Energy justice in urban energy transitions

How local governance actors understand and contribute to energy justice in a multi-level governance context

Source: AMS Institute (n.d.)

Utrecht University

July 29th, 2022

Master's Thesis – MSc Sustainable Development

International Development track

Faculty of Geosciences

Utrecht University

Word count: 20988

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Executive summary

Cities are increasingly seen as important places to govern the energy transition. Even though transitions require major changes that have significant societal influence, the consideration of justice within energy policy is limited. As the energy transition is governed through multiple levels of governance, it is essential to study who has the power to allocate benefits and burdens across areas of society. This study builds on previous research by combining the concepts of energy justice and multi-level governance to explore the role of local governance actors in promoting just urban energy transitions.

This research analysed the case study of the LIFE project in Amsterdam, which aims to develop an inclusive energy platform for the neighbourhood and specifically included social goals. The study specifically focused on whether the LIFE project could be considered just for the local residents. Through desk study, semi-structured interviews and additional data analysis, this research aimed to answer the following research question: "*How is energy justice understood by local governance actors of urban low-carbon energy transitions and how is its implementation influenced by a multi-level governance context?*".

The first part of the research compared the values of local governance actors, resident representatives and residents regarding the LIFE project across the three tenets of energy justice; distributional, procedural and recognitional. The results showed that among local governance actors different emphasis was placed on including local residents and vulnerable groups among them and that they had a narrow view of distributional justice. They make an effort to include elements of energy justice but lack in aligning their view of what is considered just with the view of residents.

The second part of the research showed that European and national levels of governance influence local governments by determining the overall direction of the energy transition, setting the legal framework and funding municipalities. Local governance actors are, however, more influential over elements of energy justice within the local implementation of energy strategies and projects, as they can use their policy instruments to decrease financial inequalities, improve elements of procedural justice and specifically target disadvantaged groups by promoting social initiatives.

This study showed that even when energy projects specifically include social goals, this does not necessarily result in just decision-making. All in all, local governance actors could do more

to promote just transitions by enhancing their understanding of energy justice and broadening the implementation of their available local policy instruments.

Acknowledgments

First of all, I would like to thank dr. Sanne Akerboom for supervising me during the time of this thesis research and giving me the opportunity to work on this specific research project. I am grateful for your encouragement to tailor the research to my own interests, and your feedback has been of great value to the research. I thoroughly enjoyed working on this topic. Similarly, I would like to thank my second reader dr. Kei Otsuki for her useful suggestions on my research proposal, which has motivated me to improve my research and stay critical throughout the process. Thank you both.

Secondly, I would like to thank all the project partners and people working on the LIFE project who have welcomed me. Thank you for allowing me to join all the relevant meetings, working in the office and always being open to help out or bring in suggestions. I really enjoyed experiencing the process of working together in an interdisciplinary team on a real-life project. I want to thank you all and wish you all the best for the remaining years that the LIFE project will take place.

Furthermore, I want to thank all the respondents who have taken part in this research. I highly appreciate the time that you have made available to participate in an interview with me. I have learned so much and the research would not have been possible without you.

Lastly, I would like to thank my family and friends who have supported me throughout the thesis process. You have kept me motivated by being interested in the process, checking in with me, or simply providing distraction when needed. Thank you all.

Index

List of abbreviations

CEP	Clean Energy Package
EC	European Commission
EU	European Union
GHG	Greenhouse Gas
HOA	Home Owner Association *(Vereniging van Eigenaren in Dutch)*
JCA	Johan Cruijff ArenA
LIFE	Local Inclusive Future Energy
NECP	Dutch National Energy Climate Plan
MLG	Multi-Level Governance
pc	Personal communication
UK	United Kingdom

Chapter 1. Introduction

Cities are considered critical actors in leading sustainability transitions by both international and transnational governance institutions (Pflieger, 2014 & Grin, 2020). Municipalities are increasingly implementing strategies toward 'sustainable low-carbon cities' to mitigate and adapt to climate change. As cities contribute to over 70% of global greenhouse gas emissions, an essential element is to implement low-carbon energy systems to lower the impact on the environment (IEA, 2021 & United Nations, n.d.). In addition, cities are pressured by population growth; a total expected global population growth of 2.1 billion between 2018 and 2050 is expected to all be absorbed by urban regions (IPCC, 2014). Of this growth, 90 percent is expected to be concentrated in Africa and Asia (UN DESA, 2014). In more developed regions, 86.6 percent of the population is expected to live in urban areas by 2050, whereas in less developed regions, this is expected to be 65.6 percent (United Nations, 2019). The energy transition comes with many complex and interlinking social, environmental and economic challenges due to infrastructural adjustments, changing prices and different ways of energy use (Elsner et al., 2019). Furthermore, it influences how society produces, works, and lives with energy (Bridge et al., 2013). Thus, local governance actors are essential for coming up with local solutions for global sustainability challenges.

As transitions have large societal impact and the potential to change or reinforce current inequalities, it is important to consider questions of justice and equity (Jenkins et al., 2018). The concept of 'energy justice' has gained popularity in research, which applies justice principles to energy systems to analyse the social and moral values underlying them (McCauley et al., 2013; Jenkins et al., 2017; Sovacool et al., 2016; Healy & Barry, 2017; Jenkins et al., 2018). According to Jenkins et al. (2018), transition frameworks and the concept of energy justice can be combined and should be, as attention to energy justice helps to serve as a tool to resolve injustice issues in the global decarbonization process and the transition to new energy systems. Case studies regarding energy justice have increased in the last decade in various regions around the world (Finley-Brook & Holloman, 2016; McCauley et al., 2016; Siciliano et al., 2018; Bombaerts et al., 2020; Velasco-Herrejon & Bauwens, 2020) and the urge for justice-aware policymaking has increasingly been considered important in energy transition research (Sovacool et al., 2017). However, the consideration of energy justice within energy policy is still limited (Jenkins et al., 2017 & Lacey-Barnacle & Bird, 2018). For instance, criticism of energy policy includes that the discourse dominantly focuses on technical aspects

and efficiency, often leaving social implications unattended (Miller & Richter, 2014 & Healy & Barry, 2017).

Another characteristic of the energy transition is that policies addressing energy-related issues are made at various governance levels, which can also be described as Multi-Level Governance (MLG). MLG refers to an increasingly complicated web of governance in which multiple governmental scales (e.g., local, national, continental) and actors (e.g., private, public) affect the governmental decision-making process (Bulkeley & Betsill, 2005). With energy policy being created at multiple governance levels, it can be questioned how this influences the position and role of municipalities to promote a just energy transition. Therefore, it is important to critically look at who has the power to allocate benefits and burdens differently across areas of society. For instance, looking at previous studies, Islar et al. (2017) showed how national energy policies in Nepal constrained the implementation of elements of energy justice on the local level (Islar et al., 2017). In more developed contexts, studies applying the MLG have demonstrated that other levels of governance can be highly influential over local authorities; however, none of those focused on energy justice specifically (Bulkeley & Betsill, 2005; Kern & Bulkeley, 2009; Audouin & Finger, 2018). As the central position of municipalities in energy transitions is emphasized, more research is needed to explore the (potential) role of local governance institutions in implementing elements of energy justice and how MLG might influence this.

This study builds on previous research by combining the concepts of energy justice and MLG to explore the (potential) role of local governance actors in promoting just urban energy transitions. The aim is to understand how local governance actors interpret and contribute to elements of energy justice and how other levels of governance influence this. The research question is as follows: "*How is energy justice understood by local governance actors of urban energy transitions and how is its implementation influenced by a multi-level governance context?*". This is studied through a case study of the Local Inclusive Future Energy Project (LIFE) in the Municipality of Amsterdam, which aims to align sustainable development with social improvement (LIFE, 2020). The project aims to develop a local energy platform based on a smart grid system while applying inclusive governance, enabling all stakeholders access to benefits, striving for maximal societal acceptability and including local communities, specifically focusing on vulnerable consumers. This is important because the project is set within a low-income neighbourhood. The research question is supported by the following sub-questions:

1) *"What elements of energy justice can be identified in similar cases within urban energy transitions, according to literature?"*

The first sub-question functions as a theoretical background to gather a profound understanding of the central concept energy justice and how this could potentially show in the case study.

2) *"How do local governance actors understand energy justice in relation to the LIFE project, and how does this relate to the understanding of resident representatives and residents?"*

This sub-question explores how local governance actors understand energy justice in relation to the LIFE project. To retrieve any meaning from this, their understanding has been compared to the view of residents and resident representatives. It is essential to analyse how local governance actors interpret concepts like energy justice in comparison with local communities, as a lack of a clear understanding might cause them to implement it differently.

3) *"What are the levels of governance involved regarding the LIFE project and what is their authoritative power?"*

This sub-question will use the concept of MLG to explore what other levels of governance are influencing the LIFE project, apart from the local governance actors themselves and what their authoritative power is. This will provide a deeper understanding of the context and complexity of how such projects are governed.

4) *"What are local policy instruments for implementing elements of energy justice?"*

The last sub-question focuses on the policy instruments that local governments can use to implement elements of energy justice.

This study demonstrates its scientific relevance as understanding the role of local governance actors in implementing elements of energy justice helps to build academic knowledge in this growing scientific field. It specifically contributes to bridging the gap between academia, policy and execution by getting an in-depth understanding of local implementation of energy justice from a governance perspective. Furthermore, its scientific relevance lies in combining the concepts energy justice and MLG. Then, the study is of societal relevance as it is essential to enhance the consideration of moral values when transitioning towards new energy systems. Urban population growth and inequality are global challenges (Brenner et al., 2012) which require a better understanding of how the energy transition can be governed in a just manner. Furthermore, smart grid platforms are considered a relatively new innovative approach that is experimented with globally and thus has can have considerable implications (LIFE, 2020). The

research also has local relevance as the LIFE project directly affects the residents living in the area. It is essential to look at the extent to which low-carbon energy initiatives of municipalities reflect elements of energy justice and to what extent local governance actors have the power to implement them. If they do not have the power, which governance levels do? Understanding this is important as it affects which groups of society will be the winners and losers within new transitions (De G4-steden et al., 2022).

The following chapters first include the theoretical framework elaborating on the main concepts the energy transition, energy justice and MLG and provides a conceptual framework. This is followed by the methodology chapter, which elaborates on the case study and applied methods. Then, the results are discussed over two chapters; the first chapter focuses on energy justice and the second chapter focuses on the influence of MLG. After that, a discussion follows, including the interpretation of the results, practical implications, theoretical implications, limitations and future research recommendations. Lastly, the research ends with a conclusion. Throughout the report, referencing to 'personal communication' is abbreviated to 'pc' to increase the readability of the chapters.

Chapter 2. Theory and concepts

2.1. Introduction

This chapter will elaborate on the main theoretical concepts. First, section 2.2. elaborates on the concept of the energy transition. It starts with a short overview of the global decarbonization process and the role of cities, followed by an overview of the theoretical characteristics of sustainability transitions. Second, section 2.3. describes the concept and theoretical background of energy justice and its three pillars; distributional, procedural and recognitional justice. After that, section 2.4. describes the concept and theoretical background of multi-level governance (MLG). Finally, section 2.5. provides a conceptual framework that explains the relations between the concepts.

2.2. The energy transition

2.2.1. Global decarbonization and the role of cities

The energy transition is the global shift in the energy sector from fossil-based sources (oil, natural gas and coal) to renewable sources such as wind, solar and lithium-ion batteries (S&P, 2020). Major shifts in the global energy mix have led to broad social and geographical changes in the past, such as the transition from coal to oil and natural gas in the twentieth century (Smil, 2010). Now again, new ways of producing, living, and working with energy are needed to ensure available and accessible renewable energy services in a low-carbon world (Bridge et al., 2013). Both international and national policies support this decarbonization process by encouraging renewable sources and improving energy efficiency (Di Silvestre et al., 2018). Figure 1 illustrates a global decrease in coal and an increase in renewable energy sources in the last decade, substantiated mainly by wind and solar PV. The share of renewable sources is expected to keep increasing as 196 states jointly signed the 'Paris Agreement', which aims to keep global warming below two degrees Celsius. Countries need to restructure their energy system accordingly. For instance, China announced a 30-60 strategy, meaning to peak carbon emissions in 2030 and become carbon-neutral by 2060 (Tian et al., 2022). The European Union (EU) aims to increase its share of renewable energy to 32% by 2030 (European Commission, 2022).

Figure 1. Share of low-carbon sources and coal in global electricity generation (IEA, 2022)
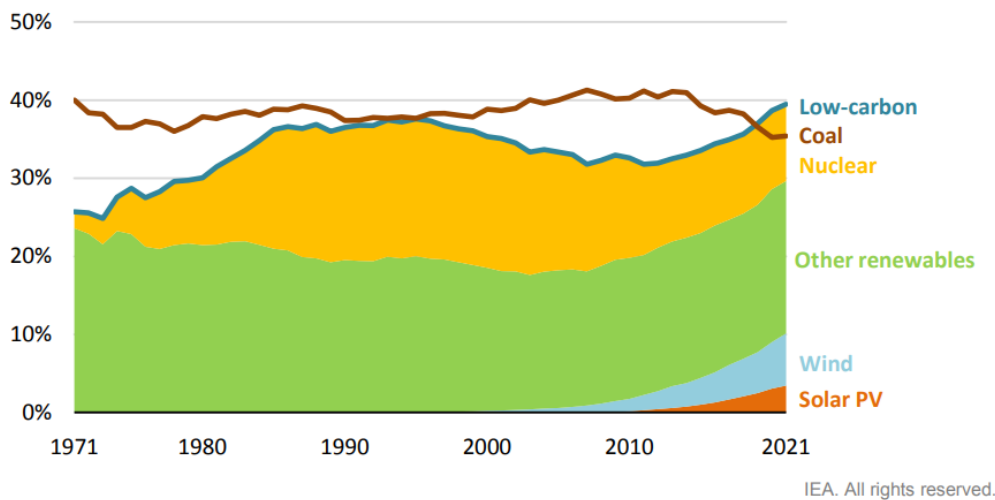
As cities contribute to 80% of the global GDP, two-thirds of global energy consumption and over 70% of global carbon emissions, they are considered critical places within the energy transition (IEA, 2021). It is expected that cities will continue to grow in population size and energy demand, so massive changes in urban energy infrastructure are needed (IEA, 2021). Moreover, the transition to renewable energy sources requires decentralized infrastructures, whereas coal-based energy systems are based on centralized infrastructures (Buijze et al., 2021; Elsner et al., 2019). Different challenges exist within cities that are still rapidly growing and those that are more mature; growing cities mainly deal with increasing energy demand from individuals, while more mature cities mainly deal with shifting consumption patterns due to electrification of transport and heating systems (IEA, 2021).

Increasing importance is placed on urban municipalities to govern energy transitions (Pflieger, 2014). Examples are the EC, which initiated multiple projects addressing energy transitions with municipalities and city authorities (European Commission, n.d.) and Chile, which initiated a program to support municipalities in developing and implementing energy-related strategies and projects (ECA, 2020). In addition, many city-to-city networks have emerged in which urban policymakers attempt to come up with responses to climate change (e.g., C40, 2021). According to Staden (2017), local governments are generally in charge of defining the strategy, implementing local policies and regulations, maintaining infrastructures and providing services to citizens and businesses. They often collaborate with other stakeholders such as citizens, businesses and non-profit organizations (Staden, 2017). Furthermore, the local decision-making

process and implementation is faster than other government levels and is therefore especially relevant to address impacts on the local community level.

2.2.2. Characteristics of sustainability transitions

Energy transitions can be seen as an important element of broader sustainability transitions. Sustainability transitions are defined as *"major shifts in established industries, socio-technical systems, and societies toward more sustainable modes of production and consumption."* (STRN, 2021). It entails various domains, such as food, water and energy (Köhler et al., 2019). Radical change is required, as incremental changes are not enough to solve issues such as climate change, resource depletion and inequality (Elzen et al., 2004; Grin et al., 2010; Köhler et al., 2019). However, such a transition can be difficult as interactions between technological systems and governing institutions can lock in the dominant technological system, creating barriers for alternative technologies to develop (Unruh, 2000). For instance, the carbon-based energy system has been locked in through institutional structures (e.g., legal arrangements), economic structures (e.g., subsidies), infrastructural structures (e.g., the centralized system) and socio-cultural structures (e.g., how to heat your house, cooking on gas) (Loorbach et al., 2017). This is to illustrate that sustainability transitions have a large societal impact.

Several characteristics distinguish sustainability transitions. They are multi-dimensional andmulti-actor processes; they include periods of stability and change that occur over a long-term process; they include open-endedness and uncertainty; they entail values, contestation and disagreement; and they have normative directionality (Köhler et al., 2019). Multi-dimensionality means that socio-technical systems consist of various components like technology, markets, socio-cultural meanings, policies, industry structures and infrastructure. Co-evolutions are needed in a range of those components. Multi-actor process means that a broad range of actors are involved in transitions that all have their resources, beliefs and interests. Examples are politics, industry actors, civil society, households and academia. Stability and change explain the complex relationship with locked-in systems and the potential change to new, more sustainable innovations, which can take decades to unfold. Open-endedness and uncertainty mean that there are multiple potential innovations and uncertainty about which one will become dominant. Values, contestation and disagreement aim to explain that different actors often have different opinions about the most desirable innovation. Lastly, normative directionality aims to explain how public policy shapes the direction of transitions by creating normative statements and strategies on how the transition should evolve. As

sustainability is a public good, private actors have little incentive to implement sustainability measures on their initiative. Therefore, public actors can guide them through by implementing regulations, subsidies, taxes, standards and policies.

The concepts of values and normative directionality are specifically relevant for this research as they closely relate to the concept of energy justice. Energy justice (further conceptualized under section 2.3) is, among other things, occupied with analysing who can benefit from sustainability measures and which groups are disadvantaged. This relates to the notion of values, contestation and disagreement as it explains how different groups can have different values on what they find important and desirable. Furthermore, normative directionality is relevant for this research as it focuses on public actors' strategies to guide sustainability transitions and their underlying normative implications. Examples of normative decisions include deciding what kind of technological development is valued, which pathway would be the best fit, how fast this pathway should be taken and what the expectations and roles of different actors should be in all this (Raven et al., 2019). Even though scholars acknowledge that sustainability transitions impact issues of justice by (1) having the potential to create of reinforce injustices and (2) knowing that a lack of social acceptance can potentially halt the progress of transitions, attention to ethical aspects of transitions in transition research is limited (Köhler et al., 2019).

2.3. Energy Justice

2.3.1. *Definition*

Energy justice is a relatively new concept in energy transition literature that builds on a more extended history of social and environmental justice concepts. It looks at moral values underlying energy systems based on a normative framework (Rasch & Köhne, 2017). Analysing energy justice is about "*asking what this energy is for, what values and moral frameworks ought to guide us, and who benefits.*" (Sovacool & Dworkin, 2015, p. 441*)*. In conceptualizing the concept, Heffron & McCauley (2017) describe two main (overlapping) approaches. First discussed in 2013 is the understanding of energy justice built on three central tenets; distributional, procedural and recognitional justice (McCauley et al., 2013). Secondly developed, Sovacool & Dworkin (2015) approached the concept with eight principles: availability, affordability, due process, transparency and accountability, sustainability, intra-generational equity, inter-generational equity, and responsibility.

Reviewing the use of definitions in energy justice research in the past decade, Jenkins et al. (2020) conclude that various definitions and approaches are used. However, it is stated that this does not have to be a bad thing. Instead of pursuing a homogenous definition, Jenkins et al. (2020) promote the exploration of differences and tensions between various perspectives across scales, geography and energy systems. As the conceptualization of the three tenets – distributional, procedural and recognitional – has proven to be a helpful approach in case studies, this study uses the definition of energy justice based on the three tenets as provided by Sicilianio et al. (2021, p.3): *"energy justice is a conceptual, analytical, and decision-making framework used to describe, understand, and analyze fairness and equity in the inclusion and consideration of those affected by energy decisions (i.e., recognition), in the access and allocation of energy services (i.e., distribution) and in the procedures used in the whole process of energy decisions (i.e., process) (Jenkins et al., 2016; Lacey-Barnacle, Robison, & Foulds, 2020; McCauley et al., 2019)."*

As mentioned in the definition, the concept of energy justice can fulfill the function of a conceptual-, analytical- and decision-making- tool (Sovacool & Dworking, 2015). First, philosophers and ethicists can use energy justice as a conceptual tool to better understand and integrate distributional, procedural and recognitional justice concerns. Second, researchers can use energy justice as an analytical tool to improve their understanding of the values underlying energy systems or to resolve energy-related challenges. This approach is primarily descriptive (Van Uffelen et al., 2022). Thirdly, energy planners, policymakers and consumers can use energy justice as a useful decision-making tool to make better-informed choices. This approach is normative, as it includes decisions on what is considered just or unjust (Van Uffelen et al., 2022). It is noted by van Uffelen et al. (2022) that energy justice can be understood differently by different actors; whereas something can be perceived as just by one actor, it can be perceived as unjust by another. According to Jenkins et al. (2020), studying energy justice has the potential to impact non-academic "real world" outcomes as it can elevate marginalized voices. This study will use energy justice as an analytical tool to improve the understanding of the values underlying the energy system in the case study according to different actors. Then, based on the results, energy justice will be used as a decision-making tool to provide recommendations aimed at governance actors.

2.3.2. The tenets of energy justice

The three tenets of energy justice each look at a different aspect of justice concerning the energy system. Distributional justice deals with how social goods and resources are allocated across

society; thus, unequal distribution of modern energy services across social groups and actors could be seen as distributional injustice (Heffron & McCauley, 2014; Sovacool et al., 2016). Looking at the burdens and costs to be distributed (e.g., power, energy, monetary costs or benefits, job opportunities), the groups between whom those are distributed and how they are distributed helps to get insight into how different segments of society are advantaged or disadvantaged when moving towards new energy systems (Sovacool et al., 2016; Siciliano et al., 2021). Procedural justice is about equitable access and participation within the decision-making process that governs how benefits and costs are distributed within energy systems (McCauley et al., 2013). Thus, it is about equitable procedures and inclusive decision-making. Recognitional justice is about recognition, fair representation and respecting all individuals and stakeholders involved (McCauley et al., 2013). A lack of recognition could, for instance, be cultural and political domination, degradation, or devaluation of certain social groups such as economically vulnerable groups, local inhabitants or marginalized cultures (Catney et al., 2013; McCauley et al., 2013; Rash & Köhne, 2017; Velasco-Herrejon & Bauwens, 2020). Important to notice is that recognitional energy justice forms the basis of procedural and distributional energy justice and is therefore highly intertwined with both, as a lack of recognition generally leads to a lack of an inclusive process and distributive injustices (Hanke & Feenstra, 2021).

2.4. Multi-Level Governance (MLG)

2.4.1. Definition

Before going into multi-level governance (MLG), it is important to define governance. Governance can be defined as "*the sum of regulations brought about by actors, processes as well as structures and justified with reference to a public problem (Benz, 2005; Mayntz, 2005; Zürn, 2005; Schuppert, 2007 in Enderlein et al., 2010, p.2).*". This definition emphasizes four elements (Enderlein et al., 2010). First, governance consists of all regulations, including policies, programs and decisions that are made through a collective course of action to target a public problem. Second, a problem is defined as public when the actors involved need to act in the name of a common good or collective interest. Third, governance includes all the actors and processes involved in designing the collective course of action. This can include both public and private actors. Lastly, governance includes structures, such as institutional and socio-economic parameters and historically determined actor relations that influence how policy processes are shaped. When applying this definition to the energy transition, it can be said that governance regarding the energy transition includes all the regulations designed under the

influence of various actors and structures to move toward more sustainable low-carbon energy systems.

As energy transitions require large-scale, complex changes in which many actors are involved, they are often governed in an MLG context. MLG is a concept that explains how governments deal with an increasingly complex web of supranational, national, subnational and non-state actors (Bache et al., 2016) in which different scale levels of decision-making (e.g., local, national, international) are not independent of each other (Adger et al., 2003). The term MLG was first used by Marks (1992), who used it to demonstrate developments in EU cohesion policy. This policy included new governing principles such as partnerships with national, subnational (regional and local), supranational (EU Commission) and non-state (e.g., trade unions and environmental groups) actors, which is central to the emergence of MLG (Bache, 2012). With the implementation of this policy, it was also the first time that subnational actors were given a formal role in the EU policy-making process. Furthermore, the cohesion policy included the additionality principle, which required EU funds for regional projects to be added to member state funds instead of being a replacement for them, which further strengthened the position of subnational authorities within the EU (Bache et al., 2012). After Marks (1992), the term MLG was used by Hooghe (1996) & Hooghe & Marks (2001) to develop an approach to analyse EU decision-making more broadly (Bache, 2012). Criticism of the MLG approach is that it has a bias in emphasizing the role of public authorities over other economic and societal actors, which limits its explanatory potential (Börzel, 2020). However, it still can be considered highly effective in exploring the roles of different levels of government (Dobravec et al., 2021).

As the concept has been widely understood and applied in different ways, there is no consensus on a single definition within research communities (Stein & Turkewistsch, 2010). Within research, it first became common to refer to the multi-level part of MLG as vertical interactions between governments of different territorial levels; *'supranational, national, regional and local governments are enmeshed in territorially overarching policy networks'* (Marks 1993, 392 and 402–3), while later increasing attention was given to interactions between horizontal networks between cities (Bache et al., 2012). Hooghe & Marks (2010) distinguished between those two types: MLG Type 1, the vertical perspective, and MLG Type 2, the horizontal perspective. The vertical type is most relevant for this research as it looks at different levels of governmental institutions and their authoritative power and will be further elaborated on in section 2.4.2. Even though MLG is rooted in a European context, it is just as relevant in global organizations and other parts of the world. For instance, it has been used to study transnational public-private

partnerships (Beisheim et al., 2010), the relationship between governance and adaptive capacity in West Africa (Brockhaus et al., 2012) and urban climate policies in East Asia (Schreurs, 2010).

2.4.2. *Vertical MLG*

Within MLG, Hooghe & Marks (2010) provided a distinction between two types. MLG Type 1, the vertical perspective, focuses on hierarchical levels of scale, thus entailing sub-national, national, or supranational levels of governance. The vertical perspective is characterized by jurisdictions with a general purpose that includes a broad range of governing functions (Bache et al., 2016). In this type, there are limited authorities on a limited number of territorial levels, and each authority is responsible for a set of governing functions. For instance, the vertical perspective could focus on how cities are embedded within and influenced by broader political structures such as nation states and international institutions like the EU (Haarstad, 2016a). For instance, Schakel et al. (2015) showed that within Europe, authority (defined by them as the ability to implement legitimate binding decisions) has been dispersed away from national governments and moved both upward to the supranational level and downward to the subnational level. Thus, MLG is considered a valuable tool for analysing how different levels of governance are linked and how they influence urban decision-making (Bulkeley & Betsill, 2005).

Even though the vertical governance perspective focuses on governmental institutions, it can also include non-state actors, such as transnational movements, public-private partnerships, and corporations (Hooghe & Marks, 2010). They are often researched as an influence on- or supplement to public actors (Keohane and Nye 2000, in Hooghe & Marks, 2010). For instance, Bulkeley & Betsill (2005) showed how the power of the local governments in addressing sustainability issues was limited by restrictions at the national level and the influential power of dominant business interests and labour movements.

2.5. Conceptual Framework

Various elements of the theoretical background were used to build a conceptual framework for this research, which shows how the different concepts help to find out more about the role of local governance actors in promoting energy justice (Figure 2). First, the conceptual framework shows that the concept of values is used to gain more insight into how local governance actors understand energy justice. As described earlier, different actors can understand justice differently. Therefore, the concept of values is helpful to compare the values of local

governance actors with those of local residents and see whether they align. Second, the concept of vertical MLG is used to analyse how other levels of governance influence the local implementation of energy justice. The three tenets 'distributional', 'procedural', and 'recognitional' justice are helpful categories for analysing the values and the influence of MLG.

Figure 2. Visualization of the conceptual framework
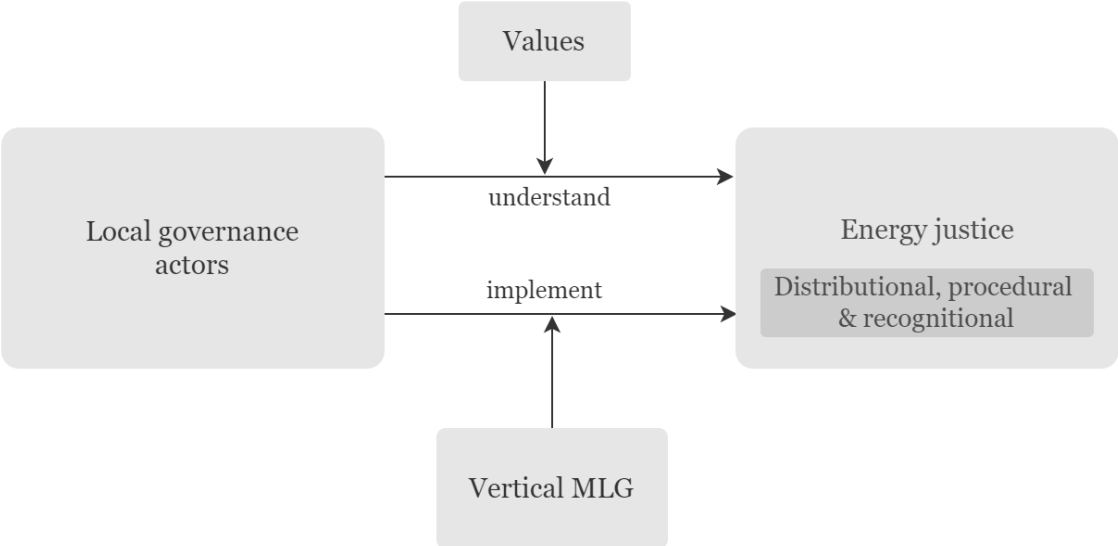
Chapter 3. Methodology

3.1. Introduction

This chapter describes all the methods that were utilized during the study. It is chosen to analyse a case study as this provides a concrete example to analyse values of energy justice. The case study is the Local Inclusive Future Energy (LIFE) project in Amsterdam, initiated by the local municipality in collaboration with other partners. First, a detailed description of the LIFE project is provided, including a description of the specific energy system and the neighbourhood in which it is situated. This is followed by a description of the collection of the data. A combination of desk study, interviews, and additional data analysis is used to answer the sub-questions. Interviews with local governance actors and resident representatives are conducted to study the values regarding the LIFE project. In addition, already existing data is analysed to study the values of local residents. Then, to study the role of local governance actors in implementing energy justice in an MLG context, a combination of desk study and interviews is done to (1) identify the vertical governance levels involved and the authoritative power of each, and (2) identify policy instruments that local governance actors can use to implement elements of energy justice. After describing the data collection, the data processing is explained. Then, a research framework is provided which summarizes the research phases of this study and the positionality of the researcher is discussed. The chapter ends with a discussion of potential methodological limitations.

3.2. Case study

3.2.1. *The LIFE project*

This research's sub-questions will be answered by analysing the LIFE City Platform project in the ArenApoort district. The LIFE project is initiated by the Johan Cruijff ArenA (JCA) and the Municipality of Amsterdam and supported by ten other partners: Spectral Enterprise B.V., Alliander N.V., TU Delft, AMS Institute, University Utrecht, Amsterdam Energy ArenA, CoForce, EnerTranS, Hedgehog Applications and the Municipality of Rotterdam. See Appendix A for a description of each partner. The project affects a variety of stakeholders due to its location in the ArenApoort urban district (LIFE, 2020). The area accommodates large entertainment venues such as the JCA, Ziggo Dome and AFAS LIVE, as well as many offices and headquarters of various large companies such as ING and Vattenfall. In addition, there are about 5000 homes that mainly belong to low-income households in the neighbourhood of Venserpolder. See Appendix B for an overview of all the stakeholders involved in the project.

The project is financed by RVO (Rijksdienst voor ondernemend Nederland), while the twelve partners cover some of their costs. The project will run from the beginning of 2021 till the end of 2024 (LIFE, 2020).

The LIFE project is a research project that investigates the possibility of creating a scalable, innovative energy platform for the neighbourhood; the LIFE City Platform. The JCA has a battery on which large amounts of sustainable electricity can be stored. The aim is to create a system based on smart technologies that allows the JCA to share stored electricity with other neighbourhood actors when they do not need it. With other local actors doing the same, this would create a local energy system in which different actors can store and share electricity. Similar projects exist, but the LIFE project is unique because it is designed on the neighbourhood level and aims to be inclusive for residents. The aim is not just to make this accessible to large companies but also to include residents and small users in this platform. As the LIFE project is a research project and such a platform has not been created before, there are still many questions about how to organize this while including local residents. Currently, potential ideas of how to include them are creating energy communities in which residents could join the platform as a collective (H.R. Poolman, pc, April 25, 2022) or enable electric vehicles parked at the JCA to donate energy to the neighbourhood of Venserpolder (T. Oosterop, pc, April 13, 2022). The project is scalable, so it has the potential to be implemented in other localities as well.

The LIFE project is based on a smart grid system aiming to prevent net congestion. Smart grid systems are defined as *"an electricity network that can intelligently integrate the actions of all users connected to it -generators, consumers and those that do both- in order to efficiently deliver sustainable, economic and secure electricity supplies"* (Milchram et al., 2018). Whereas carbon-based energy systems are characterized by a centralized infrastructure, renewable sources such as wind and solar energy are based on small-scale, decentralized infrastructures (Buijze et al., 2021). Furthermore, renewable energy generation is characterized by temporal dynamics because of weather changes and seasonal fluctuations. The transition to decentralized energy sources and the growing population in cities make it challenging to provide energy during urban peak demand hours (Elsner et al., 2019). This can result in grid congestion, meaning that the existing infrastructure has reached its total capacity and cannot accommodate the energy demand (Feltham, 2014). As a solution, smart grids use data to intelligently balance energy flows and integrate decentral energy resources into distribution networks (Atasoy, Akinc & Ercin, 2015 & Milchram et al., 2018), thereby reducing energy peaks and thus helping

avoid expensive network expansions that otherwise would have been necessary (Pront- van Bommel, 2011). In Amsterdam, current energy networks in Amsterdam will not be able to handle energy demand during peaks by 2030, which puts a limit on the installations of more renewable energy systems such as solar PV (LIFE, 2020; Pakhuis de Zwijger, 2021a). As a potential solution, the LIFE project contributes to the local energy transition by balancing out peak flows and decreasing grid congestion, therefore releasing pressure from the grid and preventing the need for grid alterations and reinforcements.

The project is suitable as a case study for three reasons. First, the project states to contribute to the urban energy transition by; making the integration of various types of sustainable generation into local energy systems simpler; adding more value to flexibility and system performance; optimizing energy infrastructure, improving energy security and avoiding grid reinforcement; and improving the use of local, sustainable energy through smart distribution in the surrounding neighbourhood (LIFE, 2020). Second, this case study is selected due to the intent of aligning sustainable development with social improvements and inclusiveness (Pakhuis de Zwijger, 2021a). The social goals of the project provide an interesting case to study how local governance actors could potentially contribute to more just energy transitions. The project wants to achieve this by including the local residents in the platform, striving for maximal social acceptability, and integrating the interests of all stakeholders, especially focusing on vulnerable energy consumers (LIFE, 2020). Additionally, the neighbourhood Venserpolder is located in Amsterdam South-East, which has been known for socio-economic challenges but has been invested heavily in the last decade (Municipality of Amsterdam, 2021a). Thirdly, the LIFE project is a suitable case study as it takes place in an MLG context. This project refers to European policies such as Article 16 of the Clean Energy Package (CEP) and the Fourth Electricity Directive, which introduce new forms of energy consumers (LIFE, 2020). On a national level, there are regulations and goals to adhere to (Ministerie van Algemene Zaken, 2017). For instance, the participation of small energy end-users in energy projects has been found to be limited by the current Dutch legal framework (LIFE, 2020).

3.2.2. Neighbourhood Venserpolder

The neighbourhood of Venserpolder was built in 1981 and is the most northern neighbourhood of the Amsterdam South-East area. It is home to about 8500 residents living in about 5000 homes. It includes sixteen large closed housing blocks with inner courtyards (see Figure 3). Further, there are self-build lots, schools, community centers, a health center and a small shopping area (Municipality of Amsterdam, 2020c). Both opportunities and challenges

characterize the neighbourhood. It is well connected by public transport, and many economic developments are taking place in the surrounding areas. However, so far, residents have not been able to profit from those developments (Municipality of Amsterdam, 2020c). It is pointed out by the municipality of Amsterdam as a so-called '*ontwikkelbuurt'*, meaning it is a neighbourhood whose conditions should be improved in multiple areas (Municipality of Amsterdam, 2020c). For instance, it is known for relatively high levels of poverty and criminality. Tables 1, 2 and 3 provide more information on the demographics of residents of Venserpolder.

Figure 3. Air photo of Venserpolder

Source: Het Parool (2009), photo shot by P. Elenbaas on 29 juli 2004.

Table 1. Demographics of residents of Venserpolder (CBS, 2019)

Region	Age 0-15	Age 15-25	Age 25-45	Age 45-65	Age 65+	Unmarried	Non-western
Venserpolder East	14%	13%	37%	28%	8%	68%	69%
Venserpolder West	15%	11%	34%	29%	12%	68%	70%
Nederlands	16%	12%	25%	28%	19%	48%	13%

Table 2. Housing circumstances of residents of Venserpolder (CBS, 2019)

Region	Owner-occupied houses	Rental properties	Owned by housing associations
Venserpolder East	34%	66%	55%
Venserpolder West	23%	76%	61%
Nederlands	57%	42%	29%

Table 3. Demographics on income, electricity and gas consumption of residents of Venserpolder (CBS, 2019)

Region	Low-income housholds (less than 9249 eu/y*)	Housholds around or below social minimum	Households up to 120% of social minimum	% Receiving a social welfare allowance	Average yearly electricity consumption	Average yearly gas consumption
Venserpolder East	19%	18%	26%	10%	1870	850
Venserpolder West	21%	21%	31%	13%	1820	800
Nederlands	8%	7%	13%	4%	2730	1180

* To decide if a household has a low income, the income is converted to a standardised income (excluding rent benefits) which is converted to the price level of the year 2000, which results in the amount of 9249 euros. This roughly corresponds to the purchasing power of social assistance benefits for a single person in 1979 when it was at its highest (CBS, 2019).

To summarize interesting characteristics of the demographics provided in Tables 1, 2 and 3, the neighbourhood Venserpolder is home to relatively many residents in the age group of 25-45 and relatively few residents over the age of 65 when compared to the rest of the Netherlands. There are relatively many non-western residents, which illustrates a culturally diverse neighbourhood. There are relatively many renters and fewer homeowners compared to the rest of the Netherlands. Venserpolder is characterized by a relatively high number of low-income households and inhabitants receiving a social welfare allowance. Lastly, it stands out that both the average electricity and gas consumption is lower than the Netherlands' average consumption.

In Venserpolder, 18-21% of the households live in energy poverty, which is relatively high compared to other neighbourhoods of Amsterdam (Figure 4). Energy poverty is not nationally defined in the Netherlands but refers to a person with insufficient resources to afford a basis level of energy services (Bouzarovski, 2018). An often-used indicator is looking at the share of energy costs in the total expenditures of a household; a share of 10% or higher is typically viewed as energy poverty (De G4-steden et al., 2022). Causes of energy poverty are often part of a complex confluence of factors, such as poverty in general, unemployment, high energy prices, poor health, social isolation and poor energy performance of the home (due to low levels of isolation or non-energy efficient appliances), high energy needs of the household or a combination of those elements (Kruit, 2021 & De G4-steden et al., 2022).

Figure 4. Energy poverty (percentage of households with energy bills taking up ≥ 10% of total income) per area, 2019 (Municipality of Amsterdam, 2020a).

The neighbourhood of Venserpolder is circled
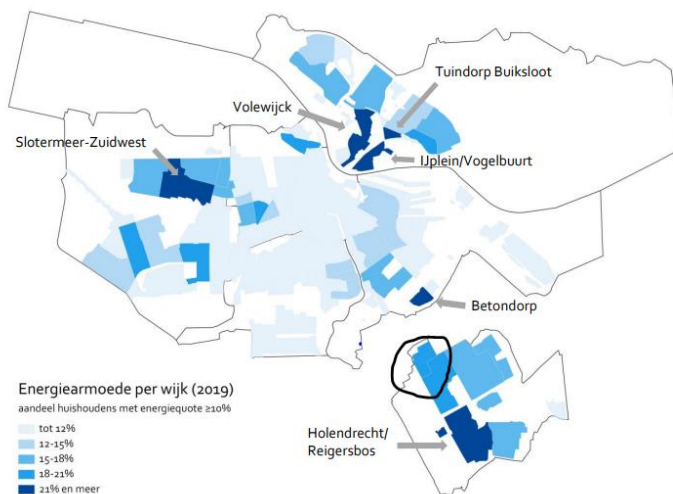
Apart from the development of the LIFE city platform, other energy-related developments are happening in Venserpolder. The municipality of Amsterdam is working toward making Venserpolder move away from natural gas (Municipality of Amsterdam, 2021c). The preferred approach of the municipality is to do this by working towards a system based on heating nets (Municipality of Amsterdam, 2020d).

3.3. Data collection

3.3.1. Desk study

First, a literature study was conducted to better understand urban energy transitions and the theoretical background of MLG and energy justice. Then, to answer SQ1, a literature review was conducted to gain more insight into elements of energy justice in similar case studies as this research. For SQ3 and SQ4, a desk study was done to identify levels of governance and local policy instruments. Then, the interviews were used to test this and bring in additional information.

3.3.2. Interviews

First, two interviews with energy justice experts were conducted to get an in-depth understanding of energy justice as a research concept and validate the research design. Two interviews were considered enough while keeping the time boundaries of the thesis in mind. They were selected through a background search at websites of Dutch universities, thereby mainly looking at whether their expertise regards similar topics as the LIFE project. Those interviews were helpful, as they validated analysing energy justice based on the three pillars. Furthermore, they validated SQ2 by emphasizing that justice is a normative concept that is experienced differently by different people, which makes it essential to understand the values of different groups and people involved (N. van Uffelen, pc, April 26, 2022, & U. Pesch pc, April 19, 2022). Those interviews were also utilized for SQ3 and SQ4 as they provided some useful information on the role of local governments in implementing energy justice. Then, eleven additional in-depth, semi-structured interviews were conducted to answer SQ2, SQ3 and SQ4.

Semi-structured interviews were conducted with local governance actors and resident representatives to gain insight into how various actors understand energy justice in the LIFE project. The interviews included an inductive and deductive approach consisting of two parts: the three tenets of energy justice and open questions. Local governance actors were the project partners of the LIFE project, which included representatives of the JCA, the AMS Institute and the Municipality of Amsterdam. Although the JCA and the AMS Institute are not members of the local government, they can be considered local governance actors as they closely work together with the local government to find innovative solutions for energy-related problems in the area, which is in line with the definition of governance actors as provided in the theoretical

framework. Even though there are twelve project partners, the choice has been made to talk to those most responsible for the inclusivity and governance elements of the project.

Project partners brought up that it is difficult to reach the residents of Venserpolder directly, as there is a high research density and a low willingness to participate due to residents being over-questioned (W. Methorst, pc, April 19, 2022, & Project Manager in LIFE, pc, June 07, 2022). To avoid (1) complicating the work of crucial future research of the LIFE project to include residents and (2) getting skewed results from only being able to talk to a few of the residents, I have chosen to solve this issue by analysing already existing data reflecting the values of residents of Venserpolder regarding the energy transition in general (see section 3.2.3. analysis of additional data) and instead interview resident representatives. The resident representatives included organizations and people that could represent the needs and wishes of the residents of Venserpolder. The sampling was done through a combination of desk study and the snow-ball-effect during interviews. The resident representatives that were interviewed are as follows:

- *CoForce.* CoForce is a local resident's organisation involved in the energy transition in Amsterdam South-East and a partner in the LIFE project. They support local residents and local companies in taking part in the energy transition and have profound knowledge of the characteristics of the neighbourhood of Venserpolder. They are of specific importance as their role in the LIFE project is to represent the interests of the residents of Venserpolder affected by the project. Even though they are officially a partner of the LIFE project, they are categorized under the resident's representatives for their specific role within the project and their many contacts with residents.

- *Stichting !WOON.* Stichting !WOON is an organization active in the municipality of Amsterdam that provides residents with energy-related information. They help residents with their energy issues by having an energy coach visit them and advise them, for example, on how to be more sustainable, decrease their energy costs and move away from gas. Furthermore, they are active in the neighbourhood of Venserpolder by organizing 'energy walks', spreading information about the energy transition and organizing summer activities relating to energy. Stichting !WOON adds valuable information to this research by bringing in the perspective of what they see in their contact with many residents.

- *Participation Advisor Venserpolder.* This participation advisor is the contact person for residents in Venserpolder about moving away from natural gas in the neighbourhood. This interviewee was chosen as a resident representative due to the many contacts with

local residents, and the interview specifically focused on the experiences and concerns of the local residents.

- *Researcher for LIFE project interacting with residents of Venserpolder.* As part of the LIFE project's official research team, this interviewee from a Dutch university has been talking with the local residents. In total, the interviewee made about fifty visits to the neighbourhood. The conversations were not based on energy yet but involved a more basic approach around general issues. The visits aimed to find out how to talk with and connect to residents in a way that resonates with them. This is a valuable insight for this research as it brings a more general perspective of the values and concerns of the residents of Venserpolder.

Then, to gain more insights into the levels of governance in the LIFE project, their authoritative power and policy instruments of local governments targeting energy justice, the same interviews as before with local governance actors were utilized. In addition, other representatives from the local government were interviewed. These interviews also combined an inductive and deductive approach by asking questions based on national and supranational influences and asking open questions.

All interviews took place between the 13th of April and the 7th of June in 2022. Appendix C shows an overview of all the interviewees, their role in the research, their organization and the interview date. Appendix D provides an overview of the generic interview guide in Dutch and English. The guide has been slightly adjusted for each interviewee according to their role and expertise. The data management procedure can be found in Appendix E. Before the interview, the interviewees were informed about privacy and confidentiality. First, they got an information letter that provides general information regarding the research and the opportunity to ask questions (Appendix F). Furthermore, a consent form was sent informing them about recording, storing, and using the interview (Appendix G). When giving consent, the interviewees had the option to either consent to their name and organization being used or an anonymized version with a description of their role and organization. Participants could withdraw their consent at all times. As most interviewees were Dutch, all except one of the interviews were conducted in Dutch. One interview was conducted in English.

3.3.3. Analysis of additional data

Additional data was analyzed to answer SQ3 and gain a deeper understanding of local residents' perspectives. These include the following:

- An already existing dataset available on the website of the Municipality of Amsterdam of a survey filled in by 303 residents of Venserpolder (170 homeowners and 133 renters) in 2021 about their attitudes about the neighbourhood moving away from natural gas, how they feel about the heating net, energy-related neighbourhood initiatives, their preferred solution and information they need from the municipality (Municipality of Amsterdam, 2021c)

- A video recording of an information evening held in December 2020 about the transition from natural gas for the neighbourhood Venserpolder. During this meeting, residents had the opportunity to ask questions about the energy plans in the neighbourhood (Municipality of Amsterdam, 2020b).

- A Dutch documentary called 'The social bill of the energy transition[1]'. It discusses the effects of the energy transition on Amsterdam South-East residents (including the neighbourhood Venserpolder), mainly focussing on the economic effects of residents with a lower income. Guests include two residents, one working as an energy coach in the neighbourhood as well (Pakhuis de Zwijger, 2021b).

The Dutch documentary was treated as part of the resident representatives. The existing survey dataset among residents of Venserpolder and the video of the information evening were treated as resident perspectives.

Furthermore, throughout the research period, I have attended several presentations, so-called 'LIFE Talks', in which project partners gave updates about the platform's development. This has helped to gain a deeper understanding of the LIFE project's various aspects and the involved actors.

3.4. Data processing

After conducting, all the interviews were transcribed in Word; they were read repeatedly and were analysed by coding them in Nvivo. The coding was done through a combination of

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[1] Translated: The sociale rekening van de energietransitie

induction and deduction. First, a separate code was created for each group of interviewees (energy justice experts, local governance actors, additional interviewees from the municipality, and resident representatives). Then, codes were structured following a coding tree around the main concepts (Appendix H). The interviews were coded analysed in Dutch and afterward translated to English. Transcripts are provided in a separate attachment.

For SQ2, the values of local governance actors, resident representatives and residents were compared. The values of resident representatives and residents were integrated into one group, representing residents' perspective. In both groups, the analysis focused on extracting the central values mentioned by those groups regarding the three tenets of energy justice. Attention was given to whether there was overlap or contradiction within groups. The values were categorized as either being perceived as positive (just) or negative (unjust), allowing for a comparison between the groups.

3.5.Research Framework

Figure 5 summarizes how the different phases of the research will lead to answering the central research question. In Phase 1, the literature review provided in Chapter 2 was conducted to gain a profound understanding of the concept relevant to this research. Then, in Phase 2, the data was collected and processed according to two main topics. The first part focussing on energy justice looked at what values of energy justice occurred in similar case studies and what values of energy justice were reflected by local governance actors, resident representatives and residents in the case study. Then, the second part focused on the vertical MLG levels present in the LIFE project and how this affected local governments' authoritative power to implement energy justice elements. Then, in Phase 3, the results are integrated and discussed to answer the main research question and provide recommendations.

Figure 5. The Research Framework (author's own)
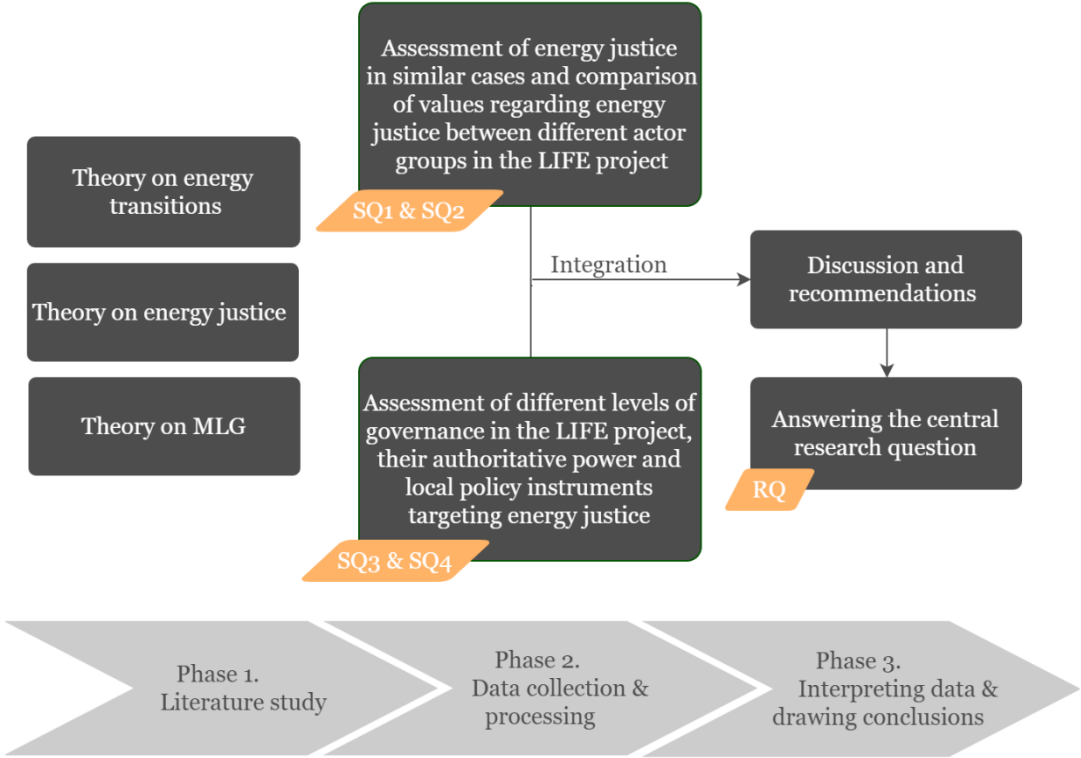
3.6. Positionality of the researcher

Regarding my position as a researcher, there are a few elements to consider. First, it is important to acknowledge that on an academic level, I feel critical of the European green transition and its technological focus as it is built on continuing economic growth and unequal global relations. I agree with scholars criticizing the lack of social elements in this transition, which has influenced the construction of this thesis proposal. Second, regarding my personal characteristics, I am a native Dutch living in Amsterdam. Living in the same city as the case study provided me with some advantages, such as a cultural familiarity with many of the potential interviewees and a familiarity with the geographical area of the research. However, the disadvantage of this familiarity could be making assumptions about the neighbourhood and its residents. It has been essential to keep in mind to be precise and thorough and not make any assumptions based on my familiarity. Lastly, being a student might have influenced my interview process as I am still learning and only have limited experience. Therefore, it was essential to prepare well regarding the content of the interview and the person I was interviewing. Being a student might have also influenced potential interviewees' willingness to participate. To deal with this, I intended to send out professional emails indicating the relevance

of the interview. In addition, recommendations by my thesis supervisor, who is directly linked to the case study, helped me to reach interviewees.

3.7. Potential limitations

A limitation of an in-depth case study is the ability to generalize the research. However, even though the results are from a specific case study, general lessons can be learned about how the implementation of energy justice relates to governance structures. Furthermore, as this case study includes explicit social goals, it has the potential to bring interesting insights into more just energy systems. If they turn out in line with previous literature, elements of this research could be generalized and further tested in different geographical contexts.

Another limitation is that the LIFE project case study is still in its early development. The LIFE project is a research project and is not yet in an actualizing phase. During this thesis, the project has been going on for only one year of the total of four years planned for the research. Thus it is still in the beginning phase. This means that there was still quite some unclarity among elements of the project, such as the way that residents can potentially be connected to the LIFE platform. Furthermore, local residents were not yet informed about the development of the LIFE platform. The early stage of the development of the LIFE project has been tried to overcome by not focussing too much on the design of the project itself currently, but focusing on the different values among actor groups, what residents would want, and what future strategy would fit with this. In addition, the research still provides valuable information on the local government's potential role and authoritative power in promoting just energy transitions.

Furthermore, a potential limitation is that local residents were not interviewed for this research. This limitation was addressed by interviewing resident representatives and analysing existing data reflecting the values of residents. Ideally, when there is more clarity about the potential connection between the LIFE project and the local residents, research includes them directly, e.g., in the form of new surveys, interviews or focus groups.

Chapter 4. Results | Energy justice

4.1. Introduction

This chapter includes the results relating to energy justice. First, section 4.1 will describe the results of SQ1: *What elements of energy justice can be identified in similar cases within urban energy transitions, according to literature?* It functions as a short literature study and focuses on the three tenets of energy justice: distributive justice, procedural justice, and recognitional justice. As the case study of this research revolves around a smart grid system, this section is limited to similar cases for consistency and comprehensibility. Moreover, the three tenets are explained within the Dutch context. By doing that, the literature review helped get insight into relevant potential (in)justices in the case study and helped structure the interviews. Second, section 4.2. describes the results of SQ2: *"How do local governance actors and project partners understand energy justice in relation to the LIFE project, and how does this relate to the understanding of resident's representatives and residents?"*. As found in literature and interviews with energy justice experts (N. van Uffelen, pc, April 26, 2022), justice is a normative concept that can mean different things to different groups and people. Therefore, a distinction has been made between two groups; (1) local governance actors and (2) resident representatives and residents. A comparison is made between the values that both groups describe regarding the three tenets of energy justice. Doing this shows whether local governance actors have a similar or different understanding of what is considered just compared to residents. The chapter ends with a sub-conclusion, which highlights the most interesting findings.

4.1. Energy justice in previous literature

4.1.2. Distributional justice

Previous studies looking into energy justice have highlighted the unequal distribution of benefits and costs of various categories like access to energy, monetary benefits, information, educational opportunities and job opportunities (Todd & Zografos, 2005; Sovacool & Dworkin, 2015; Finley-Brook & Holloman, 2016; Islar et al., 2017; Thomas et al., 2020; Velasco-Herrejon & Bauwens, 2020; Siciliano et al., 2021). Looking into smart grids, Milchram et al. (2018) describe several challenges relating to distributive energy justice by analysing debates in the Netherlands and the UK. First, even though the accessibility of smart grids for small-scale energy generation has the potential to contribute to more equitable energy market access, Dutch debate shows concerns that even though market access of smart grids to prosumers

(someone who both produces and consumes) and consumers is conceived as positive, it can be limited by outdated regulation and legislation as prosumers have lesser rights than energy suppliers. Second, there are challenges as benefits might be limited to affluent groups of society, reinforcing injustices faced by economically vulnerable residents. This can be illustrated by the example of the implementation of smart grids and smart metering devices that aim to save energy on the consumer level. Smart meters imply a responsibility on the consumers to change their behaviour and especially affect vulnerable groups like the elderly, disabled and financially disadvantaged, as they might have less room for saving and shifting their energy demand. Third, the costs of installing smart-metering systems are often financed through network tariffs, and it is worried that energy companies benefit more from this than consumers. Those examples show how (economically) vulnerable groups often cannot reap the benefits from those systems and are potentially carrying even more costs (Milchram et al., 2018).

Exploring how Dutch neighbourhoods can become gas-free, De G4-steden et al. (2022) discuss energy poverty in relation to distributional energy justice. Whereas energy poverty used to be associated with areas that lack access to modern energy, it is now increasingly associated with wealthy countries such as the Netherlands. These groups are often considered even more vulnerable through the energy transition as they cannot participate but have to face higher costs. It is described that even though policymakers pay attention to and discuss those vulnerable groups, there is often unclarity about what the energy transition will mean to them (De G4-steden et al., 2022).

4.1.3. Procedural justice

For procedural energy justice, reoccurring themes in current literature are a lack of inclusive decision-making, a lack of providing transparent information and bias in selecting participants for projects (Yildiz et al., 2015; Rasch & Köhne, 2017; Milchram et al., 2018; Velasco-Herrejon & Bauwens, 2020; Hanke & Feenstra, 2021; Siciliano et al., 2021). A lack of inclusive decision-making can result in a mismatch between the vision of institutions and local communities, as was the case in the implementation of a renewable energy project in Vietnam. While institutional actors were mainly concerned with energy security, economic growth and decreasing GHG emissions, local communities were most concerned with transparency, accountability, responsibility, linking renewable energy projects to the creation of employment and education, and the protection of natural resources like land and water. This example is also relevant for smart grids, as it shows how a mismatch of values between governance actors and residents resulted in a lack of support from the local communities (Siciliano et al., 2021).

When selecting participants for pilot smart grid projects, both the Netherlands and the UK are criticized for targeting first-mover consumers who are already interested in saving energy (Milchram et al., 2018). When this happens, it leads to not appropriately reflecting the entire population and an incorrect projection of energy savings. Research in Germany showed that members participating in renewable energy communities were dominantly middle-aged men with a relatively high income and a technical, higher education background. At the same time, low-income and vulnerable groups are underrepresented (Yildiz et al., 2015). When it comes to the participation of different societal groups in the decision-making process of renewable energy projects, it is important to realize that not all social groups have the time, resources and know-how to participate (McGee & Greiner, 2019). Vulnerable groups can be difficult to target, which is perceived as a barrier to inclusion. Hanke & Feenstra (2021) argue that the lack of reaching vulnerable groups reflects a procedural shortcoming, as there is a lack of recognition of their specific needs and how to reach them.

4.1.4. Recognitional justice

Reoccurring themes in the literature regarding recognitional justice are the lack of consideration of economically vulnerable groups (Catney et al., 2013; Islar et al., 2017; Hanke & Feenstra, 2021; Siciliano et al., 2021), the lack of consideration of local inhabitants (Rash & Köhne, 2017) and a lack of considering marginalized cultures (Velasco-Herrejon & Bauwens, 2020). Analysing 71 European renewable energy communities shows recognitional energy injustice as it was found that there was a general lack of recognition and understanding of energy poverty and vulnerable groups (Hanke & Feenstra, 2021). Another example is political stereotyping of "energy poor" households as unknowledgeable and inefficient with energy and monetary resources without adequately attempting to study the motivations behind those consumption patterns (Catney et al., 2013).

4.2. The values relating to energy justice in the LIFE project

4.2.1. Distributional justice

Local governance actors. Local governance actors mentioned various elements reflecting distributive energy justice. The most emphasis was placed on how the LIFE project could potentially contribute to lowering residents' energy bills and increasing local opportunities, but also some barriers were mentioned. Even though the interviewees mentioned various topics, there were no significant contrasts.

The importance of giving back to the neighbourhood by having the collective savings come back in a fair manner to all stakeholders involved was emphasized (T. Oosterop, pc, April 13, 2022, & H.R. Poolman, pc, April 25, 2022). Furthermore, the 'Southeast energy neutral – vision for 2040' was mentioned, describing the importance of affordable energy and ensuring employment opportunities (A. Nienhuis, pc, May 16, 2022). When asked about the potential benefits of the LIFE project for residents, it was seen as just that the residents of Venserpolder hopefully get the opportunity to collectively organize themselves and get more control over their energy, resulting in lower energy bills (H.R. Poolman, pc, April 25, 2022, & Project Manager, pc, June 07, 2022). More specifically, the potential to donate energy on the scale of a homeowners' association (HOA[2]) (A. Nienhuis, pc, May 16, 2022), more local activity and opportunities (Project Manager, pc, June 07, 2022 & H.R. Poolman, pc, April 25, 2022), and higher awareness about saving energy were mentioned (T. Oosterop, pc, April 13, 2022).

There were also elements mentioned that create barriers to elements of distributional energy justice. The high levels of energy poverty in the neighbourhood were mentioned (A. Nienhuis, pc, May 16, 2022). It was perceived as unjust that people with lower incomes are hit the hardest by rising energy prices while being least able to do anything about it (R. Ruijtenbeek, pc, May 23, 2022). It was also mentioned that a barrier to involving residents in the LIFE project could be that not everyone has a smartphone and thus might not have the technical capabilities needed to join the platform, which indicates unequal technological access (T. Oosterop, pc, April 13, 2022 & Project manager, pc, June 07, 2022). Moreover, it was mentioned that there is unequal access to sustainable energy resources like solar panels, as an overload of the net restricts the number of solar panels installed. It was perceived as unfair if residents cannot install them anymore later on while they would benefit from them, as companies now often have more financial means to buy and install them earlier on (R. Ruijtenbeek, pc, May 23, 2022).

Resident representatives and residents. The values representing residents' perspectives showed various elements relating to distributional justice. Altogether, most emphasis and consensus revolved around financial inequality, poor insulation of houses and a lack of time availability. Even though the interviewees mentioned various topics, there were no significant contrasts.

Financial inequality and the importance of moving away from energy poverty are mentioned the most in the interviews (B. Knaapen, pc, May 16, 2022; Participation Advisor, pc, June 01,

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[2] In Dutch: Vereniging van Eigenaren (VvE)

2022; Researcher Dutch University, pc, May 17, 2022 & Pakhuis de Zwijger, 2021b). It is seen as unjust that even though everyone should be able to take part in the energy transition, for many people, this is not affordable (Participation Advisor, pc, June 01, 2022, & W. Methorst, pc, April 19, 2022); in Venserpolder, many residents do not have much to spend, live in energy poverty and sometimes have trouble to make ends meet (Researcher Dutch University, pc, May 17, 2022). This is exacerbated by a poor insulation of houses, especially for tenants who do not have control over the insulation of their houses (Pakhuis de Zwijger, 2021b). When asked the question what benefits residents from Venserpolder would want to receive from the LIFE project, financial benefits are a reoccurring theme (Researcher Dutch University, pc, May 17, 2022, & Participation Advisor, pc, June 01, 2022), which is illustrated by the following quote: *"Anything that helps to support their cost of living is important"* [3] (B. Knaapen, pc, May 16, 2022). In addition, it is mentioned that creating local employment opportunities simultaneously with working on the energy transition is important (Participation Advisor, pc, June 01, 2022).

Other elements mentioned relate to technical access and time availability; in Venserpolder, there are still quite some people without smartphones and knowledge of applications that might be needed for the LIFE project and to get insight into energy usage in general (W. Methorst, pc, April 19, 2022). In addition, it is mentioned that specifically for Venserpolder, it is important to consider that most people might not be interested in participating in a platform that asks effort, time and involves smart gadgets as they have many other things on their minds (Researcher Dutch University, pc, May 17, 2022). Therefore, he argues that it is more critical to find benefits that unburden residents financially. Lastly, it is mentioned that it might be interesting to look into the possibility of sharing and donating energy with people in the community; however, as the project research is still ongoing, it is not sure if residents would be interested in this (Researcher Dutch University, pc, May 17, 2022). While W. Methorst (pc, April 19, 2022) and Participation Advisor (pc, June 01, 2022) agree that many residents are likely not interested in putting in a lot of effort and time, they do bring in the nuance that residents differ and that there are also groups who are more open and interested in energy issues.

Looking into already existing data of the residents of Venserpolder - both the publicly available survey among residents of Venserpolder and the public information evening about moving away from gas in Venserpolder – showed a general wish rather to insulate the houses properly instead of transitioning towards a different energy source (Municipality of Amsterdam, 2020b).

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[3] In Dutch: *"Nou kijk, alles wat helpt om zeg maar hun kosten van levensonderhoud te ondersteunen is van belang."*

Furthermore, residents mostly worry about higher costs and rents. Affordability is considered the most important aspect in the survey and the information evening (Municipality of Amsterdam, 2020b & Pakhuis de Zwijger, 2021b). Also, in answering a question about whether home-owners would consider participating in a neighbourhood initiative and 55,4% said not want to participate; reasons for not wanting to participate are that houses are not insulated well enough, people have no time and motivation to arrange it themselves, and there is no expertise about the topic.

Comparison. Table 4 presents a comparison of elements mentioned regarding distributional justice by both groups. A distinction is made between elements perceived as positive (plusses) and elements perceived as negative (minuses). What stands out is that local governance actors of the LIFE project identify more positive values regarding distributional justice, while residents and resident representatives express more negative values. Similarities in elements that are perceived as positive include the creation of local job opportunities and affordability. However, whereas local governance actors mention the opportunity for residents to collectively organize themselves, enabling sharing and donating energy and giving residents a higher awareness about saving energy, those elements did not come forward by resident representatives and residents. Similar elements that are perceived as negatives for distributional justice are financial inequality, energy poverty in the neighbourhood, and unequal technological access. Elements that were not mentioned by local governance actors but were pointed out by resident representatives and residents were that many residents have no control over their energy system, houses are poorly insulated, and residents lack time availability and expertise.

Table 4. Comparison values distributional energy justice regarding the LIFE project

	Local governance actors		Resident representatives & residents
+	Creating local job opportunities and more local activity	+	Creating local job opportunities
+	Giving back to the neighbourhood	+	Affordability most important aspect
+	The opportunity for residents to collectively organize themselves		
+	Enabling sharing and donating energy to lower energy bills on an individual scale or on scale of HOAs		
+	Higher awareness of saving energy among residents		
-	Financial inequality & energy poverty in the neighbourhood	-	Financial inequality and energy poverty in the neighbourhood
-	Unequal technological access	-	Unequal technological access
-	Unequal access to sustainable resources (e.g., solar panels)	-	Control over energy system; renters are dependent on landlord or housing corporation
		-	Poor insulation of houses
		-	Lack of time availability
		-	Lack of expertise

4.2.2. Procedural justice

Local governance actors. There seemed to be a difference in the importance placed on including the residents. While some explained the importance of designing the platform from the perspective of residents and what they would want, other interviewees took a bit more of an indirect view and emphasized all stakeholders involved or stated that it is not useful to involve economically disadvantaged groups directly in the energy transition. The local governance actors agreed that the neighbourhood has complex characteristics for meaningful participation and that it is essential to take small steps in approaching them.

When considering how to include the residents of Venserpolder in the LIFE platform, local governance actors mentioned that this is done using the inside-out approach. This means they

are finding out how to talk to the residents and approach them by visiting the neighbourhood, without talking about energy straight away (H.R. Poolman, pc, April 25, 2022). It is said that it would be nice to get insights into what residents want and anticipate that in the project's design (Project Manager, pc, June 7, 2022). However, as the project is still in a very early stage of development, one of the difficulties is approaching residents with a straightforward story, which is considered important (H.R. Poolman, pc, April 25, 2022). Even though there is still uncertainty on how to reach residents, examples mentioned are organizing events, playing games, asking them to engage with prototypes and using local organizations already in place (Project Manager, pc, June 7, 2022).

It is also mentioned that the characteristics of the neighbourhood Venserpolder make it challenging to have meaningful participation. So are residents of Venserpolder feeling overburdened with many projects that want to do research in the area, which makes for a difficult balance between getting data and not bothering people (Project Manager, pc, June 7, 2022). In addition, while people with sufficient financial resources and time might be interested in participating actively, many residents in Venserpolder do not have this same motivation as they have many other problems on their minds (A. Nienhuis, pc, May 16, 2022; R. Ruijtenbeek, pc, May 23, 2022). Some state that it is not useful to involve them in the energy transition directly but that it is better to take a bottom-up social approach, for instance, with language coaches and to help them with other things, and then potentially organize other energy activities around that (A. Nienhuis, pc, May 16, 2022, & R. Ruijtenbeek, pc, May 23, 2022).

Resident representatives and residents. The values representing residents' perspectives showed various elements relating to procedural justice. There was consensus about the importance of having a clear plan and building trust. Among residents, there was some variance in those who want to be actively involved, with the majority indicating that they do not want an active role.

Among resident representatives, the importance of having a clear plan of how energy projects will relate to the residents is emphasized (W. Methorst, pc, April 19, 2022 & Participation Advisor, pc, June 01, 2022), which can be illustrated by the following quote; *"Because what we have noticed is … on the one hand, we want to involve people as quickly as possible to give them the opportunity to be inclusive and participate. But if it is not clear to people what it means to them or how it is relevant for them, then they are not really inclined to invest a lot of time*

and energy in it.[4]" (Researcher Dutch University, pc, May 17). It is also noted that it is important not to make any decisions on things that will affect residents without consulting them; it should be open and not just leave them in a position in which they can either accept or decline (Researcher Dutch University, pc, May 17, 2022). It is said to make in-between steps to connect with the residents and discover their wishes. Examples could be employing an activity coordinator who takes a few months to speak with people in the neighbourhood, organizing events with energy coaches and organizing informal activities such as cooking events (W. Methorst, pc, April 19, 2022, & B. Knaapen, pc, May 16, 2022; Participation Advisor, pc, June 01, 2022). Using this approach will establish a basis. Later, this could be built upon by seeing if there are opportunities to collaborate with the LIFE project (W. Methorst, pc, April 19, 2022).

When it comes to interaction with governmental institutions, resident representatives noticed that many residents feel forgotten or poorly treated by earlier experiences (B. Knaapen, pc, May 16, 2022; W. Methorst, pc, April 19, 2022; Pakhuis de Zwijger, 2021b). When it comes to how to approach them, it is said to be essential to build trust and make them feel that they are listened to (Researcher Dutch University, pc, May 17, 2022). In addition, the difficulty of preventing overburdening residents is mentioned, especially for many people who have little financial resources and many other worries on their minds (Participation Advisor, pc, June 01, 2022).

Looking into existing data of the residents of Venserpolder, comments on how they want to be included in the transition process showed that homeowners mostly prefer not to arrange everything themselves, and renters mostly indicated that they want to arrange as little as possible themselves. In order to make a decision, residents perceive it of high importance to get more insight into the costs of different options and how to finance it. Furthermore, the survey showed that residents are moderately interested in having contact with neighbours (19.7%) and frontrunners (22,6%). Among homeowners, 15,3% indicate that they want an active role in the process, while 77,4% do not want to play an active role but want to keep updated. Also, in answering a question about whether homeowners would consider participating in a neighbourhood initiative and 55,4% said not want to participate; reasons for not wanting to participate include that there is no trust in good collaboration and there are too few active members.

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[4] In Dutch: *"Want wat we hebben gemerkt wel van ja wat je zegt aan de ene kant willen we mensen zo snel mogelijk betrekken juist om ze die mogelijkheid te geven om inclusief te zijn en particpatie. Maar als … het niet duidelijk voor mensen is wat ze er zelf aan hebben of hoe het relevant is voor hen dan zijn ze ook niet zo geneigd om daar heel veel tijd en energie in te steken."*

Comparison. Table 5 presents a comparison of elements mentioned regarding procedural justice by both groups. A distinction is made between elements perceived as positive (plusses) and elements perceived as negative (minuses). There are many overlaps in elements that are perceived as positive; both groups value having a clear story, an approach in which residents are approached with small steps and mention organizing local events and activities as a good way to reach residents. Apart from that, local governance actors and resident representatives mention the importance of building trust. Similarities in elements that can be interpreted as negative to reach procedural justice in the LIFE project include that residents are overburdened and that there is a low motivation to participate and arrange much themselves. In addition, local governance actors mention that for economically vulnerable groups, it might be more effective to use a bottom-up social approach instead of directly involving them, and resident representatives emphasize not to make any decisions that affect residents without consulting them.

Table 5. Comparison values procedural energy justice

	Local governance actors		Resident representatives & residents
+	Importance of clear story	+	Importance of clear story
+	Inside-out approach	+	Approach with small in-between steps
+	Organizing local events and activities	+	Organizing local events and activities
		+	Build trust
-	Residents are overburdened	-	Residents are overburdened
-	Low motivation to participate among lower-income groups	-	Preference for not arranging much themselves
-	For economically vulnerable groups more effective to use bottom-up social approach instead of directly involving them in energy transition	-	Do not make any decision that affect residents without consulting them

4.2.3. Recognitional justice

Local governance actors. Various elements were mentioned relating to recognitional justice. Whereas different vulnerable groups were mentioned throughout the interviews, there were some differences in the importance placed on including them.

Throughout the interviews, there was a recognition of the residents in the area and a willingness to include them in the project. It was recognized that there are many residents with low-income levels and potentially quite some people who cannot speak/read Dutch or might not own a smartphone (Project Manager, pc, June 7, 2022; R. Ruijtenbeek, pc, May 23; T. Oosterop, pc, April 13, 2022). However, while acknowledging these characteristics, there was still much unclarity about how to deal with those groups when it comes to including them in the LIFE project. Interviewees mentioned that to reach vulnerable and non-Dutch speaking people, it is important to use local organisations and their connections (Project Manager, pc, June 7, 2022; R. Ruijtenbeek, pc, May 23). While all interviewees mention that the project might be too technical for most residents, none mentioned how to potentially overcome this. It is also acknowledged that it is still unsure if there will be enough connections between the residents and the project to actually be able to incorporate their wishes (H.R. Poolman, pc, April 25, 2022).

Resident representatives and residents. The values representing residents' perspectives showed various elements relating to recognitional justice. Within this group, most emphasis was placed on the importance of including the residents and especially considering more vulnerable groups. No significant contrasts were found.

Among residents' representatives, the importance of including the needs of local residents in a project such as LIFE is emphasized (W. Methorst, pc, April 19, 2022). It is stated that as many people as possible should be allowed to be provided the opportunity to participate in the energy transition (Participation Advisor, pc, June 01, 2022). It is also mentioned that there are different residents with different interests, which makes it hard to speak about one stakeholder and determine a common interest for all those residents (W. Methorst, pc, April 19, 2022; Participation Advisor, pc, June 01, 2022). In addition, it is said to be important to recognize high levels of poverty in the neighbourhood (W. Methorst, pc, April 19, 2022; B. Knaapen, pc, May 16, 2022; Pakhuis de Zwijger, 2021b) and the disadvantages they face such as relatively higher costs and less freedom of choice (specifically renters) (Pakhuis de Zwijger, 2021b). This

can make it hard for them to be involved in the energy transition as they have financial worries on their mind (Participation Advisor, pc, June 01, 2022). In addition, something that came up is the importance of considering people who are hard to reach (e.g., non-Dutch speaking and those without a computer or smartphone) (W. Methorst, pc, April 19, 2022, & Researcher Dutch University, pc, May 17, 2022). An example of reaching those people is connecting to already existing community initiatives that have ties with many residents (Researcher Dutch University, pc, May 17, 2022).

Comments in the survey among residents and the information evening mentioned that not everyone has the same financial means. In addition, a language barrier was mentioned as one of the reasons why some residents did not want to participate in a neighbourhood initiative (Municipality of Amsterdam, 2020b).

Comparison. Table 6 presents a comparison of elements mentioned regarding recognitional justice by both groups. This table does not include pluses and minuses, as more general statements were made about considering different groups within the residents. It stands out that both local governance actors and resident representatives mention the same groups throughout the interviews and mention connecting with local organisations as a possible way to reach them. Interestingly, it is also acknowledged by the local governance actors of the LIFE project that there is still much uncertainty on how to actually include those groups.

Table 6. Comparison values recognitional energy justice

	Local governance actors		Resident representatives & residents
+	Importance of including local residents	+	Importance of including local residents
+	Recognition of low-income groups	+	Recognition of low-income groups
+	Recognition of non-Dutch speaking	+	Recognition of non-Dutch speaking
+	Recognition of groups with little technological capabilities	+	Recognition of groups with little technological capabilities
+	Connect with local organisations	+	Connect with local organisations
-	High uncertainty on how to actually include the above stated groups in the LIFE project		

4.3. Sub-conclusion

First, SQ1 looked at the occurrence of energy justice issues according to the three tenets in similar cases. For distributional energy justice, it showed that smart grids often provide fewer opportunities to small consumers and consumers due to outdated legislation. In addition, similar case studies showed concerns that the benefits of smart grids only reach more wealthy groups and reinforce a gap with lower income groups, especially as the focus is often on consumers to change their behavior. Lastly, energy poverty is mentioned as an important element, as this often reflects vulnerable energy users that cannot profit from the energy transition. For procedural energy justice, it showed that a lack of inclusive decision-making could result in a mismatch between the vision of institutions and local communities. Also, it showed that there is often a bias in selecting participants for pilot smart grids; they often target fist-mover consumers who are already interested in saving energy, which leads to incorrect conclusions about potential energy savings on a country-level. Furthermore, other case studies showed that not everyone has the time, resources and know-how to participate, which is a barrier to inclusion. Lastly, for recognitional energy justice, comparable cases showed that there was often a lack of consideration of economically vulnerable groups, local inhabitants and marginalized cultures.

Then, SQ2 focused on the values that two different groups of actors – local governance actors and residents (representatives) – have regarding the different tenets of energy justice. Within distributional justice, there is some overlap as both groups discuss financial inequality and energy poverty and thus the importance of creating financial benefits, the importance of creating local opportunities and a current unequal technological access that might prevent residents from accessing the LIFE platform. However, also some differences can be found. For instance, project partners describe the importance of giving local residents the opportunity to collectively organize themselves and being able to donate and share energy by participating in the LIFE project. However, resident representatives emphasize that many residents in Venserpolder are not in control over their energy system as they are dependent on their landlord or housing corporation. Moreover, this contrasts with what is mentioned by residents; they express a wish to rather properly insulate their houses and describe that there is little time and motivation for residents to put much effort into participating in a neighbourhood initiative.

Within procedural justice, overlaps include that both groups value that there is a clear story of how residents could be involved before they are approached. To find out about their needs, the local governance actors use the inside-out approach, which overlaps with an approach of taking

small in-between steps, as mentioned by resident representatives. Both groups mention organizing local events and activities as a valuable tool to reach residents that are hard to reach. Interestingly, both groups see that among many residents, there is a wish not to participate actively and not to arrange too much themselves and feel overburdened with research projects in which they are asked to participate. Resident representatives also mention a lack of trust in governmental institutions. Some local governance actors state that it might be more effective to use a bottom-up social approach instead of directly involving residents of Venserpolder in the energy transition.

Within recognitional justice, both groups mention the importance of including local residents, recognizing low-income groups, recognizing non-Dutch speaking and recognizing those with little technical capabilities. For the LIFE platform specifically, even though the project partners aim for recognitional justice by wishing to include the interest of residents, there seems to be much unclarity on how to go about this. For instance, questions about how low-income households could be of value in a local energy platform and how to include those with no computer or smartphone remain unanswered. Thus, it can be said that there is quite some discrepancy between the aim to develop this platform with the interests of the residents in mind and what is actually being done. In a broader sense, connecting with local organisations with ties with those groups and implementing a social approach in the neighbourhood were mentioned as possible ways to include them in the energy transition.

Chapter 5. Results | Local governments within a multi-level governance context

5.1. Introduction

This chapter contains the results that explore the role of local governments in implementing elements of energy justice. First, the results of SQ3: *"What are the levels of governance involved regarding the LIFE project and what is their authoritative power?"* describe the vertical governance levels involved; the EU, the national, and the local level. As this study is interested in potential local policy instruments, the focus is limited to public institutions and will not include how policies are influenced by non-state actors. Second, the results of SQ4: "*What are local policy instruments to implement elements of energy justice?"* are provided, which describe in more detail the different ways local governments can use their authoritative power to affect elements of energy justice.

5.2. Levels of governance in LIFE and their authoritative power

5.2.1. European

The European level of governance influences urban low-carbon energy transitions by setting up strategies and defining standards and guidelines (Haarstad, 2016a). In addition, it has influence by funding low-carbon city initiatives and networks such as the 'European Innovation Partnership on Smart Cities and Communities' (Kern & Alber, 2009; Kern & Bulkeley, 2009; European Commission, n.d.). According to Haarstad (2016a) and Kern & Alber (2009), the EU does not necessarily operate through a direct vertical process and does not have direct power over local urban infrastructures but dominantly works by stimulating horizontal processes such as connecting cities and creating partnership arrangements between them. However, as many projects are highly dependent on European funding, the EU has a significant agenda-setting influence and has the power to shape initiatives and projects in specific ways that fit with the European agenda (Bulkeley & Betsil, 2005; Haarstad, 2016a; Haarstad, 2016b). Whereas the European level does not fund the LIFE project, they fund similar projects, thus pushing the development of the technology (LIFE, 2020).

The LIFE project fits the strategy of the European Green Deal, with places a high emphasis on digitalized energy systems (European Commission, 2019). Specifically relevant for the LIFE project is the EU's Clean Energy Package (CEP), which describes a more prominent role of small consumers such as households (Buijze et al., 2021). Previously consumers were seen as

mainly passive actors that only consume energy. However, the new strategy describes that the market should be shaped to incentivize consumers to be more active and help stabilize the electricity system (Buijze et al., 2021 & Europa Decentraal, 2022). Examples of those changing roles will be the introduction of the 'active consumer' and 'energy communities' that need to have improved access to energy markets. This strategy aligns with the LIFE project as they are researching how to exchange energy locally and how residents could be included in this (HR Poolman, pc, April 25, 22). However, the current regulatory framework in the Netherlands does not yet fully allow those new roles for small consumers, which limits its influence (Buijze et al., 2021).

5.2.2. National

The second category is national governments, which typically have more power over local governments than European institutions (Haarstad, 2016a). They primarily influence local urban low-energy transitions by deciding on the strategy, the legal framework and financial conditions for spatial planning. For example, national governments determine energy and climate policy facets like pricing, development plans on energy efficiency and renewable energy measures (Bulkeley & Betsill, 2005). In addition to these more direct influences, they indirectly influence urban local authorities by stimulating and funding network-based activities and projects (Haarstad, 2016). Kern & Alber (2009) identify three different governance tools that national states can implement. Firstly, governing through enabling consists of stimulating and facilitating local action by setting guidelines and providing information. Secondly, governing by provision consists of additional services like positive incentives in the form of funding and projects. For instance, various states, including the Netherlands, have implemented funding schemes to support low-carbon investments. Thirdly, governing by regulation means that national governments use their state authority by setting mandatory requirements. This would mean that local authorities are obliged to fulfill certain requirements in the energy sector. An example is that from 2030, housing corporations and private renters in the Netherlands cannot rent out any houses with the lowest energy labels E, F or G (Ministerie van Binnenlandse Zaken en Koninkrijksrelaties, 2022).

The national level of governance influences the LIFE project by determining the strategy, funding and legal framework. On the national level, it has been decided that in 2030 70% of the generated energy will come from sustainable resources, mainly solar- and wind energy (Buijze et al., 2021). This leads to the decentralization of the energy system and allows energy production to be within reach of households and other small users. In addition, the Dutch

strategy focuses on digitalization by providing real-time data for consumers with smart meters and accounting for a larger role for smart grids in future developments (Buijze et al., 2021). The national level of governance also influences the LIFE project as it is funded through a national subsidy (Project Manager, pc, June 7, 2022) which, for instance, has the specific requirement that the project is carried out by at least three companies that will carry out the project in a cross-sectoral partnership (RVO, 2019). In addition, the national level funds similar pilots in the Netherlands researching the possibility of local smart grid platforms. Moreover, municipal urban activities are largely funded by national financial resources (L. den Ouden, pc, May 01. 2022, Project Manager, pc, June 7, 2022, & M. Valenduuk, pc, May 18, 2022). For instance, the Dutch public housing fund ('Volkshuisvestingsfonds') has made 40 million euros available for the municipality of Amsterdam to tackle energy and poverty issues in the South-East area, which includes the neighbourhood of Venserpolder (Municipality of Amsterdam, 2021b).

The legal framework is mainly relevant for the LIFE project for three themes. First, it determines the role of residents in energy markets, which influences how residents could potentially be included in the LIFE project. The Dutch National Energy Climate Plan (NECP) includes measures to support the European CEP, as discussed in the previous section. For instance, small users can use dynamic tariffs (Buijze et al., 2021). However, current legislation does not allow residents to share and donate energy (W. Methorst, pc, April 19, 2022; R. Ruijtenbeek, pc, May 23, 2022; H.R. Poolman, pc, April 25, 2022; Buijze et al., 2021). Obstructions for locally sharing and donating energy by households include the prohibition of supplying to small consumers without a permit, which is difficult to obtain (Buijze et al., 2021). This may change with the entering of force of the new Energy Act, but the legislative process has to take place so this in uncertain. [5] Secondly, the legal framework lays out conditions for participation, which indirectly influences the LIFE project. A recent change in national legislation called the 'Omgevingswet' (Environmental and Planning Act) will be implemented in 2023, focusing on higher and better levels of participation. For instance, it requires every municipality to implement a participation policy. The resident representative organization CoForce, of the case study, has been set up in line with this Dutch 'Omgevingswet', aiming to enlarge the residents' role in the neighborhood and the energy transition (R. Ruijtenbeek, pc, May 23, 2022). Thirdly, the Dutch legal framework influences the LIFE project as both housing

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[5] Important for the context of this research is the understanding that the current legal framework does not allow individual households to locally share and donate energy. For a thorough understanding of the legislation on small consumers, imbalances an aggregators, see Buijze et al., (2021).

corporations and HOA's can follow the transition at their own pace, and this is not something that local governments have direct control over (M. Vallenduuk, pc, May 18, 2022; R. Ruijtenbeek, pc, May 23, 2022). This is specifically relevant to the LIFE project as most residents are part of an HOA or housing corporation, meaning they do not have direct control over their energy source. If this is the case, it would also mean that those residents cannot individually decide to become part of an energy collective/community.

5.2.3. Local

Whereas the national level is mainly seen as the provider of financial resources and setting the overarching policies and laws, the municipality is more suited to determine the specific policies in the local area. This is because they are way closer to the residents and know the characteristics of different neighbourhoods, which is essential (M. Vallenduuk, pc, May 18, 2022, & N. van Uffelen, pc, April 26, 2022). According to Haarstad (2016a), local authorities influence the most fundamental aspects, such as planning land use and initiating public participation. Just as at the national level of governance, local governments can govern through enabling, govern by provision and govern by regulation (Kern & Alber, 2009). Governing through enabling means that the local government encourages community engagement and coordinates and facilitates partnership with private actors. This can be done by creating incentives to commit to sustainability measures, which is a softer form of governance (Rohracher & Späth, 2014). Governing by provision means that local governments shape reality by creating services and resources through financial policy and infrastructure. Governing by regulation means that the local government can use control and sanctions to enforce rules. In addition to the three modes of governing described above, Kern & Alber (2009) also describe self-governance as relevant for local governments. Self-governance means that local governments govern their own organization and activities, e.g., improving energy efficiency in municipality-owned buildings. Kern & Alber (2009) describe that even in pioneering cities, local policy mainly uses governing by enabling and self-governing, while hardly governing by regulation as this has more potential to lead to conflicts.

The strategy of the municipality of Amsterdam is in line with the strategy set at the national level; to become fully circular by 2050, decrease 95% of its emissions by 1950 and stop using natural gas before 2040 (Municipality of Amsterdam, 2022). For the area of Amsterdam South-East, the vision of the municipality is to become energy-neutral by 2040 with a specific focus on social elements. In the neighbourhood of Venserpolder, the strategy is to be free of natural gas by 2030. The current vision of the municipality is to have those residents transition to the

heating net laying in the area (Municipality of Amsterdam, 2020b). Important to mention is that the municipality mainly uses governing by enabling, and residents are not obliged to follow this vision (Participation Advisor, pc, June 01, 2022). To work on this transition, various municipality departments are active in Venserpolder, which can also lead to difficulties as residents feel overburdened (Project Manager, pc, June 7, 2022).

The LIFE project itself can be seen as a form of governing by enabling, as the project is a collaboration between public and private actors. Private businesses have an increasingly important role in creating smart grids as they offer the technological infrastructure for smart solutions (Haarstad, 2016b). This is evident in the LIFE project, as the local government depends on private companies to design the technical infrastructure and therefore stimulates collaboration (Project Manager, pc, June 7, 2022). In addition, with the various housing corporations and HOA's situated in Venserpolder, the local government mainly uses governing by enabling to incentivize them to transition towards more sustainable energy sources (L. den Ouden, pc, May 01, 2022). Governing by provision is also relevant to the LIFE project as the final design of the project will define the infrastructure of a potential local energy market, whether local residents can participate in this, and how.

Table 7 provides a summary of the results regarding the different levels of governance. It summarizes the different vertical levels of governance, their authoritative power and how they are relevant to the LIFE project.

Table 7. The different levels of governance in the LIFE project and their authoritative power.

Level of governance	Authoritative power	Relevance to the LIFE project
European	Setting strategies	Green Deal
	Defining standards and guidelines	Clean Energy Package (CEP) → different role for consumers
	Funding initiatives and supporting networks	Funding similar initiatives

National	Governing by enabling: setting guidelines and providing information	Determining strategy of decentralization and digitalization
	Governing by provision: funding initiatives and supporting networks	Funding • Subsidize LIFE • Subsidizing and researching similar projects • Funding municipalities in general
	Governing by regulation: setting mandatory requirements	Deciding of legal framework • NECP & role of residents • 'Omgevingswet' • Housing corporations and HOA's
Local	Governing by enabling: encourage community engagement and facilitate private partnerships	Determining the local strategy The LIFE project itself as example of public-private partnership
	Governing by provision: creating services and resources through financial policy and infrastructure	Defining the infrastructure of the LIFE project
	Governing by regulation: use control and sanctions to enforce rules	
	Self-governance: govern their own organization and activities	

5.3. Local policy instruments to implement elements of energy justice

An often-used categorization of policy instruments is the division between financial-economic, communicative and legal policy instruments (IPLO, n.d). Financial-economic instruments aim to influence behaviour with financial incentives. This could be either by rewarding wanted behaviour or punishing unwanted behaviour. Communicative instruments are used to

incentivizing behaviour by providing information and enlarging the knowledge of citizens or companies. Legal instruments are used to influence behaviour by enforcing laws and rules. There is not always a strict line between the policy instruments and the possibility of overlap (IPLO, n.d.) The sections below describe local policy instruments that could be used to implement elements of the three tenets of energy justice.

5.3.1. Distributive justice

For distributive justice, various financial-economic policy instruments came up in both literature and interviews, that mainly focus on decreasing costs. Also, various communicative policy instruments came up. Both are described in more detail below.

Various examples of financial-economic policy instruments were mentioned in the interviews and literature. First, voucher systems for energy-saving measures such as led lighting, energy-saving shower heads and isolation measures are mentioned (Kruit, 2021; M. Vallenduuk, pc, May 18, 2022; B. Knaapen, pc, May 16, 2022, & L. den Ouden, pc, May 01, 2022). Second, subsidies were mentioned multiple times (M. Vallenduuk, pc, May 18, 2022; A. Nienhuis, pc, May 16, 2022; L. den Ouden, pc, May 01, 2022). Those subsidies could be used to finance the unprofitable top, which means that the local government pays for the additional costs that residents need to make when switching to another energy source (Kruit, 2021 & B. Knaapen, pc, May 16, 2022). This is currently not done in Amsterdam, but it was implemented by the municipality of Rotterdam when transitioning to a heating net (R. Ruijtenbeek, pc, May 23, 2022). Furthermore, the government can pay an energy surcharge to lower-income households as a one-time financial compensation (Kruit, 2021 & L. den Ouden, pc, May 01, 2022). Lastly, another policy instrument mentioned is the 'insulation motor' as part of the fix brigade, which is an organization that is subsidized by the local government and helps people isolate their houses with radiator foil and close cracks for free (A. Nienhuis, pc, May 16, 2022; M. Vallenduuk, pc, May 18, 2022; R. Ruijtenbeek, pc, May 23, 2022).

Also, various examples of communicative policy instruments were mentioned. First, the local government can invest in local energy coaches, who visit residents for free and give advice on how people's energy system works and how to save on energy-related costs (Kruit, 2021; L. den Ouden, pc, May 01, 2022; R. Ruijtenbeek, pc, May 23, 2022). Second, providing energy displays is mentioned as a potential measure (Kruit, 2021). However, this is only possible in Amsterdam when the residents already have a smart meter from the local network operator (M. Vallenduuk, pc, May 18, 2022). Thirdly, it is crucial to ensure that all energy measures available

to residents like subsidies are well communicated and easy to get, as otherwise, many people might not even be aware that they could receive anything (R. Ruijtenbeek, pc, May 23, 2022).

5.3.2. Procedural justice

For procedural justice, both financial and communicative policy instruments were found relevant. Firstly, the importance of local governments to (financially) support resident initiatives and listen to them and involve them in their energy plans was mentioned (R. Ruijtenbeek, pc, May 23, 2022, & Project Manager, pc, June 7, 2022). Secondly, communicative policy instruments are essential to facilitate dialogue between the local government and residents (M. Vallenduuk, pc, May 18, 2022). In an interview with energy justice expert U. Pesch (pc, April 19, 2022), it was mentioned that the local government could open up and organize public participation way earlier than is often done. He mentions that there are different suitable instruments for different issues, which could change from consulting specific residents, specific resident groups or organizing a referendum for the entire neighbourhood. Furthermore, he emphasized the importance of working with and building on the local capacities and cultural diversity in the neighbourhood, instead of imposing strategies in a top-down manner. Lastly, not all residents might be reached easily through participation efforts. To still reach groups that otherwise would not participate, the local government could organize neighbourhood activities (B. Knaapen, pc, May 16, 2022, & Project Manager, pc, June 7, 2022).

5.3.3. Recognitional justice

For recognitional justice, a combination of financial and communicative policy instruments was found relevant to reach groups considered vulnerable or hard to reach. In addition, financial and communicative policy instruments were mentioned to implement a broader societal strategy. Both results are described in more detail below.

First, the local government can focus its strategy on a disadvantaged group that pays relatively high energy costs. An example of this is the current creation of energy poverty policy in Amsterdam (M. Vallenduuk, pc, May 18, 2022, & L. den Ouden, pc, May 01, 2022). In addition, disadvantaged neighbourhoods (e.g., those with many bad insulated houses or low-income households) could be prioritized by covering the unprofitable top (Kruit, 2021). To get an understanding of the needs of groups that are less likely to be reached by the local government, such as non-Dutch speaking or economically vulnerable groups that work multiple jobs and have no time available to, it is important to work closely together with key figures and social

organizations already existing in neighbourhoods (B. Knaapen, pc, May 16, 2022; Project Manager, pc, June 7, 2022; Participation Advisor, pc, June 01, 2022; R. Ruijtenbeek, pc, May 23, 2022). Also, it is said to consider and work with cultural diversity and capabilities in the neighbourhood (U. Pesch, pc, April 19, 2022 & Participation Advisor, pc, June 01, 2022). An example of this was given by B. Knaapen (pc, May 16, 2022), who explained that many residents of Venserpolder were reluctant to change to electric cooking, as they felt like they could not stir-fry on electric and could not make their dishes as they were used to. To tackle this hestitance, cooking events and demonstrations were organized in which foods were prepared that fit with the many cultures in the neighbourhood. Furthermore, this would also serve as an opportunity to get in contact and find out about potential other issues that residents face.

Lastly, R. Ruijtenbeek (pc, May 23, 2022) & A. Nienhuis (pc, May 16, 2022) argue that it is important to first invest in non-energy-related societal issues in the neighbourhood and take small steps instead of skipping that and focussing on energy issues straight away. Thus, first, critically examine what the neighbourhood needs from a social perspective. For example, coupling the energy transition to other issues like improving local employment and safety in the neighbourhood is mentioned (Participation Advisor, pc, June 01, 2022). Other examples include language coaches that can be used to help non-Dutch speaking groups with challenges they face. For example, R. Ruijtenbeek gives 'Bospolder tussendijken' in the city of Rotterdam, which implemented a successful societal track in addition to an energy track to improve social cohesion and strengthen local capabilities.

Table 8 provides an overview of the different local policy instruments mentioned to address distributive, procedural and recognitional energy justice. While for all tenets, different kinds of policy instruments are recommended, it can be said that distributive justice is dominantly influenced by financial policy instruments and procedural justice is dominantly influenced by communicative policy instruments. Recognitional energy justice is mixed more evenly.

Table 8. Overview of local policy instruments

Distributive	- Vouchers - Subsidies - Cover unprofitable top - Focus on neighbourhoods with energy poverty - One-time energy surcharge

	• Provision of information on how to get subsidies
	• Provide free isolation measures
	• Energy coaches
	• Energy displays
Procedural	• Support and involve resident initiatives
	• Facilitate dialogue between local government and residents
	• Consult specific residents or resident groups
	• Organize a referendum
	• Work with cultural diversity and capabilities in the neighbourhood
	• Organize neighbourhood events
Recognitional	• Focus strategy on specific disadvantaged groups or neighbourhoods
	o E.g., Energy poverty policy
	• Work together with key figures and social organizations in neighbourhoods
	• Consider cultural diversity and capabilities in the neighbourhood
	• Invest in non-energy related societal issues in the neighbourhood
	o E.g., Language coaches
	o E.g., Improve employment opportunities

5.4. Sub-conclusion

First, SQ3 discussed the three vertical levels of governance present in the LIFE project and the authoritative power of each. This showed that the European level has a considerable agenda-setting influence by defining strategies, standards and guidelines. Especially the CEP is relevant as it introduces a different, more active role for consumers and small users in the energy market, which is researched explicitly in the LIFE project. The authoritative power of the European level is mainly limited to softer forms of governance as they have no direct control over local infrastructures. Then, the national level of governance was also influential in deciding on energy-related strategies but had an even more direct influence by providing the funding for the

LIFE project and the legal framework in which the LIFE project has to operate. Interestingly, it showed that the current legal framework does not allow for sharing and donating energy among households, which is one of the key research elements of the LIFE project. The authoritative power of national governments includes governing by enabling, governing by provision and governing by regulation. Local governments have the most power over the direct infrastructure of the city and the strategies applied in specific neighbourhoods. Their authoritative power includes governing by enabling, governing by provision, governing by regulation and self-governance.

Then, SQ4 further explored the specific policy instruments that the local governments have under their authoritative power to target the different tenets of energy justice in their policy-making. Policy instruments targeting distributive energy justice included financial policy instruments such as distributing vouchers and providing subsidies. In addition, communicative policy instruments such as energy coaches, energy displays and providing support to get subsidies were mentioned. Policy instruments targeting procedural energy justice included financially supporting resident initiatives. The other policy instruments mentioned were mainly communicative; facilitating dialogue, consulting residents, organizing a referendum, working with local cultures and capacities and organizing neighbourhood events. Lastly, policy instruments targeting recognitional energy justice also included a mix of financial and communicative policy instruments, which include targeting specific disadvantaged groups, working together with key figures and social organizations in neighbourhoods, working with cultural diversity and local capabilities in the neighbourhoods and investing in non-energy related social issues in the neighbourhood. Interestingly, local governments rarely use legal policy instruments, even if they have the power to do so.

Chapter 6. Discussion

6.1. Introduction

This chapter will begin with the interpretation of the results. Whereas the sub-conclusions of Chapter 4 and Chapter 5 answered the sub-questions, this section will discuss what this means for the main question. It first discusses results relating to understanding of energy justice and then discusses the influence of an MLG context. Subsequently, practical implications are discussed, which include recommendations for the LIFE project and broader policy implications. Then, theoretical implications discuss how this research adds to existing literature. Finally, this research's limitations are presented, including rivalry explanations and methodological limitations. A future research recommendation follows each methodological limitation.

6.2. Interpretation of the results

6.2.1. The understanding of energy justice

The first part of this research looked at how local governance actors understand energy justice within the LIFE project. Within this case study, there is an attempt by local governance actors to work with elements of energy justice which is mainly reflected by their goal to include local residents in the LIFE project. However, an aligned definition of energy justice is not applied throughout the governance process. This lack of alignment showed in procedural and recognitional justice results, where there seemed no consensus on the importance of involving local residents, especially vulnerable groups within them. Resident representatives, however, emphasized the importance of including those groups to be essential. The most important difference compared to the perspective of residents was that whereas local governance actors saw it as an opportunity to provide residents with the opportunity to organize themselves collectively, the residents indicated to have little time and motivation to put effort into participating in a neighbourhood initiative. This shows a discrepancy between the values of local governance actors and residents. It could also be said that this is quite a narrow interpretation of distributional justice, as benefits would only reach those in a collective and not all members of the neighbourhood. This narrow interpretation of distributional justice could also be why they struggle to include groups that are more difficult to reach (e.g., economically disadvantaged, non-Dutch) in the LIFE project. Thus, while local governance actors aim to include 'just' elements in the LIFE project, their understanding is not aligned with that of resident representatives and residents.

6.2.2. The influence of MLG on the local implementation of energy justice

The second part of this research looked at the influence of MLG on the local implementation of elements of energy justice. It can be said that international and national levels of governance significantly influence the direction of the energy transition, which is primarily done by determining energy-related strategies and providing funding. Subsequently, this means that they largely influence which energy systems are preferred and developed, such as the smart grid system in the LIFE project, and the extent to which this is considered just. This limits local governments as this top-down approach through governance levels leaves municipalities with little room to start at the bottom and see what would suit local residents from a justice perspective. In addition, national legislation is vital in setting the legal framework for operating. For the LIFE project, this poses barriers to enabling residents to share and donate energy. Local governments are also limited by their financial resources, for which they largely depend on national funding.

At the same time, municipalities also have many opportunities as they decide on the local strategy and have the most direct power over local infrastructures. The study showed that mainly financial-economic and communicative instruments are considered useful. For instance, municipalities can use those to target specific disadvantaged groups such as those living in energy poverty. Interestingly, municipalities often do not use their legal policy instruments to implement elements of energy justice, but this could be a way to enlarge their influence. For instance, they could demand that local energy projects include specific social objectives. For the LIFE project, local municipalities could use their policy instruments broader than they currently do. Altogether, it can be said that local governance actors have little influence in determining the overall direction of the energy transition and energy justice within this. However, they still have some influence over the local effectuation as they can effectively use their policy instruments to promote distributional, procedural and recognitional justice.

6.3. Practical implications

6.3.1. Implications and recommendations for the LIFE project

Based on the results, recommendations can be made to the local governance actors involved in the LIFE project. Currently, the LIFE governance actors focus on potentially including residents in the form of a collective organization such as an energy community. For instance, current ideas of the LIFE project include that residents could share and donate energy among themselves in the form of energy communities and that electric vehicles parked at the JCA

could be enabled to donate energy to those energy communities. As the results showed that this collective organization is (1) not in line with the values of local residents and (2) limited by the current legal framework, this is not seen as a feasible pathway to make the LIFE project truly inclusive. Furthermore, as a collective organization in energy communities will most likely only reach those who are homeowners, already have the financial resources, interest in saving energy and technological capabilities, a large part of the neighbourhood who lack those characteristics will be left out of benefiting from the project. Thus, if the LIFE project does not consider this, they risk increasing inequalities within the neighbourhood. Therefore, it is recommended to not focus on collective organizations but strengthen the neighbourhood from a broader societal perspective by exploring collaborations with other community initiatives.

Moreover, it is recommended that the LIFE project uses policy instruments that are within the power of local governments to improve distributional, procedural and recognitional elements of energy justice. Whereas it is outside of the power of local governments to change the current legal framework surrounding the LIFE project, they could look at how local policy instruments can be used to create lines of action that align with the values of local residents. Both resident representatives and local governance actors value that profits of the LIFE project are brought back in value to the neighbourhood, highlight the importance of affordability, the creation of local job opportunities, working with local initiatives and including those with little financial resources, non-Dutch speaking and those with little technological capabilities. Local policy instruments that would fit with this are distributing vouchers and subsidies, implementing energy coaches, supporting local resident initiatives, working with local cultures, organizing neighbourhood events, targeting specific disadvantaged groups, working with key figures in the neighbourhood and investing in non-energy-related social issues in the neighbourhood. Exploring potential ways to implement this recommendation can mean that adjustments must be made to the current plan. For instance, instead of visitors who park their electric vehicles at the JCA donating energy directly to local residents in the form of a collective, they could be provided with the option to deliver the energy back to the JCA but then donate the gains of this transaction to local community centres or other social initiatives in the neighbourhood. Alternatively, as residents highly value financial elements, the value of those transactions could be used to do a yearly pay-out to all the residents in the neighbourhood of Venserpolder.

6.3.2. Policy recommendations

Apart from the recommendations for the LIFE project, some recommendations can be made for policy-makers globally. First, even though this research focused on the role of local governance

actors, it was found that national and international government organizations greatly influence the direction of the energy transition. It is recommended for international and national policy-makers to do more research on how the direction of the energy transition will influence local residents, especially more vulnerable groups. This research showed that local energy solutions still have many barriers to being inclusive for local residents and aligning with elements of energy justice. It is recommended to have a broad societal focus and connect energy initiatives to social community initiatives that strengthen neighbourhoods from a social perspective. Cities are crucial places for the global energy transition, and as transitions have such significant societal impacts and can enlarge inequalities, it is essential to consider justice issues.

For smart grid systems, this research showed that there was a narrative that they can provide residents with the opportunity to save energy and become more sustainable. However, the demographics of the neighbourhood also showed that economically vulnerable residents often already use relatively few energy sources. This makes it seem unjust that large energy users, such as businesses, will be able to profit from a smart grid system, whereas this is less accessible to local residents. This has significant implications, as smart grid platforms are highly researched and implemented globally. If policy-makers want to implement a strategy more in line with elements of energy justice, smart grid platforms might not be the suited approach. Thus, it is recommended for governance actors on all levels to either look at other strategies and energy systems that are more suited to fit with elements of energy justice or to explicitly connect smart grid platforms to social initiatives and integrate elements of energy justice within their implementation.

6.4. Theoretical implications

When comparing the result of this research with previous studies, some overlaps and differences can be found. Previous research showed a reoccurring theme of lacking the consideration of economically vulnerable groups (Catney et al., 2013; Islar et al., 2017; Hanke & Feenstra, 2021; Siciliano et al., 2021) and local inhabitants (Rash & Köhne, 2017). Interestingly, the results of this study showed that in this case, both economically vulnerable groups and local inhabitants were explicitly considered, and an active effort was made to research how to include them potentially. Difficulties arose, however, in translating this into practice. Like the study of Siciliano et al. (2021), this study showed a mismatch between the values of local governance actors and resident groups. The finding that it is challenging to include the residents of Venserpolder in the LIFE project is in line with the study of Milchram et al. (2018), who concluded that the benefits of smart grids might be limited to affluent groups of society. The

studies of Milchram et al. (2018) and Hanke & Feenstra (2021) showed how targeting first-mover consumers could lead to an incorrect reflection of the potential of the energy system. In addition, the findings of this study are in line with Milchram et al. (2018), showing that outdated regulations and legislation limit the access of small users to smart grids. Comparing the results with previous studies shows that more research is needed on making smart grids and local energy markets accessible to all groups of society.

As a relatively new concept (McCauley et al., 2013), energy justice and the three tenets can be considered valuable for analysing values underlying energy systems. Hanke & Feenstra (2021) critically noted that recognitional energy justice is highly intertwined with distributional and procedural energy justice, as it forms the basis of both; without recognitional justice, those who are not recognized are not included in the decision-making and do not receive fair benefits. Interestingly, this study showed that while local governance actors were aware and recognized potentially vulnerable groups within residents in Venserpolder, this did not automatically lead to them being included. Thus, even though recognitional justice is intertwined with the other tenets, it does not mean that recognition automatically leads to procedural and distributional justice. An additional effort must be made to include them (procedural justice) and provide them with benefits (distributional justice).

The concept of MLG was beneficial to increase knowledge on the role of local governance actors in promoting just energy transitions. It was already known that municipalities have an essential role in local energy transitions (Staden, 2017) and that their authority can be influenced by other levels of governance (Bulkeley & Betsill, 2005 & Schakel, 2015). This study added to that by analysing their role in promoting energy justice. Results showed that local governments can choose what energy systems will be included in their local strategy. However, they have little influence on the overall direction of the energy transition and which energy systems are promoted in this. They can enhance their influence on different elements of energy justice by implementing a broad range of policy instruments. Being the closest to neighbourhoods and their residents, they have the most insight into how the energy transition affects various groups. Therefore, their insights are essential for providing feedback to national and international levels of governments. As described in the theoretical framework, criticism of the MLG includes that it has a bias in emphasizing the role of public authorities over other economic and societal actors, which limits its explanatory potential (Börzel, 2020). Nonetheless, for this research, it was considered a highly relevant concept as it helped explore what local governments can do within their authoritative power to implement elements of

energy justice. It could be, however, be interesting to also look at how, e.g., economic actors influence the implementation of local energy justice. All in all, the MLG perspective was a helpful tool to explore the actual power of different governance levels and could be applied in different geographical contexts as well.

Lastly, something can be said about the relevance of combining the concepts of energy justice and MLG in one study. This showed to be highly relevant; whereas studying energy justice showed what was considered to be just by different actors, studying MLG showed which elements of energy justice local governance actors can influence energy justice and which elements are out of their power. Not combining the two concepts could have led to either unjust or unrealistic policy recommendations.

6.5. Limitations and future research recommendations

6.5.1. Potential rival explanations

The results of this research could have been impacted by the early stage of the development of the LIFE project. As a research project that is, at the time of the thesis, only in its first year of development, there were still many uncertainties about the project's design. This also meant that local residents were not yet included and unaware of how the LIFE project could affect them. This lack of clarity could have impacted the results so that resident representatives were less inclined to mark positive elements of the project simply because there are still so many uncertainties. However, the research dealt with this by asking what residents would value regarding energy in general, which could be related to the LIFE project. In this way, a relevant comparison could be made to the values of local governance actors, who did have a better idea of the potential design of the LIFE project. Moreover, the early stage of the development of the LIFE project also provides an opportunity for additional interesting insights into the governance process. It would be expected that within a project that is still being developed and has the explicit goal to include local residents and be socially inclusive, there would be more consideration and effort to include local residents so far.

Secondly, due to the time limitation of this research, the early phase of the LIFE project and the high research density in the area, it was considered unfeasible – and potentially harmful to future research of the LIFE project - to represent the local residents directly. Whereas local governance actors and resident representatives were interviewed, the results for the residents were based on an existing survey and a video of a local information evening. This could have impacted the results as the residents were not asked the same questions as the resident

representatives. However, it is still a valid approach as a survey is more suitable for representing a large group, while the other actor groups were specialist functions. Furthermore, the questions in the exiting survey were relevant for the LIFE project, as they reflected values about the energy transition and neighbourhood initiatives. For future research, especially within the LIFE project, it is encouraged to include the residents directly, for instance, by organizing a focus group.

6.5.2. Methodological limitations

This research knows some methodological limitations. First of all, whereas a case study is effective for analysing energy justice issues in a specific locality, its results are not generalizable for all energy projects within the current energy transition. The scope of this research was limited because it only looked at a specific energy system in a specific locality and only looked at vertical MLG. It focused on the municipal scale and individual values within this. The MLG part of this research can, to a certain extent, be generalized for countries in the EU, as they fall under the same vertical MLG context, but cannot be generalized to other parts of the world where different governance structures and relations between levels might exist. However, this research showed the importance of looking into the values of energy justice in localities and the role of local governments in this. There are promising areas for future research to study the relationship between energy justice and MLG from different perspectives. For instance, a focus on the influence of private actors on elements of energy justice within the creation of energy policy or a focus on the role of national governments in promoting energy justice could add valuable knowledge. Moreover, energy (in)justice can also occur between countries, which could add another interesting perspective.

Hodkinson & Hodkinson (2001) describe that a disadvantage of case studies can be that the large amount of data can be challenging to analyse and represent in a simple manner. In this study, it was also difficult to synthesize all the values in one coherent overview. This was especially the case because not all interviewees expressed the same values or concerns and brought in their own perspectives. This also relates to something mentioned by one of the interviewees, who stated that residents cannot be considered a homogenous group, as there are many differences among them (W. Methorst, pc, April 19). This study presented the result of both local governance actors and residents as homogenous groups. This was dealt with by giving special attention to ensuring that the results were representational for most of the interviews and that contrasting opinions were mentioned. However, presenting them as homogenous groups could still have led to some generalizations. Even though this approach

67

was valid and effective in comparing results between the two groups, it would be valuable to gain more insight into the differences within groups. This could lead to a better idea of how different groups of residents could benefit from such a project.

Lastly, there are some limitations in interpreting when something can be considered just. Van Uffelen et al. (2022) explain that the energy justice framework provides the three tenets as 'empty boxes' in which values usefully can be categorized, but it lacks the normative foundation to evaluate which claims could be considered legitimate. In this research, the choice was made to follow the perspective of the local residents, which leads to the following reasoning: if local governance actors want to implement elements of energy justice that align with the view of local residents, then they should implement X. A more comprehensive approach could include other perspectives, such as small local businesses. Moreover, the study of Van Uffelen et al. (2022) follows a different approach. It introduces the concept of 'normative uncertainties', which is defined as "situations where there are different partially morally defensible -- but incompatible -- options or courses of action, or ones in which there is no fully morally defensible option" (Taebi et al., 2020, p.1). They argue for deeper exploring normative assumptions under claims of (in)justice and provide five categories of normative uncertainties to distinguish between warranted and unwarranted claims of (in)justice, which is considered to be important as (in)justice studies often provide recommendations to decision-makers. Unfortunately, applying this method was out of the scope of this research. However, it would be interesting for future research as it would provide more in-depth information about why different stakeholders have different values on what is considered just.

Chapter 7. Conclusion

This research aimed to gain a deeper understanding of how local governance actors understand and contribute to elements of energy justice and how other levels of governance influence this. This was done by analysing a case study, the LIFE project in the municipality of Amsterdam, which aims to develop an energy platform for the neighbourhood and explicitly includes social goals. This study specifically focused on whether the LIFE project could be considered just for the local residents in the neighbourhood. The methods included desk study, interviews and the analysis of additional data. To answer the main question, "*How is energy justice understood by local governance actors of urban low-carbon energy transitions and how is its implementation influenced by a multi-level governance context?*" the results were divided into two parts. The first part examined how local governance understood energy justice in the case study. First, a short literature review looked at energy justice in similar cases and the Dutch context, which helped design the interviews. Then, interviews with local governance actors of the LIFE project were conducted to determine their values regarding the energy platform. Those values were categorized according to the three tenets of energy justice; distributional, procedural and recognitional energy justice and were compared to the values of resident representatives and residents. The second part of the research looked at the influence of an MLG context. This was done by identifying the different levels of vertical governance; the European, national and local level and analyse the authoritative power of each. After that, local policy instruments were identified within the authoritative power of local governments to promote just transitions.

It can be concluded that the implementation of energy justice is influenced both by the understanding of local governance actors and an MLG context. Even though it is an explicit goal of the LIFE project to include local residents, the results showed that among local governance actors, there was a different emphasis on the importance of including local residents and specifically vulnerable groups among them. Furthermore, the values of local governance actors relating to distributional energy justice were relatively narrow and differed most from those of resident representatives and residents. Whereas they saw the main benefit for residents was that they could get the opportunity to organize themselves collectively, this was not reflected in the values of residents. This discrepancy reflects a lack of aligning their view of what is considered just with the view of local residents. The current MLG context influences the local implementation of elements of energy justice by deciding on the leading strategies and direction of the energy transition, funding and setting the legal framework in which local

governance actors have to operate. Local governance actors are, however, more influential over elements of energy justice within the local implementation of energy strategies and projects, as they can use their policy instruments to decrease financial inequalities, improve elements of procedural justice and specifically target disadvantaged groups by promoting social initiatives.

All in all, local governance actors could do more to promote just transitions by enhancing their understanding of energy justice and broadening the implementation of their available local policy instruments. It can be said that even in energy projects that specifically include social goals, this does not necessarily mean that it can be considered just for local residents. It is crucial to remember that all strategies and energy systems promoted by governments have normative assumptions underlying them and influence which groups benefit from the energy transition and which groups stay behind. When cities undergo such rapid change, it is important to stay critical and promote justice within energy transitions.

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Table 5. Description of partners as provided by the LIFE project (LIFE, 2020)

Name of Partner	Type of organisation	Role in project
Johan Cruijff ArenA (A)	SME	The JCA is responsible for overall project coordination, providing a major site for the living lab, and plays a significant role in the project's dissemination.
Spectral (A)	SME	Spectral as the main technology provider is responsible for the development and coordination of LIFE Results 1, 3 and 5.
Alliander (A)	Large Company	As a grid operator, Alliander is the partner with energy distribution responsibility and will lead the development and implementation of Result 4.
TU Delft (A)	Research organisation	TU Delft is responsible for the development and coordination of Result 2.
AMS Institute (A)	Research organisation	AMS carries several responsibilities within the LIFE project and is responsible for the development and implementation of Result 7.
Utrecht University (A)	Research organisation	Utrecht University is responsible for the development and coordination of Result 6.
Municipality of Amsterdam (B)	Government	Amsterdam participates as city-coordinator, driving force and facilitator. Amsterdam contributes significantly to governance aspects and dissemination (Result 7).
Amsterdam Energy ArenA (A)	SME	The Amsterdam Energy ArenA (AEA) is responsible for the Energy Storage System (ESS) and all energy services that go with it. Main focus on Result 1, 2 and 3.
COForce (A)	SME	CoForce engages the residents of Venserpolder for the project by contributing to Results 1, 2, 3, 6 and 7.
EnerTranS (A)	SME	EnerTranS is responsible for developing the district heating grid within the Schiebroek area in Rotterdam and contributes to Result 5.
Hedgehog Applications (A)	SME	Hedgehog is develops an energy storage system aimed at storing (brake) energy from trains, trams and metros, and contributes to Result 5.
Municipality of Rotterdam (B)	Government	The municipality of Rotterdam is involved as a facilitator for the inclusion of Schiebroek in LIFE, and will contribute to governance aspects and dissemination (Result 7).

Appendix B

Table 6. List of identified stakeholder types and roles in the project (LIFE, 2020)

nr	Group	Stakeholder	Role	Importance (high, medium, low)	Position (for, against, neutral)	Degree of influence (high, medium, low)	Participant in project yes / no
1	Municipality	Municipality of Amsterdam and Rotterdam	Policy maker, initiator, legislator	H	F	H	Yes
2	DSO/grid owner	Liander / Stedin	Asset owner - energy infrastructure	H	F	M	Yes, Liander. Stedin knowledge partner
3	Asset owners - built environment	JCA / Amsterdam Energy ArenA	Asset owner - event location (initiator)	H	F	H	Yes
4	Asset owners - built environment	Real estate developers UID (Ballast Nedam / AM)	Real estate-developers	M	F	M	No, letter of support from AM
5	Asset owners - built environment	Smart Mobility Hub	Area-development	M	F	M	No, letter of support
6	Asset owners - built environment	Real estate-owner homes and offices	Asset owner built environment	M	F	M	Yes, ING Letter of support Ziggo Dome
7	Residents, tenants and businesses	Tenants / users offices	User assets	M	N	M	Yes
8	Residents, tenants and businesses	Residents	Indirect and direct users of the platform	M	N	L	Yes, indirect via CoForce
9	User Platform	Bus companies in the area e.g. GVB/FLIXbus/ Connexxion	Public transport – energy customer	M	N	H	No, letter of support from Connexxion and VRA
10	User Platform	ING	Users & flex provider	M	F	H	No, letter of commitment
11	Energy companies	Energy retailers, cooperatives and collectives	Selling of electricity to local consumers (and buying from local producers)	M	N	M	No, letter of support from local energy collective 'om | nieuwe energie'
12	Tech developer, system integrator & platform developer	Spectral / Hedgehog	Developer of LIFE platform and connected applications / systems	H	F	H	Yes
13	Applied research & modelling	TU Delft & Universiteit Utrecht	Digital Twin developer / Governance research	H	F	H	Yes
14	Knowledge dissemination & replication	The DRAGLOW consortium	Peer learning & input for the platform design principles	M	F	M	Yes, EnerTranS and municipality of Rotterdam

Appendix C

Table 7. Overview of the interviewees

Role	Interviewee	Organization	Interview date
Energy justice expert	Udo Pesch	TU Delft	19/04/2022
Energy justice expert	Nynke van Uffelen	TU Delft	26/04/2022
Local governance actor	Hans Roeland Poolman	AMS Institute	25/04/2022
Local governance actor	Tim Oosterop (JCA)	Johan Cruijff Arena	13/04/2022
Local governance actor	Project Manager	Local government	07/06/2022
Local governance actor	Richard Ruijtenbeek	Municpality of Amsterdam	23/05/2022
Local governance actor	Annoesjka Nienhuis	Municipality of Amsterdam	16/05/2022
Local government representative	Laura den Ouden	Municipality of Amsterdam	01/05/2022
Local government representative	Maaike Vallenduuk	Municipality of Amsterdam	18/05/2022
Resident's representative	Wouter Methorst	CoForce	19/04/2022
Resident's representative	Participation Advisor	Local government	01/06/2022
Resident's representative	Baudouin Knaapen	Stichting !WOON	16/05/2022
Resident's representative	Researcher	Dutch University	17/05/2022

Interview Guide - Dutch version

Introductie

- Nogmaals bedankt dat je de tijd neemt om mee te doen aan dit interview. Ik zal even een korte introductie doen. Momenteel schrijf ik mijn scriptie voor de master Sustainable Development aan de Universiteit van Utrecht. Hiervoor doe ik onderzoek naar rechtvaardigheid binnen de stedelijke energie transitie, en met name wat de rol van de lokale overheid hierin is aangezien beleid voor de energiesector op meerdere niveaus wordt gemaakt. Ik doe dit onder begeleiding van Sanne Akerboom. En ik doe dit dus met het LIFE project als een casestudie, omdat hier expliciet het doel is om dus duurzame transitie samen te laten gaan met sociale verbetering.
- Heb je nog vragen voor we beginnen met het interview?
- Dan start ik nu de opname, ben je daarmee akkoord?

Algemeen

- Kan je me wat meer vertellen over jouw rol en wat je doet (evt. binnen LIFE)?
- Wie zijn de bewoners die beïnvloed worden door het LIFE project? Hoe ziet de wijk eruit?

Energy justice

- Hoe definieer jij energierechtvaardigheid? / Wat zijn volgens jou de 'rechtvaardige' of sociale elementen in het LIFE project?
- Wat zijn de voor en/of nadelen voor de lokale bewoners van zo'n project?
- Wat is jouw algemene indruk van het contact met bewoners van Venserpolder als het gaat om de energietransitie?
- Als je het dan hebt over participatie. Hoe denk jij dat mensen in Venserpolder betrokken willen worden bij de energietransitie en aardgasvrije wijken? In het algemeen maar ook bij bijvoorbeeld een project als LIFE?
- Met LIFE wordt ook gekeken naar hoe je de besparingen van zo'n project weer terug zou kunnen brengen in de wijk. Welke voordelen willen deze mensen?
  - E.g. geld op de rekening, steun bij transitie, meedoen op een energiemarkt
- Merk je veel verschillen tussen de wensen van bewoners onderling?

- Hoe kan je ervoor zorgen om de behoeften van economisch kwetsbare groepen mee te nemen? Dit zijn vaak groepen die geen tijd hebben om actief mee te praten omdat zij andere zorgen aan hun hoofd hebben.

MLG

- Zijn er dingen waar jullie tegen aanlopen gerelateerd aan beleid, als het gaat om het meenemen van de wensen en behoeften van de lokale bewoners in Venserpolder in het LIFE project?
- Ik ben ook een beetje aan het kijken naar het gezag dat de gemeente heeft om meer rechtvaardig beleid te voeren als de behoefte daar is.
  - o Hoe past het LIFE project binnen Europese en nationale beleidsplannen?
  - o Hoe staat volgens jou de gemeente in relatie tot overheidslevels van nationaal of Europees niveau als het aankomt op beleidsinstrumenten die nodig zijn om LIFE te bewerkstelligen?

Lokale beleidsinstrumenten

- Wat voor soort beleidsinstrumenten heeft een lokale gemeente als het gaat om het rechtvaardiger maken van de energietransitie?
- Distributie
  - o Stel dat de bewoners van Venserpolder graag financiële voordelen willen ontlenen aan het LIFE project, wat zouden beleidsinstrumenten te zijn om dit te organiseren?
  - o Wat betreft beleidsinstrumenten van de lokale gemeente, ik heb gehoord dat veel subsidies vooral de mensen bereiken die al interesse en vermogen hebben en dat lagere inkomens hier alsnog niet echt van kunnen profiteren. Welke beleidsinstrumenten heeft de gemeente om ook de lagere inkomens te bereiken en te helpen in de energietransitie?
  - o De meeste beleidsinstrumenten lijken toegespitst op woningeigenaren, zijn er ook beleidsinstrumenten die zich kunnen richten op huurders?
- Erkenning
  - o Hoe kan je vanuit de gemeente ervoor zorgen om de behoeften van economisch kwetsbare groepen of anderstaligen mee te nemen?
- Participatie
  - o Wat gaat goed en kan beter aan het huidige participatieproces?

      o   Welke beleidsinstrumenten heeft de gemeente om bewoners op een eerlijke manier te betrekken in het besluitvormingsproces?

Afsluiter

- Is er nog iets wat je wil toevoegen, wat ik nog niet benoemd heb?

Interview Guide – English version

Introduction

- Thanks again for taking the time to participate in this interview. I will do a brief introduction. Currently, I am writing my thesis for the master Sustainable Development at the University of Utrecht. For this, I study energy justice within the urban energy transition, in particular looking at the role of local governments in enabling this, as energy policies are made at various levels of governance. I do this under the guidance of Sanne Akerboom. I chose the LIFE project as a case study, as it has the explicit goal to combine the sustainable transition with social improvement.
- Do you have any questions before we start the interview?
- Do you agree with me now starting the recording?

General

- Can you tell me a bit more about your role and what you do (within LIFE)?
- Can you tell me a bit more about the residents affected by the LIFE project? What does the neighbourhood look like?

Energy justice?

- How would you define energy justice? / What do you think are the 'just' or social elements of the LIFE project?
- What are the advantages and/or disadvantages for the local residents of such a project?
- What is your general impression from the contact with residents of Venserpolder how they feel about the energy transition?
- When it comes to participation. How do you think people in Venserpolder want to be involved in the energy transition? In general but also in a project such as LIFE?

- The LIFE project also looks at how to bring value from the project back in the neighbourhoods. What kind of benefits do you think that local residents would want?
  - E.g. money, support in the transition, participating in an energy market
- Do you know many differences between the wishes of residents?
- How can you ensure that the needs of economically vulnerable groups are included? These are often groups that do not have time to actively participate as they have many other concerns on their mind.

MLG

- Are there any issues you encounter related to policy when it comes to including the wishes and needs of the local residents in Venserpolder in the LIFE project?
- I am looking into the authority that the municipality has to implement more just policies.
  - How does the LIFE project fit within European and national policy plans?
  - How would you say does the municipality relate to national or European government levels when it comes to policy instruments that are necessary to realize the LIFE project?

Local policy instruments

- What kind of policy instruments does a local municipality have when it comes to making the energy transition more just?
- Distribution
  - Suppose the residents of Venserpolder would like to derive financial benefits from the LIFE project, what policy instruments could enable this?
  - I have heard that many energy related subsidies mainly reach the people who already have an interest and the financial resources and that lower incomes often cannot really benefit from this yet. What policy instruments does the municipality have to also reach lower incomes?
  - Most policy instruments seem to be aimed at home owners, are there also policy instruments that can be aimed at tenants?
- Recognition
  - How can the municipality ensure that the needs of economically vulnerable groups or non-native speakers are included?
- Participation

- o What is going well and what could be improved in the current participation process?
- o What policy instruments does the municipality have to involve residents in the decision-making process in a fair manner?

Closing

- Is there anything you would like to add that I haven't mentioned yet?

Appendix E

Data Management

1. Will this project involve re-using existing research data?
   ☐   Yes: Are there any constraints on its re-use?

   ☒   No: Have you considered re-using existing data but discarded the possibility?

   Why?

Existing data is used to gain a general overview on topics such as MLG and energy justice. However, no data is available on how MLG and energy justice relate. Furthermore, no existing data is available regarding the specific case study. To gain in-depth relevant knowledge on this specific case study, collection new data is needed.

2. Will data be collected or generated that is suitable for reuse?
   ☐   Yes: Please answer questions 3 and 4.

   ☐   No: Please explain why the research will not result in reusable data or in data that cannot be stored or data that for other reasons are not relevant for reuse.

3. After the project has been completed, how will the data be stored for the long-term and made available for the use by third parties? Are there possible restrictions to data sharing or embargo reasons? Please state these here.

Data collected during the proposed research project

Data collected will consist of recorded interviews.

Use of data

Once the interviewee or participant has consented to the use of the data, the data will be used in the master's thesis and presentation, and potentially in (academic) publications. Interviewees will have to consent to this use. Before participation, interviewees will receive an Information and Consent Form, explaining the goal of the research project, the aim of the activity, confidentiality arrangement, storage of data and whom to contact for more information.

Interviewees are then asked to sign the consent form, agreeing to their participation, but also agreeing to the storage and use of the data gathered. The consent form will provide the interviewee with several options:

1) storing the recording or the transcript;
2) using name and other identifying data or anonymized/pseudonymized before publishing and archiving;
3) using the data gathered as research data and for the purpose of academic publishing, yes or no;
4) consent to re-use of the data for other research projects, yes or no;
5) use of excerpts from the interview in presentations, yes or no.

If the interviewee or participant cannot consent to one of the options presented in question 1 or 2, the interviewee or participant will not be involved in the research project.

Publication of data sets

The use of the data can consist of two options in relation to academic publishing: using excerpts in data analysis sections and or publishing the complete data set as appendix to the article. Interviewees/participants consent to either option when agreeing to question 3 of the consent form.

Storage of data

Once the interviewee has consented to store the recorded interview or the transcript, there are two steps to storage of the data: during and after completion of the project.

The data will be stored at the secure university network drive *during the research project*. This server is available and used extensively for this purpose. The university has ensured that this drive abides by (privacy) regulation and is backed-up daily. Only the researcher of this project has access to this data.

Once *the project is completed*, the data will be archived for a minimum of 10 years, along with relevant analysis. The data will be findable and verifiable through software that can guarantee long-term availability. In a collaboration between DANS repository and the Utrecht University library, UU's employees can store data at DataverseNL. This guarantees compliance with guidelines from the University and most research funding institutions as well as the FAIR principles.

By publishing open access and by archiving the data in DataverseNL there will be no embargo or other restrictions to the use of the data.

Information Letter

Information regarding your participation in an interview regarding 'The influence of multi-level governance on the implementation of energy justice in urban low-carbon energy transitions'.

Introduction

We are asking you to participate in an interview regarding the Sustainable Development Master Thesis research of Sannah van der Wal from the University of Utrecht.

What is the background and aim of the research?

The research is about the influence of multi-level governance processes on the implementation of elements of energy justice by local governments. Energy justice is about the moral and social implications underlying the transition towards new energy systems. With multi-level governance, it is meant that the urban low-carbon energy transition is being governed through multiple levels of governance (e.g. local, national and European policies). This study aims to (1) gain more insight in the understanding, willingness and authoritative power of local governance actors regarding the implementation of elements of energy justice and (2) explore how local governance actors interact with other levels of governance and how this might enable or constrain the implementation of energy justice within the local level of urban low-carbon energy transitions. The research is done by analysing those processes in the LIFE project.

How is the research conducted?

The interviews are intended to gain more in-depth information from experts regarding energy justice, the LIFE project or the governance process. With your consent a sound recording will be made of the interview, which will serve as the basis for citations or paraphrasations in the thesis research. In case the interview takes place online, potentially a videorecording is made. Those sound- and/or videorecording are only used with the aim of transcribing the interview.

What will be expected of you?

The interview will be conducted in one conversation during an online video meeting. The duration of the interview varies and depends on your availability, but it is expected to be conducted within one hour.

What are the potential pros and cons of participating in this study?

There are no personal pros for your participation. However, your participation can help to gain relevant insight in how the transition towards new low-carbon energy systems can occur in a just manner. Outside of the time spent on the interview and corresponding, there are no efforts needed.

Voluntary participation

Your participation in this research is completely voluntary. You can withdraw from participation at all times without stating the reasons. The same goes for the consent on the use of the interview before publication.

What happens with the collected data?

Your personal data (name and contact info such as e-mail and/or phone number) are managed by the research team. In case you wish for your data to be removed, this can be done to contact Sannah van der Wal (s.vanderwal1@students.uu.nl). Your personal data will not be spread to others who are not involved in this research.

We are obliged to save the recording and the transcription of the interview for a minimum of 10 years. You consent to this by participating in the research. If you do not want to consent to this, you cannot participate in the research.

Your data, the recording and the transcriptions of the interview will be saved and stored on a secured server of Utrecht University. Those will not be shared with you, but it is possibly to see it on request.

The interviews can be used in the results of the master thesis and presentation, and potentially in scientific publications. This can occur in two ways:

- By contributing to the general understanding and insights of the researcher (in this case there will be no reference to the interview)
- By providing specific information derived from the interview or by quoting or paraphrasing excerpts from the interview. This usage requires a source reference, stating with whom, where and when the interview has taken place. If you do not want your name to be mentioned, it is possible to ask the researcher to only mention your role and a description of your organisation. If you do not agree to that, you cannot participate in this research.

The transcripts will not be shared with other researchers.

Is there a compensation for participation in this research?

There is no compensation for participating in this research.

Complaint procedure

In case you have questions regarding your rights as participator in this research or if you have any concerns regarding the way in which participants in this study are treated, you have the option to send an e-mail to the privacy officer of Utrecht University: privacy@uu.nl.

More questions?

If you have any more questions regarding this research (before, during, or after the interview) you can reach out to Sannah van der Wal (s.vanderwal1@students.uu.nl)

Attachments

Consent form regarding your participation in the interview.

Appendix G

Consent form

CONCENT FORM for participating in: ''The influence of multi-level governance on the implementation of energy justice in urban low-carbon energy transitions'.

I confirm:

- That the information letter has sufficiently informed me about the research;
- That I have been able to ask questions regarding the research and that my potential questions have been answered sufficiently;
- That I have been able to think thoroughly about my participation in this research;
- That I participate voluntarily

I agree that:

- The data collected for academic purposes is obtained and stored as stated in the information letter;
- Video (in case of video-interview) or sound recordings are also made for academic purposes. These recordings are only intended to enable the research to transcribe the interviews. The recordings will not be shared with others;
- The collected data (the interview transcripts) can be processed in scientific publications. References are made to the person's name, the place and the date on which the interview occurred. If you do not want your name to be mentioned, you can ask the research team to only state your role in the participation process and a description of your organization. To do this, see next page.

I understand

- That I have the right to cancel my participation at all times without a statement of reason;
- I have the right to view the way in which my data is stored;
- I have the right to withdraw my consent to the use of data, as stated in the information letter.

Name participant: _____

Signature: _____   Date, place: ___/___/___, _____

Statement regarding the reuse of data:

To be completed after the data collation has taken place (please tick as appropriate and sign below).

(1) Do you give your consent that both the recording and transcription of the interview will be a minimum of 10 years stored and stored on a server secured by Utrecht University?

[ ] Yes, I give my consent.
[ ] No, I do not give my consent.

(2) The collected research data (the interview transcripts) can be used in scientific publications

[ ] My name and the place and date of the interview may be mentioned.
[ ] I would like to only be referenced to as my role in the participation process and a description of my organization

Signature: _____

Appendix H

Coding tree

General

- Information neighbourhood
- Discussion points

Energy Justice

- Distributional
- Procedural
- Recognitional

MLG

- Local
- National
- European
- Constraints local government

Local policy instruments

- Distributional
- Procedural
- Recognitional