

Mentimeter question 1



Funded by the European Union

If you were owning an apartment in an old condominium building, how motivated would you be to convince other co-owners to go for a deep energy renovation?

- Very much
- Much
- Somewhat
- Neutral
- Not at all





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Supporting Energy Renovations in European condominiums

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EU Peers Transnational Winter Meeting, 3 February 2026



CONTENT

01

Introduction

02

CondoReno
approach

03

Proof of concept

04

Research

05

Discussion

06

Conclusion



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Introduction



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EPBD, 2018; EC, 2019:

- Almost 75% of the building stock is currently energy inefficient and more than 85% of today's buildings are likely to still be in use in 2050
- The renovation pace is too slow
- **42% of EU residential buildings are apartments, mostly in cities**

Residential sector



21%
Total energy
consumption

Homeowners



70%

Homeowners



41-65%
Reside in
condominiums



Introduction

An apartment building is often governed by an **Association of Co-owners**, aka. Homeowners' Association (HOA) or Condominium Association.

This is a **legal entity** formed by individual unit owners who collectively own the shared parts of a multi-owner residential building.

Consequently, the association manages the common parts, and makes decisions about the buildings maintenance and renovation.



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135K Condominium associations in the Netherlands

Source: (Centraal Bureau voor statistiek, 2023)



100K Condominium associations in Belgium

Source: (Syndici.be, 2022)



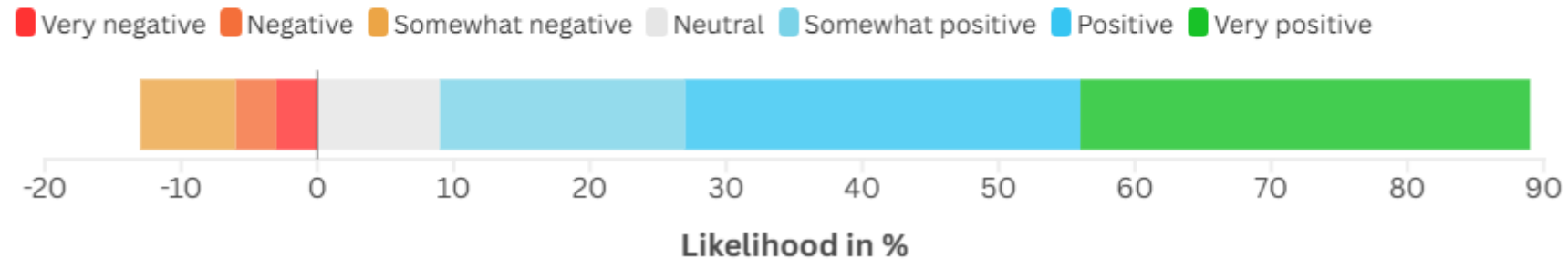
Introduction



Funded by the European Union

How do European homeowners in multifamily buildings perceive the idea of a comprehensive energy renovation of their condominium?

n=270



Source: Ragy Elgendy et al., 27-01-2026,
Questionnaire for co-owners of multi-family dwellings in The Netherlands and Flanders (270 respondents),
LIFE CondoReno-project, TU Delft

Introduction

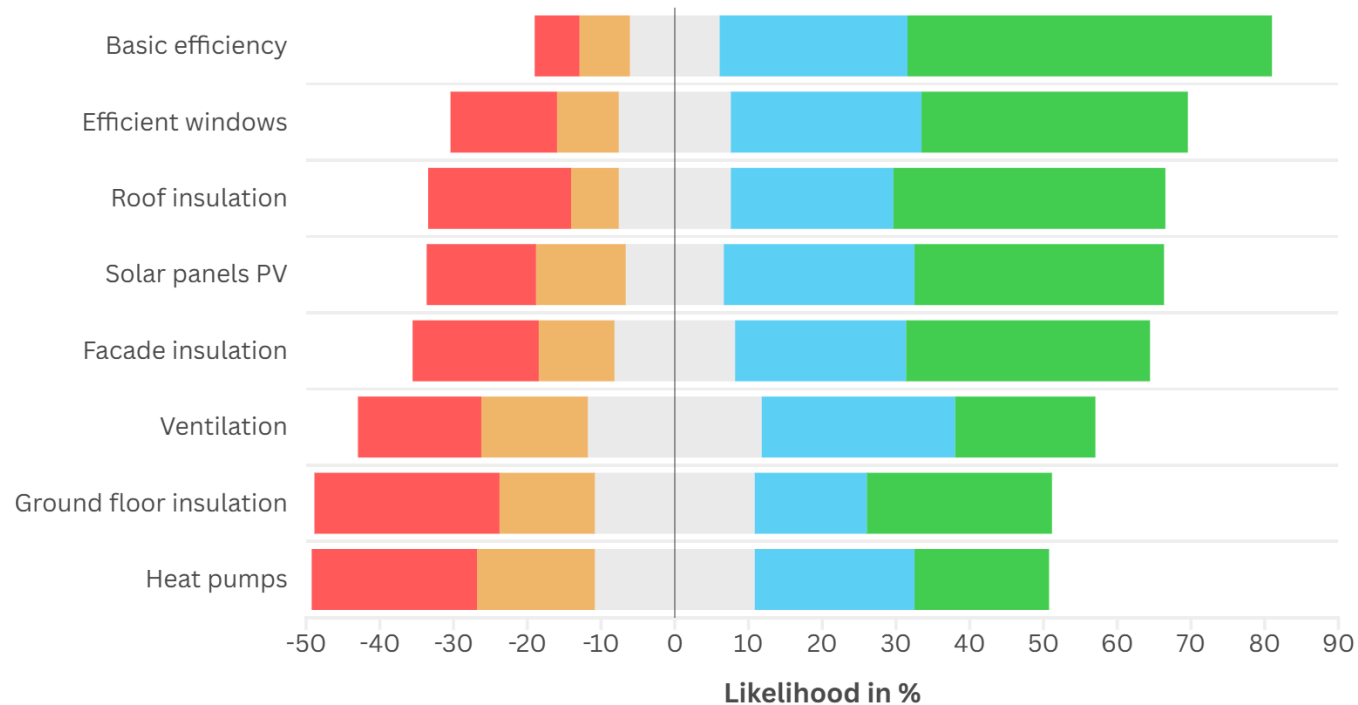


Funded by the European Union

Investment Preferences of European Homeowners in Multifamily Buildings who are Willing to Renovate

n=263

Extremely Unlikely Somewhat Unlikely Neither nor Somewhat Likely Extremely Likely



Source: Ragy Elgendy et al., 27-01-2026,
Questionnaire for co-owners of multifamily buildings in the Netherlands and Flanders (263 respondents),
LIFE CondoReno-project, TU Delft



Introduction



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Performance guaranteed renovation 2023 Flat Ellen, Assen, The Netherlands

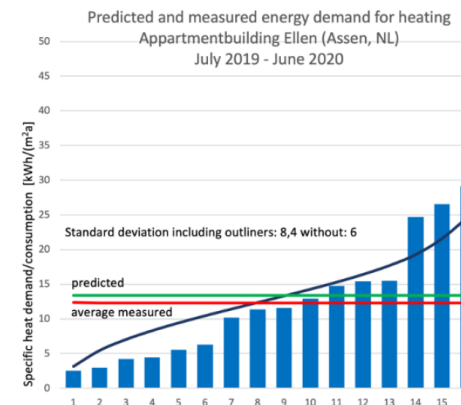
- 90% reduction of energy need for heating (guarantee EnerPHit)
- No major maintenance expected after renovation for about 30 years
- Average savings 1087 EUR/year/household 30 years

Energy performance contract feasible



Before renovation After renovation

Images © Carl-Peter Goossen, Bouwnext



Introduction



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- Co-owners are willing to renovate
- Lower maintenance and improved thermal comfort and air quality are a fact after deep renovation
- Even a factor 10 reduction of energy use for heating is technologically feasible

⇒ **How can we organize services that speed up deep energy renovations of condominiums?**



Integrated Home Renovation Services for Co-owners of Apartment Buildings in the Netherlands and Flanders

Technische Universiteit Delft, NL

Stichting Woonlastenneutraal Renoveren (WNR), NL

Stichting KERN, NL

Stad Antwerpen, BE

Stad Mechelen, BE

Autonom Gemeentebedrijf Energiebesparing Oostende, BE

Confédération Nationale de la Construction asbl (Embuild), BE

Agence Parisienne du Climat Association, FR

Union Internationale de la propriété Immobilière (UIPI), BE

European Builders Confederation (EBC), BE

Project duration: 1 October 2022 – 30 September 2026

<https://condoreno.org>

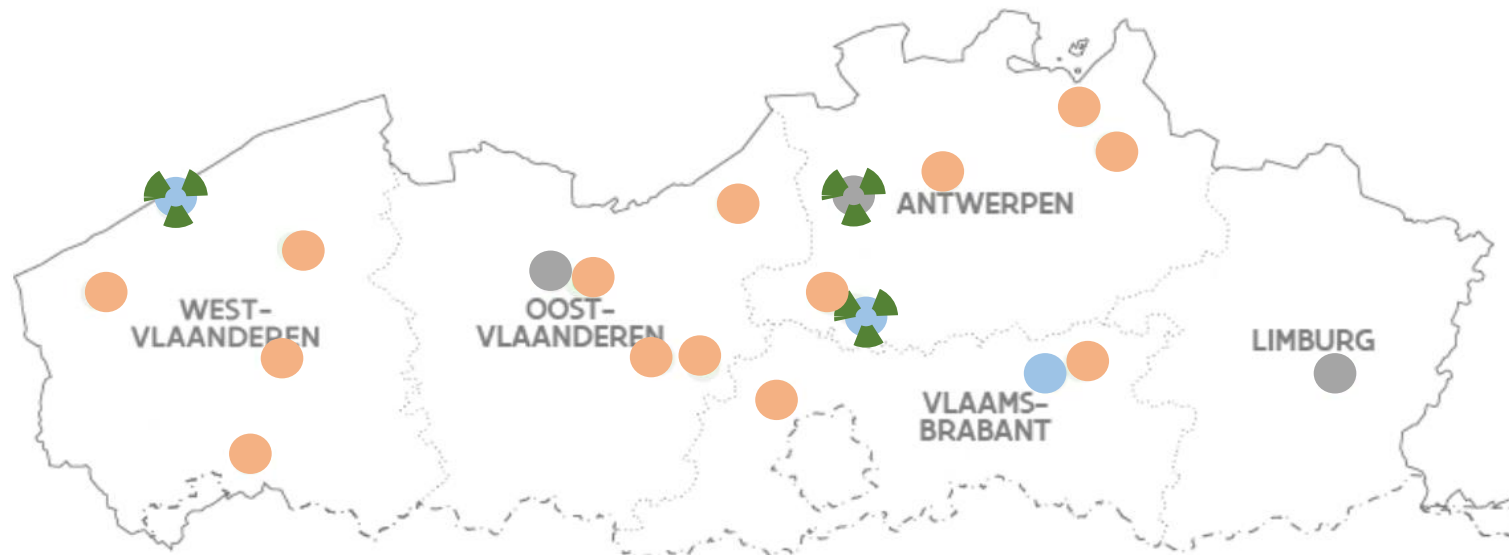








CondoReno approach

In Flanders 20 “energy houses” provide facilitation of decision-making

An energy house provides **advice and financial support towards citizens** for **energy savings** in homes.



-  CondoReno partner
-  Mature services for apartments (3/20)
-  Emerging/start-up services for apartments (3/20)
-  No developed services for apartments (14/20)

LIFE-project



New Report:
Activating Business Models for Condominium Renovations
Identification of viable business models for Integrated Home Renovation Services for condominiums in the Netherlands and Flanders



Guidebook for course providers

D3.4 Training material for activating the supply-side



Proof of concept based on 8 pilot projects

D4.1



Co-creating Integrated Home Renovation Services for co-owned condominiums

D5.2



Raggy Elgeredy, Erwin Mlacnik, and Queensa Qian, TU Delft
July 2025



Creating and Multiplying Integrated Home Renovation Services for Private Condominiums

Executive Summary for Policymakers

D6.2

<https://condoreno.org>





CondoReno approach



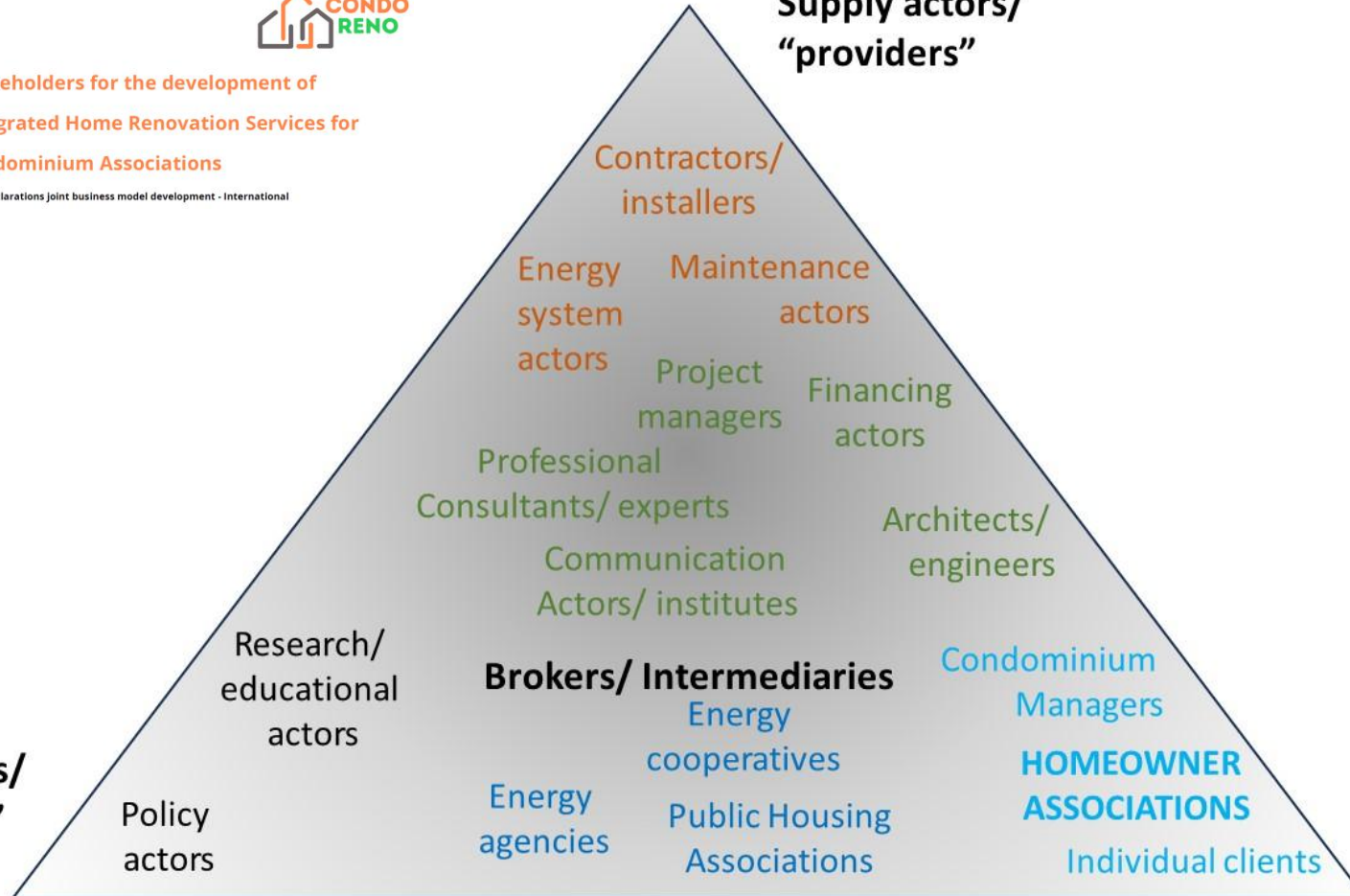
Stakeholders for the development of
Integrated Home Renovation Services for
Condominium Associations

D2.1 Declarations joint business model development - International

Supply actors/
"providers"

Public actors/
"facilitators"

Demand actors/
"clients"



Compared to OSS serving single-family homes, many other stakeholders become important for steering decisions..



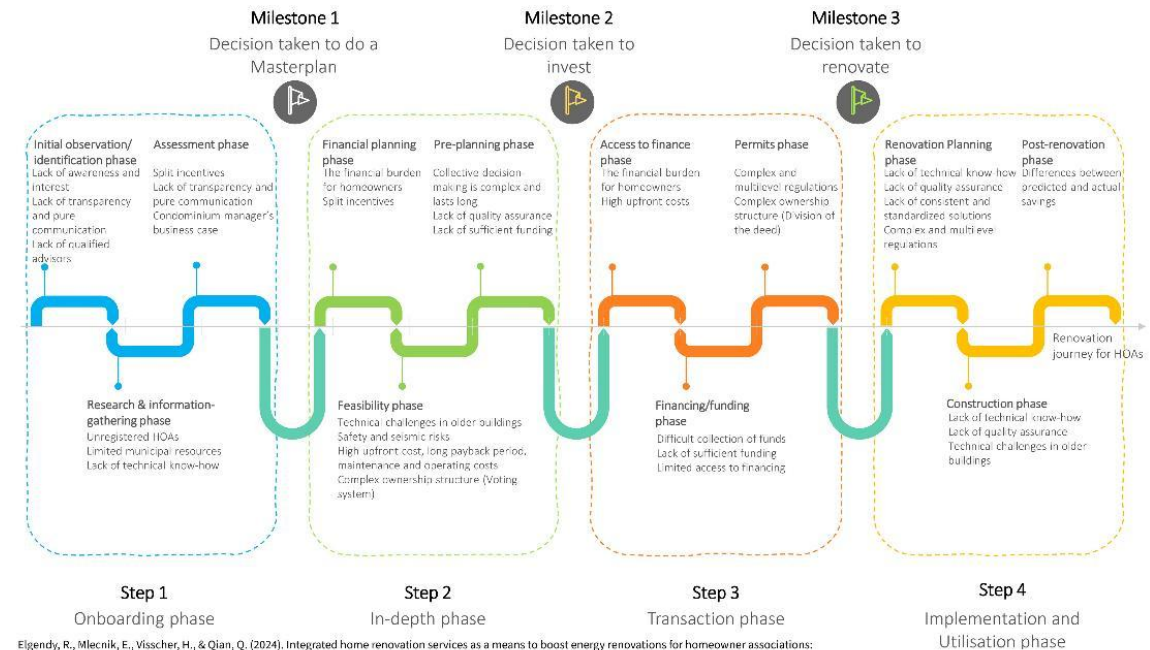
CondoReno approach



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- Use the momentum of the maintenance needs
- Combine measures into cost-optimal scenarios
- Speed up collective decision-making
- Steer towards better performance

⇒ Intervene at homeowner association meetings



Elgendy, R., Mlecnik, E., Visscher, H., & Qian, Q. (2024). Integrated home renovation services as a means to boost energy renovations for homeowner associations: A comparative analysis of service providers' business models. *Energy and Buildings*, 320, Article 114589. <https://doi.org/10.1016/j.enbuild.2024.114589>



Proof of concept



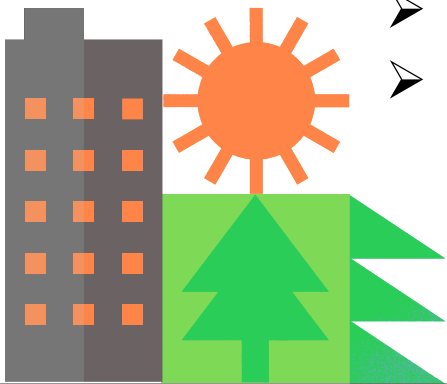
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➤ Flanders, Belgium:

- Pool of renovation master planners
- Mandatory Energy Performance Certificate for common building parts
- Local: no rent of roof apartments when roof insulation is lacking

➤ The Netherlands:

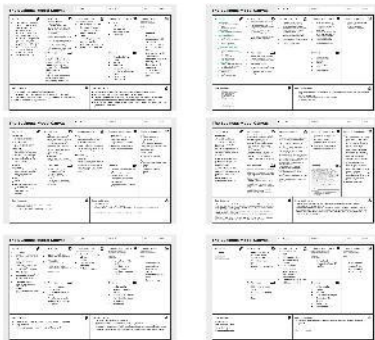
- Subsidies for process coaches
- Mandatory minimum deposit of homeowners for the reserve fund
- Support for collectively going to gas-free districts



Proof of Concept



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Activating Business Models

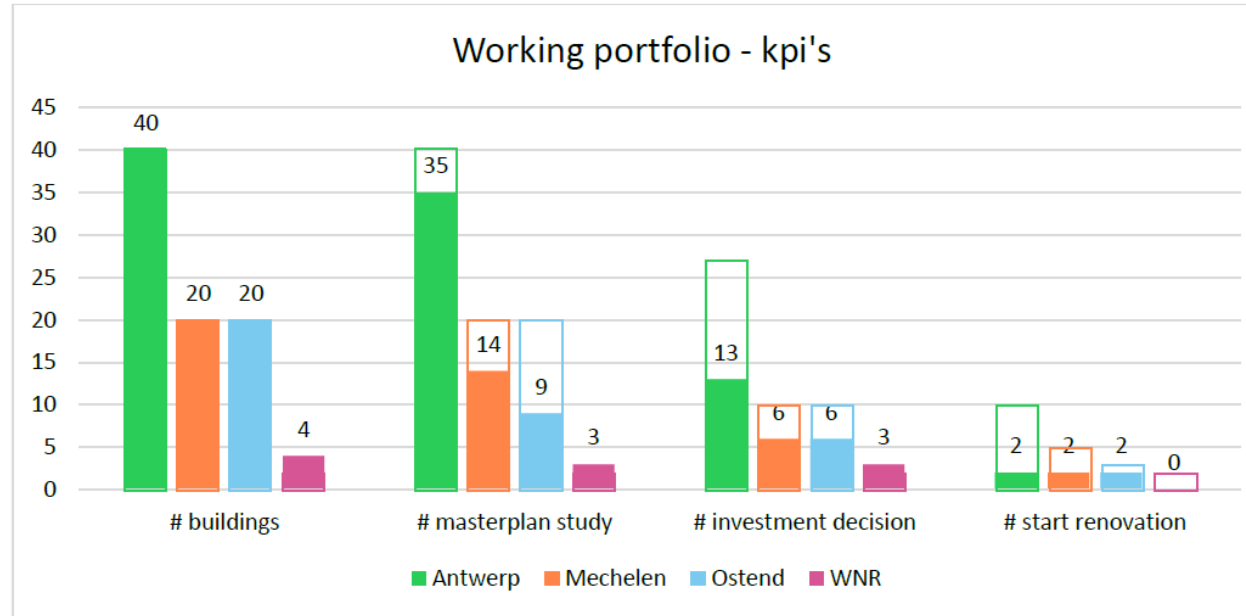


Figure 2 Summary of CondoReno case studie progress and milestone attainment



Testing the Business Models in 8 case studies for Evaluation

Proof of Concept

Ostend 1

Heterogenous financial capacity and home typology (Consultancy phase)



Ostend 2

Unexpected cost increase concrete rot (Master plan ready)



Antwerp 2

Investment needed in backlog maintenance (Investment proposal)



Antwerp 1

Delay after COA changes (Master plan ready)

Mechelen 1

Environmental permit not granted (Ready for execution)



Mechelen 2

Split incentive commercial plinth owner (Renovation scenarios)



Proof of Concept



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Amsterdam West



Nijmegen



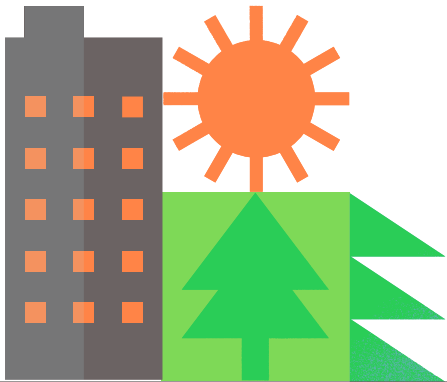
Brunssum



3 co-owners' associations
under one roof with varying
viewpoints
(Feasibility study)

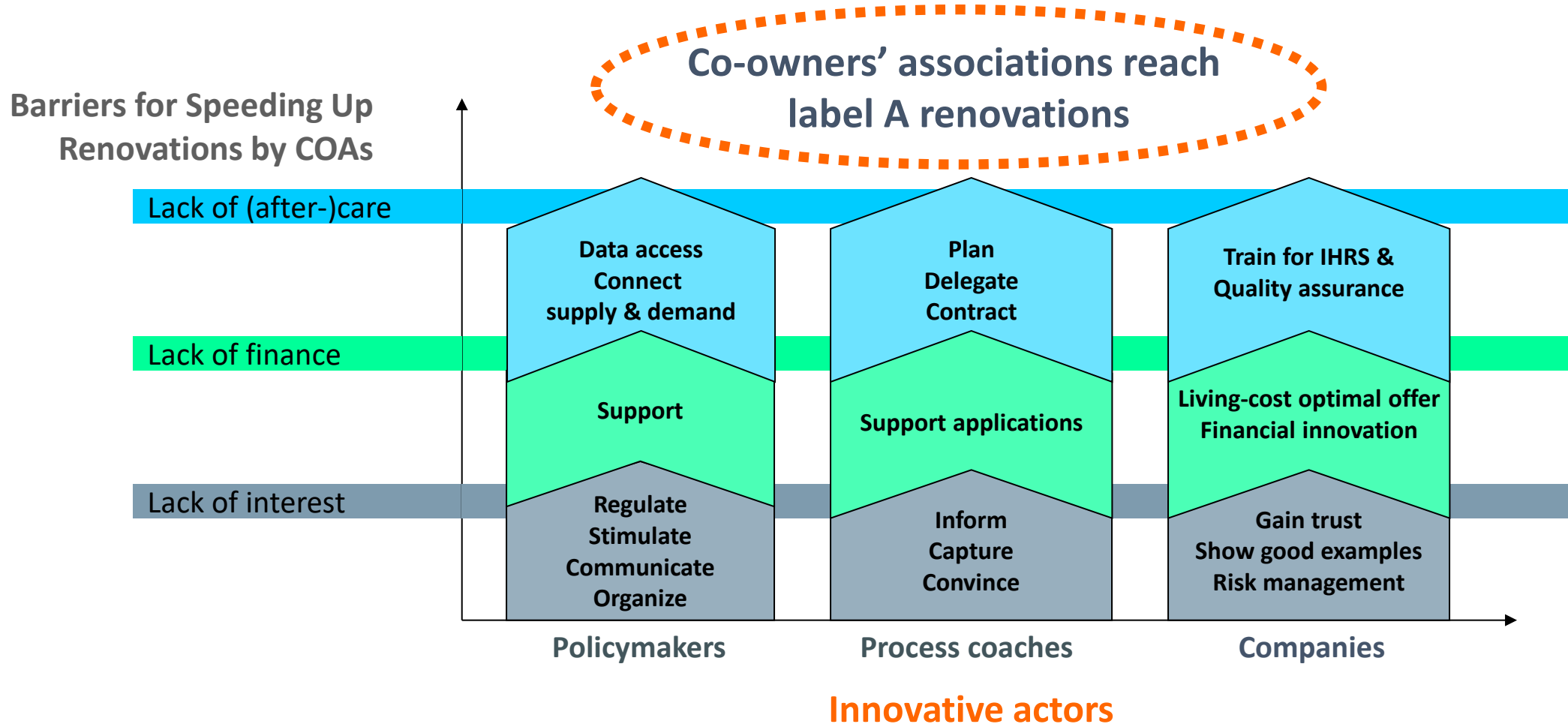
Heating system breaks
down calling for earlier
investment
(Investment proposal)

Rejection municipal &
technology push
(Renovation master plan &
financial plan)





Proof of Concept



Based on: Mlecnik, E., 29-03-2023, Naar integrale renovatiediensten voor VvE's, LIFE CondoReno project presentation, Tiel, The Netherlands & Mlecnik, E., 2013, Innovation development for highly energy-efficient housing, PhD. thesis, TU Delft, The Netherlands, https://repository.tudelft.nl/file/File_661acdda-ae5b-4556-bac6-9a676895cbd2





Mentimeter question 2

I believe the following services are still MISSING in my region for supporting co-owners to effectively do a deep renovation of their building (multiple options possible):

- Support for organizing co-owners' decision-making (legal clarity, trust-building, problem-solving)
- Clear technical renovation options and scenarios (what to do, when, and with what impact)
- Clear financial plans and funding options (costs, subsidies, affordability)
- Support to manage and implement the renovation (coordination, contractors, execution)
- Quality assurance and long-term reliability (performance, guarantees, maintenance)

Research

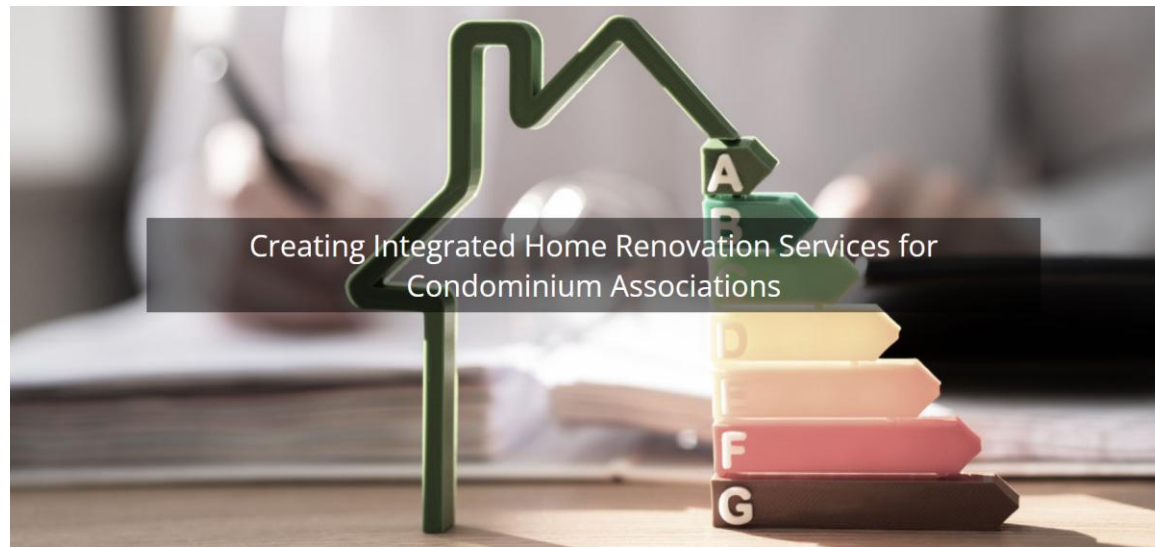
The project aims to **accelerate energy renovations** for **co-owners' associations (COAs)** by creating **6 viable business models** for **integrated home renovation service (IHRS) providers** to be replicated in **10 European countries**.



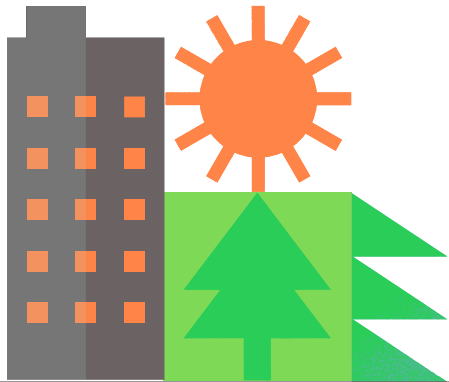
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3 Public
driven

3 Market
driven



Creating Integrated Home Renovation Services for
Condominium Associations



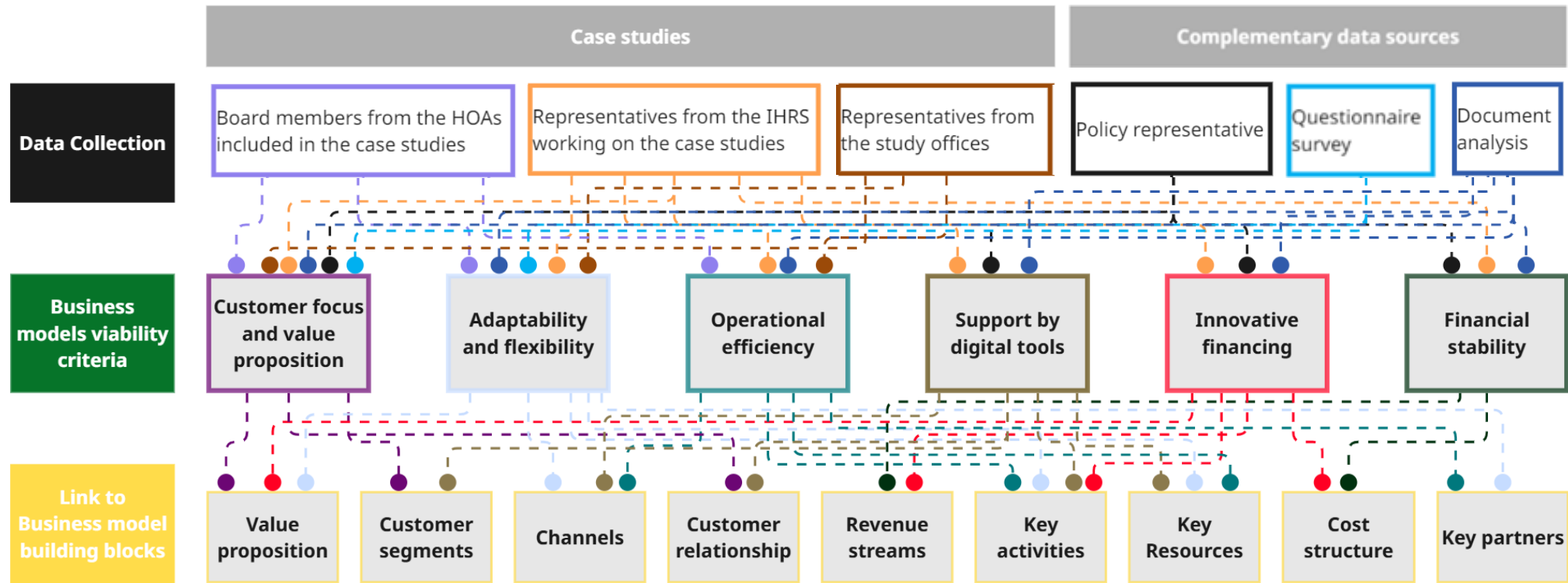


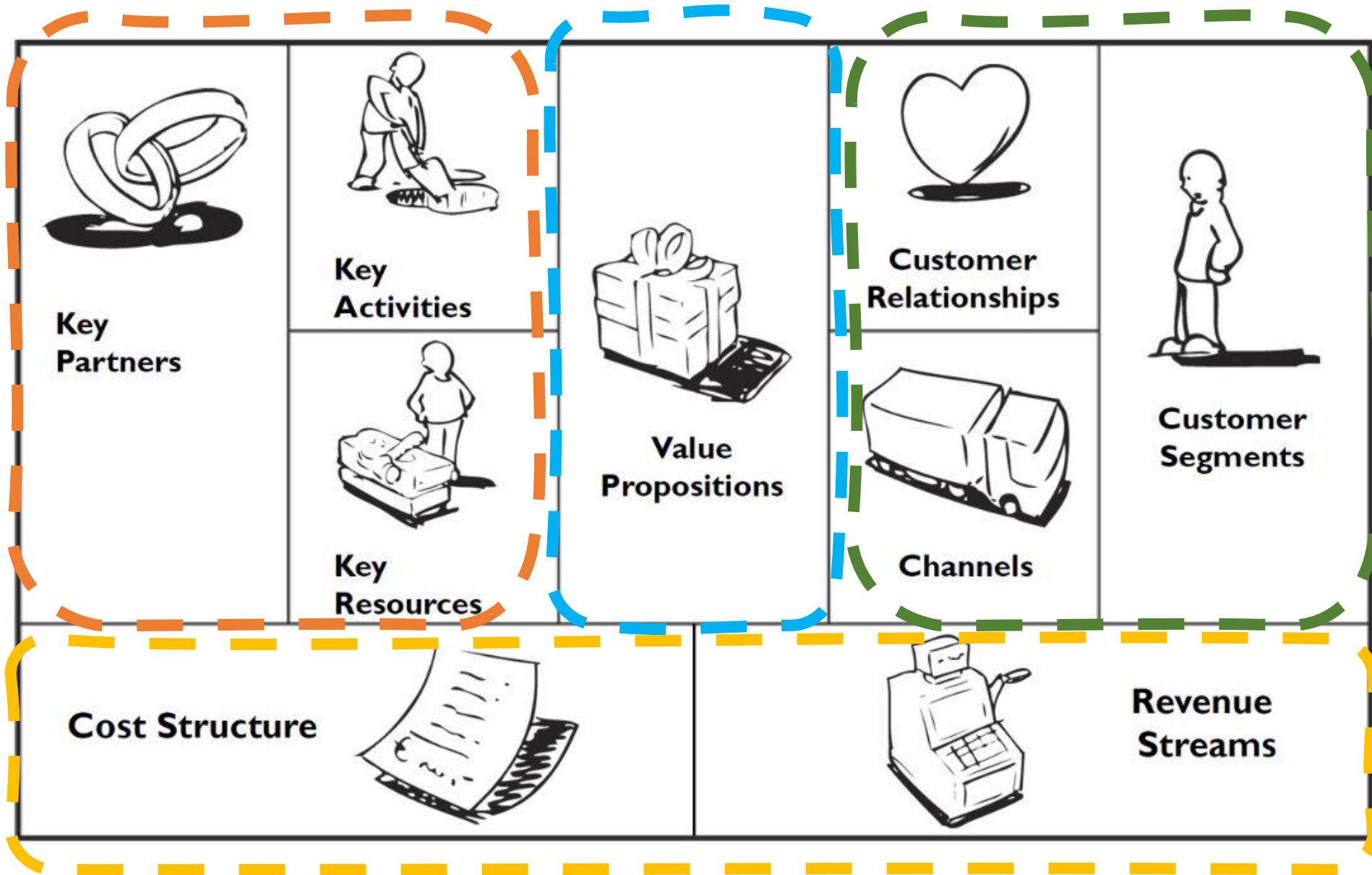
Research question

How can Integrated Home Renovation Services Facilitate Deep Renovations for co-owner associations?

Identification of IHRS viable business models

Conceptual framework





Business models of IHRs in EU for COAs



New Report:
Activating Business Models for Condominium Renovations
Identification of viable business models for Integrated Home Renovation Services for condominiums in the Netherlands and Flanders

Identifying service model archetypes

Possible models to create Integrated Home Renovation Services

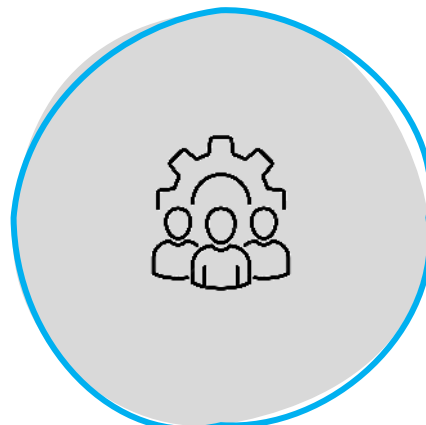
Public model

For example, Municipal services of “energy houses” in Antwerp, Mechelen and Ostend in Belgium



Private model

For example, Living-cost neutral renovation services of non-profit organization WNR in the Netherlands



Agency model

For example, CoachCoPro services Agence Parisienne du Climat in Paris

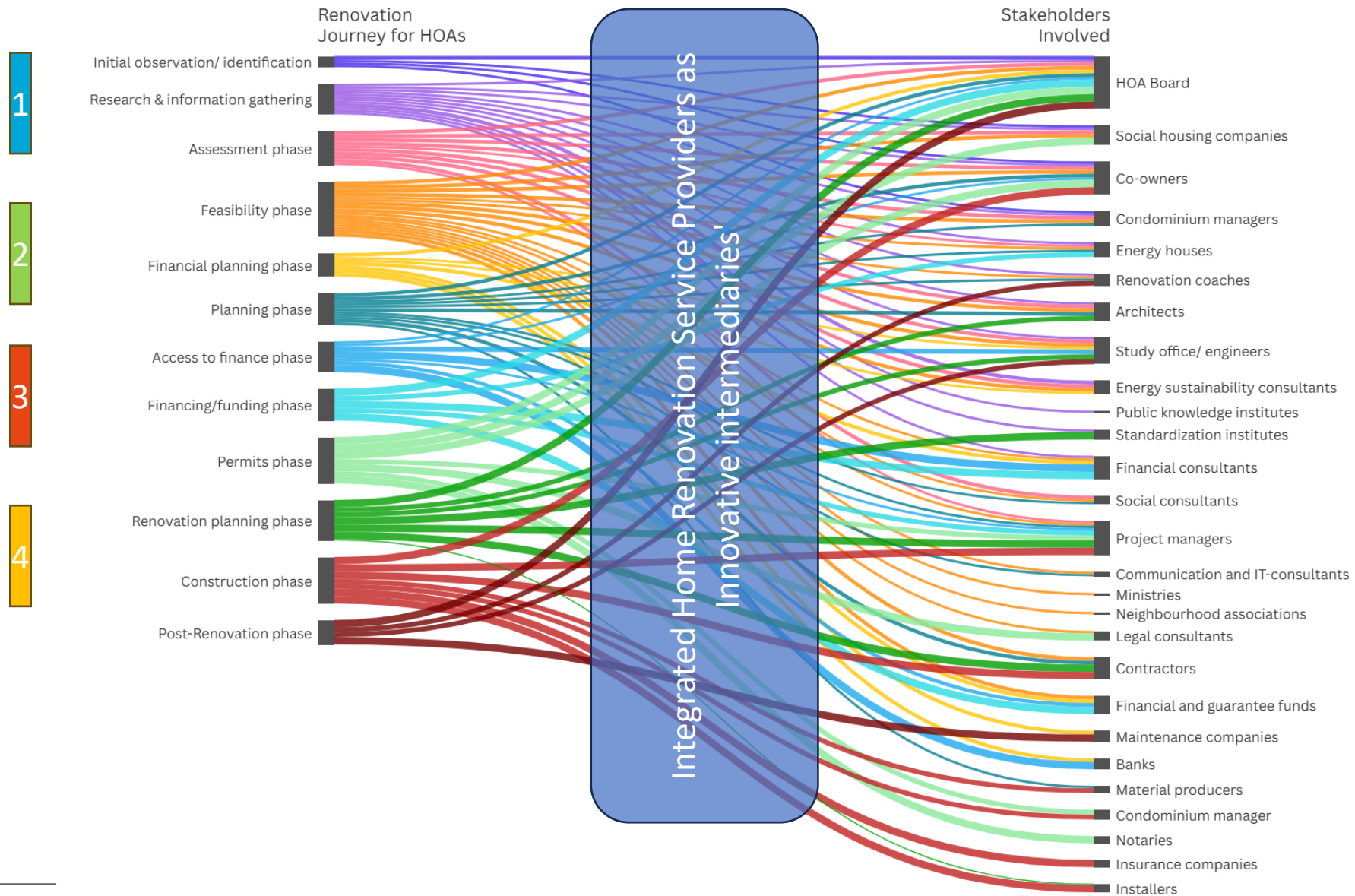


New Report:

Activating Business Models for Condominium Renovations

Identification of viable business models for Integrated Home Renovation Services for condominiums in the Netherlands and Flanders

Combining phases and stakeholders





Identifying stakeholders

Recommendations to enhance collaboration implications for business model / key partners

Private IHRS (Netherlands)

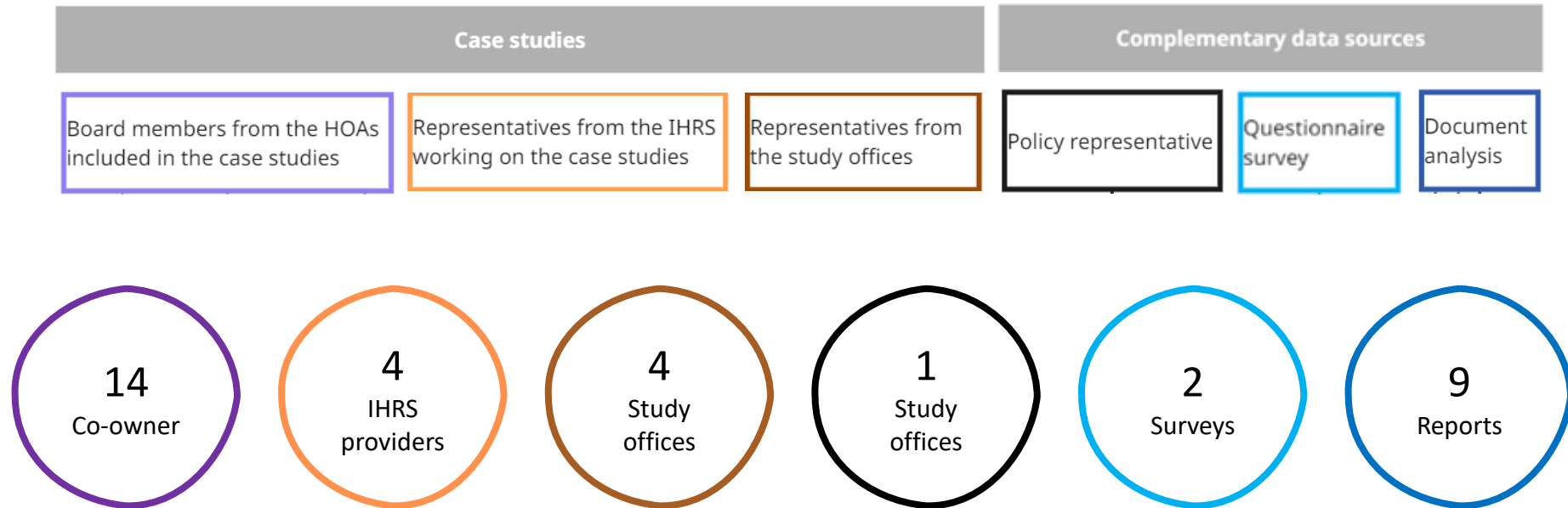
- Strengthen collaboration with social housing corporations in hybrid CAs
- Align earlier with condominium managers to streamline decision-making and communication
- Expand and formalize partnerships with municipalities for subsidy alignment and legitimacy
- Maintain a vetted network of contractors to ensure quality and trust

Public IHRS (Belgium)

- Clarify roles between the architect/study office and Energy House
- Include condominium manager in the partnership structure and explore training or incentive models
- Create regional learning networks for peer-to-peer exchange among CAs, architects, and coordinators



Research framework



Homeowners perspectives



Without the subsidy, it would never have passed.
People thought, 'if it doesn't cost us anything now,
why not try?

I-1



It's impossible to do everything at once; people
need time to adapt and to see the benefits
step by step

I-6



It's not only about saving energy, it's about finally
being proud of where we live.

I-5



The hardest part is convincing neighbors that it's not just about
money, it's about comfort and the future value of our homes

I-8



Public Energy houses perspective



Homeowners often expect us to be project managers, but our real role is to guide them, not to take over their decisions

I-17



We are not selling a product; we are helping people make a collective choice that will affect them for decades.

I-15



Trust is the biggest currency in these projects once they feel heard, the financial discussion becomes secondary.

I-16



If you push everything at once, people freeze. When we break the renovation into clear, doable phases, they start to see progress and stay motivated

I-15



Source: <https://www.ag-oostende.be/nieuws/op-zaterdag-27-september-zet-ag-oostende-energiehuis-haar-deuren-open>

Study offices perspective



Our task is to translate technical complexity into something people understand and feel ownership over

I-12



When people start to see the building as a shared home rather than individual apartments, everything changes

I-13



A phased plan helps us keep everyone on board, it gives co-owners time to understand each step and trust that the process is under control

I-14



Source: Ragy Elgendy, Mechelen 2025

Private IHRS perspective



Public services are always involved in the first steps of the renovation process... but they don't stay close to the condominium association until the end—until the renovation itself



It's quite easy to convince people that it's better to take a holistic approach and consider everything....
When we do it in one big bang, it's much easier to say:
'You have to invest a lot, but you're going to save a lot too.'



If there's not much activity in the board, or if some of the most active members leave... then it becomes quite hard for the association



Policy perspective

“ For large apartment buildings, we need strong governance and trust networks not just subsidies

“ The goal is not just energy savings, but changing how co-owners work together to make better decisions

“ I think the so-called ‘renoviction’ will become more and more important

“ Better to have a small yes than a big no



Source: Ragy Elgendy, Mechelen 2025

Compiling barriers experienced by stakeholders

Examples of Barriers & challenges faced by condominiums to undertake energy renovations



Technical barriers

- Lack of quality assurance
- Lack of standardized solutions
- Limited storage and power grids
- Lack of qualified advisors
- Differences between predicted and actual savings



Financial barriers

- High upfront costs
- Insufficient subsidies
- The financial burden for homeowners
- Higher service costs after renovation



Social barriers

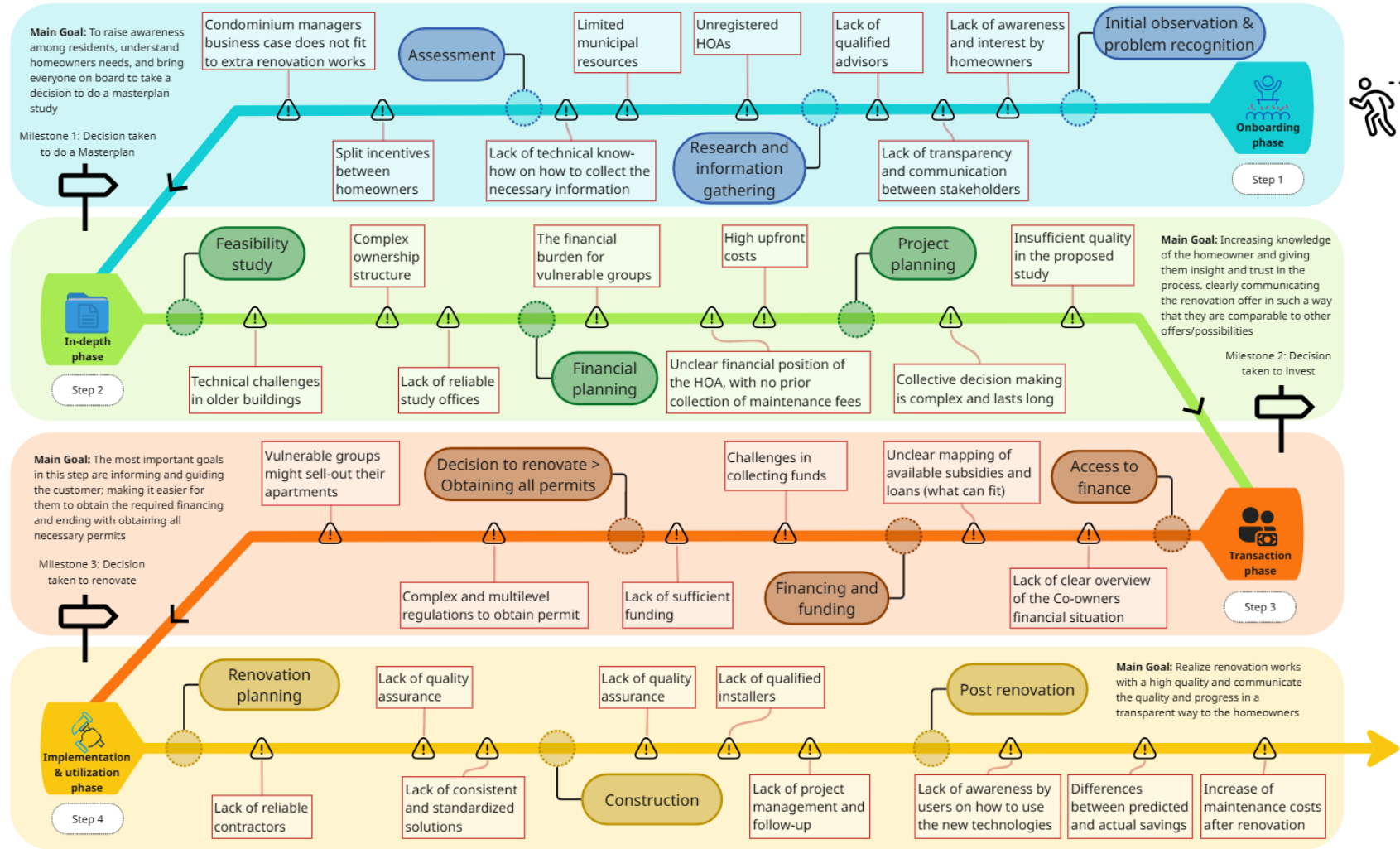
- Collective decision-making process are complex and lasts long
- Lack of awareness & information
- Homeowners' behavior towards renovation (different interests)



Legal barriers

- Complex ownership structure
- Complex and multilevel regulations
- Unregistered Condominium associations
- Limited access to financing

Combining phases and barriers to discuss solutions





Optimising the Value Proposition: Key Recommendations

Private IHRS (Netherlands)

- Clarify what is included in the service at each phase
- Emphasize long-term partnership and phased approach
- Reframe guarantees and quality assurance as part of the value promise
- Highlight independence from contractors as a trust-building asset
- Adapt the proposition to match different homeowner segments

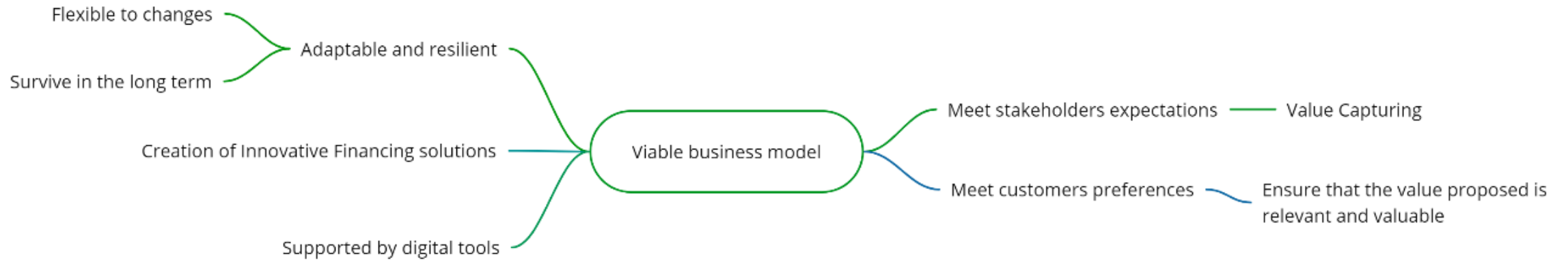
Public IHRS (Belgium)

- Extend service scope beyond the masterplan
- Communicate what is and isn't included at each stage
- Include a Phased renovation roadmaps

Assessment of the service models



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Assessment of the IHRS models



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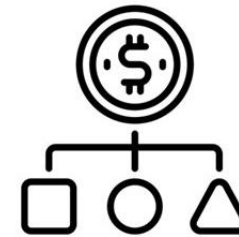
Financial stability



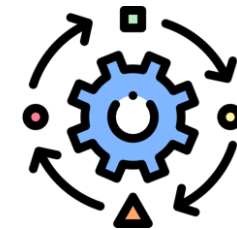
Customer focus
and value
proposition



Supported by
digital tools



Diversification



Supply chain
resilience



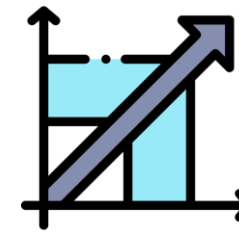
Adaptability and
Flexibility



Creation of
supportive financing
solutions



Operational
efficiency



Scalability



Competitive
advantages

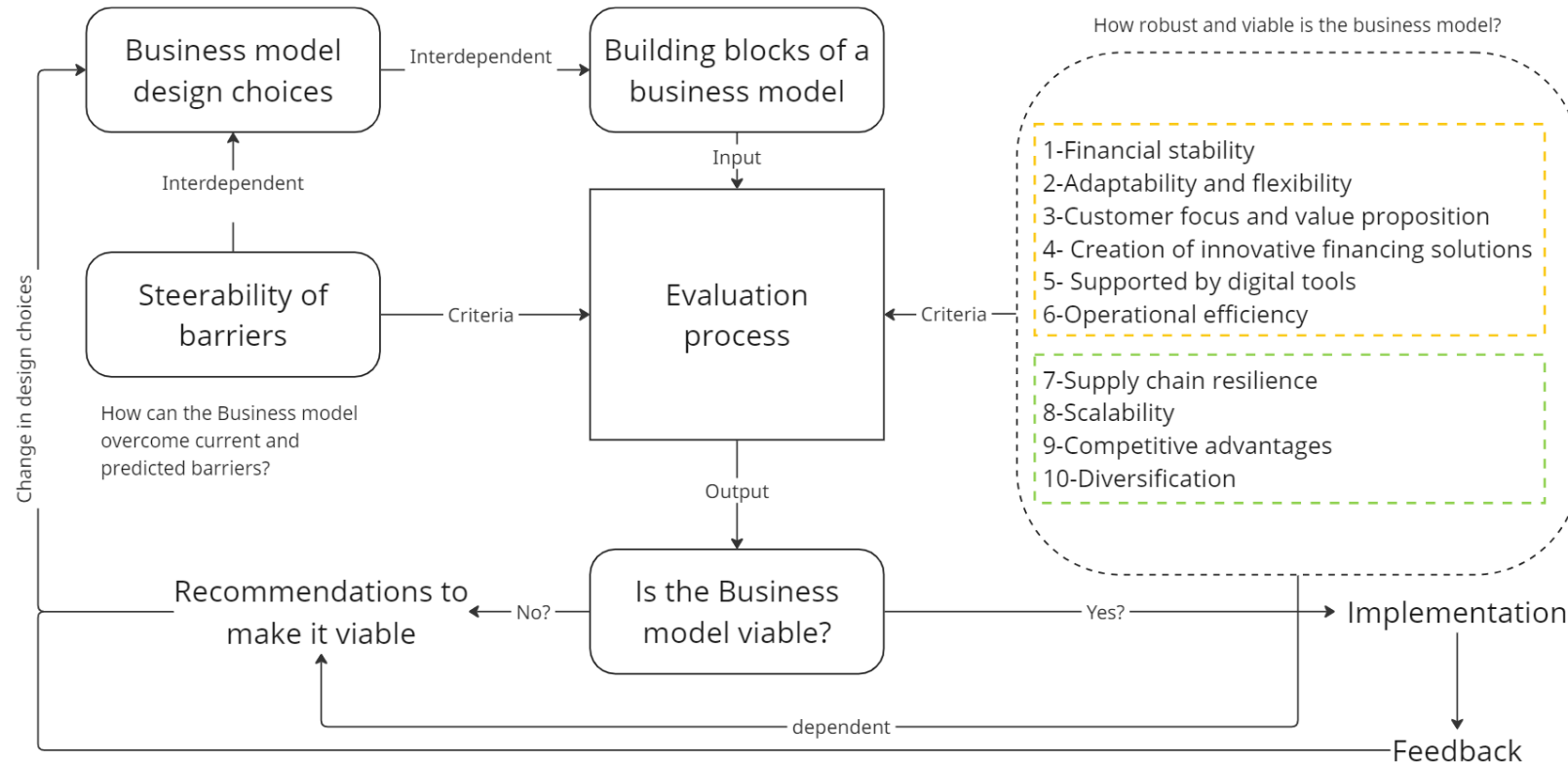
Sources: (Schinasi, 2004), (Güss et al., 2017), (Anderson et al., 2006; Osterwalder & Pigneur, 2010), (Waddle & Perlack, 1992), (Laffont-Eloire et al., 2019; Calderon-Monge & Ribeiro-Soriano, 2024), (Teece, 2010), (Gomes & Livdan, 2004), (Nielsen & Lund, 2017), (Jabbarzadeh et al., 2018), (Bharadwaj et al., 1993)





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Assessment of the IHRS models



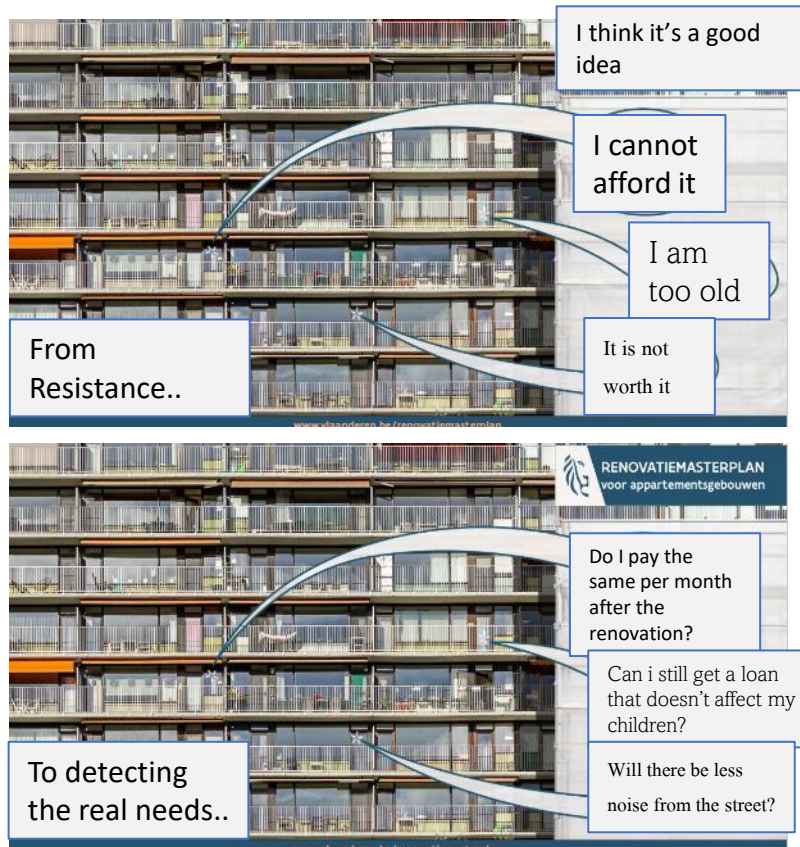
Sources: (Schinasi, 2004), (Güss et al., 2017), (Anderson et al., 2006; Osterwalder & Pigneur, 2010), (Waddle & Perlack, 1992), (Laffont-Eloire et al., 2019; Calderon-Monge & Ribeiro-Soriano, 2024), (Teece, 2010), (Gomes & Livdan, 2004), (Nielsen & Lund, 2017), (Jabbarzadeh et al., 2018), (Bharadwaj et al., 1993)



IHRS & Policy Recommendations

What already works well	What deserves further attention in IHRS development
 <p>Public financing of IHRS activities towards COAs.</p>	<p>Structural long-term and milestone-based financing (also after the planning phase). Adapted solutions for mixed COAs.</p>
 <p>Technical phasing presented in renovation master plans to prioritize decisions.</p>	<p>Speeding up the introduction of standardized tools, renovation-integrated multi-year maintenance plans and flexible modular building renovation passports.</p>
 <p>(Neutral and/or experienced) IHRS actors are trusted consultants.</p>	<p>Single contact person with competencies to steer social processes. Formal recognition of experienced IHRS and renovation actors.</p>
 <p>Multiple financial incentives are being developed for COAs and IHRS.</p>	<p>Focus on living-cost optimal scenarios for monthly expenses, solving backlog of maintenance, integration of solutions for vulnerable households.</p>
 <p>Cost calculation tools, maintenance reporting tools, COA management tools, emerging CRMs for IHRS</p>	<p>Multi-stakeholder interactive phase-based CRMs, including subsidy follow-up, matchmaking with stakeholders and checks for quality assurance.</p>
 <p>Ad-hoc IHRS collaboration with energy agencies, cooperatives, engineering offices, contractors, municipalities,...</p>	<p>Standardisation of public-private collaboration. Open education and quality assurance norms for performance-based contracting. Collaboration with banking authorities and changing business models of condominium managers.</p>

IHRS & Policy Recommendations



Appointing a process coach is key

Process coaches need to guide the COA to:

- Create homeowner support
- Develop a (sustainable) multiyear maintenance plan
- Adjust the reserve fund
- Develop and evaluate renovation scenarios
- Manage stakeholders
- Auto-finance the project
- Solve legal issues



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Conclusion

- Integrated Home Renovation Services are very much needed for co-owners' associations
- Service providers can improve in targeting deep renovation of condominiums
- **Recommendations:**
 - Adapt renovation coaching to the needs of co-owners' associations
 - Develop collaborative IHRS business models
 - Improve IHRS supporting all phases in renovation journeys





References

Stakeholders for the development of Integrated Home Renovation Services for Condominium Associations – international

https://condoreno.org/wp-content/uploads/2023/11/CondoReno-D2.1-International-Stakeholder-Mapping_V1.0.pdf

Proof of concept based on 8 pilot projects

https://condoreno.org/wp-content/uploads/2025/10/CondoReno_Deliverable-D4.1-M36.pdf

Investment proposal method and financial decision tool

https://condoreno.org/wp-content/uploads/2025/06/D3.1-Investment-proposal-method-and-financial-decision-tool_M18_with-Appendixes.pdf

Co-creating Integrated Home Renovation Services for co-owned condominiums

https://condoreno.org/wp-content/uploads/2025/10/CondoReno_Deliverable-D5.2_Co-creating-IHRS_FINAL_20250930.pdf

Training material for activating the supply side

<https://condoreno.org/guidebook-for-course-providers/>

Evaluating The Development of Integrated Home Renovation Services for Condominiums

https://condoreno.org/wp-content/uploads/2025/10/CondoReno_D6.1-Evaluating-the-developments-of-IHRS-M34_V1.0.pdf

Executive Summary Policy Recommendations

https://condoreno.org/wp-content/uploads/2025/10/CondoReno_Deliverable-D.6.2_final_submitted.pdf

Barriers and solutions for homeowners' associations undertaking deep energy renovations of condominiums

<https://research.tudelft.nl/en/publications/barriers-and-solutions-for-homeowners-associations-undertaking-de/>

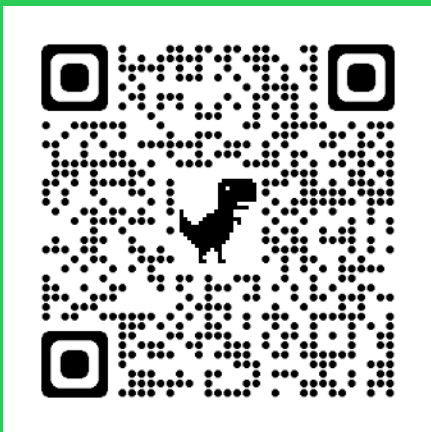
Integrated home renovation services as a means to boost energy renovations for homeowner associations: A comparative analysis of service providers' business models

<https://research.tudelft.nl/en/publications/integrated-home-renovation-services-as-a-means-to-boost-energy-re/>

Intermediaries in Action: How Integrated Home Renovation Service Providers Engage Stakeholders in Energy Renovations for Homeowner Associations

<https://iopscience.iop.org/article/10.1088/1755-1315/1554/1/012139>

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