



EviBAN

Evidence Based Assessment of NWRM
for sustainable water management

Workshop Report

Organizing partner:	Aalto university
Workshop Place:	Espoo, Finland (Teams)
Date:	21 October 2021
Number of invitess:	28
Number of registrations:	17
Number of guests attending:	15

Agenda for the workshop

EviBAN EU-project Stakeholder Meeting - Agenda

- 13:00 Meeting opening & EviBAN introduction, project overview and assessment tools under development (Harri Koivusalo, Aalto University)
- 13:15 Optimised stormwater management measures at the ZEB (zero emission building) Lab - results from application of the optimisation tool at the Norwegian case study (Edvard Sivertsen, SINTEF)
- 13:45 Testing of the EviBAN optimisation tool in Finland (Felipe Dasilva, Aalto University)
- 14:15 Integrated Sustainability Assessment (ISA) of alternative solutions - framework with criteria and indicators for assessment of stormwater management measures (Herman Helness, SINTEF)
- 14:45 On-line exercise with stakeholder input to the ISA framework
- 15:15-15:30 Break
- 15:30 Stormwater management under changing climate – modelling approach for impact assessment (Ottar Tamm, Aalto University)
- 15:50 Performance of sand and mixed sand-biochar filters for road runoff treatment in Vantaa (Harri Koivusalo, Aalto University)



16:10 Evaluating the long-term performance of roadside filters with PHREEQC geochemical modelling (Maria Dubovik, VTT)

16:30 Results from the on-line exercise (Herman Helness, SINTEF)

17:00 Meeting ends

Objectives

The objectives of the meeting were:

- Bring together key stakeholders, such as municipalities, research institutes and solution providers
- Discuss goals, solutions, and capabilities of the NBS
- Get feedback from stakeholders on assessment criteria and weighting of the measures

Characterization of the participants

Table 1 shows the number of registrations and actual participants, the respective sector of activity and the level of governance each stakeholder is active in.

Table 1 Overview of stakeholders

Institution / sector	No. of participants (registrations)		
	In total	Male	Female
Authorities	7 (7)	4 (4)	3 (3)
Representatives of companies, other sectors	1 (1)	1 (1)	0
Internal Stakeholders	7 (9)	5 (6)	2 (3)

Short summary of the workshop's activities

The workshop was opened with introductions of the participants. Harri Koivusalo (Aalto university) provided a brief overview of EviBAN project objectives and case study sites in the four participating countries: France, South Africa, Norway, and Finland. He reviewed the latest changes in the Finnish EviBAN teams and addressed the focus of the modelling case



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study site in Espoo, Finland, which has changed from Gräsanoja catchment to Vallikallio residential catchment.

Edvard Sivertsen (SINTEF) gave an invited presentation on study catchment around the ZEB (zero emission building), and the development on the EviBAN optimization tool for prescreening of cost-effective stormwater management methods. Felipe da Silva continued with results from an application of the EviBAN optimization tool in Vallikallio residential block in Espoo. Felipe presented how results from Stormwater Management Model (SWMM) were used as a training data to fix values of retention and detention parameters in the EviBAN optimization tool. He also showed how SWMM results were exploited to parameterize impacts of low impact development (LID) tools, such as swale, green roof, permeable pavement, and rain garden, on runoff. Finally, da Silva demonstrated optimization of LID tools to manage 50-year storm event using different LID cost alternatives.

Herman Helness (SINTEF) introduced the concepts and steps of Integrated Sustainability Assessment. He reviewed example of results from an earlier study and demonstrated how social, environmental, economic, governance, and technical performance aspects can be combined, and management strategy alternatives ranked. Helness finally introduced a web dissemination form that was prepared as a web-based questionnaire to go through objectives and criteria related to stormwater management and inquire their relevance in connection to proposed indicators. The participants were given time on their own to fill in and answer the questionnaire.

After the break Ottar Tamm (Aalto university) presented the status of urban hydrological modelling and climate change study in EviBAN. The SWMM is being calibrated for year-round hourly modelling of urban snow and stormwater flow in the Vallikallio residential catchment in Espoo. 20 years of recent data is gathered to analyse weather conditions and simulate urban water balance for the last two decades. Additionally, Tamm has gathered hourly climate change scenarios characterizing changes toward 2100.

Harri Koivusalo (Aalto University) reviewed the hydrological and water quality data from road runoff filters during two series field campaigns in the Tikkurilantie of the city of Vantaa. The differences between the sand and sand-biochar filters were presented. The filters turned out to be sources of nutrient leaching but behaved successfully in removing sediment and heavy metals from stormwater. Maria Dubovik continued with analysis of filter behavior using the PHREEQC geochemical model. She viewed the application of model for detailed analysis of processes in the filters and how they changed over the campaign periods from 2017 to 2019.

In the end of the workshop, Herman Helness (SINTEF) provided glimpses of results from the dissemination made during the stakeholder meeting. The rankings and valuations by the participants were viewed against the results from the Norwegian stakeholder meeting held earlier in August 2021. The day was closed with open discussion about the results.



Short summary of outcomes and results

The main outcome of the day was to provide an update of the progress made in the Finnish case studies in the cities of Vantaa and Espoo. In Espoo study area, the SWMM model of the Vallikallio catchment is being calibrated for year-round hourly urban snow and stormwater flow. The same calibrated model will be used in the future to assess the climate change impact in urban hydrology and how to mitigate the negative effect by using natural water retention measures. A presentation of the development on the EviBAN optimization tool for prescreening of cost-effective stormwater management methods was given. The results of the application of the EviBAN optimization tool in Vallikallio residential block in Espoo was presented, with an example of the optimization of LID tools to manage 50-year storm event using different LID cost alternatives. The Vantaa case study focuses on water quality data, where the differences between the sand and sand-biochar filters were presented. The analysis of filter behavior using the PHREEQC geochemical model is continued. A web-based questionnaire of The Integrated Sustainability Assessment was introduced to the participants in the workshop, which was also later fulfilled by the participants. Initial results from the stakeholder meeting dissemination were also provided in the end of the workshop.

Feedback / Review of the Workshop

In your opinion, what were the positive/negative aspects of the workshop? What did you enjoy most/less about this workshop? Which methods/tools were successful/not successful?

Pros:

- effective time schedule – not too long or short, which made the focusing on the presentations easier
- the short introduction of all the participants – this gave a warm welcoming to the beginning of the workshop where the participants were not anonymous anymore to each-other, making the workshop environment more friendly
- positive atmosphere during the workshop – the discussion part after each presentation was encouraged, but not forced

Cons:

- as the descriptions of the methods/tools are field specific, more emphasis should be given on the clear description of the methods/tools applied



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- half of the workshop participants were authorities, perhaps the discussion of the NBS should have been even more focused on how it is related to their everyday work

What suggestions for improvement do you have for future workshops?

- perhaps the presentations should be more related (if possible, while still maintaining the scope of the workshop) on the participants specialties (which is hard since the different range of skills and knowledge)
- the feedback of the authorities and other non-internal stakeholders could be gathered (anonymous) after the workshop to get unbiased feedback about the event