Decision-Making Methodology for Sustainable MED Cities

Booklet

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Sustainable MED Cities

Sustainable MED Cities - Integrated Tools and Methodologies for Sustainable Mediterranean Cities, is a capitalization project whose main objective is to enhance the capacity of public administration in delivering, implementing and monitoring efficient measures, plans and strategies to improve the sustainability of cities, neighbourhoods and buildings.

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Introduction

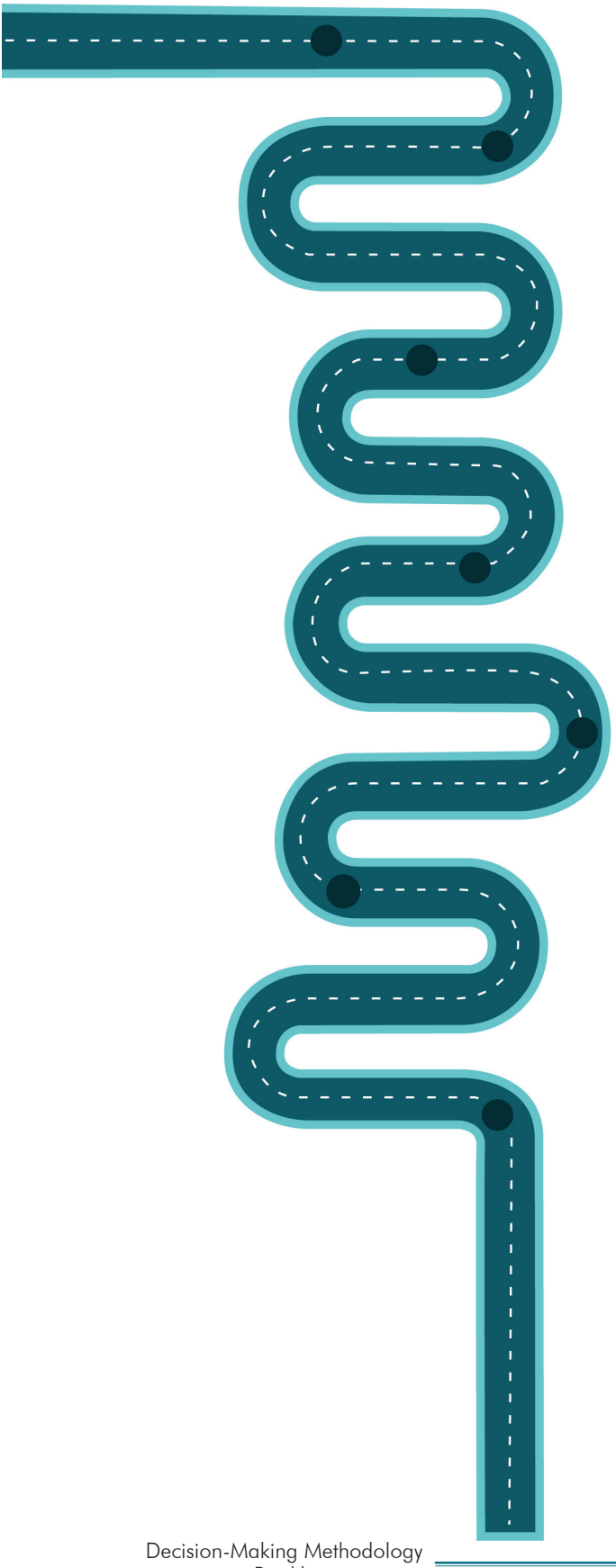
The sustainable retrofit of urban areas is a challenging task requiring careful planning and high level of engagement between all stakeholders throughout the different phases of the process to ensure that the expected targets are meet and that the project is financially, environmentally and socially successful. At urban scale, the complexity of a retrofitting project is very challenging due to the high number of variables consider and the number of stakeholders involved. With an absence of clear and well-structured methodology guiding throughout this complex task, the chances of realizing an efficient urban scale retrofitting project decreases and only individual solution at the single building scale would be implemented. In an urban scale project, the initial identification of the optimal retrofitting concept is critical because it will be the foundation of the full retrofitting process. Wrong assumptions in early stage of the planning process or would lead to a failure.

This document describes a decision-making methodology, based on the use of the Sustainable MED Cities assessment system (SBTool, SNTool, to guide in finding the most effective sustainable retrofitting concept in urban projects with regard to cost efficiency and the overall sustainability performance. The decision-making methodology is intended to support the municipality from the early initiation of the project to the preparation of the retrofitting concept that will identify the optimal package of interventions to improve the sustainability of an urban area.

The proposed decision-making methodology foresees the possibility to combine the study of a retrofitting for a urban area with the study of retrofitting concepts for single buildings located in the same urban area. This multi-scale approach makes possible to take the surrounding urban area into consideration when engaging a building retrofitting project opening the doors for new cost effective and efficient retrofitting options, as at the urban level the synergies effect between the buildings can be exploited resulting into a win-win situation for the urban area as whole and for its single buildings.

The 7 key phases

The Decision-Making methodology is divided in the following seven phases that will be described throughout the manual. Moreover, each phase is composed by a number of steps with its respectively tasks and testing protocol templates to be filled.



1. Initiation

Select the urban area and the buildings for which the retrofitting concept will be defined, collect key information, identify the stakeholders to involve and set the SMC working group responsible for the decision-making process.

2. Preparation

The beginning of the urban and building retrofitting concepts development. The preparation phase will provide the necessary information to create a sufficient working basis for the next phases.

3. Diagnosis

Analyse the current state of the buildings and the urban area. The current state is to be analysed using SNTool and SBTool.

4. Strategic Definition

Set meaningful targets for the retrofitting project by identifying the main constraints and restrictions which may limit the retrofitting design.

5. Retrofit Scenarios

Develop alternative possible retrofitting scenarios for the urban area and the buildings that fulfill the defined sustainability targets in the Strategic Definition phase.

6. Decision-Making

Select the best scenario in terms of energy and cost efficiency as well as the overall sustainability among the ones created in the previous phase

7. Retrofit Concept

Detail the best scenario in a retrofitting concept.The retrofitting concept is a report containing the description of the interventions foreseen by the scenario following the issues of SBTool and SNTool.

Phase 1: Initiation

The initiation phase is the first step in the decision-making process to define the optimal retrofitting concept for urban and building scale projects. The objective is to select the urban area and the buildings for which the retrofitting concept will be defined, collect key information, identify the stakeholders to involve and set the working group (SMC WG) responsible for the decision-making process.

Phase 1: Initiation

T1 Identification of the urban area to be studied.

Responsible: Municipality

In this stage, the municipality must carry out the necessary steps to start the Decision-Making process. First, the municipality must select the urban area and the building(s) for which the retrofitting concept will be defined.

T2 Definition of the physical boundaries of the urban area.

Responsible: Municipality

The physical boundaries of the urban area must be clearly defined, using one or more of the following criteria:

- Geographical proximity
- Property ownership / occupier
- Social and Economic context
- Legal /administrative boundary lines
- Period of construction
- Energy supply infrastructure

The Decision-Making Methodology is applicable to both small urban areas (Fig.2) and neighbourhoods (Fig. 3).

T3 Identification of the public building to be studied.

Responsible: Municipality.

After setting the physical boundaries of the urban area, the public buildings included in the retrofitting study shall be identified (Fig. 4).

The municipality shall provide the rationale behind the selection of the urban area and buildings that will be the objects of the decision-making process.

T4 Establishment of the SMC team.

Responsible: Municipality.

The "SMC Team" is the group of experts appointed by the municipality that will manage the whole decision-making process. A coordinator of the WG shall be appointed. He/she will be the main responsible for the deployment of the activities and will act as interface with the municipality.

Testing protocol template: 1.4: SMC Team

T5 Urban area: Data collection for the description of the area.

Responsible: SMC Team

The SMC Team shall collect the necessary data to describe the urban area, providing the necessary information to start the decision-making process.

Testing protocol template 1.1: Description of the urban area

T6 Building: Data collection for the description of the area.

Responsible: SMC Team

The SMC Team shall collect the necessary data to describe the building(s), providing the necessary information to start the decision-making process.

Testing protocol template 1.2: Description of the building

T7 Collection of data on local climatic conditions.

Responsible: SMC Team

The SMC Team shall collect the necessary data to analyze the climatic conditions of the urban area and building(s) , providing the necessary information to start the decision-making process.

Testing protocol template 1.3: Climatic profile

T8 Identification of stakeholders.

Responsible: Municipality

After having set the physical boundaries of the urban area, the municipality shall identify the relevant stakeholders that can contribute to the study. The identification of the stakeholders can help to refine the sustainability goals and consider multiple approaches to reach them, as the municipality would be able to utilize the stakeholder's specialized knowledge during the study. Also, the early engagement of the stakeholders in the project would be helpful to reduce the risk of conflicts in the development of the retrofitting concept.

Typical stakeholders are:

- Municipality's departments and other local authorities (e.g., Building Control, Health & Safety , Green Areas, Mobility Management, Urban Planning).
- Experts (e.g., urban planners, energy managers, landscape designers, etc.)
- Utilities and service providers (e.g., energy, water, solid waste, etc.)
- Public Interest Groups (e.g., neighbours, residents' associations, business as asociations, sports and other local clubs and societies, neighbourhood watch, NGO's, politicians)
- External Parties (e.g., banks, funding agencies)

Testing protocol template 1.5: Stakeholders

Phase 2: Preparation

The preparation phase is the beginning of the urban and building retrofitting concepts development. The preparation phase will provide the necessary information to create a sufficient working basis for the next phases.

Phase 2: Preparation

The first task of the preparation phase consists in the **contextualisation** of the SNTool generic framework (transnational version) to the local conditions and priorities.
The contextualization process consists of:

T1 Selection of criteria at the neighbourhood scale (SNTool).

Responsible: The SMC Team

The first task consists in the selection of the criteria that will compose the local version of the tool. The criteria are selected from the whole list of the SNTool. There isn't a fixed number of criteria to be selected. The local systems can widely vary from this point of view. Only a core set of criteria, the Key Performance Indicators (KPIs), are mandatory for all. The KPIs represent the priority sustainability transnational issues and they allow to compare the key performances in the Mediterranean areas through the Sustainable MED Cities Passport.

Testing protocol template 2.1: SNTool selection of criteria

T2 Data source identification at the neighbourhood scale (SNTool).

Responsible: The SMC Team

The assessment method associated to each indicator in the SNTool requires specific information and data. It is necessary to identify, preliminary to the assessment activities, the sources of this information.

The identification of the sources of data can determine the exclusion of a criterion from the local versions of SBTool and SNTool. For instance, a criterion selected in the previous stage could be later excluded because during the identification of the source of information it has been verified that the data aren't available or are of poor quality.

Testing protocol template 2.2: SNTool data sources

A valid retrofitting concept can only be defined if it is studied on solid data. Collecting the data together from several data providers is comparable with putting together a puzzle and needs a structured process to be followed. The SMC WG shall define all needed data at building and urban level for the assessment activities. Potential data providers, data sources and most promising strategies must be identified to gather all the needed data. The use of software tools (GIS, energy simulation, cloud-based applications) may accelerate the collection and processing of the data collection process significantly.

T3 Benchmarking at the neighbourhood scale (SNTool).

Responsible: The SMC Team

The second task consists in the definition of the scoring scale for each selected criterion. The benchmark is a quantification of the indicator's value corresponding to the minimum acceptable performance (score zero) and the one that is considered the best at local level (score 5). To set the benchmarks, it is possible to refer to (listed in a priority order):

- National, regional laws
- National, regional, municipal regulations
- Technical standards (national or international)
- Statistical data
- Scientific literature
- Local reference values
- Simulations

Testing protocol template 2.3: SNTool benchmarks

T4 Weight assessment at the neighbourhood scale (SNTool).

Responsible: The SMC Team

The third task consists in the definition of the weight at criterion, category and issue level through the assignment of priorities. The weighting process takes place in 3 steps:

1. Assignment of priority values to issues and weights calculation
2. Assignment of priority values to categories and weights calculation
3. Assignment of priority values to criteria and weights calculation

Testing protocol template 2.4: SNTool weights assessment

T6 Data source identification at the building scale (SBTool).

Responsible: The SMC Team

The assessment method associated to each indicator in the SBTool requires specific information and data. It is necessary to identify, preliminary to the assessment activities, the sources of this information. The identification of the sources of data can determine the exclusion of a criterion from the local versions of SBTool and SNTool. For instance, a criterion selected in the previous stage could be later excluded because during the identification of the source of information it has been verified that the data aren't available or are of poor quality.
A valid retrofitting concept can only be defined if it is studied on solid data. Collecting the data together from several data providers is comparable with putting together a puzzle and needs a structured process to be followed. The SMC WG shall define all needed data at building and urban level for the assessment activities. Potential data providers, data sources and most promising strategies must be identified to gather all the needed data. The use of software tools (GIS, energy simulation, cloud-based applications) may accelerate the collection and processing of the data collection process significantly.

Testing protocol template 2.6: SBTool data sources

T8 Weight assessment at the building scale (SBTool).

Responsible: The SMC Team

The following task consists in the definition of the weight at criterion, category and issue level through the assignment of priorities. The weighting process takes place in 3 steps:

1. Assignment of priority values to issues and weights calculation
2. Assignment of priority values to categories and weights calculation
3. Assignment of priority values to criteria and weights calculation

Testing protocol template 2.8: SBTool weights assessment

T9 Participation Guarantee System (PGS): Co-Creation Lab and Collaborative Platform.

Responsible: The SMC Team / Municipality

Participatory Moment 1: Preparation

In the preparation phase, stakeholders take a crucial role since it is here that the sustainability assessment tools (SNTool and SBTool) are contextualised. The selection of the assessment criteria is a very important step in the process because it will determine which sustainability issues will be considered in the preparation of the retrofitting scenarios. More, the assignment of weights to criteria consists in a prioritization of the different sustainability subjects and should reflect the needs and expectations stakeholders. The contextualisation of SBTool and SNTool needs to be done in conjunction with stakeholders. A PGS workshop must be organised to validate the selection of the assessment criteria and the weighting process.

This contextualisation process can be done in two moments:

1. Co-Creation Lab

A face-to-face workshop where different stakeholders will gather in groups and discuss their insights and comments on the different SNTool and SBTool indicators to be calculated depending on each context. The outcome is expected to be a final list prioritizing the indicators that are considered relevant for the assessment process as a result of the discussion and agreement among stakeholders. This workshop is leaded by a SMC team representative with support of the municipality and intends to gather a limited group of people.

2.Collaborative Platform

The Sustainable MED Cities Collaborative Platform is an online digital tool to gather as much feedback and opinions from the different stakeholders at every phase of the decision-making process.

For the Preparation phase, a Prioritization activity is enabled containing a list of the SNTool and SBTool categories. There are two different Prioritization activities: one for the neighbourhood and the other one for the building scale. In each activity you will find the list of categories, click on each one of them to read the description and vote a positive or a negative rating depending on the level of relevance for the neighbourhood or building. You can also leave a comment and share your feedback in each one of them. For people to participate they will have to register in Adhocracy+ using the following link: https://adhocracy.plus/sustainable_med_cities/

Phase 3: Diagnosis

Analyse the current state of the buildings and the urban area. The current state is to be analysed by using a contextualised version of SBTool, SNTool and SCtool.

Phase 3: Diagnosis

The diagnosis phase consists in the evaluation of the current condition and relative level of sustainability of the urban area and buildings using a contextualised versions of SNTool and SBTool.
Establishing an understanding of current conditions can serve several purposes for decision makers. Specifically, it can allow to:

•Identify strengths and weaknesses as well as assets (such as hard infrastructure or intangible resources) that can be leveraged to support interventions
•Identify interconnections, co-benefits, synergies, or trade-offs between city systems that can help guide efficient use of resources
•Explore gaps in awareness and opportunities for action.

The objectives of the diagnosis are:

1. To set the basis for the definition of the performance targets for the retrofitting project of the urban area and public buildings (Phase 4).

2. To identify the strengths and key weaknesses of the whole urban area and buildings in terms of sustainability.

T1 Assessment of the current state of the urban area using SNTool.

Responsible: The SMC Team

The key-weaknesses analysis is based on the SNTool assessment's results, possibly complemented with a soft analysis based on occupant surveys and workshops.
The performance scores evaluated using SNTool represent the average performance of the urban area in the various sustainability fields.

Each criterion has been compared to the benchmark values which allow the municipality in a quick an efficient way to check which urban indicators perform weak and which ones are performing well. If a criterion shows a result above a certain performance threshold defined by the municipality, the criterion is not relevant for the weaknesses analysis as it already performs well. Based on the first analysis on urban level, the SMC Team can rank the criteria according to their reached performance. Using the results of the benchmarking and ranking process a periodization of the different key-weak points of the urban area is possible.

T3 Evaluation of the energy infrastructure's current state.

Responsible: The SMC Team

The SMC-WG shall evaluate the current energy infrastructure and renewable energy potential and identify the key weakness in the existing energy infrastructure and systems. Hence, these elements can be among others all components of heating/cooling networks like pipes, storage systems or heat suppliers. If in the urban area such components are available, it is necessary to of identify and rank the key weakness of these components regarding the energy and cost efficiency. This step can be skipped in case such systems are not available.

The performance of the energy infrastructure in the urban area is for instance not always correlating with the performance of single buildings connected to the heat network. The performances even may show contrary directions. If for example the energetic performance of the connected buildings is very high, the efficiency of the heat network can be lower due to an over dimensioning of pipes and shorter operation times. Moreover, it is also necessary to consider for existing heat networks the energy losses which may appear in operation from pipes and heat exchangers and evaluate them.

Furthermore, the evaluation of the current energy infrastructure and potential for inclusion of renewable energies, would help the SMC Team to have a better view on the current state of the urban area, thus they can later formulate more realistic and attainable targets for the retrofitting project. As for instance if in the current state analysis, the results of the solar energy potential show that there are very few suitable spaces for PV applications, then the SMC-WG in the "Retrofit Scenarios" phase might avoid developing senarios, in which the PV is used extensively and would rather consider the use of other renewable energy sources to meet its design targets.
Following is a brief description of possible methods that can be used to evaluate the current state of the energy infrastructure:

A. Heating and cooling networks
B. Electrical demand
C. Inclusion of renewable energy potential

Testing protocol template 3.3: Evaluation of the energy infrastructure's current state

T4 Evaluation of the water infrastructure's current state.

Responsible: The SMC Team

The SMC-WG shall evaluate the current energy infrastructure and renewable energy potential and identify the key weakness in the existing energy infrastructure and systems. Hence, these elements can be among others all components of heating/cooling networks like pipes, storage systems or heat suppliers. If in the urban area such components are available, it is necessary to of identify and rank the key weakness of these components regarding the energy and cost efficiency. This step can be skipped in case such systems are not available.

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Testing protocol template 3.4: Evaluation of the water infrastructure's current state

T5 SWOT analysis preparation.

Responsible: The SMC Team

At the end of the diagnosis phase, the SMC-WG develops a report that summarizes the main findings of the diagnosis phase. The report shall contain the following:

• Main findings of the diagnosis, including weaknesses at urban and building scale

• Recommendations on how to handle the weaknesses in the next phases of the decision-making process.

The report shall contain a SWOT analysis for the urban area, identifying the strengths, weaknesses, available opportunities, and possible threats. The SWOT analysis is based on a quadrant matrix, in which strengths and weaknesses (internal factors) are presented above the x-axis, and opportunities and threats (external factors) are presented below. Typically, strengths and opportunities (positive factors) are listed on the left of the y-axis, while weaknesses and threats (negative factors) are listed on the right.

The SWOT analysis is a powerful tool for a fast and powerful initial diagnosis. Once the SWOT analysis in complete, the municipality can analyse the results and diagnose the implications.

T6 Assessment of the current state of the building using SBTool.

Responsible: The SMC Team

The key-weaknesses analysis is based on the SBTool assessment's results, possibly complemented with a soft analysis based on occupant surveys and workshops.

The performance scores evaluated using SBTool represent the average performance of the building in the various sustainability fields. Each criterion has been compared to the benchmark values which allow the municipality in a quick an efficient way to check which building indicators perform weak and which ones are performing well. If a criterion shows a result above a certain performance threshold defined by the municipality, the criterion is not relevant for the weaknesses analysis as it already performs well.

Based on the first analysis at the building level, the SMC Team can rank the criteria according to their reached performance. Using the results of the benchmarking and ranking process a periodization of the different key-weak points of the building is possible.

T7 Identification of the weaknesses and critical issues of the building.

Responsible: The SMC Team

On the base of the performance scores, it is possible to rank the criteria (from -1 being the lowest performance to 5 being the highest achievable performance) and identify the critical issues.

To complement the SBTool evaluation, it is recommended to carry out a survey among the users of the building. The survey can be useful to identify the priorities and issues non quantifiable through the SBTool indicators. To analyse the valuable feedback of the different occupants on these non-assessed key-weaknesses using SBTool, it is recommended to carry out a Co-Creation Lab by the municipality as part of the PGS approach (Task 9).

Based on the results of the two-part key weaknesses identification (SBTool + survey) a summary shall be created showing the SNTool assessment results and concurrently the identified non-simulated weaknesses by the municipality.

Testing protocol template 3.7: Identification of weaknesses and critical issues in the building

T8 Preparation of the Diagnosis Summary Report.

Responsible: The SMC Team

At the end of the diagnosis phase, the SMC-WG develops a report that summarizes the main findings of the diagnosis phase. The report shall contain the following:

- Main findings of the diagnosis, including weaknesses at urban and building scale
- Results of the SWOT analysis (for the neighbourhood scale)
- Critical issues identified in the assessment.
- Recommendations on how to handle the weaknesses in the next phases of the decision-making process.

Testing protocol template 3.8: Diagnosis Summary Report

T9 Participation Guarantee System (PGS) Co-Creation Lab.

Responsible: The SMC Team / Municipality

The diagnosis phase consists in the evaluation of the current condition and relative level of sustainability of the urban area and buildings using the contextualised versions of SNTool and SBTool. The aim of the diagnosis phase is to analyse the current state of the buildings and the urban area, trying to identify their strengths and weaknesses.

During this phase, it is recommended to carry out a survey among the inhabitants of the urban area or building using the features of the collaborative platform.

The survey can be useful to identify the priorities of inhabitants and issues non quantifiable through the corresponding tool indicators for the building (SBTool), Neighborhood (SNTool). For instance, these can be occupant desires concerning the design or amenities of the neighbourhood infrastructure (e.g. need for a new shopping opportunity or playground in the neighbourhood, need more parking space or brighter street lighting, etc.).

This might be done through:

1. Co-Creation Lab

For this face-to-face workshop, different stakeholders will gather in groups and discuss their insights and comments on the current situation of the selected building and urban area. This could be done through the development of a survey exposing the results obtained during the sustainability assessment asking the different stakeholders for their level of agreement on the results as well as their perceptual insights on the state of the building and neighbourhood.

Guideline questions for the survey:

The survey should focus on gathering perceptual feedback regarding the state of the neighbourhood and the building that the SNTool and SBTool are not able to identify. The survey should be composed of open questions that address the different critical issues for the key topics as:

- Urban and green areas
- Energy
- Water
- Solid waste
- Mobility

Example: Based on your perceptual insight of the urban area, what are the main critical issues of the neighbourhood concerning energy ? (Energy demand, consumption, infrastructure, renewable energy, etc.)

2. Collaborative Platform

The Sustainable MED Cities Collaborative Platform is an online digital tool to gather as much feedback and opinions from the different stakeholders at every phase of the decision-making process. In order to participate, users need to visit the following link:

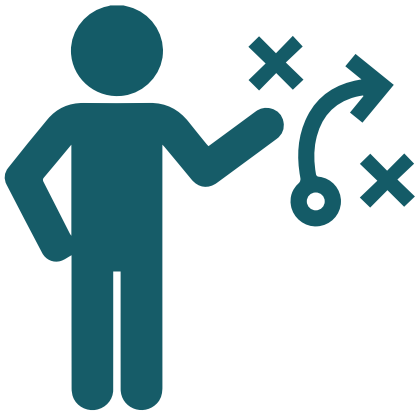
https://adhocracy.plus/sustainable_med_cities/

1.1 Analysis of the current state of the building and the neighbourhood.

In order to gather the point of view of stakeholders, a spatial brainstorming task is enabled in order for people to comment and share their point of view on the current situation of the neighbourhood and building, spatially attached to the map.

1.2. Validation of the sustainability assessment

The proposed survey aims to compare the results obtained during the sustainability assessment with the results of the co-creation lab regarding the perception of stakeholders. Through the collaborative platform a poll has been enabled. The objective is to ask open questions to the participants regarding their insights on each one of the issues as some perceptual elements can not be addressed through the application of SNTool and SBTool .



Phase 4: Strategic Definition

Set meaningful targets for the retrofitting project by identifiying the main constraints and restrictions which may limit the retrofitting design.

Phase 4: Strategic Definition

The main goal of this phase is the definition of the main framework conditions for the later retrofitting design based on the results of the diagnosis phase. The strategic definition therefore serves as pointer for the later design phases by setting meaningful targets for the retrofitting project and by identifying the main constraints and restrictions which may limit the retrofitting design.

Specifically, this phase allows to:

- Build a shared vision to support decision making
- Drive improvement in performance by setting a baseline from which to assess change.

The strategic definition phase is articulated in two steps:

1. Setting sustainability targets
2. Setting constraints and restrictions.

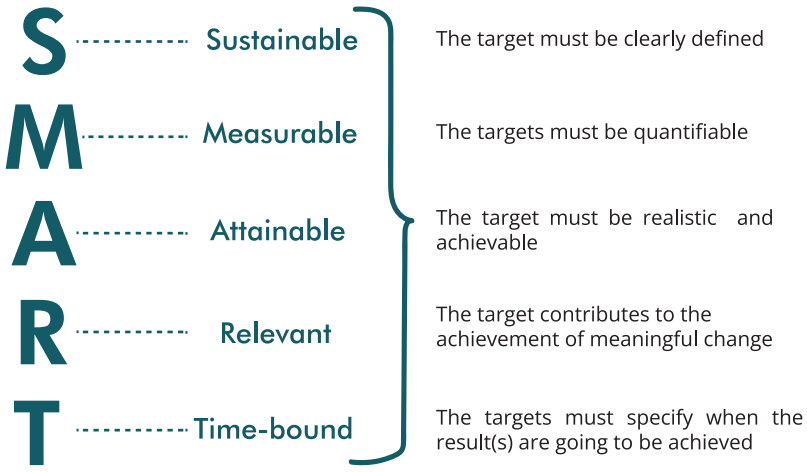
In the first one, following the diagnosis' outcomes, the performance targets for the urban area and public buildings retrofitting projects are defined.

In the second one, the constraints that could limit the range of possible retrofit strategies are identified.

T1 Setting of the sustainability targets for the urban area.

Responsible: The SMC Team and the Municipality

Before starting to create a sustainability retrofitting scenario for the urban area and the buildings, it is necessary to define clear and measurable targets that should be achieved by the retrofitting concept. Targets must address all fields of sustainability like environment, economy and social aspects.



To get a clear direction in which the sustainability retrofitting projects for the urban area and the buildings should be developed, targets must be measurable.

In this step, SBTool and SNTool are used to set measurable sustainability targets at urban and building scale. In practice, for each assessment criteria it must be set a target score. Each target score will correspond to a target value of the indicator.

The outcome of this step will be a table listing the sustainability targets in the form of target scores and target indicators' values in relation to the assessment criteria included in the contextualised versions of SBTool and SNTool.

Testing protocol template 4.1: Identification of the weaknesses and critical issues in the urban area

T2 Definition of constraints and restrictions at urban level.

Responsible: The SMC Team

Since each urban area has specific conditions, many potential retrofitting technologies cannot be implemented due to constraints and restrictions in different fields. The main constraints that occur in district and building sustainability retrofitting projects can be defined and structured into the following categories:

- Legal constraints (e.g. Building Codes, Cultural Heritage Protection).
- Technical constraints (e.g. Architecture, Systems).
- Financial constraints (e.g.Investment Cost, ROI).
- Environmental constraints (e.g. Climatic conditions, urban morphology).
- Stakeholder based restrictions.

In this stage, the SMC team must identify the existing constraints and their nature to proceed with the next steps in the decision-making process.

Testing protocol template 4.2: Constraints and restrictions for the urban area

T3 Preparation of the Sustainability Targets Summary Report.

Responsible: The SMC Team

After assigning the expected performance and identifying the constraints and restrictions to achieve the established sustainability targets for each indicator in the urban area, a summary report needs to be done in order to explain, in a qualitative way, the weaknesses that are going to be addressed in the next phase of retrofitting scenarios.

Testing protocol template 4.3: Sustainability Targets Summary Report for the urban area

T4 Setting of the sustainability targets for the building.

Responsible: The SMC Team and the Municipality

Before starting to create a sustainability retrofitting scenario for the building, it is necessary to define clear and measurable targets that should be achieved by the retrofitting concept. Targets must address all fields of sustainability like environment, economy and social aspects.
To get a clear direction in which the sustainability retrofitting projects for the building should be developed, targets must be measurable.
In this step, SBTool is used to set measurable sustainability targets at urban and building scale. In practice, for each assessment criteria it must be set a target score. Each target score will correspond to a target value of the indicator.

The outcome of this step will be a table listing the sustainability targets in the form of target scores and target indicators' values in relation to the assessment criteria included in the contextualised versions of SBTool and SNTool.

Testing protocol template 4.4: Setting of the sustainability targets for the building

T5 Definition of constraints and restrictions at the building scale.

Responsible: The SMC Team

Each building is defined by specific characteristics and conditions, many potential retrofitting technologies cannot be implemented due to constraints and restrictions in different fields. The main constraints that occur in building sustainability retrofitting projects can be defined and structured into the following categories:

- Legal constraints (e.g. Building Codes, Cultural Heritage Protection)
- Technical constraints (e.g. Architecture, Systems)
- Financial constraints (e.g.Investment Cost, ROI)
- Environmental constraints (e.g. Climatic conditions, urban morphology)
- Stakeholder based restrictions

In this stage, the SMC team must identify the existing constraints and their nature to proceed with the next steps in the decision-making process.

Testing protocol template 4.5: Constraints and restrictions for the building(s)

T6 Preparation of the Sustainability Targets Summary Report.

Responsible: The SMC Team

After assigning the expected performance and identifying the constraints and restrictions to achieve the established sustainability targets for each indicator in the building(s), a summary report needs to be done in order to explain, in a qualitative way, the weaknesses that are going to be addressed in the next phase of retrofitting scenarios.

Testing protocol template 4.6: Sustainability Targets Summary Report for the Building(s)

T7 Participation Guarantee System (PGS) Co-Creation Lab.

Responsible: The SMC Team and the Municipality

The main goal of this phase is the definition of the main framework conditions for the later retrofitting design based on the results of the diagnosis phase. The strategic definition therefore serves as pointer for further design phases by setting meaningful targets for the retrofitting project and by identifying the main constraints and restrictions which may limit the retrofitting design.
Indeed, this phase allows both to build a shared vision to support Decision-Making and to drive improvement in performance by setting a baseline from which to assess change.

At the strategic definition stage, stakeholders again take centre-stage since it is here that the framework conditions for the retrofit design and plans are defined based on the results of the diagnosis phase. A series of Specific-Measurable-Attainable-Relevant-Time based (S.M.A.R.T.) targets are set, and constraints and restrictions on the project identified. This needs to be done in conjunction with stakeholders through:

1. Co-Creation Lab

An in-presence workshop where different stakeholders gather up to define the specific sustainability targets based on the expected and desired performance of each selected criterion. The target score is defined by assigning a score from 0 (minimum acceptable performance) to 5 (highest performance achievable) taking into account the diagnosis score obtained in the previous phase (Diagnosis) and the weaknesses as well as the critical issues identified in the urban area and building(s).

1.Collaborative Platform

https://adhocracy.plus/sustainable_med_cities/

In this phase, the objective of the collaborative platform is to ask the different stakeholders through a poll their insight on what should the sustainability targets be for each category in order to identify the priorities to focus on during the Retrofitting Scenarios phase based on the point of view and perception of people on the needs of the urban area and/or building(s).

Phase 5: Retrofitting Scenarios

Develop alternative possible retrofitting scenarios for the urban areas and the buildings that fulfil the defined sustainability targets in the Strategic Definition phase.

Phase 5: Retrofitting scenarios

Once it has been established a vision for the future of the urban area and the building(s) and identified the sustainability targets that will drive efforts to achieve this vision, it can begin the development of a plan to make this vision a reality.

In this phase, the SMC WG develops alternative possible retrofitting scenarios for the urban area and the buildings that fulfil the defined sustainability targets in the Strategic Definition phase. As it's often the case, the team might come up with number of different scenarios, all of which fulfil the sustainability targets. Therefore, all valid scenarios would then be assessed in the next phase to choose the optimal one.

Development of Retrofitting Scenarios

A scenario can be defined as a package of retrofitting interventions.

Interventions may comprise changes to a physical (or hard) asset, such as a new development, technological solution, or other built structure. They can also comprise a soft intervention, such as a process or policy that builds knowledge or empowers skills and leadership (e.g., training, capacity building, behaviour change, improved coordination between departments).

Interventions should promote a holistic, interconnected approach to urban functions and consider the urban area as a system, and they should aim to bridge silos through an inclusive process that acknowledges co-dependencies and interdependencies. This integrated approach can help new ideas emerge and bring together new opportunities for cross-sectoral innovation. It can maximize synergies, foster efficient use of resources, and build longevity by ensuring that stakeholders and co-owners are engaged and invested in the successful implementation of the effort.
To achieve the sustainability performance targets it is necessary to develop alternative scenarios.

In this phase the SMC Working Group will develop alternative retrofitting scenarios for both the urban area and the buildings. It is important that the scenarios differentiate significantly among each other. Otherwise, it would not make sense to compare them in the decision-making phase (next phase) by a value assessment. However, the final decision about the number and content of scenarios that are created and used is always carried by the SMC TEAM in cooperation with stakeholders. Each scenario is a package of different solutions to improve the sustainability of the urban area as a whole, considering all buildings as connected global system.

A retrofitting scenario is composed of a variety of single interventions in different thematic fields. The main fields among others are energy, water, use of land, resources consumption, climate mitigation and adaptation, mobility, health, socio-cultural conditions.

The approach proposed by this methodology is to consider the energy as the priority filed. Urban regeneration interventions in the field of energy retrofitting are influencing the other thematic urban regeneration fields. The energy interventions are the starting point in the preparation of a scenario. All non-energetic interventions will be then added and integrated in a unique vision.

To create a retrofitting scenario, the SMC TEAM shall proceed according to the following steps:

A. Selection and optimization of energy interventions at urban level.

B. Selection and optimization of energy interventions at building level.

C. Selection of non-energy related interventions (water, mobility, use of land, services, etc.)

D. Identification of business models and financing schemes.
E. Validation of the scenario.

How to prepare a retrofitting scenario: selection of interventions

The starting point in creating a scenario are the weakness identified in the Diagnosis Phase. The interventions are studied by the SMC Team to improve the sustainability of the urban area and buildings with the objective to achieve the sustainability performance targets established in the Strategic Definition phase.

The process is based on an iterative approach which allows to repeat the evaluation and re-select the package of measures as long as the SMC Team is satisfied with the achieved improvement results. Each iteration step will provide intermediate results by performing calculations and assessments using SBTool and SNTool. The multi-scale approach allows to verify the impact of the urban scale interventions on the buildings and vice-versa.

As the identification of a package of interventions of a is a complex task, the SMC Team can follow a structured sequential approach based on three different mechanisms:

- **Interventions filtering based on set constraints and restrictions**
- **Interventions compilation based on diagnosis results**
- **Interventions sequence logic of application**

After the preparation of a scenario by the SMC Team, the results achieved finally need to be compared with the targets set in the Strategic Definition. Only if all targets have been reached, then the study about the financing of the scenario can start. If the targets have not been reached the scenario needs to be refined again by further iteration steps as long as needed till all targets have been reached. For valid scenarios, which have reached all targets the financing must be determined by considering appropriate business models and financing schemes. This step is needed in order to ensure the financing of the scenario as well as to identify all available useful financing instruments like grants, loans or contracting solutions.

T1 Selection and optimization of energy interventions at urban scale.

Responsible: The SMC Team

To ensure the right chronological sequence to create a complete energy retrofitting concept planners initially should apply interventions from categories in the following order:

- Energy consumption reduction
- Increasing the efficiency of the energy supply
- Inclusion of renewable energy production

Energy consumption reduction

The reduction of the energy consumption is the basis for the creation of sustainable energy concepts and to achieve the set sustainability goals. For that reason, the reduction of the energy consumption must be the priority for planners. Keeping the order is also important as potential newly constructed heat networks should be operated efficient in the long-term.

If the chronological order is changed, installed heating systems may be dimensioned upon the current energy consumption of the buildings or the urban area. If the energy consumption later will be reduced by interventions in a later iteration step, the heating systems may get oversized, and the efficiency may be lower. Thus, it is necessary to use the heat demand that will take place after passive retrofitting measures to reduce the energy consumption (consumer-driven) have been applied. Otherwise, the estimations would be based on the heat demand of the current state and will not reflect the future heat demand which will be the relevant one. Besides, it is in general from an ecological point of view more useful to prioritise the reduction of energy consumption over installing more efficient energy supply systems. The best energy is the energy which is not consumed.

Increasing the efficiency of the energy supply

After applying energy consumption reduction measures the next step will be to increase the efficiency of the energy supply in the district. Then, according to the general efficiency increasing potential the urban scale solutions should be preferred over individual solutions. After applying energy consumption reduction interventions on building level, the next step will be to increase the efficiency of the energy supply on urban level. According to the general potential of energy efficient supply interventions the urban solutions should be prioritized over individual solutions on building level. The reason for this is, that neighbourhood interventions have a lot of advantages compared to individual solutions as they allow taking advantage of synergies and scaling effects. Following main advantages are identified compared to individual solutions.

Inclusion of renewable energy production

The efficiency of the energy supply can be further improved using climate neutral and renewable energy sources. By increasing the share of climate-neutral and renewable electricity in a building and in the urban area, the primary energy consumption can be reduced significantly. Energy efficient supply interventions should be applied before adding renewables to avoid a wrong dimensioning of the renewable energy systems. For example, if a new more efficient boiler or heat network is installed as an intervention it may affect the economic efficiency of a solar thermal system for domestic hot water, as the hot water creation already may be more efficient. Hence, the dimensioning of the solar thermal system needs to be matched with the hot water demand and the new heating and hot water generation system. Furthermore, the energy balance between energy production and energy consumption must be optimised to achieve the best results for a scenario.

T2 Selection and optimization of non-energy interventions at urban scale.

Responsible: The SMC Team

Even though this methodology focuses on Energy as the central element for the structuring of the retrofitting scenarios, it also aims at promoting synergies and trade-offs between the different issues to be addressed in the urban area through the proposed interventions. To focus on the multiple inter-linkages between the sustainability targets as an integrated and synergistic approach would lead to many benefits. Such an approach would considerably enhance effectiveness and the quality of outcomes, as well as contributing towards more efficient use of resources, greater coherence across sectors and stakeholders, and the formation of crucial partnerships.

This second task that focuses on the proposal of interventions for the other issues different from Energy also following the same general guideline by first addressing the Consumption issue as the first category of intervention and then focus on managing the efficiency of the mentioned issues.

T3 Identification of business models and financing schemes at urban scale.

Responsible: The SMC Team & The Municipality

For each scenario, possible business models and financing mechanisms must be identified in order to evaluate which one could be the most suitable for a practical future implementation of the retrofitting interventions. The possible use of the following financing opportunities should be evaluated.

Grants

Grants may be available at all stages for feasibility studies, proposal development, capital investment and maintenance expenses. They offer a subsidy to the total costs but exist only because governments or other altruistic organizations wish to see particular innovations develop that would otherwise not be economically attractive. They will usually only cover part of the costs.

Loans

Loans imply debts that must ultimately be repaid, and on-going interest charges. Retail and commercial banks will generally lend, but at a price that depends upon perceived risks. They will want to see a business model that shows adequate “debt coverage”, i.e. a plan that shows how interest charges and debt repayment will be covered under normal and risky scenarios. Hence, lenders will often want to see co-funding by the owners and other stakeholders in the project. Furthermore, in order to borrow at a reasonable rate, the lender may require collateral security, i.e. financial recourse to stakeholder assets in the case of default. In contrast, pure project finance, without any recourse to the stakeholder assets, but secured only against the anticipated savings is sometime known as “non-recourse financing” and will be more expensive. Finally, for energy efficiency, preferential loans may be available at a lower cost. This is where governments or NGOs make funds available to retail and commercial banks under a scheme to incentivise particular initiatives.

Loan guarantees

This is an ancillary financial product that can reduce the cost of debt finance. Essentially it involves another stakeholder to the project investment team, namely a loan guarantor. The loan guarantor is usually a public body created to lower the cost of energy efficiency loans, back acting as a final guarantee that defaults will be avoided.

Energy performance contracting

Energy Performance Contracting is usually undertaken by an ESCO, through a contractual obligation to implement the energy savings initiatives in return for a flow of payments from the building owner or end-user. To the extent that this flow of payments is less than the savings, it is attractive to the owner. Evidently the owner / end user is passing on some of the investment returns to the ESCO, but is avoiding the initial capital outlay. A variety of financial arrangements may be undertaken with the ESCO taking on some, none or all of the debt and collateral obligations, and performance risk may also be split in flexible ways.

Co-investment

There are several initiatives around the world whereby municipalities or energy utilities assume the capital cost of retrofitting and place the charge on the property, to be recovered through the regular property tax-, or utility bill assessment and collection. Evidently, this is simply transferring the debt, but it may be an incentive for several reasons. Owners may not want, or be able, to accumulate more bank debt, or the bank terms may be unfavourable. For commercial owners, this is an easy way to transfer the cost to the tenants. Municipalities, furthermore, may have access to lower cost funds through bonds, specialist cleantech funds or related initiatives, and may be willing to spread the cost over a longer term.

Tax contributions

Fiscal measures are an important class of support and can relate to a reduced rate of tax for the owners, properties and / or contracting organisations, as well as specific tax and VAT benefits on the various cost or revenue elements. Evidently, they are idiosyncratic to individual EU member states, but are widely used as part of the business models.

Embedded revenue contributions

Many countries now encourage residential, commercial and industrial consumers to install solar, wind, biomass, micro-hydro and other renewable sources of electricity generation to reduce consumption of grid supplied energy and for sale back to the local distribution company, or, in the case of larger industrial units, to the wholesale market. These feed-in tariff (FiT) arrangements vary according to technologies, vintage, length of term and size of connection. District level solutions have a lot to offer here as there are economies of scale in the provision of generating facilities and transaction costs. "Smart" districts offer further revenue possibilities through the possibility of end-users of electricity "selling" demand reduction options to the distribution utilities. In some countries, there are also "white certificate" trading schemes for energy efficiency which are intended to parallel what green certificates have achieved for renewable technologies. The idea is very similar, having a volume based target for energy savings, earning credits to the extent that they are achieved, and being able to trade credits so that those who are able to achieve it more efficiently do more and profit by selling to others who face higher marginal costs of energy saving. In Europe, Italy has been the only country to have some trading, although Belgium, France, Denmark, Poland and the UK have limited schemes. Rental increases are sometimes anticipated following retrofitting and can be built into the financing model.

Testing protocol template 5.1: Description of the scenario at urban scale

Selection and optimization of energy interventions at building scale.

Responsible: The SMC Team

To ensure the right chronological sequence to create a complete energy retrofitting concept for the buildings, planners initially should apply interventions from categories in the following order:

- Energy consumption reduction
- Increasing the efficiency of the energy supply
- Inclusion of renewable energy production

The detailed explanation of each one of the category interventions are found in **Task 1: Selection and optimization of energy interventions at urban scale.**

T5 Selection and optimization of non-energy interventions at building scale.

Responsible: The SMC Team

Even though this methodology focuses on Energy as the central element for the structuring of the retrofitting scenarios, it also aims at promoting synergies and trade-offs between the different issues to be addressed in the building(s) through the proposed interventions. To focus on the multiple inter-linkages between the sustainability targets as an integrated and synergistic approach would lead to many benefits. Such an approach would considerably enhance effectiveness and the quality of outcomes, as well as contributing towards more efficient use of resources, greater coherence across sectors and stakeholders, and the formation of crucial partnerships.

This following task that focuses on the proposal of solutions to the other issues different from Energy following the same general guideline by first addressing the consumption issue as the first category of intervention and then focus on managing the efficiency of the mentioned issues.

T6 Identification of business models and financing schemes at building scale.

Responsible: The SMC Team & The Municipality

For each scenario, possible business models and financing mechanisms must be identified in order to evaluate which one could be the most suitable for a practical future implementation of the retrofitting interventions. The possible use of the following financing opportunities should be evaluated. The detailed explanation of the different buiseness models and financing schemes available are found in Task 3 of Phase 5.

Testing protocol template 5.6: Description of the scenario at building scale.

T7 Participation Guarantee System (PGS): Co-Creation Lab.

Responsible: The SMC Team & The Municipality

In this phase, the SMC WG develops possible alternative for retrofitting scenarios to be applied to the urban area and the buildings that fulfil the defined sustainability targets in the Strategic Definition phase.

As it's often the case, the team might come up with number of different scenarios, all of which fulfil the sustainability targets.

Therefore, all valid scenarios would then be assessed in the next phase to choose the optimal one. Once a vision for the future of the urban area has been established and have identified the sustainability targets that will drive efforts to achieve this vision, it is possible to begin the development of a plan to make this vision a reality.
Inputs and suggestions from inhabitants, occupants and stakeholders are a valuable contribution in the development of retrofitting interventions. Stakeholders can provide feedback considering their targets and expectations on the prioritization of interventions.

This should be fulfilled through the implementation of the following tools and strategies:

1. Co-Creation Lab

An in-presence workshop where different stakeholders gather up to come up with different retrofitting scenarios that intend to achieve the sustainability targets set in the previous phase. a retrofitting scenario is a set of different strategies that tackle different different issues. It is important to take into account the synergies between the different strategies, meaning that one proposed strategy can assess two or more issues.

2.Collaborative Platform

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In this phase, the objective of the collaborative platform is to ask the different stakeholders through a Spatial Brainstorming their ideas on what should be done in the urban area and the building(s) to improve their performance and reach the previously established sustainability targets.

Phase 6: Decision-Making

Select the best scenario in terms of energy and cost efficiency as well as the overall sustainability among the ones created in the previous phase.

Phase 6: Decision-making

The overall goal of this phase is to select the best scenario in terms of energy and cost efficiency as well as the overall sustainability among the ones created in the previous phase (Phase 5: Retrofitting Scenarios). Only the scenarios which have reached the sustainability targets (Phase 4: Strategic Definition) can be compared in the decision-making phase.

The selected best scenario will then developed in a retrofitting concept in the following phase (Phase 7: Retrofitting concept).

Phase 6: Decision-making is articulated in 2 steps:

1. **Assessment of scenarios**
2. **Ranking of scenarios**

T1 Assessment of a scenario: Evaluation of the sustainability level at urban scale with the SNTool.

Responsible: The SMC Team

Each scenario foresees a package of interventions to improve the sustainability of the urban area.

In this stage, the main goal is to identify the scenario, among the ones developed in phase 5, that allows the urban area to reach the higher level of sustainability. To perform this task, it is possible to use SNTool.

The following steps must be accomplished for each scenario at urban scale:

- Identify the criteria in SNTool that are impacted by the retrofitting interventions
- For those criteria, assuming the implementation of the interventions, the value of the indicators bas to be calculated and updated
- The new SNTool overall score is updated.

The process described above allows to verify the potential level of sustainability reachable by the urban area in relation to the interventions foreseen by each scenario.

For each scenario, the overall SNTool score take in account the sustainability priorities of the municipality and stakeholders. These ones have been "embedded" into the contextualised versions of the SNTool through the assignment of a weights to criteria, categories and issues.

At the end of the scenarios' assessment process, the final output is the SNTool score associated to each of them. The table below provides an example concerning the urban area:

Testing protocol template 6.1: Assessment of the urban scale scenario with SNTool.

T2 Assessment of a scenario: Evaluation of the sustainability level at building scale with the SBTool.

Responsible: The SMC Team

Each scenario foresees a package of interventions to improve the sustainability the building(s).

In this stage, the main goal is to identify the scenario, among the ones developed in phase 5, that allows the buildings to reach the higher level of sustainability. To perform this task, it is possible to use SBTool.

The following steps must be accomplished for each scenario:

- Identify the criteria in SBTool that are impacted by the retrofitting interventions
- For those criteria, assuming the implementation of the interventions, the value of the indicators bas to be calculated and updated

The process described above allows to verify the potential level of sustainability reachable by the buildings in relation to the interventions foreseen by each scenario.

For each scenario, the overall SBTool score take in account the sustainability priorities of the municipality and stakeholders. These ones have been "embedded" into the contextualised versions of the SBTool through the assignment of a weights to criteria, categories and issues.

At the end of the scenarios' assessment process, the final output is the SBTool score associated to each of them. The table below provides an example concerning the building(s):

Testing protocol template 6.2: Assessment of the urban scale scenario with SNTool.

T3 Calculation of the Sustainability Global Score of the scenarios.

Responsible: The SMC Team

On the base of the scenarios' assessment process (see 6.1), it is possible to proceed with their ranking to identify the optimal one. To rank a scenario, it is necessary to assign a sustainability global score aggregating the SBTool and SNTool scores trough a weighted sum.

The ranking process is articulated in 3 steps:

1. Assignment of a weight to determine the priority levels among the urban area and the buildings.

2. Assignment of a Sustainability Global Score to a scenario.

3. Ranking of scenarios according to their global sustainability scores.
4. Selection of the optimal scenario to be transformed in a retrofitting concept.

1. Assignment of a weight to determine the priority levels among the urban area and the buildings.

The first step is to assign a weight, expressed as a percentage, to the urban area and the buildings under evaluation. The weight reflects the relative importance among them. The table below provides an example concerning an urban area and two buildings:

2. Assignment of a Sustainability Global Score to a scenario.

The overall score of each scenario is calculated as a weighted sum of the SNTool and SNTool scores. The weights are the ones set in the step above (Assignment of a weight to determine the priority levels among the urban area and the buildings).

This is example of the calculation of the global sustainability score for a scenario:

Testing protocol template 6.3: Calculation of the Sustainability Global Score of the scenarios

T4 Ranking of scenarios according to their Sustainability Global Score.

Responsible: The SMC Team

Once that a global sustainability score has been assigned to all the scenarios, it is possible to proceed with their ranking. The scenarios are ranked on the base of their Global Sustainability Score.

T5 Selection of the optimal scenario to be transformed in a retrofitting concept.

Responsible: The SMC Team & The Municipality

According to the scenarios' ranking, Scenario 2 results to be potentially the one that allows to reach the higher level of sustainability.

However, to confirm the selection of Scenario 2 as the optimal one, it is necessary to consider other 2 aspects:

1. The potential financial mechanism to implement the scenario

2. The non-simulated aspects.

Financial Mechanisms

The final chose should combine the best scenario in terms of performance and financial sustainability. For example, if a scenario may not have reached the first rank but has many advantages in terms of financial mechanisms that are not reflected by the global sustainability score, decision-makers need to bear these aspects in mind.

Non-simulated aspects

As the ranking result is based on a quantitative method also non-simulated aspects which cannot be described by the SBTool and SNTool scores need to be considered in the final decision-making. For example, if a scenario may not have reached the first rank but has many advantages in terms of qualitative improvements that are not reflected by the global sustainability score, decision-makers need to bear these aspects in mind. Hence, an expert judgement needs to be done to assess the final ranking of the variants beside the global sustainability score. The scenario which has finally been identified as the best ranked one (quantitative and qualitative aspects) is transformed in a retrofitting concept in the next stage.

Testing protocol template 6.5: Selection of the optimal scenario

Participatory Guarantee System (PGS) Co-Creation Lab.

Responsible: The SMC Team & The Municipality

The overall goal of this phase is to select the best scenario in terms of energy and cost efficiency as well as the overall sustainability among the ones created in the previous phase. This phase is articulated in two main steps represented by the assessment of the scenarios and their ranking process.

Only the scenarios which have reached the sustainability targets can be compared in the Decision-Making phase.

The selected best scenario will then developed in a retrofitting concept in the next phase.

Occupant and user participation becomes critical once more at the Decision-Making stage, where a selection is made from among the scenarios previously generated. In all cases, feedback from occupants and users should be invited at this point, before a final decision is made on the best scenario.

A key question is the level of influence over this decision they are to be afforded vis-à-vis other stakeholders.

The opinions of occupants and users should be heavily weighted. After the SMC Team has ranked the variant design concepts, and assessed them for value, the results should be encapsulated in a summary report. This is then presented in a PGS meeting, starting the participatory approach at this crucial stage of the Decision-Making process.

The above will be reached through the development of a Co-creation lab as well as the implementation of the collaborative platform.

1. Co-Creation Lab

An in-presence workshop where different stakeholders gather up to select the best optimal scenario for the urban area and the building(s). In this workshop, the aim is to gather the opinion of the people involved and invite them to vote for the scenario they consider the most appropriate from the options of scenarios that have been previously analysed and selected as they achieve the sustainability targets set before.

1.Collaborative Platform

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In this phase, the objective of the collaborative platform is to ask the different stakeholders through a Prioritization task their insight on the best scenario for the urban area and for the buildings. A scenario is a set of interventions aimed at achieveing the sustainability targets established before.

Phase 7: Retrofit Concept

Detail the best scenario in a retrofitting concept. The retrofitting concept is a report containing the description of the interventions foreseen by the scenario following the issues of SBTool and SNTool.

Phase 7: Retrofit Concept

T1 Detailed description of the retrofitting interventions.

Responsible: The SMC Team

In this phase, the SMC Team is required to detail the best scenario in a retrofitting concept.

The retrofitting concept is a report containing the description of the interventions foreseen by the scenario. The interventions are illustrated for the urban area and the building(s) and organised following the issues of SBTool and SNTool.

For each intervention the information to provide is:

- Description
- Expected results
- Activities/works to implement the intervention
- Timescale
- Budget estimation
- Financial scheme
- Responsible for the implementation
- Partnerships
- Reference stakeholders
- Links with existing or future strategies, plans, programs

T2 Preparation of the retrofitting concept report.

Responsible: The SMC Team

The retrofitting concept shall be considered as the first step or an integrated urban planning and design process. It provides a solid basis to build a valid retrofitting project in future. This last steps consists of completing the following .

Testing protocol template 7: Assessment of the urban scale scenario with SNTool

The retrofitting concept must be complemented with:

- Description of urban area (1.1)
- Description of the building (1.2)
- Diagnosis summary report (3.8)
- Assessment of the urban scae senarion with SNTool (6.1)
- Assessment of the scenario at building scale (6.2)

T3 PGS Final Co-Creation Lab.

Responsible: The SMC Team

A final meeting with the different stakeholders needs to be done to present the final results. In the lab, the SMC team explains in detail the chosen scenarios at urban and building scale to the participants as well as the different synergies intended and the financial schemes to develop with the interventions.

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Associated Partners

United Nations Environment
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Action Plan

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https://www.enicbcmed.eu/projects/sustainable-med-cities