

Reflection Report

**As part of the Master Thesis: Energy efficiency renovations in privately rented apartment blocks:
how to align policy instruments to barriers?**

21/06/2023

by

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Educational institution

University	Delft University of Technology
Faculty	Architecture and the Built Environment
Master	Architecture, Urbanism and Building Sciences
Track	Management in the Built Environment
Graduation Lab	Energy Transition in the Existing Building Stock

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Relation between graduation topic and Management in the Built environment

The master AUBS at the TU Delft focuses on the field of spatial planning and the built environment. This research focuses on the building stock and how the building stock can be transformed to energy efficiency standards drawn up by governmental actors. The master track MBE is specifically related to this topic since this track explores the managerial dimension and processes involved in the built environment. This includes the analysis of stakeholders and their perception on different issues. In addition, it includes the technical and financial aspects of energy efficiency renovations. This research analyses stakeholder perceptions to draw up policy instruments to speed up energy efficiency renovations and to decrease energy poverty. My graduation topic focuses on a specific aspect of energy transition in the existing building stock, namely energy transition of private rented apartments in the Flemish context.

Energy efficiency renovations are not widely discussed during the courses of the Master track Management in the Built Environment. It was challenging to get an understanding of all the different themes related to this topic. When investigating literature, it became clear that often two perspectives were used to research the topic. 1) investigating the barriers identified by stakeholders or 2) investigating policy instruments that could stimulate energy efficiency renovations. Making this connection seemed to be a valuable research topic. However, there are many other factors that should be considered when performing research on energy efficiency renovations. In addition, there are many stakeholders involved and many building types as well.

The technical knowledge gained during my Master and Bachelor at the TU Delft, helped to understand the technical differences between building types resulting in different energy efficiency renovations. The stakeholder models presented during the master courses helped to structure the stakeholders and understand their role in the process. The governance theme, that played a very important role in this research, was very new to me. It was challenging to understand different levels, roles, and structures. Especially, since the research is conducted abroad. I noticed that my focus automatically moved more towards the barrier perspective. However, keeping the motivation to understand the governance perspective was very important for the added value of my research. The interviews with the policy experts helped to understand the governance perspective better and motivated to dive deeper into the subject.

Recommendations

During this research, other contexts have served as an inspiration for the study. Reading studies conducted in different contexts has allowed for the evaluation of a wide range of barriers and policy instruments during the empirical study. The results indicate that the context of a study does not necessarily exclude barriers but rather enables the prioritization of barriers. In the case of evaluating policy instruments, it was found that the context of the research primarily influenced the effect of the measure. The effect of this measure can be considered desirable or undesirable in different context.

For example, the lessons that the Netherlands can draw from this study are that a clear roadmap with a timeline of minimum requirements up to 2050 should be established for private renters, premiums should be supported with sufficient promotion, the EPC-bounded indexation is a tested alternative for the point system, and the renovation obligation could be implemented after the effect of this measure is shown in Flanders. This roadmap should ensure that private landlords have a clear understanding of the investments they need to make in the coming years and will also facilitate the gradual transition towards energy efficiency renovations. According to the Dutch policy expert E4 that was interviewed for this research, in the Netherlands policy experts are less afraid of disrupting the market since there is a demand for more affordable houses and less real estate investors. Implementing additional measures could reduce the profitability for real estate investors. In the Netherlands, implementation of minimum requirements could therefore be implemented sooner than in Flanders. Another lesson that the

Netherlands could learn is that when implementing premiums for landlords, these premiums should be supported by sufficient promotion since landlords do not search for premium before they decided to perform a renovation. Policy expert E4 mentioned that currently in the Netherlands, premiums are almost never requested. The EPC-bounded indexation could be a tested alternative for the point system. Implementation in Flanders highlights the positive effect of this measure. Finally, when the effect of the renovation obligation becomes more visible, the Netherlands could implement this regulations as one of the requirements on the roadmap towards an energy efficient building stock.

Evaluation of my research approach

This research started with a literature study followed by an empirical study. Looking back at this approach, it would have been useful to start with empirical research methods earlier. In literature, the relevance of speeding up energy efficiency renovations is supported by environmental ambitions and arguments. The building sector accounts for 40% of the Greenhouse gas emissions which should be reduced as fast as possible to reach climate goals. In addition, apartments in the private sector have the poorest physical state, and the people living in the private rented sector are vulnerable to energy poverty. Multiple studies can be found on barriers that reduce the speed of energy efficiency renovations and policy instruments that should eliminate these barriers. This research was set up based on this viewpoint.

During the empirical study, the specific characteristics of the private sector in Belgium became more evident. Regulations for social rent and owner-occupied houses seemed to be easily proposed and implemented while policy makers appeared to be hesitant towards the implementation of regulations in the private rented sector. At first, it seemed that the private rented sector was left out in policy documents. However, during the interviews it became clear that pushing the private rented sector into energy efficiency renovations might not lead to the aimed results. Policy makers aimed for a long-term road map that could slowly incorporate landlords to avoid disruption in the private rental market.

Although, this insight is not often mentioned in literature, this research may have been more relevant if it was focused on designing a road map for the private rented sector instead of focusing on eliminating barriers to “speed up” energy efficiency renovations.

The empirical research methods that were used in this research were a survey and interviews with renters, landlords, policy makers, and experts. Feedback that I received on this approach was that I had to increase my focus on policy makers instead of renters and landlords because of the governance aspect which is an important aspect in this research. Looking back, I think that the number of participants for the interviews with the policy makers and the specific people selected for these interviews was sufficient since I spoke to a variety of policy makers on different levels with different interests and working in different contexts. In addition, in the last interviews, no additional information was gathered since the answers were significantly overlapping. This verifies the findings from these interviews.

However, conducting the interviews at an earlier stage, would have given me the opportunity to move forward quicker and dive deeper into the subject. In the research approach, the interviews with the landlords and renters were used as input for the interviews with the policy makers. Therefore, the interviews with a policy makers took place at a later stage. Although, the input of the interviews with the renters and landlords was very useful during the interviews with the policy makers, I do not think it was necessary to split the interviews into two stages.

Finding a sufficient number of participants for the interviews with renters and landlords, was more complicated than expected. It was very hard to reach renters and landlords that were willing to participate and were not part of my personal network. Also, renters and landlords were not matched because of research ethics. Finding enough participants with suitable characteristics was challenging and stressful. However, I am proud that I managed to include vulnerable tenants in this research.

Academic and societal value, scope and implication of the graduation project, including ethical aspects

Societal value

In the past year, we saw that the energy crisis pushed low-income and middle-income households into poverty (IEA, 2022). The households in the private rented sector appear to be very vulnerable to this energy crisis (Papantonis et al., 2022). In addition, buildings are responsible for 40% of the total energy consumption and 36% of the greenhouse gas emissions from the energy used in Europe (European Commission, 2020a). Energy efficiency renovations are stimulated by the European Commission as the key solution to energy poverty and the reduction of GHG emissions (European Commission, 2020a). But the renovation is going to slow. Energy efficiency renovations are extensively researched (Ebrahimigharehbaghi et al., 2021; Nijs et al., 2021; Papantonis et al., 2022) but not much attention is paid to the private rented sector. In addition, the energy crisis made the vulnerability of private renters more evident (IEA, 2022). To reach the climate goals of 2050, it is now urgent to learn from the energy crisis to increase living standards in the private rented sector.

Scientific relevance

Research on speeding up EERs either focuses on (1) the barriers to perform EERs (bottom-up) or on (2) governance to EERs to minimize energy poverty (top-down). Research wherein speeding up EERs is researched from a bottom-up perspective, often recommends more research on the governance perspective. In addition, research from this perspective often proposes some legislations or policy instruments while the context and background of these policies is not studied.

On the other hand, literature can be found that focuses on the top-down perspective. This research studies different types of governance but does not consider the barriers that are identified from the bottom-up perspective. In addition, little research can be found on approaches to governance to minimise barriers of EERs within this specific sector. Figure 1 visualises the scientific gap that this research aims to fill in.

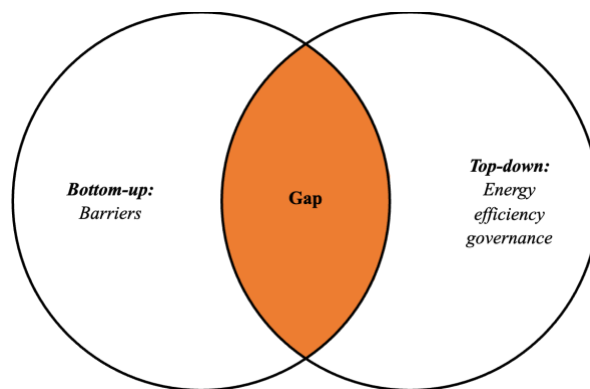


Figure 1 Visualisation of the scientific gap (source: author).

This research connects the bottom-up and the top-down perspective by researching both the barriers and energy efficiency governance. The research adds to the existing literature by focusing specifically on the PRS, investigating how policy instruments and barriers are currently aligned and can be better aligned to speed up EERs. In existing literature, policy instruments were seldomly aligned to barriers which makes it hard to determine the effect of a certain policy instrument and to propose improvements.

Scope & transferability

The scope of this research was very specific; private rented apartments situated in Antwerp. This was necessary to evaluate implemented policies within a short period. It is reasonable to expect that the results of the measures may differ. For example, in the Dutch rental markets in cities, the contract

durations are shorter than in Belgium. Adding regulations on transaction moments in the Netherlands and Belgium would logically result in different timelines. To ensure that the results of the study are properly interpreted and transferable, a chapter has been devoted to the Flemish building stock.

Personal targets

One of my personal targets was to learn about the Belgian context and legislations. I am very happy that I challenged myself to investigate a totally different context. Now, at the end of this research, I can admit that I learnt a lot about Belgium. Especially, during the interviews, I noticed that I am very aware of the legislations that are implemented in Belgium and the actors that are responsible for this implementation. Though, I think for the quality of the research, doing this research in a foreign country was extra challenging. Of course, it took longer to understand the context. But, not having a broad network, was the most challenging aspect. Fortunately, my mentor has a large network in Antwerp that helped me finding participants. One advantage of doing research abroad, was that I was less biased.

Another personal target was that I wanted to ask for more feedback. During some periods of this research, I forced myself to share my report on a weekly basis. I think that I received a lot of feedback during the whole graduation project. I found it challenging to incorporate the feedback while moving on in the process. Sometimes I noticed that I postponed next steps because I wanted to improve my work based on the feedback. Looking back, I think I could have been less afraid to just go ahead while continuing improving the report, especially with starting the interviews. Nevertheless, I am very happy that my work is reviewed multiple times because it motivated me to look critically at my work multiple times. It also gave me the feeling that my mentors were very aware of my process and progress.

Recommendations to other master students that would like to study a related subject

I would recommend students that would like to study energy efficiency renovations, to start with getting an understanding of all the topics that are related to this subject (climate goals, behavioral sciences, political sciences, welfare, technical challenges, etc.). Then, after getting this understanding, I would advise to focus on one of these aspects and search for a research gap and research question within this specific field to keep the research manageable within a short period of time. Important topics could be to study the correlation between the energy performance certificate and the real energy savings, and how people can be supported to change their behavior. Another research could investigate temporary homes for the private rental sector.

I started with designing my research question before I studied all these different aspects. Doing an extensive literature study at the start of this research is in my opinion very important because there is a lot of information available. Both in scientific literature as well as in the media or reports published by governmental or commercial organizations. My first research question was developed based on my own interest; How can a tenant play a role in increasing the energy efficiency of their home? But, the relevance of this research question was not really supported by literature. Starting with reading literature and finding a gap that interests you, will save time and frustration. Once a relevant question is drafted, I learned that it is important to keep your focus. There are a lot of topics that are related to energy efficiency renovations that made me stray from my initial focus. These topics made me doubt if I focused on the right aspects. Reading about these aspects before designing my research question would have helped to reduce distraction.

In addition, I would advise to start very early with interviewing stakeholders. Since this research field is very operational, I think the insights of the stakeholders will help to structure the literature review.