DESSIN
DEMONSTRATE ECOSYSTEM SERVICES ENABLING INNOVATION IN THE WATER SECTOR

www.dessin-project.eu
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EDITORIAL

Dear readers,

DESSIN has now been running for more than 18 months! For this occasion, a Project Steering Board Meeting of the whole consortium (40 project partners from 18 organizations and the Project Advisory Committee) took place in the Emscher region (Germany) in June.

The progress reported of the various areas of work as well as the first results were impressive: all of the pilot plants in the demonstration cases are either set up or close to implementation. The analysis of governance factors conducive to innovation uptake is completed. The DESSIN Ecosystem Service Evaluation Framework is currently being tested in the mature case studies. And a sustainability assessment is being elaborated to supplement the Framework.

One of the highlights of the meeting was the excursion through the Emscher area, visiting a number of interesting sites: unrestored open wastewater canals as well as restored streams, Lake Phoenix as a transformation of an industrial area into a residential and recreational area, and the DESSIN pilot plant of the lamella settler at a combined sewer overflow (CSO).

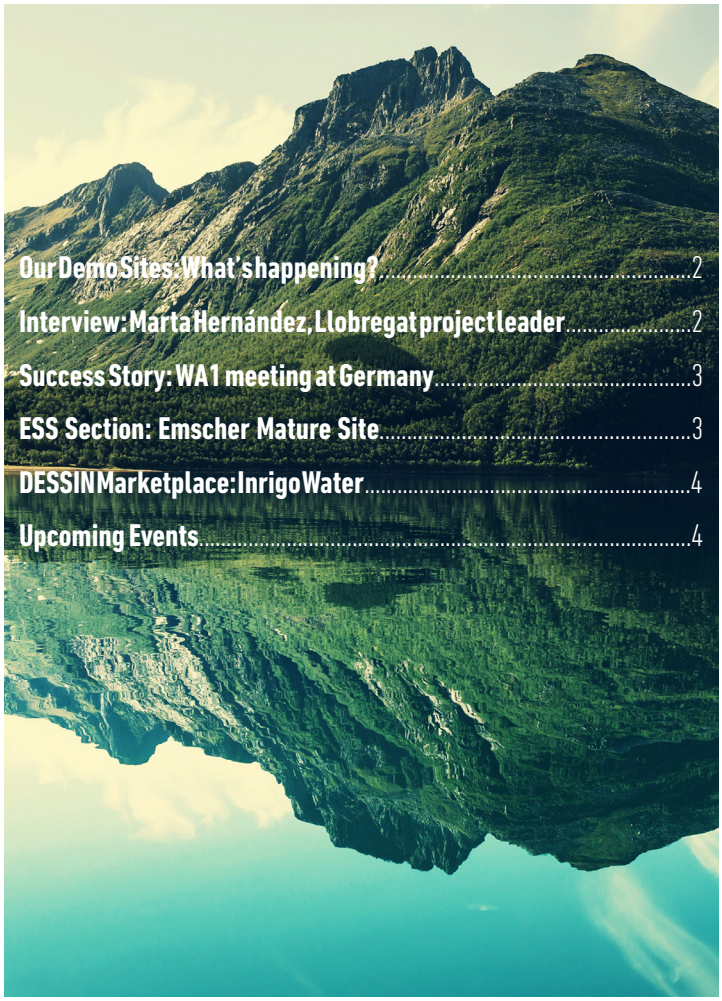
Moreover, internal working sessions were part of the meeting. Upcoming tasks were identified with the aim of finalizing the Evaluation Framework by the end of the year, collecting data during the technologies' pilot phases, and promoting interactions between the demo sites.

Enjoy reading further news about the DESSIN project!

Best regards,

Issa Nafo & Nadine Gerner, Emscher Mature and Demo Site Leaders

CONTENTS



OUR DEMO SITES
WHAT'S HAPPENING?

LLOBREGAT (SPAIN)

On the 2nd of July, the injection of sand filtered water in the drinking water treatment plant (DWTP) in Sant Joan Despí started. The injection system is totally autonomous and has been installed for the demonstration phase of the DESSIN project. The maximum capacity of injection is 50L/s and during three weeks 30 L/s were injected. The pre-potable water is injected in a depth of 30 metres in a well located in the facilities of the DWTP. This well is reversible. Water can be injected if there is surplus water produced in the treatment process, or groundwater can be recovered, if needed.

From July to September, sampling campaigns have been scheduled twice a week to assess the impact of pre-potable water in the aquifer. Chemical analyses are performed in Aigües de Barcelona (AB) Central Laboratory, including physicochemical parameters, priority pollutants and organic micropollutants. Cetaqua is doing some complementary determinations for total organic carbon, pH, electrical conductivity, hardness and pathogens in the experimental platform, located in the DWTP of Sant Joan Despí.

The equipment has been installed 6 months earlier than expected because AB has high interest in having a long period of recharge. The system will be in operation for a minimum of one year, as effects in groundwater can appear at mid-term. The equipment allows the testing of the injection of sand water independently on the needs for groundwater of the DWTP, as the rest of the dual wells (injection-extraction) will be fully operative during the demonstration phase.

The flowmeter used at the DWTP in Sant Joan Despí, Barcelona.

INTERVIEW// MARTA HERNÁNDEZ - LLOBREGAT PROJECT LEADER

"We can benefit from more interaction between partners to take advantage of the strong consortium of the DESSIN project"

Marta Hernández has a Degree in Environmental Science for the Universitat Politècnica de Catalunya. She is the leader of the Llobregat Demo Site, which is located near the Cetaqua headquarters. Besides the DESSIN project, Marta Hernández also leaded the Life+ ENSAT project (2010 – 2012), focused on the enhancement of Soil Aquifer Treatment to deal with emerging pollutants in the environment.

The DESSIN project is close to its second year, what are your thoughts on the evolution of the project?

The activities linked to development of technology (laboratory experiments, pilots, implementation at demonstration sites) are progressing as expected. Some of them are joint efforts of different research teams (e.g. in Hoffselva and Emscher). Other demonstration sites are working more at local scale (e.g. Westland and Llobregat) in close collaboration with technology developers. Regarding the evaluation of ecosystem services, the basis for the evaluation have been established, taking into account results from other EU funded projects, such as MARS.

As Leader of the Llobregat Demo Site, which are its biggest achievements so far?

The implementation of the injection system and the observation network is the biggest achievement we've done. The total investment have been around 60K€, and it has been facilitated by Aigües de Barcelona, which has trust in the project and has supported the equipment installation and the drilling works, as well as the operation of the injection for one year.

Is there any area that needs improvement?

Yes, of course! We need to find the best way to synthesize all the results we're obtaining to be able to present them to the stakeholders at different levels. Moreover, we have the opportunity to communicate with society and final clients about the relevance of groundwater and what Aigües de Barcelona is doing for its protection.

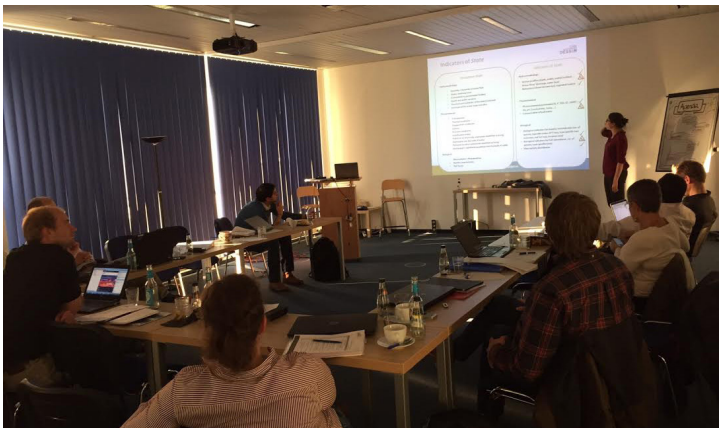
The whole DESSIN team met in June in Germany. Which were the resolutions and conclusions you took?

We can benefit from more interaction between partners to take advantage of the strong consortium of the DESSIN project. In that sense, our colleagues prepared a dynamic exercise in the meeting, to identify the synergies we could get from each other. Now we're producing first results and I hope we're going to share them in the coming meetings.

Which are the goals you want to achieve (both for the Llobregat Demo Site and for the project) until the next meeting, which will be held at Barcelona on January 2017?

We have a double objective. First, we want to use the meeting in Barcelona to bring DESSIN results to our stakeholders. It will be a great opportunity to present results from other demo sites to national and local entities, for example the potential of decentralised water reuse (e.g. the Athens case) and engineering of natural systems (e.g. the Dutch case). For us, both cases are very close to Barcelona's water problems in terms of water scarcity, so maybe we could prepare specific workshops on these topics. Moreover, Ecosystem Services valuation methodologies are starting as a hot topic in Spain, so it will be great to have a master class about that. The second objective will be to present the Llobregat case as a showcase to the rest of the partners and stakeholders. As you can see we have lot of expectations for this meeting!

SUCCESS STORY
WA1 MEETING AT GERMANY



A presentation during an internal WA1 meeting at Emscher.

The technical meetings continue as the project moves forward. 14 members of the DESSIN team met on October 1st and 2nd at the Emscher in Germany to celebrate a fruitful reunion in order to get updates on the progress at the different Mature Sites.

Ecologic, DHI, Cetaqua, Emschergenossenschaft and IWW were the partners attending this Work Area 1 (WA1) meeting to share the experiences and improvements with the ESS methodology in each Mature Site. The feedback was very positive and the partners agreed on an optimized timeline. New tools such as the software (WP 23) to be developed by DHI were presented and serve as an example for the good work achieved by the DESSIN team. The next WA1 meeting is scheduled for the first term of 2016, when the project will have reached its second year of life.

ESS SECTION
EMSCHER MATURE SITE

Emscher in the past...

The Emscher is a 84 km long river and tributary of the river Rhine, flowing through the Ruhr area in the German federal state of North Rhine-Westphalia. With the start of industrialization in the 19th century - mainly coal mining and steel production - the Emscher catchment with a landscape of water meadows was transformed into an industrial conurbation. Flooding of newly-built industrial and urban areas and the need for wastewater discharge were pressing problems. To solve this, the Emscher as well as its tributaries were straightened and channelized; wastewater was discharged along with the natural river flow in open water channels. As a result, almost all of water bodies in the catchment are heavily modified according to the Water Framework Directive.

With the decline in the mining industry in the end of the 20th century, a second structural change in the area began, being reflected also in a changing Emscher. The restoration of the Emscher water bodies was initiated in the 1990s – and is still going on until 2020. In the future, wastewater will be completely conveyed through underground wastewater sewers and, subsequently, the Emscher stream and its tributaries will be revitalized. In order to comply with the Water Framework Directive, these measures are indispensable. However, they are also beneficial for the entire Ruhr area, enhance attractiveness, offer recreational spaces and promote biodiversity.

... and present

This large-scale restoration, called the Emscher re-conversion, is a process lasting for three decades with a total budget of 4.5 billion Euros.

A total length of about 400 km of sewers and 290 combined sewer overflow (CSO) structures with a total volume of 485.000 m^3 are to be built until 2017. Also centralized wastewater treatment plants as well as pumping stations in subsidence areas are part of this system in conversion. In a second step, 350 km of water courses in an area of 865 km^2 will be ecologically revitalized until 2020 to complete the Emscher re-conversion project. Until now, 264 km of sewers and 91 CSOs with a volume of 328.000 m^3 have been constructed. 120 km of water courses are already restored. Some ecological hotspots have already been completed, such as Lake Phoenix which was built on an area where a steel plant was formerly located; now it comprises biodiversity, recreation, flood retention, and attractiveness enhancement in the middle of the city of Dortmund.

Lake Phoenix, in a present view, Emscher.

Emscher in DESSIN

Within DESSIN, the ecosystem services provided in and around representative reclaimed stream sections in the Emscher area will be assessed as mature sites using DESSIN's Ecosystem Service Evaluation Framework. After validation of the Framework at these mature sites, where measures are already completed, the methodology will be applied to analyze which ecosystem services are promoted by DESSIN's project demo cases.

DESSIN MARKETPLACE

HIGH RATE FILTRATION (HRF) SYSTEM, INRIGO WATER

As one of the five demonstration sites in the DESSIN project, Hoffselva is a peri-urban catchment with a population of 25 000 inhabitants located in an area of 1427 ha. The site is located in the western part of Oslo, the capital of Norway. The sewer network consists of a separate system in the upper part and mainly a combined sewage system in the middle and lower parts. The water quality in Hoffselva is poor due to pollution from 22 combined sewage overflows (CSOs) discharging to the river during rain events.

The objective of the high rate filtration (HRF) demonstration at Hoffselva is to improve the water quality in peri-urban areas using innovative HRF local treatment solution that enable cost efficient, sustainable mitigation of overloaded sewer systems and thereby increasing the value of Eco Service System (ESS).

HRF system is developed by Inrigo Water together with other partners. The HRF CSO treatment is based on upflow filtration with floating filter media and downflow cleaning technology. Filtration removes debris and big particles in the lower portion of the filter media layer. Suspended solid (SS) and particulate organic matter are trapped inside the filter media layer. The overall removal of SS and BOD is 50% - 80% for CSO treatment. This treatment process does not require any coagulant (or other chemicals) because the extremely-small special filter media is used.

HRF CSO treatment system is a technology which has advantages such as: simple operation, less maintenance, low investment, energy conservation, space saving, no chemicals. The major objective in this demonstration plant is trying to investigate the CSO treatment efficiency under Norwegian sewer and climate conditions for improving the ecological system in Hoffselva, and further to develop a manhole-type HRF system for CSO local (decentralized) treatment. On the other side, how to minimize the construction/investment cost and operational cost is also an important mission during the demonstration.

UPCOMING EVENTS

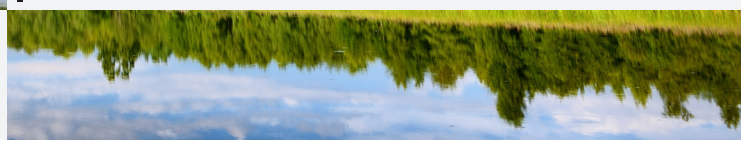
9-13 NOV
Ecosystem Services Partnership (ESP) conference 2015
Organiser: Ecosystem Services Partnership
Country: Stellenbosch, South Africa
http://www.espconference.org/espconference2015#.VjNTAfl_Okp

20 NOV
Seminar for Climate Change
Organiser: European Comission
Country: Madrid, Spain
http://www.iies.es/agenda/Madrid-Seminario-Cambio-climatico-COP-21_ae371960.html

18-21 JAN
International Water Summit
Organiser: Masdar
Country: Abu Dhabi, United Arab Emirates
http://www.iagua.es/eventos/international-water-summit

1-3 FEB
IWA Water Loss Conference 2016
Organiser: IWA, WLSG, IWWA and MM Activ Sci-Tech Communications
Country: Bangalore, India
http://www.waterloss2016.com/

10 FEB
EIP Water Conference 2016
Organiser: EIP Water
Country: Leeuwarden, The Netherlands
http://www.eip-water.eu/save-date-next-eip-water-conference-10-february-2016-leeuwarden



PARTNERS