

Reflections

Reflection is an integral part of realizing the integrity of the project, not only for further in-depth thinking about the significance of the project, but also allows for the organization of all the achievements and challenges during the project, providing a valuable foundation for future research or professional work. I will reflect on the project's **Scientific & Societal Relevance, Methodology, Transferability, Studio & Course and My Position as an Urbanist**.

Scientific & Societal Relevance

The energy transition is both an ambitious and urgent challenge. While it has been widely discussed and implemented from scientific and technical perspectives, I observed a major gap between policy goals and reality in the Netherlands. The EU has set a target for 42.5% renewable energy consumption by 2030, yet the Netherlands currently lags behind, falling below the EU27 average. This motivated me to focus on wind energy—the most promising renewable energy source in the country—as the entry point of my research, aiming to understand its delayed development.

By analyzing government reports, I identified seven contributing factors, among which *grid congestion* and *public opposition* stood out. These two issues are importantly related to energy planning and the just energy transition, and they also have a real impact on the energy transition in the Netherlands, yet they are rarely examined together in current literature. Therefore, this represents a critical research gap in the current research on the dilemma of renewable energy development in the context of the just energy transition.

To address this, I adopted the concept of **energy communities**—a relatively new model only formally recognized in the EU's Clean Energy for All Europeans package in 2019. There have been a large number of pilot projects opened in EU countries in recent years, positioning energy communities as an innovative solution for engaging citizens in grid management. Energy communities are resident-centered and make extensive use of decentralized technology, which essentially helps to eliminate opposition to renewable energy installations and reduce the load on the main grid.

However, energy communities remain experimental, facing challenges in participation mechanisms, policy support, and planning approaches. Therefore, I propose a systematic strategy framework for energy community development, including a more comprehensive system of resident participation, energy community scale-up strategy, and complementary planning and design tools.

The energy transition is not only a policy issue but one that deeply impacts

everyday life. Recent geopolitical conflicts have increased the cost of living, particularly energy prices in the EU, further highlighting the need to accelerate renewable energy development. This project aligns with that need at multiple levels: the goal of a just energy transition, a research question that centers public opposition, and methodological choices that prioritize stakeholder engagement and community empowerment.

I start from a broad issue of energy transition to concrete, community-based analysis, and finally implement it in the development and construction of energy communities, and put forward feasible and practical strategies, which can play a certain reference for both residents who want to participate in the energy transition, developers or investors who want to understand or adopt the energy community, and even policy makers who make decisions in the energy transition implications.

Methodology

Choosing the right research methodology is challenging but at the same time very important, especially for this project. As I am an international student from a different cultural and social background, it took more time and effort to understand Dutch energy transition and the dilemma of renewable energy development in the Netherlands, and even more time-consuming to find an appropriate research methodology after establishing the research question. Fortunately, with two years of systematic study at Urbanism and the help of my mentors, I was able to establish a methodological framework for my research and revise my methodology during the process of my study.

The methods outlined in Chapter 3 were thoroughly implemented throughout the project. Among them, **Literature review** was a backbone methodology, supporting everything from framing the research question to strategy formulation. In Chapter 4, **Stakeholder Analysis, Case Studies, Analytical Mapping, Fieldwork, and Policy Document Review** collectively enabled a multidimensional analysis of Dutch energy communities. These methods provided a comprehensive understanding of current conditions, challenges, and future opportunities. In the final Strategy & Design chapter, I also applied scenario making and expert review to evaluate my strategy.

The role of this multidimensional analysis was especially pivotal. Here I used case studies to examine both successful and failed energy community projects in the Netherlands, deriving insights into factors that influence outcomes. Through field work I participated in a residents' meeting on the

implementation of an energy community project and interviewed one of the project leaders, which helped me understand the reality of the current problems and future potentials of energy community development in the Netherlands. Stakeholder analysis clarified which stakeholders are essential to energy community development and the extent of their needed involvement. Through analyzing and researching the policies, I found out the positive new policies and the insufficiencies of the policies for the development of energy communities, which gave me space to think about the development of the strategies. Additionally, by focusing on the North-Holland South region and applying GIS-based spatial analysis, I was able to identify more potential development areas based on existing energy plans that meet a variety of constraints; these analyses provided me with a solid foundation for my subsequent strategy proposals.

Transferability

In the context of the Netherlands, this research is highly transferable. The project's scope, regional focus, and targeted stakeholders are all rooted in the Dutch context, particularly North-Holland South. The documentation of research processes, data sources, and analytical tools allows for replication or adaptation in other Dutch regions. The detailed documentation of the project's development and the sources of data for each analysis will help subsequent researchers to replicate the process in other regions.

Beyond national borders, the research also holds international relevance. As the renewable energy sources of interest in the project, wind energy, and in the subsequent analysis and strategy chapters, solar energy, are currently the dominant renewable clean energy sources with the greatest potential for development. They are also widely used around the world. Energy communities built upon them are conceptually and practically adaptable across democratic societies. However, it should be clear that because of the differences in local policies, governance frameworks, and socio-political dynamics mean that any adaptation should be context-sensitive.

Nevertheless, the grid congestion and public opposition caused by the dilemma of renewable energy development that this project hopes to solve through energy communities is a common situation, which provides a valuable reference point for global energy transition efforts.

Studio & Course

The Urbanism master program has significantly shaped my ability to approach urban challenges from multidimensional and multidisciplinary angles. In the first year, I developed the capacity to conduct research across micro, meso, and macro scales. In the second year, the graduation project helped refine my analytical thinking across regional and disciplinary boundaries.

The Planning Complex Cities (PCC) studio was a natural fit, given its emphasis

on regionalization, spatial planning, and territorial governance. The energy transition dilemmas, stakeholder conflicts, and regional governance and planning issues that I wanted to study made it suitable for me to join the studio, and it turned out to be the right choice as well. Many of the issues I focus on, grid congestion and public opposition, have strong connections to energy engineering, sociology and other disciplines. My two mentors helped me navigate interdisciplinary intersections, using energy communities as a focal point to address grid congestion and public opposition without getting too deeply involved in one discipline, and always keeping the spatial and humanistic perspectives of urbanism as the main focus. I also gained substantial multidisciplinary knowledge through this process.

My Position as an Urbanist

As I stated in the Motivation section at the beginning of the project, I believe that humanistic care is the defining quality of an urbanist. Whether tackling large-scale energy transitions or improving local community resilience through energy communities, my core motivation has been to empower residents and improve social environments.

Throughout the project, I realized that an urbanist is not enough as a **problem researcher**, as a **solution seeker** and as a **vision maker**. For instance, through stakeholder analysis and conversations with the leader of the Flexcitizen Energy Community, I discovered that many issues—such as stakeholder conflicts and the lack of attention from policymakers and DSOs—require more than spatial strategies. Therefore, I believe urbanists must also act as **mediators**, facilitating collaboration among stakeholders and communities through strategic planning and design. This belief became the core principle guiding my strategy development.

Finally, as I enter the final phase of my graduation project, I will further refine my work based on P4 defense feedback and my mentors' suggestions. I will also conduct an expert review to assess my proposed strategies and accordingly strengthen the recommendations and conclusions part of the project.