999, 823). Without "an energy system", life as we currently understand it cannot exist[21]. However, this ubiquity also belies the complexity involved in its construction, application and maintenance. As with food, the production and consumption of energy is far from a simple, sequential input/output set of apolitical practices, but rather is a phenomenon whereby numerous overlapping and inherently complex social, technical, and economic factors intersect and contend on a daily basis. It has been the relative stability found in the energy systems of developed countries (underpinned by the exploitation of fossil fuels) that has allowed planning and policy actors be lulled by a false narrative of energy systems as simply technical constructs that do not (nor indeed need to) adhere to social or political considerations.

Since the 1970s, the range and complexity of modelling tools for analyzing energy systems and its sub-systems (*e.g.*, the electricity power system) have focused on better energy supply system design, demand forecasting, energy and environment interactions, energy-economics and energy system planning (Bhattacharyya & Timilsina 2010), leaving social and political issues aside, rarely considered beyond being outliers or threats. This tendency to view this complexity in almost exclusively technical and apolitical terms remains strong. However, this is beginning to change. For example, Bale *et al.* (2015, 150) quite rightly apply complexity science methods to better understand energy systems and systems change. While they focus on "*aspects of energy systems (in terms of technologies, ecosystems, users, institutions, business models)*", they do acknowledge the interaction between energy system actors and energy technologies, and physical and political processes that also make

[20] ENTRUST project fact sheet on Cordis: https://cordis.europa.eu/project/id/657998

[21] Recent news reports from the ongoing war in Ukraine starkly illustrates the importance of electricity and urban living where the onset of winter and Russian airstrikes destroying much of Ukraine's critical electrical infrastructure (*e.g.,* substations, transformers, *etc.*) has left residents of high-rise tower blocks particularly vulnerable, especially those living in the upper floor apartments with no access to elevators due to resultant power cuts (e.*g.,* see AFP, 2022). As Bryce (2020) notes, it is electricity now more than ever that determines the fates of nations and states.

up complex systems. Basu *et al.* (2019) develop this approach further calling for new conceptualizations of urban energy systems that build on contemporary understandings of the energy system that incorporate political, environmental, and economic considerations given cities now account for two-thirds of global primary energy demand and therefore are central to any sustainable transitions planning. However, the traditional approach has been to place emphasis on technical and business-oriented aspects at the expense of social and environmental concerns.

3.2 Technological characterization: a supply chain perspective

As mentioned above the energy system is socio-technical in nature, while we would argue the importance of better understanding the social dimensions of energy, these can really only be appreciated if the technical context is understood. As part of the body of work produced for the ENTRUST H2020 project[22], Landini *et al.* (2016) sought to present an overview of the European energy system, focusing on the technological drivers that characterize it. Taking a multidisciplinary, actor-network approach, much like complexity science more generally, they considered the energy system from a supply chain perspective. As El Saadany *et al.* (2011) indicate, a supply chain is a complex network involving many stakeholders that engage at various levels in the procurement of raw materials, transforming them into intermediate goods, before the selling/purchasing of final products to market. As such, "*the output of one stage is the input to another; consequently, the environmental decisions made at one stage of a supply chain are affected by those made at prior stages and will affect those made in subsequent stage*" (Landini *et al.* 2016, 10). In essence, an energy supply chain represents the movement of materials from their source to the consumer and constitutes four key elements: namely (1) the generation of energy, (2) the transmission of energy (very often over long distances), (3) the distribution of energy to consumers (*e.g.*, electricity, petroleum-based products for transport, natural gas, home heating oil, *etc.*), and finally (4) the consumption of those energy products by the consumer (*Ibid.*).

Taking electricity as an example, it can be generated from a range of sources including renewable technologies such as hydro and wind power thermal power from nuclear energy or fossil fuels such as coal, oil, and natural gas. Once generated, this bulk electricity is transported using high voltage electricity transmission lines from the sites of production to areas where it will be consumed or transformed. Substation transformers convert this high voltage electricity to a much lower voltage for distribution to consumers through ground level transformer substations or low voltage street mains and cables connected directly to domestic or commercial buildings where it will be used as part of the occupant's daily routine. When engaging in electricity supply planning and supply chain design, the interlinkages between long-term planning decisions (*e.g.*, capital investment, strategic planning applications, *etc.*) and short-term operational decision-making (*e.g.*, scheduling employee rosters, equipment use/maintenance, product purchasing decisions, *etc.*) present a series of dynamic challenges for systems and control engineers. Landini *et al.* (2016) also note that these interlinkages are further complicated by numerous uncertainties arising outside traditional framings of the energy system, including the market, political sphere, and technological developments. This is supported by Lee (2014) who outlines the design of a biodiesel production network in the Southeastern United

[22] Project reports and associated publications are available from the ENTRUST project's Zenodo repository: https://zenodo.org/communities/entrust/?page=1&size=20

States with the degree and quality of co-operation across actors in a network seen as key determinants for success. Also, alignment and contingency are other significant factors to consider (Simangunsong *et al.* 2012) with growing environmental uncertainties increasingly seen as essential to supply chain modelling (Fynes *et al.* 2004). The energy sector, as with other industrial sectors, is increasingly prioritizing supply chain optimization given the multi-scalar uncertainties associated across all activities (Lee, 2014). An interesting exercise undertaken by Landini *et al.* (2016) when characterizing the energy system through a supply chain lens, was to apply key performance indicators (KPIs) to account for the complexity involved. KPIs have evolved over the years to take into consideration the numerous different factors impacting the energy supply chain, whether through application or influence. These can include internal KPIs (to assess the internal workings and calculations of an individual business or entity), external KPIs (such as communications between or across policy institutions and stakeholders), and planning for future decision-making (*e.g.*, official reports evaluating progress *etc.*) and strategizing (Lehtonen 2013; Závadsky *et al.* 2019).

Table 1, below, presents the initial framework of Ideal Key Performance Indicators to characterize energy supply chains according to Landini *et al.* (2016). Their rationale was to present a set of defined themes as a 'guiding framework' across all applicable technologies in the energy system as a means for standardizing and maintaining consistency when characterizing the energy supply chain, while also ensuring there is an appropriate range of perspectives and scales for each theme.

Table 1 Framework of Ideal Key Performance Indicators to Characterize Energy Supply Chains (source: Landini *et al.* 2016, 20)

Theme	Strategic Level Indicators	Tactical Level Indicators	Operational Level Indicators
Greenhouse gas	Contribution to national GHG profile	Location of emissions arising in supply chain	GHG profile @ operational level
Waste Generation	Contribution to national waste profile	Hazardous Waste?	Waste profile @ operational level
Capital investment cost	Cost of produced energy	Cost per installation	Payback for typical investor
Political commitment	International arena	Political landscape	Investment support
Technological Regime	Infrastructure lifespan	Maturity of technology	Social Acceptability
Resource Outlook	Resource remaining @ current usage	Theoretical resource availability	Level of new uptake /annum
Public Opinion	National public support	Public support monitoring	Acceptance of technology
Consumer Behavior	National energy program	Energy behavioral change monitoring	Level of new uptake

This effort is further refined in later tables of their document, which present a series of 'filtering' to their identified list of ideal indicators. The authors note this was predicated on the availability of suitable data ability to accurately determine suitability and replicability across technologies. Consequently, certain KPIs were favored for specific technologies and certain stages of the energy supply chain. Their emphasis on 'technology specific KPIs' for the middle phases (*i.e.*, production, transportation-distribution, and storage) of the process before finally focusing on the end user stage[23]. The authors also noted difficultly in securing data on the two final themes in Table 1, public opinion and consumer behavior, both of which have also been traditionally difficult to capture accurately. They tried to overcome this by applying number of different evaluating parameters including:

- Primary energy source: as statistical data on public opinion for energy production are available, the type of primary energy that the technology uses can be taken as an indicator of public opinion.
- Market share: especially for the end user, market share is a strong indicator of how many people are in favor of that technology.
- Protest movements: for transportation and storage technologies, the presence of protests around new installations has been considered as a negative indicator of public acceptance.

(Landini *et al.* 2016, 24)

By following the energy supply chain and augmenting information involving stakeholders, the authors were able to analyze the four main stages of the energy supply chain, along with the main technological drivers shaping the system. The reviewed technologies were also grouped into similarly based categories, with specific KPIs outlined and defined for each to compare their respective strengths and weaknesses. Consequently, they demonstrate how complex and multi-layered the energy system really is and indicate the numerous factors that need to be considered when describing it. The traditional energy system, itself characterized by highly centralized energy production models that rely in the main on fossil fuel exploitation (in all its forms) remains the defining feature of current energy system, though this is changing. A growing suite of alternative energy solutions are already impacting the market such as wind and solar energy technologies in addition to greater distributed generation with the potential for two-way flows of energy based on energy/electricity demand oscillations experienced throughout a 24-hour cycle. Indeed, the shift to greater electrification across all sectors of society continues apace with the issue of storage increasing in importance given the variability of renewable energy sources and the need to balance off-peak and peak-load demand. Also, a growing emphasis on demand response solutions (*e.g.*, see the ACCEPT H2020 project[24]) and associated business model solutions to accommodate them are also adding a further layer of complexity to the system.

3.3 Policy and regulatory context

The inherent complexity of the energy system is further compounded by the often competing or

[23] Here, they outlined two tables broken down between heating, ventilation, and air conditioning (HVAC) and Lighting and Transport systems.

[24] ACCEPT project fact sheet on Cordis: https://doi.org/10.3030/957781

contradictory policy and regulatory contexts (another aspect of its social dimension). It can be taken as given that we live in complex, non-linear and often recursive social structures (Urry 2000), which in turn influence how we interact with our physical environment; from the energy networks we plug in to, to the spatial environments we negotiate. Again, it is useful here to take a multi-level perspective considering international (*e.g.*, intergovernmental agreements on climate and environment); European (*e.g.*, EU Climate Package), national (*e.g.*, National Energy and Climate plans) and local (*e.g.*, building energy standards) levels of governance to get a more wholistic understanding.

Affordable, reliable, and sustainable energy has been set as one of the 17 Sustainable Development Goals pledged by the United Nations alongside world leaders in 2015. It has been recognized that achieving this goal is imperative to advancing other Sustainable Development Goals, including those related to poverty eradication, food security, clean water and sanitation, health, education, and economic growth, while at the same time combating climate change (United Nations General Assembly 2015). The United Nations has introduced numerous policies and initiatives to facilitate the attainment of this goal, such as the Decade of Sustainable Energy for All, 2014-2024 (General Assembly resolution 67/215). This initiative has become a quasi-international organization that supports governments and other partners in accelerating efforts relating to sustainable energy. As a result, most countries in the last two decades have created policy frameworks to transition towards a more sustainable energy system. For example, in the recently published RePowerEU plan, the European Commission further increases its ambition for renewables in final energy consumption setting a target share of 45 per cent by 2030 (European Commission 2022a), while Sweden adopted the challenging target of cutting its net greenhouse gas emissions to zero by 2045 (Swedish Government 2020).

In most instances, it is no longer possible for individual states to meet the energy demands of its citizens without first adopting some form of co-dependent relationship with other states or third-party entities such as the multi-national oil and natural gas companies. Energy policy, therefore, continues to be a fundamental government activity for all states with the level of complexity with which it is applied only set to increase with the numerous deepening and intersecting crises we face, most notably climate change. It should be noted that biodiversity loss and ecosystems breakdown are increasingly acknowledged to be both interconnected and reinforcing crises that are intrinsically linked to how we use energy.

In the European Union, member states adhere to a collective strategy that links energy and climate. These strategies include a suite of supporting, interrelated approaches with three pillars of making energy more sustainable, secure, and affordable across member states. This is to be achieved by implementing low carbon energy technologies, renewable energy production, and upgrading or decommissioning existing energy infrastructure. This approach includes developing the Energy Union though implementing strategies and realizing policy initiatives and legislative packages such as 2030 Climate and Energy Policy Framework, European Green Deal, RePowerEU plan, Fit for 55 package, Clean Energy for all Europeans package, Clean Energy for EU Islands framework, *etc*.

As part of this approach, a growing emphasis on citizen-led or citizen-oriented participation in the European energy sphere has begun to manifest around the still quite nebulous concept of the ‘energy citizen’. Lennon *et al.* (2021) write that in 2015, the European Commission marked a notable shift in approach with two key communications: Delivering a New Deal for Energy Consumers and Launching the public consultation process on a new energy market design. Both documents placed particular importance on empowering consumers as part of any future energy policy. In addition, the reduction of energy costs via self-generation and self-consumption were seen as a means for enhancing the role of ‘the consumer’ (European Commission 2015a, 2015b). The Commission also identified the need for a greater share of variable renewable energy sources in the grid and for improving supports for their deployment with the design any new energy market template needing to place consumers at

the center of the future European energy system (Lowitzsch *et al.* 2020). To meet this challenge, the Commission acknowledged that the correct framework needed to be created to enable energy consumers participate successfully in the Energy Transition. From these initiatives the Clean Energy Package for all Europeans was launched the in November the following year (Lowitzsch 2019).

In 2019, the European Commission further revised the Clean Energy Package assigning community energy a clear status in EU and national legislation for the first time (Lennon *et al.*, 2021), with two key directives; the revised Renewable Energy Directive (EU) 2018/2001 (RED II) and Internal Electricity Market Directive (EU) 2019/944 (IEMD). Both directives formally acknowledge the rights of 'energy communities' to participate in the energy sector[25]. Taken together, the IEMD and RED II introduced a Europe-wide model for the governance of energy communities, requiring member states to adhere to promote citizen participation in the energy sector through the vehicles of Citizen Energy Communities (CECs) and Renewable Energy Communities (RECs) (Caramizaru & Uihlein 2020; Lowitzsch *et al.* 2020; Lennon *et al.* 2021). Several key takeaways of the directives include the revised Electricity Market Directive places the onus on member states to develop the appropriate 'regulatory framework' to give energy citizens, via their participation in energy communities, a greater level of support when competing with incumbent market actors. Caramizaru & Uihlein (2020) note how RED II also provides for the development and expansion of energy communities in the energy domain by establishing preferential market conditions and other incentives (see also Lowitzsch 2019b). Both directives very much situate energy communities, and therefore the energy citizen, in a multiple role scenario whereby they must prioritize environmental and social community benefits over simply profit (Lowitzsch *et al.* 2020).

3.4 Energy as a social system

Geels (2004, 900) describes socio-technical systems as "the linkages between elements necessary to fulfil societal functions" comprising "artefacts, knowledge, capital, labour, cultural meaning, etc." In this section, the energy system traditionally viewed predominately as an almost exclusively technical construct will instead be considered as a socio-technical system of interacting social and technical elements. Moreover, given the intimate nature of people's relationship with energy and the importance of the human factor in the energy system an argument will be made that the energy system could also usefully be considered a social system.

There have been various efforts to broaden how energy is seen and represented (Sovacool and Florini 2012). While Rosa *et al.* (1988) recognize that while energy can be seen as primarily a physical construct, it does in fact permeate almost every aspect of the social world. This includes everything from, "*life-styles, broad patterns of communication and interaction, collective activities, and key features of social structure and change are conditioned by the availability of energy, the technical means for converting energy into usable forms, and the ways energy is ultimately used*" (*ibid*, 149). Aronson and Stern (1984, 15) in what can be considered their seminal paper on the topic suggest 'there is no single socially shared concept of energy'. Instead, they propose four ways of seeing energy: as a commodity, an environmental resource, a social necessity, and as strategic material. They rightly argue that each of these views is not given equal weight by policymakers, with the

[25] Furthermore in October 2022, the European Commission (2022b) included "comprehensive" reform of the EU's electricity market (including a decoupling of electricity and gas prices) in its new work programme.

commodity paradigm being the one that remains the hegemonic social representation of energy. The emergence of sustainable development as a policy goal in the 1990s has seen a new facet of the "energy as social necessity" representation emerge, which Devine-Wright (2007) describes as "energy citizenship". This approach or approaches, which will be discussed in section 5.4, argue for the social necessity of public engagement and participation in processes of policymaking and planning, driven by principles of local empowerment and action.

Energy continues to have a largely ambiguous, sometimes contradictory, status in social theory. So much so that theorists (*e.g.*, Shove & Walker, 2014) have on occasion pronounced for whom and what is energy actually for. In their similarly titled 2014 article, energy supply and energy demand are viewed as essential to the "ongoing reproduction of bundles and complexes of social practice" (*Ibid.*, 41) with social-theoretical perspectives on energy having a critical role in framing how problems like reducing carbon emissions are addressed. Acknowledging this, they and others in recent years (*e.g.*, see also Pink 2012; Strengers 2012; Stirling 2014; Horta 2018; Yamaguchi 2019) offer alternative theories of practice that contribute to addressing fundamental questions around energy, particularly its utility – not so much from its engineering and design perspectives, but with regards in its social contexts. It also remains true that these issues are "*routinely and perhaps necessarily obscured by those who see energy as an abstract resource that structures or that is structured by a range of interlocking social systems*" (Shove & Walker 2014, 41) given more immediate concerns like energy poverty, distributional and procedural justice, *etc.*

4 Energy and the citizenry

4.1 Introduction

Chapter 4 explores the energy-related cultures, practices and behaviors that can be said to "*constitute a powerful human factor in the energy system*" (Axon *et al.* 2018). In its three component parts it will explore different aspects of people's relationship with energy – its deep intertwining in the (social) practices that make up daily life; the impact of energy system artefacts on local environments and what that means for those than live there; and thirdly it will consider the meaning of, and the means to achieving a so-called just transition to a decarbonized future. The significance of energy in our daily lives, particularly the making of home as a lens, highlights the intrinsic relationship of energy consumption with the social practices that combine to make up lived experiences of citizens.

Drawing on a range of literature including on: understanding home (Mallett 2004; Easthope 2004), social practices (*e.g.*, Shove and Walker 2010; Pink 2011; Strengers 2012; Pink 2012), behavioral approaches (Abrahamse *et al.* 2005; Yohanis 2012; Frederiks, Stenner, and Hobman 2015) gender and energy (*e.g.*, Mechlenborg and Gram-Hanssen 2020; Petrova and Simcock 2021; Clancy *et al.* 2003) we present findings from the interviews we conducted for Work Package 2 of the ENCLUDE project.

4.2 Energy: the making of home

Several interviewees described how certain events in their lives led to changing perspectives on energy use and how we live generally. One participant described how his perspectives on energy use within the home shifted dramatically during the COVID-19 pandemic, watching as the family's second car "*literally sat in the driveway and rotted for two years*" [EI15]. As the country emerged from the pandemic EI15 no longer saw any need for what was now viewed as a drain on the family's finances and its energy use budget. As a result, the family decided to sell the second car and invest the money

in purchasing an electric cargo bike instead. Another interviewee described how the birth of a child with visual and hearing difficulties, and who required use of a cane, radicalized her attitude towards how we use cities. This change in attitude has contributed towards her growing advocacy work around clean, renewable energy and the advancement of society more generally: "…*obviously it was an area that I knew a lot about in theory. But in practice, when you're trying to teach a four-year-old not to fall over a cracked pavement, it kind of means something different*" [EI33].

Many participants acknowledged a certain juxtaposition between how they want to organize their lives and the financial and material constraints that the energy system impinges on them. EI24, for example, described "*a kind of cognitive dissonance between my professional interest in these issues and the way that I don't pay enough attention to my immediate energy usage. I'm just not very good at budgeting or taking considered decisions around energy coming into the home*". The daily reality of how significantly an individual's own personal usage can realistically effect change and meet the challenges associated with the climate crisis *etc.*, given the systemic constraints imposed on individuals was also mentioned: "*we still drive a diesel car, our house still has an oil boiler, umm we, we're realistic about our ability to impact our own personal umm…contribution to global warming, etc. you know?*" [EI15].

An interviewee from Nigeria articulated how personal energy use looks different in various parts of the world. Where a practice (*e.g.*, decisions around using certain fuels) may be negatively appraised by outsiders as not being "clean" or causing damage to the environment. From the perspective of those directly involved, decisions around energy are not as straightforward and therefore cannot be appraised as simply being good or bad. Instead, they require a more complex understanding of how people attempt to meet their needs at specific moments in their lives:

> "*But of course…we can't also exclude the fact that in Africa, in many parts of Africa…and I would say that, you know, if you look at the nitty gritty that people actually do make decisions right. It's just that when we're looking at it from an external perspective we're looking at, you know, how clean is it? How accessible? How generally applicable is the source of energy? So for instance, you find that people in local areas they use firewood for cooking which is not necessarily clean. But it's also a solar energy, you know, and these people make decisions even within the local area on the kind of forest they should cut down to actually fuel their needs at that point in time…I would say it's not necessarily as straightforward as we want it to be*" [EI13]

One participant [EI23] living an 'ecovillage' in Ireland explained the changes she made to her home to dramatically reduce her energy bills, installing "*a heat pump and solar panels and insulation*" and choosing to live without certain luxuries like a tumble dryer. However, she also recognized her privileged position as a homeowner and someone who was able to access a loan from her family to finance most of the changes to her home. A position that remains inaccessible for many people in society. A politician we spoke to described how energy is structured in such a way within our personal lives that is very much taken for granted and taken as a given by most people, "*just like turning on a tap, like never kind of questioning it*". However, recent global events like the Russian invasion of Ukraine and the resultant energy price shocks have pushed energy and the energy system more to the center of daily decision-making considerations for a greater cohort of people than was heretofore [EI20].

Home is the space where we live our private lives, it is where people perform the intimacies of living, and carry out the practices that are needed to support everyday lives whether within or outside the home. The performance of these domestic practices – meeting the needs of oneself and others *e.g.*, cooking, heating, washing, playing – require energy. In this way the centrality of energy to people's daily lives can be seen. However, people's experiences of the making of home is to a large extent determined by the roles they play in the household and this, in turn, leads to different relationships

with, and understandings of, energy (Dunphy *et al.* 2017).

This is also true for domestic practices where the link between material objects or technologies intrinsically linked to the evolution of practices and energy behaviors. However, as Dunphy *et al.* (2017) note, this link does not sufficiently explain the evolution and ubiquity of a specific practice. This is true for the home as it is in the workplace *e.g.,* the refusal of many to give up the rituals associated with solid fires even after installation of renewable energy heating solutions (Eakins *et al.* 2022). Nor does it account for the phenomenon of individual and intergenerational unlearning as (energy) technologies change. While the topic of organizational unlearning has received attention in business organization and management literature (*e.g.*, see Hislop *et al.* 2014; Scheiner *et al.* 2016; Brook *et al.*, 2016; Johannessen & Hauan 1994), the concept of unlearning particularly as a social theory remains largely underdeveloped (its importance arguably emphasized by the attachment of many to carbon wasteful habits such as solid fire use mentioned above). Also, some domestic practices are not only highly symbolic but also by necessity can be deeply entrenched human behaviors that become resistant to societal change. For example, daily usage patterns which heretofore emphasize holding off using high demand domestic appliances to off-peak hours will need to be changed when using renewable energy sources or with micro-grid scenarios, as the preference would be to use energy when it is produced (to paraphrase an Irish utility's communication campaign: if its windy outside – turn on the washing machine). Zanocco *et al.* (2022) frame this as a component of the energy literacy concept of 'load shape awareness' when encouraging households to alter their daily usage patterns using demand response and time-varying pricing approaches. But for most participants energy and the making of home have greater significance beyond simple technological considerations, being more likely framed by one's lived experiences and often the immediate needs one faces.

While the home is of course relevant and important, there remains a sexist tendency in the literature to consider the home domain as particularly suitable for exploring women's perspectives. From a wider debate about citizenship, this raises the question if women's experiences are generally omitted in public sphere which has been traditionally considered a male space of influence (Lennon *et al.,* 2020). There is much left unsaid beyond consumer expressions of citizenship, with notable exceptions, across the energy life cycle from extraction, production, distribution and end-of-life (Pearl-Martinez and Stephens, 2016, van Veelen and van der Horst, 2018, Allen *et al.,* 2019). Indeed, Lennon *et al.* (2020) argue that while the concept of citizenship needs to be broadened to allow for non-commercial energy use, domestic spaces and spaces of caring it also needs to be framed in such a way that introduces and enables more transformative aspects of citizenship (which could be harnessed for the energy transition).

4.3 Energy: the making of place

One spokesperson for an environmental organization in Ireland described the complexity associated with people's sense of place, and how this may influence attitudes towards the low carbon energy movement in unpredictable and sometimes seemingly contradictory ways: "*There's a huge risk that where citizens don't feel a part of something then why should they bother…well you could look at it from both ways around, you know. Why should I support a pylon going through my local community? Or looking at it from another way, why should I give a damn about all of this energy climate stuff when I don't actually see any…anything material in my own backyard or in my own house?*" [EI29]

EI29 also suggested that by making citizens feel "*a part of something bigger*", people may put aside or lessen their place attachment at the very local level in lieu of wider environmental concerns, though this would need to be linked to citizens' perceptions of trust for it to work. Another participant spoke of the negative effect the Shannon Liquefied Natural Gas (LNG) project in Ireland has had on both himself and on his local community, evoking a strong sense of place attachment. Any mention of the

terminal, which is set to be built on the farm where his paternal grandmother came from, was described as the project bringing "*trouble to my door*". Suggesting trouble coming from outside had upset the previously harmonious sense of place for the area. An interesting point made was in relation to the development of wind farms in the local area, and while the importance of place seems to be somewhat understood by large corporations, it is at the same time also disregarded: *"…where I'm living here, they want to build loads of wind turbines all around the farms around here, like big, massive wind turbines owned by some company. They give themselves a local name, but they're up the country somewhere, or they're abroad…then you're left with something which is not even done at a local level…we have, we've oligarchs, and they're called corporations*" [EI30]. Efforts to greenwash or what Murrey and Jackson (2020) describe as "*localwashing*" by energy companies are viewed poorly by citizens. Especially where there is a local dispute these actions undermine a company's status with local people who frame such practices within a wider justice lens.

Place is a strong concept for the deployment of energy infrastructure in local environments and its meaning for those who live there. Fast and Mabee (2015, 25) talk of "*a fundamental human trait of creating meaning attached to the spaces we inhabit*". The significance of people's attachment to their local environment for deployment of renewable energy, and related infrastructure essential for the energy transition, requires further exploration. Literature from several topics is drawn upon in this section, including *e.g.*, Cresswell (2015), also Tuck and McKenzie (2015), on the concept of place; Cowell (2020) on spatiality of energy infrastructure deployment; Devine-Wright and Quinn (2020) on place attachment; and Cass and Walker (2009) on civic opposition to energy projects

Shove and Walker (2014) for example distinguish between two broad schools of thought on the role energy plays between, on the one hand, an emphasis on the types of energy production and use being the main drivers for instigating political, economic, and technical change, and the on the other the locating of energy within social practices, *i.e.*, siting it very much in the social. They suggest that energy supply and demand are fundamentally expressed through artefacts and infrastructures that constitute the energy system. The importance of place in understanding the energy system is not to be ignored and the spatiality of energy is a determining factor for citizens' interaction with and engagement of the energy system.

Energy production is invariably located in specific places or locales, and in turn impacts how we interpret the meaning associated with the spaces they occupy. Wind farms, for example are by their very nature industrial spaces of (electricity) production despite very often being situated in remote, rural landscapes. Their presence on the landscapes they occupy blurs how we define what is to be considered 'wild' and what are industrial/domesticated spaces demonstrating a fluidity of meaning for those who live in their vicinity. While they are static nodes of production situated along often integrated globalized energy networks, they are also representational spaces with the wind turbine playing a dichotomous role in our collective cultural consciousness. Local people may ascribe ownership (in an abstract sense), referring to turbines as 'our turbines' or they may reject them as 'their turbines', usually as part of a wider rejection of the company building/operating them[26]. Lennon *et al.* (2022) highlight the strong connection between place identity and trust for many people. Peng *et al.* (2020) note that, while not the same, one's identification or feelings about a place and the wider place identity attributed

[26] This is one reason why community energy developments typically more acceptable *i.e.,* those "*where communities (of place or interest) exhibit a high degree of ownership and control, as well as benefiting collectively from the outcomes*" (Seyfang *et al.,* 2013, p. 978).

to that same place can and do overlap. Both "*embody subjective or emotional bonds*" between people and the physical environment with place identity a key component of an individual's personality. As Pink (2012, 24) suggests, places "*do not necessarily exhibit particular qualities or have predetermined effects in the world. In this sense, like practices, places are entities that are constantly changing*."

4.4 Energy: the making of a just transition

However, while citizens recognize that "our relationship to energy is fundamentally driven by our pursuit of well-being [and is often framed] as well in terms of exclusion and the fact that often people's well-being is not realized because of their exclusion from markets, excessive pricing and just exclusion from infrastructure" [EI24]. The danger of the many injustices inherent to existing energy infrastructure being replicated in any new configuration (even within a low-carbon setting) is also recognized by several participants, particularly in terms of access. Also, the emphasis on transitioning does not necessarily mean significant change for the better, or indeed transformative change in terms of justice. The transition from coal to oil did not see significant declines in exploitation of vulnerable populations, nor did the extraction of coal diminish in real terms. Rather, as one can see from Figure 1 the exploitation of coal as an energy resource continued to expand long after the transition to oil or natural gas had occurred.

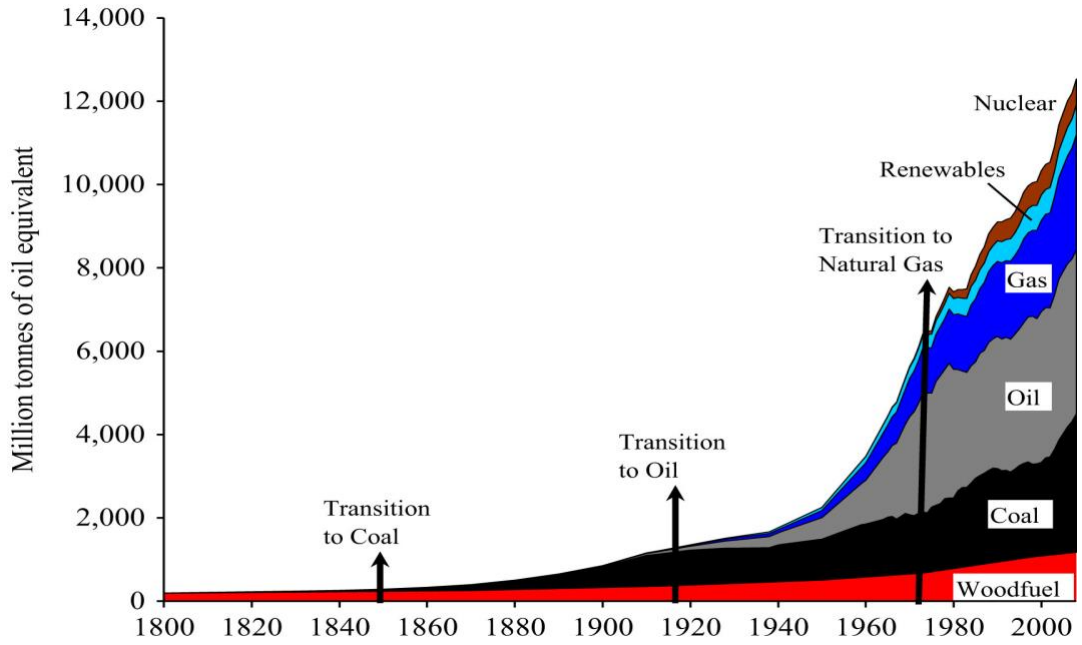

Figure 1 The growth in energy source exploitation since 1800 (source: Fouquet & Pearson, 2012)

Indeed, "there is a tendency…for transition to essentially either imply, directly or indirectly, a type of slow gradual approach. And that may have made sense at one stage, given the extreme challenges of transforming our energy system. But transition now can almost be held up as a type of…either explicit or implicit excuse for not proceeding with rapid transformation" [EI29].

For some citizens we spoke to, there is a sense that the government there is playing catch-up with the challenges stemming from climate change and the energy crisis. Also, several participants suggested that they (the government) should have taken action to mitigate these issues much earlier and that "*energy advice should have been rolled out and communicated about 20 years ago at least, maybe more*" [EI17]. There is also a feeling that governments in general somewhat prohibit the rollout of cleaner energy technologies by not providing enough funding or incentives for these. One German participant spoke of how several years before, her parents "*needed a new heating system in the house and they wanted to have something climate friendly and or like low carbon…but the only thing that*

was supported by the government was a natural gas heating system, which is, which was contradicting their own values but was the only thing they could pay or that they got funding for" [EI22].

An interviewee from Ireland outlined how even the "SEAI[27] grants that go to people for these things [energy retrofits etc.] they're actually helping the rich more than the poor because in order to access the grant you have to be able to put up money yourself, a good bit of money. That means the people who are accessing those grants are people who have the cash and people who are not accessing those grants, don't have the cash up front" [EI23]. Another participant living in an Irish ecovillage described the frustration of attempting to make progress within the village when the current model for the energy system "prevents us as neighbors…in the community, working together, supporting each other" [EI16]. EI16 develops this point further, arguing "there needs to be a kind of clear model for where we're going so we can actually go 'ah, maybe at the moment we can't put in a half-megawatt solar PV panel bank but we know that will be coming down the line, our modelling says ok that should be available…so we can start, at least we can put the land aside for that".

These statements were echoed by environmental organizations within Ireland, where one spokesperson agreed that in terms of potential barriers "*the main impediment has been that policy hasn't existed to facilitate that…that participation, and more specifically, relevant public bodies have not been mandated or obliged to facilitate that [type of] participation*".

One interviewee summed up energy justice as "*making it available, making it affordable, making it accessible*" [EI13]. Many participants spoke of a fairer, people-centered energy future in which there is more local control over energy and a greater proliferation of locally owned energy cooperatives, where locals have a stake in any energy project located in their community. "*I feel like we should have more energy cooperatives, bottom-up cooperatives, and the fact that we don't leads me to believe that something isn't being done. And I think you need a system of supports that can break through the status quo and you need the system to be as easily accessible as possible*" [EI42] and where communities are properly engaged with by the companies that propose these projects.

In terms of procedural justice, there is an overall sense that it is lacking at various levels of the energy system, both in terms of decision-makers and at the local level. One politician from the Green Party described the frustration felt at the lack of progress being made with local groups often stymied and constantly having to push against a majority, center-right representation on the local council, "*when push comes to shove and you're trying to get something done nothing can happen because there isn't another voice…to champion the right things*" [EI19]. This was also felt by locals protesting the Shannon LNG project sited on Ireland's midwestern seaboard. "*The fossil fuel sector has so much power and influence that it can undermine the democratic work of government*" and when it comes to the public, the government "*have never involved people in public participation in any meaningful way. They come to these information days, and they tell you it's public participation, but they already tell you what they've decided*" [EI30]. This statement was echoed by one Irish politician who described how "*in Ireland we don't do consultation very well. We either make it a kind of a rubber-stamping exercise whereby we've made the decision already and now we're like 'Hey, look at our decision, how do you feel about that?'*", which is not consultation. Like a consultation should be more proactive and from the beginnings of the decision-making process" [EI33]. She went on to describe the solution to this issue lay with ensuring "*systems of government that are robust enough that if they make good decisions for*

[27] The Sustainable Energy Authority of Ireland (SEAI) is Ireland's national body tasked with promoting and facilitating the development of sustainable energy in Ireland.

the right reasons, they are confident enough in their consultations that they can move ahead with good decisions and that they can navigate the kind of issues through consultation and genuine collaborative decision-making in a way that gets to the end of the process and doesn't lead to stasis" [EI33].

In general, the energy system is considered "dysfunctional" and unwelcoming to those citizens who have had experience engaging with it, leaving many people feeling "ignored", overwhelmed, or blocked out by those in positions of greater power. One Irish activist summarized the idea of energy citizenship as being "*something you take control of yourself…the desire to be an energy citizen is something you have yourself. The respect and…permission to be that is something that you have to get from government because they have so much control over it*" [EI39]. This was mirrored by the words of a Nigerian interviewee who believed that the majority of citizens there "*don't see themselves actively participating in the energy decisions…it's more like a top down approach where the leadership makes the decision…even me as an energy user like in Nigeria I don't see myself as an - apart from the fact that I'm a lawyer and advise participants in that industry - I've never, after that, I never see myself as an active decision maker in the energy, energy industry*" [EI13].

The theme of distributive justice – or lack thereof – was also present in numerous conversations with participants. One politician described how there are two opposing views when it comes to developing renewable energy source infrastructure, where on the one hand there are communities who don't want any more energy projects in their area because they are already fatigued by the level of development, and on the other there are people calling for more energy projects to ensure energy security and avoid further carbon lock-ins. Who benefits and who suffers can sometimes prove difficult to determine. As one interviewee working in the policy arena revealed, poorer-income households tend to suffer the most when it comes to energy costs generally, but also find it hard to participate in funding schemes like those run by the SEAI due to lack of availability to matching funds usually required to qualify for such schemes. There is a perception that the government should be *"paying for people to put solar panels on their houses, rather than just incentivizing them to reduce the cost of it, why aren't they literally going out there and paying them for it?"* [EI15]. Coupled with this, there was a feeling that communities and individuals deserve to benefit more from the projects and schemes that impact their lives, otherwise "*If the people themselves are not seeing a personal benefit, then they're going to see it as a negative*" [E15].

As has been previously described, many participants envisaged an energy future that saw greater levels of citizen participation, with more control for local communities. There was also an emphasis on a fairer distribution of 'benefits' arising from a project and a desire to see companies actively engage with local communities, including helping fund local initiatives and improvements in affected areas so local citizens can see direct, tangible benefits for both themselves and for their locality. Increased levels of community ownership and control, as pointed out by one participant, had the potential to increase public acceptance of, and reduce protests around RES infrastructure developments. This was framed as a win-win for both the company driving the development and the community being impacted. "*If you actually were an investor in that and you saw a dividend, then you might be more inclined to accept that they're there because you part own them in a cooperative way*" [EI15]. Interestingly, one participant from Germany, who had grown familiar with the practice of companies inviting local communities to invest in energy projects earmarked for their locality, barely viewed this as participation in the energy system because it is "*just like passively agreeing to something*" [EI22]. This perspective was interesting considering that for participants from other countries, this form of 'passive participation' remains quite ambitious for citizens trying to engage with the energy system there.

Many argue that the energy transition could and should be just – resulting in a fairer more sustainable energy system. As we have alluded to above, fairness is almost a prerequisite for a successful move

away from fossil fuels. Concepts such as just transition[28] (see *e.g.,* Heffron & McCauley 2018; Barry 2021) and energy justice (see *e.g.,* Sari *et al.* 2017) are rightly acknowledged as important components of achieving a sustainable energy transition and the societal transformation that will accompany it. There are three core tenets in common to many justice scholarships, namely:

- **Procedural justice**: considering how decisions are made, who is involved, and who has influence? (see *e.g.*, Sovacool & Dworkin 2015).
- **Distributive justice**: considering the fairness of how benefits and ills arising from decisions are shared (see *e.g.*, Lee & Byrne 2019).
- **Recognition justice**: considering how stakeholders are identified and acknowledged (see *e.g.*, McCauley *et al.* 2013).
- A fourth is increasingly added: **Restorative justice**: addressing past and ongoing harm caused by energy systems and past decisions (see *e.g.,* Heffron & McCauley 2017).[29]

While the energy justice focus has primarily centered on the actors and stakeholders at the center of the policy cycle, it does apply "*justice principles to energy policy, energy production and systems, energy consumption, energy activism, energy security and climate change*" (Jenkins *et al.* 2016, 174). As a result, interest from policy makers and researchers, and even energy industry actors have grown significantly in recent years. So much so, that it can be argued there has led to a certain attenuation of the concept (Lennon *et al.* 2022). Indeed, some scholars have suggested that while as a term it has reached certain critical mass in the literature, it still lacks a coherent, unified conceptual approach to the numerous intersecting expressions of the concept found in the literature (Lee & Byrne 2019; Pellegrini-Masini *et al.* 2020)[30]. At its core, notions of energy justice have remained firmly fixed in traditional philosophical practices and political thinking, while at the same time incorporating formal equality concepts (*Ibid.*) that are also broadening into incorporating what is described as the more-than-human (Sovacool *et al.* 2017; Silva Ontiveros *et al.* 2018; Jenkins *et al.* 2020; After Oil Collective 2022). Lennon *et al.* (2021 196) suggest that indeed it is "*this multifaced aspect to the concept that in many ways makes it useful for critiquing existing governance structures and has contributed to it becoming somewhat of a guiding principle for many in energy law and policy*". This potential ethical turn may have potentially radical consequences to how we shape our energy future (McHarg, 2020).

Decarbonization, including the ongoing transition away from carbon-intension fuels, both requires and will result in significant societal transformation. It will inherently mean substantial changes in the way we live our lives and how we organize our societies (and their component economies). The level of social (and socio-economic) change envisaged can only be effectively realized with the agreement and acquiescence of the citizenry (Dunphy & Lennon 2020a). This means getting citizens to buy into the objective of decarbonization generally and to open to considering specific decarbonization actions

[28] Originating in the labor movement, the idea of the just transition is very much tied up with ensuring workers do not lose out in the move away from fossil fuels. In our work we focus on the wider applicable of the concept.

[29] Such restorative justice is not unrelated to (albeit different circumstances) to the idea that the renewable energy could offer a platform for reconciliation between indigenous and settler peoples in settler-colonial countries (including conflicts around energy extractivism), as discussed by Hoicka *et al.* (2021).

[30] Whether such a unified concept is itself desirable could be debatable, given the value inherent in flexible concepts

constructively – including, *e.g.,* policy changes[31], deployment of infrastructure[32], economic strategies, educational priorities, *etc*. However, to date such buy-in has not always been evident, as shown by the public opposition to many (renewable and related) energy projects which have been identified as a substantial impediment to the ongoing transition (Enevoldsen & Sovacool, 2016).

Bell *et al.,* (2007) note what they describe as a 'social gap' between support for renewable energy (specifically wind) and related projects in principle amongst the population at large and local opposition to such energy projects. They see three reasons to such opposition, and it is informative to look at what these positions might infer about people's relationship with energy:

- People acting in their own perceived self- (and perhaps selfish) interest. Lennon *et al.,* (2019) posit that attributing opposition to renewable energy projects to such NIMBYism (alone) is an oversimplification as it is typically more complicated.
- Minority opposition preventing the will of the silent majority. This view of a democratic deficit aligns with the majoritarian discourse coalition identified by Mullally *et al.* (2018, 75), which holds that popular support should "*overrule the local concerns at project implementation stage*."
- Qualified support where people support renewable energy but not unconditionally, rather they "*believe that there are general limits and controls that should be placed on its development*" (Bell *et al.* 2007, 463).

As Bell *et al.* (2007) observe, there is no one explanation for opposition to RES projects, and there can be multiple overlapping reasons. Lennon *et al.,* (2019, 14) note "*local people's relationships with, and perceptions of, the energy system (are) framed by their day-to-day lived experience.*" Appreciating this relationship and understanding how people's relationship with the energy system can be improved will be key part of realizing a successful decarbonization of energy.

5 Energy citizenship(s)

5.1 Introduction

In recent years, the terms 'energy citizenship' and the 'energy citizen' have increasingly been used to describe the evolving relationship people have with the energy system, particularly as we transition to more dispersed and potentially more democratically organized low-carbon infrastructure. While still largely the purview of academic and policy making circles, notions around citizenship and democracy are increasingly informing debates around how we are to restructure the energy system over the coming years and this growing interest has also meant it has become in somewhat polysemous in both how people interpret and apply it to those discourses. This has led to scholars reappraising its significance from several different perspectives, whether in terms of its contribution to understanding

[31] Policy innovations will be required in the energy domain but also across a multitude of distinct but interlinked policy areas (see *e.g.,* Mullally & Dunphy 2015 for discussion of environmental policy integration in the energy domain)

[32] However, this should does not mean that they are expected to automatically accept infrastructure deemed necessary (in contrast with the majoritarian viewpoint often expressed by proponents of such projects *e.g.,* as evident in energy policy deliberations by Mullally, *et al.,* 2018)

the psychological aspects to renewable energy governance (Devine-Wright 2007), to its role in material participation (Ryghaug *et al.* 2018), or its co-option by neoliberal tropes like the 'citizen-as-consumer' (Lennon *et al.* 2020), to its relationship to the growing literature around energy democracy (Wahlund & Palm 2022).

Understanding energy citizenship, therefore requires us to to 'return to the source' around ideas on 'citizenship' itself and recognize it is informed by the two main traditions – *i.e.*, the liberal tradition with its emphasis on the rights and entitlements of citizens and the civic republican tradition with its emphasis on the duties and responsibilities of citizens (Dunphy and Lennon, 2022). However, it also requires one to be more open to new and more inclusive approaches to the citizenship ideal, most notably in relation to wider framings around ecology and our shared commonality with other human and more-than-human socialities (Tsing, 2013). Citizenship in the energy domain therefore requires a broader, more flexible approach that takes into consideration multiple perspectives and frames of reference that very much depend on context.

5.2 Citizenship within the energy domain

Increased and more meaningful citizen participation is an important component of the energy transition, albeit that the nature and scale of this participation remains contested. Energy citizenship[33] is best understood as a social construct that allows space for socio-technical visioning of the kind of potential role(s) citizens can, or indeed ought to, express when engaging with the energy system (Pel et al. 2021). Devine-Wright (2007) can be credited for (re)interpreting the notion of energy citizenship as a vehicle to describe how citizens might claim a more active stake in an energy system. One that goes beyond the prevailing paradigm of 'consumer' to a more nuanced understanding of the multiple roles citizens can and/or should adopt around energy. In applying Aronson and Stern's (1984, 16) four contrasting views of energy – as a commodity; as an ecological resource; as a social necessity; and as a strategic material – the opportunity for more varied conceptualizations of the types of roles citizens can adopt begin to emerge.

In this section, the evolving roles of, and expectation on, the citizen in the energy domain will be explored including *e.g.*,

- **Active consumerism**, where citizens are enabled (perhaps even expected) to use their purchasing power to influence the marketplace and there by feed into the design (and use) of products and services (Fox *et al.* 2017).
- **Prosumerism**, whereby "*small consumers who are also producers of electricity or providers of flexibility and able to modify their consumption patterns accordingly*" (Kuhnbach *et al.* 2021)
- Various conceptualizations of **energy citizenship** (a term popularized, if not quite originated by Devine-Wright 2007). This is a somewhat nebulous term, referring the often-contested idea

[33] In exploring the various roles citizens are playing, and have been permitted to play in the energy domain, this section expands upon earlier work in Lennon et al. (2020) where we explored the contrasting and competing visions of active consumer and energy citizens asking the fundamental question – what are we citizens or consumers?

of citizen acknowledgement and empowerment in the energy domain, and often described in terms of formal participation in the transition towards more sustainable energy configurations.

Since each of these perspectives in and of themselves reflect a specific set of values and beliefs that in turn are subject to the changing perceptions of those interpreting them. This often leads to differing, sometimes contradictory, roles expected of citizens in the energy domain and the degree of autonomy afforded them (Lennon *et al.* 2020; Pel *et al.* 2021). As a result, energy citizenship can at times appear polysemous and prone to different meanings or interpretations depending on who is doing the interpreting. Mullally *et al.*, (2018) argue that citizenship in the energy domain comprises of rights and responsibilities that are themselves supported by important principles of sustainability and social justice (Dunphy and Lennon 2022). Despite what has been a growing acceptance for greater participation on the part of citizens in the energy domain, what that might mean in practical terms remains unclear and is not exclusively confined to energy (*e.g.*, see DeCaro & Stokes 2013).

We argue that ideas on citizenship and its relationship to debates on the energy transition have tended to be significantly biased towards notions of the 'good citizen', who partakes in energy conservation and decarbonization through more 'active' consumer practices around energy (Lennon *et al.* 2020). As such, energy citizenship very often presented emphasizing the inherent responsibilities that come with a citizen's consumer-led practices. However, very little attention is given on the associated rights that should accompany them, for example the right to energy (Hesselman 2022; Hesselman *et al.* 2022). Much like 'localwashing' mentioned above, this diverting of responsibility away from those with real power in the energy system (*i.e.*, the energy incumbents, state actors, *etc.*) to individual citizens (those with the least power, given their only accepted role is as passive consumers) is symptomatic of wider derogations in responsibility by those in power. Similarly for the climate crisis, Naomi Oreskes rightly points out that:

> "*When future historians ask, 'Why didn't people take action to stop the climate crisis when they had known about it for decades', a prominent part of the answer will be the history of denial and obfuscation by the fossil fuel industry, and the ways in which people in power and privilege refused to acknowledge that climate change was a manifestation of a broken economic system*"
>
> (Oreskes 2022)

By placing the responsibility for reducing energy consumption onto individual consumers ignores the deeply entrenched societal and structural parameters that condition social practices and affect individual behavior (Dunphy & Lennon 2020b). Consequently, consumerist orientations to understanding energy citizenship greatly limit the options available to citizens for participating meaningfully in the energy domain and more importantly their potential impact on the energy transition.

5.3 Modes of energy citizenship

Working from the assumption that the idea of "energy citizenship" is born in a context where citizens evolve from being simply consumers (Lennon *et al.* 2020) to something more engaging. In this section, we explore the different modes of energy citizenship that have manifested around the concept. Notions around energy citizenship usually align to a presumption that citizens have a key role to play in the energy transition (Devine-Wright 2007; Ryghauget *et al.* 2018) which is "*a view of the public that emphasizes awareness of responsibility for climate change, equity and justice (...) and, the potential for (collective) energy actions*" (Devine-Wright 2007). Energy citizenship emphasizes the rights and responsibilities of the public vis-á-vis the energy system, focusing on increasing citizens' social and environmental responsibility for their own energy use, placing them in an active rather than passive position (Devine-Wright 2007).

Leveraging work conducted by Mullally *et al.* (2018) and based on an analysis of the collated literature informed by the contributions from the modified Delphi panel members, we have characterized emerging modes of energy citizenship. This will be discussed in detail for the remainder of the chapter. The various modes of energy participation discussed, center on one or more citizen-consumer participation categories, including *e.g.*, consumption-based 'smart consumers'; market-based 'active consumers'; law-based 'constitutionalists'; information-based 'good citizens'; production-based 'prosumers'; community-based 'collectivists'; equity-based 'investors'; politics-based 'challengers'; activist-based 'agitators'; *etc.* Other potential categories of energy citizenship that warrant consideration include *e.g.*, independent-minded 'off-griders'; excluded, 'unconnected'; disadvantaged 'energy poor'; dispossessed (especially in terms of indigenous peoples); *etc.*

In their review of an earlier consultation process on energy policy in Ireland, Mullally *et al.* (2018) highlighted six distinct narratives that appeared to coalesce around citizen participation in the energy domain. They classified these as being either paternalist, majoritarian, consumerist, constitutionalist, communitarian, or deliberative oriented narratives. Each of these perspectives offers insights into the kinds of views that may ultimately inform how energy citizenship might, or indeed should, evolve. Dunphy and Lennon (2022) then applied this framework as part of their characterization of the modes of participation around energy, see Table 2 below. These very much centered on consumption; market influence (& power); access to information; enforcement of rights; individual and collective production; and challenging powerholders through formal and informal political actions and were also informed by other examinations of citizen participation in energy (*e.g.*, see Irvin and Stanbury, 2004; Pallett *et al.*, 2019; Revez *et al.* 2022; *etc.*).

Table 2 Modes of Participation and their Expressions of Energy Citizenship (Dunphy & Lennon 2022)

Mode of Participation	Expression of citizenship	Examples of those impacted
Access (or lack there of) to energy as a resource	Non-performance; disengaged; absence of rights or power to affect change; exploitation/resistance. Operating outside of, or negatively impacted by, existing energy infrastructure particularly by fossil fuel exploitation and other extractive industries	The Dispossessed; the Excluded; the Energy Vulnerable;
Consumption-orientated	Framed exclusively by purchasing practices and consumer-oriented behaviors. False narrative on power expressed through consumer 'choice'	The Active consumer; the Good citizen; the Digital Native; the Energy champion; the Collectivist-consumer
Production-orientated	Largely framed by production of energy narratives. Operate through the production of energy and some self-consumption	The Prosumer; the Self-Consumer; the Collectivist-producer; the Citizen-investor

Politically motivated	Interested in decision-making processes and motivated to affect change from within existing power structures	The Citizen-litigator; the Citizen-challenge; the Citizen-activist

As with citizenship more generally, energy citizenship can best be understood as a diversity of expression, engagement, and participation (Ryghaug *et al.*, 2018), which in turn are dependent on the many intersecting experiences of individual energy citizens. These different expressions are invariably linked to the degree of socio-economic privilege and one's lived experiences (Dunphy & Lennon, 2022).

From Table 2, one can see the first mode of participation is linked to access and the framing of energy as a resource. Here, the duality of resource (*i.e.*, wealth) and exploitation (*i.e.*, the capturing of that wealth from another group) has its roots in the European capitalist and colonial expansions from the late 1400s onwards. This capturing of resources has seen those particularly residing in the Global North continuing to benefit from the legacy of historical exploitation and those impacted by what was essentially intergenerational exploitation continue to be dispossessed. Invariably, this dynamic of 'winner versus loser' relationship has seen those negatively impacted continually being 'locked-out' or benefiting from the energy system. They also carry the burden of continuing exploitation whether that is from direct or indirect means. They include the Dispossessed (Bell, 2002), including Indigenous peoples and other marginalized groups from whom energy resources have been unjustly taken (*e.g.*, see O'Faircheallaigh, 1991; Xanthaki, 2013). Numerous examples of contemporary exploitation including what Newell (2021) highlights as emerging work on 'extractivismo' and its renewable energy variant 'renewable extractivism', building on research on fossil based extractivism which has uncovered how energy economies continue to graft on historical racial inequities between European descendants and Indigenous populations settler colonial countries like Canada, The United States, and Australia. Another notable fast-growing field of research centers around energy poverty, both in the Global North and the Global South where issues of energy justice and energy poverty can have very different outcomes for those affected depending on whether one lives in a state with adequate social security protections or not. Dunphy and Lennon (2022) provide other examples for this, and the other categories presented in Table 2.

The second mode of participation presented in Table 2 centers around consumption-led practices and the framing of citizen participation solely within the parameters set down for 'the consumer'. Within this framework, citizens have little participation beyond how their purchasing practices might be seen to define their contribution. Narratives on both the 'passive consumer' and 'active consumer' have been used to describe and differentiate those practices, but citizens must still operate within limited, and indeed limiting, sets of socio-technical boundaries. For example, in until recently motorists could choose between two principal fuel types to run their motor vehicles, but in no way were they given a viable alternative to having to own a personal motor vehicle. Alternatives, like public transport and safe bicycle lanes were continually underfunded and not prioritized. The advent of electrical vehicles will not offer a new alternative for mobile citizens but will instead 'lock in' existing patterns of consumption and the infrastructure needed to support it. Similarly, narratives on what it means to be a Good citizen, a Digital native, an Energy champion, or a Collective-consumer invariably lock citizens into behaving in ways that maintain, rather than change, the status quo and existing power structures.

While the third category for energy citizenship focuses on production, giving citizens more freedoms than were traditionally experienced when solely engaged in consumption, they are expected to generate energy within strictly delineated socio-technical boundaries that are designed to maintain rather than disrupt the status quo. Hybrid configurations like prosumption or self-consumption do provide opportunities for citizens to establish greater energy sovereignty either as individuals or as part of a Collectivist producer or Citizen investor models. However, until recently the technical and

financial structures in place continue to favor incumbent largescale energy producers.

The fourth a category of energy citizenship is within the political sphere and can take on a number of different expressions. Here, the emphasis is on affecting change in decision-making processes at different scales; from the local, the regional, the national, and even the supra- and international. Examples include the Citizen-litigator whose has detailed knowledge of the legal system and who is primarily concerned with procedural correctness. Working within the laws on information provision, consultation, and permitting, the citizen-litigator puts forward arguments that defend existing rights – or potentially expand those rights – in order to affect change to energy policy development and regulation. While the Citizen-challenger is more concerned with political processes, where change can be made through campaign work, lobbying, and electoral politics. The citizen-challenger operates very much in the certain of existing socio-political structures and leverages considerable socio-political changes to instigate change. On the other hand, the Citizen-activist, is someone who operates more on the political margins and either does not have the social and political capital personally to link into existing nodes of power or is concerned with a political issue that is considered as marginal by those in the center of power. Issues of trust – in the political system generally, but also in those operating within it – means that practices like social mobilization, protest movements, and other radical actions are seen as means to instigate system change.

5.4 The "Energy citizen"

In this section, different manifestations of the energy citizen based on the previously described modes of participation are presented and discussed; they are informed by real-life examples from Chapter 4 (participant pseudonym: EI01, EI02, *etc.*). This is also informed by the conceptualization work carried out by ENCLUDE's peer projects (*e.g.*, see Biresselioglu *et al.* 2021; Debourdeau *et al.* 2021; Ruggieri *et al.* 2021; Hamann *et al.* 2022), which fed into our analysis and helped illustrate the types of 'energy citizen' envisaged and the roles she is expected to play in the energy system.

> "*All forms of participation – whether invited or uninvited, insider or outsider – are always orchestrated and framed in powerful and highly partial ways, and are thus subject to exclusions*"
>
> (Pallet *et al.* 2017, 607).

As we have seen in the previous sections, energy citizens can and do display multiple, overlapping expressions of citizenship in the energy domain, which are very much dependent on the specific circumstances they face. Socio-economic privilege and life experience are both recognized as being significant in framing the type of citizenship one expresses. Indeed, as mentioned previously citizenship itself can be seen as a container for apportioning privilege and as a source of social identity (Gee *et al.* 2016). This was reflected in discussions we had with citizens on the topic, who acknowledged that many cohorts in society are either locked-in to poor energy infrastructure that negatively impacts their lives (*e.g.*, those residing in areas with poor public transport, poor quality housing, limited choice of fuel supply, a monopoly electricity franchise, *etc.*) or are locked-out of existing energy configurations or from partaking in the energy transition (*e.g.*, citizens without the socio-political or financial capital to participate in new low-carbon energy initiatives in their area). Existing socio-technical structures, and very often the ones being designed to replace them, in fact limit the transformative potential of social innovation in the energy system, especially when framed in narrow instrumentalist terms (Wittmayer *et al.* 2020). Therefore, if we are to see a complete reification of energy citizenship or even to get a realistic representation of what the future energy system will actually look likes then we must ask the following questions: in what contexts is meaningful citizen participation in the energy system to be permitted and who is to be allowed participate? Understanding

the defining basis and the goals of those tasked with transforming the current energy system will be important. If it is to be a business-as-usual scenario, with limited tokenistic engagement, then we a destined to repeat the failures of the present. To begin the process of answering these questions, it is useful to get an understanding the types of energy citizenships being expressed. Again, if we return to Table 2 there are already numerous expressions. The following are some selected examples emerging from the literature review and analysis of the collect data (further elaboration of such expressions will be included in the forthcoming D2.2).

The Dispossessed – the dispossession of rights and property have long featured in the unequal exchanges that have underwritten trade and development of the energy system since the 1400s. This has not changed with the advent of renewable energy technologies. Examples from the literature include Jennifer Baka's (2017) article detailing how narratives of wastelands as "empty" spaces in need of "improvement" continues to dispossess land users by enclosing common property lands and developing forms of energy incompatible with local needs, in what she describes as "energy dispossession". The theme of dispossession is also reflected in Stock's (2022, 1) paper on how the solar energy transition in India is disrupting the lives and livelihoods of marginalized groups "*through land dispossession, uneven provisioning of electricity and water resources, dislocation of fuelwood and grazing access, and the diminution of labor opportunities*". While Sovacool *et al.* (2021) have also written about the negative impacts and injustices linked to four decarbonization pathways in Africa and Europe that have further exacerbated vulnerability and inequality in communities. Finally, Dafnos (2020) paper on the criminalizing of Indigenous land defenders and environmentalists, in line with extractivist nation-state policy that sees them as a risk to its security has led to further accumulation and dispossession there.

The Excluded – while there are certain similarities shared with the dispossessed, those citizens considered energy excluded also comprise citizens in the Global North who, either from political or financial exclusory practices, have not been included in decision making around energy development. Also, the concentrations of financial supports to the middle classes through financial grants *etc.* continues to deprioritize those citizens without the financial or social supports to participate. Consideration should also be given to more-than-human actors in the energy system. Sovacool *et al.* (2019, 205) illustrate how policies designed to promote the diffusion of electric vehicles can reinforce, rather than mitigate, exclusion and elitism in national planning in addition to "*producing negative environmental externalities and exacerbating rural (and global) vulnerability*". This approach is also reflected in Brummer's (2018) review of community energy the barriers projects face in Germany, the UK and the USA. Changes to rules around financing and banking licenses in Germany, for instance resulted in energy cooperatives there being precluded from availing of mezzanine financing options and lowering their resilience when competing with other actors that did not need to meet the same requirements.

The Energy Vulnerable – sometimes referred to as fuel poverty and broadly defined as a households' inability to meet its energy needs, the issue of energy poverty is believed to affect nearly 10% of households across the European Union (Hearn *et al.* 2022). However, despite it being a global issue, impacting both the Global South and the Global North, differing interpretations of what constitutes energy poverty has seen energy vulnerable citizens in different countries experiencing diverging levels of support from policymakers. With energy, particularly electricity, a key driver of economic growth, employment, and sustainable development (Gatto & Busato 2020) there is growing 'fuel poverty gap' (the average shortfall fuel poor households experience in paying their energy bills) that is exacerbated or ameliorated by many factors ranging from energy efficiency to the social life of the household (Middlemiss & Gillard 2015). People "*from commonly disadvantaged social categories (disabled people, single parents, and people from ethnic minorities) are more likely to experience energy poverty*" (Middlemiss 2022, 1). As DellaValle and Czako (2022, 1) point out, the literature on energy citizenship points out that for citizens to partake in the energy transition in a meaningful way, they

must be allowed to contribute through their "energy investment and consumption decisions, but also as social and political actors who can shape the energy system". This is particularly true for the energy vulnerable who face multiple intersecting injustices.

The Active consumer – consumption largely frames citizen's role in energy as a passive consumer of energy, characterized as the transactional relationship between fortunate recipient and benevolent energy provider, and has represented the long-held traditional view of the citizen in the energy domain (Dunphy *et al.* 2021). More recently, this market-driven representation has been modified somewhat to account for the perceived agency consumers possess vis-à-vis their transactional rights and responsibilities. The role out of smart technologies has facilitated a rise in this form of participation through gamification features in wearables and apps to 'nudge' or encourage users to interact more with service providers[34]. Reading Schweiger *et al.* (2020) this can be best understood as an active user of a product or service, feeding information back to the provider who in turn adapts their service to meet the needs of the user. In the energy sector, Cseres (2018, 227) rather optimistically describes active consumers as playing "*a key role in promoting competition, ensuring affordable energy prices and security of supply, as well as contributing to the EU's environmental and climate goals*" and through efficient energy use "*crucial actors to manage the energy transition*". However, she does note that the present legal frameworks do not yet facilitate its full potential. Despite this there has been a tendency to conflate the role of active consumer with that of the energy citizen particularly in policy making circles, which has led to a diminution of the greater transformative potential of the latter (Lennon *et al.* 2020). The active consumer concept appears to be little more than a marketing communications tool for enhancing consumer response (*e.g.*, see Stewart & Pavlou 2002).

The Good citizen – asking what makes 'a good citizen' in contemporary society, Russell Dalton (2016) points to a competition between normative representations of citizenship from duty-based citizenship (linked to voting, paying taxes, serving on juries, *etc.*) and emergent engaged citizenship (emphasizing concerns around social issues, the ongoing climate crisis, *etc.*). However, as Mullally *et al.* (2018) have noted the idea of the 'good citizen' has very often been situated as part of information-deficit models pushed by paternalist discourse coalitions, with the energy citizen depicted as someone who is ill-informed and in need of the 'right information' in order to be persuaded to do the 'right thing' and make the 'right' choices (Lennon *et al.*, 2020). This type of participation allows those with real power (*i.e.*, governments, energy incumbents, *etc.*) to control the narrative and divert responsibility away from those who can really affect change to the energy system and limits the citizen to what is essentially an information-based role where participation is characterized by commodity-oriented, transactional engagements. As a result, existing status quos are maintained at the expense of real change. However, this form of participation should not be entirely dismissed. Horst *et al.* (2019) suggest normative debates about what constitutes a good citizen have been too narrowly defined and fail to capture the diversity of participation and belonging experienced across social, cultural and (a)religious contexts in Europe. This reconceptualizing will be useful in terms of the energy system since some citizens are not necessarily averse to this form of engagement and are quite happy to delegate responsibility for energy to someone else (Dunphy *et al.* 2021). As Pykett *et al.* (2010, 523) point out, the performative aspect of citizenship cannot be ignored and citizenship "*like democracy, is*

[34] Another example of this is the sudden increase in consumer wearables and mobile applications providing biofeedback, sleep and stress monitoring services on health and sports performance to users (see Peake *et al.* 2018).

always enacted in particular contexts in which positioning, method and motives play an important part".

The Digital Native – is often used to describe the 'net generation' (particularly in the Global North) born after 1980. The digital native can be considered someone who has grown up along with the rapidly evolution in digital technologies, including the internet, considering these to be a normal part of everyday life. As a result, she is supposed to be 'native' to the digital lifestyle, always connected to the internet, and relaxed about adapting to new cutting-edge technologies (Thomas 2011). The concept shares some overlapping characteristics to the good citizen, framed by pedagogical narratives, and was first coined by Marc Prensky (2001) to describe the gap between educators and the needs of students who had grown up with digital technologies. Given the degree of complexity attributed to new energy technologies, in terms of the installation and their maintenance, the digital native is more attuned to the demands of the production and presumption lifestyles expected from the energy citizen. No longer simply a passive consumer, the digital native can align herself with new energy configurations, *e.g.*, demand response, with relative ease. However, the term has since been critiqued by scholars who view it and the narratives that have grown around it to be problematic. For example, not all citizens, even those born after 1980, have similar levels of digital literacy (Selwyn 2009). Brown & Czerniewicz (2010) point out that the idea of a generation of 'digital natives' is wholly inaccurate and instead effectively describes 'digital elite' shored up by a 'digital apartheid' if you will. Instead, they prefer the term 'digitzen' to capture the digital democracy potential that could form of a mobile society that is not age specific.

The Energy champion – is another contributor to the consumption driven narratives around energy efficiency. Drawing on identity theory and self-identity around consumption, Clancy and O'Loughlin (2002) adopt a consumer behavior approach to their analysis of the hedonic aspects to energy consumption and to energy conservation behaviors. They found that the energy champion is what they describe as an "*anti-consumerist, and this consumption-averse behavior seems to be an indicator of their propensity to adopt a conserver role*" (2002, 267). With personality traits that could be described as thrifty, careful, technically minded, and environmentally conscious the energy champion can be considered more of an early adaptor than say the majority of citizens. Axon *et al.* (2018) describe efforts made in the ENTRUST H2020 project, to broaden out the idea of an 'energy champion' beyond its marketing origins to promote a community-based peer-to-peer intervention in a British housing estate. Despite considerable effort on the part of those leading the intervention, and those participating, engagement with the scheme proved low reinforcing the notion of early adaptors. Also, in their assessment of photovoltaic diffusion in Switzerland at the subnational level, Hirt *et al.* (2021) clearly portray energy champions as early adaptors

The Collectivist-consumer – can in many ways be considered another marketing tool for those tasked with affecting energy behavior and is usually organized and run by a commercial entity that encourages consumers to sign up to a service whereby the entity bargains for say cheaper electricity tariffs on their behalf. The entity secures the cheaper rate on the strength of numbers they bring to the table and the consumer benefits from a lower rate that they would not be able to secure on their own. An example of this model, is 'One Big Switch'[35] in Ireland, where campaign material for recruiting customers is presented as a three-step process as follows: 1.) You register/You join for free online; 2.) We negotiate/We use the strength of our 240,000 members to date to source discounted offers; and 3.) You choose/You choose the offer that is right for you, there is no obligation. While initially

[35] https://onebigswitch.ie/

focused on offering reduced electricity bills, the company has branched out to home insurance, travel insurance, and internet broadband offers. As with the previous expressions of energy citizenship collective consumerism does not offer any real agency to the citizen, beyond the usual parameters afforded the costumer, who can avail of an offer (if they can afford it) or decline it. The customer does not partake in the negotiating of the energy price, nor make a decision beyond simply expressing their interest in reducing their electricity bill.

The Prosumer – emerging from the cooperative movements of the twentieth century, the notion of converging production with consumption gained increasing popularity particularly after Alvin Toffler coined the term 'prosumer' in his book, 'The Third Wave' (1980/1981). "Underlying this is the distinction between production for use and production for exchange. When people produce for use, production and consumption are united in the same person. When they produce for exchange, then production and consumption are separated" (Kotler 1986, 510). Ahluwalia and Miller (2015) while acknowledging the relative newness of the term to describe what was happening in the Information Age, ideas on what constitutes 'a prosumer' hark back to a time before the Industrial Revolution's clear division of labor to a more self-sufficient system of work. In the energy system, the prosumer produces and then consumes her own energy (usually electricity) and has grown in importance over the past ten years. Also, similar to the entangling of consumer/citizen earlier, policy makers have in the past referred to energy prosumers as 'active consumers' (Kotilainen 2020) or indeed as 'energy citizens' (Kampman *et al.* 2016) further adding confusion to the terminologies. It should be noted that prosumerism is not without its negative aspects despite its relatively positive perception in policy making circles. Ritzer and Jurgenson (2010, 13) highlight that in terms of control and exploitation, in prosumer capitalism there is "*a trend toward unpaid rather than paid labor and toward offering products at no cost*". This is reflected in the energy system too, where prosumers may only get paid up to a percentage of the electricity they actually feed into the grid, but not for all of it. The remainder is not consumed by the prosumer, nor is it paid for. Instead, the system operator benefits at the expense of the prosumer. However, Kallio *et al.* (2020) illustrate how this may be overcome, demonstrating how industry incumbents can be hybrid actors in the energy market collaborating with small local power producers.

The Self-Consumer – currently, many stakeholders in the energy system are dependent on the end user's electricity bill to stay afloat. However, the developing photovoltaic market for private dwellings and commercial buildings can be considered a threat to the existing status quo via self-consumption. The self-consumer, who almost takes on the role of the "off-grider" consuming the electricity they produce using a solar photovoltaic array installed on their property, changes the traditional producer-consumer dynamic. Options open to the self-consumer can range from own-operator to more hybrid artisanal production models. Recent research reflects this interest. For example, Gomez-Gonzalez *et al.* (2020) discuss the role frequency containment reserve (FCR) can play in improving photovoltaic self-consumption for household-prosumers. However, self-consumers still need to use electricity from the grid when they are not getting enough from their solar panels (Gigout *et al.* 2021), along with the accompanying infrastructure that comes with it. Though, as the cohort of self-consumers grows, restructuring such as a shift to micro-grid arrangements will likely become a priority.

The Collectivist-producer – energy cooperatives have increasingly seen as an important instrument for driving the energy transition in Europe (Yildiz *et al.* 2015). The European Commission's Clean Energy for All Europeans Package (CEP) promotes collectivist production via the revised Renewable Energy Directive (EU) 2018/2001 (European Parliament and Council of the European Union, 2018) and the revised Internal Electricity Market Directive (EU) 2019/944 (European Parliament and Council of the European Union, 2019), both mentioned in section 3.3. Citizens can become collectivist producers by joining an energy cooperative, or another organizational form of energy community. The community energy movement (while noting that collectivist energy projects do not necessary, but often mean community energy), essentially an outcome of the energy transition and social innovation, has been a vehicle for citizens to arrange alternative ways to organize and govern local energy systems

that are both more participative and democratic (van der Schoor *et al.*, 2016). Pellicer-Sifres *et al.* (2018) describe energy cooperatives as examples of transformative action and grassroots innovation. They suggest that making radical transformative changes to sustainability is not simply a matter of scaling-up whatever happens to be the preferred energy regime. Instead, a combination of commercial, social, and empowering strategies should be put in place to enable citizens transform their current values and relations through learning. The array of organizational structures and business models now available to citizens who now wish to participate in collectivist production, via vehicles like CECs[36], is impressive though availability does depend on the legal and socio-political arrangements in each country. Collectivist-production has other benefits too. Higueras-Castillo *et al.* (2019) examine how collectivism, culturally, influences pro-environmental behavior and attitudes toward renewable energies (particularly biomass and solar) in Germany, Mexico and Spain. Their research confirms the assumption that the degree of collectivism versus individualism is a strong determinant in the formation of pro-environmental behaviors, as well as affecting consumer attitudes to renewable energy systems.

The Citizen-investor – the importance of CECs and RECs as vehicles for citizens to invest in say an energy project is significant, with citizen investment in distributed renewables fast becoming an important component of the energy transition in some countries (Curtin *et al.* 2019). However, beyond mature markets in Germany and Denmark there is little empirical evidence regarding the experience of citizen-investors in other countries (*ibid.*). However, having said that there is a cohort of citizens who are likely to engage in this type of activity. Those who can afford to invest invariably come from high-income households, though Curtin *et al.* (2019) note that even when a citizen-investor is interested in an energy project, the investment amounts tend to be much lower than the equity needed for large projects. Key barriers remain, including limited legislative and market supports, a lack of personal savings, and limited/no access to loan finance. Without significant policy interventions this expression of energy citizenship is likely to remain limited.

The Citizen-litigator – litigation has long been a useful tool for citizens to challenge perceived failings or wrong-doing perpetrated by the state or commercial entities, particularly in terms of environmental justice and civil rights. Recent examples include the 2019 Dutch Supreme Court's decision to uphold an earlier decision made against the Dutch government to urgently reduce emissions as part of its human rights obligations. In Ireland, a citizens' group (Friends of the Irish Environment) took the government to the Supreme Court for failing to take adequate action on climate change and won. In the energy domain, Mullally *et al.* (2018) attribute this form of citizen participation very much within the 'constitutionalist' perspective where concerns regarding legal rights and how the law can be used to accommodate change are priorities. As with environmental and civil rights litigation, case law and establishing legal precedent is important if citizens are to successfully enforcing existing legal rights or establish new legal precedent. Public engagement is formal and expressed through established regulatory mechanisms, with decision-making residing at the national or in the case of the European Union, the supranational level. However, as Sokołowski (2020) highlights energy democracy concerns are increasingly informing policy, especially where the concerns of citizens and energy system requirements intersect.

[36] Both CECs and RECs provide pathways for organising collective cooperation around energy, and are arranged in terms of ownership, governance frameworks, and non-commercial purposes (compared to traditional energy market actors). However, given key differences regarding the scope of activities and eligibility criteria renewable energy communities can generally be seen as a subset, or type, of citizen energy community (REScoop.EU, 2019).

The Citizen-challenger – in a democracy, Barry (2019, 728) makes the point that in times of non-violent disagreement 'contestation is more important than consensus' and it is from such contestations that compromise and agreement can be achieved. Dunphy and Lennon (2020) argue that this approach can potentially be the most challenging to governments, regulators, and the energy incumbents. Recent media reports in Ireland that proposed new legislation on planning should curtail citizens' groups, such as residents' associations, from challenging or taking a judicial review on planning decisions, while individual citizens would still be allowed to do so. This was seen by many as an attempt by government to limit the rights of ordinary citizens to engage in local planning decisions. Making it prohibitive to all but the wealthiest individuals in society, and effectively leading to a curtailment of citizens' right to challenge controversial planning decisions. This expression of energy citizenship is very much situated within the political, and participation is characterized by citizens protesting or challenging a status quo through legal action or street protest. They may be motivated by locally specific or global concerns ranging from the climate crisis (Bowman, 2019); calls for increased renewable energy (Hager, 2015); opposition to wind farms (Cass & Walker, 2009); or anger over increases to cost of living, inequality, and police repression (Brannen *et al.* 2020). However, Hossain *et al.* (2021) note caution with regards the transformative potential of street protests in affecting change. They found that any meaningful advancements in citizen power, resulting after energy protests, where often short-lived or later subverted. In some instances, protests allowed governments to retreat "*further into insulated and technocratic policy spaces to resolve energy problems*" (*Ibid.*, 64).

The Citizen-activist – research on political activism tends to focus on the ways citizens campaign for political or social change, the processes that lead them to act, and the consequences of those actions (Norris 2009). Bill Moyer (2001) outlines four roles[37] activists (and the social movements they participate in) must adopt to fulfill the different requirements needed for successful campaigning. They comprise (1) the citizen, (2) the reformer, (3) the rebel, and (4) the change agent, with all four roles needed either in combination or at different times in a campaign. According to Martin (2007, 27) activism often operates behind the scenes, while activists are "*typically challengers to policies and practices, trying to achieve a social goal, not to obtain power themselves*". In the energy domain, as with environmental protests generally, citizen-activists do not necessarily have to come from the locale where a campaign is situated. Illustrative examples of this include the fifteen yearlong Corrib Gas controversy in Ireland (see Siggins 2010; Slevin 2019) where local protesters to the planned gas pipeline through their area were supported by activists and campaigners from all over Ireland, all of whom had aligned interests (see Dunphy *et al.* 2020). Similarly, Native American protests about the Keystone XL pipeline project at the Standing Rock Reservation attracted considerable interest from environmental campaigners from non-native communities across the United States and beyond (Grossman 2017).

[37] The four roles Moyer identifies include the citizen, meaning activists need to make sure the movement does not lose contact with its main constituency. Losing that contact, the activist risks becoming ineffective if that constituency continues to believe the powerholders' claim to serve the public's interest. While reformers are often underappreciated in movements, but they carry out an important function in providing alternative solutions to identified failures. Whereas the rebel is probably the most identifiable member of a social movement. Using nonviolent direct actions and publicly saying "no", rebels put the issue on the political agenda. Finally, the change agent is probably the key role in any movement, convincing the majority of society by organizing grassroots networks and promote long-term strategies (Speck 2014).

6 Summary and conclusions

This was the first of two related outputs from research focused on understanding the concept of energy citizenship[38]. Viewing the world as a social construction that needs to be interpreted, this research takes a mixed methods qualitative approach to capture and analyze the data on existing and emerging ideas of citizenship around energy and the energy system. In realizing this research, a mixed-methods approach was chosen involving the use of several methods: literature review; surveys; asynchronous structured dialogues; in-depth interviews; with thematic analysis of the resultant transcripts and records.

Building on the research presented in this document the ultimate report from this work package will develop and present a detailed typology of energy citizenship. Building on the initial descriptions of expressions of citizenship described in this report, the forthcoming typology will characterize an inclusive framework of energy citizenship[39]. In doing so it will challenge the neoliberal and regressive idea that citizenship is something that is earned, contesting the exclusionary conceptualization of energy citizenship as something one becomes through participation. In much the same way as Joppke (2021, 4) observed "*Earned citizenship thus becomes a metaphor for a post- welfare society that is unwilling to redistribute its wealth and protections internally*" we suggest that an energy citizenship that is won or earned is good imagery for an energy system that remains unjust.

The forthcoming typology will provide a means of conceptualizing the relationship between the different ways in which citizens act in, or on the energy system and the governance structures that condition their actions. As anticipated in Dunphy and Lennon (2022), it will offer a framework for *"people's relationship with energy, establishing rights and responsibilities for a continuum of expressions of energy citizenship*." The typology, the appreciation of an inclusive multifaceted energy citizenship that will underpin it, and the understanding of the different manifestations of citizenship around energy described in it will contribute to both understanding and mobilizing the decarbonization potential of the energy citizenry elsewhere in ENCLUDE[40].

This report (and the subsequent typology) will contribute to the ongoing discourse (including with peer projects) on the role of citizenship in the energy transition and the meaning and value of energy citizenship[41].

[38] This is ongoing research and as such this deliverable serves as the first part of the overall report of the research being undertaken in this package of work Accordingly, it should be considered along with its companion and the principal output from this research: Deliverable 2.2 Typology of Energy Citizenship – forthcoming mid-2023.
[39] The typology will aim to connect the different ways in which citizens act in, or on, the energy system noting the socio-political structures that shape their action, and the discourses which act to (in)validate such actions.
[40] In WP5 'The impact of energy citizenship in decarbonization pathways' but also in WP6 'ENCLUDE Academy for energy citizenship leadership'
[41] It will also be relevant to scholarship on related conceptualizations of citizenships with post-cosmopolitan attributes *e.g.,* environmental citizenship, etc.

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Appendix 1: Survey

ENCLUDE

Energy Citizens for Inclusive Decarbonization

Survey Questionnaire

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Survey Questionnaire

Participant ID (e.g. COR001)	
Date:	

1. Personal Details

a. Place of residence			
b. Gender	☐ Male ☐ Female ☐ Other	c. Age	
d. Which of the following is your highest level of education?	☐ Less than primary ☐ Primary ☐ Lower secondary ☐ Upper secondary ☐ Post-secondary, non-tertiary ☐ Tertiary ☐ Post-graduate ☐ Other_____	e. Which of the following describes your current occupational situation?	☐ Paid employed ☐ Self employed ☐ Unpaid work ☐ Seeking employment ☐ Retired/pensioned ☐ Full time student ☐ illness / disability ☐ Other_____
f. Household income in comparison with average in your country?	☐ Much higher ☐ A bit higher ☐ Similar to the average ☐ A bit lower ☐ Much lower		

2. Personal Relationship to Energy

(a) Where does energy become a visible part of your daily life?

(b) To which well-being dimensions does energy contributes?
Health ☐ Education ☐ Safety ☐ Financial ☐ Relationships ☐ Other ☐ _____

(c) What does the term energy transition mean to you?

(d) The current path of the energy transition is inclusive and equal for all citizens.

Strongly Disagree	1	2	3	4	5	Strongly agree

(e) The fact that the energy transition will result in both winners and losers is not acknowledged is the discourse on the energy transition.

Strongly Disagree	1	2	3	4	5	Strongly agree

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

3. Participation and decision-making in the energy system

(a) It is easy to engage with decision-makers regarding energy infrastructure projects.

Strongly Disagree	1	2	3	4	5	Strongly agree

(b) I am confident that I would be invited and encouraged to participate fully in the decision-making process.

Strongly Disagree	1	2	3	4	5	Strongly agree

(c) When I have participated in the decision-making process, I have felt heard and considered.

Strongly Disagree	1	2	3	4	5	Strongly agree

(d) The decision-making process of most energy infrastructure projects is fair and just.

Strongly Disagree	1	2	3	4	5	Strongly agree

(e) My efforts to participate in the energy system have been intentionally/unintentionally limited by current governance structures/decision-makers.

Strongly Disagree	1	2	3	4	5	Strongly agree

(f) I feel that those in power do not want citizens to engage with the decision-making process.

Strongly Disagree	1	2	3	4	5	Strongly agree

(g) The concept of citizen participation in the energy system/decision-making processes remains mostly theoretical and lacks substance in practice.

Strongly Disagree	1	2	3	4	5	Strongly agree

4. Energy Citizenship

(a) What does energy citizenship mean to you?

(b) The concept of energy citizenship is new to me.

Strongly Disagree	1	2	3	4	5	Strongly agree

(c) The fact that many times citizens are asked to react to plans and measures developed by experts implies information and power imbalances from the start of a project process.

Strongly Disagree	1	2	3	4	5	Strongly agree

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Appendix 2: Interview Schedule

ENCLUDE

Energy Citizens for Inclusive Decarbonization

Interview Schedule

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Interview Notes

- Interviewees should be assured of the confidentiality of the project.
- Informed consent should be obtained from all interviewees.
- Interviews should be recorded, where interviewee gives permission, otherwise detailed notes should be taken.
- Interviewees should be assured there are no right answers, in all cases you are looking for their experiences and/or their personal opinions.
- Questions to be asked are numbered.
- These are semi-structured interviews, the interview schedule is designed as a guide for conversation, not a questionnaire. The interviewer should make sure they elicit a response to all questions below, especially the key topics listed in the checklist at the end. However, an effort should be made to maintain the natural flow of the conversation.
- Allow the interviewee scope to expand upon topics that are of interest to them, while possibly spending less time on others. You may also find that in answering one question, the interviewee will also give a response to another which you have not yet asked. In this case, there is no need to formally address this topic again.

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ENCLUDE
Energy Citizens for Inclusive Decarbonization

Semi-Structured Interview guide

Participant profile

1) Can you tell be a little about yourself?

Prompts: Area of residence; Age range; Gender; Occupation

Personal relationship to energy

2) How do you use energy in a typical day?
3) Do you think energy contribute to your well-being?
    a. How so?
4) Have you any concerns around energy?
5) Are you familiar with the term energy transition?
    a. What does it mean to you?

Participation and decision-making in the energy system

6) How do you see people participating in the energy system?
7) How would you describe your own participation in the energy system?
8) Are there other ways would you like to participate in the energy system?
    a. What are the barriers to your participating more?
9) What does a fair decision-making process around energy look like to you?
    a. Inclusive?
10) What are the barriers to having fair and inclusive participation in the energy system?
    a. How can these barriers be addressed?
11) Are citizens encouraged to become involved in the decisions around energy and the energy system?
    a. Are they even permitted?
12) Are citizens permitted /encourage to join together on energy projects?
    a. or on energy decision making?

Understandings of energy citizenship

13) How would a people's centered energy system look like to you?
14) What does the term "energy citizenship" mean to you?
15) Do you consider yourself an energy citizen?
    a. Why or why not?

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Appendix 3: Delphi Panel Questions

ENCLUDE

Energy Citizens for Inclusive Decarbonization

Delphi Panel Questions

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Overview

A Delphi-panel like approach is a way to capture opinions from a group through a series of rounds of engagement, where members of the group remaining anonymous to one another. It is a structured iterative dialogue which leads to knowledge creation through consensus and/or dissonance among the participants

Revez *et al*., 2020[§]

[§] Revez, Alexandra, Niall P Dunphy, Clodagh Harris, Gerard Mullally, Breffní Lennon, and Christine Gaffney. 2020. "Beyond Forecasting: Using a Modified Delphi Method to Build Upon Participatory Action Research in Developing Principles for a Just and Inclusive Energy Transition." International Journal of Qualitative Methods 19 (January): 1–12. https://doi.org/10.1177/1609406920903218.

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Delphi Panel – Round one

Please comment briefly (1-2 paragraphs) on each of the following statements drawn from the literature concerning energy citizenship

1. Energy citizenship is a form of active citizenship
2. Energy citizenship is a normative ideal
3. Energy citizenship is an expression of agency
4. Energy citizenship involves increased participation in community energy
5. Energy citizenship is a concession to secure acquiescence for energy developments
6. Energy citizenship is an analytical category
7. Energy citizenship is open to interpretation
8. Energy citizenship means the participation of citizens in energy governance
9. Energy citizenship is a buzzword

Note: Responses will be anonymous, there will be 2 or 3 rounds of engagement, questions in subsequent rounds will be informed by the replies in earlier rounds

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