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Energy citizenship
for a sustainable future

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1 Executive Summary

The main aim of the DIALOGUES project to provide support to the Energy Union through research focusing on energy citizenship, hence, enabling citizens to take a central role in the energy transition. The main components of the actions for this objective include the operationalisation, contextualization, measurement, and supporting of the framework environments, policies and institutions in order for deep, inclusive energy citizenship to emerge.

To this end, this deliverable, D2.1 DIALOGUES Integrated Research White Paper – Version 1, aims at defining and guiding the interdisciplinary knowledge creation process within DIALOGUES, and ensuring that project partners establish a common understanding of the expected outputs, and concepts employed in the project.

The deliverable report is composed of two main parts. The first part (Section 3 and Section 4) is devoted to the analysis of terminology pertaining to energy citizenship, resulting from a comprehensive and state-of-the -art literature review. The literature review is based on a set of sources ranging from peer-reviewed journal articles (mainly listed under Web of Science, ScienceDirect, Scopus, and ResearchGate), to books and book chapters, scientific and technical project reports, and policy briefs. The main keywords used to delimit the research were: “empowerment (of citizens in the energy system)”, “individual energy behaviour”, “inclusion (in energy transition)”, “energy justice”, “energy poverty”, “(energy) self-sufficiency”, “energy democracy”, “energy citizen”, “(citizen) energy community”, “public engagement (in energy system)”, “energy transition”, “consumer empowerment”, and “prosumers”. In the initial screening, around 750 sources were identified. Following the initial screening, 161 sources were included for relevance. The criteria for relevance were matching keywords, relevance to energy citizenship, addressing significant topics, providing a comprehensive perspective, and introducing new concepts. Section 3 utilizes the results of the comprehensive and state-of-the -art literature review for providing a thorough analysis of terminology pertaining to ‘energy citizenship’ and DIALOGUES scope. The components of this analysis are the identification of alternative definitions of the term ‘energy citizenship’, reflecting the perspectives of different disciplines (Section 3.1), formation of a DIALOGUES Glossary of Terms (Section 3.2), an interdisciplinary assessment of terminology regarding energy citizenship (Section 3.3), and the identification of energy citizenship themes utilizing bibliometric analysis via the VOSviewer software. The results from the first part are integrated in the second part (Section 5 and Section 6), Section 5 revisits the DIALOGUES research questions in order to review and reformulate these research questions (Section 5.2), acknowledging discipline-wise perspectives as well as contradictions and consensus between disciplines along the theoretical/methodological dimensions (Section 5.1). Finally, Section 6 provides pointers to an overarching DIALOGUES framework through the integration of discipline-wise approaches.

Identifying alternative definitions of energy citizenship is important in terms of reflecting different perspectives of disciplines, determining areas of consensus as well as areas of conflict, ensuring healthy and effective communication among disciplines regarding energy citizenship, and finally contributing to the DIALOGUES working definition of energy citizenship. To this end, the following definitions are provided: energy citizenship, through different perspectives, such as participation and participatory processes, empowerment, social acceptance, energy democracy, and energy justice. The DIALOGUES glossary of terms includes the definitions of more than 50 terms pertaining to energy citizenship, that are frequently addressed, as identified in the state-of-the-art

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literature review. The interdisciplinary assessment of terminology regarding energy citizenship is structured with respect to the umbrella terms from the literature, derived from different disciplines. These umbrella terms in the context of energy citizenship are main approaches and theoretical frameworks, eliciting factors, alternative solutions, democracy and justice context, citizenship context, poverty context, community-oriented approach, society emphasis, and individuals-oriented approach. The bibliometric analysis was conducted using VOSviewer software in order to identify energy citizenship themes in 101 manuscripts from the literature review selected for their inclusion in the Web of Science database. The analysis classifies the terminology into eight clusters, and points to the increasing importance of 'energy citizenship' as an emerging theme.

Revisiting and review of the DIALOGUES research questions was conducted in the light of the identified common grounds and ongoing debates, based on the literature review. These were determined as the conceptualization of energy citizenship as a process, pathways for citizen engagement, going beyond individual consumption to collective action, and the significance of power dynamics. Through these common grounds and ongoing debates, the DIALOGUES research questions were reformulated, and a number of new research questions were proposed.

The overarching DIALOGUES framework relies on the three main components of identifying a DIALOGUES working definition of energy citizenship and establishing an interdisciplinary research plan and formulating DIALOGUES core research questions.

2 Introduction and Overview

The DIALOGUES project has the goal of supporting the Energy Union with operational research on energy citizenship that enables citizens to take a central role in the energy transition. To reach this objective, DIALOGUES will operationalise, contextualize, measure, and support the framework environments, policies and institutions that allow deep, inclusive energy citizenship to emerge. The key focus of the project is the inclusion of the perspectives of groups currently on the margins of the energy transition.

DIALOGUES' central methodological pillar is grounded in tested inter- and transdisciplinary techniques, with a spotlight on open innovation and co-design of the research process through novel Citizen Action Labs in eight countries. These goals will be reached through co-creation, co-design and open innovation activities centred on multilateral exchange of ideas between researchers, stakeholders, policymakers and citizens.

DIALOGUES will move the idea of energy citizenship forward to an operational concept that offers actionable policy insights, applied research tools and a unifying theory for citizen-oriented energy research. The project will develop tools to measure the degree, and map the modes of expressing energy citizenship, related key performance indicators (KPI), a policy decision tool, and a Knowledge Platform linking all project data and results. Policymakers & stakeholders from the DIALOGUES levels of analysis – community, local, regional, national and supranational – will be included in this process, through co-creative workshops and policy briefs.

To ensure maximum impact on all geo-political levels, the DIALOGUES research process will be framed by a Policy Advisory Group of leading energy experts, research centres and institutions, local governments, city networks and NGOs. The project will foster deep, multilateral exchanges with 72 supporting organisations, in 13 nations, including Canada, whose partnership allows DIALOGUES to significantly extend the

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dissemination network and improve scientific robustness through sharing best-practices and comparative analysis.

To achieve these ambitious goals, the DIALOGUES research team is developing an integrated interdisciplinary research agenda, the core of which is outlined in the following sections.

2.1 Aims and Objectives of the Integrated Research White Paper

This report is the draft version of the DIALOGUES Integrated Research White Paper, which will help to define and guide the interdisciplinary knowledge creation process within DIALOGUES. It aims to establish a theoretical framework that integrates the discipline-wise approaches in an overarching DIALOGUES framework, which is required for the successful execution of the main activities of this project. This will be accomplished by utilizing insights from literature reviews, carrying out an interdisciplinary assessment of the terminology, and investigating the project's key research questions and hypotheses.

This research framework will be developed further throughout the project and will result in the final version of the DIALOGUES Integrated Research White Paper, to be published on completion of the project. In addition, it will include the results of the open research workshops conducted in DIALOGUES, especially with a view on where interdisciplinary agreement was found and which specific topics, concepts or ideas are subject to controversy.

A key facet of DIALOGUES is the comprehensive approach to its research questions, which requires an interdisciplinary consortium involving co-creation with citizens, non-academic policy makers, industry and technology specialists. While being capable of addressing complex issues, the interdisciplinary work also poses significant challenges, including differing expectations of output, differing perspectives on the roles of individuals and teams, navigating different academic cultures, communication and comprehension, and valuing/using inputs of others (Mallaband et al., 2017).

The draft version DIALOGUES Integrated Research White Paper ensures that a common understanding of the expected outputs and concepts used in the project is established. More specifically, this paper will encompass:

1. a working definition of the term 'energy citizenship' and glossary of terms to be used throughout DIALOGUES,
2. an assessment of cross-disciplinary terminology related to energy citizenship,
3. a definition of specific research questions to be addressed,
4. theoretical frameworks for answering the specific research questions holistically, including a comprehensive gender framework and discipline-wise best practice methodology for addressing the research question, and
5. the identification of contradictions and consensus between disciplines and the trans-disciplinary perspective of applied stakeholders.

By elaborating all of the above-mentioned points, this paper aims at establishing a horizontally integrated approach to DIALOGUES inter- and transdisciplinary research to i) overcome disciplinary silos, ii) ensure the exploitation of existing knowledge, data, and related theories, iii) provide an exhaustive assessment of how energy citizenship can be encouraged, and how energy citizenship can iv) fully benefit from the inclusion of stakeholders in the whole research process.

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2.2 Relevance to DIALOGUES approach

To respond in the best possible way to the current climatic conditions (IPCC AR6, 2021), which threatens the natural basis of human life on the planet, the EU envisions a rapid exit from fossil energy towards an energy system based on renewables, and energy efficiency. There is a consensus that the technological means for this transition exist, yet significant barriers remain: the vested interests of the fossil industry and the power it yields, path dependency and carbon lock-in, and some European citizens' lack of interest, and their preoccupations, but also their general resistance. DIALOGUES focuses on how citizen engagement can shape ideas and policies of the future and on how an active role of citizens in the transition will lead to socioeconomic benefits, a greater social acceptance, and generally, more durable governance of this transition. These benefits emerge from the opportunity for citizens to shape ideas and policies for the future fostering greater innovation potential.

DIALOGUES will tackle this challenge and will create practical recommendations and tools for policy makers and citizens to render "energy citizenship" a productive force in the energy transition.

Thus, DIALOGUES has the ambition to find a general definition of energy citizenship that is valid and useful across the disciplines, for qualitative and quantitative analyses, and easily communicable to stakeholders – including policy makers, planners, and activists, among others.

Efforts to qualify "citizenship" through energy is fairly a recent development. The term 'Citizenship' has gained wider recognition only in the second decade of this century and is itself a rich and multi-layered historical concept (Tilly, 1995). In its most general sense it describes the relationship between an individual and an overall political entity, such as a city, a region, or a nation-state. It implies entitlements, protections, needs in its liberal-individualistic form and obligations, and active relations in a civic-republican view. Finally, citizenship implies the existence of non-citizenship, the exclusion from entitlements and the freedom from obligations.

In the European society of the global north, citizenship is (almost) universal and largely passive, reactive. It carries few obligations and duties. The evolution of citizenship needs to be seen both, as a result of struggles from below for rights, privileges and entitlements, and as a result of reforms from above, designed to avert crises and guarantee the functioning of society. It was always also a condition of resilience. Emerging cities like Florence in Renaissance Italy considered socialization into citizenship as an important safeguard against unexpected crises.

Before developing an interdisciplinary and transdisciplinary approach, energy citizenship has to be viewed with its roots in the long history of citizenship, to be able to see where it expresses a new quality because it responds in its partiality – confined to energy – to a new, unprecedented historical epoch. In this epoch, the transition from one energy system, fossil-based, to another, renewable-based, is the driver for a profound social and economic transformation (Lennon et al., 2019). This is why energy citizenship is not just another variant of "citizenship" (civic, social, political, ecological, etc.), but a vital condition for the European Green Deal and more in general for the European climate goals.

There is presently no inclusive, all-encompassing, overarching understanding of "energy citizenship" that corresponds to the urgency of a common understanding as a basis for incisive policy and action. An immediate cause is the technocratic approach to energy of the past. The rise of fossil fuels coincided with the emergence of large companies for

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providing coal, oil, gas, and nuclear power, with increasingly larger power plants, and continental and intercontinental distribution networks. Thus, the economy and society co-existed with highly centralized energy systems run by experts' top-down.

This "old, technocratic, closed-door regulatory model is ill-suited for present conditions and no longer proves satisfactory to anyone involved" (Szulecki and Overland, 2020). The prevailing citizen detachment in energy politics is to a large extent explained by this centralized and detached nature of the traditional energy infrastructure (Devine-Wright, 2012; Brondi et al., 2016) and the lack of citizen involvement in the energy decision-making process (Catney et al., 2013; Brondi et al., 2016).

The energy sector transformation towards decentralized renewable energy multiplies the actors in the field, requires a high level of participation, whether on the supply or demand side, and sufficient understanding of the issues involved to be able to act in the framework of "enlightened self- and collective-interest", i.e., as an energy citizen. However, the old energy model is also an expression of powerful vested interests, and its political representation with little tolerance for new players in the field. However, other factors play a role, including – and here DIALOGUES becomes important – the lack of a common understanding among all concerned parties in this transformation process, its disruptive elements, its constraints and its opportunities.

The concept of energy citizenship is central in providing a framework and a tool for the actors involved in the deep systematic transformation of the energy sector, putting at its centre an action-oriented approach that draws its logic from the evolving process and the need of strengthening their understanding of their role and how to fill it.

The Interdisciplinary assessment of terminology regarding energy citizenship, which will be developed in DIALOGUES, will look at the current use of energy citizenship in the relevant scientific disciplines. An interdisciplinary approach is not taken for its own sake; scientific disciplines produce specific knowledge through their distinct definition of their field and methodology of looking at the world. A climatologist, an anthropologist and a biologist will have different ways of looking at the Amazon rainforest that cannot be subsumed in the name of "interdisciplinarity" under a single, general formula without risking a reductionism that threatens to render the result intellectually and practically meaningless. The validity of an interdisciplinary approach derives from the light it can shed on a distinct problem and the contribution an integrated view can offer for tackling it in an encompassing way. In the case of DIALOGUES, the challenge is to start from a common understanding of the problem: how to ensure that citizens play a role in the transformation of the energy system, to address the epochal threat of climate change, and achieve the EU goals set for the coming years and decades.

An overarching, comprehensive concept of energy citizenship will immediately prove its soundness as a useful framework and basis for the DIALOGUES team, which itself is multidisciplinary in its composition and embedded in different national, cultural and political contexts. The success will be measured in the clarity with which a common research strategy and practice unfolds. In a next step, the concept of energy citizenship will need to show its transdisciplinary usefulness in working with stakeholders, supporters, and participants in the Citizen Action Labs. The DIALOGUES team will work to conceptualize energy citizenship in a way that not only connects to the various scientific disciplines involved but also, in a transdisciplinary way, in relating to the life worlds of the wide range of stakeholders. Our aim is to not solely make diverse actors aware of their energy citizenship, but also to empower them to act upon it.

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3 Terminology pertaining to Energy Citizenship and DIALOGUES scope

3.1 Alternative definitions of energy citizenship

The state-of-the-art literature review conducted for DIALOGUES had two main objectives. The first objective is to identify how the existing body of literature relates to the idea of “energy citizenship”. The second objective is to conceptualize “Energy Citizenship” as incorporating collective and inclusive contexts, thus, providing in depth information regarding how the literature covers “energy citizenship” and/or related concepts.

The literature review is based on a set of sources ranging from peer-reviewed journal articles (mainly listed under Web of Science, ScienceDirect, Scopus, and ResearchGate), to books and book chapters, scientific and technical project reports, and policy briefs. The main keywords to delimit the research were: “empowerment (of citizens in the energy system)”, “individual energy behaviour”, “inclusion (in energy transition)”, “energy justice”, “energy poverty”, “(energy) self-sufficiency”, “energy democracy”, “energy citizen”, “(citizen) energy community”, “public engagement (in energy system)”, “energy transition”, “consumer empowerment”, and “prosumers”.

In the initial screening, around 750 sources were identified and of these, 161 were included for relevance. The criteria for relevance were matching keywords, relevance to energy citizenship, addressing significant topics, providing a comprehensive perspective, and introducing new concepts.

The majority of the studies reviewed focus on the role of individuals and communities in the energy system while addressing energy citizenship-related aspects. The systematic review also reveals various conceptual frameworks to define energy citizenship. The conceptual definitions of energy citizenship and terminology assessment pertaining to this literature review are provided in Section 3.1 and 3.3, respectively.

The contemporary perspective on the term “energy citizenship” was originated by Devine-Wright (2007). This conceptualization brings a different interpretation to the concept, refining the role of citizens from an understanding of passive recipients, to that of active and participating actors in the energy system. Although frequently addressed in the literature, there is no consensus on the definition of energy citizenship within a generally accepted and consolidated framework. This, in turn, results in certain disablers against establishing a common ground for relevant research activities in this field. One of the main disablers is that the ambiguity in meaning is likely to generate communication-related challenges, as different stakeholders define the concepts differently. To this end, it is important to frame the concept of energy citizenship and provide alternative definitions to reach a consensus.

In its original understanding, “citizenship” refers to the legal rights, responsibilities and privileges of a person to the state. However, in the energy system, there is no citizenship-granting entity; rather, the concept of citizenship in the energy context implies an active engagement in an energy system and awareness regarding energy issues. The state-of-

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the-art literature review reveals several alternative overarching frameworks, on which the term “energy citizenship” might be based. These include participation and engagement, collective actions and responsibility, social acceptance in an inclusive and transparent energy decision-making, empowerment, political and civic activity, gender equality, and energy justice.

One of the most prevalent approaches to defining energy citizenship is through the active involvement and democratic engagement of individuals and communities within the energy systems, to meet decarbonisation targets for the sake of sustainable energy transitions (Mendes et al., 2020; Coy et al., 2021; Mang-Benza, 2021; Caramizaru and Uihlein, 2020; Nakamura, 2017; Mori and Tasaki, 2019; Parkins et al., 2018). Engagement is mainly observed in two particular levels: the individual level, where the citizen focuses on energy efficiency in the household or workplace, and the political level, where the citizen engages in local, national or international activities related to climate policies (Radtke, 2014). At both levels, decarbonisation is emphasized. Decarbonisation targets are in relation to taking personal or collective responsibility to reduce energy consumption, which requires a proactive citizen participation movement regarding energy and environmental policy (Kloppenburg and Boekelo, 2019; Nakamura, 2018).Increases in energy efficiency or the reduction of energy consumption rely on the direct involvement of citizens in initiatives targeting their attitudes and daily practices, which indicate the key role of citizens in the energy sector (Amadori and Votta, 2021).

Engagement and participation in the energy systems requires collaboration between citizens, civil society, and the local authorities (Haf and Robison, 2020.; Heldeweg and Séverine Saintier, 2020). This perfectly aligns with of energy citizenship’s social dimension, in which collaboration becomes practical through participatory exercise, aiming at “progressively normalizing meanings, identities, interests and reciprocal relations” among different actors in the same community (Urquiza et al., 2018).

Citizens engage in the energy transformation also through participation in administrative decision making, political participation, or community involvement (Vigoda-Gadot et al., 2008). In this sense, energy citizenship is defined in terms of collective political engagement in energy consciousness, literacy, behaviour and practices (Ingeborgrud et al., 2020). An equal participation of citizens in the energy system creates a more democratic and socially just energy system, with a particular focus on procedural justice (Thomas et al., 2020). Huh et al. (2019) argue that energy citizenship in a democratic and socially just energy system could be regarded as a characteristic of citizens with awareness of the requirements for “active and socially reformative action and participation” in terms of energy and climate change. This approach brings another dimension to the concept of energy citizenship, that of a future-oriented citizenship path –, whereby engaging citizens today can lead to their involvement in an energy transition tomorrow.

Moncecchi et al. (2020) define energy citizenship from another perspective, through energy communities, which allow citizens to participate in the clean energy transition, with the right to engage in “producing, consuming and sharing energy as active participants in the energy market”. In the context of participatory processes, this includes actors and regulatory institutions involved in the governance of the energy sector (Sanz-Hernandez, 2019; Walker et al., 2016). These participatory processes provide hybrid relationships between people and energy technologies, and the different roles people can take such as “users, consumers, protesters, supporters and prosumers” (Ryghaug et al., 2018). According to Fitzpatrick (2014), engagement in the energy system only implies improved consumer information. However, a more ambitious approach for

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energy citizenship allows citizens to become “co-producers, co-investors and therefore co-owners of energy systems”, bringing prosumerism to the fore. Kampman et al. (2016) define energy citizens as the prosumers who produce energy, ensure supply-demand side flexibility, or store energy in times of oversupply. Hence, energy citizens as prosumers have the opportunity for inclusion and wider ethical-political engagement within energy transitions, instead of being limited to energy consuming practices (Damgaard, 2021). Such an active role of citizens, not only as consumers but also agents that shape energy policies, is regarded as an alternative way of representing the public as “energy citizens”, who have the potential for action with equitable rights and responsibilities (Vesnic-Alujevic et al., 2016).

In addition to the scientific debate defining energy citizenship through individual participation and engagement, various scholars define the term through collective energy actions and collective awareness. Watson et al. (2020) point out that energy citizenship should not only be conceived individually, but should also support and promote collective citizen action. This perspective mainly stems from the assumption that the energy transition might be achieved through the collective awareness of responsibility for climate change and the potential for (collective) energy actions, such as establishing community renewable energy projects (Campos and Marin-Gonzalez, 2020; Sarrica et al., 2014). In this regard, empowering energy citizens to meaningfully engage in collective energy actions contributes to sustainable energy transitions (Lennon et al., 2020).

Participation of energy citizens in collective energy actions may be realized in various ways, for instance, socially or politically. One political approach to engaging in collective actions is participating in protests and movements, namely political and civic activities, in energy issues (Campos and Marin-Gonzalez, 2020; Huttunen et al., 2020).

Collective engagement, which constitutes one of the essentials of energy citizenship, is not only limited to actions. One current alternative line of research focuses on energy citizenship in terms of increasing citizens’ social and environmental responsibilities (i.e., collective responsibility) and rather than taking a passive position, establishing a notion of active public and stakeholders through equitable rights and responsibilities in relation to energy production and consumption (Beauchampet and Walsh, 2021; Cantoni et al., 2018; Lee, 2019). Taking into account the social and environmental responsibilities, some scholars consider energy citizenship as a part of ecological citizenship, referring mainly to the responsibilities of ecologically aware individuals, who can make conscious energy behaviour choices for an environmentally-friendly future (Kenis, 2016; Islar and Busch, 2016). The social and environmental responsibilities of collectives for a green future is also in relation to climate citizenship, in which individuals become members of a community and their commitment contributes to environmental protection using their rights, entitlements, and obligations (Pohjolainen et al., 2021). It is thus directly linked to energy citizenship in terms of collective responsibility, for a rapid transformation of the energy system from fossil to renewable.

Inclusivity in the energy system is a key aspect in energy citizenship. To this end, many scholars define energy citizenship with a focus on social acceptance in energy decision-making. Suboticki et al. (2019) argue that people live in a heterogeneous society and it is important to consider a variety of voices in terms of gender, socio-economic status, ethnicity, and geographic collocation. Given these premises, gender equality in energy decision-making has been frequently discussed in the literature as a relevant dimension for energy citizenship in energy transition pathways, as reflected by the key findings of the reviewed research.

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Accordingly, incorporating the gender perspective, energy citizenship could be defined as gender-equal participation in decision-making processes, integrating the interests of different genders into the policy design. Also, it is important to consider distributional, recognition, and procedural impacts and benefits in energy transition under just and democratic systems (Buechler et al., 2020; Gram-Hanssen et al., 2017; Johnson et al., 2020; Lieu et al., 2020; Bell et al., 2020; Batel, 2020). However, diversity reaches beyond gender-related issues to the intersectionality between gender and other sensitive issues such as race, age, minority status, socio-economic status, or vulnerable groups. For instance, an alternative definition of energy citizenship addresses poverty since energy citizenship is undermined by the inability to adequately heat, cool, or provide other required energy services to homes (Longo et al., 2020).

Energy citizenship potentially empowers individuals and groups to shape energy policies. Findings of the literature review also support this perspective, revealing that energy citizenship could also be defined with a perspective pertaining to the interrelationships between energy practices/energy choices and citizens' political power to shape new energy policies. In this regard, Wuebben et al. (2020) emphasize that the emerging energy practices could lead individuals and collectives to gain knowledge regarding the interrelationships of energy practices and notice their political power to influence the prospective policies. Such emphasis on "lived experiences" aligns with the core assumptions of energy citizenship.

Opportunities for citizens to shape energy policies depend on a functioning democratic system, and scholars explain energy citizenship through energy democracy in terms of inclusive and transparent decision-making as well as individual/household involvement and ownership (Szulecki and Overland, 2020; Allen et al., 2019; Ruostetsaari, 2020; Elkjaer et al., 2021; Łapniewska, 2019). One of the fundamental pillars of energy democracy is the distributed form of governance with which energy citizenship is associated (Gonda, 2019; Sarrica et al., 2018; van Zyl-Bulitta et al., 2019). The material-based definition of energy citizenship reflecting citizens simply as consumers is too narrow. Instead, a more meaningful explanation is a deliberative democracy's distributed form of governance, with a decentralized organization in which individuals interact (i.e., a bottom-up structure instead of a hierarchical and top-down decision-making) (Olivadese et al., 2021).

In addition to the defining frameworks for energy citizenship, energy citizenship is also associated with energy justice. Such association is built on the basis of distributional, procedural, and recognition pillars of the energy justice framework, since citizenship implies the equal and just access to the resources without discrimination (Sovacool and Dworkin, 2015; Bosch and Schmidt, 2020; Bardaux et al., 2018). A condition for justice is reciprocal recognition, and all citizens should have the right to access energy within the framework of universal socio-economic welfare principles, allowing the achievement of contemporary global citizenship standards (Boamah and Rothfuss, 2020; Shyu, 2021).

Table 1 summarizes the alternative definitions of energy citizenship, which have been compiled as a result of state-of-the-art literature review.

Defining Term	Explanation	References
Participation and participatory processes	Involvement and democratic engagement within the energy systems to meet decarbonisation targets	Mendes et al., 2020; Coy et al., 2021; Mang-Benza, 2021; Caramizaru and Uihlein, 2020; Nakamura, 2017; Mori and

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		Tasaki, 2019; Parkins et al., 2018
	Collaboration between citizens, civil society, and the local authorities	Haf and Robison, 2020.; Heldeweg and Séverine Saintier, 2020
	Participation in administrative decision making, political participation, or community involvement	Vigoda-Gadot et al., 2008; Ingeborgrud et al., 2020
Empowerment	Prosumerism (co-producers, co-investors and therefore co-owners of energy systems)	Moncecchi et al., 2020; Sanz-Hernandez, 2019; Walker et al., 2016; Ryghaug et al., 2018; Fitzpatrick, 2014; Kampman et al., 2016; Bartiaux et al 2014
	Collective energy actions and collective awareness (community renewable energy projects, protests and movements)	Watson et al., 2020; Campos and Marin-Gonzalez, 2020; Sarrica et al., 2014; Lennon et al., 2020
	Collective responsibility (collective social and environmental responsibilities)	Beauchampet and Walsh, 2021; Cantoni et al., 2018; Lee, 2019; Kenis, 2016; Islar and Busch, 2016
	Everyday energy usage as prefigurative of citizen engagement	Genus et al 2021, Heiskanen et al 2018; Gram-Hanssen et al., 2017, Sahakian et al 2021
	Climate and ecological citizenship	Pohjolainen et al., 2021
Social acceptance	Inclusivity	Suboticki et al., 2019; Batel, 2020
	Gender equality	Buechler et al., 2020; Gram-Hanssen et al., 2017; Johnson et al., 2020; Lieu et al., 2020; Bell et al., 2020
	Suppressing energy poverty	Longo et al., 2020
Energy democracy	Political power to shape policies	Wuebben et al., 2020
	Democratic governance (inclusive and transparent decision-making)	Szulecki and Overland, 2020; Allen et al., 2019; Ruostetsaari, 2020; Elkjaer et al., 2021; Łapniewska, 2019
	Distributed form of governance	Gonda, 2019; Sarrica et al., 2018; van Zyl-Bulitta et al., 2019; Olivadese et al., 2021
Energy justice	Distributional, procedural, and recognition justice without any discrimination	Sovacool and Dworkin, 2015; Middlemiss 2017; Bosch and Schmidt, 2020; Bardaux et al., 2018; Boamah and Rothfuss, 2020; Shyu, 2021

Table 1. Alternative Definitions of Energy Citizenship

3.2 Glossary of Terms

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The DIALOGUES glossary is compiled from the state-of-the-art literature review, and involves definitions of frequently addressed and contextual-flexible terms, pertaining to energy citizenship. The Glossary is presented in Appendix A.

3.3 Interdisciplinary assessment of terminology regarding energy citizenship

The analysis based on the state-of-the-art literature review of WP2 of the DIALOGUES project reveals that the concept of “energy citizenship” is addressed through various dimensions, approaches and variables. To this end, an interdisciplinary assessment of terminology pertaining to these dimensions and approaches, and ultimately energy citizenship, is vital for a discussion of complex and technical concepts.

The general context of energy citizenship implies that the studies and documents directly referencing the concept utilize certain keywords to address energy citizenship such as “energy system”, “decision-makers”, “stakeholders”, and “political debates”. The frequent occurrence of these terms in energy citizenship literature is likely to be a natural consequence of the debate over a top-down vs bottom-up approach to energy citizenship in decision-making and in the energy system.

The terminology assessment regarding energy citizenship is conducted through a systematic analysis, categorizing the relevant terminologies under certain themes, as follows:

- Main approaches and theoretical frameworks
- Eliciting factors
- Alternative solutions
- Democracy and justice context
- Citizenship context
- Poverty context
- Community-oriented approach
- Society emphasis
- Individuals-oriented approach

The comprehensive literature review demonstrates that most literature pertaining to energy citizenship is found in the Social Sciences and Humanities disciplines. However, some studies belong to a variety of sub-domains including community studies, human geography, social geography, sociology and sociology of consumption, behavioural sciences, social psychology, environmental sciences and environmental politics, global governance, policy science, economics (e.g., energy economics), international trade, sustainability studies, culture and urban studies, institutional economy and organizational psychology, studies of gender and vulnerable groups, energy ethics, and justice frameworks.

Among these sub-domains, almost all studies contextualize energy citizenship from the perspectives of socio-psychological studies, behavioural sciences and policy science. However, it is also crucial to extend these perspectives, focusing on influencing individual behaviour and examining social practices influenced by lifestyle choices and by institutions and structures (Davoudi et al., 2014). Individual or consumer-oriented approaches and theoretical frameworks are also utilized to explain the dynamics of energy citizenship. At this juncture, certain terminologies are identified, as shown in Table 2.

Umbrella Term	Terminology	References

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Main approaches and theoretical frameworks	decide-announce-defend	(Komendantova et al., 2021; Sarrica et al., 2018; Pohjolainen, 2021)
	feminist theory	(Buechler et al., 2020; Bell et al., 2020; Gonda, 2019)
	consumer behavior	(Czibere et al., 2020; Tuniki et al., 2021; Amadori and Votta, 2021)
	energy cultures	(Stephenson et al., 2010; Dunphy et al., 2018; Amadori and Votta, 2021)
	cognitive norms	(Stephenson et al., 2010; Anderson and Gibson, 2020; Shi et al., 2019)
	material culture	(Stephenson et al., 2010; Chilvers et al., 2018; Sahakian et al., 2021)
	energy practices	(Bauwens and Eyre, 2017; Chilvers and Longhurst, 2016; Dunphy et al., 2018; Giardullo et al., 2019; Haf and Robison, 2020; Ryghaug et al., 2018; Standal et al., 2020; Stephenson et al., 2010; Wuebben et al., 2020)
	social practice theory	(Dunphy et al., 2018; Giardullo et al., 2019; Standal et al., 2020; Shove and Walker, 2014; Bartiaux et al., 2014; Sahakian et al., 2021; Reckwitz, 2002; Warde, 2005; Shove and Pantzar, 2005)
	domestication theory	(Standal et al., 2020; Giardullo et al., 2019; Scott and Powells, 2019)

Table 2.Terminology regarding main approaches and theoretical frameworks of energy citizenship

DIALOGUES defines energy citizenship as “the degree to which, and the ways in which, the goals of a sustainable energy transition enter into the everyday practices of an individual". Therefore, energy transition emerges as one of the key areas for citizens to demonstrate their participation. With increasing recognition of the role of citizens in the energy transition, the literature reveals a number of eliciting factors pertaining to energy citizenship. The terminologies related to these factors include several key words, such as ecological crisis, climate change and environmental anxiety. Table 3 summarizes the eliciting factors pertaining to energy citizenship.

Umbrella Term	Terminology	References
Eliciting factors	ecological crisis	(Elgaaied-Gambier and Mandler, 2021; ; Yusoff and Jennifer Gabrys, 2011)
	environmental anxiety	(Elgaaied-Gambier and Mandler, 2021; Davoudi et al., 2014; Devine-Wright and Murphy, 2007)
	climate change	(Czibere et al., 2020; Somerville, 2019; Kenis, 2016; Fitzpatrick, 2014; Bouzarovski, 2018)
	energy consumption	(Xu et al., 2021; Belaïd and Joumni, 2020; Gram-Hanssen et al., 2017; Amadori and Votta, 2021)

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	energy costs	(Piggot et al., 2019; Csutora et al., 2021; Schall, 2019)

Table 3. Terminology regarding eliciting factors pertaining to energy citizenship

The eliciting factors pertaining to energy citizenship could be resolved by alternative solutions. The energy citizenship literature reveals a variety of approaches as solutions, and the relevant terminology include contributions to climate change mitigation such as smart grids, renewable energy, sustainable energy, energy efficiency, energy sufficiency, energy saving, and energy innovation. A detailed list of terminology regarding alternative solutions for alleviating energy citizenship-related challenges is illustrated in Table 4.

Umbrella Term	Terminology	References
Alternative Solutions	energy transition	(Johnson et al., 2020; Bell et al., 2020; Buechler et al., 2020; Mang-Benza, 2021; Gjørtler Elkjær et al., 2021; Levenda et al., 2021; Bartiaux et al., 2018; Feenstra and Özerol, 2021; Łapniewska, 2019; Leal-Arcas, 2019; Huh et al., 2019; Bouzarovski, 2018)
	smart grids	(Hyytinen and Toivonen, 2015; Mah et al., 2012; Lucia et al., 2016)
	climate policy	(Somerville, 2019; Nikas et al., 2021; Nakamura, 2018)
	global regime	(Somerville, 2019; Levenda et al., 2021; Leal-Arcas, 2019)
	socio-technical transition	(Hyytinen and Toivonen, 2015; Giardullo et al., 2019; Chilvers and Longhurst, 2016)
	energy policy	(Csutora et al., 2021; Day et al., 2016; Ruostetsaari, 2020; Sarrica et al., 2018)
	renewable energy	(Olivadese et al., 2021; Caramizaru and Uihlein, 2020; Hoppe et al., 2019)
	sustainable energy	(Sarrica et al., 2014; Csutora et al., 2021; Hyytinen and Toivonen, 2015)
	energy governance	(Szulecki, and Overland, 2020; Allen et al., 2019; Gonda, 2019)
	energy saving	(Xu et al., 2021, Belaïd and Joumni, 2020; Shi et al., 2019)
	energy technology	(Lieu et al., 2020; Johnson et al., 2020; Buechler et al., 2020)
	energy innovation	(Xu et al., 2021; Lennon et al., 2019; Lucia et al., 2016)
	energy efficiency	(Amadori and Votta, 2021; Czibere et al., 2020; Xu et al., 2021)
	energy sufficiency	(Davoudi et al., 2014; Sarrica et al., 2014; Longo et al., 2020)
	sustainable consumption	(Norwegian Ministry of Environment. 1994; Fuchs and Lorek, 2005)

Table 4. Terminology regarding solutions that would alleviate energy citizenship-related challenges

Democracy and justice are key associated notions, as it is seen as a requirement to include all segments of society in energy decision-making, and to ensure their equal participation in this process. These principles are linked to democratic governance, and thus, the energy citizenship literature frequently addresses deliberative democracy in

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terms of participatory procedures, energy democracy, and procedural and recognition justice. Terminology pertaining to democracy and justice within the framework of energy citizenship is listed in Table 5.

Umbrella Term	Terminology	References
Democracy and justice	deliberative democracy	(Lennon et al., 2020; Olivadese et al., 2021; van Veelen and van der Horst, 2018; Lennon et al., 2019; Haf and Robinson, 2020; Urquiza et al., 2018)
	material democracy	(van Veelen and van der Horst, 2018; Stephenson et al., 2010; Catney et al., 2013; van Veelen and van der Horst, 2018)
	energy democracy	(Campos and Marín-González, 2020; Wuebben et al., 2020; Coy et al., 2021; van Veelen and van der Horst, 2018; Mullally et al., 2018)
	associative democracy	(van Veelen and van der Horst, 2018; Mullally et al., 2018; Lennon et al., 2019)
	stealth democracy	(Ruostetsaari, 2020; Ruostetsaari, 2017; Haf and Robison, 2020)
	gender justice	(Goetz, 2007; Terry 2009)
	procedural justice	(Thomas et al., 2020; Sanz-Hernández, 2019; Piggot et al., 2019; Walker and Day, 2012)
	distributive justice	(Beauchampet, and Walsh, 2021; Thomas et al., 2020; Lennon et al., 2019; Johansen and Emborg, 2018; Walker and Day 2012)
	recognition justice	(Thomas et al., 2020; Boamah and Rothfuß, 2020; Walker and Day 2012)
	energy justice	(Dwyer and Bidwell, 2019; Scott and Powells, 2019; Shyu, 2021)
	environmental justice	(Walker et al., 2016; Bell et al., 2020; Sovacool and Dworkin, 2015; Levenda et al., 2021)
	ecofeminism	Buckingham,2004; Macgregor, 2004, 2006, 2014

Table 5. Terminology regarding democracy and justice context

Energy citizenship is an inclusive concept, associated with several different spheres that share common characteristics, such as ecological citizenship, environmental citizenship, civil citizenship, political and social citizenship, and sustainability citizenship. This is likely due to the concepts covered under energy citizenship being related to these different notions, for instance, citizens' responsibility for environmental protection is addressed in both energy citizenship and environmental/ecological citizenship. In this sense, the relevant terminology pertaining to citizenship context is given below in Table 6.

Umbrella Term	Terminology	References
Citizenship	ecological citizenship	(Islar and Busch, 2016; Asilsoy and Oktay, 2018; Anneleen Kenis, 2016; Lee, 2019; Anantharaman 2014, Evans 2011; Dobson, 2003)

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	civil citizenship	(Heldeweg and Séverine Saintier, 2020; Hoppe et al., 2015; Anderson and Gibson, 2020)
	political citizenship	(Huttunen et al., 2020; Anderson and Gibson, 2020; Hoppe et al., 2015)
	social citizenship	(Anderson and Gibson, 2020; Heldeweg and Séverine Saintier, 2020; Hoppe et al., 2015)
	sustainability citizenship	(Lee, 2019; Sarid and Goldman, 2021, Micheletti and Stolle 2012)
	environmental citizenship	(Sarid and Goldman, 2021; Slee, 2014; Mori and Tasaki, 2019; Lee, 2019; Huttunen et al., 2020)

Table 6. Terminology regarding citizenship context

As far as citizenship is concerned, inclusivity and recognition are key. However, inequalities in allocation and distribution of energy resources and services lead to energy poverty, a topic frequently addressed in the energy citizenship literature. Accordingly, certain terminology related to the concept of poverty, such as energy access, access to electricity and clean fuel, and the right to access energy were determined. These can also be identified as concepts related to the barriers against justice and energy democracy.

The related terminology is illustrated in Table 7.

Umbrella Term	Terminology	References
Poverty	energy poverty	(Shyu, 2021; Fitzpatrick, 2014; Bouzarovski, 2018, Middlemiss 2017 ; Longhurst and Hargreaves, 2019)
	energy access	(Wilhite, 2017; Boamah and Rothfuß, 2020)
	access to energy	(Bartiaux et al., 2018; Gram-Hanssen et al., 2017; Feenstra and Özerol, 2021; Leal-Arcas, 2019)
	access to electricity	(Shyu, 2021; Bartiaux et al., 2018; Stikvoort, et al., 2020)
	access to clean fuel	(Shyu, 2021; Sovacool and Dworkin, 2015; Day et al., 2016)
	right to energy	(Shyu, 2021; Foxon and Steinberger, 2011; Steinberger and Roberts, 2010)

Table 7. Terminology regarding poverty context

In the SSH literature, energy citizenship is often associated with the concepts of collectives or communities. In the intersection area of these domains, there emerge terminologies pertaining to the community, such as energy community, cooperatives, rural communities, community empowerment, collective energy decisions, and participatory business models. Another area of terminology relates to collective responsibility and actions, such as self-efficacy, energy self-sufficiency, and community knowledge networks. The respective terminology regarding community-oriented approach of energy citizenship is demonstrated in Table 8.

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Umbrella Term	Terminology	References
Community-oriented	energy community	(Campos and Marín-González, 2020; Wuebben et al., 2020; Moncecchi et al., 2020; Caramizaru and Uihlein, 2020)
	energy cooperatives	(Caramizaru and Uihlein, 2020; Hoppe et al., 2019; Łapniewska, 2019)
	community energy	(Koirala et al., 2018; Caramizaru and Uihlein, 2020; Haf and Robison, 2020)
	collective energy actions	(Caramizaru and Uihlein, 2020; Wuebben et al., 2020; Horstink et al., 2020)
	public engagement	(Chilvers et al., 2017; Parkins et al., 2018; Axon and Morrissey, 2020)
	politicization	(Swyngedouw, 2011, 2014)
	community empowerment	(Coy et al., 2021; Caramizaru and Uihlein, 2020; Hyytinen and Toivonen, 2015)
	rural communities	(Slee, 2014; van Bommel and Höffken, 2021; Kalkbrenner and Roosen, 2016))
	rural development	(Slee, 2014; Kaphengst and Velten, 2014; Lennon et al., 2019)
	transition towns	(Kenis, 2016; Haf and Robison, 2020; Hoppe et al., 2015))
	community dynamic	(Coy et al., 2021; Moncecchi et al., 2020Caramizaru and Uihlein, 2020)
	co-creation	(Gjørtler et al., 2021; Chilvers and Longhurst, 2016; Komendantova et al., 2021)
	social innovations	(Hyytinen and Toivonen, 2015; Lennon et al., 2019; Lucia et al., 2016)
	self-efficacy	(Coy et al., 2021; Amadori and Votta, 2021; Czibere et al., 2020; Xu et al., 2021)
	energy self-sufficiency	(Johnson et al., 2020; Davoudi et al., 2014; Sarrica et al., 2014; Longo et al., 2020)
	ecological city	(Asilsoy and Oktay, 2018; Olivadese et al., 2021)
	co-ownership	(Musall and Kuik, 2011; Johansen and Emborg, 2018)
	community knowledge networks	(Catney et al., 2013; Slee, 2014; Kloppenburg and Boekelo 2019)
	positive energy district	(Olivadese et al., 2021; Wuebben et al., 2020; Coy et al., 2021)
	collective energy decisions	(Lennon et al., 2020; Schall, 2019; Caramizaru and Uihlein, 2020)

Table 8. Terminology regarding community-oriented approach of energy citizenship

Collective actions and responsibility are affected by social dynamics in the context of energy citizenship. Accordingly, the literature also identifies certain aspects that emphasize the society dimension of energy citizenship. The terminology pertaining to society includes a set of variables such as social identity, identity narrative, socio-legal institutions, social practise theory and social psychology. Table 9 provides a summary for the terminology regarding the society aspect of energy citizenship.

Umbrella Term	Terminology	References

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Society Emphasis	consumption	(Warde, 2005; Shove 2014)
	social identity	(Stevenson et al., 2015; Boamah and Rothfuß, 2020; Elgaaied-Gambier and Mandler, 2021)
	social practices	Reckwitz, 2002; Warde, 2005; Shove and Pantzar, 2005
	identity narrative	(Bouzarovski and Bassin, 2011; Anderson and Gibson, 2020; Stevenson et al., 2015)
	socio-legal institutions	(Heldeweg and Séverine Saintier, 2020; Moncecchi et al., 2020; Caramizaru and Uihlein, 2020)
	sociotechnical imaginaries	(Bouzarovski and Bassin, 2011; Islar and Busch, 2016; Anderson and Gibson, 2020)
	critical discursive social psychology	(Anderson and Gibson, 2020; Stevenson et al., 2015; Elgaaied-Gambier and Mandler, 2021)
	social psychology	(Davoudi et al., 2014; Shi et al., 2019; Anderson and Gibson, 2020; Stevenson et al., 2015)
	practice theory	(Shove and Walker, 2014 ; Sahakian and Bertho, 2018 ; Bartiaux et al., 2014; Sahakian et al., 2021; Reckwitz, 2002; Warde, 2005; Shove and Pantzar, 2005)

Table 9. Terminology regarding society emphasis of energy citizenship

The perspective in the literature on energy citizenship is two-fold; there are community and individual perspectives, but the terminology regarding community and society is still dominant. Energy citizenship requires individuals to be at the centre of the energy system; however, the limited terminology regarding the individual-oriented approach to energy citizenship shows that this is not the case. Nevertheless, despite a generally limited scope of terminology, the list includes prosumerism, which puts emphasis on the individual both consuming and producing, individual participation, consumer engagement, etc. The terminology regarding the individual-oriented approach of energy citizenship is given in Table 10.

Umbrella Term	Terminology	References
Individual - oriented	citizen science	(Wuebben et al., 2020; Beauchampet and Walsh, 2021; Moncecchi et al., 2020; Lee, 2019)
	consumer engagement	(Schweiger et al., 2020; Lennon et al., 2020; Stephenson et al., 2010)
	citizen empowerment	(Watson et al., 2020; Lennon et al., 2019; Leal-Arcas, 2019)
	prosumerism	(Campos and Marín-González, 2020; Ruostetsaari, 2020; Horstink et al., 2020; Kloppenburg and Boekelo, 2019)
	participation	(Vigoda-Gadot et al., 2008; Nakamura, 2018; Schall, 2019)
	discursive participation	(Mullally et al., 2018; Chilvers and Longhurst, 2016; Leal-Arcas, 2019)

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	public engagement	(Parkins et al., 2018; Chilvers et al., 2017; Axon and Morrissey, 2020)
	pro-environmental behavior	(Brondi et al., 2016; Asilsoy and Oktay, 2018; Sarid and Goldman, 2021)
	environmental consciousness	(Czibere et al., 2020;Chaisty and Whitefield, 2015; Comeau et al., 2015)
	transition pathways	(Lieu et al., 2020; Johnson et al., 2020; Gjørtler et al., 2021)
	individual as household	(Longo et al., 2020; Wilhite, 2017; Belaïd and Joumni, 2020)
	attitudinal distance	(Ruostetsaari, 2017; Mori and Tasaki, 2019)
	resistance	(Dueholm Rasch and Köhne, 2015; Ernst and Shamon, 2020)
	individual energy decisions	(Lennon et al., 2020; Schall, 2019; Ernst and Shamon, 2020))
	energy precariousness	(Longo et al., 2020; Day et al., 2016; Shyu, 2021)
	energy deprivation	(Longo et al., 2020; Day et al., 2016; Shyu, 2021)
	resourcefulness	(Lee, 2019; Islar and Busch, 2016; Kenis, 2016)

Table 10. Terminology regarding individual-oriented approach of energy citizenship

4 Identification of energy citizenship themes utilizing bibliometric analysis via VOSviewer

Identification of patterns, key terms and parameters among the corpus enables us to organize, process and categorize the massive text data (Liu et al., 2015). One possible approach is via statistical evaluation of contextual terms in a variety of software tools. Bibliometric analysis is such a technique for analysing published scientific studies, creating a network-based relationship between keywords, authors, journals, and organizations (Chen et al., 2016; Guo et al., 2019; Biresselioglu et al., 2020). Bibliometric analysis is a quantitative method for assessing knowledge structure and the development of research disciplines in Natural Sciences, Social Sciences and Humanities, and involves analysing related publications (Pauna et al., 2019).

The VOSviewer software is one of the practical tools for bibliometric analysis, allowing users to create a map of terminology and perform a visual analysis. As a statistical tool and software, VOSviewer helps overcome the challenges arising from the interpretivist nature of the research, while preventing bias. In VOSviewer software, each keyword is a separate “item”, which is the subject of the topic. To create, visualize and explore maps on bibliometric data, VOSviewer demonstrates the results in “clusters”, which categorize items for relevance. Each item has “links” that connect to other items (i.e., terms). There are various types of link, such as bibliographic coupling links between publications, co-authorship links between researchers, and co-occurrence links between terms. In D2.1 of DIALOGUES, co-occurrence was selected as the key to defining links between terms.

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The strength of each link is measured with a positive numerical value, which is identified as total link strength in VOSviewer.

VOSviewer software maps the results in three different visualization techniques: network visualization, overlay visualization, and density visualization. Network visualization primarily demonstrates how the different terminologies are linked. The links are depicted according to their weights; a higher level of interaction induces a higher weight. The overlay visualization provides a time wise perspective revealing the evolution of the appearance of terminology in the literature. Finally, the density visualization displays the terminology in clusters and their interactions, by clustering the more closely related terms.

In this respect, this section utilizes bibliometric analysis via the VOSviewer software in order to identify energy citizenship themes. The bibliometric analysis is based on the state-of-the-art literature review of DIALOGUES Work Package 2 and involves 101 manuscripts from the literature review that are in the Web of Science database.

The bibliometric analysis was conducted via VOSviewer (version 1.6.17), and resulted in 64 keywords, 8 clusters, 520 links, with a total link strength of 3213.

Figure 1 and Figure 2 below summarize the results of the bibliometric analysis, demonstrating terminology along with occurrence frequencies, link frequencies, and total link strengths.

In the analysed literature, the terms with the highest number of occurrences are: energy transition (36), citizenship (34), behaviour (27), woman (25), project (25), individual (22), consumption (21) and attitude (20). The terms with the highest number of links are: individual (44), project (42), energy transition (40), consumption (38), household (37), decision (35), and attitude (34). The terms with the highest link strengths in total are energy democracy (304), political consumerism (301), prosumerism (287), demand response (286), consumption (281), attitude (278), energy transition (251), and citizens' attitude (227). Figure 2 demonstrates the terms with total link strengths of 100 or higher, along with the associated total link strengths.

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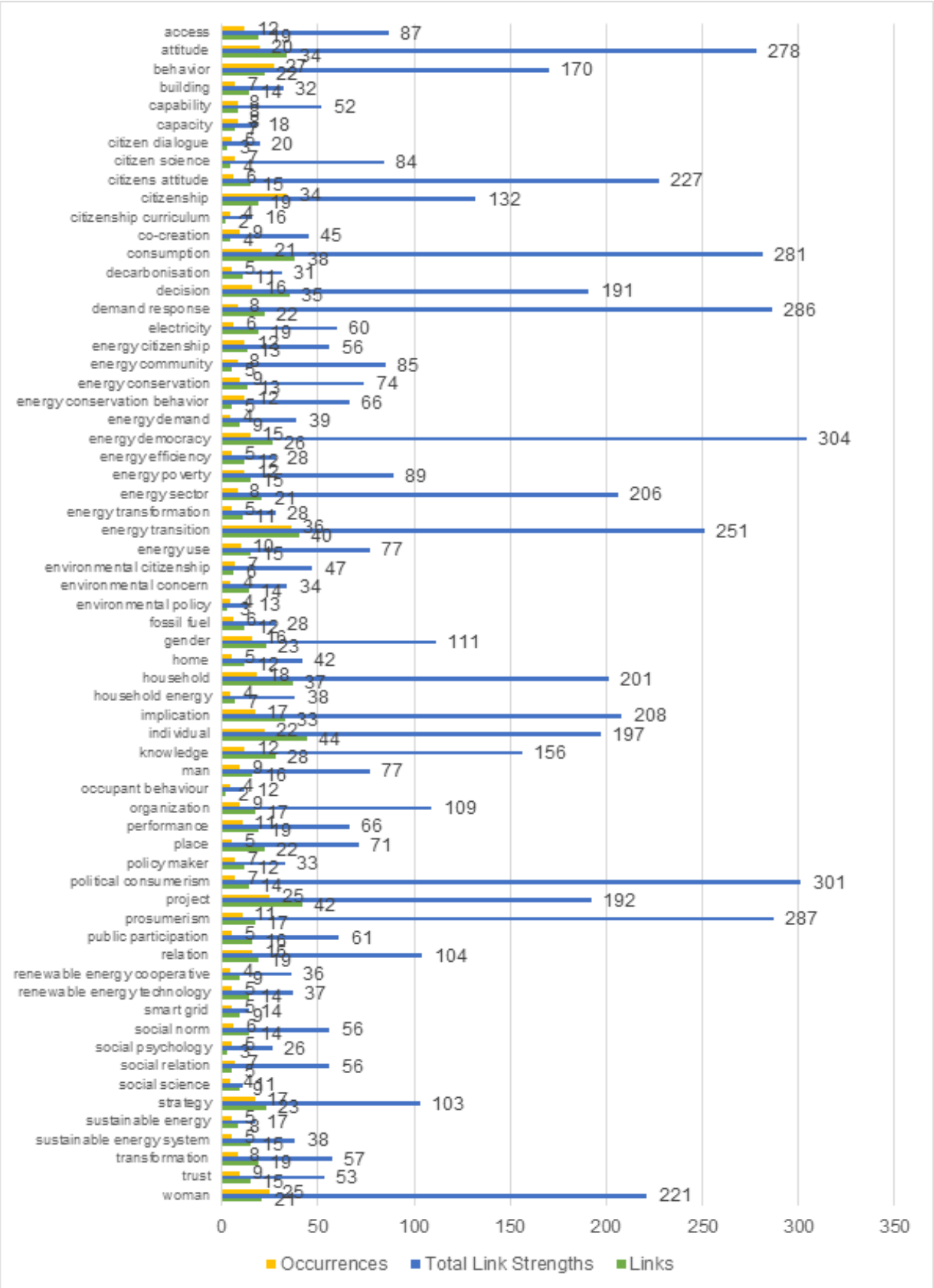

Figure 1. Results of Bibliometric Analysis in Alphabetical Order of Terminology

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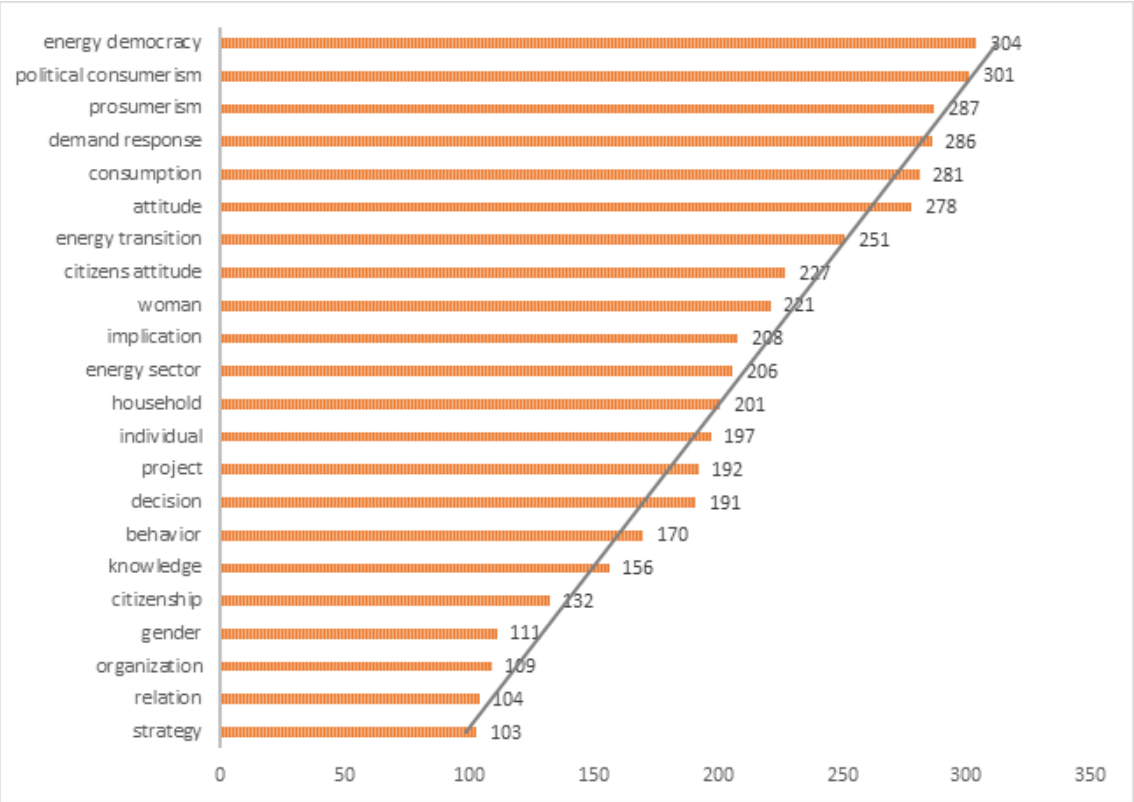

Figure 2. Total Link Strengths (for items with total link strength of 100 or higher)

VOSviewer classifies the terms in eight clusters, as shown in the Network Visualization (Figure 3). Each of the eight colours in this network corresponds to a cluster, and the thickness of a line segment connecting terms indicates link strength.

An analysis of the network visualization demonstrates a higher number of links, hence, more interaction for the terms individual, energy transition, consumption, and household. On the other hand, there are fewer links, and thus, lower interaction for the terms capability, energy conservation behaviour, household energy, occupant behaviour, citizen dialogue, citizenship curriculum, and social psychology.

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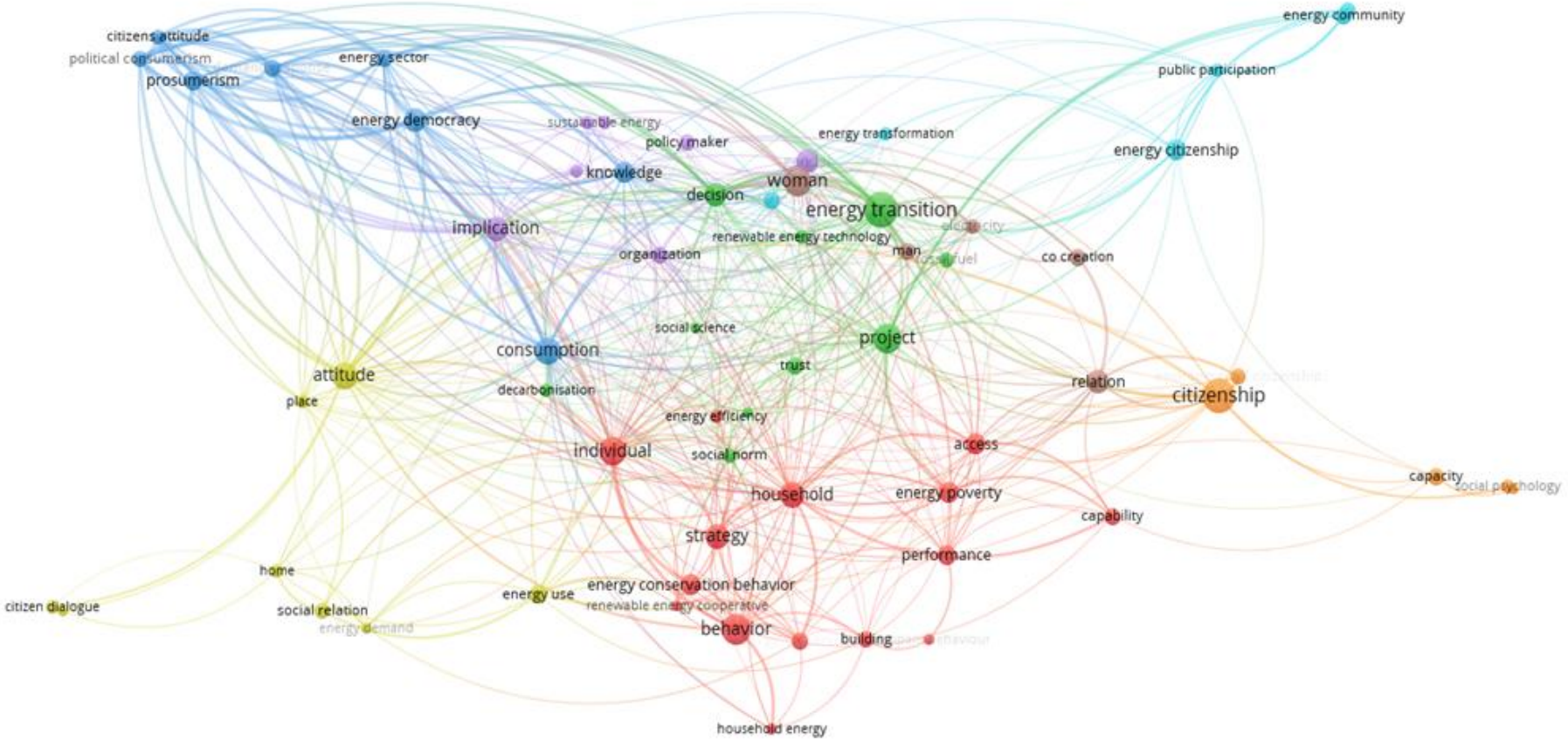

Figure 3. Network Visualization of VOSviewer

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Table 11 below provides the details of clusters, terminology in each cluster, their total links, total link strengths, and number of occurrences.

	Results of Bibliometric Analysis			
	Items (Terms)	Links	Total Link Strengths	Occurrences
Cluster 1	access	19	87	12
	behaviour	22	170	27
	building	14	32	7
	capability	8	52	8
	energy conservation	13	74	9
	energy conservation behaviour	5	66	12
	energy efficiency	12	28	5
	energy poverty	15	89	12
	household	37	201	18
	household energy	7	38	4
	individual	44	197	22
	occupant behaviour	2	12	4
	performance	19	66	11
	renewable energy cooperative	9	36	4
	strategy	23	103	17
Cluster 2	decarbonisation	11	31	5
	decision	35	191	16
	energy transition	40	251	36
	environmental concern	14	34	4
	fossil fuel	12	28	6
	project	42	192	25
	renewable energy technology	14	37	5
	social norm	14	56	6
	social science	9	11	4
	trust	15	53	9

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Cluster 3	citizens attitude	15	227	6
	consumption	38	281	21
	demand response	22	286	8
	energy democracy	26	304	15
	energy sector	21	206	8
	knowledge	28	156	12
	political consumerism	14	301	7
	prosumerism	17	287	11
Cluster 4	attitude	34	278	20
	citizen dialogue	3	20	5
	energy demand	9	39	4
	energy use	15	77	10
	environmental policy	3	13	4
	home	12	42	5
	place	22	71	5
	social relation	5	56	7
Cluster 5	gender	23	111	16
	implication	33	208	17
	organization	17	109	9
	policy maker	12	33	7
	smart grid	9	14	5
	sustainable energy	8	17	5
	sustainable energy system	15	38	5
Cluster 6	citizen science	4	84	7
	energy citizenship	13	56	12
	energy community	5	85	8
	energy transformation	11	28	5
	public participation	16	61	5
	transformation	19	57	8
Cluster 7	capacity	7	18	8
	citizenship	19	132	34

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	citizenship curriculum	2	16	4
	environmental citizenship	6	47	7
	social psychology	3	26	5
Cluster 8	co-creation	4	45	9
	electricity	19	60	6
	man	16	77	9
	relation	19	104	16
	woman	21	221	25

Table 11. Clusters as a Result of Bibliometric Analysis

An analysis of Cluster 1 shows that household and individual are among the terms with the highest interactions. Despite lower link and occurrence values, total link strengths are high. Terms that have interactions with a higher number of other terms are behaviour, strategy, energy poverty, energy conservation, energy conservation behaviour, and 'performance. Figure 4 presents a visual of Cluster 1.

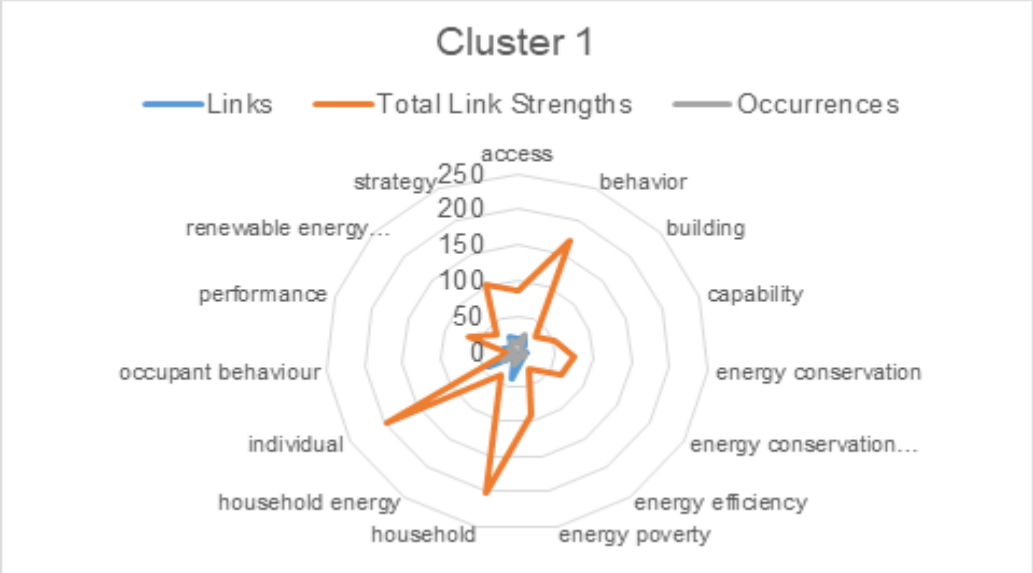

Figure 3. Cluster 1: Terms, number of links, total link strengths, and occurrences

The terms energy transition, decision, project and social norm in Cluster 2 have higher interactions. Another point to note about this cluster is the interlinking among decarbonisation, environmental concern, fossil fuel, and renewable energy technology. These are demonstrated in Figure 5 below.

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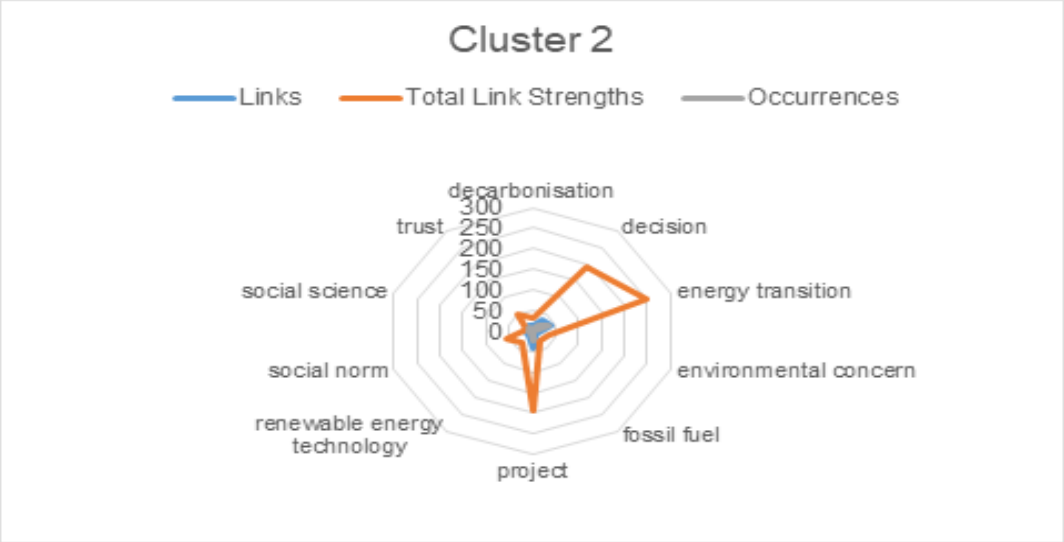

Figure 4. Cluster 2: Terms, number of links, total link strengths, and occurrences

Cluster 3 seems to have a focus on consumption and energy-related terminologies. One significant aspect of this cluster is that almost all terms have high total links strengths. Items with higher number of links are consumption, knowledge, energy democracy, and demand response. Figure 6 provides a visual analysis of Cluster 3.

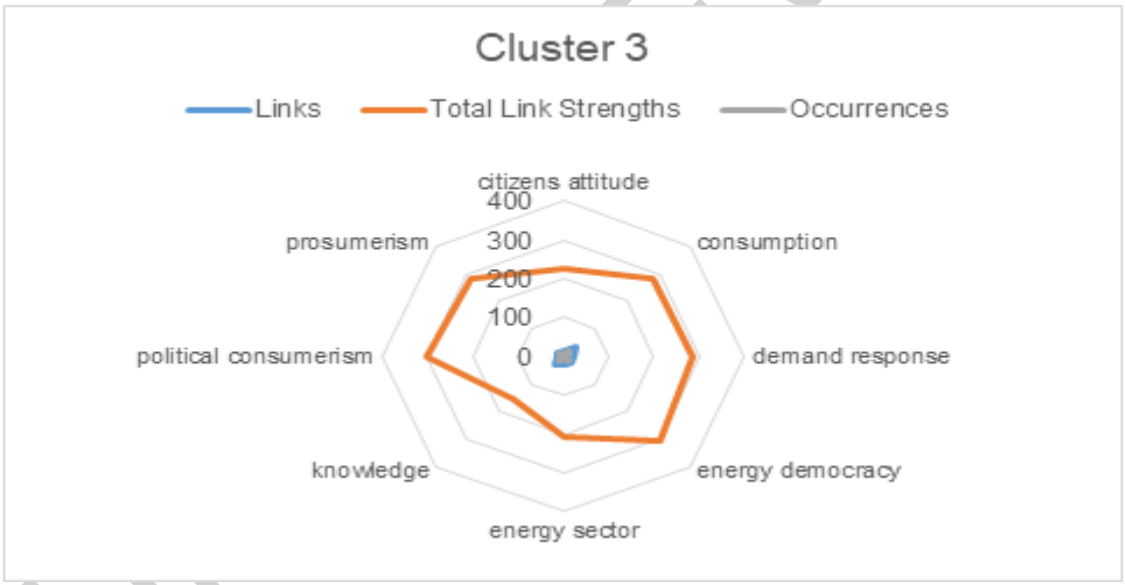

Figure 5. Cluster 3: Terms, number of links, total link strengths, and occurrences

Cluster 4 focuses more on attitude, social relation, and 'citizen dialogue. Also in this cluster are other energy-related terminology, such as energy demand and energy use, as well as environmental policy. In terms of occurrences, the most prominent terms are: attitude, energy use, and social relation. Cluster 4 is visually represented in Figure 7 below.

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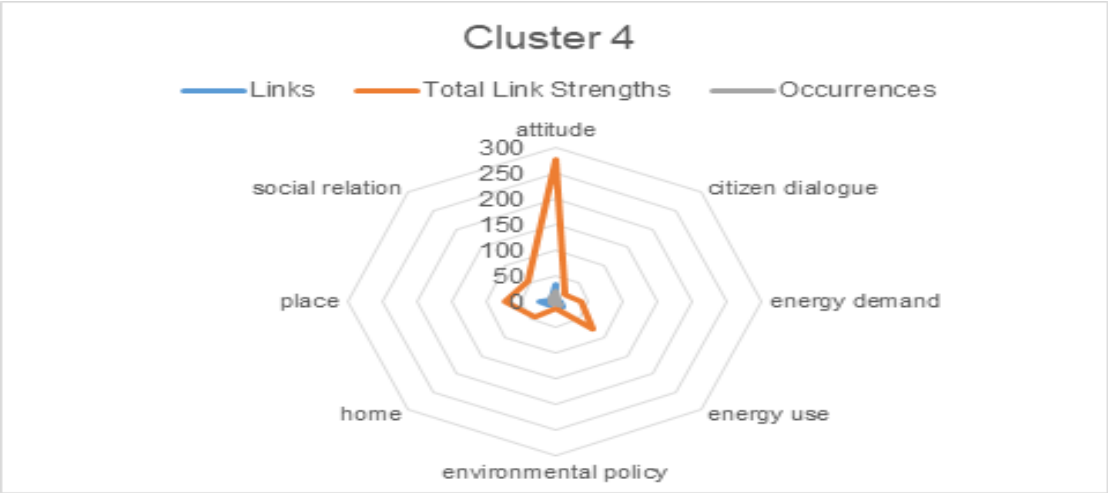

Figure 6. Cluster 4: Terms, number of links, total link strengths, and occurrences

Cluster 5 focuses mainly on gender and sustainability. Notable items include gender, policy maker, smart grid, sustainable energy and sustainable energy system. Regarding total link strengths, the overarching term gender has one of the highest. Figure 8 below visualizes the Cluster 5.

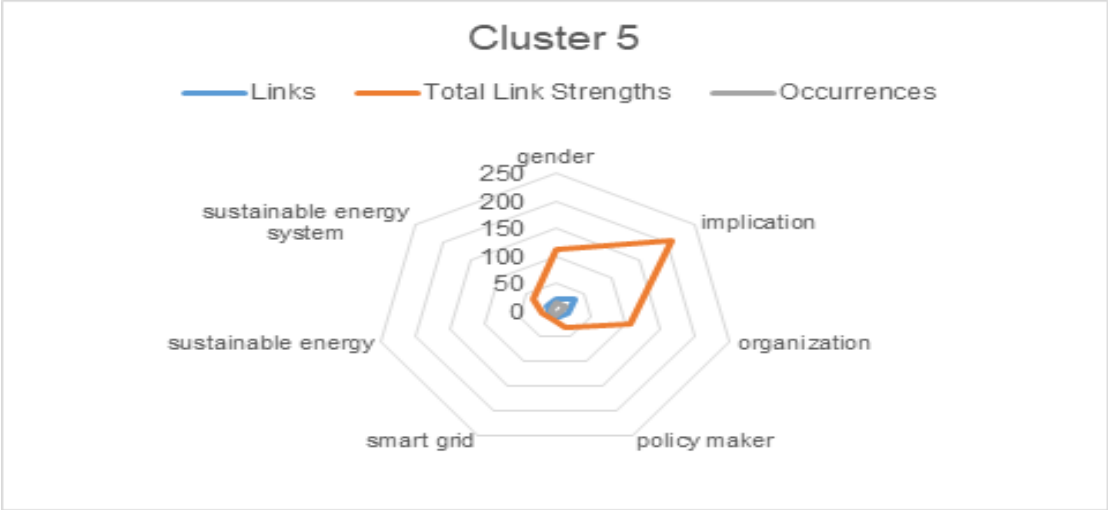

Figure 7. Cluster 5: Terms, number of links, total link strengths, and occurrences

In Cluster 6, the most prominent items in terms of total link strengths are: citizen science, energy citizenship, energy community, and energy transformation. Despite being rather recent, the concept of energy citizenship has a high total link strength. In addition, energy community and citizen science have high total link strengths. The highest occurrence frequency is for energy citizenship. Figure 9 demonstrates Cluster 6.

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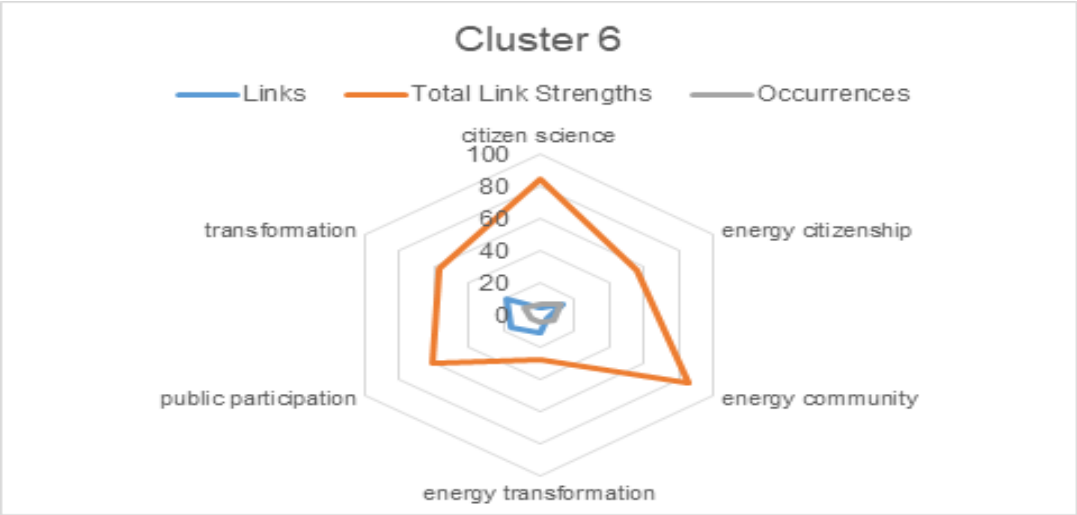

Figure 8. Cluster 6: Terms, number of links, total link strengths, and occurrences

Cluster 7, focuses mainly on citizenship-related terminology, including citizenship, environmental citizenship, and citizenship curriculum. Citizenship, as an overarching term, has the highest total link strength and the highest occurrence frequency. The terms social psychology and capacity are also in this cluster. Figure 10 demonstrates Cluster 7.

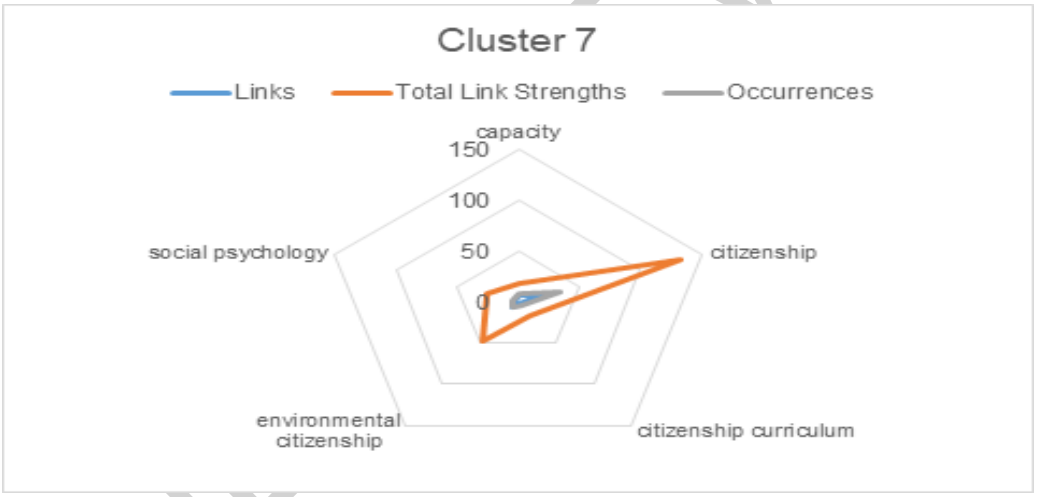

Figure 9. Cluster 7: Terms, number of links, total link strengths, and occurrences

Cluster 8 involves gender-related terminology, along with co-creation, relation, and electricity. The highest total link strength is for the term woman with 221, followed by relation (104), man (77), electricity (60) and co-creation (45), respectively. Figure 11 below visualizes the Cluster 8.

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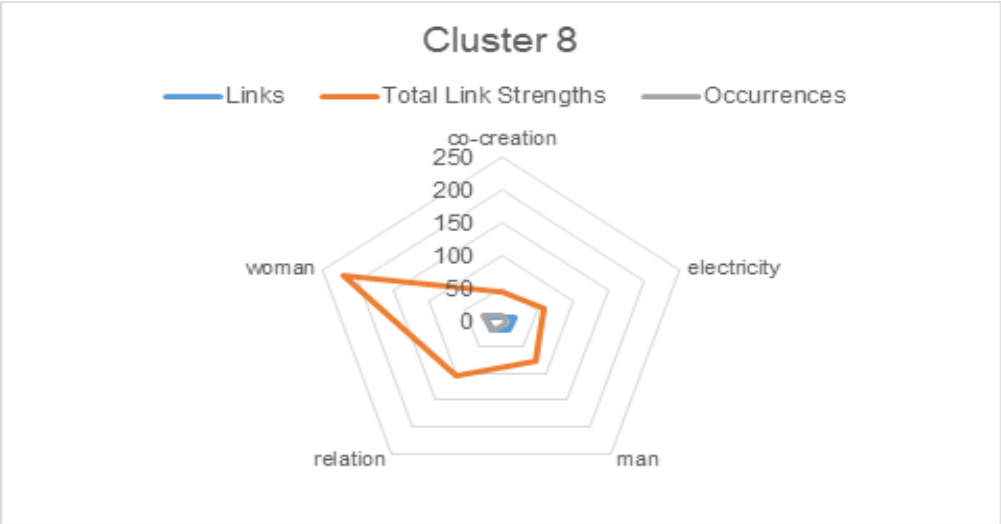

Figure 10. Cluster 8: Terms, number of links, total link strengths, and occurrences

The Overlay Visualization provides a demonstration of the clusters over the years (Figure 12). For this purpose, the timeline from 2016 to 2020 was used.

According to the overlay visualization, the theme of energy citizenship emerges approximately in 2019. Other more prominent themes over the years are as follows: For the years 2017-2018: energy transition, energy poverty, strategy, capacity, public participation, organization; and for the year 2020, energy community, energy democracy, energy transformation, prosumerism, and co-creation. The theme with the highest number of links is energy democracy, followed by energy transformation.

By 2020, themes frequently occurring in the literature were energy community, energy democracy, prosumerism, energy sector, political consumerism, co-creation, energy transformation, decarbonisation, social relation, energy conservation behaviour, and woman. Moreover, emerging themes were more associated with awareness, while there was a continuing focus on terms related to energy, climate change, and behaviour. There was also a higher tendency towards themes related to knowledge, decision, trust, attitude, access, behaviour, energy use, organization, implication, and consumption. These were more prominent than themes such as energy sector, renewable energy technologies, energy conservation behaviour, household energy, demand response, prosumerism, and renewable energy cooperatives.

The overlay representation also reveals the increasing importance of the energy citizenship theme. The concept of energy citizenship is becoming more pronounced in the literature, and this theme interacts with many others, for example, public participation, individual, and attitude. Attitude, on the other hand, is related to themes such as citizen dialogues, behaviour, citizenship, decision, environmental concern, household energy, prosumerism. Hence, the theme of energy citizenship can be located in a large cluster that touches many areas. The common point for most themes is their direct or indirect links to energy citizenship.

The item density visualization (Figure 13) suggests a larger central meta-cluster involving the themes of individual, woman, consumption, and energy transition. The cluster boundaries consist of many themes covering the years 2016-2020. The density cluster associated with the years 2019-2020 includes energy conservation, citizenship, behaviour, woman, and energy transition. Two condensations appear as a transition set:

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the terms attitude and citizenship; other sub-condensations are around the emerging themes of energy citizen dialogue, citizens attitude, and energy community.

The cluster density visualization (Figure 14) also demonstrates the interactions items in different clusters, for instance, the items in the red cluster (Cluster 1) interact with those in the green (Cluster 2). From a general perspective, the themes in the red cluster (Cluster 1) interact with a greater number of clusters, but the yellow cluster (Cluster 4) has the greatest total interaction of all clusters.

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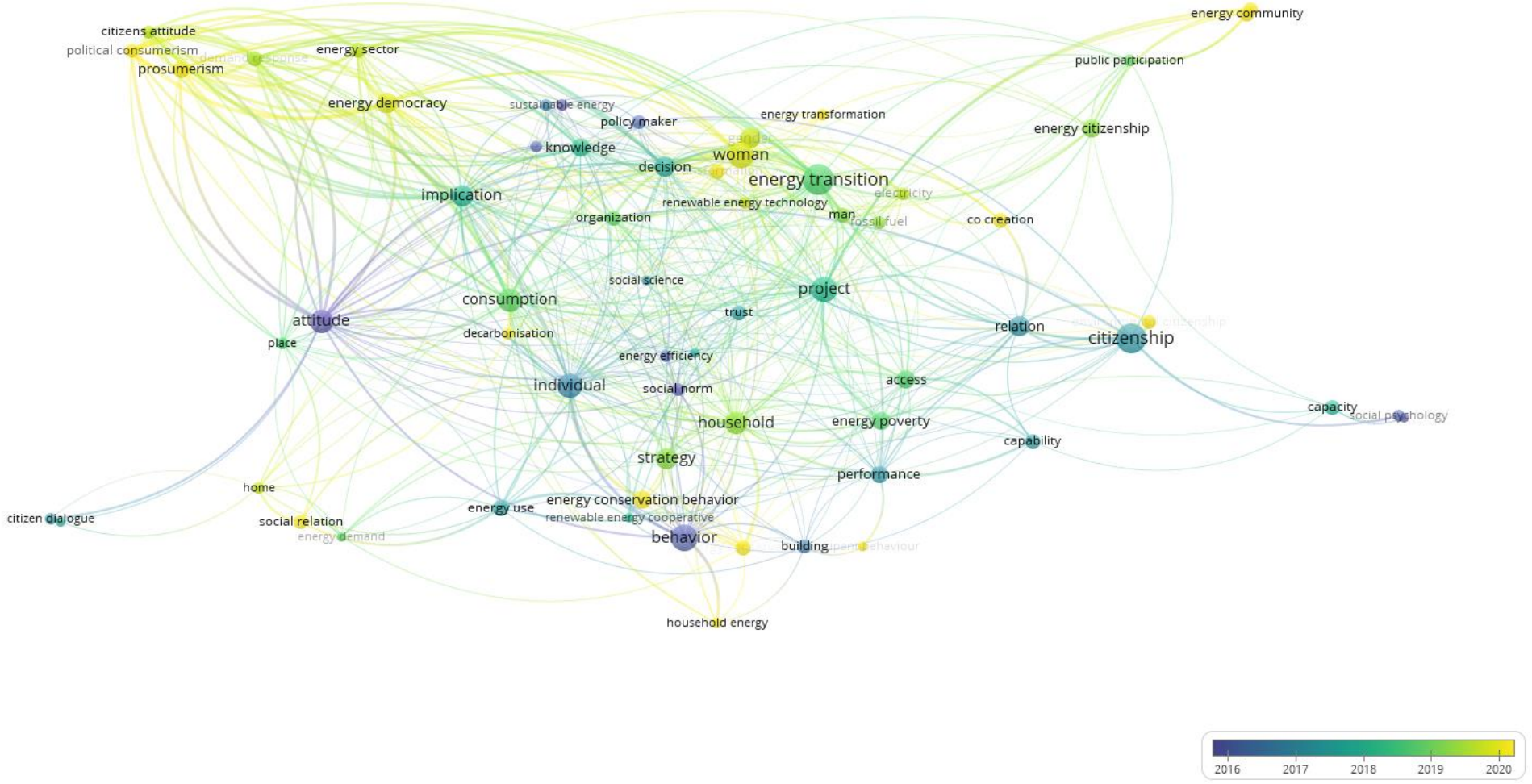

Figure 11. Overlay Visualization of VOSviewer

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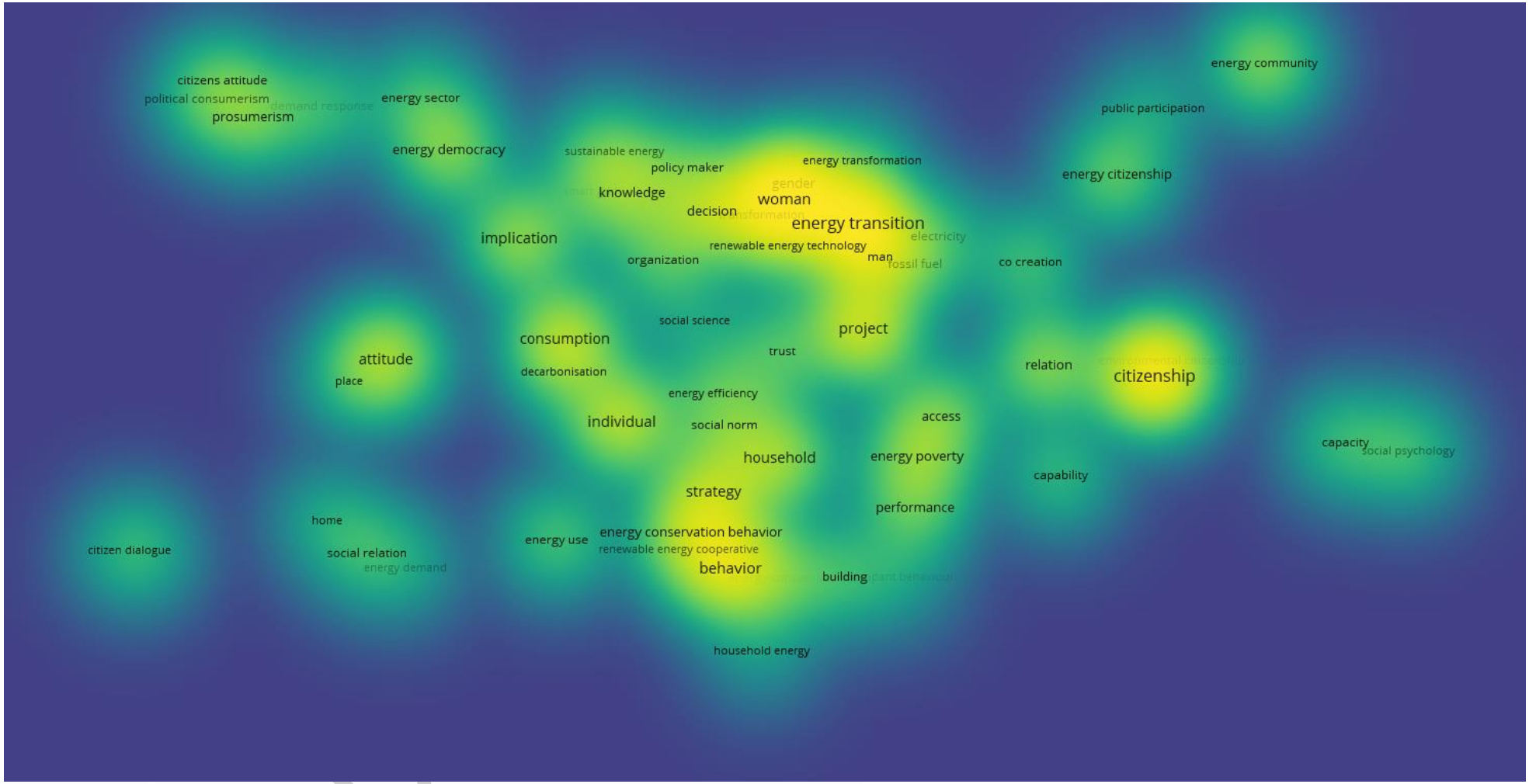

Figure 12. Item Density Visualization

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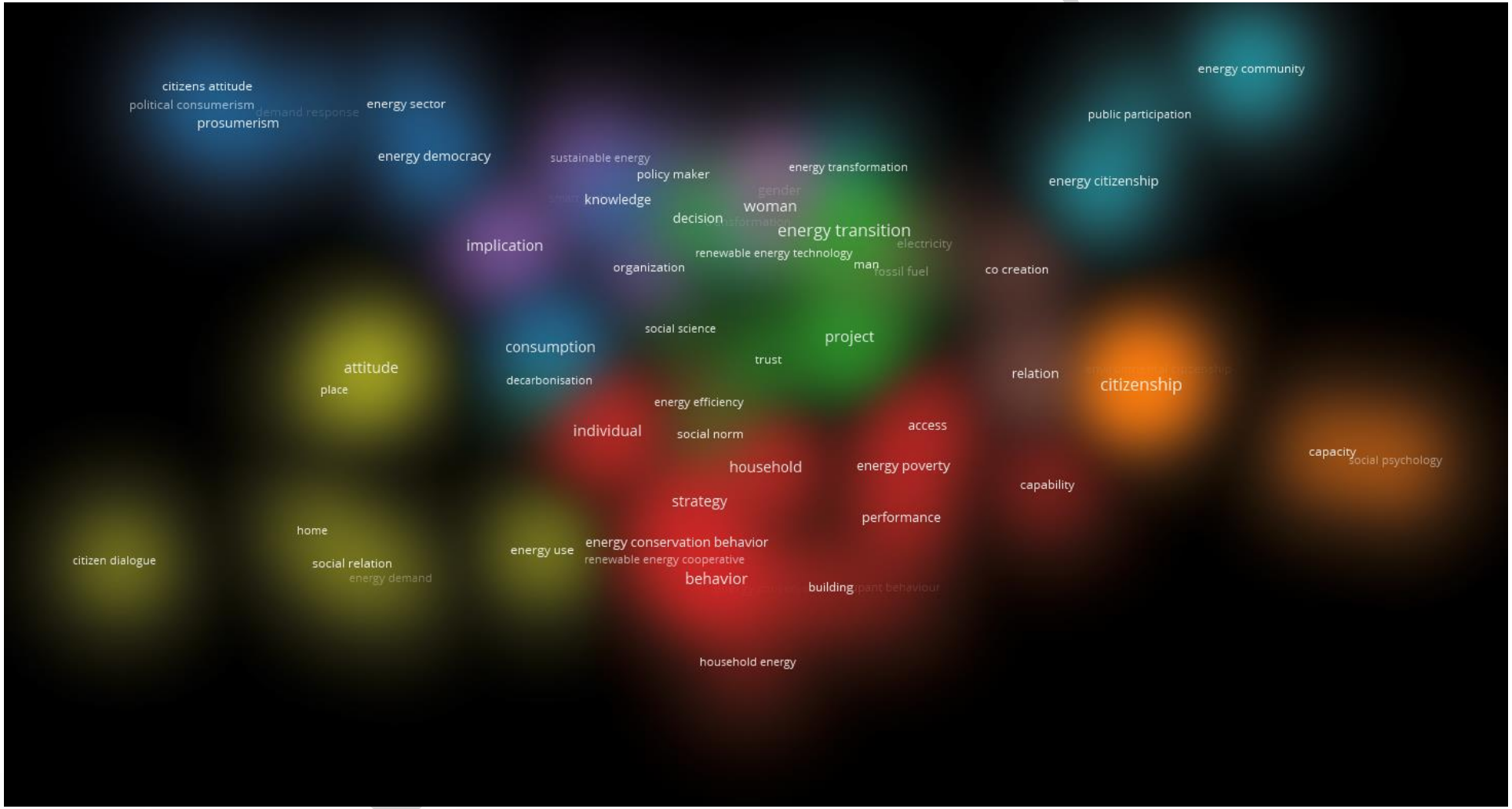

Figure 13. Cluster Density Visualization

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5 Revisiting DIALOGUES research questions

5.1 DIALOGUES research question types

5.1.1 Discipline-wise theoretical framework for the research questions

The theoretical framework brings together a wide range of disciplines that offer different and complementary approaches to energy citizenship.

Energy citizenship is an emergent concept that has not yet been precisely defined by scholars, with one notable exception (Devine-Wright, 2012). Although not yet a central concept within the field of energy and environmental science, there has been an increasing focus on understanding energy transitions as a social and political process, as well as a technological one. In this context, social sciences increasingly refer to conceptual and analytical cluster categories such as 'energy justice' (Sovacool and Dworkin, 2015; Bosch and Schmidt, 2020; Levenda et al., 2021; Walker and Day, 2012; Walker et al., 2016), 'energy democracy' (Szulecki and Overland, 2020; Elkjaer et al., 2021) and 'energy citizenship' (Campos and Marin-Gonzalez, 2020). The concept of 'energy citizenship' can be seen as an approach through which energy justice can be operationalised and framed. Some authors, however, warn that this concept might be "co-opted to reflect popular neoliberal discourses and ignore crucial questions of unequal agency and access to resources" (Lennon et al., 2020). Therefore, there is a need for a more formal conceptualisation, which neither neglects structural inequalities nor focuses only on individual action (Huttunen et al., 2020; Lennon et al., 2020).

The current framing of energy citizenship varies according to discipline. For instance, Science and Technology Studies (STS) insist on creating energy citizenship through the material participation of individuals and stress the relationship between people and energy technologies (Ryghaug et al., 2018). From a different perspective, behavioural sciences and social psychology aim to identify the factors driving the adoption of specific habits regarding energy systems (Elgaaied-Gambier and Mandler 2021). Energy citizenship is understood as a set of practices rooted in everyday life, influenced by intra-individual, inter-individual or external processes (Belaid and Joumni 2020). This perspective shares common grounds with social practice theory, which puts the emphasis on mundane energy uses (Shove and Walker, 2014; Sahakian and Bertho 2018). A challenge identified in the literature is to bridge this approach with perspectives investigating more occasional and collective forms of participation in energy transition (Chilvers and Longhurst, 2016).

The collective dimension of energy citizenship is the dimension most emphasized in the sociology of engagement and participation, community studies and human geography. Scholars in these fields remind us that citizenship concerns not only individual values and lifestyles, but should be understood as a process emerging from participation and community organizing (van Veelen and van der Horst, 2018). Campos and Marin-Gonzalez (2020) show that citizens can become actively involved in the transition as individual consumers, but also as prosumers, as well as participants in protests and support movements. In this perspective, consumption can be seen as more political and

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less individualised (Huttunen et al., 2020). This literature concentrates on shared identities and collective actions as the crux of the pro-energy citizenship movement (Campos and Marin-Gonzalez, 2020; Lennon et al., 2020; Wuebben et al., 2020; Coy et al., 2021; Cantoni et al., 2018; Devine-Wright, 2012).

The scale at which this movement should take place is, however, debated. Energy geographers point out that energy is produced, distributed and consumed at various geographical scales (Calvert, 2016). This echoes the question of institutional and policy drivers of collective/community action (Coy et al., 2021), addressed mainly by political science and law scholars. For some the democratic and the bureaucratic realms are strongly related areas and energy citizenship is framed as the close participation in decision making at the national level (Vigoda-Gadot et al., 2008), while for others, decentralisation and localisation of energy decision making is key to enhancing energy democracy (Heldeweg and Séverine Saintier, 2020). While much of the literature insists on the community level as the most suited for participatory actions, the notion of citizenship also calls for a reflection on the relation between individuals and the state (van Veelen and van der Horst, 2018). Moreover, the local scale should not be seen as unproblematic, because "the emphasis on the local from the energy democracy movement can be seen as an act of boundary ma(r)king" (van Veelen and van der Horst, 2018). Even when collective initiatives make efforts to promote inclusivity, any form of public engagement entails the risk of excluding certain visions, practical realities and envisioned futures (Chilvers and Longhurst, 2016). Thus, power dynamics should always be taken into account when analysing and co-producing energy citizenship.

In direct relation with the above, it must be noted that most energy justice literature takes a 'gender-blind' approach (Mang-Benza, 2021). Taking a gender perspective indeed allows us to see the absence of the specific issues affecting women regarding energy access in most analyses on democratic participation (Gram-Hanssen et al., 2017; Walker et al., 2016; Lieu et al., 2020). Moreover, women's agency is seen as effective only at the local level, and women's broader participation in energy policy, including at the national level, is rarely addressed. Therefore, the project should research both in the direction of the structural inequalities impeding women's participation in the energy system and their leadership role in energy transition (Mang-Benza, 2021). Beyond gender, there is a need for greater critical engagement with how intersecting identities and inequalities are coded into energy systems to pursue a just transition (Brown and Spiegal, 2019).

5.1.2 Discipline-wise best practice methodology for addressing the research questions

The literature relies on very different approaches, but qualitative methods remain dominant.

Qualitative methods include:

- in-depth interviews (with citizens, policymakers and other stakeholders);
- analysis of websites, blogs, institutional documents (manifestos, descriptions of initiatives, etc.);
- textual analysis;
- workshops;
- focus groups;
- participatory methods, including living lab approaches;
- on-site observations;
- hypothetical choice experiments;

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- ethnography;
- case studies

Quantitative methods include:

- ad hoc surveys;
- analyses carried on existing databases;
- records of energy use

Some of the literature uses mixed methods, but few studies involve international comparison. There is, therefore, a much-needed effort in this direction, in order to understand the local, regional and national variations of conceptions and operationalisation of energy citizenship.

5.1.3 Achieving a common ground based on the literature

From the extensive literature gathered within this project, we identified common grounds and ongoing debates that can support the (re)formulation of the research questions:

- **Energy citizenship as a process:** Citizens are understood as active rather than passive owners of rights and duties. Likewise, citizenship is framed as a process, rather than a given and fixed state of engagement with the energy system. In this respect, instead of researching the nature of the core elements that express energy citizenship, we would like to enlighten the methods by which *energy* citizenship is concretely voiced and enacted.

- **Pathways for citizen engagement:** It is important to avoid falling into the normative trap of simply defining the characteristics of a "good" energy citizen, and instead, acknowledge that structural inequalities prevent some from accessing and engaging with energy resources. Thus, we can shift our focus from the "types of individuals and communities" most likely to deepen energy citizenship, to the diverse pathways through which individual and community engagement emerge.

- **Going beyond individual consumption to collective action:** For the same reasons, one challenge is to co-create – with experts and non-experts - an approach to energy citizenship that avoids favouring individual consumption practices over more collective forms of organisation. There is a need to consider both processes, involving everyday energy usage and collective forms of action, rooted in both practical experiences as well as community and political forms of organizing.

- **The significance of power dynamics:** Finally, the literature stresses the importance of power dynamics that exist at different levels: within social groups, within energy institutions and organisations, between experts and non-experts. These dynamics play a role in inequalities in access to energy and in participation in policy making and energy transition, and should therefore be systematically addressed. In this respect, the focus on gender is indispensable, but it should also be recognised that it intersects with other dimensions, such as age, ethnicity, race, class, disability or migrant status.

5.2 Reformulating DIALOGUES research questions

The original and proposed reformulations are provided below:

How is energy citizenship defined and understood?

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Original Research Question	Proposed Reformulation of the Research Question
• What are the core elements that express energy citizenship (actions, internal processes, etc.)?	• How is energy citizenship voiced and enacted?
• What types of individual or community engagement with the energy system can be linked to the deepening of energy citizenship and extension across domains (both within individuals and within groups)?	• How do individual and community engagements with the energy system emerge and evolve towards active democratic participation?
• Are there generalizable relationships between gender, age, socio-economic status and geography?	• How does engagement with the energy system relate to structural inequalities in terms of gender, class, race ethnicity, migrant status, etc.

Table 12. Research Questions Concerning the Definition and Understanding of Energy Citizenship

Is energy citizenship more likely to emerge locally, or at regional, national or supranational levels? For what reasons?

Original Research Question	Proposed Reformulation of the Research Question
• How is this related to the (perceived) political and collective power dynamics at varying geo-political scales?	(No changes proposed)
• How does this relate to the existence/activity of underprivileged groups at each geo-political scale?	(No changes proposed)

Table 13. Research Questions Concerning the Emergence of Energy Citizenship

How can we contextualize the barriers and opportunities for inclusive energy citizenship?

Original Research Question	Proposed Reformulation of the Research Question
• What are the specific barriers for women at individual, symbolic and structural levels to engage in energy citizenship actions in their private sphere and in the community? What are promising approaches to overcome these barriers at individual, community and local government levels?	(No changes proposed)

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• What drives and impedes energy citizenship among specific parts of society that are not yet well represented in the Energy Union, such as single mothers, the unemployed, recent migrants, the energy poor, etc.?	• What drives and impedes energy citizenship among specific parts of society that are not yet well represented in the Energy Union, such as women, single parents, the unemployed, recent migrants, the energy poor, etc.?
• How open are EU or national transition goals to the participation of energy citizens and how could deeper energy citizenship impact future energy policymaking?	• To what extent do EU or national transition goals take systemic inequalities and participation of energy citizens into account and how could more inclusive energy citizenship impact future energy policymaking?

Table 14. Research Questions Concerning Barriers and Opportunities for Inclusive Energy Citizenship

How can inclusive energy citizenship be measured and quantified?

Original Research Question	Proposed Reformulation of the Research Question
Which meaningful psychometric and action-oriented measures of energy citizenship can be co-designed (with citizens, stakeholders, and policymakers)?	How can underlying reasons for energy engagement (such as education and gender normative roles) be approached quantitatively?
What common actions and energy identities characterize the various pathways towards deeper energy citizenship?	(No changes proposed)

Table 15. Research Questions Concerning the Measurement and Quantification of Energy Citizenship

What is the relative importance of processes internal to relevant social groups as opposed to external environmental or institutional variables?

Original Research Question	Proposed Reformulation of the Research Question
• What institutional, regulatory, technological and investment aspects need to be in place to make energy citizenship attractive and accessible to all, especially marginalized groups?	(No changes proposed)
• What institutional, regulatory, technological and investment aspects need to be in place to make energy citizenship attractive and accessible to all, especially marginalized groups?	(No changes proposed)
• How can internal concepts in energy-justice, such as equitable distributions of costs and benefits, perceived fairness and collective	• How can concepts in energy-justice, such as equitable distributions of costs and benefits, perceived fairness and collective efficacy

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efficacy intersect with the deepening of energy citizenship?	intersect with the deepening of energy citizenship?
	• (Proposed additional sub-question) How to ensure that experts encourage collective initiatives towards transforming the energy system?
	• (Proposed additional sub-question) How are actors aware of internal power dynamics influencing policy making and participatory processes? How do they perform exemplarity regarding energy issues and inclusion?

Table 16. Research Questions Concerning the Relative Importance of Internal Processes and External Variables

What impact does the digitisation of the energy system and the proliferation of social media have on the emergence and consolidation of energy citizenship?

Original Research Question	Proposed Reformulation of the Research Question
• What is the use of digital devices among our stakeholders and what are the potentials for energy identity?	(No changes proposed)
• How do collectives form around energy citizenship in virtual space?	(No changes proposed)
• How do virtual opinion leaders influence the uptake of energy citizenship through sharing information or demonstrating examples?	(No changes proposed)
	• (Proposed additional sub-question) How are digital forms of participation improving or aggravating social exclusion?

Table 17. Research Questions Concerning the Effects of Digitisation of the Energy System and Social Media on Energy Citizenship

How can policy-relevant outreach and engagement further support inclusive energy citizenship?

Original Research Question	Proposed Reformulation of the Research Question
• How can targets and KPIs for energy citizenship be developed in	(No changes proposed)

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ways that remain aware of heterogeneity across (marginalized) groups? How should the EU or national targets be communicated and transposed to local, community, or individual targets?	
• How can policymakers be engaged in the conceptualisation of energy citizenship so that they find the concept useful and actionable?	(No changes proposed)
• How can energy citizenship enter into and inform broader policy discussions and initiatives?	(No changes proposed)

Table 18. Research Questions Concerning the Effects of Policy-relevant Outreach and Engagement on Energy Citizenship

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6 Towards an overarching DIALOGUES framework

This draft of the Integrated Research White Paper aims to provide an input into a solid and integrated research framework, which is required for the successful execution of the core activities of the DIALOGUES project. This framework is to be further developed and adapted throughout the lifetime of the project, while the current version serves as the foundation for a common and solid interdisciplinary base. Developing a common framework aims at aligning the many different disciplines represented in DIALOGUES, to avoid disciplinary silos, ensure exploitation of existing knowledge, data and related theories, and align the different activities planned in DIALOGUES' Citizen Action Lab.

The draft framework outlined in this report aims at providing guidelines for the research activities throughout the whole project. This is achieved by discussing key terms, providing a glossary, highlighting the different research methods applied and the levels of analyses targeted, and finally, streamlining the research project by proposing commonly agreed research questions.

6.1 Towards a definition of "energy citizenship"

Energy citizenship links to advancements in technological solutions as well as continuing and informed changes in society, including citizens' everyday practices and values as well as the political system. As such, it is related to multiple disciplines of study and practice, among which are economics, psychology, sociology, transportation research, urban design, health, systems planning.

The conceptualization phase of the DIALOGUES project proposal employed a concept of energy citizenship that considers multiple pathways towards deeper energy citizenship, and acknowledges specific social, material, and political contexts. The "depth" of energy citizenship, in turn, is a multidimensional concept. 'Pathways to energy citizenship' refers to a linked set of actions, habit changes, or cognitive-emotive processes that deepen an individual's engagement with the energy transition. These result in a greater awareness of energy use in one's daily life, as well as actionable ways to engage individually or collectively in the energy transition. Departing from the simplistic idea that some find it easier than others to engage in 'energy citizenship pathways', it posits a variety of forms of engagement, ranging from commitment to indifference or even opposition.

Following different pathways, individuals can arrive at different forms of energy citizenship, expressed in different ways, driven by a combination of their internal process and their socio-material-political contexts. This approach led to the development of a preliminary definition of energy citizenship, as the degree to which, and the ways in which, the goals of a sustainable energy transition enter into the everyday practices of an individual. Energy citizenship can either be shown through individual and collective actions, or felt internally through reflection and concern. Energy citizenship is not a static quality, but evolves over time, waxing or waning due to internal and external factors, making it important to find ways of sustaining engagement.

The literature review and accompanying analyses presented above revealed two important aspects to be considered in the further development of this definition: firstly, it was revealed that no consensus was reached on the definition of 'energy citizenship' in

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research, and secondly, that there are several overarching frameworks which could form the basis of the concept of “energy citizenship”.

These alternative definitions (see Section 3.1) have different underlying themes, which were grouped into “participation and engagement”, “collective actions and responsibility”, “social acceptance in an inclusive and transparent energy decision-making”, “empowerment”, “political and civic activity”, “gender equality”, and “energy justice”.

DIALOGUES will include all of the above-mentioned frameworks in its operations. The participation and engagement of citizens will be considered at the following levels - individual and collective; private, political and civic; local, national and international; and material and intellectual. These activities will be incorporated under the consistent consideration of inclusivity, equality, transparency, and justice. This implies that energy citizenship will be elaborated from the social, political, and technical dimensions. Moreover, DIALOGUES will also consider the currently established legal framework on the national and EU level, as well as the economic aspects resulting from this movement.

The DIALOGUES’ working definition of energy citizenship conveys a deep, inclusive conceptualisation, unlike any of the alternative definitions. Thus, this working definition can be built on, and will continue to be used in the project, undergoing a process of adaptation in light of reflection on the results and insights presented above, as well as of the further research activities in DIALOGUES.

6.2 Establishing an interdisciplinary research plan

As described in Section 5.1.1, each discipline approaches energy citizenship from a particular angle. Energy citizenship is related to multiple disciplines of study and practice. For example, science and technology studies focus on individuals’ material participation that takes place through adoption of energy technologies. Behavioural sciences and social psychology investigate the motivations for energy related behaviour, which can take the form of either everyday life activities or occasional participation in energy transition. Scholars from sociology of engagement and participation, community studies and human geography stress that citizenship can also be understood as a process emerging from participation and community organization, and not simply as individual values and preferences, thus energy consumption can also be seen as a political action.

The question of energy citizenship thus requires interdisciplinary research, which, if well managed can “[…] accomplish a range of objectives: to answer complex questions, to address broad issues, to explore disciplinary and professional relations, to solve problems that are beyond the scope of any one discipline, to achieve unity of knowledge, whether on a limited or grand scale.” (Thompson Klein, 1990).

To ensure an effective research management, DIALOGUES builds on prior experiences, most notably from the Horizon 2020 project SMARTEES (GA#763912), which developed, tested and refined a set of strategies for effective interdisciplinary work. (Cohen et al., 2021).

DIALOGUES aims at applying these strategies to overcome interdisciplinary barriers, specifically, by building a common vocabulary and structured group interactions. In the following figure, we outline key aspects of the process of structuring our interdisciplinary research strategy. The left side of the figure refers to the importance of building up a common vocabulary early on in a project, to maintain and regularly review it. The foundations for this have been established with the Glossary developed in this report (see Appendix A) as well as the assessment of terminology presented in Section 3.3.

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Building a Common Vocabulary	Structured Group Interactions
Why? To avoid communication problems from over-complicated or jargon terms	**Why?** To leverage the potential of group meetings and use the available time as efficiently as possible
How? • Document analysis & word webbing techniques are used to derive key terms • Terms will be specific and unambiguous (e.g. "mathematical model", or "theoretical model" instead of just "model". • Key terms used in all project reports will be explained in a glossary • Discipline-specific jargon and acronyms are either avoided or clearly defined • Contact and discussion between research and disciplinary groups is increased, terms may become clear due to context clues or be hashed out during discussion. • Create a project culture where it is encouraged to ask for clarification during discussions or presentations.	**How?** • Structured activities in face-to-face/virtual meetings and workshops in place of some open discussions or presentations • One responsible person arranges and shapes the discussion • Clear objectives for the activity at the outset, explaining the overall purpose of the activity within the greater common research agenda. • Format of the activity is well defined and communicated at the onset, including any time constraints or rules to interaction. • Leader plays an active role during the activity, monitoring workflow or keeping the discussion related to the objectives. • For every activity a specific format is chosen: e.g. (anonymous) ranking exercise, written feedback exercise, structured brainstorming, cross-disciplinary group interviews • When an activity requires subgroups, extra time is taken and it will be ensured that each subgroup is diverse in terms of the disciplines, perspectives, genders, and age groups represented.

Figure 14. Key aspects in structuring DIALOGUES interdisciplinary research strategy

6.2.1 Terminology & Glossary

The literature review on energy citizenship provided a clear insight into the multidimensionality of the concept, and the many approaches and themes it can encompass.

To provide a structured representation of terminologies needing to be considered in DIALOGUES, the key terms identified in the literature review were clustered under nine umbrella terms (see Section 3.3): Main approaches and theoretical frameworks, Eliciting factors, Alternative solutions, Democracy and justice context, Citizenship context, Poverty context, Community-oriented approach, Society emphasis and finally Individuals-oriented approach.

Additionally, the Glossary derived from the literature analysis serves the project team as a reference.

6.3 DIALOGUES Core research questions

DIALOGUES is built around three conceptual cornerstones linking the assessment of the state-of-the-art with the project's ambitions and research questions. DIALOGUES' interdisciplinary approach requires that the research questions posed in the project are answered using both qualitative and quantitative methods (see Section 5.1.2).

	I	II	III
Cornerstone	**Operationalise the concept of 'energy citizenship'**	**Investigate broad trends in citizen engagement with the sustainable energy transition**	**Co-creation, inclusivity and shared ownership of the research / engagement process**

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Current state-of-the-art	Energy citizenship is a poorly understood concept that offers little actionable advice to policymakers.	Citizen engagement in energy topics is researched and considered in a fragmented and situation / technology-specific manner with little interconnection.	Siloes of research, citizen apathy, and policymaking without operational knowledge and tools
Ambition	• Define 'inclusive energy citizenship' • Illustrate the concept in-practice with Citizen Action Labs • Provide pathways to deepen energy citizenship • Develop a knowledge platform and data repository as research / policy tools • Integrate the concept with policy	• Understand broader trends in energy topics becoming salient to citizens' lives • Develop an interdisciplinary, multi-method research process that leverages past data and incorporates past work • Develop a trans-disciplinary process to focus on the relevance of these trends • Focus on key contextual conditions: geo-political scope, institution / legal factors, social group processes and digitalisation • Develop pathways and linkages between different types of engagement with energy topics	• Building an inter- and trans-disciplinary energy citizenship research agenda across Europe • Open events to mesh with other ongoing projects • Interviews and engagement with experts and stakeholders • Build avenues for hard-to-reach and underrepresented groups
Related research questions	R1, R4	R2, R3, R5, R6	R5, R6, R7

Table 19. Conceptual cornerstones of DIALOGUEs and their relationships with the research questions

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6.3.1 List of consolidated research questions

R1. How is energy citizenship defined and understood?

- How is energy citizenship voiced and enacted?
- How do individual and community engagements with the energy system emerge and evolve towards active democratic participation?
- How does engagement with the energy system relate to structural inequalities in terms of gender, class, race ethnicity, migrant status, etc.

R2. Is energy citizenship more likely to emerge locally, or at regional, national or supranational levels? For what reasons?

- How is this related to the (perceived) political and collective power dynamics at varying geo-political scales?
- How does this relate to the existence/activity of underprivileged groups at each geo-political scale?

R3. How can we contextualize the barriers and opportunities for inclusive energy citizenship?

- What are the specific barriers for women at individual, symbolic and structural levels to engage in energy citizenship actions in their private sphere and in the community? What are potential approaches to overcoming these barriers at individual, community and local government levels?
- What drives and impedes energy citizenship among specific sections of society that are not yet well represented in the Energy Union, such as women, single parents, the unemployed, recent migrants, the energy poor, etc.?
- To what extent do EU or national transition goals take into account systemic inequalities and participation of energy citizens and how could more inclusive energy citizenship impact future energy policymaking?

R4. How can inclusive energy citizenship be measured and quantified?

How can underlying reasons for energy engagement (such as education and gender normative roles) be approached quantitatively?

What common actions and energy identities characterize the various pathways towards deeper energy citizenship?

R5. What is the relative importance of processes internal to relevant social groups as opposed to external environmental or institutional variables?

- What institutional, regulatory, technological and investment aspects need to be in place to make energy citizenship attractive and accessible to all, especially marginalized groups?
- What institutional, regulatory, technological and investment aspects need to be in place to make energy citizenship attractive and accessible to all, especially marginalized groups?
- How can concepts in energy-justice, such as equitable distributions of costs and benefits, perceived fairness and collective efficacy intersect with the deepening of energy citizenship?
- How is it possible to ensure that experts encourage collective initiatives towards transforming the energy system?

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- How can actors be made aware of internal power dynamics influencing policy making and participatory processes? How do they perform exemplarity regarding energy issues and inclusion?

R6. What impact does the digitisation of the energy system and the proliferation of social media have on the emergence and consolidation of energy citizenship?

- What is the level of use of digital devices among our stakeholders and what are the potentials of this for energy identity?
- How do collectives form around energy citizenship in virtual space?
- How do virtual opinion leaders influence the uptake of energy citizenship through sharing information or demonstrating examples?
- How are digital forms of participation improving or aggravating social exclusion?

R7. How can policy-relevant outreach and engagement further support inclusive energy citizenship?

- How can targets and KPIs for energy citizenship be developed in ways that maintain awareness of heterogeneity across (marginalized) groups? How should the EU or national targets be communicated and transposed to local, community, or individual targets?
- How can policymakers increase their engagement in the conceptualisation of energy citizenship so that they find the concept useful and actionable?
- How can energy citizenship enter into and inform broader policy discussions and initiatives?

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7 Conclusion

Deliverable 2.1 of DIALOGUES, The Integrated Research White Paper – Version 1, involves the work conducted for establishing a common understanding of the expected outputs and concepts used in the project, among DIALOGUES partners.

The main input of this effort is the comprehensive and state-of-the -art literature review conducted within Work Package 2 of DIALOGUES. The literature review reveals how 'energy citizenship' and relevant terminology are conceptualized in the literature including peer-reviewed journal articles (mainly those listed under Web of Science, ScienceDirect, Scopus, and ResearchGate), books and book chapters, scientific and technical project reports, and policy briefs. The literature review reveals that the term energy citizenship itself is infrequently cited in the literature, hence the search is extended to cover keywords pertaining to the concept, including "empowerment (of citizens in the energy system)", "individual energy behaviour", "inclusion (in energy transition)", "energy justice", "energy poverty", "(energy) self-sufficiency", "energy democracy", "energy citizen", "(citizen) energy community", "public engagement (in energy system)", "energy transition", "consumer empowerment", and "prosumers". The bibliometric analysis conducted later shows that the concept of energy citizenship has a greater presence in the literature in more recent years. The bibliometric analysis conducted using the VOSviewer software also identifies that the terminology pertaining to energy citizenship can be classified into eight clusters. This analysis identifies political consumerism, citizens' attitude, demand response, as other themes associated with recent years, and energy democracy, energy sector and attitude are identified as transition themes. The increasing emphasis on energy citizenship was also reflected by the identification of more than 50 terms from the literature review, that are related to energy citizenship. These terms constitute the DIALOGUES glossary of terms.

Although most research on energy citizenship emanates from Social Sciences and Humanities, the literature review reveals that sub-disciplines to energy citizenship and related concepts take different approaches. These are presented in two sections, as the alternative definitions of energy citizenship and interdisciplinary assessment of terminology, reflecting perspectives of different disciplines, determining areas of consensus, and of disagreement, paving the way for formulating a DIALOGUES working definition of energy citizenship and establishing a common research framework for DIALOGUES.

The literature review also provides pointers to the common grounds and ongoing debates concerning energy citizenship and related concepts. These are identified as the conceptualization of energy citizenship as a process, pathways for citizen engagement, going beyond individual consumption to collective action, and the significance of power dynamics. DIALOGUES research questions are revisited and reviewed through these common grounds and ongoing debates. A number of reformulations are proposed, along with two additional research question suggestions, the first concerning the relative importance of internal processes and external variables, and the second, how energy citizenship is affected by digitisation of the energy system and social media.

Finally, an overarching DIALOGUES framework is defined. This framework has three main pillars: first, the identification of a DIALOGUES working definition of energy citizenship, second, the interdisciplinary DIALOGUES research plan, and third, the formulation of DIALOGUES core research questions.

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9 Appendix

9.1 Appendix A: DIALOGUES Glossary

-A-

Terminology	Definition	Reference
Access to Energy	A very basic human energy need for reliable and affordable access to clean cooking facilities and electricity in modern society towards low-carbon energy transitions or low-carbon society	Shyu, 2021; IEA, 2020
Associative democracy	A context in which individual freedom and human well-being are best served when as much community affairs as possible are voluntarily and democratically managed by the self-governing association	van Veelen and van der Horst, 2018

-C-

Terminology	Definition	Reference
Citizen Energy Community	A self-organized community including (i) voluntary and open participation and democratic governance in which all members are adequately represented; (ii) a primary purpose to provide environmental, social community, or economic benefits to its members or the local area; and (iii) may engage in generation, distribution, aggregation, storage, charging (e.g., for electric vehicles), or energy efficiency (including building renovations)	Wuebben et al., 2020
Citizen Science	The collection and analysis of data collected by professionals and volunteers from diverse backgrounds and with varying levels of expertise to advance our collective understanding of the natural world	Wuebben et al., 2020
Collective Participatory Practices	The process of simultaneous coproduction of subjects (including participating publics), objects (issues of material devices) and models (political ontologies and formats) of participation, shaped by (and in turn shaping) extant orders on these dimensions	Chilvers et al., 2018
Community Dynamic	A concept for a community with shared recognition of a problem and collective capacity for discussion and action	Coy et al., 2021
Community Empowerment	A multifaceted concept associated with a number of different outcomes such as breakthrough, agency, autonomy, and power shift	Coy et al., 2021
Community Energy	Collective energy actions that foster citizens' participation across the energy system	Caramizaru and Uihlein, 2020

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Community Energy Projects	The projects based on varying degrees of community involvement in decision-making and benefits sharing	Caramizaru and Uihlein, 2020
Community co-ownership	Community ownership is not a clearly defined term and different forms of community ownership exist in practice. Projects can be completely owned by a municipality or can be implemented in cooperation with private actors. There are development trusts and cooperatives as well as cases in which shares are owned by a local community organization like a community charity	Musall and Kuik, 2011
Community knowledge networks	The CKN approach entails exploring, both theoretically and empirically, the role of knowledge networks in reducing energy consumption. It draws attention to the role social interaction plays in shaping practices, but also ways in which these can be identified and, perhaps, mobilised to enable overall changes in energy use	Catney et al., 2013
Consumer behavior with respect to energy consumption	The ownership and use of heating devices, the overall home power consumption, and the use of electric vehicle (EV) charging stations	Amadori and Votta, 2021
Consumer engagement	Smart energy systems rely on active consumer participation. Consumers have to accept, install, and use smart products and services. They need to provide data and adjust their behaviour. Even highly automatized solutions require some user involvement and if automation is not given, intensive consumer participation is essential. For the sustainable energy transition, it is important to embrace consumers as active contributors in energy systems	Schweiger et al., 2020
Consumption	Consumption is "a process whereby agents engage in appropriation and appreciation, whether for utilitarian, expressive or contemplative purposes, of goods, services, performances, information or ambience, whether purchased or not, over which the agent has some degree of discretion" (Warde, 2005: 137).	Warde, 2005: 137

-D-

Terminology	Definition	Reference
Deliberative democracy	A context of discursive consensus, decision-making and majority rule which is grounded in arguments forming of public talk that leads to higher quality and more legitimate decisions	van Veelen and van der Horst, 2018
Discursive Participation	The various ways in which citizens can talk about public settings that affect the community, state,	Mullally et al., 2018

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	or nation in which they live in accordance with their interests to ensure energy citizenship	
Distributive Justice	Socially just allocation of resources to overcome spatial inequalities, such as diminishments in social welfare imposed on neighbourhood communities for the benefit of larger populations	Thomas et al., 2020

-E-

Terminology	Definition	Reference
Ecofeminism	Bringing together feminism and environmentalism, ecofeminism argues that both domination of women and the degradation of the environment could be attributed to patriarchal capitalistic systems. Thus, responses to the environmental and climate crisis must take into consideration the domination of women and other groups of minorities. Some ecofeminists propose a cultural shift towards feminist ethics of care and cooperation, over aggression and domination as a response (Buckingham 2004), while other scholars advocate for more antagonistic, political projects of feminist ecological citizenship (MacGregor 2004, etc.).	Buckingham,2004; Macgregor, 2004, 2006, 2014
Ecological citizenship	An approach to realize personal responsibility for the environment, following the known dimensions of sustainable urbanism	Asilsoy and Oktay, 2018
Ecological city	A city that proposes the usage of fundamental ecological principles in urban planning, design, and administration to form and improve environmentally and economically sustainable cities	Asilsoy and Oktay, 2018
Ecologies of participation	The dynamics of spaces and collectives of participation and how they interact within wider systems and political cultures	Chilvers et al., 2018
Energy Citizenship	A term representing public participation within energy systems through an emphasis on awareness for climate change and the potential for (collective) energy activities, counting acts of consumption, and the setting up of community renewable energy projects	Sarrica et al., 2014
Energy Community	The collective organizations including energy cooperatives and social enterprises that involve citizens in the energy system, as well as communities formed by consumers who produce within the financial system with social, economic, and environmental benefits	Campos and Marín-González, 2020; Moncecchi et al., 2020; Caramizaru and Uihlein, 2020
Energy Consumption	Amount of energy used to perform an action and the major driver for CO2 emissions	Gram-Hanssen et al., 2017
Energy Cultures	The interactions between cognitive norms (e.g. beliefs, understandings), material culture (e.g.	Stephenson et al., 2010

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	technologies, building form) and energy practices (e.g. activities, processes), which can explain consumer energy behavior	
Energy Democracy	A goal or an ideal for a just and sustainable energy transition with a strengthening democracy and public participation through participatory activities such as social movements	Campos and Marín-González, 2020; Szulecki and Overland, 2020
Energy Justice	The goal of achieving equity in social and economic participation in the energy system, and making energy more accessible, affordable and clean for all communities through democratically managed and more educated energy choices	Walker et al., 2016; Sovacool and Dworkin, 2015; Bartiaux et al., 2018
Energy Poverty	Lack of access to sustainable and affordable energy services and products	Shyu, 2021
Energy Services	Energy services are those functions performed using energy which are a means to obtain or facilitate desired end services or states. Energy services is a way to bring attention to the services energy provides, rather than focus on energy in and of itself.	Fell, 2017
Energy Transition	A pathway towards the transformation of the global energy sector to diminish the reliance on limited fossil fuels for energy, electricity, and transport, to enlarge the use of renewable energy and to diversify energy mixes to ensure worldwide energy access, longer-term energy security, and enhanced climate resilience	Johnson et al., 2020; Levenda et al., 2021
Environmental anxiety	Environmental degradation is described as something that prevents some individuals from living a normal life or enjoying certain situations because of the severe anxiety it generates	Elgaaied-Gambier and Mandler, 2021
Environmental Behavior	The nucleus of ecological citizenship in terms of adopting attitudes and behaviours that minimize any adverse effects on natural environment	Asilsoy and Oktay, 2018
Environmental Citizenship	The idea of taking responsibility for environmental issues and advancing individuals and social orders to embrace sustainable ways of living and environmentally–socially sustainable economies, innovations, and businesses	Sarid and Goldman, 2021
Environmental Justice	Fair treatment and meaningful involvement of all individuals, collective identities and group experiences in the decision-making, development, implementation and enforcement of environmental laws, regulations and policies	Levenda et al., 2021
Ethical Consumption	Utilization of the consumer market by politically and ethically considering how your consumer choices influence other individuals and communities as well as the environment	Gram-Hanssen, 2017

-G-

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Gender justice	"Gender justice" emerged from activists and academics acknowledging that there are institutionalized gender biases in the contemporary conceptions of justice and willing to go beyond softer approaches like "gender mainstreaming". It has been defined as "the ending of - and if necessary the provision of redress for - inequalities between women and men that result in women's subordination to men". One interesting aspect is that the concept intends to focus on the "key sites of gender-specific injustice", which are the family and the community.	Goetz, 2007; Terry 2009

-H-

Terminology	Definition	Reference
Household Energy Saving Intervention – HESO	A framework of an option-based cost-efficient household energy-saving intervention and a preliminary assessment of its effect on household energy saving	Xu et al., 2021
Hydraulic Fracturing	Commonly referred to as 'fracking' is a method for recovering shale gas (and oil) from underground shale rock layers	Dueholm Rasch and Köhne, 2015

-I-

Terminology	Definition	Reference
Individualization	Individualization, in the context of environmental action, refers to the tendency to over-individualize environmental responsibility, oftentimes resulting in the idea that individuals need only respond with "better" consumer choices and behavioural change. Scholars have criticized individualization for its inability to collectively challenge political and social institutions, and address issues related to the distribution of power and influence in society which lie at the core of the environmental and climate crisis of today.	Maniates, 2001
Intersectionality	A concept and theoretical approach describing the overlapping and interdependent systems of discrimination or disadvantage across social categories, such as race, class and gender.	Dunphy et al. 2018 Johnson et al., 2020 Lieu, et al., 2020
Item Response Theory	A theory based on mathematical models through a score-based measurement that takes into consideration the differences in behavioural difficulty and inconsistency within behaviour domains	Belaïd and Joumni, 2020

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-M-

Terminology	Definition	Reference
Material democracy	The concept that brings the issue of access to, and engagement with material assets assist to the fore	van Veelen and van der Horst, 2018

-O-

Terminology	Definition	Reference
Occupant Behaviour Analysis	The energy-related behaviour analysis depending on the occupant's expectations towards the indoor environment, building plan considerations, indoor air quality, properties of HVAC systems, lighting control, as well as their recognition of comfort beneath specific conditions	Tuniki et al., 2021

-P-

Terminology	Definition	Reference
Participatory Business Models	Extending the conventional focus on customer and supplier relationships to a more inclusive consideration of stakeholders	Lennon et al., 2019
PIMBY (Please, In My Backyard)	The tendency to implant the values of "well-being and modernity" in complex identity formation processes and technologies sometimes leads to opposite phenomena, and this is called PIMBY (Please, In My Backyard)	Ryghaug et al., 2018
Place Attachment	The linkage between person and place which is irreducible to demography and attempts to quantify the spatial extent, and conversely cannot be defined without reference to historical and social relations in environmental psychology	Scott and Powells, 2019
Platform Society	Decentralized and digitally empowered trades of distributed resources	Kloppenburg and Boekelo, 2019
Politicization	Politicization refers to the beliefs, strategies, processes and actions that are oriented toward collective, political actions as responses to environmental problems. Politicization proposes individuals to claim their roles as citizens as a means of resistance against the post-political conditions and the depoliticized climate consensus, as observed by scholars such as Zizek, Rancière and Swyngedouw.	Swyngedouw, 2011, 2014
Positive Energy District	Energy-efficient and energy-flexible urban areas that bring net zero emission environment, sustainable production and consumption, and mobility to reduce energy use and greenhouse gas emissions and to create added value and incentives for the consumer	Olivadese et al., 2021

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Practical Recognition	A reasonable pathway to consider how energy activities for all intents and purposes address energy needs and visions of diverse groups	Boamah and Rothfuß, 2020
Procedural Justice	The idea of fair processes that goes beyond limited arrangements for consultative or engagement forms to request equal opportunities to access data, challenge and rebut the arguments of others and for the participation on an equal balance, with the desire that recommendations can be changed or denied which choices that will be taken in a reasonable and transparent way	Thomas et al., 2020

-R-

Terminology	Definition	Reference
Renewable Energy Cooperatives	Groups of citizens who organize themselves to collectively take action to foster the use of renewable energy and increase energy efficiency standards	Hoppe et al., 2019

-S-

Terminology	Definition	Reference
Senso Comune	A knowledge or understanding that is believed to be true and therefore held in common by the majority in society, and a driver for citizenship	Lennon et al., 2020
Smart Energy Markets (Distributed production of energy)	Decentralized markets where energy is produced locally	Hyytinen and Toivonen, 2015
Smart Grids	The energy systems that improve possibilities of effective, reliable, and uninterrupted transmission of energy and enable linking the individual producers and hybrid solutions to the grid	Hyytinen and Toivonen, 2015
Social Innovations	The simultaneous development and emergence of technologies, services, organizations and networks through particular participatory processes, including the development of responsible citizenship	Hyytinen and Toivonen, 2015
Social Practices	Theories of social practice posit that the social world is first and foremost populated by diverse social practices which are carried by agents. Social practice theories shift the unit of analysis away from the micro (individuals) or macro (institutions, infrastructures, society) to the assemblages of bodies, objects, competencies and cultural meanings constituting practices (Reckwitz, 2002). A practice is a “routinized type of behaviour” which consists of several interconnected elements: forms of bodily activities, forms of mental activities, ‘things’ and	Schatzki, 1996; Reckwitz, 2002; Warde, 2005; Shove and Pantzar, 2005

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	their use, a background knowledge in the form of understanding, know-how, states of emotion and motivational knowledge" (Reckwitz, 2002).	
Sustainable Consumption	One of the most widely used definition of sustainable consumption comes from the Oslo Roundtable on Sustainable Production and Consumption in which the term is defined as "the use of goods and services that respond to basic needs and bring a better quality of life while minimising the use of natural resources, toxic materials and emissions of waste and pollutants over the life cycle as not to jeopardise the needs of future generations". Fuchs and Lorek (2005) differentiate between strong and weak SC, with weak SC relying on increasing the eco-efficiency of consumption via technological fixes, and in contrast, strong SC involves change in consumption patterns and a reduction in consumption volume which often requires changes in infrastructures, norms and materials which drive unsustainable consumption in the first place.	Norwegian Ministry of Environment. 1994, cited in OECD 2002; Fuchs and Lorek, 2005
Sustainability Citizenship	A concept for pro-sustainability behaviour, in public and in private, based on social and environmental responsibility, driven by a belief in fairness of the distribution of environmental goods	Sarid and Goldman, 2021
Sustainable Energy	A way of producing and utilizing energy that meets the needs of the present without compromising the needs of future generations and permits sustainable development goals (social, economic, and environmental)	Sarrica et al., 2014
Sustainable Energy Policy	The policy that aims to manage climate change and national efforts to make energy sustainable, and to increase its understanding in household energy consumption designs	Csutora et al., 2021
Sustainable Systems Innovation	Major changes required along the entire production–consumption chain, its flows, its multi-level architecture and institutions, structures, and – not least – the behaviour of the actors involved in it, from resource extraction to the final consumption of goods and services	Hyytinen and Toivonen, 2015

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Terminology	Definition	Reference
Transition towns	The term for community projects that aim to increase self-sufficiency with a predominant focus on sustainable consumption and the idea for more far-reaching government initiatives	Kenis, 2016

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