
3rd ESP
EUROPE
CONFERENCE
Tartu, Estonia
Ecosystem Services Science,
Policy and Practice in the
face of Global Changes
2021
7-10 June

ATENAS

Water JPI

Water Works 2017

ACADEMY OF FINLAND

Narodowe Centrum Badań i Rozwoju

ANR

LYON CITY DEMO SITE

The Yzeron River

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Blue – Green Infrastructure

management of stormwater and adaptation to climate change

16, avenue Emile Evellier
69290 Grézieu-la-Varenne, France
Tél : 04 37 22 11 55
https://**www.riviere-yzeron.fr/syndicat/**

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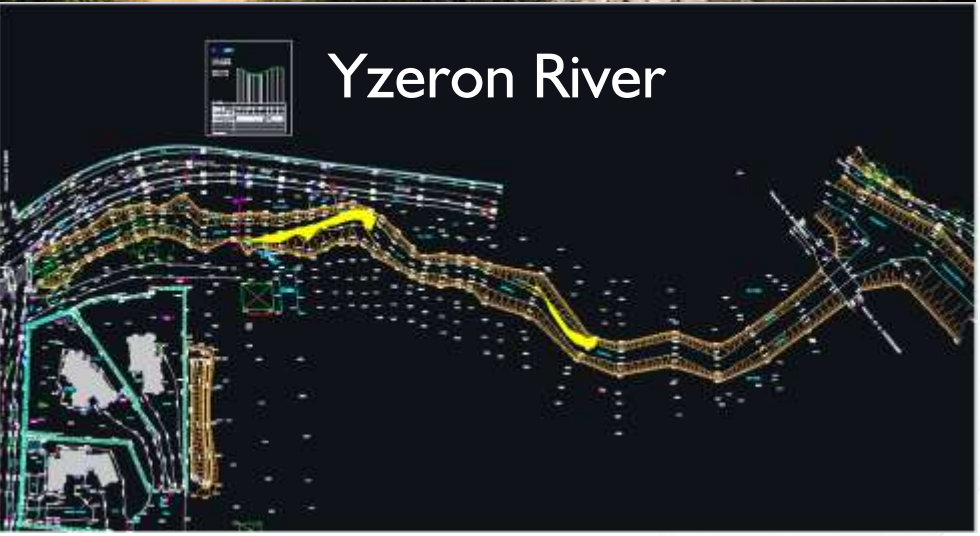
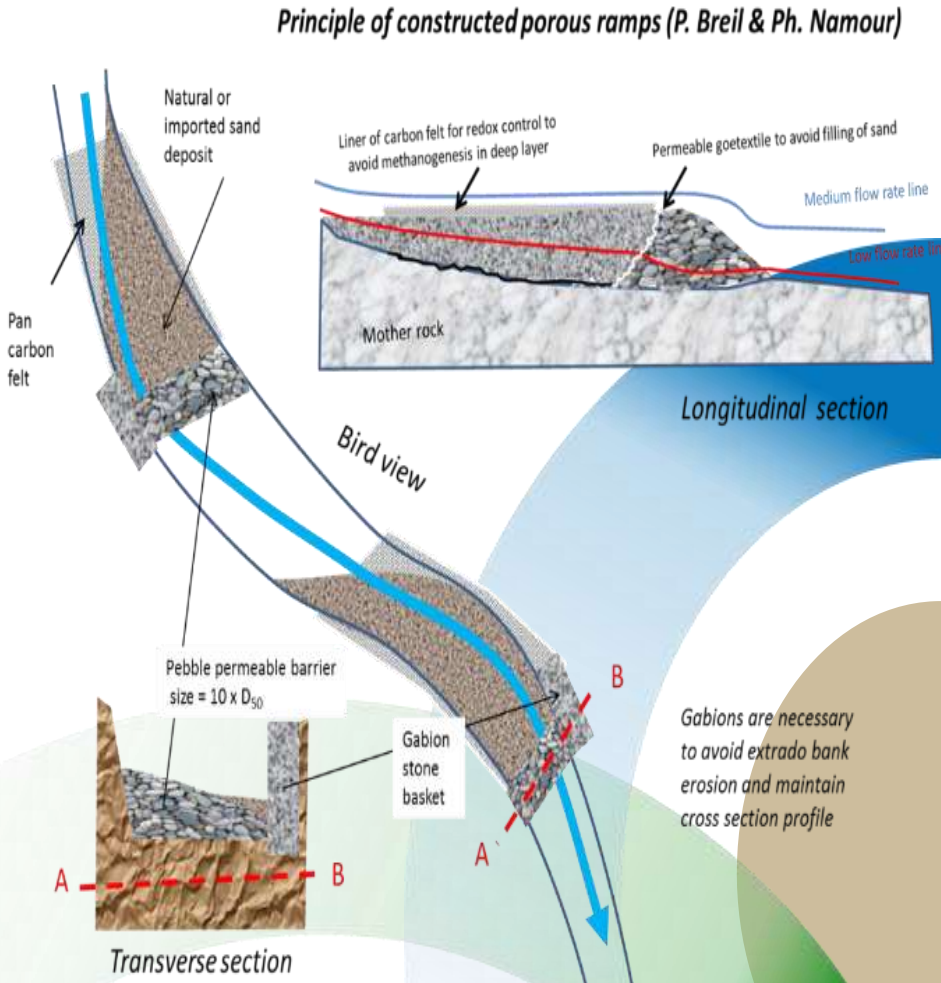
General presentation of NBS demonstration sites in the Yzeron basin (France)

Pascal Breil, Gilles Armani, Philippe Namour and Fanny Courapied





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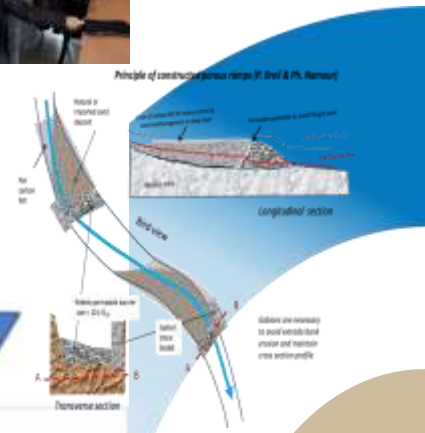
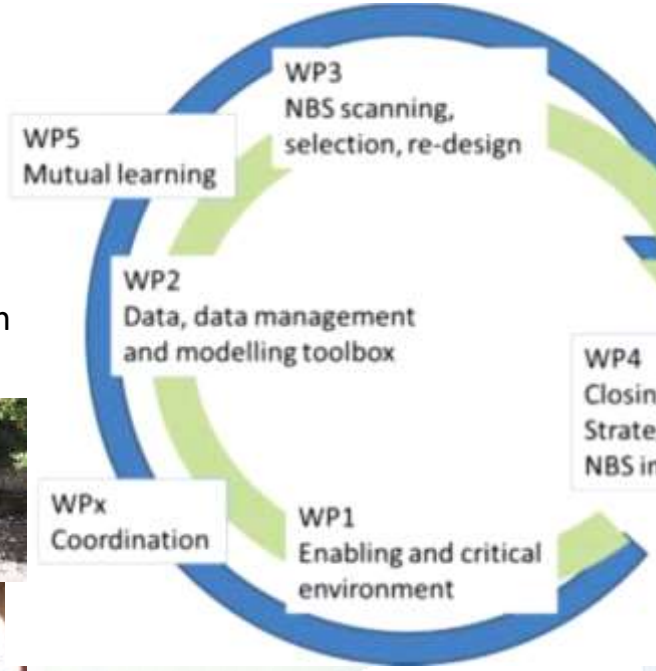
Present contribution to ATENAS WPs'

WP3: workshops on NBS visioning and codesign with river and sanitation syndicates of the river basin.

WP5: Mutual learning, public information

WP2: decision supports maps





WP2: design, implementation, construction phases and monitoring strategy

WP1: Factsheets on barriers and ways to overcome

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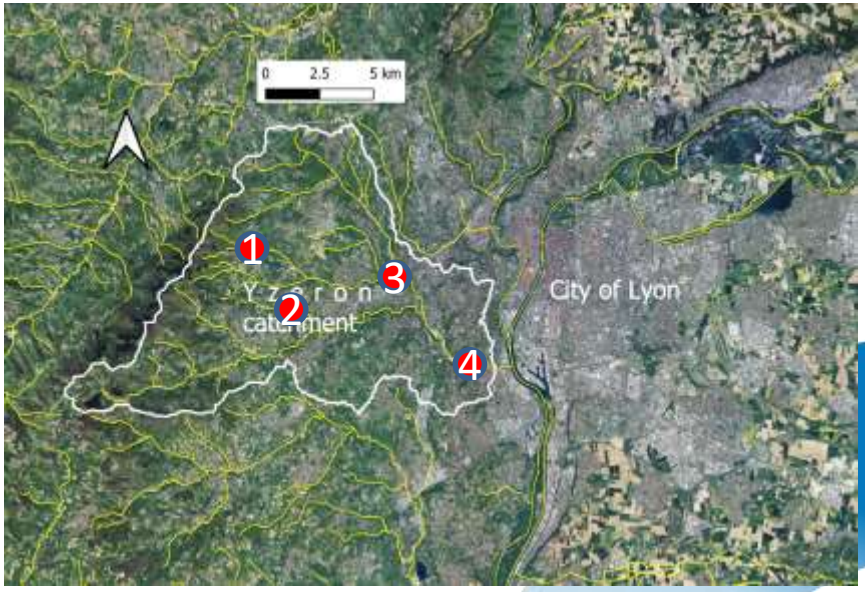
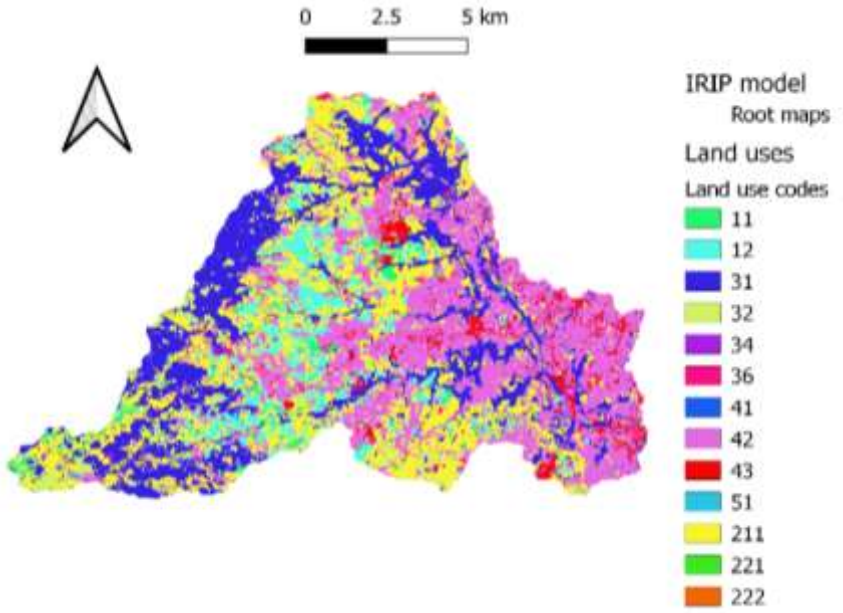
French demosites catchement presentation





CES-BIO code	Land use type	IRIP code
11	summer culture	1
12	winter culture	0
31	deciduous forest	0
32	coniferous forest	0
34	lawns	1
36	woody moors	0
41	dense urban	1
42	diffuse urban	1
43	industrial and commercial areas	1
44	road surfaces	1
45	mineral surfaces	1
46	beaches and dunes	0
51	water	1
53	glaciers or snow	1
211	meadows	0
221	orchards	0
222	vineyards	1

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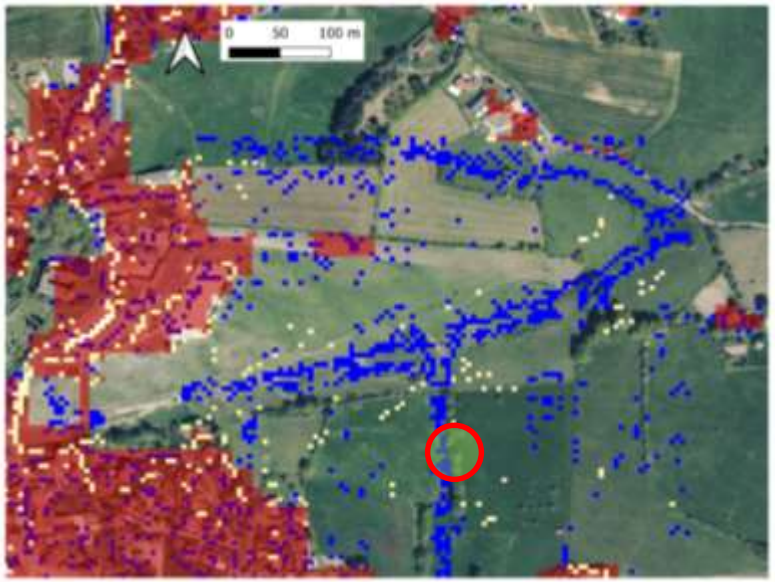
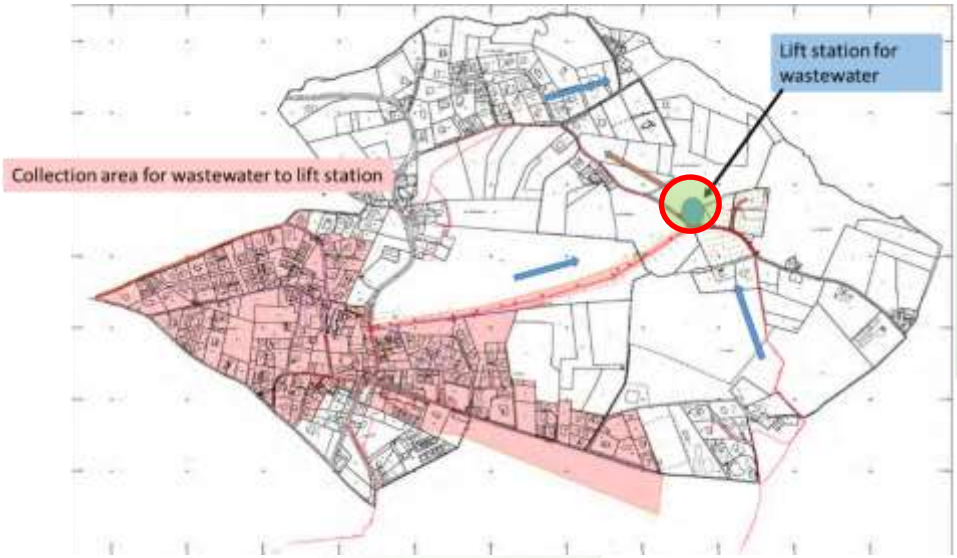
DEMOSITE 1



Problem to solve:
Current situation with a very degraded combined sewer pipe, which runs from the village to the lift station. This causes drainage of the wetland area crossed and frequent overflowing of the lift station into the natural environment.



Diagnosis of runoff paths :
Modelling of intense overland runoff with highlighting of the production area coming from the village (red), erosion areas (yellow) and accumulation areas indicating the wetland (blue).

NBS solution under study:
construction of a treatment plant based on a filter planted with reeds. Replacement of the degraded network with a new wastewater network, which involves separating rainwater from wastewater from the village. Choice of the location of the planted filter to avoid its flooding and preserve the wetland.

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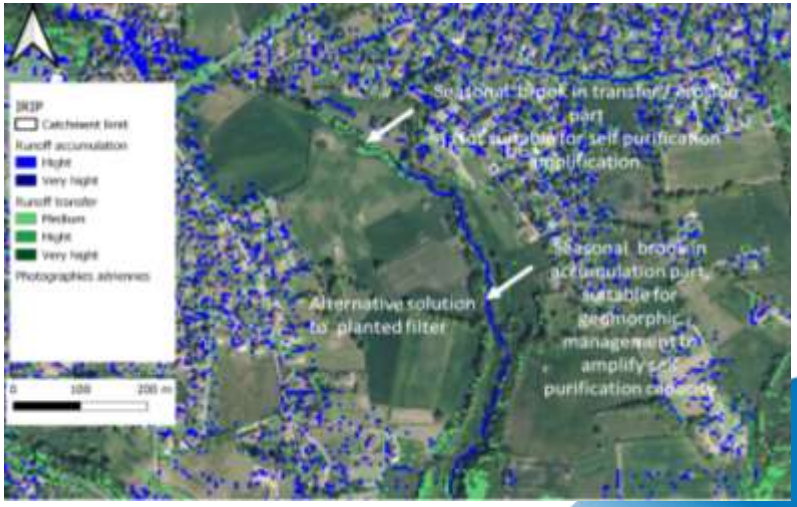
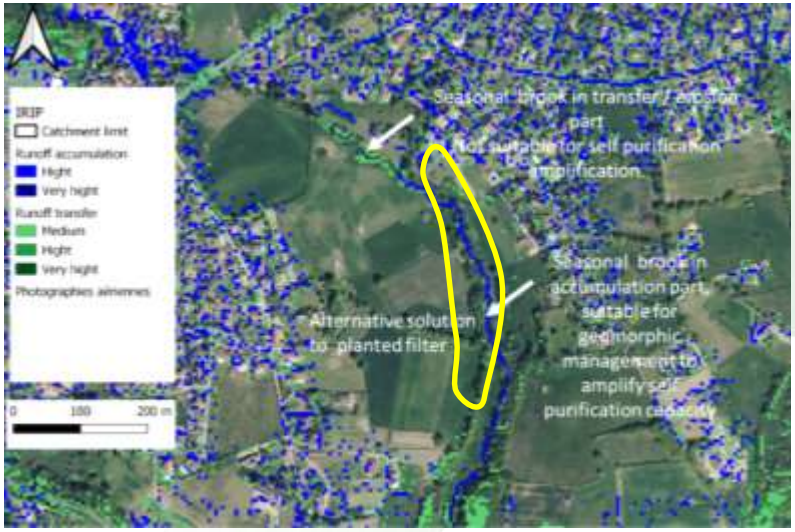
DEMOSITE 2



Diagnosis of runoff paths :
Modelling of intense runoff shows that there is no opportunity for gravity accumulation on the left bank. On the other hand, an accumulation process (blue) exists in the watercourse downstream of an erosion zone (light green).

Problema to solve:
Frequent storm surges impact the ecological functioning of the seasonal watercourse. These spills are difficult to avoid. A first solution was to treat the overflows in a wetland to be created in a meadow field (in green). However, gravity constraints make this solution impossible. Moreover, private properties on the right bank do not accept to give up land.



NBS solution under study:
A topographical study of the bed of the watercourse is underway to determine where to place porous ramps that will allow the natural accumulation of sand transported by this watercourse. The principle is to favour the infiltration of pollution into the sand banks to provoke a self-purification process which is thus amplified.

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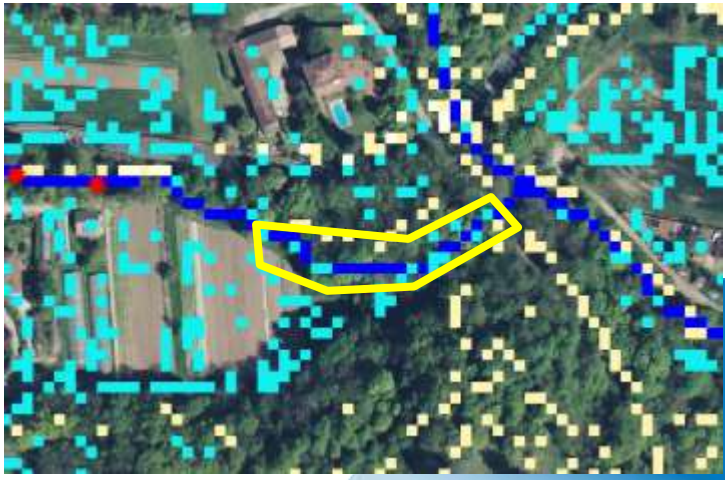
DEMOSITE 3

Diagnosis of runoff paths : Modelling of intense runoff shows that there is no opportunity for gravity accumulation on the left bank. On the other hand, an accumulation process (blue) exists in the watercourse downstream of an erosion zone (light green).



Problem to solve:
Frequent storm surges have an impact on the ecological functioning of this seasonal watercourse. These discharges are difficult to avoid. Replacement work for the severely degraded combined sewerage system will take time as it is very expensive. The numerous storm overflows along the river do not allow for the development of point-by-point solutions to pre-treat storm discharges.

NBS solution under study:
A solution to amplify the self-purification capacity of the river was completed in September 2020. This consists of locally modifying the topography of the watercourse to promote the creation of hyporheic biofilters. A topographical study of the bed of the watercourse as well as a hydraulic study made it possible to specify the locations of devices called porous ramps.

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DEMOSITE 4

Diagnosis :
The concrete bed, developed over 2 kilometers, has disconnected the river from its groundwater table and prevents the deposition of sediments. This prevents the self-purification process from working in an area that receives a lot of discharges from stormwater spillways that are loaded with organic matter.

Problem to solve:
The urban course of the Yzeron was channeled and the riverbed concreted in the 1970s to gain space to build. Several floods occurred in the 1990s. They are partly the result of upstream waterproofing, but mainly due to a change in the rainfall regime with more intense rains. The river syndicate of the Yzeron basin took charge of the project with the principle of increasing the flow gauge to better contain the overflows while renaturing the river.

Adopted NBS solution :
The water neck has been widened and redesigned. The connection between the river and the groundwater has been restored, allowing the self-purification process in the hyporheic zone to function properly. The banks have been consolidated by biodegradable geotextiles. Native plants and trees were planted to recreate a diversity of terrestrial habitats. Roots will be used to ensure the long-term stability of the banks. Pebbles and large boulders were used to create a stabilized hydraulic diversity in the stream. A footpath has been built to allow public access. However, night lighting was prohibited to allow nocturnal species to move about. Garbage cans have been banned as they are taken away during the flooding of the watercourse. This poses a problem of cleanliness of the site which is very busy.

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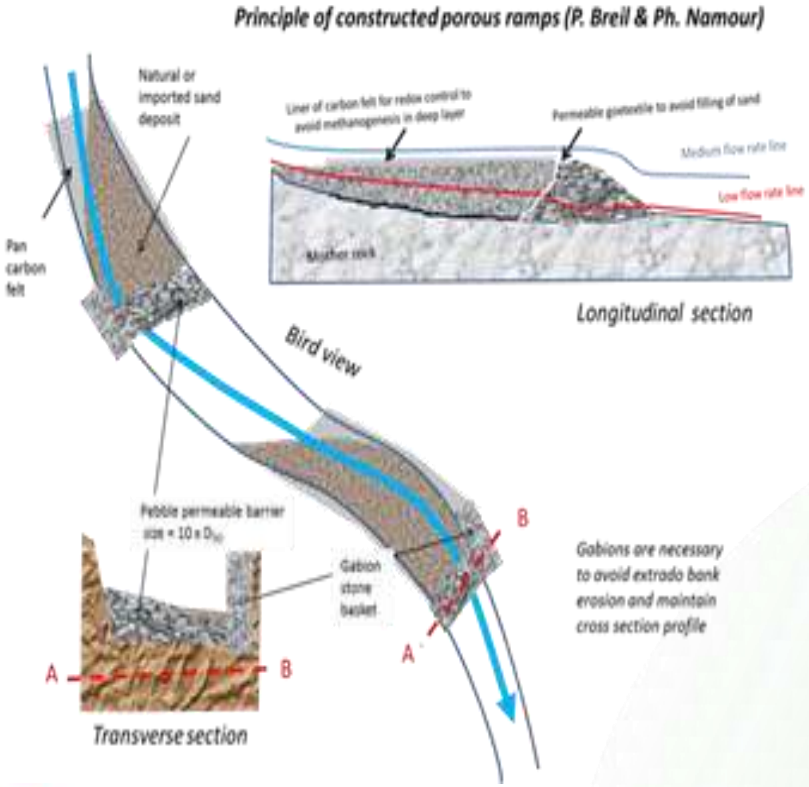
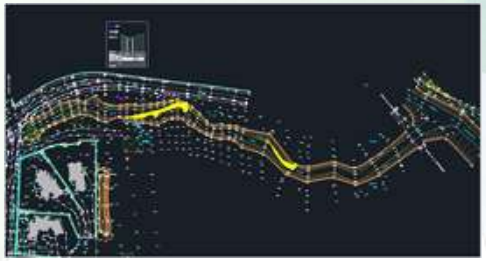
Scientific and technological results

Scientific: WP2 / D1.1. Irip model implementation in selected catchments in each partners' country

Technical: WP2 / D2.2. design, implementation, construction of a new NBS in the french demosite.





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Collaboration, coordination, mobility, synergies

WP5 : FR

Signature of an agreement with the sewage system union to provide ATENAS project expertise on nature-based solutions as an alternative to limit grey solutions. This task consist in assessing and discussing proposals made by consulting offices which are in contract with the sewerage syndicate. The goal is to retain as much storm runoff as possible to recharge local groundwater and small rivers in the catchment area. This is part of the mandatory sewer system renovation strategy.

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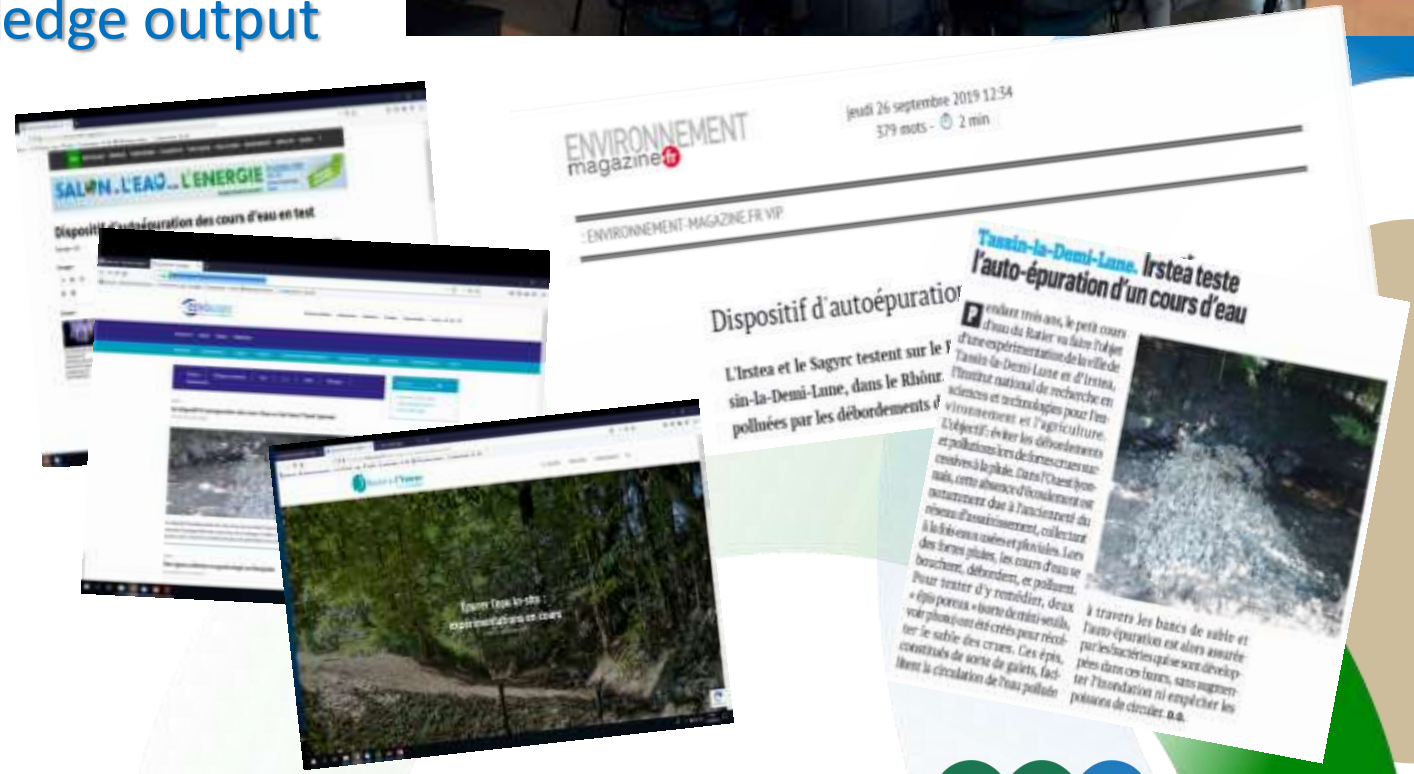
Stakeholder engagement

WP3: contribution to M3.1 and /FR/ 4 workshops over the period 2020-2021 in France on demonstration sites 1, 2, 3 and 4 with the river syndicate and the sewerage system syndicate.

Impact and knowledge output

WP5: EN/ D.5.2 / Presentation of the new implemented NBS on demonstration site number 3 in two trade journals and three online journals.



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Continuation of the work in the future

In case the new NBS developed in France to increase or recover the self purification capacity of small river is effective (to be demonstrated using monitoring (D.2.2)) the solution will be replicated by the river basin syndicate and issued to the ARRA association which brings together 252 members who are both individuals (public and private employees) and structures (as legal entities): departments, administrations, public establishments, local authorities, river syndicates, consultancies, companies, associations, training organizations, research institutes https://**www.arraa.org/nos-missions**

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