



# SUPER i

## D1.4 Recommendations on innovative financial instruments for EE renovations

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# Executive Summary

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This document provides a comprehensive analysis and recommendations for innovative financial instruments to fund the EE renovations, focusing on Public-Private Partnership (PPP) models, their comparative benefits, and specific applications in the SUPER-i pilots. The report categorises PPPs into four main types: guaranteed savings contracts, shared savings contracts, Direct Credit Lines (DCLs), and Energy Supply Contracts (ESCs). Each model is analysed for its structure, risk allocation, and potential benefits for social housing associations, private owners, tenants, and government entities. Additionally, the report includes a ranking system for PPP contracts based on their performance in pilot projects in Italy, Denmark, and Slovenia, offering practical guidance for stakeholders in selecting appropriate financial instruments for EE renovations.

## Main Findings by Country

Italy: the ownership structure of social housing is unique, with properties co-owned by social housing companies and private owners. This dual ownership requires a collaborative approach when designing and implementing PPP contracts. One of the significant challenges identified is that social housing companies in Italy are prohibited from obtaining loans from funding institutions, which necessitates the use of innovative funding solutions. These solutions include crowdfunding and government grants to cover investment costs, ensuring that EE renovation projects can proceed despite financial constraints.

Guaranteed savings contracts are identified as the most suitable PPP model for Italy, followed by shared savings contracts. These contracts align well with the restrictions on loan access faced by social housing companies. Under a guaranteed savings contract, the Energy Service Company (ESCO) bears the financial and technical risks, guaranteeing a predetermined level of energy savings that covers the debt incurred for the project. If the actual savings exceed the guaranteed amount, the additional savings are shared, benefiting both the social housing company and the ESCO.

The benefits and costs associated with these contracts are distributed among various stakeholders. Social housing companies benefit from increased building value and a portion of the energy savings, while ESCOs receive a significant share of the energy savings and cover maintenance and operational costs. Tenants enjoy energy savings without incurring any costs, and the government gains environmental benefits through reduced CO2 emissions.

Slovenia: the social housing stock is entirely owned by social housing companies, which simplifies the ownership dynamics compared to Italy. Funding mechanisms in Slovenia involve a combination of private savings and national grants to finance EE interventions. This approach ensures that the

financial burden is shared, making it feasible for social housing companies to undertake large-scale EE projects.

Direct credit lines and guaranteed savings contracts are the most suitable PPP models used in Slovenia. These contracts are well-suited to the local context, where social housing companies cover the investment costs and benefit from increased building value and energy savings. ESCOs share the investment costs and risks, receiving a portion of the energy savings as compensation for their involvement. Tenants, like in Italy, benefit from energy savings without any direct cost involvement. The government supports these projects through grants aimed at energy-efficient refurbishment, contributing to societal CO2 emission reductions.

**Denmark:** the social housing companies in Denmark fully owns the social housing buildings, with tenants directly involved in covering a small percentage of the investment costs through their rent payments. These payments contribute to the national building fund, which plays a crucial role in financing EE projects. This unique funding mechanism ensures that both the social housing associations and the tenants have a vested interest in the success of EE renovations.

Shared savings and guaranteed savings contracts are the preferred PPP models in Denmark. These contracts ensure that social housing associations and ESCOs are both incentivized to achieve the highest possible energy savings. Under these contracts, the social housing company is responsible for a significant portion of the investment and maintenance costs but benefits from increased building value and energy savings. ESCOs also cover a portion of the investment costs and receive a substantial share of the energy savings as a return on their investment. Tenants in Denmark contribute a small percentage of the refurbishment costs, which is fully refunded when they move out, ensuring they also benefit from energy savings without long-term financial commitments. The government supports EE projects through grants, ensuring that societal benefits such as reduced CO2 emissions are achieved.

In summary, this report provides a strategic framework for leveraging innovative financial instruments to achieve sustainable energy efficiency improvements in social housing. The comprehensive analysis and practical recommendations serve as a valuable resource for driving forward the goals of the SUPER-i project, contributing to reduced carbon emissions, enhanced energy savings, and improved financial sustainability in the social housing sector.

# 1. Introduction

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## Purpose of the Document

The purpose of the "D1.4 Recommendations on Innovative Financial Instruments for Energy Efficiency Renovations" deliverable is to offer a detailed exploration and set of recommendations for innovative financial instruments tailored specifically for energy efficiency (EE) renovations within social housing contexts.

The primary focus of this document is to identify and evaluate various Public-Private Partnership (PPP) models that can effectively bridge the investment gap in EE projects. By leveraging the expertise and financial capabilities of both the public and private sectors, PPPs can provide the necessary funding and risk management solutions to support large-scale EE renovations. The document categorizes PPPs into four main types—Guaranteed Savings Contracts, Shared Savings Contracts, Direct Credit Lines (DCLs), and Energy Supply Contracts (ESCs)—and provides a comparative analysis of these models. This document includes practical case studies from pilot projects in Italy, Denmark, and Slovenia. These case studies illustrate the application of different PPP models in real-world scenarios, providing valuable insights into the challenges and successes of implementing EE renovations through innovative financial instruments. The case studies also highlight the importance of tailoring financial solutions to local contexts, taking into account factors such as regulatory environments, ownership structures, and the specific needs of the social housing sector.

In summary, the purpose of this document is to serve as a strategic guide for policymakers, social housing associations, financial institutions, and other stakeholders involved in energy efficiency renovations. By providing comprehensive recommendations on innovative financial instruments, the document aims to enhance the financial viability and environmental impact of EE projects, contributing to the broader goals of sustainability and carbon reduction.

## 2. Public Private partnership contracts

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### 2.1. Overview

Public-Private Partnerships (PPPs) are long-term agreements that align government service delivery objectives with the profit motives of private entities, as defined by the OECD in 2008. In times of financial constraints, PPPs become essential for securing funding and minimising capital expenditure on energy infrastructure projects. The European Commission categorises PPPs into two types: contractual and institutionalised. Over the past two decades, countries like the UK, Spain, France, Germany, Italy, and Portugal have seen significant growth in PPPs and project finance.

PPPs offer mutual benefits to both sectors. The private sector gains guaranteed mitigation of project risks, while the public sector receives much-needed capital investment and management expertise. These partnerships ensure necessary investments, effective public resource management, timely service provision, and long-term remuneration for the private sector. PPPs leverage private sector expertise and often classify assets off the government's balance sheet, improving fiscal indicators. However, PPPs can also result in potential cost increases, negatively impact fiscal health, and involve lengthy, costly procurement processes. The inflexibility due to the long-term and complex nature of PPP agreements can also be a drawback.

Financing structures for PPPs often involve a Special Purpose Vehicle (SPV) used by the private party to raise finance through equity and debt. Equity investors, such as project developers and private equity funds, take on higher risks for higher returns. In non-recourse project finance, lenders are repaid from project revenues without recourse to equity investors, typically involving 70-95% of the total finance as debt. While this structure benefits large projects, it comes with higher interest rates compared to government borrowing. Alternatives to non-recourse project finance include corporate guarantees, full-recourse corporate finance, and limited recourse project finance. Governments can also participate by providing direct loans or guarantees to lower financing costs, with lenders often seeking additional credit support through measures like step-in rights or government involvement.

### 2.2. Guaranteed savings

A Guaranteed Savings Contract is a financial arrangement where the social housing association finances 100% of the investment costs required for an energy efficiency (EE) renovation project. In this contract, an Energy Service Company (ESCO) is responsible for the project's implementation, design, and all costs associated with the installed EE technologies, thereby taking on full financial and technical risks. The social housing association is guaranteed a predetermined level of energy savings, equivalent to the cost of the debt incurred to finance the project. This structure ensures that the social housing company bears no financial risk as the ESCO guarantees the energy savings.

If the actual energy savings exceed the guaranteed amount, the extra savings are shared between the social housing company and the ESCO. Specifically, the social housing company receives the guaranteed savings plus 20% of the additional savings, while the ESCO receives 80% of the additional savings. Conversely, if the energy savings fall short of the guaranteed amount, the ESCO compensates the social housing company for the difference. This arrangement aligns the interests of both parties, motivating the ESCO to maximise energy savings to benefit from the additional savings, thereby ensuring optimal performance and accountability. The table below illustrates the structure of the guaranteed savings contract.

<b>Public Private Partnership (PPP): Guaranteed savings</b>	
<b>Involved parties:</b> Social Housing, ESCO and Funding institution. <b>Source of funding:</b> The social housing is responsible for covering the investment costs. <b>Investment risk:</b> is taken by the ESCO	
<b>Social housing:</b> <b>Benefits</b> <ul style="list-style-type: none"> <li>❖ <b>energy savings</b> (which are transferred to the <b>tenants</b>)               <ul style="list-style-type: none"> <li>➢ if <i>energy savings</i> &gt; <i>minimum guaranteed savings</i>, gets <b>minimum guaranteed savings + 20% (energy savings - minimum guaranteed savings)</b></li> <li>➢ if <i>energy savings</i> &lt; <i>minimum guaranteed savings</i>, gets <b>minimum guaranteed savings.</b></li> </ul> </li> <li>❖ <b>increased value of the building</b></li> </ul> <b>Cost</b> <ul style="list-style-type: none"> <li>❖ <b>investment cost</b> (partly possibly covered by <b>government grants</b>)</li> </ul>	
<b>Private owners</b> (under the assumption that some of the dwellings are privately owned) <b>Benefits</b> <ul style="list-style-type: none"> <li>❖ <b>energy savings</b></li> <li>❖ <b>increased value of the building</b></li> </ul> <b>Cost</b> <ul style="list-style-type: none"> <li>❖ <b>investment cost</b> (partly possibly covered by <b>government grants</b>)</li> </ul>	
<b>Tenants</b> <b>Benefits</b> <ul style="list-style-type: none"> <li>❖ <b>energy savings</b></li> </ul> <b>Cost</b> <ul style="list-style-type: none"> <li>❖ It depends on the country. In our pilots, it goes from <b>0 (Italy and Slovenia)</b> to <b>2% of the refurbishment cost (Denmark)</b> which is totally returned when the tenant moves out.</li> </ul>	
<b>National or local government</b> <b>Benefits</b> <ul style="list-style-type: none"> <li>❖ <b>Lower CO2 emissions</b> for society</li> </ul> <b>Cost</b> <ul style="list-style-type: none"> <li>❖ <b>Grants</b> towards energy efficient refurbishment</li> </ul>	



## ESCO

### Benefits

#### ❖ Energy savings:

- If energy savings > minimum guaranteed savings, they get **80% (energy savings - minimum guaranteed savings)**
- otherwise, **(energy savings - minimum guaranteed savings)**

### Cost

**maintenance and operating costs** of running the energy efficiency technologies.

## 2.3. Shared savings

In a Shared Savings Contract, the ESCO covers 100% of the investment costs for the EE renovation project, while the social housing company provides the equity by offering the building for the project. The ESCO also manages the project's design, implementation, and all associated costs, bearing all financial and technical risks. The ESCO guarantees a fixed amount of energy savings, ensuring it recovers its investment and any potential profit.

If the actual energy savings exceed the guaranteed amount, the extra savings are shared between the social housing company and the ESCO. In this scenario, the social housing company receives 35% of the additional savings, while the ESCO receives 65% of the additional savings plus the guaranteed savings. If the energy savings fall short of the guaranteed amount, the ESCO absorbs the financial loss, and the social housing company does not receive any savings but also incurs no financial risk. This setup ensures that the ESCO is incentivized to achieve higher energy savings to benefit from the additional savings, thereby aligning their interests with those of the social housing company. The table below illustrates the structure of the shared savings contract.

Public Private Partnership (PPP): Shared savings
<b>Involved parties:</b> Social Housing, ESCO and Funding institution.
<b>Source of funding:</b> The ESCO is responsible for covering the investment costs.
<b>Investment risk:</b> is taken by the ESCO
<b>Social housing:</b> <b>Benefits</b> <ul style="list-style-type: none"><li>❖ <b>energy savings</b> (which are transferred to the <b>tenants</b>)<ul style="list-style-type: none"><li>➤ if energy savings &gt; minimum guaranteed savings, <b>gets 35% (energy savings - minimum guaranteed savings)</b></li><li>➤ if energy &lt; minimum guaranteed savings, <b>gets 0</b></li></ul></li><li>❖ <b>increased value of the building</b></li></ul>

<p><b>Private owners</b> (under the assumption that some of the dwellings are privately owned)</p> <p><b>Benefits</b></p> <ul style="list-style-type: none"> <li>❖ <b>energy savings</b> <ul style="list-style-type: none"> <li>➤ If energy savings &gt; minimum guaranteed savings, <b>gets 35% (energy savings - minimum guaranteed savings)</b></li> <li>➤ if energy &lt; minimum guaranteed savings, <b>gets 0</b></li> </ul> </li> <li>❖ <b>increased value of the building</b></li> </ul>
<p><b>Tenants</b></p> <p><b>Benefits</b></p> <ul style="list-style-type: none"> <li>❖ <b>energy savings</b></li> </ul> <p><b>Cost</b></p> <ul style="list-style-type: none"> <li>❖ It depends on the country. In our pilots, it goes from <b>0 (Italy and Slovenia) to 2% of the refurbishment cost (Denmark)</b> which is totally returned when the tenant moves out.</li> </ul>
<p><b>National or local government</b></p> <p><b>Benefits</b></p> <ul style="list-style-type: none"> <li>❖ <b>Lower CO2 emissions</b> for society</li> </ul> <p><b>Cost</b></p> <ul style="list-style-type: none"> <li>❖ <b>Grants</b> towards energy efficient refurbishment</li> </ul>
<p><b>ESCO</b></p> <p><b>Benefits</b></p> <ul style="list-style-type: none"> <li>❖ <b>Energy savings:</b> <ul style="list-style-type: none"> <li>➤ If energy savings &gt; minimum guaranteed savings, they get <b>minimum guaranteed savings + 65% (energy savings - minimum guaranteed savings)</b></li> <li>➤ Otherwise, they get <b>energy savings.</b></li> </ul> </li> </ul> <p><b>Cost</b></p> <p><b>maintenance and operating costs</b> of running the energy efficiency technologies.  <b>investment cost</b> (partly possibly covered by <b>government grants</b>)</p>

### Comparative overview between Guaranteed savings and shared savings contracts

Both the Guaranteed Savings Contract and Shared Savings Contract provide structured frameworks for financing and implementing EE projects, leveraging the expertise and financial capabilities of ESCOs while protecting the interests of social housing associations. In a Guaranteed Savings Contract, the social housing company bears no risk, with the ESCO covering any shortfall in savings, and the social housing association invests 100% of the project costs. Savings are distributed so that the social housing company receives guaranteed savings plus 20% of additional savings, while the ESCO receives 80% of the additional savings.

In contrast, the Shared Savings Contract involves the ESCO investing 100% of the project costs, with the social housing company providing the building equity. Here, the ESCO absorbs all financial risks if the savings fall short of the guaranteed amount. Savings distribution in this contract means the social housing company receives 35% of additional savings, while the ESCO receives 65% plus the

guaranteed savings. These contracts enable effective financing and implementation of EE projects, ensuring sustainable and energy-efficient improvements through a collaborative approach.

## 2.4. Energy Supply Contract

Energy Supply Contracts (ESCs) are business models where social housing companies collaborate with Energy Service Companies (ESCOs) to install energy efficiency measures, with the project costs being financed by both parties. Under an ESC, the social housing company and the ESCO share the financial risk and the benefits of the EE renovations. The cost-sharing ratio typically ranges between 50%-90% covered by the ESCO and 10%-50% by the social housing company.

In an ESC, the social housing company pays for the energy efficiency improvements through their energy or utilities bill. This model means that there is no guaranteed minimum energy savings for either party, and the financial risk is shared. The energy savings generated by the EE renovations are divided between the social housing company and the ESCO based on the percentage of the investment costs each party covered. Additionally, the debt associated with the project typically remains with the meter, meaning that if the social housing company sells the building, the new owner assumes the contract.

This contract type is particularly beneficial for ensuring that energy efficiency improvements are continuously managed and financed even if ownership of the building changes. It resembles traditional energy supplier models, making it a familiar and manageable structure for both social housing companies and ESCOs. The shared financial risk and investment also encourage both parties to work collaboratively towards achieving maximum energy savings and cost efficiency. The table below illustrates the structure of the ESC contract.

<b>Public Private Partnership (PPP): Energy Supply Contracts</b>	
<b>Involved parties:</b>	Social Housing, ESCO and Funding institution.
<b>Source of funding:</b>	The ESCO and social housing are responsible for covering the investment costs.
<b>Investment risk:</b>	is taken by the ESCO and Social Housing association
<b>Social housing:</b>	
<b>Benefits</b>	
	❖ $(1 - \gamma)$ of energy savings, $(50\% < \gamma < 90\%)$ , (which are transferred to the tenants)
	❖ increased value of the building
<b>Cost</b>	
	❖ $(1 - \gamma)$ maintenance and operating costs of running the energy efficiency technologies.
	❖ $(1 - \gamma)$ investment cost (partly possibly covered by government grants)

<p><b>Private owners</b> (under the assumption that some of the dwellings are privately owned)</p> <p><b>Benefits</b></p> <ul style="list-style-type: none"> <li>❖ <math>(1 - \gamma)</math> of energy savings</li> <li>❖ increased value of the building</li> </ul> <p><b>Cost</b></p> <ul style="list-style-type: none"> <li>❖ <math>(1 - \gamma)</math> maintenance and operating costs of running the energy efficiency technologies.</li> <li>❖ <math>(1 - \gamma)</math> investment cost (partly possibly covered by government grants)</li> </ul>
<p><b>Tenants</b></p> <p><b>Benefits</b></p> <ul style="list-style-type: none"> <li>❖ <math>(1 - \gamma)</math> of energy savings</li> </ul> <p><b>Cost</b></p> <ul style="list-style-type: none"> <li>❖ Goes from 0 (Italy and Slovenia) to 2% of the refurbishment cost (Denmark) which is totally returned when the tenant moves out.</li> </ul>
<p><b>National or local government</b></p> <p><b>Benefits</b></p> <ul style="list-style-type: none"> <li>❖ Lower CO2 emissions for society</li> </ul> <p><b>Cost</b></p> <ul style="list-style-type: none"> <li>❖ Grants towards energy efficient refurbishment</li> </ul>
<p><b>ESCO</b></p> <p><b>Benefits</b></p> <ul style="list-style-type: none"> <li>❖ <math>\gamma</math> of energy savings .</li> </ul> <p><b>Cost</b></p> <ul style="list-style-type: none"> <li>❖ <math>\gamma</math> maintenance and operating costs of running the energy efficiency technologies.</li> <li>❖ <math>\gamma</math> investment cost (partly possibly covered by government grants)</li> </ul>

## 2.5. Direct Credit Line

Direct Credit Lines (DCLs) are financing mechanisms introduced by public entities such as government bodies, non-profit organisations, and banking foundations to support energy efficiency (EE) projects. These funds are provided through collaboration with private financial institutions, including banks and investment funds. The primary goal of DCLs is to address the challenge of insufficient lending for EE projects, which often stems from the limited understanding and risk aversion of local financial institutions (LFIs) towards the unique characteristics and benefits of EE initiatives.

Through DCLs, public entities provide funds to LFIs at generally low-interest rates. This incentivizes private-sector entities to lend further for EE projects. The LFIs then on-lend these funds to end-

users at higher, market-aligned rates, enabling them to realise a profit while expanding the overall financing available for EE projects. This collaborative financing approach effectively leverages and augments public funds, making more capital available for EE improvements. For instance, initiatives like the World Bank's credit lines in 2008 exemplify how DCLs can stimulate financial support for sustainable projects by encouraging active participation from private financial institutions. The collaborative agreements usually require LFIs to co-finance the loans, further enhancing the pool of available funds for EE projects. The table below illustrates the structure of the DCL contract.

<b>Public Private Partnership (PPP): Direct Credit Line</b>	
<b>Involved parties:</b> Social Housing, and Funding institution.	
<b>Source of funding:</b> Social housing is responsible for covering the investment costs using financial institutions or government loans.	
<b>Investment risk:</b> is taken by the Social Housing association	
<b>Social housing:</b>	
<b>Benefits</b>	
❖ <b>energy savings</b> (which are transferred to the <b>tenants</b> )	
❖ <b>increased value of the building</b>	
<b>Cost</b>	
❖ <b>investment cost</b> (partly possibly covered by <b>government grants</b> )	
❖ <b>maintenance and operating costs</b> of running the energy efficiency technologies.	
<b>Private owners</b> (under the assumption that some of the dwellings are privately owned)	
<b>Benefits</b>	
❖ <b>energy savings</b>	
❖ <b>increased value of the building</b>	
<b>Cost</b>	
❖ <b>investment cost</b> (partly possibly covered by <b>government grants</b> )	
❖ <b>maintenance and operating costs</b> of running the energy efficiency technologies	
<b>Tenants</b>	
<b>Benefits</b>	
❖ <b>energy savings</b>	
<b>Cost</b>	
❖ It depends on the country. In our pilots, it goes from <b>0 (Italy and Slovenia)</b> to <b>2% of the refurbishment cost (Denmark)</b> which is totally returned when the tenant moves out.	
<b>National or local government</b>	
<b>Benefits</b>	
❖ <b>Lower CO2 emissions for society</b>	
<b>Cost</b>	
❖ <b>Grants towards energy efficient refurbishment</b>	

### Comparative overview of the four PPP contracts:

The Guaranteed Savings Contract involves the social housing association financing 100% of the investment costs, with the Energy Service Company (ESCO) taking on full financial and technical risks. The ESCO is responsible for project design, implementation, and covering all costs associated with the installed EE technologies. In this arrangement, the social housing association bears no financial risk, as the ESCO guarantees a predetermined level of energy savings equivalent to the cost of the project's debt. If actual savings exceed the guarantee, the social housing association receives the guaranteed amount plus 20% of the additional savings, while the ESCO gets 80% of the additional savings. If savings fall short, the ESCO compensates the difference, ensuring optimal performance and accountability from the ESCO.

In contrast, the Shared Savings Contract sees the ESCO financing 100% of the investment costs while the social housing association provides the building equity. The ESCO handles all aspects of the project, including design and implementation, and bears all associated risks. Here, the ESCO guarantees a fixed amount of energy savings. If the savings exceed the guarantee, the social housing association receives 35% of the additional savings, and the ESCO receives 65% plus the guaranteed savings. Should the savings fall short, the ESCO absorbs the financial loss. This structure ensures that the ESCO is motivated to maximize energy savings, aligning its interests with those of the social housing association.

Direct Credit Lines (DCLs) are introduced by public entities like government bodies, non-profits, and banking foundations to support EE projects. These entities provide low-interest funds to Local Financial Institutions (LFIs), which then on-lend these funds at higher, market-aligned rates. LFIs are incentivized to lend further for EE projects, overcoming their initial reluctance due to limited understanding of EE benefits. Public funds leverage private-sector participation, expanding overall financing for EE projects. LFIs co-finance the loans, creating a collaborative effort that boosts available capital for sustainable projects while allowing LFIs to profit from the interest rate difference.

Energy Supply Contracts (ESCs) involve both the social housing association and the ESCO co-financing the EE project costs, typically with the ESCO covering 50%-90% and the social housing association covering 10%-50%. In this model, the financial risk and benefits are shared proportionally. The social housing association pays for the energy efficiency improvements through their energy or utilities bill, with the debt associated with the project remaining with the meter. If the building is sold, the new owner assumes the contract. Savings generated from the EE renovations are divided based on the investment proportions, encouraging both parties to work collaboratively towards achieving maximum energy savings and cost efficiency.

In summary, each PPP contract type offers distinct advantages and addresses different aspects of risk allocation, investment responsibility, and performance incentives. The Guaranteed Savings Contract eliminates financial risk for the social housing association, while the Shared Savings Contract aligns ESCO's interests closely with those of the social housing association. DCLs leverage public funds to stimulate private-sector lending, expanding overall EE project financing. ESCs ensure shared financial risk and continuous improvement, providing a manageable structure for both social housing associations and ESCOs. These varied options facilitate effective financing and implementation of EE projects, promoting sustainable and energy-efficient improvements.

## 3. PPP applications

In this section we describe the structure of each PPP contract for each SUPER-i pilot country taking into account the different financial and logistic specificities between the pilot countries.

### 3.1. Italy

Following the information provided by ATER-Trieste for the Italian pilot, we consider the following characteristics in developing the PPP contracts:

- Social housing stock in Italy is usually co-owned by social housing companies and private owners.
- The tenants will receive all the financial benefits from the energy savings generated by the proposed EE renovations.
- The government benefits from reduced CO2 emissions
- The social housing company is not allowed to obtain loans from funding institutions.

The SUPER-i Italian pilot consists of two sites with different ownership characteristics, where Montasio is co-owned by the private owners and the social housing company ATER Trieste, and BOITO building is fully owned by ATER Trieste. In the case of Montasio building ATER Trieste owns 64% of the dwellings in the building while the rest 36% of the dwelling are privately owned by residents. Furthermore, as discussed in deliverable D3.2, Montasio requires intensive refurbishment to improve the current energy efficiency state of the building, and Boito is planned for demolition and reconstruction to a new building.

#### 3.1.1. Montasio

Direct credit lines:

Public Private Partnership (PPP): Direct Credit Line
<b>Involved parties:</b> ATER Trieste, crowdfunding and Local authority. <b>Source of funding:</b> ATER Trieste is responsible for covering the investment costs using government grants, and private savings. <b>Investment risk:</b> is taken by the Social Housing association
<b>Social housing:</b> <b>Benefits</b> <ul style="list-style-type: none"><li>❖ 64% of energy savings (transferred to the tenants)</li><li>❖ increased value of the building</li></ul> <b>Cost</b> <ul style="list-style-type: none"><li>❖ 64% of investment cost (partly covered by government grants)</li><li>❖ 64% of maintenance and operating costs of running the energy efficiency technologies.</li></ul>



<p><b>Private owners</b> (under the assumption that some of the dwellings are privately owned)</p> <p><b>Benefits</b></p> <ul style="list-style-type: none"> <li>❖ 36% of energy savings (Kept by the private owners)</li> <li>❖ increased value of the building</li> </ul> <p><b>Cost</b></p> <ul style="list-style-type: none"> <li>❖ 36% of investment cost (partly covered by government grants)</li> <li>❖ 36% of maintenance and operating costs of running the energy efficiency technologies</li> </ul>
<p><b>Tenants</b></p> <p><b>Benefits</b></p> <ul style="list-style-type: none"> <li>❖ energy savings</li> </ul> <p><b>Cost</b></p> <ul style="list-style-type: none"> <li>❖ 0</li> </ul>
<p><b>National or local government</b></p> <p><b>Benefits</b></p> <ul style="list-style-type: none"> <li>❖ Lower CO2 emissions for society</li> </ul> <p><b>Cost</b></p> <ul style="list-style-type: none"> <li>❖ Grants towards energy efficient refurbishment</li> </ul>

#### Energy supply contracts (ESCs):

<p><b>Public Private Partnership (PPP): Energy Supply Contracts</b></p> <p><b>Involved parties:</b> ATER Trieste, ESCO, funding institutions and local authority.</p> <p><b>Source of funding:</b> The ESCO and ATER Trieste are responsible for covering the investment costs using private savings, crowdfunding, government grants and financial institutions.</p> <p><b>Investment risk:</b> is taken by the ESCO and Social Housing association</p>
<p><b>Social housing:</b></p> <p><b>Benefits</b></p> <ul style="list-style-type: none"> <li>❖ Between 6.4% and 32% of energy savings,</li> <li>❖ increased value of the building</li> </ul> <p><b>Cost</b></p> <ul style="list-style-type: none"> <li>❖ Between 6.4% and 32% of maintenance and operating costs of running the energy efficiency technologies.</li> <li>❖ Between 6.4% and 32% investment cost (partly covered by government grants)</li> </ul>
<p><b>Private owners</b> (under the assumption that some of the dwellings are privately owned)</p> <p><b>Benefits</b></p> <ul style="list-style-type: none"> <li>❖ Between 3.6% and 18% of energy savings,</li> <li>❖ increased value of the building</li> </ul> <p><b>Cost</b></p> <ul style="list-style-type: none"> <li>❖ Between 3.6% and 18% of maintenance and operating costs of running the energy efficiency technologies.</li> </ul>

❖ <b>Between 3.6% and 18% of investment cost</b> (partly possibly covered by <b>government grants</b> )
<b>Tenants</b> <b>Benefits</b> ❖ <b>Between 6.4% and 32% of energy savings</b> <b>Cost</b> ❖ <b>0</b>
<b>National or local government</b> <b>Benefits</b> ❖ <b>Lower CO2 emissions</b> for society <b>Cost</b> ❖ <b>Grants</b> towards energy efficient refurbishment
<b>ESCO</b> <b>Benefits</b> ❖ <b>Between 50% and 90% of energy savings .</b> <b>Cost</b> ❖ <b>Between 50% and 90% of maintenance and operating costs</b> of running the energy efficiency technologies. ❖ <b>Between 50% and 90% of investment cost</b> (partly possibly covered by <b>government grants</b> )

#### Shared savings:

<b>Public Private Partnership (PPP): Shared savings</b>
<b>Involved parties:</b> <b>ATER Trieste</b> , ESCO, local authority and Funding institution. <b>Source of funding:</b> The ESCO is responsible for covering the investment costs. <b>Investment risk:</b> is taken by the ESCO
<b>Social housing:</b> <b>Benefits</b> ❖ <b>64% of energy savings</b> (which are transferred to the <b>tenants</b> ) <ul style="list-style-type: none"> <li>➢ <i>if energy savings &gt; minimum guaranteed savings, gets 35% (energy savings - minimum guaranteed savings)</i></li> <li>➢ <i>if energy &lt; minimum guaranteed savings, gets 0</i></li> </ul> ❖ <b>increased value of the building</b>

**Private owners** (under the assumption that some of the dwellings are privately owned)

**Benefits**

- ❖ **36% of energy savings**
  - If energy savings > minimum guaranteed savings, **gets 35% (energy savings - minimum guaranteed savings)**
  - if energy < minimum guaranteed savings, **gets 0**
- ❖ **increased value of the building**

**Tenants**

**Benefits**

- ❖ **64% of energy savings**

**Cost**

- ❖ **0**

**National or local government**

**Benefits**

- ❖ **Lower CO2 emissions** for society

**Cost**

- ❖ **Grants** towards energy efficient refurbishment

**ESCO**

**Benefits**

- ❖ **Energy savings:**
  - If energy savings > minimum guaranteed savings, they get **minimum guaranteed savings + 65% (energy savings - minimum guaranteed savings)**
  - Otherwise, they get **energy savings**.

**Cost**

- ❖ **maintenance and operating costs** of running the energy efficiency technologies.
- ❖ **investment cost** (partly possibly covered by **government grants**)

**Guaranteed savings:**

**Public Private Partnership (PPP): Guaranteed savings**

**Involved parties:** ATER Trieste, ESCO and local authority.

**Source of funding:** The social housing is responsible for covering the investment costs using private savings, crowdfunding and government grants.

**Investment risk:** is taken by the ESCO

## Social housing:

### Benefits

- ❖ **64% of energy savings** (which are transferred to the **tenants**)
  - if *energy savings* > *minimum guaranteed savings*, gets **minimum guaranteed savings + 20% (energy savings - minimum guaranteed savings)**
  - if *energy savings* < *minimum guaranteed savings*, gets **minimum guaranteed savings**.
- ❖ **increased value of the building**

### Cost

- ❖ **64% of investment cost** (partly possibly covered by **government grants**)

## Private owners (under the assumption that some of the dwellings are privately owned)

### Benefits

- ❖ **36% of energy savings**
- ❖ **increased value of the building**

### Cost

- ❖ **36% of investment cost** (partly possibly covered by **government grants**)

## Tenants

### Benefits

- ❖ **64% of energy savings**

### Cost

- ❖ **0**

## National or local government

### Benefits

- ❖ **Lower CO2 emissions** for society

### Cost

- ❖ **Grants** towards energy efficient refurbishment

## ESCO

### Benefits

- ❖ **Energy savings:**
  - If *energy savings* > *minimum guaranteed savings*, they get **80% (energy savings - minimum guaranteed savings)**
  - otherwise, **(energy savings - minimum guaranteed savings)**

### Cost

- ❖ **maintenance and operating costs** of running the energy efficiency technologies.

### 3.1.2. Boito

#### Direct credit lines:

<b>Public Private Partnership (PPP): Direct Credit Line</b> <b>Involved parties:</b> Social Housing, and local authority. <b>Source of funding:</b> Social housing is responsible for covering the investment costs using private savings, crowdfunding and government grants. <b>Investment risk:</b> is taken by the Social Housing association
<b>Social housing:</b> <b>Benefits</b> <ul style="list-style-type: none"> <li>❖ energy savings (which are transferred to the tenants)</li> <li>❖ increased value of the building</li> </ul> <b>Cost</b> <ul style="list-style-type: none"> <li>❖ investment cost (partly possibly covered by government grants)</li> <li>❖ maintenance and operating costs of running the energy efficiency technologies.</li> </ul>
<b>Private owners</b> (under the assumption that some of the dwellings are privately owned) <b>Benefits</b> <ul style="list-style-type: none"> <li>❖ energy savings</li> <li>❖ increased value of the building</li> </ul> <b>Cost</b> <ul style="list-style-type: none"> <li>❖ investment cost (partly possibly covered by government grants)</li> <li>❖ maintenance and operating costs of running the energy efficiency technologies</li> </ul>
<b>Tenants</b> <b>Benefits</b> <ul style="list-style-type: none"> <li>❖ energy savings</li> </ul> <b>Cost</b> <ul style="list-style-type: none"> <li>❖ 0</li> </ul>
<b>National or local government</b> <b>Benefits</b> <ul style="list-style-type: none"> <li>❖ Lower CO2 emissions for society</li> </ul> <b>Cost</b> <ul style="list-style-type: none"> <li>❖ Grants towards energy efficient refurbishment</li> </ul>

#### Energy supply contracts (ESCs):

<b>Public Private Partnership (PPP): Energy Supply Contracts</b> <b>Involved parties:</b> Social Housing, ESCO, local authorities, and Funding institutions. <b>Source of funding:</b> The ESCO and social housing are responsible for covering the investment costs using private savings, crowdfunding and government grants. <b>Investment risk:</b> is taken by the ESCO and Social Housing association
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## Social housing:

### Benefits

- ❖  $(1 - \gamma)$  of energy savings, ( $50\% < \gamma < 90\%$ ), (which are transferred to the **tenants**)
- ❖ increased value of the building

### Cost

- ❖  $(1 - \gamma)$  maintenance and operating costs of running the energy efficiency technologies.
- ❖  $(1 - \gamma)$  investment cost (partly possibly covered by **government grants**)

## Private owners (under the assumption that some of the dwellings are privately owned)

### Benefits

- ❖  $(1 - \gamma)$  of energy savings
- ❖ increased value of the building

### Cost

- ❖  $(1 - \gamma)$  maintenance and operating costs of running the energy efficiency technologies.
- ❖  $(1 - \gamma)$  investment cost (partly possibly covered by **government grants**)

## Tenants

### Benefits

- ❖  $(1 - \gamma)$  of energy savings

### Cost

- ❖ 0

## National or local government

### Benefits

- ❖ Lower CO2 emissions for society

### Cost

- ❖ Grants towards energy efficient refurbishment

## ESCO

### Benefits

- ❖  $\gamma$  of energy savings.

### Cost

- ❖  $\gamma$  maintenance and operating costs of running the energy efficiency technologies.
- ❖  $\gamma$  investment cost (partly possibly covered by **government grants**)

## Shared savings:

### Public Private Partnership (PPP): Shared savings

**Involved parties:** Social Housing, ESCO, local authorities and funding institutions.

**Source of funding:** The ESCO is responsible for covering the investment costs.

<b>Investment risk:</b> is taken by the ESCO
<b>Social housing:</b> <b>Benefits</b> <ul style="list-style-type: none"> <li>❖ <b>energy savings</b> (which are transferred to the <b>tenants</b>) <ul style="list-style-type: none"> <li>➤ if <i>energy savings</i> &gt; <i>minimum guaranteed savings</i>, gets <b>35% (energy savings - minimum guaranteed savings)</b></li> <li>➤ if <i>energy</i> &lt; <i>minimum guaranteed savings</i>, gets <b>0</b></li> </ul> </li> <li>❖ <b>increased value of the building</b></li> </ul>
<b>Private owners</b> (under the assumption that some of the dwellings are privately owned) <b>Benefits</b> <ul style="list-style-type: none"> <li>❖ <b>energy savings</b> <ul style="list-style-type: none"> <li>➤ If <i>energy savings</i> &gt; <i>minimum guaranteed savings</i>, gets <b>35% (energy savings - minimum guaranteed savings)</b></li> <li>➤ if <i>energy</i> &lt; <i>minimum guaranteed savings</i>, gets <b>0</b></li> </ul> </li> <li>❖ <b>increased value of the building</b></li> </ul>
<b>Tenants</b> <b>Benefits</b> <ul style="list-style-type: none"> <li>❖ <b>energy savings</b></li> </ul> <b>Cost</b> <ul style="list-style-type: none"> <li>❖ <b>0</b></li> </ul>
<b>National or local government</b> <b>Benefits</b> <ul style="list-style-type: none"> <li>❖ <b>Lower CO2 emissions</b> for society</li> </ul> <b>Cost</b> <ul style="list-style-type: none"> <li>❖ <b>Grants</b> towards energy efficient refurbishment</li> </ul>
<b>ESCO</b> <b>Benefits</b> <ul style="list-style-type: none"> <li>❖ <b>Energy savings:</b> <ul style="list-style-type: none"> <li>➤ If <i>energy savings</i> &gt; <i>minimum guaranteed savings</i>, they get <b>minimum guaranteed savings + 65% (energy savings - minimum guaranteed savings)</b></li> <li>➤ Otherwise, they get <b>energy savings</b>.</li> </ul> </li> </ul> <b>Cost</b> <ul style="list-style-type: none"> <li>❖ <b>maintenance and operating costs</b> of running the energy efficiency technologies.</li> <li>❖ <b>investment cost</b> (partly possibly covered by <b>government grants</b>)</li> </ul>

**Guaranteed savings:**

**Public Private Partnership (PPP): Guaranteed savings**

**Involved parties:** Social Housing, ESCO and Funding institution.

**Source of funding:** The social housing is responsible for covering the investment costs.

**Investment risk:** is taken by the ESCO

#### Social housing:

##### Benefits

- ❖ **energy savings** (which are transferred to the **tenants**)
  - if *energy savings* > *minimum guaranteed savings*, gets **minimum guaranteed savings + 20% (energy savings - minimum guaranteed savings)**
  - if *energy savings* < *minimum guaranteed savings*, gets **minimum guaranteed savings**.
- ❖ **increased value of the building**

##### Cost

- ❖ **investment cost** (partly possibly covered by **government grants**)

**Private owners** (under the assumption that some of the dwellings are privately owned)

##### Benefits

- ❖ **energy savings**
- ❖ **increased value of the building**

##### Cost

- ❖ **investment cost** (partly possibly covered by **government grants**)

#### Tenants

##### Benefits

- ❖ **energy savings**

##### Cost

- ❖ **0**

#### National or local government

##### Benefits

- ❖ **Lower CO2 emissions** for society

##### Cost

- ❖ **Grants** towards energy efficient refurbishment

#### ESCO

##### Benefits

- ❖ **Energy savings:**
  - If *energy savings* > *minimum guaranteed savings*, they get **80% (energy savings - minimum guaranteed savings)**
  - otherwise, **(energy savings - minimum guaranteed savings)**

##### Cost

- ❖ **maintenance and operating costs** of running the energy efficiency technologies.



## 3.2. Denmark

Following the information provided by Danish partners for the Danish pilot, we consider the following characteristics in developing the PPP contracts:

- Social housing stock in Denmark is fully owned by social housing company
- The tenants will receive part of the energy savings generated by the proposed EE renovations.
- The tenants covers 2% of the investment costs of the EE renovations
- The tenants rents goes to the national building fund
- The government benefits from reduced CO2 emissions
- The local funding institutions receives a portion from the financial benefits from the energy saving

### Direct credit lines:

Public Private Partnership (PPP): Direct Credit Line	
<b>Involved parties:</b>	Social Housing, and Funding institution.
<b>Source of funding:</b>	Social housing is responsible for covering the investment costs using financial institutions or government loans.
<b>Investment risk:</b>	is taken by the Social Housing association
<b>Social housing:</b>	
<b>Benefits</b>	<ul style="list-style-type: none"> <li>❖ energy savings (part is transferred to the tenants)</li> <li>❖ increased value of the building</li> </ul>
<b>Cost</b>	<ul style="list-style-type: none"> <li>❖ 98% of the investment cost</li> <li>❖ 98% of the maintenance and operating costs of running the energy efficiency technologies.</li> </ul>
<b>Tenants</b>	
<b>Benefits</b>	<ul style="list-style-type: none"> <li>❖ Part of the energy savings</li> </ul>
<b>Cost</b>	<ul style="list-style-type: none"> <li>❖ 2% of the investment costs</li> <li>❖ 2% of the maintenance and operating costs</li> </ul>
<b>National or local government</b>	
<b>Benefits</b>	<ul style="list-style-type: none"> <li>❖ Lower CO2 emissions for society</li> </ul>
<b>Cost</b>	<ul style="list-style-type: none"> <li>❖ Grants towards energy efficient refurbishment under the national building fund</li> </ul>

## Energy supply contracts (ESCs):

<b>Public Private Partnership (PPP): Energy Supply Contracts</b>
<p><b>Involved parties:</b> Social Housing, ESCO and Funding institution.</p> <p><b>Source of funding:</b> The ESCO and social housing are responsible for covering the investment costs.</p> <p><b>Investment risk:</b> is taken by the ESCO and Social Housing association</p>
<p><b>Social housing:</b></p> <p><b>Benefits</b></p> <ul style="list-style-type: none"> <li>❖ <math>(0.98 - \gamma)</math> of energy savings, <math>(50\% &lt; \gamma &lt; 90\%)</math>, (part is transferred to the tenants)</li> <li>❖ increased value of the building</li> </ul> <p><b>Cost</b></p> <ul style="list-style-type: none"> <li>❖ <math>(0.98 - \gamma)</math> maintenance and operating costs of running the energy efficiency technologies.</li> <li>❖ <math>(0.98 - \gamma)</math> investment cost</li> </ul>
<p><b>Tenants</b></p> <p><b>Benefits</b></p> <ul style="list-style-type: none"> <li>❖ Part of the energy savings</li> </ul> <p><b>Cost</b></p> <ul style="list-style-type: none"> <li>❖ 2% of the investment cost</li> <li>❖ 2% of the maintenance and operating cost</li> </ul>
<p><b>National or local government (NBF)</b></p> <p><b>Benefits</b></p> <ul style="list-style-type: none"> <li>❖ Lower CO2 emissions for society</li> </ul> <p><b>Cost</b></p> <ul style="list-style-type: none"> <li>❖ Grants</li> </ul>
<p><b>ESCO</b></p> <p><b>Benefits</b></p> <ul style="list-style-type: none"> <li>❖ <math>\gamma</math> of energy savings .</li> </ul> <p><b>Cost</b></p> <ul style="list-style-type: none"> <li>❖ <math>\gamma</math> maintenance and operating costs</li> <li>❖ <math>\gamma</math> investment cost</li> </ul>

## Shared savings:

<b>Public Private Partnership (PPP): Shared savings</b> <b>Involved parties:</b> Social Housing, ESCO and Funding institution. <b>Source of funding:</b> The ESCO is responsible for covering the investment costs. <b>Investment risk:</b> is taken by the ESCO
<b>Social housing:</b> <b>Benefits</b> <ul style="list-style-type: none"> <li>❖ <b>energy savings</b> (part is transferred to the <b>tenants</b>) <ul style="list-style-type: none"> <li>➤ <i>if energy savings &gt; minimum guaranteed savings, gets 35% (energy savings - minimum guaranteed savings)</i></li> <li>➤ <i>if energy &lt; minimum guaranteed savings, gets 0</i></li> </ul> </li> <li>❖ <b>increased value of the building</b></li> </ul>
<b>Tenants</b> <b>Benefits</b> <ul style="list-style-type: none"> <li>❖ <b>Part of the energy savings</b></li> </ul> <b>Cost</b> <ul style="list-style-type: none"> <li>❖ <b>2% of the investment cost</b></li> </ul>
<b>National or local government (NBF)</b> <b>Benefits</b> <ul style="list-style-type: none"> <li>❖ <b>Lower CO2 emissions</b> for society</li> </ul> <b>Cost</b> <ul style="list-style-type: none"> <li>❖ <b>Grants</b> towards energy efficient refurbishment</li> </ul>
<b>ESCO</b> <b>Benefits</b> <ul style="list-style-type: none"> <li>❖ <b>Energy savings:</b> <ul style="list-style-type: none"> <li>➤ <i>If energy savings &gt; minimum guaranteed savings, they get <b>minimum guaranteed savings + 65% (energy savings - minimum guaranteed savings)</b></i></li> <li>➤ <i>Otherwise, they get <b>energy savings</b>.</i></li> </ul> </li> </ul> <b>Cost</b> <ul style="list-style-type: none"> <li>❖ <b>maintenance and operating costs</b> of running the energy efficiency technologies.</li> <li>❖ <b>98% of investment cost</b></li> </ul>

## Guaranteed savings:

<b>Public Private Partnership (PPP): Guaranteed savings</b>
<p><b>Involved parties:</b> Social Housing, ESCO and Funding institution.</p> <p><b>Source of funding:</b> The social housing is responsible for covering the investment costs.</p> <p><b>Investment risk:</b> is taken by the ESCO</p>
<p><b>Social housing:</b></p> <p><b>Benefits</b></p> <ul style="list-style-type: none"> <li>❖ <b>energy savings</b> (part is transferred to the <b>tenants</b>) <ul style="list-style-type: none"> <li>➤ if <i>energy savings</i> &gt; <i>minimum guaranteed savings</i>, gets <b>minimum guaranteed savings + 20% (energy savings - minimum guaranteed savings)</b></li> <li>➤ if <i>energy savings</i> &lt; <i>minimum guaranteed savings</i>, gets <b>minimum guaranteed savings.</b></li> </ul> </li> <li>❖ <b>increased value of the building</b></li> </ul> <p><b>Cost</b></p> <ul style="list-style-type: none"> <li>❖ <b>98% of investment cost</b></li> </ul>
<p><b>Tenants</b></p> <p><b>Benefits</b></p> <ul style="list-style-type: none"> <li>❖ <b>Part of the energy savings</b></li> </ul> <p><b>Cost</b></p> <ul style="list-style-type: none"> <li>❖ <b>2% of the investment cost</b></li> </ul>
<p><b>National or local government (NBF)</b></p> <p><b>Benefits</b></p> <ul style="list-style-type: none"> <li>❖ <b>Lower CO2 emissions</b> for society</li> </ul> <p><b>Cost</b></p> <ul style="list-style-type: none"> <li>❖ <b>Grants</b> towards energy efficient refurbishment</li> </ul>
<p><b>ESCO</b></p> <p><b>Benefits</b></p> <ul style="list-style-type: none"> <li>❖ <b>Energy savings:</b> <ul style="list-style-type: none"> <li>➤ If <i>energy savings</i> &gt; <i>minimum guaranteed savings</i>, they get <b>80% (energy savings - minimum guaranteed savings)</b></li> <li>➤ otherwise, <b>(energy savings - minimum guaranteed savings)</b></li> </ul> </li> </ul> <p><b>Cost</b></p> <p><b>maintenance and operating costs</b> of running the energy efficiency technologies.</p>

### 3.3. Slovenia

Following the information provided by Slovenian partners for the slovenian pilot, we consider the following characteristics in developing the PPP contracts:

- Social housing stock in Slovenia is fully owned by social housing company
- The tenants will receive part of the energy savings generated by the proposed EE renovations.
- The government benefits from reduced CO2 emissions.
- The social housing association will use private savings and national grants to cover the investment costs of implementing the EE interventions.

**Direct credit lines:**

<b>Public Private Partnership (PPP): Direct Credit Line</b>	
<b>Involved parties:</b> Social Housing, and local authorities.	
<b>Source of funding:</b> Social housing is responsible for covering the investment costs using private savings, national grants, and crowdfunding.	
<b>Investment risk:</b> is taken by the Social Housing association	
<b>Social housing:</b>	
<b>Benefits</b>	
❖ energy savings (which are transferred to the tenants)	
❖ increased value of the building	
<b>Cost</b>	
❖ investment cost (partly possibly covered by government grants)	
❖ maintenance and operating costs of running the energy efficiency technologies.	
<b>Private owners</b> (under the assumption that some of the dwellings are privately owned)	
<b>Benefits</b>	
❖ energy savings	
❖ increased value of the building	
<b>Cost</b>	
❖ investment cost (partly possibly covered by government grants)	
❖ maintenance and operating costs of running the energy efficiency technologies	
<b>Tenants</b>	
<b>Benefits</b>	
❖ energy savings	
<b>Cost</b>	
❖ 0	

### National or local government

#### Benefits

- ❖ Lower CO2 emissions for society

#### Cost

- ❖ Grants towards energy efficient refurbishment

### Energy supply contracts (ESCs):

#### Public Private Partnership (PPP): Energy Supply Contracts

**Involved parties:** Social Housing, ESCO, local authorities and funding institutions.

**Source of funding:** The ESCO and social housing are responsible for covering the investment costs.

**Investment risk:** is taken by the ESCO and Social Housing association

#### Social housing:

##### Benefits

- ❖  $(1 - \gamma)$  of energy savings, ( $50\% < \gamma < 90\%$ ), (which are transferred to the **tenants**)
- ❖ increased value of the building

##### Cost

- ❖  $(1 - \gamma)$  maintenance and operating costs of running the energy efficiency technologies.
- ❖  $(1 - \gamma)$  investment cost (partly possibly covered by **government grants**)

**Private owners** (under the assumption that some of the dwellings are privately owned)

##### Benefits

- ❖  $(1 - \gamma)$  of energy savings
- ❖ increased value of the building

##### Cost

- ❖  $(1 - \gamma)$  maintenance and operating costs of running the energy efficiency technologies.
- ❖  $(1 - \gamma)$  investment cost (partly possibly covered by **government grants**)

#### Tenants

##### Benefits

- ❖  $(1 - \gamma)$  of energy savings

##### Cost

- ❖ 0

### National or local government

#### Benefits

- ❖ Lower CO2 emissions for society

#### Cost

- ❖ Grants towards energy efficient refurbishment

## ESCO

### Benefits

- ❖  $\gamma$  of energy savings.

### Cost

- ❖  $\gamma$  **maintenance and operating costs** of running the energy efficiency technologies.
- ❖  $\gamma$  **investment cost** (partly possibly covered by **government grants**)

## Shared savings:

### Public Private Partnership (PPP): Shared savings

**Involved parties:** Social Housing, ESCO and local authorities, and funding institutions.

**Source of funding:** The ESCO is responsible for covering the investment costs.

**Investment risk:** is taken by the ESCO

#### Social housing:

##### Benefits

- ❖ **energy savings** (which are transferred to the **tenants**)
  - if energy savings > minimum guaranteed savings, **gets 35% (energy savings - minimum guaranteed savings)**
  - if energy < minimum guaranteed savings, **gets 0**
- ❖ **increased value of the building**

**Private owners** (under the assumption that some of the dwellings are privately owned)

##### Benefits

- ❖ **energy savings**
  - if energy savings > minimum guaranteed savings, **gets 35% (energy savings - minimum guaranteed savings)**
  - if energy < minimum guaranteed savings, **gets 0**
- ❖ **increased value of the building**

#### Tenants

##### Benefits

- ❖ **energy savings**

##### Cost

- ❖ **0**

#### National or local government

##### Benefits

- ❖ **Lower CO2 emissions** for society

##### Cost

- ❖ **Grants** towards energy efficient refurbishment

## ESCO

### Benefits

#### ❖ Energy savings:

- If *energy savings* > *minimum guaranteed savings*, they get **minimum guaranteed savings + 65% (energy savings - minimum guaranteed savings)**
- Otherwise, they get **energy savings**.

### Cost

- ❖ **maintenance and operating costs** of running the energy efficiency technologies.
- ❖ **investment cost** (partly possibly covered by **government grants**)

## Guaranteed savings:

### Public Private Partnership (PPP): Guaranteed savings

**Involved parties:** Social Housing association, ESCO and local authorities.

**Source of funding:** Social housing association is responsible for covering the investment costs using private savings, national grants, and crowdfunding.

**Investment risk:** is taken by the ESCO

### Social housing:

#### Benefits

- ❖ **energy savings (which are transferred to the tenants)**
  - if *energy savings* > *minimum guaranteed savings*, gets **minimum guaranteed savings + 20% (energy savings - minimum guaranteed savings)**
  - if *energy savings* < *minimum guaranteed savings*, gets **minimum guaranteed savings**.
- ❖ **increased value of the building**

#### Cost

- ❖ **investment cost** (partly possibly covered by **government grants**)

**Private owners** (under the assumption that some of the dwellings are privately owned)

#### Benefits

- ❖ **energy savings**
- ❖ **increased value of the building**

#### Cost

- ❖ **investment cost** (partly possibly covered by **government grants**)

### Tenants

#### Benefits

- ❖ **energy savings**

#### Cost

- ❖ **0**



## National or local government

### Benefits

- ❖ Lower CO2 emissions for society

### Cost

- ❖ Grants towards energy efficient refurbishment

## ESCO

### Benefits

- ❖ Energy savings:
  - If energy savings > minimum guaranteed savings, they get 80% (energy savings - minimum guaranteed savings)
  - otherwise, (energy savings - minimum guaranteed savings)

### Cost

- ❖ maintenance and operating costs of running the energy efficiency technologies.

## 4. Ranking of PPP contracts

In this section we rank the four PPP contracts from most appropriate to least appropriate for each SUPER-i pilot, using the financial analysis findings detailed in deliverable D3.13. The table below describes the ranking system.

Ranking for risk adjusted extra returns (RP)		
$0.75 < RP < 0.95$	5	reasonable
$0.95 < RP < 1.5$	6	very reasonable
$1.5 < RP < 2$	7	good
$2 < RP < 3$	8	very good
$RP > 3$	9	excellent

explanation about the difference between Italy and Slovenia vs Denmark: ranking changed because they cannot borrow. Old ranking as well

### 4.1. Differences between the SUPER-i pilots

When creating PPP (Public-Private Partnership) contracts for energy efficiency (EE) renovations, various country-specific characteristics must be considered. These characteristics influence the financial, logistical, and legal frameworks within which the PPP contracts operate, ensuring that they are tailored to the local context and capable of addressing specific needs and challenges.

#### Italy

In Italy, social housing is often co-owned by social housing companies and private owners. This ownership structure necessitates a collaborative approach to PPP contracts. The tenants benefit directly from the financial savings resulting from EE renovations, while the government gains from reduced CO2 emissions. However, a critical constraint is that social housing companies in Italy are not allowed to obtain loans from funding institutions. This restriction influences the structure of PPP contracts, often requiring innovative funding solutions such as crowdfunding or government grants to cover investment costs.

#### Slovenia

Slovenia's social housing stock is fully owned by social housing companies, which simplifies the ownership dynamics compared to Italy. The tenants in Slovenia also benefit from energy savings, and the government sees reduced emissions. The social housing associations use a mix of private

savings and national grants to finance EE interventions. Direct credit lines and guaranteed savings contracts are common, with the social housing company covering the investment risk and ESCOs covering the technical risk. This setup ensures that the financial and technical burdens and benefits are appropriately distributed among all stakeholders.

### Denmark

In Denmark, social housing is similarly owned by social housing companies, and tenants are directly involved in covering a small percentage of the investment costs for EE renovations. The tenants' rent payments are directed to the national building fund, which plays a significant role in financing EE projects. This unique funding mechanism, coupled with government support for reducing CO2 emissions, shapes the PPP contracts. The Danish model emphasises shared savings and investment responsibilities, ensuring that both the social housing associations and ESCOs have a vested interest in the success of the EE projects.

Each country's unique financial and logistical context significantly influences the design and implementation of PPP contracts. In Italy, the inability of social housing companies to obtain loans requires innovative financing strategies, while in Slovenia and Denmark, the full ownership by social housing companies simplifies the contractual arrangements but requires robust collaboration between public and private entities to ensure successful project outcomes. These differences highlight the importance of tailoring PPP contracts to align with the specific characteristics and constraints of each country to promote effective and sustainable energy efficiency improvements.

## 4.2. Comparison of financial findings before and after changes in the ability of social housing companies to access loans in Italy and Slovenia

The table below provides a summary of the ranking findings for Italy and Slovenia prior to the changes in ability to access or use loans as a funding instrument

Country	Building	Shared savings	Guaranteed Savings	DCL	Energy supply contract
Italy	Boito	2nd	1st	4th	3rd
	Montasio	1st choice	3rd	4th	2nd
Slovenia	Neza 26 a in b	1st choice	2nd	4th	3rd

The table below provides a summary of the ranking findings for Italy and Slovenia post the changes in ability to access or use loans as a funding instrument

Country	Building	Shared savings	Guaranteed Savings	DCL	Energy supply contract
Italy	Boito	2nd	1st	3rd	4th
	Montasio	2nd	1st	3rd	4th
Slovenia	Neza 26 a in b	2nd	1st	4th	3rd

## 4.3. Italy

### 4.3.1. Boito

Based on the risk adjusted extra returns, the guaranteed savings contract is considered the most appropriate PPP contract for Boito followed by the shared savings contract.

PPP		Social housing company	ESCO	Tenants	Civil society
Shared savings	Cost	No cost involved	Is responsible for covering the investment costs using private savings, crowdfunding, and government grants.	No cost involved	Part of the refurbishment cost is covered by Government grants
	Benefit	<p>If energy savings are higher than the minimum guaranteed savings, the social housing company gets 35% of the extra energy savings (energy savings - minimum guaranteed savings).</p> <p>If energy savings are lower than the minimum guaranteed savings, the social housing company gets 0. The energy savings are then directly transferred to the tenants but the social housing company benefits from the increased value of the building after the energy efficiency intervention.</p>	<p>If the energy savings are higher than the minimum guaranteed savings, the ESCO gets the minimum guaranteed savings + 65% (energy savings - minimum guaranteed savings)</p> <p>If the energy savings are lower than the minimum guaranteed savings, the ESCO gets all the energy savings</p>	energy savings	Environmental benefits measured in terms of lower CO2 emissions.
	Risk adjusted extra return	Very good	good	Excellent	Excellent
Rank		8	7	9	9

PPP		Social housing company	ESCO	Tenants	Civil society
Guaranteed savings	Cost	Is responsible for covering the investment costs using private savings, crowdfunding, and government grants.	Is responsible for covering the maintenance and operating costs of the energy efficiency technologies.	No cost involved	Part of the refurbishment cost is covered by Government grants
	Benefit	<p>If the energy savings are higher than the minimum guaranteed savings, the social housing company gets the minimum guaranteed savings + 20% (energy savings - minimum guaranteed savings)</p> <p>If the energy savings lower than the minimum guaranteed savings, the social housing company gets the minimum guaranteed savings</p> <p>The energy savings are then directly transferred to the tenants but the social housing company benefits from the increased value of the building after the energy efficiency intervention.</p>	<p>If the energy savings are higher than the minimum guaranteed savings, the ESCO gets 80% (energy savings - minimum guaranteed savings)</p> <p>If the energy savings are lower than the minimum guaranteed savings, the ESCO repays the difference between the energy savings and the minimum guaranteed savings.</p>	Energy savings	Environmental benefits measured in terms of lower CO2 emissions.
Risk adjusted extra return		Excellent	Very good	Excellent	Excellent
Rank		9	8	9	9

PPP		Social housing company	ESCO	Tenants	Civil society
Direct credit line	Cost	<p>Is responsible for covering the investment costs using private savings, crowdfunding, and government grants.</p> <p>The social housing company is also responsible for the maintenance and operating costs of the energy efficiency technologies.</p>	Not involved	No cost involved	Part of the refurbishment cost is covered by Government grants

	<b>Benefit</b>	Gets 100% of energy savings.  The energy savings are then directly transferred to the tenants but the social housing company benefits from the increased value of the building after the energy efficiency intervention.	Not involved	Energy savings	Environmental benefits measured in terms of lower CO2 emissions.
<b>Risk adjusted extra return</b>		<b>good</b>		<b>Excellent</b>	<b>Excellent</b>
<b>Rank</b>		<b>7</b>		<b>9</b>	<b>9</b>

PPP		Social housing company	ESCO	Tenants	Civil society
<b>Energy Supply Contract</b>	<b>Cost</b>	Is responsible for covering a fraction (somewhere between 10% and 50%) of the investment costs using private savings, crowdfunding, and government grants.  The social housing company is also responsible for covering a fraction (somewhere between 10% and 50%) of the maintenance and operating costs of the energy efficiency technologies.	Is responsible for covering a fraction (somewhere between 50% and 90%) of the investment costs using private savings, crowdfunding, and government grants.  The ESCO is also responsible for covering a fraction (somewhere between 50% and 90%) of the maintenance and operating costs of the energy efficiency technologies.	No cost involved	Part of the refurbishment cost is covered by Government grants
	<b>Benefit</b>	Receives a fraction (somewhere between 10% and 50%) of the energy savings.  The energy savings are then directly transferred to the tenants but the social housing company benefits from the increased value of the building after the energy efficiency intervention.	Receives a fraction (somewhere between 50% and 90%) of the energy savings.	Energy savings	Environmental benefits measured in terms of lower CO2 emissions.
<b>Risk adjusted extra return</b>		<b>Very reasonable</b>	<b>Very good</b>	<b>Excellent</b>	<b>Excellent</b>
<b>Rank</b>		<b>6</b>	<b>8</b>	<b>9</b>	<b>9</b>

#### 4.3.2. Montasio

Based on the risk adjusted extra returns, the shared savings contract is considered the most appropriate PPP contract for Montasio followed by the guaranteed savings contract.

PPP		Social housing company	ESCO	Tenants	Private owners (36%)	Civil society
Shared savings	Cost	No cost involved	Is responsible for covering the investment costs using funding provided by financial institutions (debt financing) or by the government (grants).	No cost involved	No cost involved	64% of the refurbishment cost is covered by Government grants
	Benefit	<p>If energy savings are higher than the minimum guaranteed savings, the social housing company gets 35% of the extra energy savings (energy savings - minimum guaranteed savings).</p> <p>If energy savings are lower than the minimum guaranteed savings, the social housing company gets 0. The energy savings are then directly transferred to the tenants but the social housing company benefits from the increased value of the building after the energy efficiency intervention.</p>	<p>If the energy savings are higher than the minimum guaranteed savings, the ESCO gets the minimum guaranteed savings + 65% (energy savings - minimum guaranteed savings)</p> <p>If the energy savings are lower than the minimum guaranteed savings, the ESCO gets all the energy savings</p>	Energy savings	<p>If energy savings are higher than the minimum guaranteed savings, the private owners get 35% (energy savings - minimum guaranteed savings).</p> <p>If energy savings are lower than the minimum guaranteed savings, the private owners get 0. The private owners benefit from the increased value of the building after the energy efficiency intervention.</p>	Environmental benefits measured in terms of lower CO2 emissions.
Risk adjusted extra return		Excellent	Excellent	very good	very good	Excellent
Ranking		9	9	8	8	9

PPP		Social housing company	ESCO	Tenants	Private owners (36%)	Civil society
Guaranteed savings	Cost	Is responsible for covering the investment costs using private savings, crowdfunding, and government grants.	Is responsible for covering the maintenance and operating costs of the energy efficiency technologies.	No cost involved	Is responsible for covering part of the investment costs using funding provided by financial institutions (debt financing) or by the government (grants).	64% of the refurbishment cost is covered by Government grants

	<b>Benefit</b>	<p>If the energy savings are higher than the minimum guaranteed savings, the social housing company gets the minimum guaranteed savings + 20% (energy savings - minimum guaranteed savings)</p> <p>If the energy savings lower than the minimum guaranteed savings, the social housing company gets the minimum guaranteed savings. The energy savings are then directly transferred to the tenants but the social housing company benefits from the increased value of the building after the energy efficiency intervention.</p>	<p>If the energy savings are higher than the minimum guaranteed savings, the ESCO gets 80% (energy savings - minimum guaranteed savings)</p> <p>If the energy savings are lower than the minimum guaranteed savings, the ESCO repays the difference between the energy savings and the minimum guaranteed savings.</p>	<b>Energy savings</b>	<p>If the energy savings are higher than the minimum guaranteed savings, the private owners get the minimum guaranteed savings + 20% (energy savings - minimum guaranteed savings)</p> <p>If the energy savings are lower than the minimum guaranteed savings, the private owners get the minimum guaranteed savings. The private owners benefit from the increased value of the building after the energy efficiency intervention.</p>	Environmental benefits measured in terms of lower CO2 emissions.
<b>Risk adjusted extra return</b>		<b>Excellent</b>	<b>Excellent</b>	<b>Excellent</b>	<b>Excellent</b>	<b>Excellent</b>
<b>Ranking</b>		<b>9</b>	<b>9</b>	<b>9</b>	<b>9</b>	<b>9</b>

PPP		Social housing company	ESCO	Tenants	Private owners (36%)	Civil society
<b>Direct credit line</b>	<b>Cost</b>	<p>Is responsible for covering the investment costs using private savings, crowdfunding, and government grants.</p> <p>The social housing company is also responsible for the maintenance and operating costs of the energy efficiency technologies.</p>	Not involved	No cost involved	<p>Are responsible for covering part of the investment costs using funding provided by financial institutions (debt financing) or by the government (grants).</p> <p>The private owners are also responsible for the maintenance and operating costs of the energy efficiency technologies.</p>	64% of the refurbishment cost is covered by Government grants



	<b>Benefit</b>	Gets 100% of energy savings.  The energy savings are then directly transferred to the tenants but the social housing company benefits from the increased value of the building after the energy efficiency intervention.	Not involved	Energy savings	If the energy savings are higher than the minimum guaranteed savings, the private owners get the minimum guaranteed savings + 20% (energy savings - minimum guaranteed savings)  If the energy savings are lower than the minimum guaranteed savings, the private owners get minimum guaranteed savings They also benefit from the increased value of the building after the energy efficiency intervention.	Environmental benefits measured in terms of lower CO2 emissions.
<b>Risk adjusted extra return</b>		<b>Excellent</b>		<b>Excellent</b>	<b>Very good</b>	<b>Excellent</b>
<b>Ranking</b>		<b>8</b>		<b>9</b>	<b>8</b>	<b>9</b>

PPP		Social housing company	ESCO	Tenants	Private owners (36%)	Civil society
<b>Energy Supply Contract</b>	<b>Cost</b>	Is responsible for covering a fraction (somewhere between 10% and 50%) of the investment costs using private savings, crowdfunding, and government grants.  The social housing company is also responsible for covering a fraction (somewhere between 10% and 50%) of the maintenance and operating costs of the energy efficiency technologies.	Is responsible for covering a fraction (somewhere between 50% and 90%) of the investment costs using private savings, crowdfunding, and government grants.  The ESCO is also responsible for covering a fraction (somewhere between 50% and 90%) of the maintenance and operating costs of the energy efficiency technologies.	No cost involved	Are responsible for covering part of the fraction (somewhere between 10% and 50%) of the investment costs using funding provided by financial institutions (debt financing) or by the government (grants).  The private owners are also responsible for covering part of the fraction (somewhere between 10% and 50%) of the maintenance and operating costs of the energy efficiency technologies.	64% of the refurbishment cost is covered by Government grants

	<b>Benefit</b>	<p>Receives a fraction (somewhere between 10% and 50%) of the energy savings.</p> <p>The energy savings are then directly transferred to the tenants but the social housing company benefits from the increased value of the building after the energy efficiency intervention.</p>	Receives a fraction (somewhere between 50% and 90%) of the energy savings.	Energy savings	<p>Receives part of the fraction (somewhere between 10% and 50%) of the energy savings.</p> <p>The private owners benefit from the increased value of the building after the energy efficiency intervention.</p>	Environmental benefits measured in terms of lower CO2 emissions.
<b>Risk adjusted extra return</b>		<b>Excellent</b>	<b>Very good</b>	<b>Excellent</b>	<b>Excellent</b>	<b>Excellent</b>
<b>Ranking</b>		<b>9</b>	<b>8</b>	<b>9</b>	<b>9</b>	<b>9</b>

## 4.4. Denmark

### 4.4.1. Borlumparken

PPP		Social housing company (Owned by tenants)	ESCO	Financial institution	Civil society
Shared savings	<b>Cost</b>	No cost involved	Is responsible for covering the investment costs using funding provided by financial institutions (debt financing) or by the government (grants).	Offers a loan for funding the energy efficiency project	10% of the refurbishment cost is covered by Government grants
	<b>Benefit</b>	<p>If energy savings are higher than the minimum guaranteed savings, the social housing company gets 35% of the extra energy savings (energy savings - minimum guaranteed savings).</p> <p>If energy savings are lower than the minimum guaranteed savings, the social housing company gets 0</p> <p>The energy savings are then directly transferred to the tenants but the social housing company benefits from the increased value of the building after the energy efficiency intervention.</p>	<p>If the energy savings are higher than the minimum guaranteed savings, the ESCO gets the minimum guaranteed savings + 65% (energy savings - minimum guaranteed savings)</p> <p>If the energy savings are lower than the minimum guaranteed savings, the ESCO gets all the energy savings</p>	The financial institution gets the interest rates on loan plus, at maturity, the repayment of the loan itself	Environmental benefits measured in terms of lower CO2 emissions.

Risk adjusted extra return	Very good	Very good	Good, a higher risk adjusted extra return than that of S&P500	Excellent
Rank	8	8	7	9

PPP		Social housing company (Owned by tenants)	ESCO	Financial institution	Civil society
Guaranteed savings	Cost	Is responsible for covering 90% of the investment costs using funds from financial institutions(debt financing) or government (grants), and the tenants covers 2% of the investment cost	Is responsible for covering the maintenance and operating costs of the energy efficiency technologies.	Offers a loan for funding the energy efficiency project	10% of the refurbishment cost is covered by Government grants
	Benefit	<p>If the energy savings are higher than the minimum guaranteed savings, the social housing company gets the minimum guaranteed savings + 20% (energy savings - minimum guaranteed savings)</p> <p>If the energy savings lower than the minimum guaranteed savings, the social housing company gets the minimum guaranteed savings The energy savings are then directly transferred to the tenants but the social housing company benefits from the increased value of the building after the energy efficiency intervention.</p>	<p>If the energy savings are higher than the minimum guaranteed savings, the ESCO gets 80% (energy savings - minimum guaranteed savings)</p> <p>If the energy savings are lower than the minimum guaranteed savings, the ESCO repays the difference between the energy savings and the minimum guaranteed savings.</p>	The financial institution gets the interest rates on loan plus, at maturity, the repayment of the loan itself	Environmental benefits measured in terms of lower CO2 emissions.
Risk adjusted extra return		Good	Very good	Good, a higher risk adjusted extra return than that of S&P500	Excellent
Ranking		7	8	7	9

PPP		Social housing company (Owned by tenants)	ESCO	Financial institution	Civil society
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Direct credit line	Cost	Is responsible for covering 90% of the investment costs using funds from financial institutions(debt financing) or government (grants), and the tenants covers 2% of the investment cost  The social housing company is responsible for covering the maintenance and operating costs of the energy efficiency technologies.	Not involved	Offers a loan for funding the energy efficiency project	10% of the refurbishment cost is covered by Government grants
	Benefit	Gets 100% of energy savings.  The energy savings are then directly transferred to the tenants but the social housing company benefits from the increased value of the building after the energy efficiency intervention.	Not involved	The financial institution gets the interest rates on loan plus, at maturity, the repayment of the loan itself	Environmental benefits measured in terms of lower CO2 emissions.
Risk adjusted extra return		Good		Good, a higher risk adjusted extra return than that of S&P500	Excellent
Rank		7		7	9

PPP		<b>Social housing company (Owned by tenants)</b>	<b>ESCO</b>	<b>Financial institution</b>	<b>Civil society</b>
<b>Energy Supply Contract</b>	<b>Cost</b>	Is responsible for covering a fraction (somewhere between 10% and 50%) of the investment costs using funding provided by financial institutions (debt financing) or by the government (grants). The tenants cover 2% of the investment costs The social housing company is also responsible for covering a fraction (somewhere between 10% and 50%) of the maintenance and operating costs of the energy efficiency technologies.	Is responsible for covering a fraction (somewhere between 50% and 90%) of the investment costs using funding provided by financial institutions (debt financing) or by the government (grants). The ESCO is also responsible for covering a fraction (somewhere between 50% and 90%) of the maintenance and operating costs of the energy efficiency technologies.	Offers a loan for funding the energy efficiency project	10% of the refurbishment cost is covered by Government grants
	<b>Benefit</b>	Receives a fraction (somewhere between 10% and 50%) of the energy savings.  The energy savings are then directly transferred to the tenants but the social housing company benefits from the increased value of the building after the energy efficiency	Receives a fraction (somewhere between 50% and 90%) of the energy savings.	The financial institution gets the interest rates on loan plus, at maturity, the repayment of the loan itself	Environmental benefits measured in terms of lower CO2 emissions.

		intervention.			
<b>Risk adjusted extra return</b>		<b>Good</b>	<b>Very reasonable</b>	<b>Good</b> , a higher risk adjusted extra return than that of S&P500	<b>Excellent</b>
<b>Rank</b>		<b>7</b>	<b>6</b>	<b>7</b>	<b>9</b>

#### 4.4.2. Vaevergarden

PPP		Social housing company (Owned by tenants)	ESCO	Financial institution	Civil society
Shared savings	<b>Cost</b>	No cost involved	Is responsible for covering the investment costs using funding provided by financial institutions (debt financing) or by the government (grants).	Offers a loan for funding the energy efficiency project	10% of the refurbishment cost is covered by Government grants
	<b>Benefit</b>	<p>If energy savings are higher than the minimum guaranteed savings, the social housing company gets 35% of the extra energy savings (energy savings - minimum guaranteed savings).</p> <p>If energy savings are lower than the minimum guaranteed savings, the social housing company gets 0. The energy savings are then directly transferred to the tenants but the social housing company benefits from the increased value of the building after the energy efficiency intervention.</p>	<p>If the energy savings are higher than the minimum guaranteed savings, the ESCO gets the minimum guaranteed savings + 65% (energy savings - minimum guaranteed savings)</p> <p>If the energy savings are lower than the minimum guaranteed savings, the ESCO gets all the energy savings</p>	The financial institution gets the interest rates on loan plus, at maturity, the repayment of the loan itself	Environmental benefits measured in terms of lower CO2 emissions.
<b>Risk adjusted extra return</b>		<b>Very good</b>	<b>Very good</b>	<b>Good</b> , a higher risk adjusted extra return than that of S&P500	<b>Excellent</b>
<b>Rank</b>		<b>8</b>	<b>8</b>	<b>7</b>	<b>9</b>

PPP	Social housing company (Owned by tenants)	ESCO	Financial institution	Civil society
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<b>Guaranteed savings</b>	<b>Cost</b>	Is responsible for covering 90% of the investment costs using funds from financial institutions(debt financing) or government (grants), and the tenants covers 2% of the investment cost	Is responsible for covering the maintenance and operating costs of the energy efficiency technologies.	Offers a loan for funding the energy efficiency project	10% of the refurbishment cost is covered by Government grants
	<b>Benefit</b>	<p>If the energy savings are higher than the minimum guaranteed savings, the social housing company gets the minimum guaranteed savings + 20% (energy savings - minimum guaranteed savings)</p> <p>If the energy savings lower than the minimum guaranteed savings, the social housing company gets the minimum guaranteed savings</p> <p>The energy savings are then directly transferred to the tenants but the social housing company benefits from the increased value of the building after the energy efficiency intervention.</p>	<p>If the energy savings are higher than the minimum guaranteed savings, the ESCO gets 80% (energy savings - minimum guaranteed savings)</p> <p>If the energy savings are lower than the minimum guaranteed savings, the ESCO repays the difference between the energy savings and the minimum guaranteed savings.</p>	The financial institution gets the interest rates on loan plus, at maturity, the repayment of the loan itself	Environmental benefits measured in terms of lower CO2 emissions.
<b>Risk adjusted extra return</b>		<b>Very good</b>	<b>Very good</b>	<b>Good</b> , a higher risk adjusted extra return than that of S&P500	<b>Excellent</b>

<b>PPP</b>		<b>Social housing company (Owned by tenants)</b>	<b>ESCO</b>	<b>Financial institution</b>	<b>Civil society</b>
<b>Direct credit line</b>	<b>Cost</b>	<p>Is responsible for covering 90% of the investment costs using funds from financial institutions(debt financing) or government (grants), and the tenants cover 2% of the investment cost.</p> <p>The social housing company is responsible for covering the maintenance and operating costs of the energy efficiency technologies.</p>	Not involved	Offers a loan for funding the energy efficiency project	10% of the refurbishment cost is covered by Government grants
	<b>Benefit</b>	Gets 100% of energy savings. The energy savings are then directly transferred to the tenants but the social housing company benefits from the increased value of the building after the energy efficiency intervention.	Not involved	The financial institution gets the interest rates on loan plus, at maturity, the repayment of the loan itself	Environmental benefits measured in terms of lower CO2 emissions.
<b>Risk adjusted extra return</b>		<b>Very good</b>		<b>Good</b> , a higher risk adjusted extra return than that of S&P500	<b>Excellent</b>
<b>Rank</b>		<b>8</b>		<b>7</b>	<b>9</b>

PPP		Social housing company (Owned by tenants)	ESCO	Financial institution	Civil society
Energy Supply Contract	Cost	Is responsible for covering a fraction (somewhere between 10% and 50%) of the investment costs using funding provided by financial institutions (debt financing) or by the government (grants). The tenants cover 2% of the investment costs. The social housing company is also responsible for covering a fraction (somewhere between 10% and 50%) of the maintenance and operating costs of the energy efficiency technologies.	Is responsible for covering a fraction (somewhere between 50% and 90%) of the investment costs using funding provided by financial institutions (debt financing) or by the government (grants).  The ESCO is also responsible for covering a fraction (somewhere between 50% and 90%) of the maintenance and operating costs of the energy efficiency technologies.	Offers a loan for funding the energy efficiency project	10% of the refurbishment cost is covered by Government grants
	Benefit	Receives a fraction (somewhere between 10% and 50%) of the energy savings.  The energy savings are then directly transferred to the tenants but the social housing company benefits from the increased value of the building after the energy efficiency intervention.	Receives a fraction (somewhere between 50% and 90%) of the energy savings.	The financial institution gets the interest rates on loan plus, at maturity, the repayment of the loan itself	Environmental benefits measured in terms of lower CO2 emissions.
Risk adjusted extra return		Very good	Very good	Good, a higher risk adjusted extra return than that of S&P500	Excellent
Rank		8	8	7	9

#### 4.4.3. Afdeling

PPP		Social housing company (Owned by tenants)	ESCO	Financial institution	Civil society
Shared savings	Cost	No cost involved	Is responsible for covering the investment costs using funding provided by financial institutions (debt financing) or by the government (grants).	Offers a loan for funding the energy efficiency project	10% of the refurbishment cost is covered by Government grants



	<b>Benefit</b>	<p>If energy savings are higher than the minimum guaranteed savings, the social housing company gets 35% of the extra energy savings (energy savings - minimum guaranteed savings).</p> <p>If energy savings are lower than the minimum guaranteed savings, the social housing company gets 0. The energy savings are then directly transferred to the tenants but the social housing company benefits from the increased value of the building after the energy efficiency intervention.</p>	<p>If the energy savings are higher than the minimum guaranteed savings, the ESCO gets the minimum guaranteed savings + 65% (energy savings - minimum guaranteed savings)</p> <p>If the energy savings are lower than the minimum guaranteed savings, the ESCO gets all the energy savings</p>	The financial institution gets the interest rates on loan plus, at maturity, the repayment of the loan itself	Environmental benefits measured in terms of lower CO2 emissions.
<b>Risk adjusted extra return</b>		<b>Excellent</b>	<b>Very Good</b>	<b>Good</b> , a higher risk adjusted extra return than that of S&P500	<b>Excellent</b>
<b>Rank</b>		<b>9</b>	<b>8</b>	<b>7</b>	<b>9</b>

<b>PPP</b>		<b>Social housing company (Owned by tenants)</b>	<b>ESCO</b>	<b>Financial institution</b>	<b>Civil society</b>
<b>Guaranteed savings</b>	<b>Cost</b>	Is responsible for covering 90% of the investment costs using funds from financial institutions(debt financing) or government (grants), and the tenants covers 2% of the investment cost	Is responsible for covering the maintenance and operating costs of the energy efficiency technologies.	Offers a loan for funding the energy efficiency project	10% of the refurbishment cost is covered by Government grants
	<b>Benefit</b>	<p>If the energy savings are higher than the minimum guaranteed savings, the social housing company gets the minimum guaranteed savings + 20% (energy savings - minimum guaranteed savings)</p> <p>If the energy savings lower than the minimum guaranteed savings, the social housing company gets the minimum guaranteed savings. The energy savings are then directly transferred to the tenants but the social housing company benefits from the increased value of the building after the energy efficiency intervention.</p>	<p>If the energy savings are higher than the minimum guaranteed savings, the ESCO gets 80% (energy savings - minimum guaranteed savings)</p> <p>If the energy savings are lower than the minimum guaranteed savings, the ESCO repays the difference between the energy savings and the minimum guaranteed savings.</p>	The financial institution gets the interest rates on loan plus, at maturity, the repayment of the loan itself	Environmental benefits measured in terms of lower CO2 emissions.



Risk adjusted extra return	Excellent	Very Good	Good, a higher risk adjusted extra return than that of S&P500	Excellent
Rank	9	8	7	9

PPP		Social housing company (Owned by tenants)	ESCO	Financial institution	Civil society
Direct credit line	Cost	Is responsible for covering 90% of the investment costs using funds from financial institutions(debt financing) or government (grants), and the tenants cover 2% of the investment cost.  The social housing company is responsible for covering the maintenance and operating costs of the energy efficiency technologies.	Not involved	Offers a loan for funding the energy efficiency project	10% of the refurbishment cost is covered by Government grants
	Benefit	Gets 100% of energy savings. The energy savings are then directly transferred to the tenants but the social housing company benefits from the increased value of the building after the energy efficiency intervention.	Not involved	The financial institution gets the interest rates on loan plus, at maturity, the repayment of the loan itself	Environmental benefits measured in terms of lower CO2 emissions.
Risk adjusted extra return		Excellent		Good, a higher risk adjusted extra return than that of S&P500	Excellent
Rank		9		7	9

PPP		Social housing company (Owned by tenants)	ESCO	Financial institution	Civil society
Energy Supply Contract	Cost	Is responsible for covering a fraction (somewhere between 10% and 50%) of the investment costs using funding provided by financial institutions (debt financing) or by the government (grants). The tenants cover 2% of the investment costs. The social housing company is also responsible for covering a fraction (somewhere between 10% and 50%) of the maintenance and operating costs of the energy efficiency	Is responsible for covering a fraction (somewhere between 50% and 90%) of the investment costs using funding provided by financial institutions (debt financing) or by the government (grants).  The ESCO is also responsible for covering a fraction (somewhere between 50% and 90%) of the maintenance and operating costs of the energy efficiency technologies.	Offers a loan for funding the energy efficiency project	10% of the refurbishment cost is covered by Government grants

		technologies.			
	<b>Benefit</b>	<p>Receives a fraction (somewhere between 10% and 50%) of the energy savings.</p> <p>The energy savings are then directly transferred to the tenants but the social housing company benefits from the increased value of the building after the energy efficiency intervention.</p>	Receives a fraction (somewhere between 50% and 90%) of the energy savings.	The financial institution gets the interest rates on loan plus, at maturity, the repayment of the loan itself	Environmental benefits measured in terms of lower CO2 emissions.
<b>Risk adjusted extra return</b>		<b>Excellent</b>	<b>Very Good</b>	<b>Good, a higher risk adjusted extra return than that of S&amp;P500</b>	<b>Excellent</b>
<b>Rank</b>		<b>9</b>	<b>8</b>	<b>7</b>	<b>9</b>

#### 4.4.4. Storgarden

<b>PPP</b>		<b>Social housing company (Owned by tenants)</b>	<b>ESCO</b>	<b>Financial institution</b>	<b>Civil society</b>
<b>Shared savings</b>	<b>Cost</b>	No cost involved	Is responsible for covering the investment costs using funding provided by financial institutions (debt financing) or by the government (grants).	Offers a loan for funding the energy efficiency project	10% of the refurbishment cost is covered by Government grants
	<b>Benefit</b>	<p>If energy savings are higher than the minimum guaranteed savings, the social housing company gets 35% of the extra energy savings (energy savings - minimum guaranteed savings).</p> <p>If energy savings are lower than the minimum guaranteed savings, the social housing company gets 0</p> <p>The energy savings are then directly transferred to the tenants but the social housing company benefits from the increased value of</p>	<p>If the energy savings are higher than the minimum guaranteed savings, the ESCO gets the minimum guaranteed savings + 65% (energy savings - minimum guaranteed savings)</p> <p>If the energy savings are lower than the minimum guaranteed savings, the ESCO gets all the energy savings</p>	The financial institution gets the interest rates on loan plus, at maturity, the repayment of the loan itself	Environmental benefits measured in terms of lower CO2 emissions.

		the building after the energy efficiency intervention.			
<b>Risk adjusted extra return</b>		<b>Very good</b>	<b>Very good</b>	<b>Good</b> , a higher risk adjusted extra return than that of S&P500	<b>Excellent</b>
<b>Rank</b>		<b>8</b>	<b>8</b>	<b>7</b>	<b>9</b>

<b>PPP</b>		<b>Social housing company (Owned by tenants)</b>	<b>ESCO</b>	<b>Financial institution</b>	<b>Civil society</b>
<b>Guaranteed savings</b>	<b>Cost</b>	Is responsible for covering 90% of the investment costs using funds from financial institutions(debt financing) or government (grants), and the tenants covers 2% of the investment cost	Is responsible for covering the maintenance and operating costs of the energy efficiency technologies.	Offers a loan for funding the energy efficiency project	10% of the refurbishment cost is covered by Government grants
	<b>Benefit</b>	<p>If the energy savings are higher than the minimum guaranteed savings, the social housing company gets the minimum guaranteed savings + 20% (energy savings - minimum guaranteed savings)</p> <p>If the energy savings lower than the minimum guaranteed savings, the social housing company gets the minimum guaranteed savings</p> <p>The energy savings are then directly transferred to the tenants but the social housing company benefits from the increased value of the building after the energy efficiency intervention.</p>	<p>If the energy savings are higher than the minimum guaranteed savings, the ESCO gets 80% (energy savings - minimum guaranteed savings)</p> <p>If the energy savings are lower than the minimum guaranteed savings, the ESCO repays the difference between the energy savings and the minimum guaranteed savings.</p>	The financial institution gets the interest rates on loan plus, at maturity, the repayment of the loan itself	Environmental benefits measured in terms of lower CO2 emissions.
<b>Risk adjusted extra return</b>		<b>Very good</b>	<b>Very good</b>	<b>Good</b> , a higher risk adjusted extra return than that of S&P500	<b>Excellent</b>
<b>Rank</b>		<b>8</b>	<b>8</b>	<b>7</b>	<b>9</b>

PPP		Social housing company (Owned by tenants)	ESCO	Financial institution	Civil society
Direct credit line	Cost	Is responsible for covering 90% of the investment costs using funds from financial institutions (debt financing) or government (grants), and the tenants covers 2% of the investment cost  The social housing company is responsible for covering the maintenance and operating costs of the energy efficiency technologies.	Not involved	Offers a loan for funding the energy efficiency project	10% of the refurbishment cost is covered by Government grants
	Benefit	Gets 100% of energy savings. The energy savings are then directly transferred to the tenants but the social housing company benefits from the increased value of the building after the energy efficiency intervention.	Not involved	The financial institution gets the interest rates on loan plus, at maturity, the repayment of the loan itself	Environmental benefits measured in terms of lower CO2 emissions.
Risk adjusted extra return		Very good		Good, a higher risk adjusted extra return than that of S&P500	Excellent
Rank		8		7	9

PPP		Social housing company (Owned by tenants)	ESCO	Financial institution	Civil society
Energy Supply Contract	Cost	Is responsible for covering a fraction (somewhere between 10% and 50%) of the investment costs using funding provided by financial institutions (debt financing) or by the government (grants). The tenants cover 2% of the investment costs The social housing company is also responsible for covering a fraction (somewhere between 10% and 50%) of the maintenance and operating costs of the energy efficiency technologies.	Is responsible for covering a fraction (somewhere between 50% and 90%) of the investment costs using funding provided by financial institutions (debt financing) or by the government (grants).  The ESCO is also responsible for covering a fraction (somewhere between 50% and 90%) of the maintenance and operating costs of the energy efficiency technologies.	Offers a loan for funding the energy efficiency project	10% of the refurbishment cost is covered by Government grants
	Benefit	Receives a fraction (somewhere between 10% and 50%) of the energy savings.  The energy savings are then directly transferred to the tenants but the social housing company benefits from the increased value of the building	Receives a fraction (somewhere between 50% and 90%) of the energy savings.	The financial institution gets the interest rates on loan plus, at maturity, the repayment of the loan itself	Environmental benefits measured in terms of lower CO2 emissions.

		after the energy efficiency intervention.			
<b>Risk adjusted extra return</b>		<b>Very good</b>	<b>Very good</b>	<b>Good</b> , a higher risk adjusted extra return than that of S&P500	<b>Excellent</b>
<b>Rank</b>		<b>8</b>	<b>8</b>	<b>7</b>	<b>9</b>

#### 4.4.5. Hammerthor

PPP		Social housing company (Owned by tenants)	ESCO	Financial institution	Civil society
Shared savings	<b>Cost</b>	No cost involved	Is responsible for covering the investment costs using funding provided by financial institutions (debt financing) or by the government (grants).	Offers a loan for funding the energy efficiency project	10% of the refurbishment cost is covered by Government grants
	<b>Benefit</b>	If energy savings are higher than the minimum guaranteed savings, the social housing company gets 35% of the extra energy savings (energy savings - minimum guaranteed savings).  If energy savings are lower than the minimum guaranteed savings, the social housing company gets 0. The energy savings are then directly transferred to the tenants but the social housing company benefits from the increased value of the building after the energy efficiency intervention.	If the energy savings are higher than the minimum guaranteed savings, the ESCO gets the minimum guaranteed savings + 65% (energy savings - minimum guaranteed savings)  If the energy savings are lower than the minimum guaranteed savings, the ESCO gets all the energy savings	The financial institution gets the interest rates on loan plus, at maturity, the repayment of the loan itself	Environmental benefits measured in terms of lower CO2 emissions.
<b>Risk adjusted extra return</b>		<b>Excellent</b>	<b>Very good</b>	<b>Good</b> , a higher risk adjusted extra return than that of S&P500	<b>Very good</b>
<b>Rank</b>		<b>9</b>	<b>8</b>	<b>7</b>	<b>8</b>

PPP	Social housing company (Owned by tenants)	ESCO	Financial institution	Civil society
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<b>Guaranteed savings</b>	<b>Cost</b>	Is responsible for covering 90% of the investment costs using funds from financial institutions(debt financing) or government (grants), and the tenants covers 2% of the investment cost	Is responsible for covering the maintenance and operating costs of the energy efficiency technologies.	Offers a loan for funding the energy efficiency project	10% of the refurbishment cost is covered by Government grants
	<b>Benefit</b>	<p>If the energy savings are higher than the minimum guaranteed savings, the social housing company gets the minimum guaranteed savings + 20% (energy savings - minimum guaranteed savings)</p> <p>If the energy savings lower than the minimum guaranteed savings, the social housing company gets the minimum guaranteed savings</p> <p>The energy savings are then directly transferred to the tenants but the social housing company benefits from the increased value of the building after the energy efficiency intervention.</p>	<p>If the energy savings are higher than the minimum guaranteed savings, the ESCO gets 80% (energy savings - minimum guaranteed savings)</p> <p>If the energy savings are lower than the minimum guaranteed savings, the ESCO repays the difference between the energy savings and the minimum guaranteed savings.</p>	The financial institution gets the interest rates on loan plus, at maturity, the repayment of the loan itself	Environmental benefits measured in terms of lower CO2 emissions.
<b>Risk adjusted extra return</b>		<b>Excellent</b>	<b>Very good</b>	<b>Good</b> , a higher risk adjusted extra return than that of S&P500	<b>Very good</b>
<b>Rank</b>		<b>9</b>	<b>8</b>	<b>7</b>	<b>8</b>

<b>PPP</b>		<b>Social housing company (Owned by tenants)</b>	<b>ESCO</b>	<b>Financial institution</b>	<b>Civil society</b>
<b>Direct credit line</b>	<b>Cost</b>	<p>Is responsible for covering 90% of the investment costs using funds from financial institutions(debt financing) or government (grants), and the tenants covers 2% of the investment cost</p> <p>The social housing company is responsible for covering the maintenance and operating costs of the energy efficiency technologies.</p>	Not involved	Offers a loan for funding the energy efficiency project	10% of the refurbishment cost is covered by Government grants
	<b>Benefit</b>	<p>Gets 100% of energy savings.</p> <p>The energy savings are then directly transferred to the tenants but the social housing company benefits from the increased value of the building after the energy efficiency intervention.</p>	Not involved	The financial institution gets the interest rates on loan plus, at maturity, the repayment of the loan itself	Environmental benefits measured in terms of lower CO2 emissions.

Risk adjusted extra return	Very good		Good, a higher risk adjusted extra return than that of S&P500	Very good
Rank	8		7	8

PPP		Social housing company (Owned by tenants)	ESCO	Financial institution	Civil society
Energy Supply Contract	Cost	Is responsible for covering a fraction (somewhere between 10% and 50%) of the investment costs using funding provided by financial institutions (debt financing) or by the government (grants). The tenants cover 2% of the investment costs The social housing company is also responsible for covering a fraction (somewhere between 10% and 50%) of the maintenance and operating costs of the energy efficiency technologies.	Is responsible for covering a fraction (somewhere between 50% and 90%) of the investment costs using funding provided by financial institutions (debt financing) or by the government (grants).  The ESCO is also responsible for covering a fraction (somewhere between 50% and 90%) of the maintenance and operating costs of the energy efficiency technologies.	Offers a loan for funding the energy efficiency project	10% of the refurbishment cost is covered by Government grants
	Benefit	Receives a fraction (somewhere between 10% and 50%) of the energy savings.  The energy savings are then directly transferred to the tenants but the social housing company benefits from the increased value of the building after the energy efficiency intervention.	Receives a fraction (somewhere between 50% and 90%) of the energy savings.	The financial institution gets the interest rates on loan plus, at maturity, the repayment of the loan itself	Environmental benefits measured in terms of lower CO2 emissions.
Risk adjusted extra return		Good	Very reasonable	Good, a higher risk adjusted extra return than that of S&P500	Very good
Rank		7	6	7	8

#### 4.4.6. Frisenborgparken

PPP	Social housing company (Owned by tenants)	ESCO	Financial institution	Civil society
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Shared savings	<b>Cost</b>	No cost involved	Is responsible for covering the investment costs using funding provided by financial institutions (debt financing) or by the government (grants).	Offers a loan for funding the energy efficiency project	10% of the refurbishment cost is covered by Government grants
	<b>Benefit</b>	<p>If energy savings are higher than the minimum guaranteed savings, the social housing company gets 35% of the extra energy savings (energy savings - minimum guaranteed savings).</p> <p>If energy savings are lower than the minimum guaranteed savings, the social housing company gets 0. The energy savings are then directly transferred to the tenants but the social housing company benefits from the increased value of the building after the energy efficiency intervention.</p>	<p>If the energy savings are higher than the minimum guaranteed savings, the ESCO gets the minimum guaranteed savings + 65% (energy savings - minimum guaranteed savings)</p> <p>If the energy savings are lower than the minimum guaranteed savings, the ESCO gets all the energy savings</p>	The financial institution gets the interest rates on loan plus, at maturity, the repayment of the loan itself	Environmental benefits measured in terms of lower CO2 emissions.
Risk adjusted extra return		good	Very good	Good, a higher risk adjusted extra return than that of S&P500	good
Rank		7	8	7	7

PPP	Social housing company (Owned by tenants)	ESCO	Financial institution	Civil society
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Guaranteed savings	<b>Cost</b>	Is responsible for covering 90% of the investment costs using funds from financial institutions(debt financing) or government (grants), and the tenants covers 2% of the investment cost	Is responsible for covering the maintenance and operating costs of the energy efficiency technologies.	Offers a loan for funding the energy efficiency project	10% of the refurbishment cost is covered by Government grants
	<b>Benefit</b>	<p>If the energy savings are higher than the minimum guaranteed savings, the social housing company gets the minimum guaranteed savings + 20% (energy savings - minimum guaranteed savings)</p> <p>If the energy savings lower than the minimum guaranteed savings, the social housing company gets the minimum guaranteed savings</p> <p>The energy savings are then directly transferred to the tenants but the social housing company benefits from the increased value of the building after the energy efficiency intervention.</p>	<p>If the energy savings are higher than the minimum guaranteed savings, the ESCO gets 80% (energy savings - minimum guaranteed savings)</p> <p>If the energy savings are lower than the minimum guaranteed savings, the ESCO repays the difference between the energy savings and the minimum guaranteed savings.</p>	The financial institution gets the interest rates on loan plus, at maturity, the repayment of the loan itself	Environmental benefits measured in terms of lower CO2 emissions.
Risk adjusted extra return		Good	Very good	Good, a higher risk adjusted extra return than that of S&P500	good
Rank		7	8	7	7

PPP		Social housing company (Owned by tenants)	ESCO	Financial institution	Civil society
Direct credit line	Cost	<p>Is responsible for covering 90% of the investment costs using funds from financial institutions(debt financing) or government (grants), and the tenants covers 2% of the investment cost</p> <p>The social housing company is responsible for covering the maintenance and operating costs of the energy efficiency technologies.</p>	Not involved	Offers a loan for funding the energy efficiency project	10% of the refurbishment cost is covered by Government grants
	Benefit	<p>Gets 100% of energy savings.</p> <p>The energy savings are then directly transferred to the tenants but the social housing company benefits from the increased value of the building after the energy efficiency intervention.</p>	Not involved	The financial institution gets the interest rates on loan plus, at maturity, the repayment of the loan itself	Environmental benefits measured in terms of lower CO2 emissions.
Risk adjusted extra return		Very reasonable		Good, a higher risk adjusted extra return than that of S&P500	good
Rank		6		7	7

PPP		Social housing company (Owned by tenants)	ESCO	Financial institution	Civil society
Energy Supply Contract	Cost	Is responsible for covering a fraction (somewhere between 10% and 50%) of the investment costs using funding provided by financial institutions (debt financing) or by the government (grants). The tenants cover 2% of the investment costs. The social housing company is also responsible for covering a fraction (somewhere between 10% and 50%) of the maintenance and operating costs of the energy efficiency technologies.	Is responsible for covering a fraction (somewhere between 50% and 90%) of the investment costs using funding provided by financial institutions (debt financing) or by the government (grants).  The ESCO is also responsible for covering a fraction (somewhere between 50% and 90%) of the maintenance and operating costs of the energy efficiency technologies.	Offers a loan for funding the energy efficiency project	10% of the refurbishment cost is covered by Government grants
	Benefit	Receives a fraction (somewhere between 10% and 50%) of the energy savings.  The energy savings are then directly transferred to the tenants but the social housing company benefits from the increased value of the building after the energy efficiency intervention.	Receives a fraction (somewhere between 50% and 90%) of the energy savings.	The financial institution gets the interest rates on loan plus, at maturity, the repayment of the loan itself	Environmental benefits measured in terms of lower CO2 emissions.
Risk adjusted extra return		Very reasonable	Good	Good, a higher risk adjusted extra return than that of S&P500	Good

<b>Rank</b>	<b>6</b>	<b>7</b>	<b>7</b>	<b>7</b>
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## 4.5. Slovenia

### 4.5.1. Neza 26 a in b

The tables below presents the ranking of tailored PPP contracts for implementing the proposed EE interventions in NSlovenian pilot Neza 26 a in b.

PPP		Social housing company (50% owned by Spikter)	ESCO	Tenants	Civil society
Shared savings	<b>Cost</b>	No cost involved	Is responsible for covering the investment costs.	No cost involved	20% of the refurbishment cost is covered by Government grants
	<b>Benefit</b>	If energy savings are higher than the minimum guaranteed savings, the social housing company gets 35% of the extra energy savings (energy savings - minimum guaranteed savings).  If energy savings are lower than the minimum guaranteed savings, the social housing company gets 0. The energy savings are then directly transferred to the tenants but the social housing company benefits from the increased value of the building after the energy efficiency intervention.	If the energy savings are higher than the minimum guaranteed savings, the ESCO gets the minimum guaranteed savings + 65% (energy savings - minimum guaranteed savings)  If the energy savings are lower than the minimum guaranteed savings, the ESCO gets all the energy savings	energy savings	Environmental benefits measured in terms of lower CO2 emissions.
<b>Risk adjusted extra return</b>		<b>Very good</b>	<b>good</b>	<b>Good</b>	<b>Excellent</b>
<b>Rank</b>		<b>8</b>	<b>7</b>	<b>7</b>	<b>9</b>

PPP		Social housing company(50% owned by Spikter)	ESCO	Tenants	Civil society
Guaranteed savings	<b>Cost</b>	Is responsible for covering the investment costs using private savings, crowd funding and government grants.	Is responsible for covering the maintenance and operating costs of the energy efficiency technologies.	No cost involved	20% of the refurbishment cost is covered by Government grants
	<b>Benefit</b>	If the energy savings are higher than the minimum guaranteed savings, the social housing company gets the minimum guaranteed savings + 20% (energy savings - minimum guaranteed savings).  If the energy savings are lower	If the energy savings are higher than the minimum guaranteed savings, the ESCO gets 80% (energy savings - minimum guaranteed savings)  If the energy savings are lower	Energy savings	Environmental benefits measured in terms of lower CO2 emissions.

		If the energy savings are lower than the minimum guaranteed savings, the social housing company gets the minimum guaranteed savings. The energy savings are then directly transferred to the tenants but the social housing company benefits from the increased value of the building after the energy efficiency intervention.	than the minimum guaranteed savings, the ESCO repays the difference between the energy savings and the minimum guaranteed savings.		
<b>Risk adjusted extra return</b>		<b>Very good</b>	<b>Excellent</b>	<b>very good</b>	<b>Excellent</b>
<b>Rank</b>		<b>8</b>	<b>9</b>	<b>8</b>	<b>9</b>

PPP		<b>Social housing company ( 50% owned by Spikter)</b>	<b>ESCO</b>	<b>Tenants</b>	<b>Civil society</b>
<b>Direct credit line</b>	<b>Cost</b>	Is responsible for covering the investment costs using private savings, crowd funding and government grants.  The social housing company is also responsible for the maintenance and operating costs of the energy efficiency technologies.	Not involved	No cost involved	20% of the refurbishment cost is covered by Government grants
	<b>Benefit</b>	Gets 100% of energy savings. The energy savings are then directly transferred to the tenants but the social housing company benefits from the increased value of the building after the energy efficiency intervention.	Not involved	Energy savings	Environmental benefits measured in terms of lower CO2 emissions.
<b>Risk adjusted extra return</b>		<b>Very good</b>	<b>Reasonable</b>	<b>Good</b>	<b>Excellent</b>
<b>Rank</b>		<b>8</b>	<b>5</b>	<b>7</b>	<b>9</b>

PPP		<b>Social housing company(50% owned by Spikter)</b>	<b>ESCO</b>	<b>Tenants</b>	<b>Civil society</b>
<b>Energy Supply Contract</b>	<b>Cost</b>	Is responsible for covering a fraction (somewhere between 10% and 50%) of the investment costs using funding from private savings, crowdfunding and government grants.  The social housing company is also responsible for covering a	Is responsible for covering a fraction (somewhere between 50% and 90%) of the investment costs using funding provided by financial institutions (debt financing) or by the government (grants).	No cost involved	20% of the refurbishment cost is covered by Government grants

		fraction (somewhere between 10% and 50%) of the maintenance and operating costs of the energy efficiency technologies.	The ESCO is also responsible for covering a fraction (somewhere between 50% and 90%) of the maintenance and operating costs of the energy efficiency technologies.		
	<b>Benefit</b>	<p>Receives a fraction (somewhere between 10% and 50%) of the energy savings.</p> <p>The energy savings are then directly transferred to the tenants but the social housing company benefits from the increased value of the building after the energy efficiency intervention.</p>	Receives a fraction (somewhere between 50% and 90%) of the energy savings.	Energy savings	Environmental benefits measured in terms of lower CO2 emissions.
<b>Risk adjusted extra return</b>		<b>Very good</b>	<b>Very reasonable</b>	<b>Very reasonable</b>	<b>Excellent</b>
<b>Rank</b>		<b>8</b>	<b>6</b>	<b>6</b>	<b>9</b>

## 5. Conclusions

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Deliverable D1.4 provides an in-depth analysis of the role PPPs play in advancing EE renovations in social housing. This comprehensive study evaluates four primary PPP models: Guaranteed Savings Contracts, Shared Savings Contracts, Direct Credit Lines (DCLs), and Energy Supply Contracts (ESCs). The analysis underscores each model's unique advantages, risk allocation, and benefits for various stakeholders.

**In Italy**, social housing often involves co-ownership between social housing companies and private owners, necessitating a collaborative approach to PPP contracts. The findings indicate that tenants benefit directly from financial savings resulting from EE renovations, while the government benefits from reduced CO2 emissions. However, a critical constraint is that social housing companies in Italy cannot obtain loans from funding institutions. This restriction requires innovative funding solutions such as crowdfunding or government grants to cover investment costs. The Italian pilot projects, Montasio and Boito, demonstrate the practical application of PPP models, particularly emphasizing the necessity for customized financial strategies to overcome local financial constraints and enhance investment efficiency. The ranking of PPP contracts for Italy places Guaranteed Savings Contracts at the top due to their ability to ensure energy savings and manage financial risks effectively. Shared Savings Contracts also rank highly, particularly for the Montasio project, as they distribute costs and benefits among all stakeholders.

**Slovenia's** social housing stock is fully owned by social housing companies, simplifying ownership dynamics compared to Italy. The tenants benefit from energy savings, and the government achieves reduced emissions. The Slovenian model typically uses a mix of private savings and national grants to finance EE interventions. Direct credit lines and guaranteed savings contracts are common, with social housing companies covering the investment risk and ESCOs handling the technical risk. This arrangement ensures that financial and technical burdens and benefits are appropriately distributed among stakeholders. The Neza pilot project in Slovenia highlights the effectiveness of this model in achieving significant energy savings and financial sustainability. In Slovenia, the ranking of PPP contracts highlights Direct Credit Lines and Guaranteed Savings Contracts as the most effective. These models facilitate the necessary financial investments and technical management to ensure successful EE renovations.

**In Denmark**, social housing companies own the housing stock, and tenants contribute a small percentage to the investment costs for EE renovations. The tenants' rent payments are directed to the national building fund, which significantly supports EE projects. This funding mechanism, along with government support for CO2 emissions reduction, shapes the PPP contracts. The Danish model focuses on shared savings and investment responsibilities, ensuring that both social housing associations and ESCOs have a vested interest in the success of EE projects. The Danish pilot

projects, including Borlgumparken, Vaevergarden, Afdeling, Storgarden, Hammerthor, and Frisenborgparken, illustrate the robust collaboration between public and private entities required for successful project outcomes. Denmark's ranking of PPP contracts places Shared Savings Contracts at the forefront, reflecting their capacity to align the interests of all stakeholders and ensure comprehensive engagement in EE projects. Guaranteed Savings Contracts also perform well, leveraging the national building fund to support extensive energy renovations.