



# Roadshow: Build your financial capacity

Co-organized with



**FINANCIAL CASE STUDY - 'FINANCIAL CASE STUDY - Quantifying multiple benefits: Exploring how to improve decision-making by considering long-term impact investment'**

1st Training session ONLINE, 5 July 2024



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## Table of contents

1.	Introduction .....	2
1.1.	What is Scalable Cities .....	2
1.2.	What is the Roadshow: Build your financial capacity?.....	3
1.3.	Agenda .....	4
2.	Glossary .....	5
3.	Financial data from Gnice District: A comparison between BAU and SPEN approach.....	7
4.	Financial data from Gnice District using the MBx.tool: A comparison between BAU and SPEN approach. ....	11
5.	Guiding questions for the Training session.....	14



# 1. Introduction

By harnessing digital technology, data analytics, and connectivity, [cities](#) can optimize resource use, enhance energy efficiency, reduce emissions, and foster sustainable practices. Smart infrastructure, from energy-efficient buildings to efficient transportation networks, enables local administrations to meet their green goals.

A Smart City empowers local governments to utilize data-driven decision-making, engage citizens through co-creation processes, comprehend financial needs for implementing innovative financing models, nurture a collaborative stakeholders' ecosystem, and include vulnerable groups and deprived areas to align with EU sustainability goals. In this context, financial insights are indispensable within the local administration, playing a vital role in transforming cities into sustainable, green hubs of the future. It represents a wholehearted commitment to the journey towards a climate-neutral Europe by 2050.

Local administrations are crucial for the success of the [EU Taxonomy](#), and the [New Green Deal](#) due to their role in implementing green initiatives at the city and regional levels. They require financial skills to secure funds, manage budgets, attract investments, ensure compliance, foster innovation, and drive local economic growth in alignment with the [EU's sustainability objectives](#). Local governments are the bridge between [European sustainability policies](#) and tangible projects, making their financial expertise vital for translating these initiatives into actionable, green solutions that benefit both the community and the environment.

## 1.1. What is Scalable Cities

[Scalable Cities](#) is a community of communities. Since 2014, a total of 20 European projects have been funded in which lighthouse cities and fellow cities have committed to developing innovative projects to achieve climate neutrality. The key idea has been to develop innovative energy solutions and business models that can be scaled up and replicated across Europe and lead to measurable results. In this sense, public administrations have been invited to take an active part in the energy transition by taking a proactive role in both designing innovative services and addressing the local market.



Scalable Cities has a Secretariat that supports all these Smart Cities communities to collect and document all the knowledge and experiences developed, as well as to provide support through different services.



**Some of the technical solutions** developed by the cities that are part of Scalable Cities are the following:

- Computing and cognitive solutions, providing applications or services enabling behavioural changes for citizens.
- Data-Driven business models enabling cities or operators to manage energy efficiency better.
- Deployment of charging infrastructure for electric vehicles.
- District heating.
- Electric/hybrid public vehicle purchases.
- Energy management (district/blocks/ buildings/Demand/response) using technologies such as AI, microgrid, blockchain or others.
- Energy storage.
- Frugal solutions: it is an approach that involves using ingenuity to innovate the most simply and effectively possible using the least amount of resources.
- Industrial heat production.
- Infrastructure physical and digital.
- Mobility stations.
- New buildings.
- New public transport infrastructures.
- Park & ride facilities.
- Positive Energy Blocks or Positive Energy Districts.
- Private buildings retrofitting.
- Public buildings retrofitting.
- Public lighting.
- Renewable energy production.
- Renewable energy thermal production.
- Vehicle Sharing Platforms (carpooling, sharing).
- Bundling services, grouping a set of actions in a coherent and global business model. E.g. combining retrofitting with renewables and EV charging stations.
- Others.

## 1.2. What is the Roadshow: Build your financial capacity?

The [Roadshow is a service offered by the Scalable Cities Secretariat](#) to support cities in the field of financial design of projects such as business model, financial schemes and everything that unfolds from it. With this objective, a series of activities will be carried out through which basic and advanced skills on finance will be acquired, to have resources with which to think and design economically sustainable and scalable urban projects to achieve climate neutrality.



## 1.3. Agenda

### 1st training session 'FINANCIAL CASE STUDY - Quantifying multiple benefits: Exploring how to improve decision-making by considering long-term impact investment'

<b>Introduction</b>	
<b>9:00 - 9:05</b>	Introduction of Scalable Cities and Smart Cities and Communities projects. Paula Ferrando, GNE Finance.
<b>9:05 - 9:15</b>	Introduction of The Synkia project. Niki Gaitani, NTNU..
<b>9:15 - 9:45</b>	Explanation of the pilot SPEN project in the Gnice District in Salzburg. Understanding the business model and financial structure developed under the Synkia project. Abel Magyar ABUD.
<b>9:45 - 10:15</b>	Introduction to the MBx Web Tool, developed within the Synkia project, which can quantify multiple benefits using the SCBA (Social Cost-Benefit Analysis) methodology. Victoria Taranu, BPIE. You will be able to use the tool!
<b>5 minutes break!</b>	
<b>10:20 - 10:30</b>	Explanation of the exercise: How the Business Model is influenced and modified by incorporating economic data and the methodology provided by the MBx tool? Paula Ferrando and Victoria Taranu.
<b>10:30 - 11:15</b>	Breakout sessions: Groups will work on the Financial Model and Business Model of the Gnice District using calculations from the MBx tool. Participants will reflect on and discuss how the model changes, what is affected, and who is impacted. Discussion on the feasibility of adopting this tool and perspective in our financial models.
<b>11:15 - 11:30</b>	Summary of discussions from each group, highlighting common points and differences.
<b>11:30 - 12:00</b>	Q&A and open discussion (if needed)

Synikia web site: <https://www.synikia.eu/>

Direct link to the Technical reports: <https://www.synikia.eu/resource-types/technical-reports/>

#### **Attention!**

This document serves as supporting material for the Training Session segment. To fully understand the content, participation in the session is required, as the Case Study will be explained in detail along with the data gathered in this document.



## 2. Glossary

**Sustainable Positive Energy Neighbourhood (SPEN):** As defined in the syn.ikia's evaluation framework, a Sustainable Plus Energy Neighbourhood is a highly energy efficient and energy flexible neighbourhood with a surplus of energy from renewable sources (Salom et al., 2021). The syn.ikia definition of a SPEN is similar to that for a positive energy building, but the geographical boundary is physically or digitally expanded to take in the entire neighbourhood, including local storage and energy supply units. Users, buildings and technical systems are all connected via a digital cloud hub and/or common energy infrastructures. The SPEN framework includes a strong focus on cost efficiency, indoor environmental quality, spatial qualities, sustainable behaviour, occupant satisfaction, social factors (co-use, shared services and infrastructure, and community engagement), power performance (peak shaving, flexibility and self-consumption), and greenhouse gas emissions. To know more please read de deliverable "[Mainstreaming the neighbourhood approach into EU building policies](#)"

**Multiple-Benefits:** The EPBD includes an explicit mention of 'integrated district or neighbourhood approaches'. Multiple benefits of this approach are listed, such as cost-effectiveness and integration with the energy, mobility, green infrastructure, waste and water treatment and other aspects of urban planning which take into account local and regional resources, circularity and sufficiency. For a comprehensive appraisal of the multiple benefits of SPENs, they should be identified, quantified and monetised. For this it is necessary go further thought three steps: : 1) identifying the key benefits and the stakeholders who will accrue these benefits; 2) quantifying the identified benefits; and 3) translating the quantified benefits into monetary values. To know more please read de deliverable "[Multiple benefits of sustainable plus energy neighbourhoods and their potential impact on policy and investment decisions](#)"

**Social Cost Benefit Analysis (S-CBA):** S-CBA is an application of welfare economics principles to normative questions around investment choices. It is based on the assessment of changes in welfare benefits and costs, expressing them all in the common currency of monetary values to calculate the net effect on the total economic wellbeing of society. Welfare effects are changes in health and well-being, which, measured in economic terms as producer surplus (increases in the profitability of production) and consumer surplus resulting from the expansion of people's consumption possibilities. This includes their access to services, publicly provided non-market goods and natural environment services, such as the air and water quality, access to nature and general amenity infrastructure. 'The broad purpose of S-CBA is to help social decision-making and to increase the social value or, more technically, to improve allocative efficiency'. To know more please read de deliverable "[A methodology report on the required calculations for the quantification and monetisation of multiple benefits](#)" (attached with the email)



Roadshow: 1<sup>st</sup> online training session 'FINANCIAL CASE STUDY - Quantifying multiple benefits: Exploring how to improve decision-making by considering long-term impact investment'

**Project costs present value:** This refers to the current value of all costs associated with a project, adjusted for the time value of money. It calculates what all future costs would be worth in today's dollars. **Units:** Currency (e.g., dollars, euros).

**Government impacts:** Effects of a project on government finances, such as tax revenues, subsidies, or costs incurred by government agencies. **Units:** Currency (e.g., dollars, euros).

**Wider monetized societal impacts:** This refers to the broader societal impacts of a project that can be quantified and expressed in monetary terms. These may include economic benefits or costs that affect society at large beyond direct project participants. **Units:** Currency (e.g., dollars, euros).

**Net present value (NPV):** The difference between the present value of cash inflows and outflows over a project's life. It indicates the project's profitability. The present value is calculated by estimating the timing and amount of future cash flows to be discounted at a rate reflecting project cost of capital or the returns available on alternative investments of comparable risk. If the NPV of a project or investment is positive, it means its rate of return is higher than the discount rate. **Units:** Currency (e.g., dollars, euros).

**Un-monetized impacts:** Impacts of a project that are difficult to quantify in monetary terms, such as biodiversity loss, cultural heritage preservation, etc. **Units:** Often non-monetary (e.g., species diversity indices, cultural significance scales).

**Benefit cost ratio:** A ratio of the present value of project benefits to the present value of its costs. It indicates the project's efficiency and profitability. A BCR greater than 1 indicates that the benefits outweigh the costs, making the project financially viable. **Units:** Dimensionless (ratio).

**Return on Investment (ROI):** A measure of the gain or loss generated relative to the amount invested. It is typically expressed as a percentage. **Units:** Percentage (%).

**Marginal Impact of intervention:** The additional impact on outcomes (e.g., economic, social) caused by a specific intervention or project. **Units:** Varies depending on the specific outcome being measured (e.g., units of GDP growth, percentage change in employment).





### 3. Financial data from Gnice District: A comparison between BAU and SPEN approach.

Scenario: Business-as-usual (NZEB level) <i>(situation if the initiative did not exist)</i>	Scenario: SPEN										
The neighbourhood has no community-oriented design and planning with no or very limited shared facilities or services to the community	Neighbourhood approach in community aiming to optimize energy use through renovation and work together with residents to set up a self-sufficient energy community. The premises will also include facilities such as a kindergarten, clinic, café, co-working spaces, common rooms and special assistance rooms. Provide outdoor green spaces with walking and cycling infrastructure.										
SCENARIO TO BE ENTERED IN TOOL	SCENARIO ALREADY ENTERED AS USE CASE										
INITIATIVE DETAILS											
Country: <a href="#">Austria</a>	Country: <a href="#">Austria</a>										
Initiative title: <a href="#">250 social housing dwellings</a>	Initiative title: <a href="#">SPEN with 250 social housing dwellings</a>										
Initiative description: <a href="#">Development 250 independent social housing dwellings (new built)</a>	Initiative description: <a href="#">Development of new built 250 social housing dwellings with shared facilities and infrastructure.</a>										
TIME-PERIOD FOR S-CBA											
Discount rate: <a href="#">4%</a>	Discount rate: <a href="#">4%</a>										
Timeline: <a href="#">apply same discount rate to complete timeline</a>	Timeline: <a href="#">apply same discount rate to complete timeline</a>										
Time period of multiple benefits calculation: <a href="#">50 years</a>	Time period of multiple benefits calculation: <a href="#">50 years</a>										
Output units for financial calculation: <a href="#">€millions</a>	Output units for financial calculation: <a href="#">€millions</a>										
INITIATIVE INTERVENTION GROUP											
First financial year of investment: <a href="#">2024</a>	First financial year of investment: <a href="#">2024</a>										
Analysis unit (beneficiaries): <a href="#">Dwelling units</a> <i>Dwelling size is assumed to have a size of 4 members. Therefore, a total of 1000 inhabitants (30% senior citizens, 40% adults and 30% children)</i>	Analysis unit (beneficiaries): <a href="#">Dwelling units</a> <i>Dwelling size is assumed to have a size of 4 members. Therefore, a total of 1000 inhabitants (30% senior citizens, 40% adults and 30% children)</i>										
Intervention description: <a href="#">Improve energy efficiency and indoor air quality of buildings</a>	Intervention description: <a href="#">Improve community living of senior citizens, adults and children</a>										
Financial year ending: <a href="#">31.03.2024</a>	Financial year ending: <a href="#">31.03.2024</a>										
Timeline- beneficiaries intervened annually:	Timeline- beneficiaries intervened annually:										
<table border="1"> <tr> <td></td> <td>2024</td> <td>2025</td> <td>2026</td> <td>2027</td> </tr> </table>		2024	2025	2026	2027	<table border="1"> <tr> <td></td> <td>2024</td> <td>2025</td> <td>2026</td> <td>2027</td> </tr> </table>		2024	2025	2026	2027
	2024	2025	2026	2027							
	2024	2025	2026	2027							



No. of households	-	80	80	90	No. of households	-	80	80	90
<b>COST INPUTS</b>									
Capital expenditure: €73,5 million (spent over first 3 years)					Capital expenditure: €75million (spent over first 3 years)				
Operating expenditure: €80,000 per annum					Operating expenditure: €40,000 per annum				
Consumer Price Index: country default					Consumer Price Index: country default				
Gross Domestic Product: country default					Gross Domestic Product: country default				
<p><b>IMPACTS</b></p> <p>There are likely to be limited impacts from this project:</p> <p><b>1. Increase in health and well-being</b> (reduced inpatient hospital visits, reduced GP visits)- apply impacts based on age group</p> <p><a href="#">Reduced inpatient hospital visits</a></p> <p><b>Senior citizen-</b> pre-intervention level:4 post-intervention level:2 Evidence quality: High Timelag: 1 Length of impact: 20 Segment of intervention group: 30% Success rate: 90%</p> <p><b>Adults-</b> pre-intervention level:4 post-intervention level:2 Evidence quality: High Timelag: 1 Length of impact: 40 Segment of intervention group: 40% Success rate: 90%</p> <p><b>Children-</b> pre-intervention level:4 post-intervention level:2 Evidence quality: High Timelag: 1 Length of impact: 50 Segment of intervention group: 30% Success rate: 90%</p> <p><a href="#">Reduced GP visits</a></p> <p><b>GP visits (government contribution)</b> pre-intervention level:5 post-intervention level:4</p>					<p><b>IMPACTS</b></p> <p>There are likely to be many impacts resulting from this project, more for society and the government widely.</p> <p><b>1. Increase in health and well-being</b> (reduced inpatient hospital visits, reduced GP visits, improved quality of life, physical health gain from walking and cycling)- apply impacts based on age group</p> <p><a href="#">Reduced inpatient hospital visits</a></p> <p><b>Senior citizen-</b> pre-intervention level:4 post-intervention level:2 Evidence quality: High Timelag: 1 Length of impact: 20 Segment of intervention group: 30% Success rate: 90%</p> <p><b>Adults-</b> pre-intervention level:4 post-intervention level:2 Evidence quality: High Timelag: 1 Length of impact: 40 Segment of intervention group: 40% Success rate: 90%</p> <p><b>Children-</b> pre-intervention level:4 post-intervention level:2 Evidence quality: High Timelag: 1 Length of impact: 50 Segment of intervention group: 30% Success rate: 90%</p> <p><a href="#">Reduced GP visits</a></p> <p><b>GP visits (government contribution)</b></p>				



<p>Evidence quality: Medium  Timelag: 1  Length of impact: 25  Segment of intervention group: 80%  Success rate: 90%</p> <p><b>GP visits (patient-copayment)</b>  pre-intervention level:5  post-intervention level:4  Evidence quality: Medium  Timelag: 1  Length of impact: 25  Segment of intervention group: 80%  Success rate: 90%</p> <p><b>2.Reduction in energy poverty</b> (increase in disposable income due to energy efficiency)</p> <p><b>All residents-</b>  pre-intervention level:0  post-intervention level:1  Evidence quality: Medium  Timelag: 1  Length of impact: 50  Segment of intervention group: 70%  Success rate: 60%</p>	<p>pre-intervention level:5  post-intervention level:4  Evidence quality: Medium  Timelag: 1  Length of impact: 25  Segment of intervention group: 80%  Success rate: 90%</p> <p><b>GP visits (patient-copayment)</b>  pre-intervention level:5  post-intervention level:4  Evidence quality: Medium  Timelag: 1  Length of impact: 25  Segment of intervention group: 80%  Success rate: 90%</p> <p><a href="#">Physical health gain from walking</a>  <b>All residents-</b>  pre-intervention level:0  post-intervention level:1  Evidence quality: High  Timelag: 1  Length of impact: 50  Segment of intervention group: 90%  Success rate: 90%</p> <p><a href="#">Physical health gain from cycling</a>  <b>All residents-</b>  pre-intervention level:0  post-intervention level:1  Evidence quality: High  Timelag: 1  Length of impact: 50  Segment of intervention group: 80%  Success rate: 90%</p> <p><a href="#">Health and quality life gain (Quality-adjusted life year)</a>  <b>Adults-</b>  pre-intervention level:0  post-intervention level:0.03  Evidence quality: High  Timelag: 1  Length of impact: 40  Segment of intervention group: 50%  Success rate: 95%</p> <p><b>Children-</b></p>
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	<p>pre-intervention level:0 post-intervention level:0.09 Evidence quality: High Timelag: 1 Length of impact: 50 Segment of intervention group: 30% Success rate: 95%</p> <p><b>2.Reduction in energy poverty</b> (increase in disposable income due to energy efficiency)</p> <p><b>All residents-</b> pre-intervention level:0 post-intervention level:1 Evidence quality: Medium Timelag: 1 Length of impact: 50 Segment of intervention group: 70% Success rate: 90%</p>
<b>OUTPUT RESULTS</b>	
<p>Check results and compare</p> <ul style="list-style-type: none"> <li>• Benefit- cost ratio</li> <li>• Return-on-investment</li> </ul>	<p>Check results and compare</p> <ul style="list-style-type: none"> <li>• Benefit- cost ratio</li> <li>• Return-on-investment</li> </ul>



## 4. Financial data from Gnice District using the MBx.tool: A comparison between BAU and SPEN approach.

### Description of case / scenario

Base	Gnice Pilot project. Scenario: Business-as-usual.
Best case	Gnice Pilot project. Scenario: SPEN.

### Return on Investment on 50 years

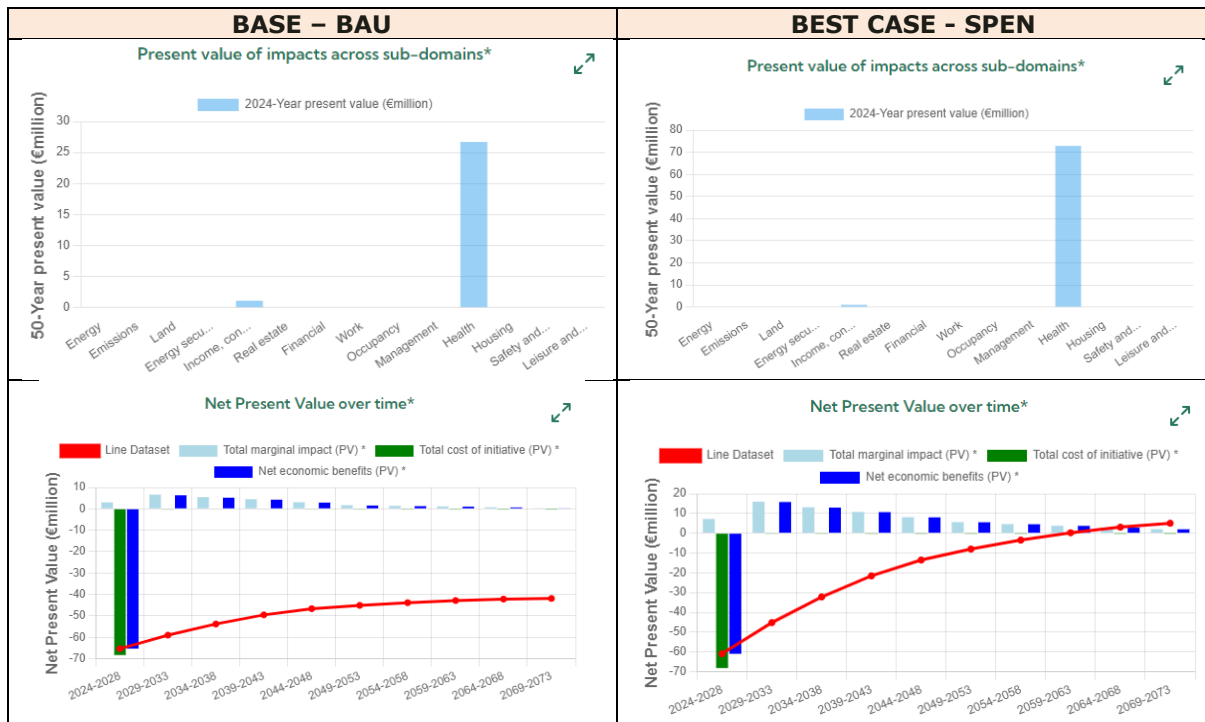
	Base	Best case
Project costs present value i.e. Investment *	-69.7	-68.87
Government impacts *	26.58	26.04
Wider societal impacts *	1.23	47.87
Total societal impacts, net present value *	-41.9	5.04
Un-monetized impacts		
Benefit cost ratio, Wider-societal Total	0.4	1.07
Return on Investment, Wider-societal Total	0.4	1.07
Benefit cost ratio, Wider-societal only	0.02	0.7
Benefit cost ratio, Government only	0.38	0.38

\* €million

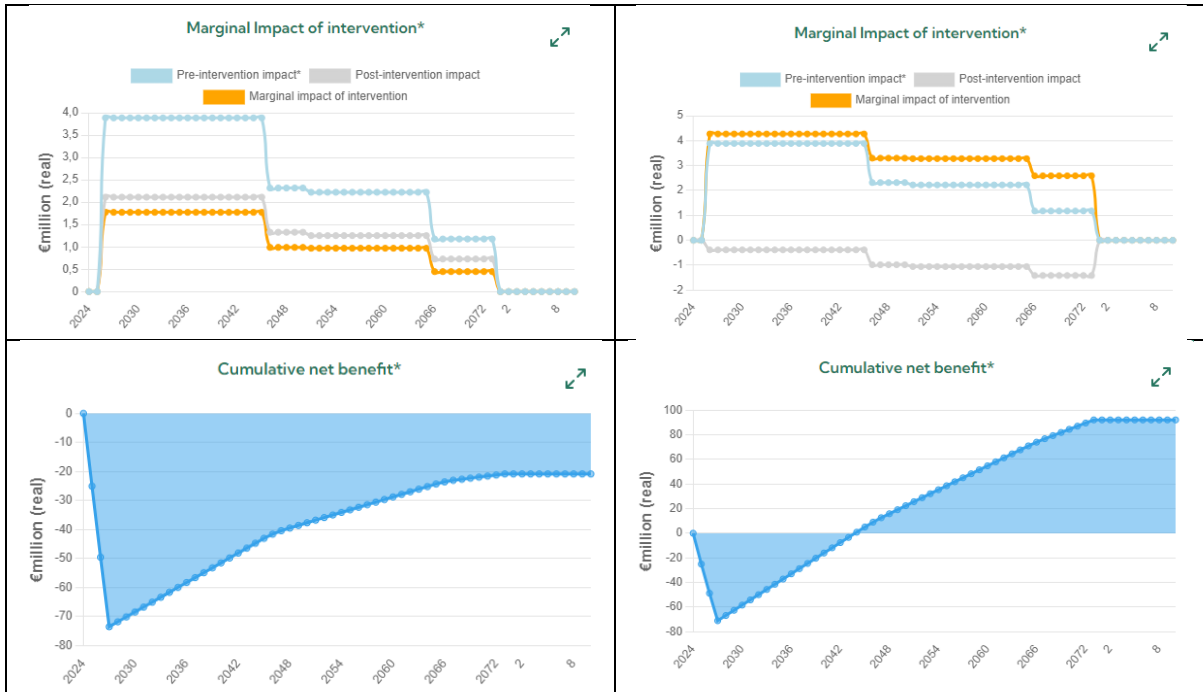


## Impacts Summary

	Base	Best case
Inpatient hospital visit reduce	8.98	8.98
Inpatient hospital visit reduce (2)	9.53	9.3
Inpatient hospital visit reduce (3)	7.92	7.61
GP visits - Publicly funded (institution contribution) reduce	0.15	0.14
GP visits - Privately funded (patient co-payment) reduce	0.12	0.11
Increase in disposable income due to energy efficiency (reduction in energy poverty)	1.11	1.07
Health and Quality life gains (Quality-adjusted life year (QALY) gained)	0	5.79
Health and Quality life gains (Quality-adjusted life year (QALY) gained) (1)	0	2.95
Physical health gain from cycling	0	4.14
Physical health gain from walking	0	31.67
Health and Quality life gains (Quality-adjusted life year (QALY) gained) (2)	0	2.16



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## 5. Guiding questions for the Training session

### Specific Financial Analysis Questions

#### 1. Costs and Benefits:

- a) How do the investment costs compare between BAU and SPEN?
- b) How do the operation and maintenance costs compare between BAU and SPEN?
- c) What types of long-term benefits are expected under the SPEN approach that would not be considered under the BAU?

### Impact and Sustainability Questions

#### 2. Social Impact:

- a) How does SPEN compare to BAU scenario in terms of social impacts?

### Comparison and Conclusion Questions

#### 3. Final Comparison:

- a) What are the key differences in financial outcomes between BAU and SPEN?
- b) Which approach provides a greater long-term economic return and why?
- c) How do we use social cost benefit analysis to compare BAU and SPENs? What lessons can be learned from this comparison for future projects?

#### 4. Recommendations:

- a) Which approach would you recommend for similar future projects and why?
- b) What changes or improvements do you suggest to maximize economic benefits in future projects?
- c) Who are the potential users of the MBx tool?
- d) What is your feedback on using the tool?

