

DESSIN

**Demonstrate that ecosystem
services are enabling
innovation in the water sector**



**David Schwesig
IWW Water Centre, DE**

**2017 Water JPI Exploratory Workshop, Dublin
2nd - 3rd November 2017**

Project - Background & Timeline

Funding source & topic:

FP7 Inno-Demo-Water I

EC contribution 5,980 T€

Timeline:

48 months

Jan 2014 – Dec 2017



Project consortium: 20 partners from 7 countries

6 universities / research centres



3 site owners



Oslo kommune



11 SMEs



BRUINE DE BRUIN B.V.[®]
KOSTENBESPAREND MAATWERK VOOR UW BEDRIJF !

AMPHOS²¹



Project - Objectives

- A) Demonstrate and promote innovative solutions to water related challenges with a focus on water quality and water scarcity
- B) Demonstrate a methodology for the valuation of ecosystem services (ESS) as catalyser for innovation in the water sector, **and better decision-making**

Water scarcity solutions

Water quality solutions

Positive impacts on ESS of water bodies (quantifiable)

New arguments for market uptake and practical implementation

Demo sites

- ∅ ESS MATURE SITE
- DEMO SCARCITY
- DEMO WFD (QUALITY)

2. HOFFSELVA

Filtration & treatment
in combined sewer overflows



1. EMSCHER

Real time control of sewer network
& treatment in combined sewer overflows



3. WESTLAND

Aquifer storage and recovery
for horticulture



AARHUS ∅

EMSCHER



5. LLOBREGAT

Aquifer storage and recovery
for drinking water supply

LLOBREGAT



4. ATHENS

Sewer mining &
water reuse for
urban green

Project - Outputs

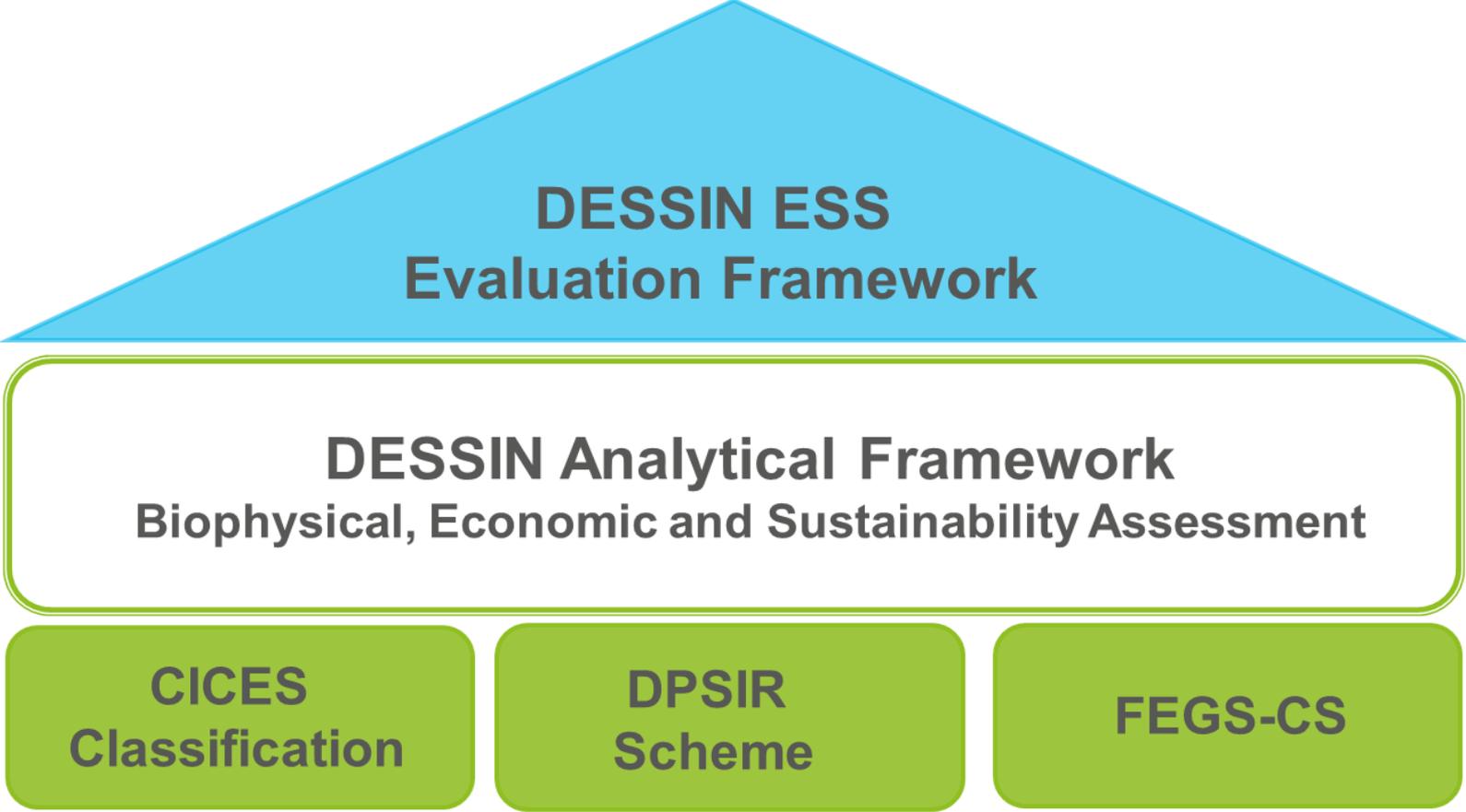
DESSIN delivered a structured approach on how to evaluate positive effects of human interventions (e.g. by innovative technologies) on ecosystems and human well-being.

The approach links improved ecosystem status to increased value of ESS and enhanced ESS use by humans.

DESSIN also tested the approach in case studies, highlighting its applicability.

- Framework for valuation of changes in ecosystem services, to compare different intervention options and their effect on ESS, support decision making; combined with sustainability assessment
 - Paper version: as a step-by-step practical guide ('DESSIN ESS Cookbook', D11.2)
 - Software version (new module for MIKE workbench)
- Examples for successful application of the framework in several real demo cases
- A portfolio of solutions for water scarcity / quality issues with
 - demonstrated technical performance
 - Evaluated benefits and co-benefits in terms of ecosystem services

Components and foundations of the DESSIN ESS Evaluation Framework - “DESSIN cookbook”

A diagram illustrating the components and foundations of the DESSIN ESS Evaluation Framework. It is structured as a house: a blue triangle at the top, a white rounded rectangle in the middle, and three green rounded rectangles at the base. The triangle contains the text "DESSIN ESS Evaluation Framework". The middle rectangle contains "DESSIN Analytical Framework" and "Biophysical, Economic and Sustainability Assessment". The three base rectangles contain "CICES Classification", "DPSIR Scheme", and "FEGS-CS" respectively.

**DESSIN ESS
Evaluation Framework**

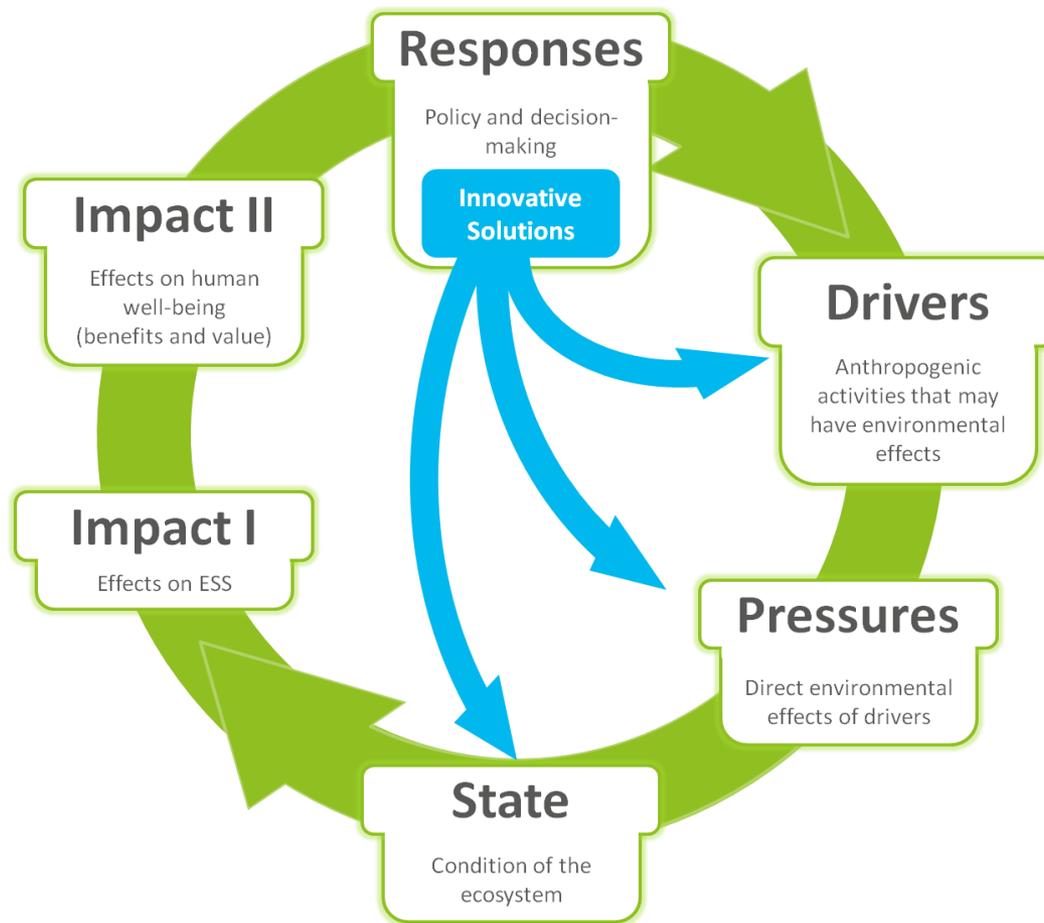
DESSIN Analytical Framework
Biophysical, Economic and Sustainability Assessment

**CICES
Classification**

**DPSIR
Scheme**

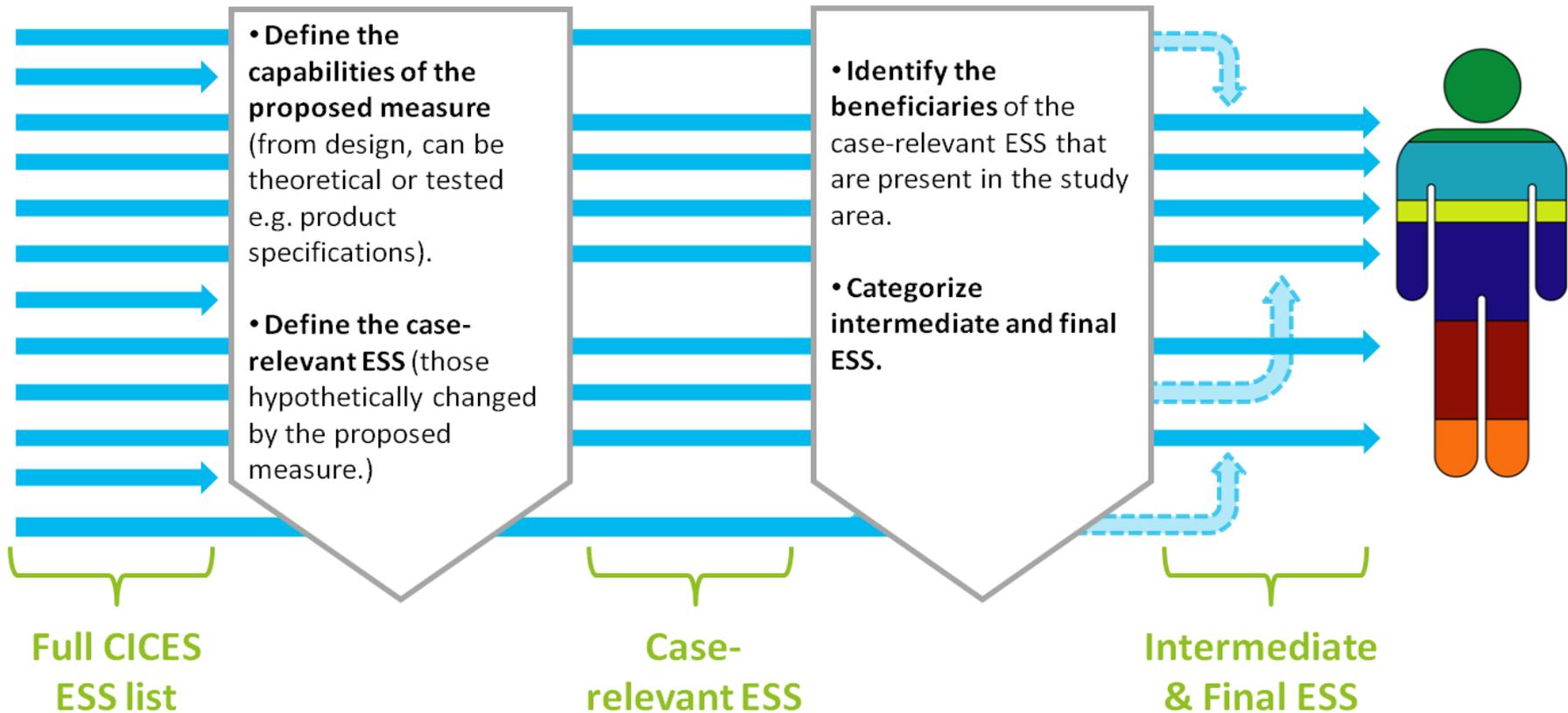
FEGS-CS

Conceptual approach of the DESSIN ESS Evaluation Framework

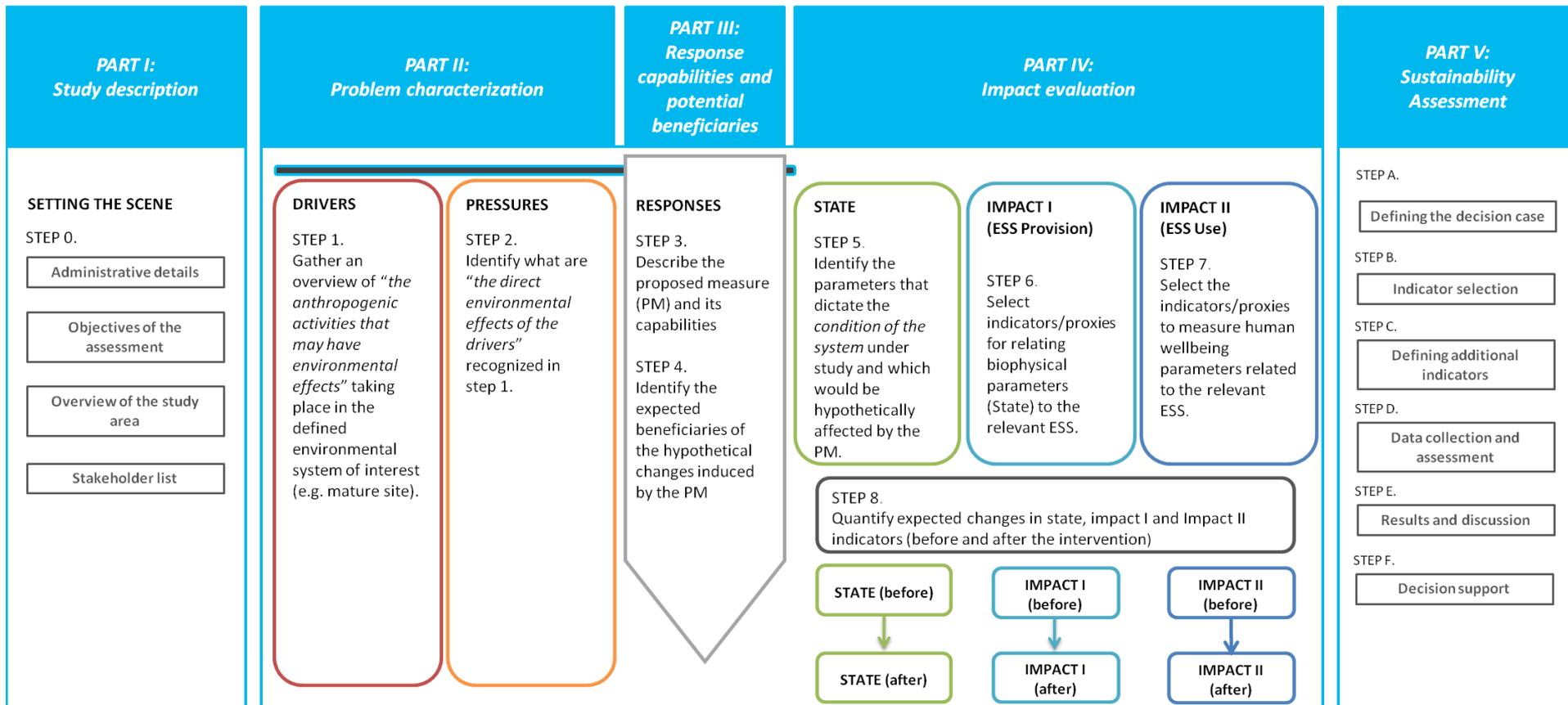


(based on Müller and Burkhard, 2012, Van Oudenhoven et al., 2012 and Haines-Young and Potschin, 2010; 2013).

Linking the capabilities of responses to final ESS through the identified beneficiaries...



Practical steps for the application of the DESSIN ESS Evaluation Framework – Overview



Link to SRIA Theme 1.1

1.1.1 Developing approaches for assessing the ecological functioning of ecosystems:
DPSIR approach within the DESSIN ESS framework contributes here.

1.1.2 Developing and testing methodologies for the valuation of ecosystem services:
DESSIN ESS framework is a significant contribution here. One of the first references in ESS monetization for different solutions.

1.1.3 Establishing multiple pressure-impact-response relationships in [...] ecosystems
DESSIN ESS framework embeds a modified DPSIR approach, and in our demo cases we have shown how it can be applied.

1.1.4 Integrating ecosystem services into management of water resources:
Decision-support ESS framework / software contributes here. In our demo areas, this was the first time water administrators have seen implementation of ESS calculation in real test cases, to assess different intervention options.

Link to SRIA Theme 1.2 & 1.3

1.2.3 Understanding and managing ecological flows

We can provide some local examples, e.g. ASR sites Llobregat, Westland demo cases.

1.2.4 Integrated eco-technological solutions for remediation/mitigation of degraded water bodies

Key feature of water quality / scarcity solutions tested in DESSIN. One output: guidelines/recommendations for some of the key approaches, e.g. on ASR implementation.

1.3.2 Developing innovative/improved tools for adaptation to hydroclimatic extremes

Sewer mining to irrigate urban green and fight heat island effects (Athens demo case).

1.3.3 Improving water management to mitigate harmful impacts of extreme events (e.g. impaired water quality)

Rapid treatment technologies for combined sewer overflows (Emscher, Hoffselva demo case)

Real-time-control of sewer networks (Emscher demo case).

RDI Gaps for the Future I

Cross-cutting 1.1. subthemes: Predicting effects of measures on biodiversity

Hardly feasible to predict effects of specific technical or management measures on biodiversity. Difficult to establish direct link between measure and effect. However, biodiversity is one of the most relevant factors for cultural ecosystem services (e.g. recreation).

1.1.2 Developing and testing methodologies for the valuation of ecosystem services:

Approaches are needed to harmonize economic valuation results from using different evaluation methods. (If effects on more than one ecosystem service shall be combined).

- Choice of valuation method depends on type of ecosystem service. Different methods provide monetary values with different economic meaning. e.g., stated-preferences methods (willingness to pay) vs. market evaluation methods (market price).

1.1.4 Integrating ecosystem services into management of water resources

- The business value of ecosystem services;
- Ways of integrating ES value into the decision-making process;
- How does management of ecosystem services impact corporate performance;
- Urban ecosystem services;

RDI Gaps for the Future 2

Cross-cutting: Data

- Data availability, functional monitoring and functional failure prediction. Data needed for ESS evaluation are not identical with the 'standard environmental data' gathered today.
- Development of new tools in ecological engineering and early warning systems, including sensors, web services, numerical codes and (further) ecological restoration.
- Increased availability and relevance of data and decision making products, in particular for extreme weather events.

DESSIN – Contact Details

Coordinator:

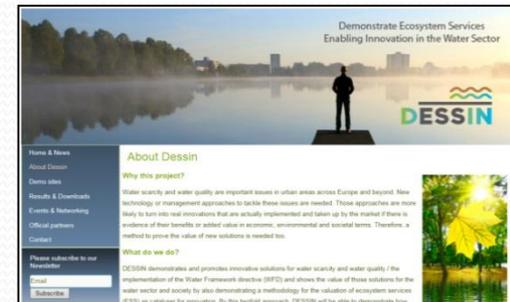


David Schwesig
d.schwesig@iww-online.de

F: +49 208 40303 215
M: +49 151 25 28 92 35

IWW Water Centre
Moritzstr. 26
45476 Mülheim - Germany
www.iww-online.de

Website:



www.dessin-project.eu



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Final event:
Joint workshop
with WssTP on
28 Nov, Brussels



28th November
Crowne Plaza Hotel "Le Palace"
Rue Cineaste, 3
Brussels (Belgium)

Agenda

- | | |
|-------------|---|
| 14.00-15.00 | Opening & Session 1
The value of ecosystem services:
success stories from DESSIN |
| 15.00-15.30 | Coffee & networking break |
| 15.30-16.30 | Session 2
Benefits of nature-based solutions
and grey-green infrastructure |
| 16.30-17.00 | Coffee & networking break |
| 17.00-18.00 | Session 3
Implementing and scaling up ESS,
NBS, NBSI, driver for innovation in
the water sector? |
| 20.00 | Networking dinner |

Participation is free of charge. Registration by 18th November is required.
For further information please contact Anne Breda (anne.breda@wssstp.eu)

[Register now](#)