

Il futuro ha bisogno di ricerca!

**Social housing energy retrofitting:
Business model and supporting tools for public administration**

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Introduction

Social housing



Introduction

Social housing association as inspiring example



Research question

How to support the energy refurbishment process
for social housing association?

Methodology



1

Analysis of the context
Management of the retrofit process by social housing associations

2

Series of Workshops
Concepts
Development
Simulation
Validation

Methodology

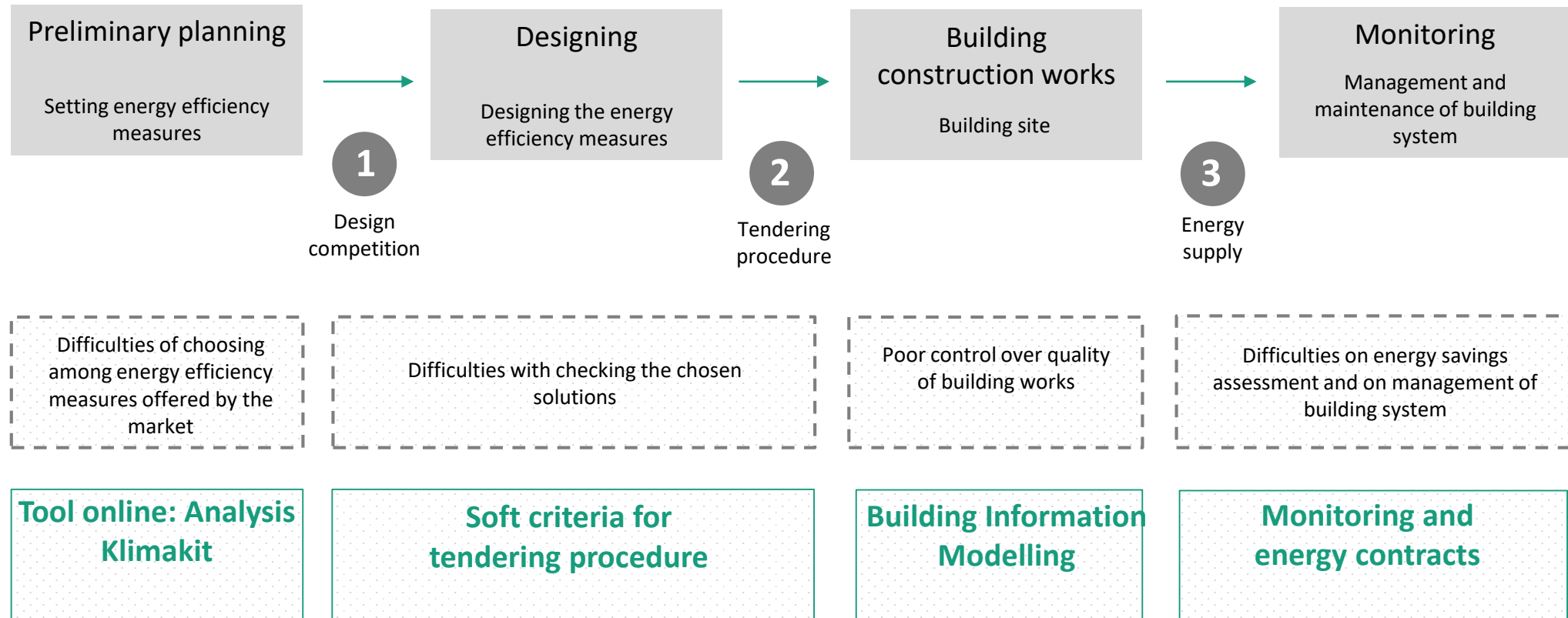
Main findings



1. Definition of **standardized retrofit packages** with warranty of certain **energy savings**
2. **Supporting tools** for the most critical phases of refurbishment process
3. **Business model** for financing the retrofit by energy costs savings

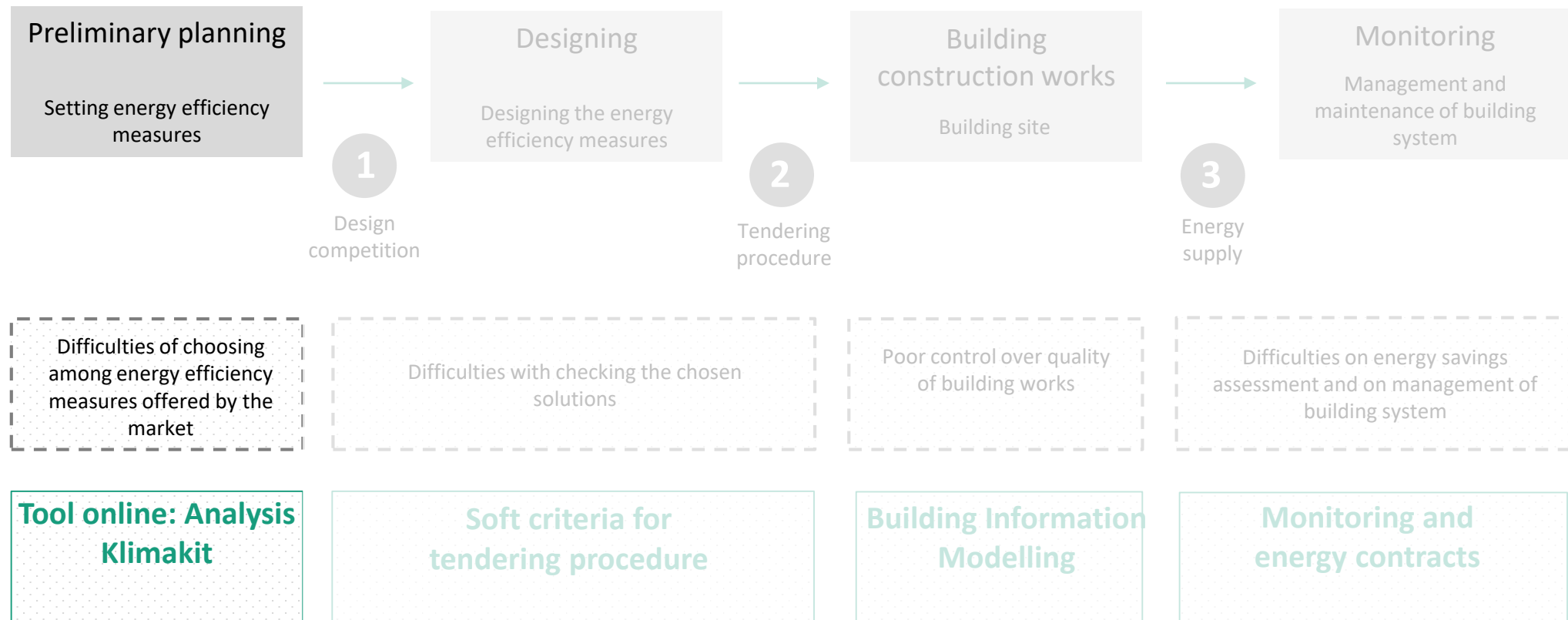
Existing energy retrofit process

Critical issues



Existing energy retrofit process

Critical issues



Supporting tools

Decision making



Terraced house



Apartment block
(Large)



Apartment block
(Small)



Multi-family house



Mixed



Supporting tools

Decision making



Terraced house



Apartment block
(Large)



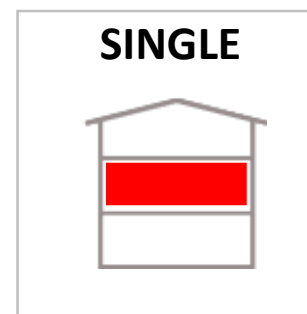
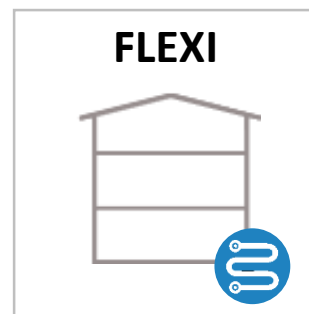
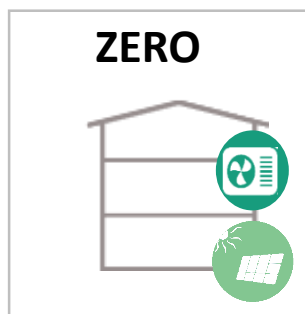
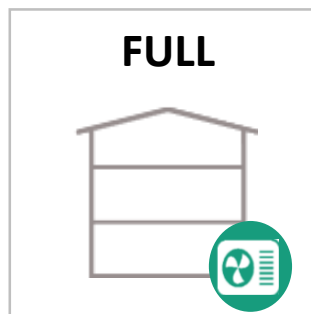
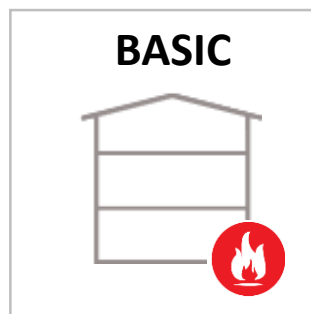
Apartment block
(Small)



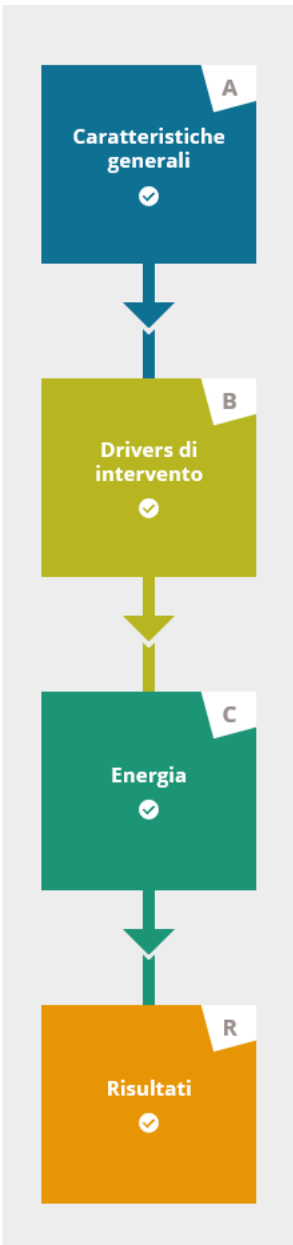
Multi-family house



Mixed



Risultati - Report analisi Klimakit



PACCHETTO KLIMAKIT: "BASE"	LIVELLO 1	LIVELLO 2	LIVELLO 3
Riduzione costi operativi	62 %	77 %	73 %
Riduzione emissione CO ₂ eq.	62 %	77 %	80 %
Costi riqualificazione involucro (€/m ²)	165,40 €	195,29 €	229,74 €
Costi riqualificazione impianto (€/m ²)	4,26 €	4,26 €	44,00 €
Tempi di rientro senza incentivi	14 anni	14 anni	19 anni
Tempi di rientro incentivi provinciali	7 anni	7 anni	10 anni
Tempi di rientro incentivi nazionali	12 anni	8 anni	10 anni

INDIETRO

SCARICA REPORT

NUOVA ANALISI

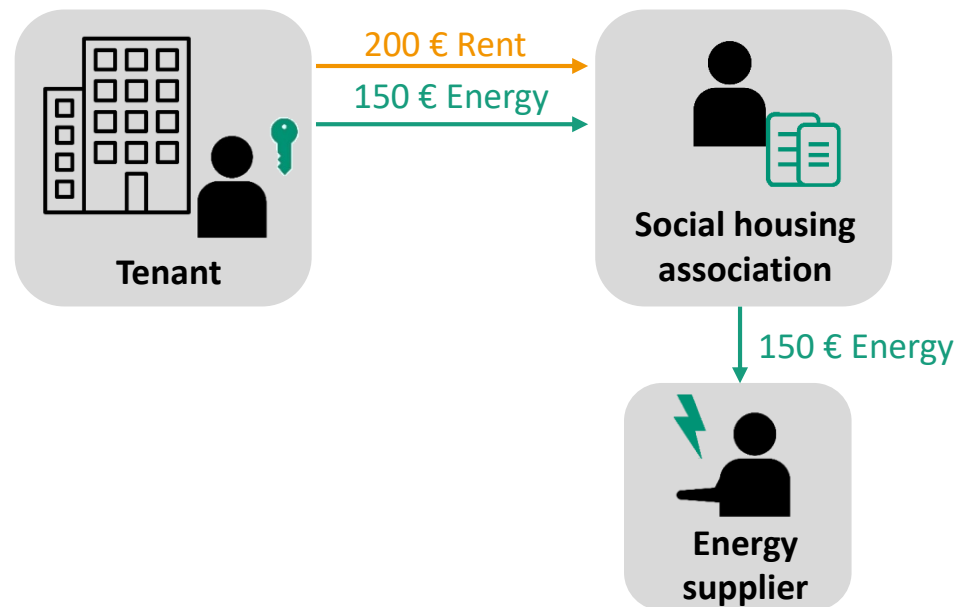
Existing energy retrofit process

Costs before the retrofit



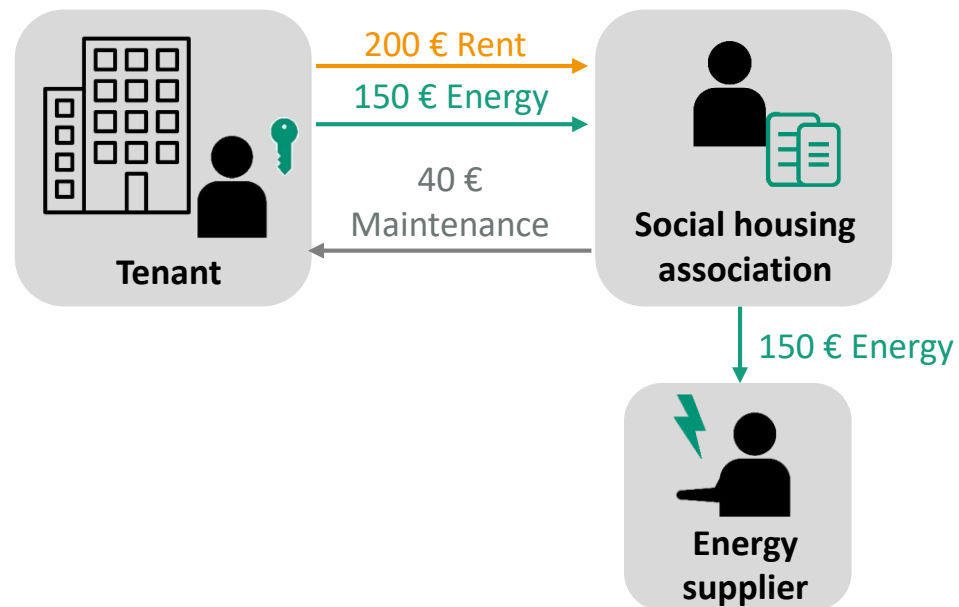
Existing energy retrofit process

Costs before the retrofit



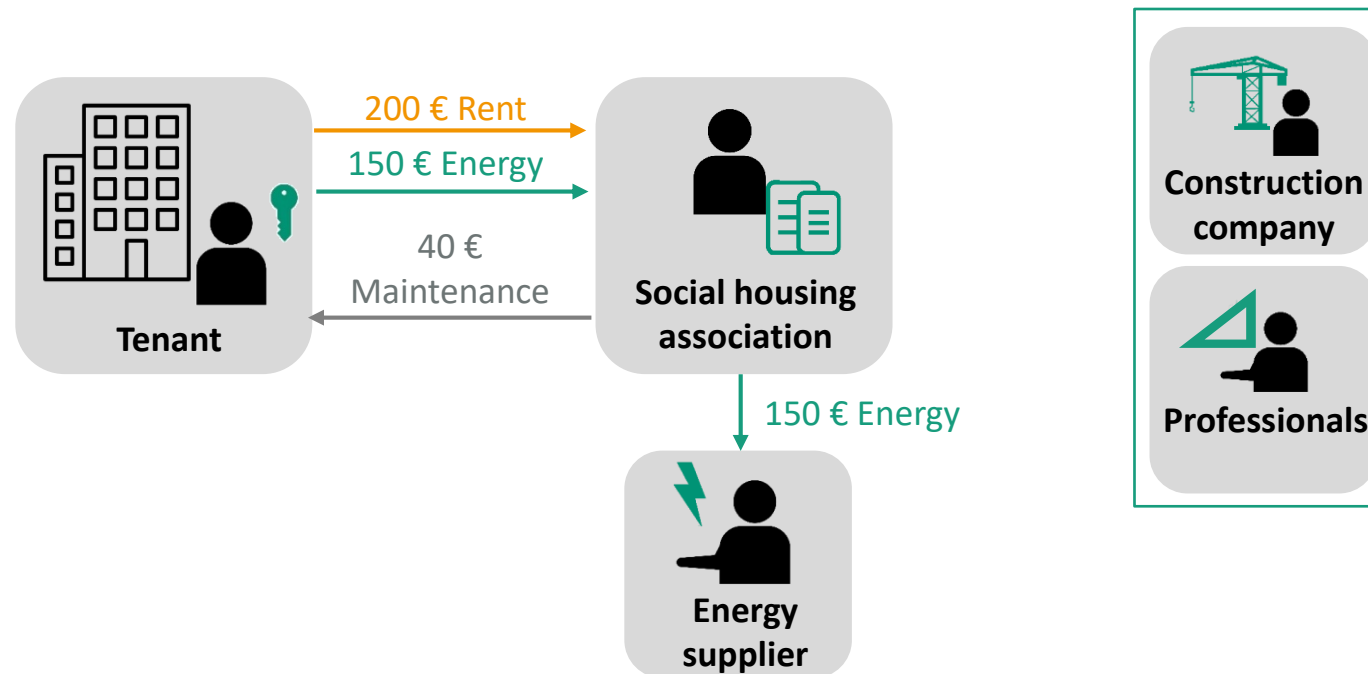
Existing energy retrofit process

Costs before the retrofit



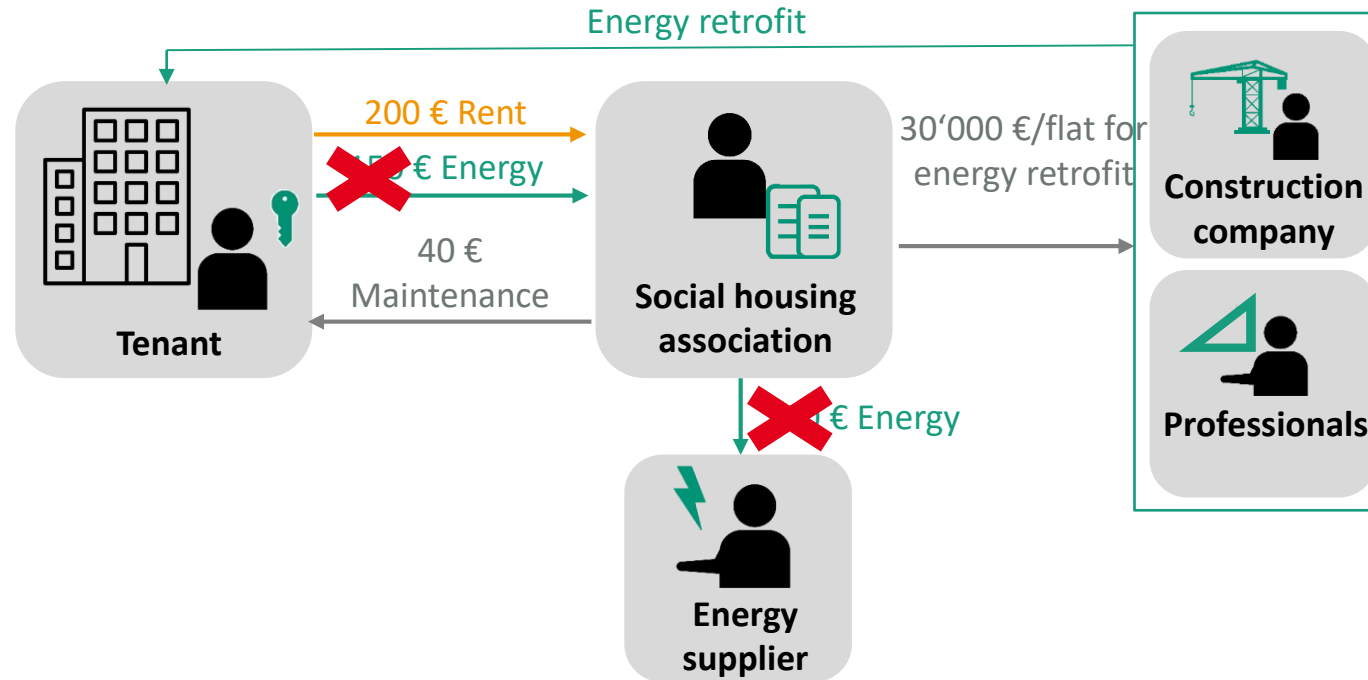
Existing energy retrofit process

Costs after the retrofit



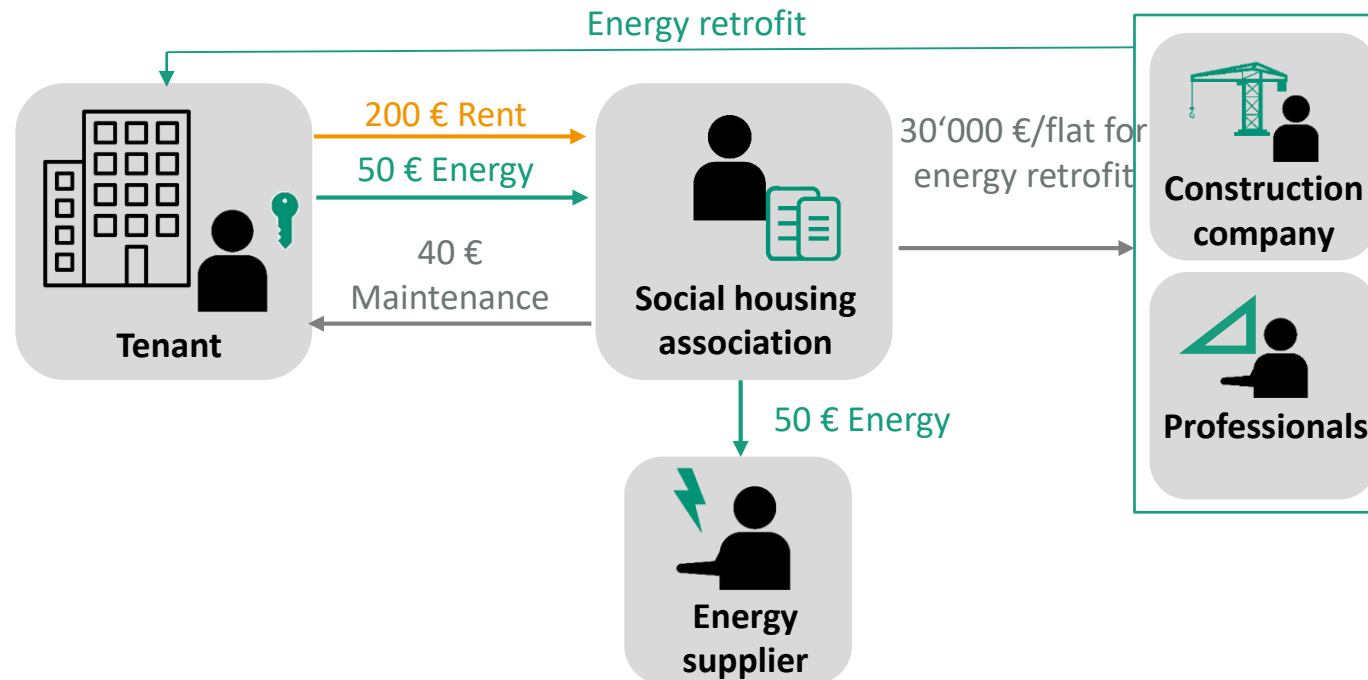
Existing energy retrofit process

Costs after the retrofit

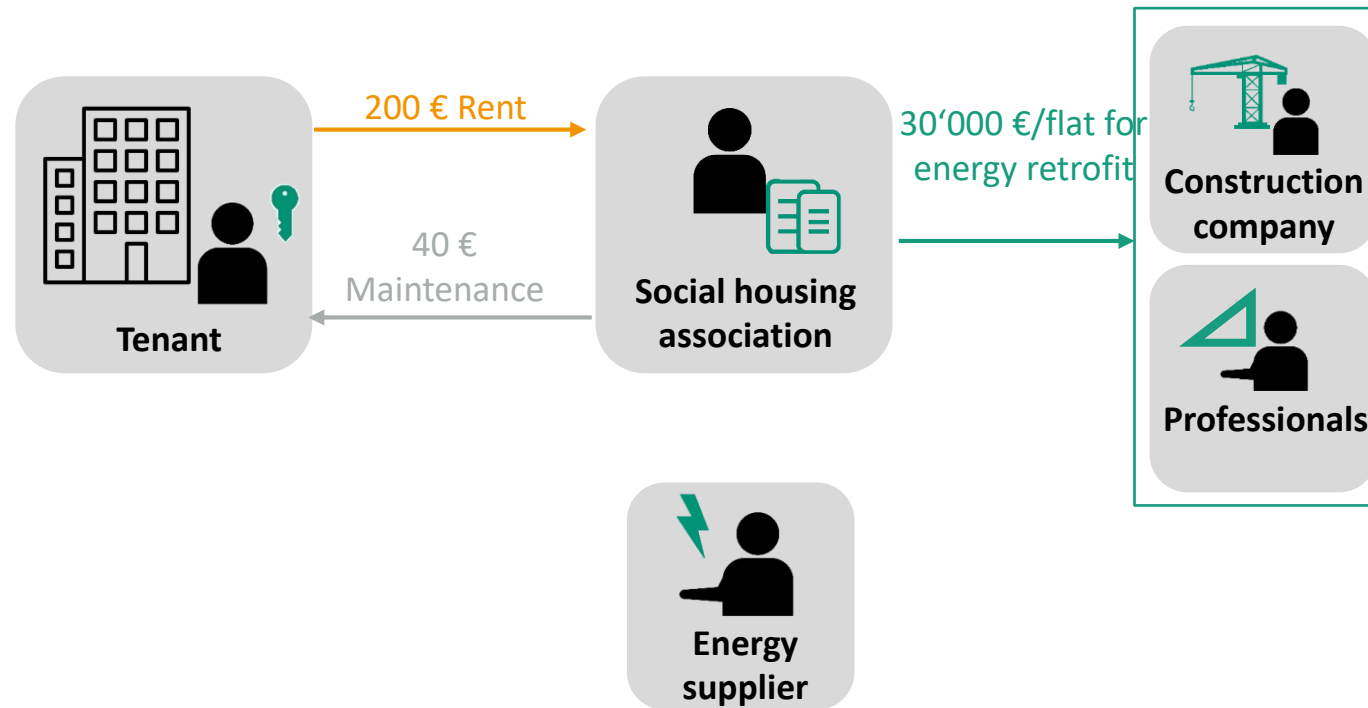


Existing energy retrofit process

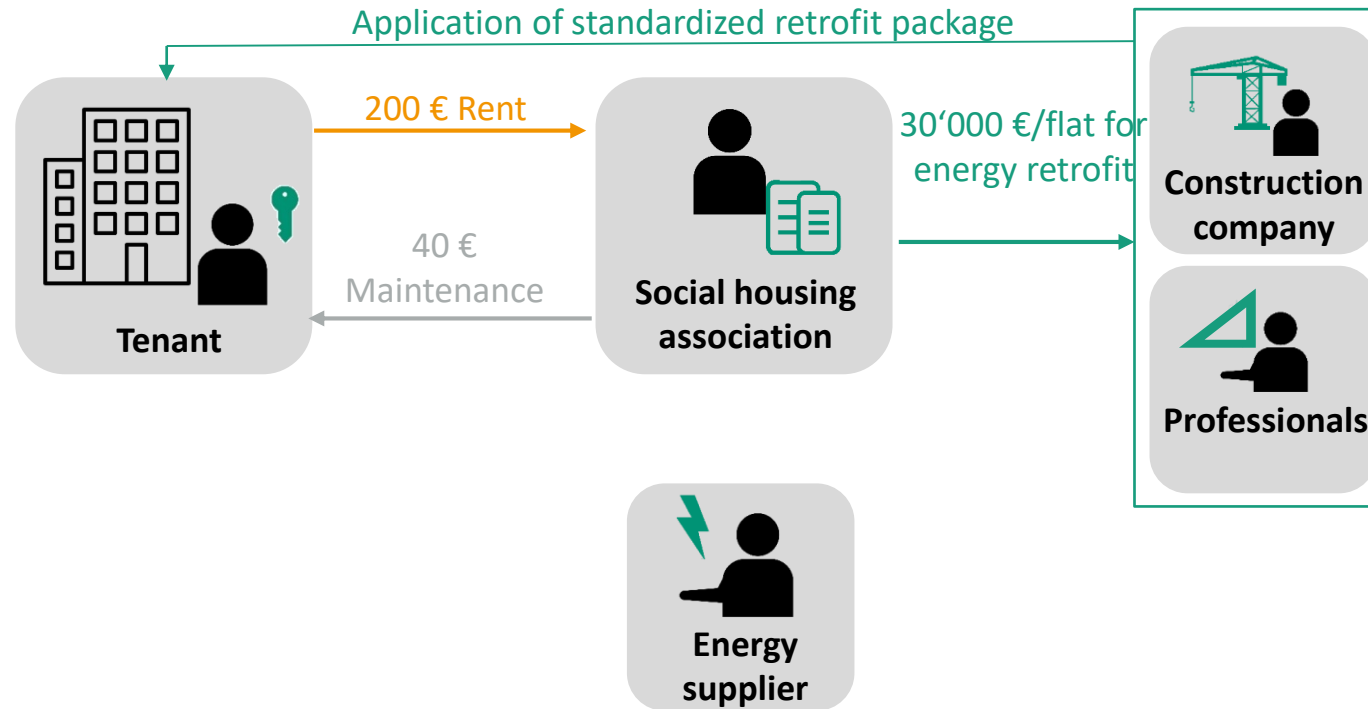
Costs after the retrofit



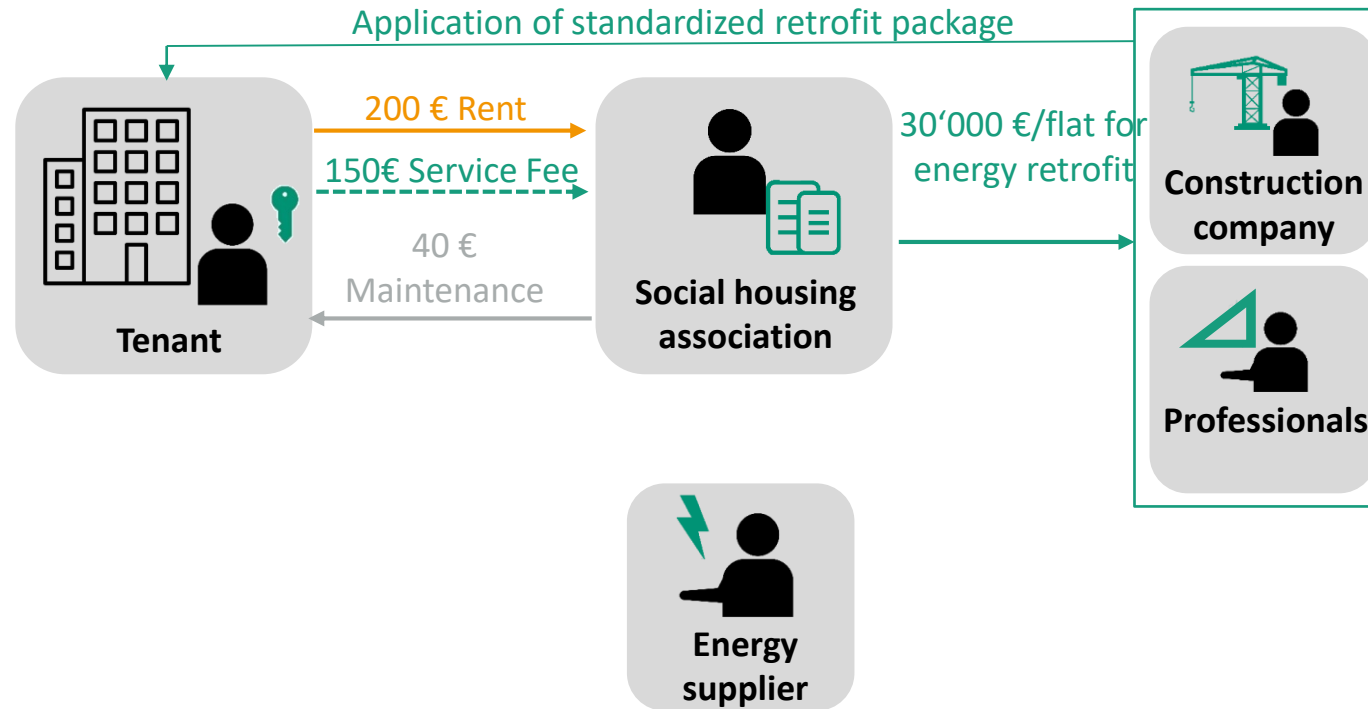
Proposed Business Model



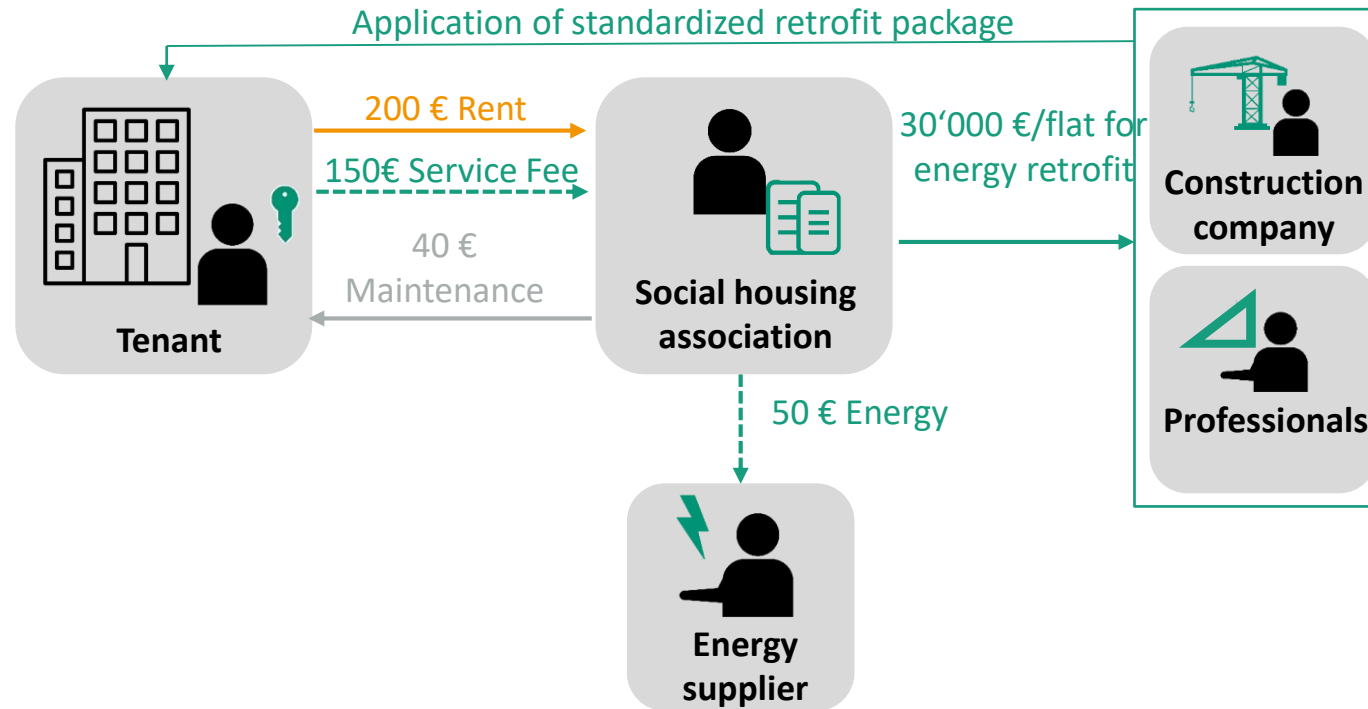
Proposed Business Model



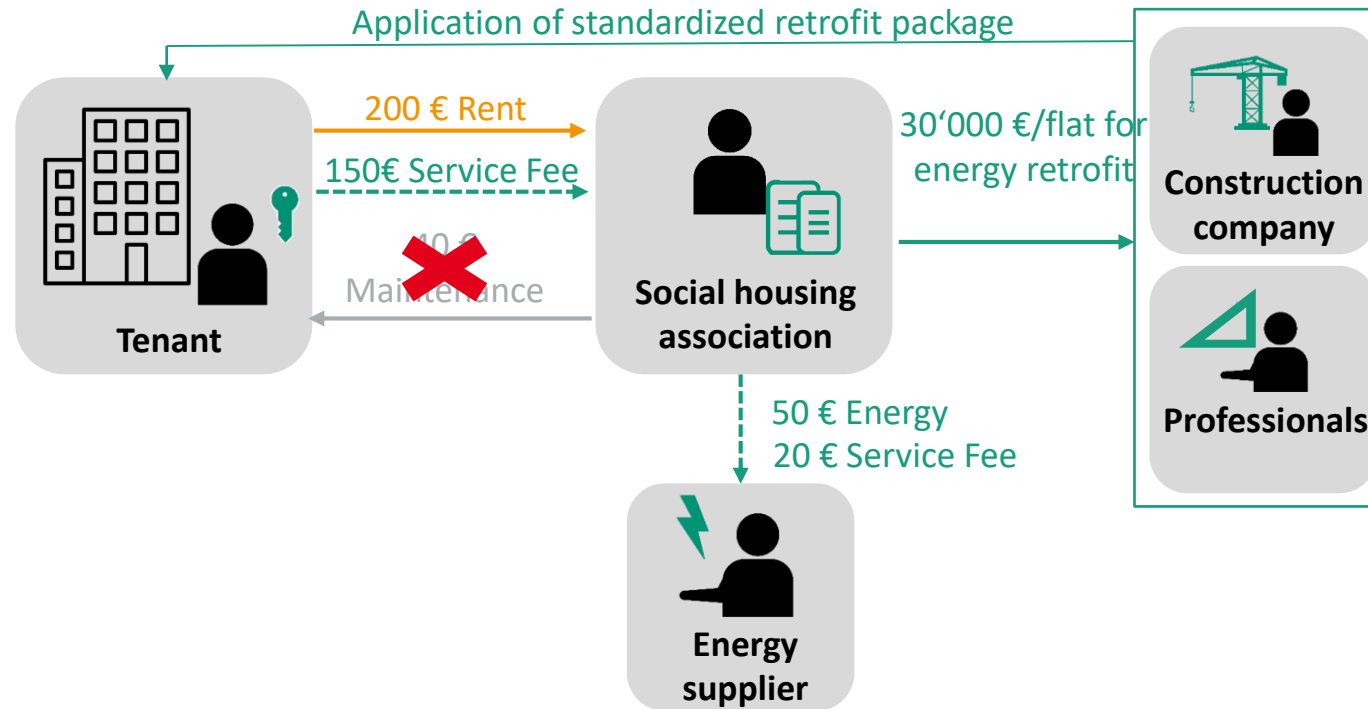
Proposed Business Model



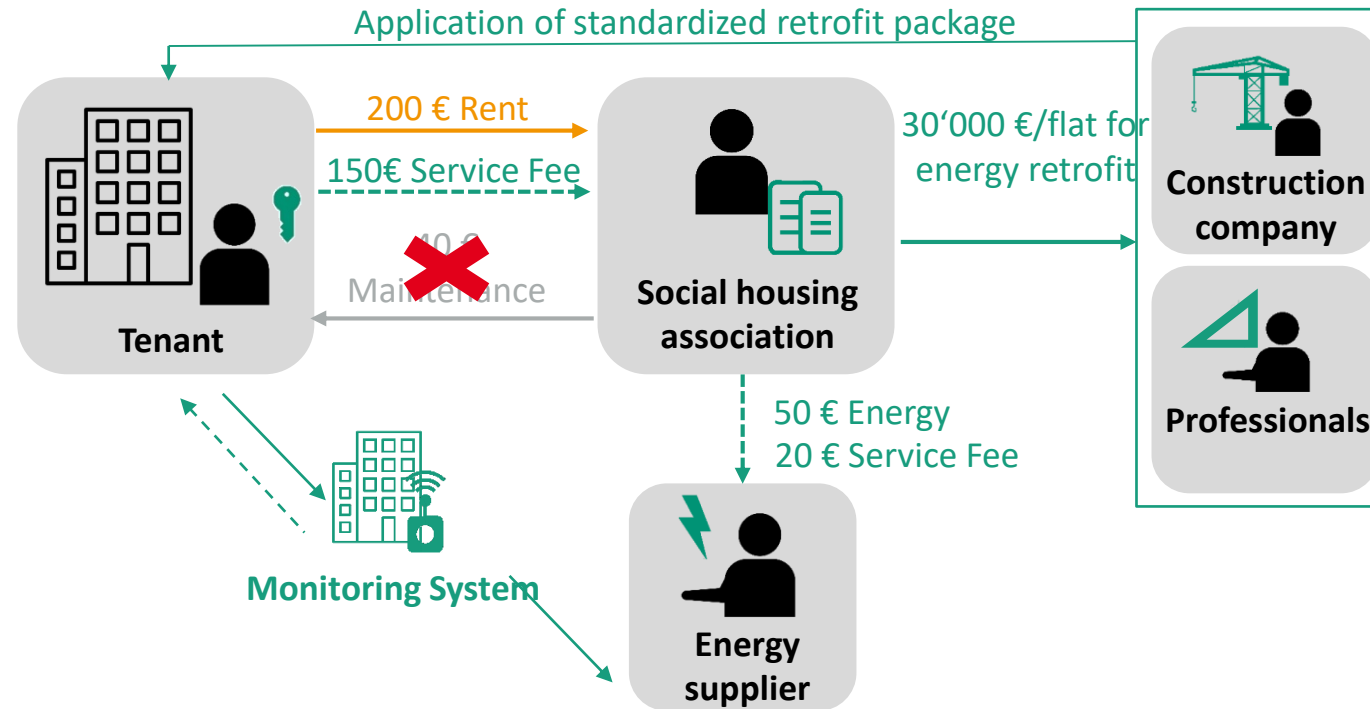
Proposed Business Model



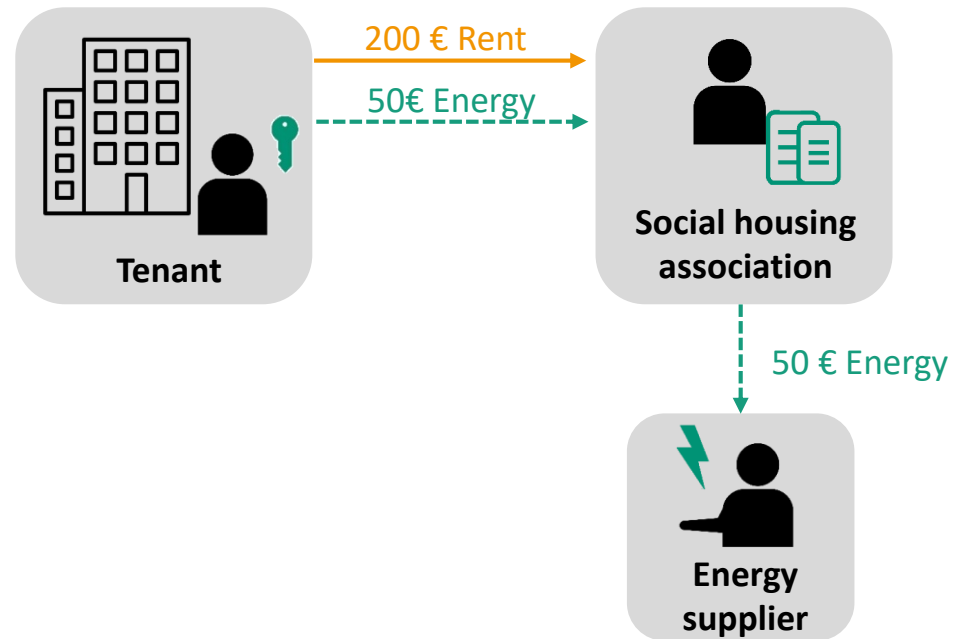
Proposed Business Model



Proposed Business Model



Proposed Business Model after 10 years



Conclusions

Benefits of the proposed Business Model:

- **Social housing associations can recover part of the investment costs** for retrofit;
- It **protects tenants** to future energy prices;
- It define **long-term customer loyalty** between energy supplier and Social housing association;
- It **improves the collaboration** among stakeholders for creating integrated solutions with warranty of energy performance.

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