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Drivers and barriers for investment decision about zero-emission renovations of non-residential buildings

Jonker, H., Bakker, J., Zweers, N., Klösters, M., Kooger., R, van Diemen, J. (2024)

Agenda

01 Introduction



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Introduction

- Non-residential building stock exists of 1,2 million, roughly 10% of all buildings, 40% of all floor area and responsible for 30% of the total CO₂-emissions from the built environment (KEV, 2023)
- The building stock needs deep thermal renovations to establish climate neutrality as agreed in the Energy Performance of Buildings Directive (EPBD).
- Energy savings measures are studied only for sub-sectors NL (Kleiwegt, Wegbrands & de Boer, 2023; Cagno et al. 2015)
- Insights in the investment decisions of the non-residential sector is lacking, but needed for efficient and effective policies
- **Objective:** Provide insight in the investment decisions of the non-residential building owners, which is needed for efficient policies and incentives to achieve the goals of the EPBD.

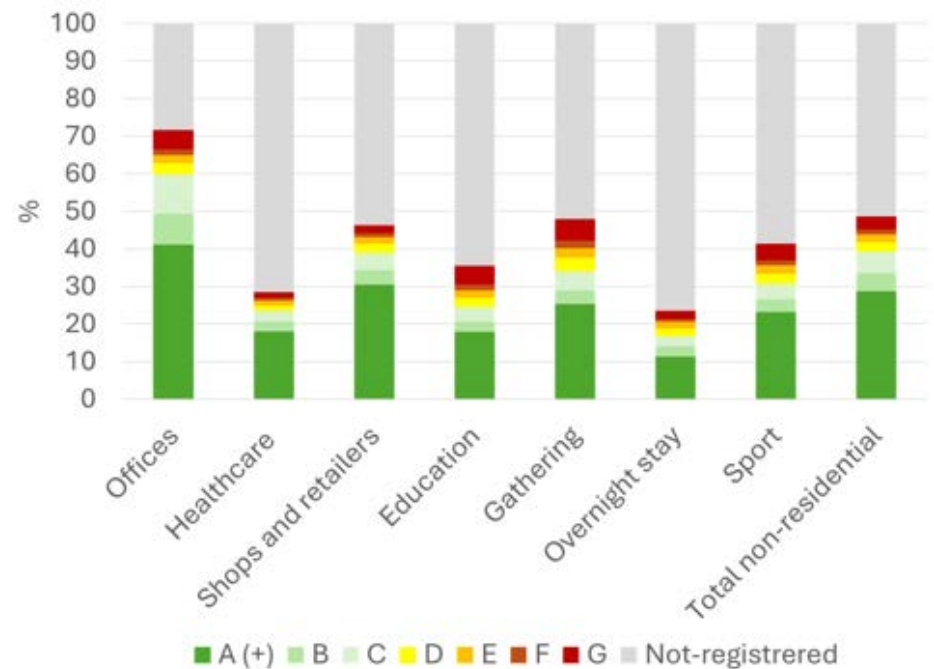


Figure: Distribution energylabels for non-residential sectors (RVO, 2025)

Research questions

Main research questions

What factors influence the investment decisions regarding deep thermal renovations among different types of owners of non-residential buildings?

Sub-question 1: What is the current state of energy savings measures among various types of non-residential building owners?

Sub-question 2: What drivers and barriers influence different types of building owners in their investment decision for deep thermal renovations for non-residential buildings?

Twofold approach

Market sketch: Develop a categorization of non-residential buildings and outline the relevant policy framework.

Interviews: Deep-dive in experiences of energy saving measures and drivers and barriers

Method

Desk study

- Desk study: categorization and policy implications
- Explorative interviews to establish categorization

Interviews

- Categorization is based on the owner of the building
- 16 semi-structured interviews of 1,5 hours
- Data anonymized, coded in ATLAS.ti and analysed in Excel
- Recruiting interview candidates has been time intensive

Result market sketch

- Climate neutral built environment 2050
 - Dutch policy translation: energylabel A++ or A+++
 - Building related measures: building envelope and installations
 - Phase-out natural gas
- Categorization
 - Non-residential buildings subject to energy labeling requirements
 - Distinction between public and commercial real estate
 - Distinction owner-occupied and landlords
 - Organization size
- Drivers and barriers categories: financial, organizational, policy, knowledge and capacity, other

Table. Categorization of ownership types

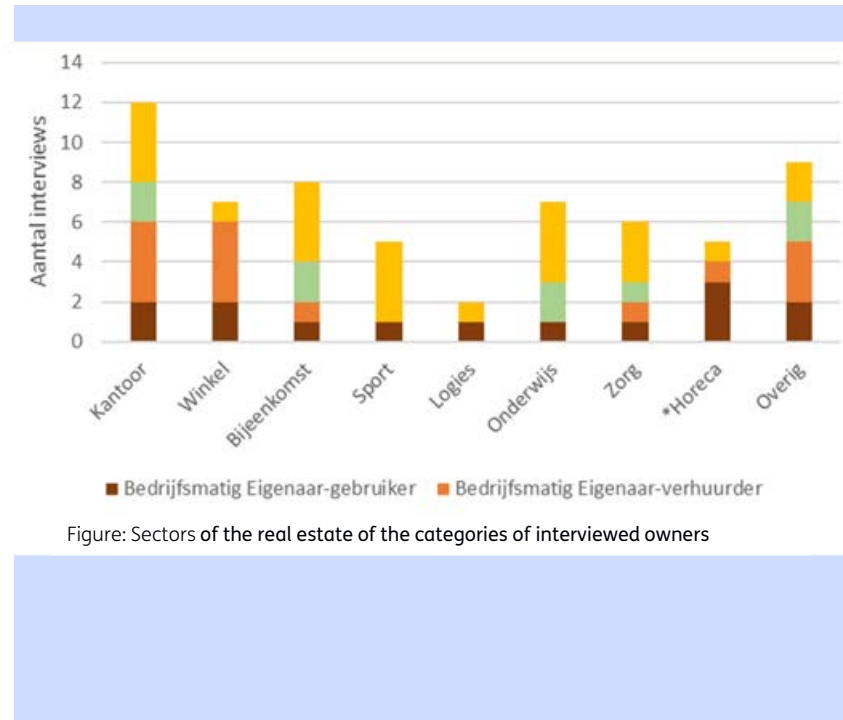
Private ownership	Public ownership
Owners-occupied Small ↔ Big	Owners-occupied Small ↔ Big
Landlords Small ↔ Big	Landlords Small ↔ Big

Description of the interview sample

- Three public and private sector representatives
- Thirteen organizations ranging from, institutional investor, municipalities, to smaller public and private organizations
- Interviewees had different occupations: e.g. director, asset manager

Remark

- The results are explorative, the sector is very diverse, and the sample size is relatively small
- The selection of interviewees has been very deliberate, however, the ratio of interviews per category has not been corrected for the share in assets





Results interviews

Measures are taken, but to various extend

Sub-question 1: What is the current state of energy savings measures among various types of non-residential building owners?

- Energetic performance building stock is difficult to describe: *‘very divers, or unknown’*
- Almost all interviewees have taken some measures (led lights, insulation, solar PV) in some of the buildings
- One commercial owner has not taken any measures
- Natural gas:
 - Half of interviewees considers phasing out natural gas when taking other measures
 - Due to externalities, clients, renter, or district heat network
 - Several public owner always incorporate it *‘want to get it right the first time’*



Trigger moments for renovation are scarce

Sub-question 1: What is the current state of energy savings measures among various types of non-residential building owners?

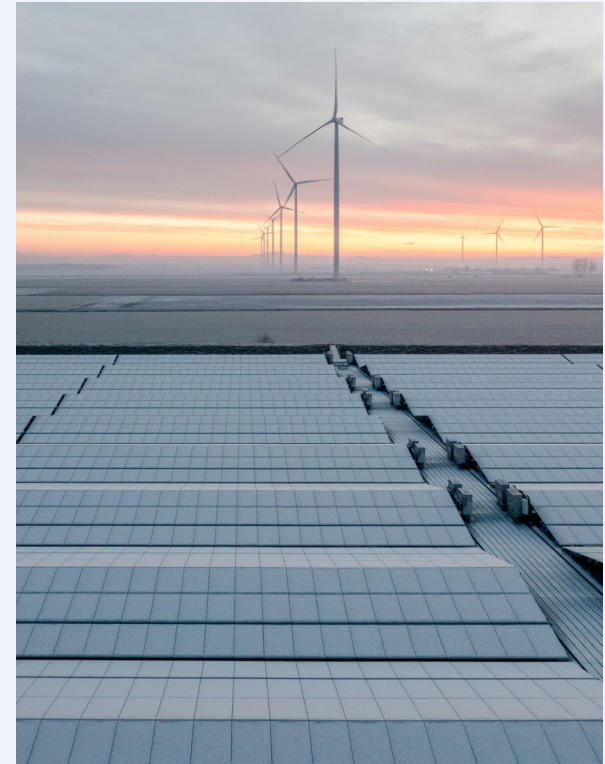
- Several owner (public and private) differentiate in their building stock, measures are only taken in the core/strategic portfolio
- Resulting in stranded assets
- Triggers in renovation: when building elements become outdated, mutation, label-C obligation offices, after an 'incident', or initiated by renter/investor



Internal goals differ

Sub-question 1: What is the current state of energy savings measures among various types of non-residential building owners?

- All public owner have internal sustainability goals; most private ones have too
- CO2 neutral, climate neutral, conformation SDG, energy neutral or self sufficiency
- Terms are used inconsistent and not always incorporated in day-to-day practice



Identification drivers and barriers

Sub-question 2: What drivers and barriers influence different types of building owners in their investment decision for deep thermal renovations for non-residential buildings?

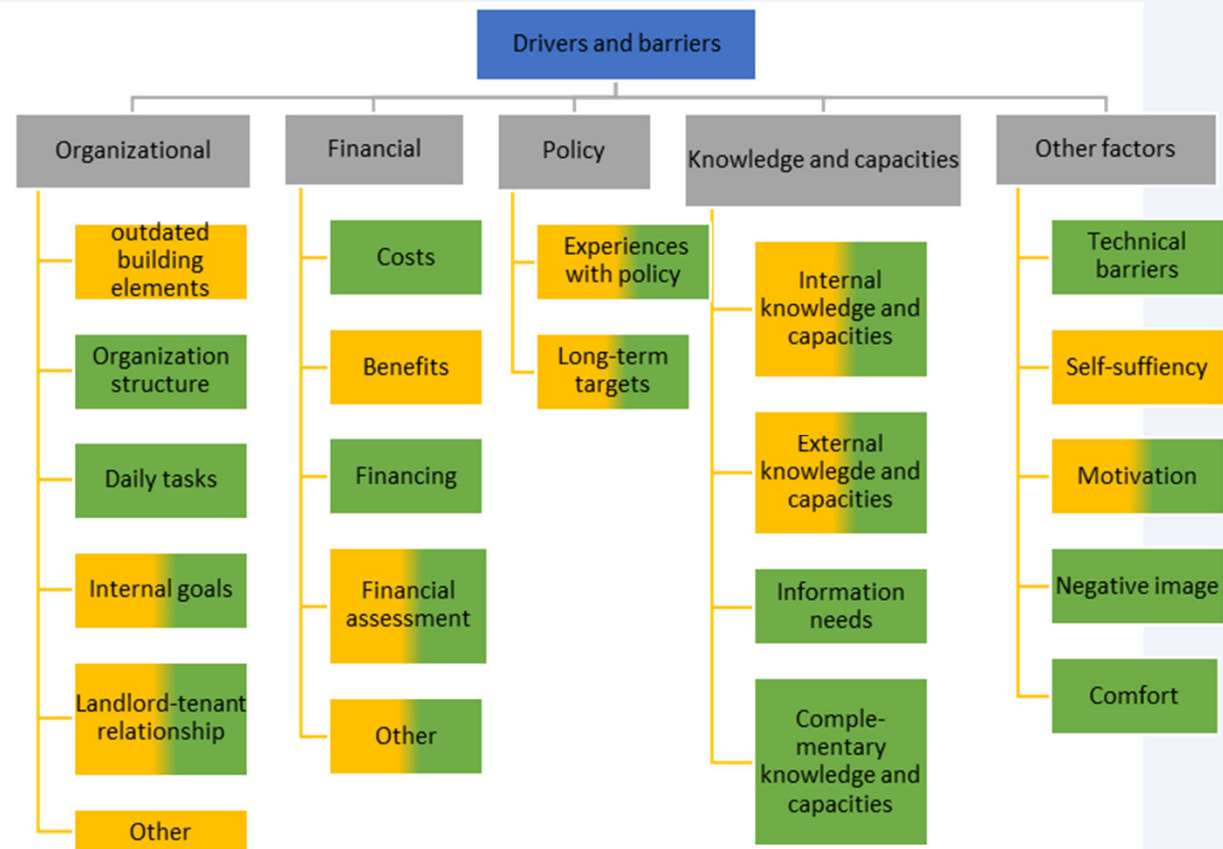


Figure. Overview of all driver and barriers. Yellow as driver – Green as barrier

Mainly organizational and financial barriers

Sub-question 2: What drivers and barriers influence different types of building owners in their investment decision for deep thermal renovations for non-residential buildings?

- Organizational factors
 - Driver for public owners building element outdated
 - Barriers are day-to-day tasks
- Financial factors HJ1
 - Costs-benefit analysis often perceived negatively
 - Financial priorities



Policy narratives

Sub-question 2: What drivers and barriers influence different types of building owners in their investment decision for deep thermal renovations for non-residential buildings?

- Narratives are not linked to ownership categories

Narratives:

- Actively involved and taking action
- Passive towards policy, goals are too abstract and too far in time
- Independent: More ambitious goals and ahead of policy (self-sufficiency)



Differences between categories

- Private owners more in extremes
- Public owners more in between
- Ambitious and passive are spread over the ownership categories

Ambitious group

Private owners-users

Intrinsic motivation
Desire to be self-sufficient in energy

Private landlords

Driven by internal sustainability and EU targets

Public owners

Aware of long-term policy targets
More financial support possibilities compared to private sector, internal hurdles (organizational, knowledge)

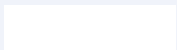
Passive group

Private owners-users

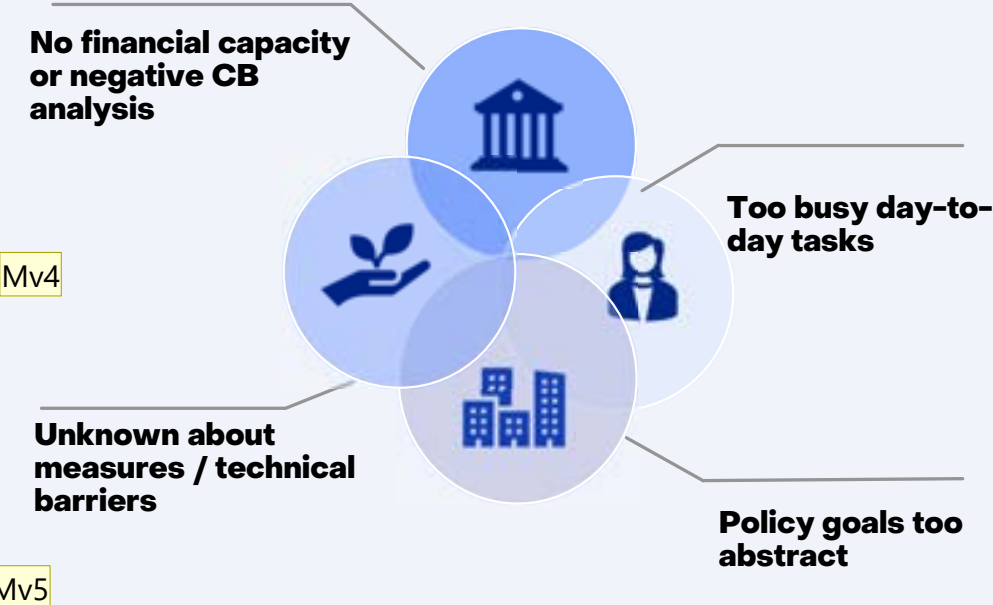
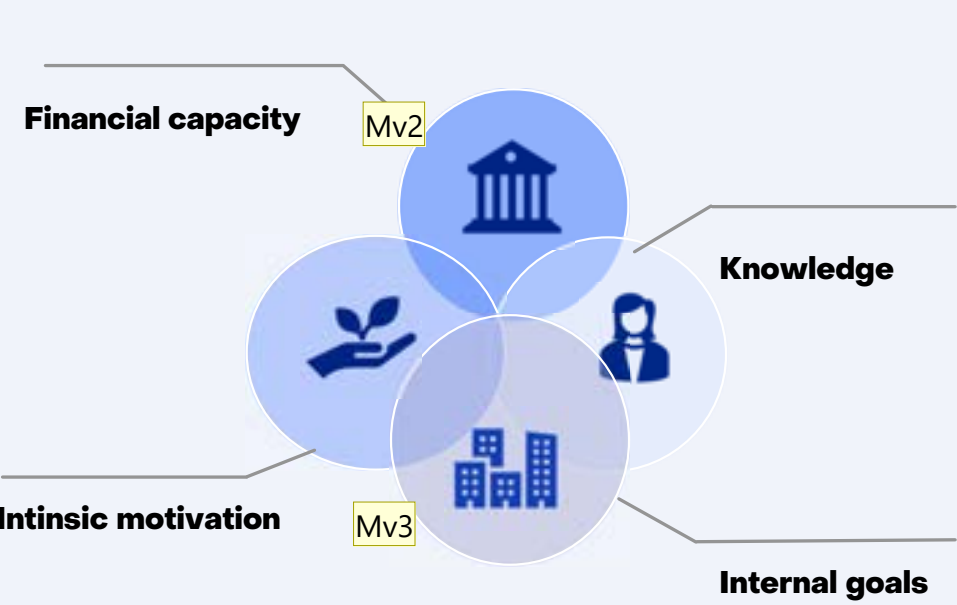
Focused on survival enterprise
Unaware of long-term policy targets

Private landlords

Prioritizes the financial return on investments



Ambitious owners vs Passive owners



- Mv1** Misschien wel met deze beginnen, en hier ook het meest bij stil staan.
Schie, M.H. (Maarten) van; 2025-09-11T09:13:48.700
- HJ1 0** Ja eens
Jonker, H.W. (Hanna); 2025-09-11T15:07:05.595
- Mv2** Investeringsruimte nodig ('investeringen zijn hoog' = subjectief). Inductiefornuis efficiënter, maar ovens en frituur typisch beduidend hogere energiekosten op huidig prijspeil.
Schie, M.H. (Maarten) van; 2025-09-11T09:16:22.573
- Mv3** Vergroting netaansluiting kost tijd (vaak jaren) en geld (10-20k is niet abnormaal). Koplopers gebruiken creatieve oplossingen zoals extra adres.
Schie, M.H. (Maarten) van; 2025-09-11T09:16:55.372
- Mv4** Er ligt vaak nog geld en ruimte binnen bestaande aansluiting op tafel die niet benut wordt door bewustzijn; expertise energieadviseur maar ook accountants helpt hierbij.
Schie, M.H. (Maarten) van; 2025-09-11T09:17:48.230
- Mv5** Hangt samen met investeringshorizon, en wie kan/moet wat doen. Isolatie ligt bij gebouweigenaar, mss hier noemen.
Schie, M.H. (Maarten) van; 2025-09-11T09:17:58.456



Conclusions and policy recommendations

1. Incorporate triggers of renovation in policy

Most renovations occur when building elements are outdated, which occurs every fifteen to twenty years. This leaves one or two renovation moments per building until 2050. These policies should align more effectively with the triggers of renovation and focus on the “passive” group.

2. Provide financial support for a more favorable cost-benefit analysis,

The costs-benefit analysis of deep thermal renovation is often negative. Incorporate this more in policy, not only for the public sector.

3. Generate more knowledge and support for the phase out of natural gas and

Interviewees lack knowledge on how to take measures regarding the phase-out of natural gas. Contribute to knowledge and support. The building related limitations are a main point of focus.

4. Draw attention to stranded assets

Both commercial and private owner distinguish in their portfolio. This can result in a deteriorating building stock. The extend of this phenomena is unknown.

Further research

- Follow-up research: phase out natural gas for process-related energy
- Follow-up research: Passive group - what drives them and how to include them
- More insight in grey building stock/stranded assets for effective policy
- Deep-dive in investment decisions for landlord-tenant
- Research with larger sample size
- Extend knowledge on practical policy recommendations

Questions?

**Do you want share your
thoughts or contact us?
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Scan for the
research



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