



**D2.1 Report describing implementation and results of the “Model for NBS suitability” in the form of decision maps.
Part 3**

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Kivistö case area

Selecting the case study area for Atenas – The case Kivistö

The key objective of Atenas in Helsinki metropolitan region was to support developing and evaluating alternatives for urban planning and decentralized stormwater management **in the planning phase**. There were no concrete implementations of nature-based solutions during the project. The aim of the Helsinki metropolitan case was to (i) develop a systematic and interactive approach to support multi-objective urban planning in general and (ii) to test the approach in the ongoing urban planning process.

We held a stakeholder meeting at the beginning of the project (Nov 2019) and invited city officers from the city of Vantaa, Finland to discuss potential development areas that are going through land use planning. Totally, five different areas were identified by the city officers. Finally, after email exchanges and further discussions between Atenas researchers and the city authorities of Vantaa, Kivistö development area was selected as a potential research site.

The target area is a new residential area of about 20 ha, where dense urban construction is planned. The key starting point for the planning of the Kivistö area is mitigating and adapting to climate change, as well as the City of Vantaa's goal of being carbon neutral by 2030. One of the challenges in the development of the area is the management of stormwater to avoid flooding to the railway nearby. A central part of stormwater management is building a reservoir for the retention of the flood water. Multi-criteria decision analysis were selected by the researchers to be a key tool for co-planning and support decision making. Researchers at Syke are experienced in facilitating use of MCDA.

Multi-criteria decision analysis (MCDA) is a general term for systematic approaches that support the analysis of multiple alternatives in complex problems involving different objectives, intangible and incommensurable impacts and uncertainties (Belton and Stewart 2002). They are especially useful when evaluating trade-offs and prioritising alternatives. MCDA methods aim at improving the quality of decisions by providing an overall view of the pros and cons of the different alternatives from different perspectives. Carrying out the MCDA process in close collaboration with relevant stakeholders enhances social learning and enables inclusion of the public values and concerns in the process, increasing participants' trust as well as the process quality.

The main phases of MCDA are 1) identification of objectives, 2) structuring them into a form of hierarchy, 3) developing alternatives, 4) assessing their performances with regard to objectives, and 5) collecting preference information. The potential benefits of MCDA are presented in Table 1.

Table 1. Potential benefits of using MCDA

BENEFITS OF MCDA
<ul style="list-style-type: none"> • Provides a structured framework for the planning • Supports synthesis of information and helps to identify data gaps and uncertainties • Supports participants' learning and comprehensive understanding of the planning situation • Supports systematic and transparent evaluation of alternatives • Possibility to compare monetary and non-monetary impacts and identify trade-offs • Facilitates discussion in a multi-stakeholder group • Supports finding balanced and sustainable solutions

The starting point of the case was the evaluation framework developed in the earlier project (TASAPELI). First, we further developed the framework to better support urban planning, and by integrating criteria from other guidelines that guide operations in the City of Vantaa, such as the resource wisdom roadmap. Based on the experience gained from multi-benefit assessment in urban planning, the approach supports dialogue between different stakeholders and, due to its holistic perspective, steers away from silo-like planning. Thus, the approach can alleviate confrontation between different organizations / stakeholders, help find multi-benefit solutions, and increase the transparency and general acceptability of decisions.

For the MCDA analyses two different stormwater management options for stormwater management in the Murronuisto basin (Fig. 3.1): a natural-like reservoir (ALT A) and a functional pool park (ALT B) was designed together with city planners and Atenas researchers. The options differed in terms of construction area, amount and location of green areas. Designing the options was an iterative task and it was guided by the objectives presented in the evaluation framework. In other words, there was a strong aspiration to ensure that the objectives of the evaluation framework were met at least to some extent in both options.

The Kivistö team sought to tailor the expanded evaluation framework to Kivistö's case study by identifying criteria that are not relevant in the comparison of the alternatives formed. Based on the review, the criteria were grouped into two groups: those to be considered in the comparison of the options and those to guide the design (and thus do not need to be taken into account when comparing the options, as it is possible to take them sufficiently into account in both options).

The Multi-Criteria Assessment started in the spring of 2020, and during the process which ended in autumn 2022 a dozen meetings were organised between experts from the City of Vantaa and SYKE (=Kivistö team meetings). Typically, 5-8 experts from City of Vantaa participated in the meetings.

In addition to these meetings, a workshop was organised on June 7, 2021 for designers and experts from various industries in the city of Vantaa. Nearly 20 persons from different departments from the City of Vantaa participated in the workshop. The goals of the workshop were to discuss and further develop a preliminary evaluation framework and to evaluate the differences between alternatives against criteria.

In the workshop, the evaluation framework, the alternatives to be evaluated and the approach applied in the evaluation were presented. For the group work, the participants were divided into three groups, each of which had been assigned the topics to be discussed from the evaluation framework, because it was already possible to estimate in advance that the time allocated for group discussions, about an hour, is too little to go through all the evaluation factors. Each group had a facilitator and a scribe. The views presented in the groups were recorded in the Mural.

Based on the experience gained from multi-benefit assessment in urban planning, the approach supports dialogue between different stakeholders and, due to its holistic perspective, steers away from silo-like planning. Thus, the approach can alleviate confrontation between different organizations / stakeholders, help find multi-benefit solutions, and increase the transparency and general acceptability of decisions.

ALT A for stormwater management in Kivistö



ALT B



Figure 3.1. Stormwater management options in the Murrenpuisto basin

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