Fixing up Vantaanjoki

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Vantaanjoki is a familiar river to many in the Helsinki Region. It runs from Southern Tavastia through dense population, agricultural lands and historical landscapes to the Baltic Sea in Helsinki. The Vantaanjoki basin is unique in Finland as it houses roughly fifth of the entire country's population. Located in the South, the basin is also heavy on agriculture, which together with urbanization creates complex challenges to the river ecosystem. The basin features numerous recreational opportunities such as fishing, nature trails, and swimming which are all threatened by the declining water quality.

On a rainy June afternoon our team took a trip to Vanhankaupunginkoski where Vantaanjoki meets the Baltic Sea. We explored the misty shores, met connected with the wildlife and, and met people who rely on the neighborhood for their daily quota of nature

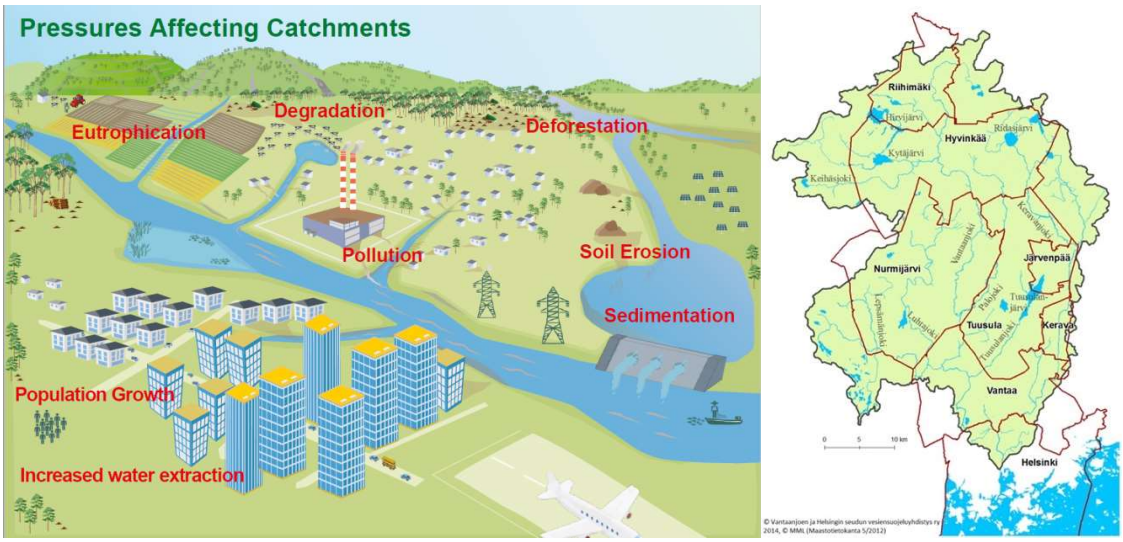
in their busy city lives. Walking along the banks of the syrup-colored stream, we also got closer to what needs to be done in order to improve the environmental state of the basin.

Catchment-based planning

Catchment-based planning is an approach that aids in decision-making especially, focusing on land use and water management within a specific river basin. Currently, Finland does not have nationwide tools for this method, but several related projects are in progress. Although this approach may not be the most efficient, examining each catchment individually helps ensure that its unique characteristics are considered.

One of the key strengths of catchment-based planning is that it helps assess the different conditions of an area. It allows us to identify priority areas where actions are most needed or would have the greatest impact. In addition, this approach works as part of a broader system. In our case, it supports sustainable decision-making in the Vantaanjoki river basin, with the goal of balancing environmental, social, and economic aspects.

For instance, this approach can help reduce pollution, protect water quality, and guide urban planning by identifying where and how development can align with natural systems. In addition, catchment-based planning can support flood risk management and climate adaptation. To succeed, collaboration between all stakeholders in the area is required, from municipalities to landowners. Shared responsibility is essential for maintaining the health of the catchment and preparing for future changes in the area.



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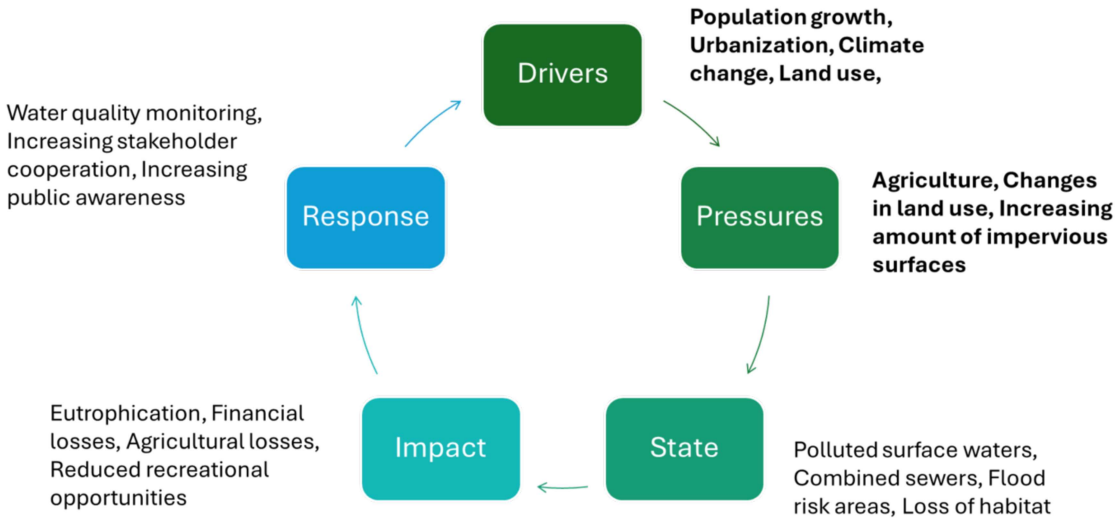
Our process

The aim of our project was to create an indexing system that could be used to identify priority areas in the Vantaanjoki catchment. When priority areas are identified, water management practices can be directed more efficiently saving time and money.

Our journey began by getting familiar with the characteristics of the Vantaanjoki basin. We studied the water quality in Vantaanjoki, researched different actors and stakeholders, looked at meteorological data, examined the flooding patterns, and explored the urban areas and recreational use of Vantaanjoki.

With this knowledge we carried out a DPSIR analysis. In short, the framework consists of identifying different Drivers, Pressures, States, Impacts and Responses related to an environmental issue – water management in our case. We decided to concentrate on the pressures that we found and based our indexing on them. The indices were then divided into indicators.



Next on the project we searched for spatial data for each indicator. In a later phase this data could be used to identify the priority areas within the catchment. Finally, we weighed the indicators so the GIS analysis (which we did not have sufficient time to carry out) would result to a clear priority area map for each index. The weights were assigned based on our findings from the DPSIR analysis and largely also guesswork. Developing our solution further, the GIS analysis would help to make the weighing accurate.

The solution – index-indicator matrix

Our final product consists of five indices and three to five indicators per index.

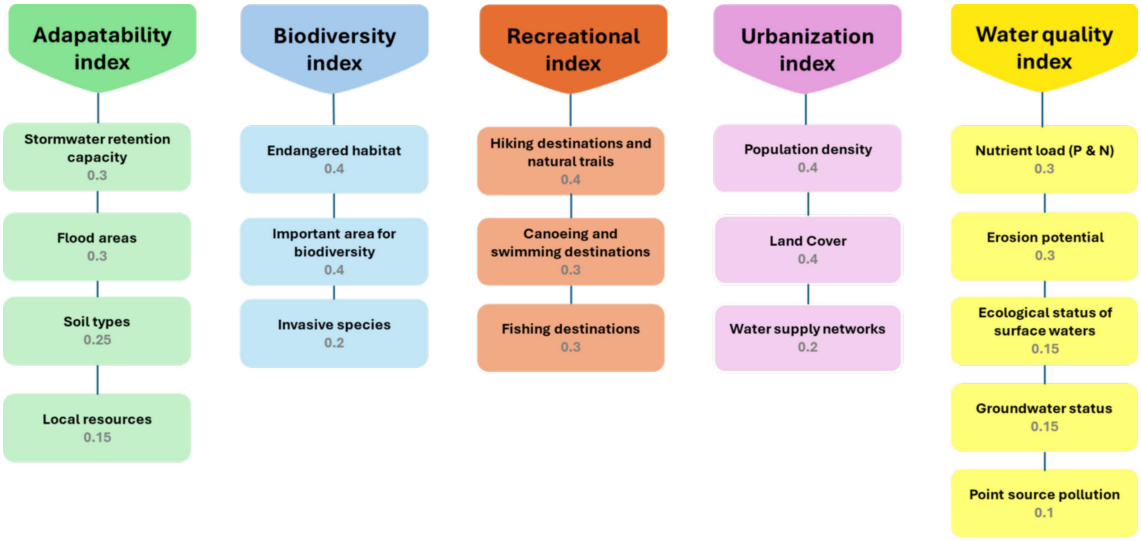
Adaptability index refers to the area's ability to adapt to climate change (increased flooding and precipitation)

Biodiversity index shows significant areas for biodiversity.

Recreational index considers areas valuable for recreation.

Urbanization index shows where the pressure caused by urbanization is the highest.

Water quality index shows where the water quality issues lie.



Together, these indices and indicators pinpoint the pressure areas in the Vantaanjoki basin. Unlike existing priority area identification, our solution includes the pressure from urban areas and considers recreational value. These are particularly important in the Vantaanjoki basin due the high population density.

When applied, the solution can help dedicate valuable water management resources more effectively. Not only could the solution help improve the state of Vantaanjoki but also be adapted for other urbanized areas across Finland or even the globe.

Waves of Change – A Future for Vantaanjoki and the Baltic Sea

Vantaanjoki may be just one river, but it tells a much bigger story about how we live, build, farm, and connect with nature. As it winds through cities and fields before reaching the Baltic Sea, it carries the fingerprints of all its users. That's why taking care of the catchment isn't just an environmental issue it's a shared responsibility.

What could Vantaanjoki look like in 10, 20 or even 50 years? That depends on the actions we take today. With smarter catchment-based planning and tools like our priority area identification method, we can guide restoration efforts, reduce pollution, and ensure that recreational and natural areas are preserved for future generations.

Vantaanjoki is more than just a river, it connects communities, ecosystems, and ultimately flows into the Baltic Sea, one of the most vulnerable seas in the world. Protecting it means protecting everything downstream as well.

For our team, this project was not just about data and indicators, it was about learning to see the bigger picture. We believe this kind of approach can help shift water management from reactive to proactive. It all starts with recognizing that nature too deserves a voice. With collaboration, science, and a splash of creativity, we can ensure that the story of Vantaanjoki flows towards a healthier, more sustainable future.