Final presentation master thesis:

Energy efficiency renovations in privately rented apartment blocks: how to align policy instruments to barriers?

Floor Rekers | 4837886 28-06-2023



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Energy effciency European building stock



Building sector is responsible for 40% of the total GHG emissions in Europe



15% Of the total GHG emissions is emitted by the residential sector



One third of the building stock is over 50 years old



8% Of the European citizens does not have access to required energy supplies



Private rented sector (PRS)

Households in the PRS face more issues with affording required levels of energy services.

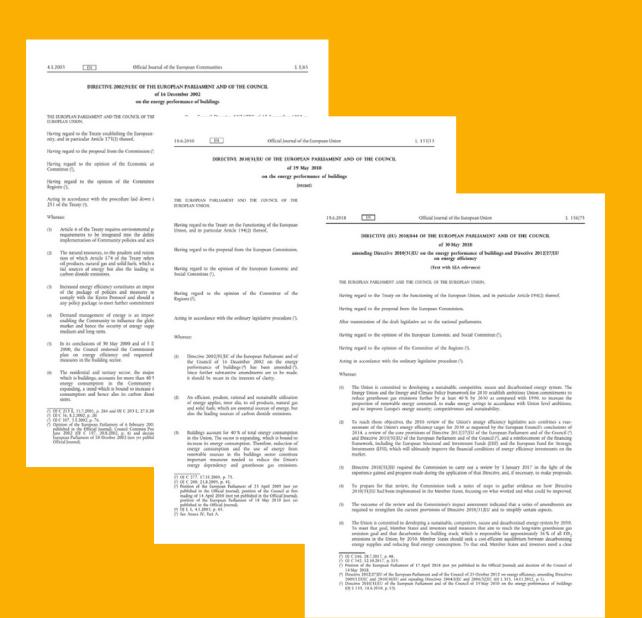
Privately rented homes are considered the least energy efficient on average across the various housing sectors





Sources: Papantonis et al., 2022

European reduction targets



2020

- 20% reduction of primary energy consumption
- 20% increase in renewable energy
- 20% reduction of GHG emissions

These goals are reached due to Covid19.

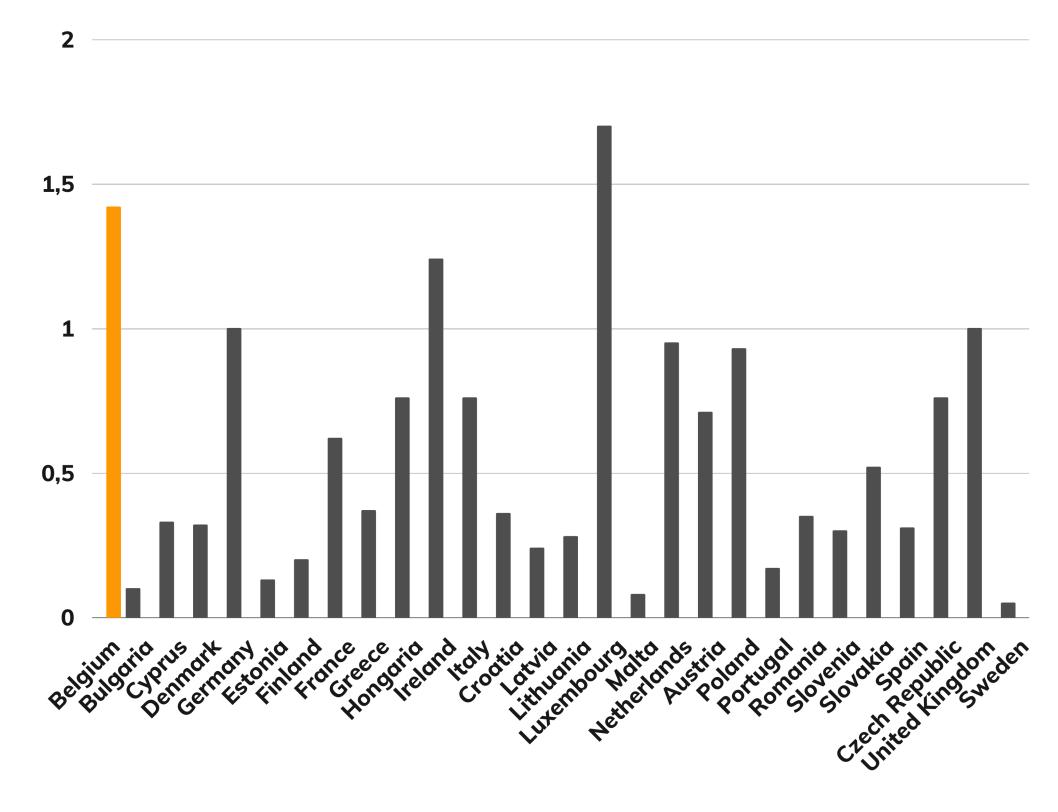
2030

- 30% reduction of primary energy consumption
- 27% increase in renewable energy
- 55% reduction of GHG emissions

Additional measures are required to reach these goals.

2050

• 100% reduction of GHG emissions



The Residential Sector in Belgium: Second Highest CO2 Emissions per Capita in Europe



Belgium

Responsibility per region

The responsibility to draw a renovation strategy is subsumed to the three Belgian regions: Flanders, Brussels, & Wallonia.

Renovation strategies

Minimum requirements, premiums, and supporting programs to steer towards an energy efficient building stock.

Renovation rate too low

Yearly, 3.5% of the existing building stock needs thorough renovation to reduce 85% of the GHG emissions by 2050. Currently, only 2.5% is renovated.

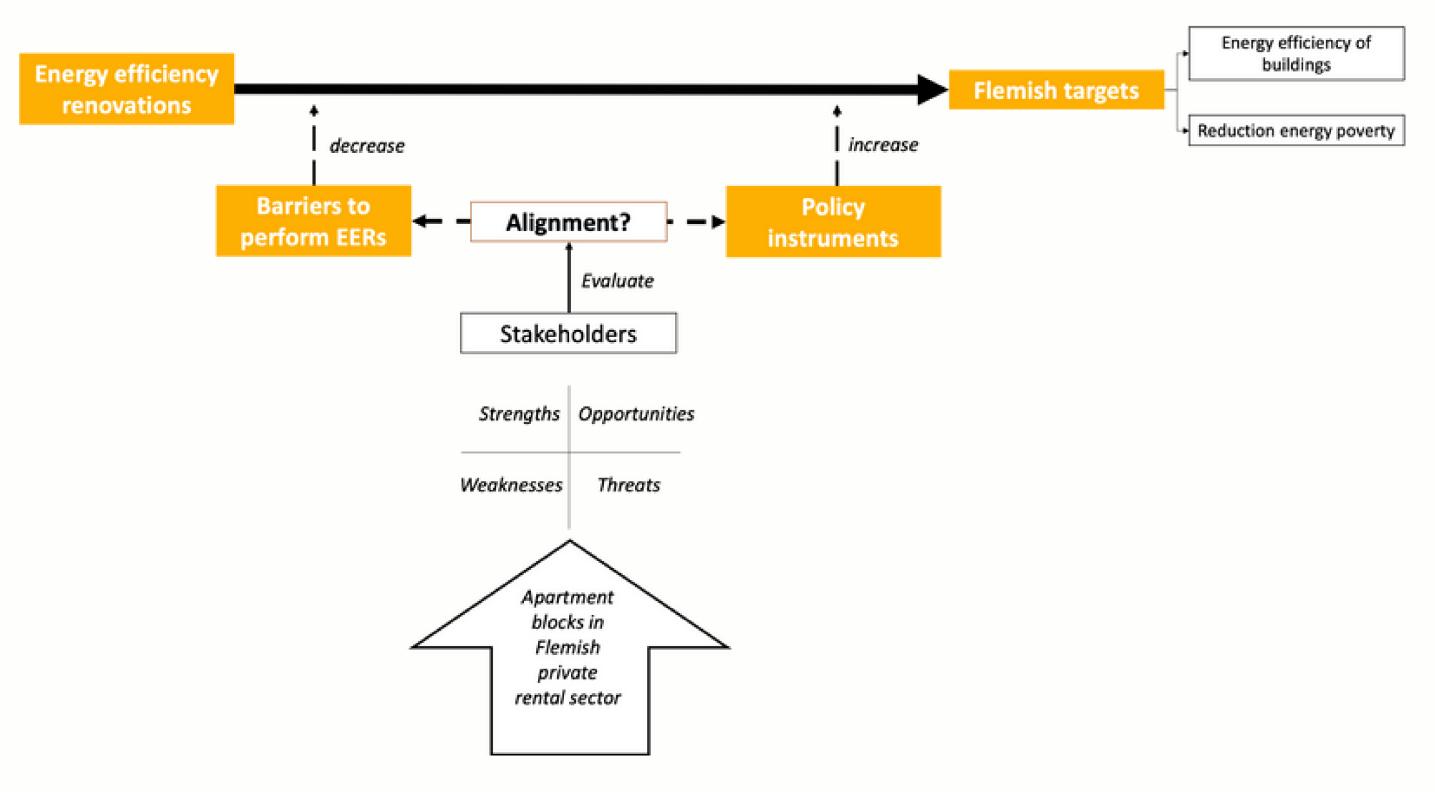


How can policy instruments be implemented to reach the Flemish targets for reducing energy usage in buildings by energy efficiency renovations and alleviating energy poverty in the private rental sector?



Concepts

Based on literature study





Research approach

Main concepts: energy poverty & energy efficiency renovations

What are we talking about?

Policy instruments

- Ambitions: Flemish and European strategy
- Type of instruments
- Levels of implementation
- Evaluation method

Barriers

- Stakeholders
- Phases

Alignment

- Promising policy instruments
- Important barriers
- How to implement policy instruments?

Research approach

What did I do to find an answer to the main research question?







Literature study

Investigation of the existing literature on renovation strategies, barriers, policy instruments, and alignment.

Interviews with landlords (N=6) and tenants (N=10)

Evaluating policy instruments and barriers identified from literature + identification of new barriers.

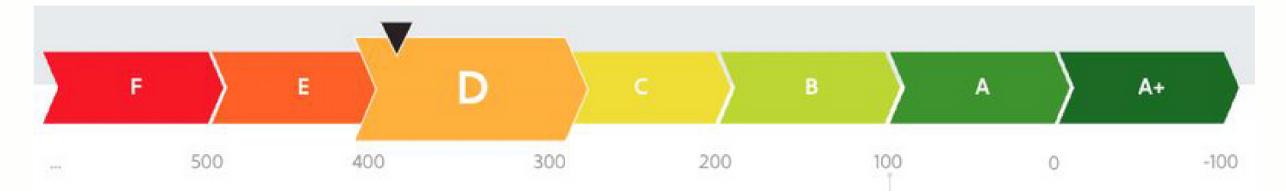
Interviews with policy experts (N=5)

Evaluating policy instrument, identifying new policies, and confirmation of proposed strategies.

Results

Energy efficiency renovations

- Energy performance certificate
- All dwellings energy label A in 2050



- Pro's and con's of measuring real energy
- Increasing the renovation rate



Energy poverty

- Types of energy poverty
 - Payment impossible with normal consumption
 - Payment impossible due to excessive consumption
 - Payment impossible due to poor physical state
- → financial support
- → <u>education</u>
- → energy efficiency renovation



Context

Apartment blocks in the Flemish private rental sector situated in Antwerp

Flemish targets do not meet European targets
Regularly changing policies
Retirement landlords
Market sensitive for disruption
Young & small households



Important barriers

Considering phase

- Energy efficient measures are not perceived as "necessary".
- Rent increase

Decision phase

- Limited rights to renovate
- Risk relationship landlords

Execution phase

(Temporary) move

Promising policy instruments

Direct regulatory interventions

- Index limitations
- EPC required on transaction
- Renovation premium landlords
- Renovation obligation

Collaborative governance

- Support energy houses
- Road map on EPC

Voluntary programs & market driven

- Investment and saving calculation tools
- Mobile homes



Current situation

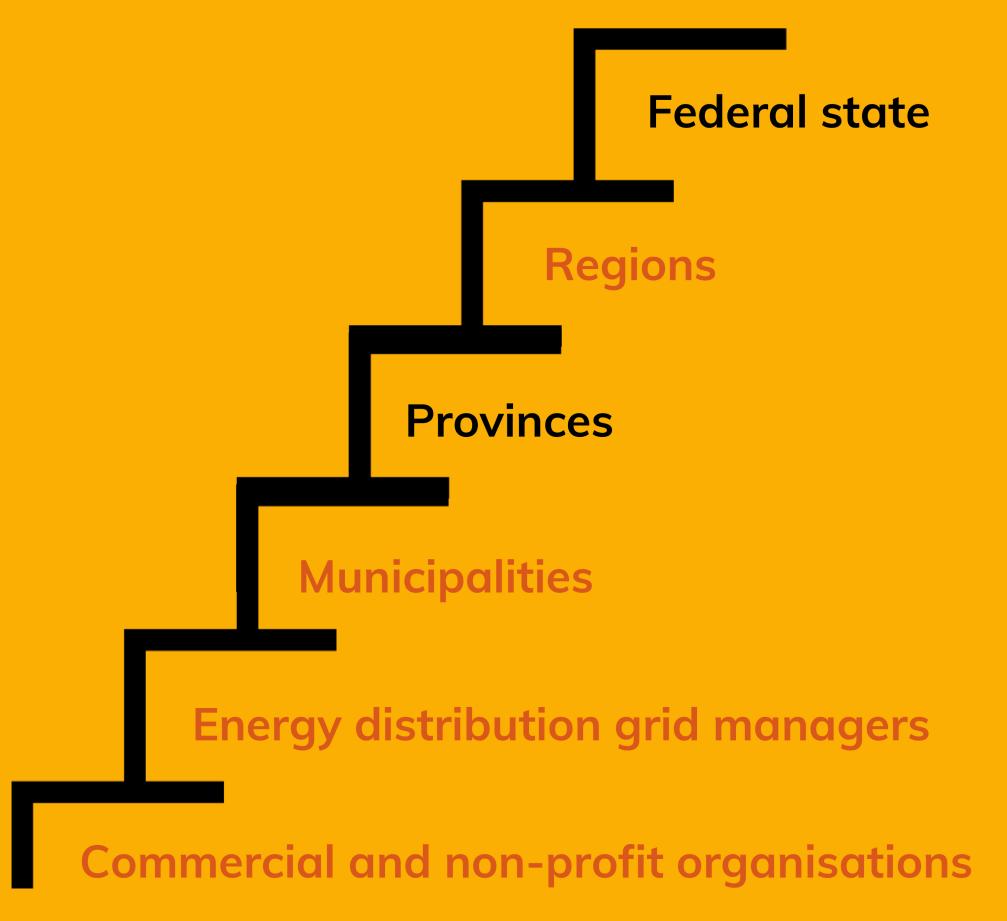
Before advised implementation

- Landlords have autonomy to determine extent renovation.
- Available premiums have little impact on budget.
- Landlord invests in enhancing overall quality.
- Renovations take place when tenant terminates the contract.
- Tenants take energy saving measures for which permission from landlord is not required.



Levels of legislation

In Belgium







- Achieve European targets.
- Create stable environment for municipalities and landlords.
- Avoid disruption of the market.
- Implement instruments with measurable effects.

Instruments

- Roadmap to 2050.
 - Minimum requirements
 - Renovation obligation
 - EPC required on transaction
- EPC bounded indexation limitation.
- Support energy houses.

Reduced barriers

- Energy efficiency renovations are not perceived as "necessary".
- Limited rights to renovate.





- Implementation Flemish strategy.
- Ability to adapt to changes.
- Focus on education and communication.

Instruments

- Support energy houses.
- Renovation premium landlords.

Reduced barriers

- Energy efficiency renovations are not perceived as "necessary".
- Risk relationship landlords.



• Draw up effective energy savings plan.

Instruments

Renovation premium landlords

Reduced barriers

• Energy efficiency renovations are not perceived as "necessary".





- Create valuable business models.
- Support stakeholders
- (Reduce pressure on governmental actors)

Instruments

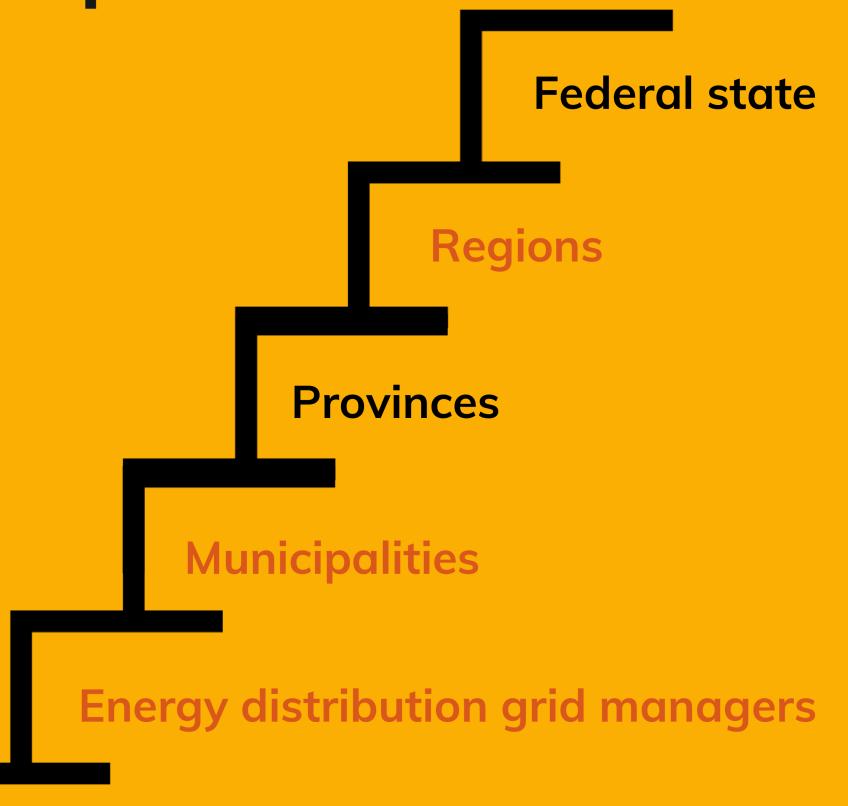
- EPC roadmap
- Investment and savings calculation tools
- Mobile homes

Reduced barriers

- Energy efficiency renovations are not perceived as "necessary".
- Rent increase
- Temporary move



Implementation barriers



Commercial and non-profit organisations

- Changes in roadmap might reduce trust.
- Demand for bottom-up approaches

- Additional support from energy houses requires significant investment
- Premium for landlords does not create incentive
- No attractive business models
- Accuracy calculation tools too low
- Tools are too complicated



Reflection

1 Sample size

2 Study design

3 Data collection

4 Scope & Transferability



What about the responsibility of the tenants and landlords?

After implementation

- Landlords are able to show that they were required to implement a certain measure due to additional requirements shown in the Roadmap to 2050.
- Calculation tools can help to show tenants why a fixed fee is reasonable.
- Calculation tools can help to show tenants why a fixed fee is unreasonable.
- Landlords take measures that allow to index rent and comply with future mandatory regulations.
- Tenants can approach landlords with support from energy houses.



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Scope

Apartment blocks in the Flemish private rental sector situated in Antwerp

Flanders

- 58% Of the Belgian houses are situated in Flanders.
- The Flemish government provides extensive information on the current state of the building stock.

Apartment units

- Highest share of households in Flanders lives in apartment blocks (25%).
- More barriers to energy efficiency renovations.

Private rental sector

- Dwellings are in the poorest physical state.
- Households living in the PRS are most vulnerable to energy poverty.

Antwerp

- Policy instruments are specific to municipal contexts.
- 70% of the people living in Antwerp live in the PRS.



Sources: VEKA, 2022; Diependaele, 2020; Papantonis et al., 2022; Dreesen, 2021.

PESTLE Analysis

POLITICAL

- Regularly changing policies
- Strong focus on EERs
- Not focused on PRS
- Next elections in 2024

ECONOMIC

- Fluctuating energy prices
- High renovation costs
- Retirement of landlords
- Housing shortage
- EPC improvement from E to B increases the value of a home with 12%.

SOCIAL

- Small households
- Young households
- Small apartments
- Average education level

TECHNOLOGICAL

- Poorest physical state
- 3,5% has an energy label A
- 95% requires radical renovation
- The older the dwelling the poorer the label
- Very diverse housing stock

LEGAL

- Codex wonen
- + additional regulations
- Newly-built houses must be net-zero

ENVIRONMENTAL

- Obliged to meet European targets
- Residential heating has a share of 14,9% of the total emissions of Belgium



The Flemish renovation strategy aims for 85% GHG emission reduction by 2050.

Europe aims for 100%
GHG emission reduction by 2050.

