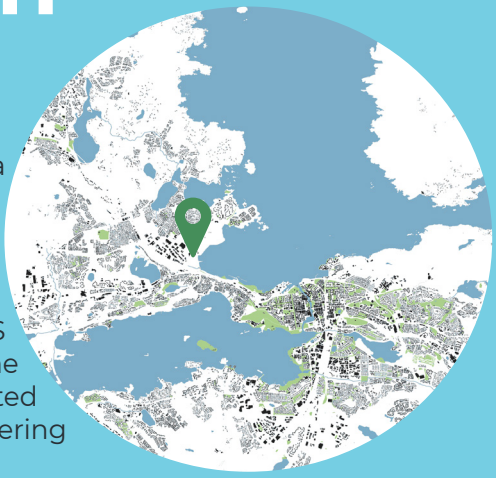
UNaLab Nature-based Solutions

Biofilter in Tampere



Hiedanranta is an old pulp mill area located four kilometres from the city centre of Tampere, by the shore of Lake Näsijärvi. The city decided to construct a biofilter in this site to clean leachate from the old pulp mill landfill. This NBS demonstration is a first attempt for the city to purify leachate from a contaminated site in situ with more advanced filtering materials.

The reasons behind the initiative included the city's intent to develop the qualitative management of storm water, the reports of disturbing odours from users of the area, and the interest of a biochar factory in Hiedanranta to promote the use of biochar in storm water management. The biofilter was co-created with several stakeholders and has been operational since December 2018.

Quick facts

Site: Old landfill of a pulp mill, new city district
Aim: Removal of nutrients from landfill leachate
Cost: 70,000 EUR
Filtering material: Biochar, peat, Leca-gravel

CHALLENGES

Flooding

Water pollution

BENEFITS

Improved water quality

CO-BENEFITS

Enhanced biodiversity

Recreational use

Technical specifications

The landfill leachate, which contains nitrogen (N) and phosphorus (P), is led through a filtration area which is about 100m² and 3m deep. The biofilter consists of different filtering layers and the novel filtering materials used are biochar, peat and Leca-gravel. Deep-rooted bushes and perennials native to the area were planted on top of the filter to retain water and nutrients.

First results

At first, the biofilter seemed to function effectively in cleaning the water (reduction N 80% and P 90%), but its insufficient capacity soon became evident. The inflow volume (over 80 m³/day) is higher than expected and the quantitative treatment capacity (about 40 m³/day) of the filter is lower than expected. The qualitative treatment results have also decreased. Works are underway to analyse and solve these problems.

Scan to learn more

Monitoring

- Water quality & quantity
- Recreational use
- Biodiversity
- Carbon emissions

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