Project:"Evidence based assessment of NWRM for sustainable water management"

EVIBAN

Outcomes and expected impact:

EviBAN will produce outputs to the scientific community, to water managers and policy, and the public.

A main output for the scientific community and water managers will be the toolbox with the different tools that will be developed in WP2 and be available on the project website after the project has been completed. The tools will be in the form of software models, spreadsheet templates and written guidelines as appropriate for the different uses. Some components will be based on existing models distributed by others under open source e.g. SWMM or with restrictions e.g.MARTHE model owned by BRGMwith license fees. In such cases the toolbox will provide reference to where the software can be obtained and guidance for use in contexts covered by EviBAN. The toolbox components are expected to be used primarily by the scientific community and advanced water management users.

Further outputs to facilitate uptake of the results will be four reports covering the framework and KPIs for the learning alliance and three project/international workshops on: i) Drivers and barriers to NBS, ii) Toolbox development, needs and ambitions, iii) Potential of the EviBAN NBS to 'closing the water gap'. Training sessions on hydrogeological and hydrogeochemical modelling will be organised for local stakeholders in the cases studies with MAR.

EviBAN outputs will also include case study results from: Demonstrations of NWRM for stormwater management and evaluation of MAR for peak stormwater runoff to cope with drought-stress, including optimization of the solutions; performance and optimisation of SAT for treated wastewater and dissemination of ICT solution. A main integrating output for all cases will be the ISA assessment methodology and demonstration of its applicability through different water management case studies. These outputs will come in the form of a main results report and a policy brief for each of the case studies that will be aimed at water managers and policy makers, respectively. Further, manuscripts for five scientific papers are planned to address the four case studies and the developed toolbox.

Outputs aimed at the public include digital content on the project webpages and in social media about the demonstration sites, dissemination events and information from the stakeholder workshops.

EviBAN will develop new knowledge on how NBS should be used under different conditions to contribute to progress towards SDGs and transfer the knowledge into innovative tools for adaptive water management.

In the short term, the case studies with strong commitment of end users and stakeholders will bring direct outcomes aligned with the WJPI SRIA – Theme 5, and the expected impacts in the H2020 Societal Challenge 5, Call topic SC5-33-2016. Enhancing innovation capacity and integration of new knowledge will be ensured by the collaboration within EviBAN, which will be enriched by the strong multidisciplinary team (climate-science, water engineering, hydrogeology, ICT, water treatment, water network and quality), the noteworthy trans-

nationality of the activities.
This will ensure impacts such as the improved use of […] resources in the area of water research and innovation, an improved synergy […] between national and EU funding, […] exchange of good practices; strengthened international leadership of European research in this area, and implementation of the objectives of the JPI on Water.
The knowledge will be operationalised through the toolbox, so end-users and potential clients can benefit from all the synergies between the functionalities developed. This will give more sustainable water management by utilising recommendations for the inclusion of climate and stormwater model parameters in local standards for NBS design, facilitating use of NBS as a sustainable means of reducing diffuse water pollution, evaluating optimal implementation of NBS with different water sources in terms of resulting water quality and economic cost, performing ISA on MAR strategies as management options, and improving stakeholder involvement through use of ICT-tools.
In the intermediate term, the toolbox will support achievement of the UN SDGs, strengthen the competitiveness and growth of companies, and support the development of technological solutions and services for the implementation of EU water policy. The tools developed in EviBAN are responding to urgent needs to close the water gap in different socio-economic and climatic areas. These needs are expected to increase dramatically in the future, and are strong drivers for worldwide implementation of the solutions developed by the project´s companies, thus contributing particularly to SDG 6 'Ensure availability and sustainable management of water and sanitation for all', SDG 13 'Take urgent action to combat climate change and its impacts', and the development of 'innovations meeting the needs of European and global markets'. Also, these tools promote a sustainable way to reach a good environmental quality and to provide safe and sufficient water for the different uses, thus supporting directly the implementation of EU water policy.
The long-term impact will be achieved through the exploitation of the results and the commercialisation of the tools by the collaborating companies. This will improve the management of stormwater, wastewater, groundwater and alternative sources, and develop new approaches toward a better water system sustainability, resilience and satisfaction of water users. As such, EviBAN will directly contribute to the implementation of various EU Regulations & Policies, in particular the Water Framework Directive; Groundwater Directive; Floods Directive; Water Scarcity & Drought Strategy and the Roadmap to a Resource Efficient Europe.

Expected research results to communicate and disseminate (in very general terms)	**Target groups for communication and dissemination activities:**
1. The project consortium includes consulting companies that are willing to commercially exploit the results. An exploitation plan will be developed in WP4, and the management of IPR will be considered in the Consortium Agreement.	The dissemination of the results at local and regional scales is ensured by the direct involvement of the key stakeholders at an early stage in all case studies.
2.	

EviBAN will contribute substantially to existing water cycle knowledge and demonstrate the added value of using climate information and services, ICT tools and models for quantity and quality to improve NBS design, evaluate implementation alternatives, and in decision making by end users.	
3.EviBAN will provide knowledge required to operationalise integrated sustainability assessments for evaluating applicability of NBS in different regional and local contexts.	
Experiments / Case studies (if any): location, type of experiments: **Agon-Coutainville:** Tertiary treatment of secondary WWTP effluent (33 500 inh. eq./ BOD5= 2120 kg /day) by reed bed and a sand dune filter. The MAR/SAT system has been chosen to protect the sensitive shellfish production zone on the surrounding estuary. Since 2016, the ImaGeau Subsurface Monitoring System is implemented for real time monitoring of saline intrusion. Water quality and quantity are analysed to develop an ICT tool (BRGM/Géo-Hyd) to assess efficiency of SAT in context of saline intrusion.	Stakeholders are SAUR (WWTP management for local authorities), Seine Normandy Water Agency (Public Institution with mission is to support water resources protection), ARS (Regional Agency of Health), SMEL and Agon Municipality.
Hessequa Municipal area in the Western Cape, South Africa: Water stressed areas relying partly on groundwater for water supply. Pressures on water resources due to drought. Artificial aquifer recharge (AR) in the Goukou River, using flushed water during high rain periods, is a potential water resource. Potential impacts of the AR-process on biodiversity and estuarine health will be a key parameter in the plausibility of using AR. Optimisation of best combination of water sources and NWRM to use. Optimisation tool to be customised for use by local municipal officials.	Stakeholders are Hessequa Municipality, Cape Nature, National and Provincial departments for water and environment.
KLIMA 2050 - Høvringen, Vikaune Fabrikker - Sveberg and Storm Aqua – Sandnes, Norway: Eco-engineered grey-green solutions for rooftops and engineered pervious surface materials for runoff management with respect to quality and quantity. Høvringen consists of 3 large-scale test fields, whereas	Stakeholders are Storm Aqua and Vikaune Fabrikker (suppliers of grey-green solutions).

Sveberg consists of 4 large-scale test fields, hence both sites enable parallel testing of different measures. The sites are in mid Norway. In Sandnes (southern Norway), there are two full-scale installations. One site focuses on infiltration and the other on treatment. All sites are instrumented to measure the water balance and climatic conditions. **Stormwater NBS test sites in Espoo and Vantaa, Finland:** Biofilters and similar NBS to capture and treat stormwater runoff from roads prior to infiltration or discharge to receiving surface waterbodies. Site monitoring and acquisition of data for hydrologic, hydraulic and geochemical performance assessment. Consecutively linked hydrological and hydrogeochemical transport modelling of NBS performance and impact during heavy rainfall/snowmelt events in cold conditions.	Stakeholders are regional and local authorities, local community, landscape designers, suppliers.
Water Policy context / project contribution to policies (National, European, International – UN SDGs): The toolbox will support achievement of the UN SDGs, strengthen the competitiveness and growth of companies, and support the development of technological solutions and services for the implementation of EU water policy. The tools developed in EviBAN are responding to urgent needs to close the water gap in different socio-economic and climatic areas. These needs are expected to increase dramatically in the future, and are strong drivers for worldwide implementation of the solutions developed by the project´s companies, thus contributing particularly to SDG 6 'Ensure availability and sustainable management of water and sanitation for all', SDG 13 'Take urgent action to combat climate change and its impacts', and the development of 'innovations meeting the needs of European and global markets'. Also, these tools promote a sustainable way to reach a good environmental quality and to provide safe and sufficient water for the different uses, thus supporting directly the implementation of EU water policy.	

List of deliverables expected:
D1.1 (Month 3): Risk management plan (T1.2). D1.2 (Month 6): Conceptual framework and KPIs for the learning alliance (T1.3). D1.3 (Months 12, 24, 36): 3 Project / International workshop reports, with a focus on experiences and recommendations: i) Drivers and barriers to NWRM, ii) Toolbox development, needs and ambitions, iii) Potential of the EviBAN NWRM and NBS as measures for 'closing the water gap' (T1.3). D1.4 (Months 12, 24, 36): Formal status reports to the FPOs in the required format (T1.1).
D2.1 (Month 24): Report: documentation of toolbox components and guide for use (T2.1-5). D2.2 (Month 24): Manuscript for scientific paper: General ISA framework evaluation of NWRM and similar NBS to identify sustainable management options based on performance and optimisation according to selected sustainability criteria (T2.5). D2.3 (Month 24): Toolbox components available on the project website (T2.1-5).
D3.1 (Month 24): Scientific article manuscript about NWRM in stormwater management (T3.2.2-3) D3.2 (Month 24): Technical report or article manuscript about MAR solutions (T3.3.2-3) D3.3 (Month 30): Technical report analysing application of optimisation model to case studies (T3.2.2-3 and T3.3.2-3) D3.4 (Month 36): Scientific article manuscript on ISA of demonstrated solutions (T3.2.4 and T3.3.4) D3.5 (Month 36): Article manuscript on drivers and barriers to NWRM/NBS based on the application of the governance assessment tool (T3.2.1. and T3.3.1)
D4.1 (Month 4): Project Website (T4.3) D4.2 (Months 6, 12, 18, 24 & 30): Dissemination plan (regularly updated) (T4.1) D4.3 (Month 9): Data Management plan (T4.1) D4.4 (Month 20): Exploitation plan (T4.2) D4.5 (Month 36): Dissemination events (T4.1)