

Implementing nature-based solutions in the Lèze valley, France

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Nicosia, 13-15 October 2025



European
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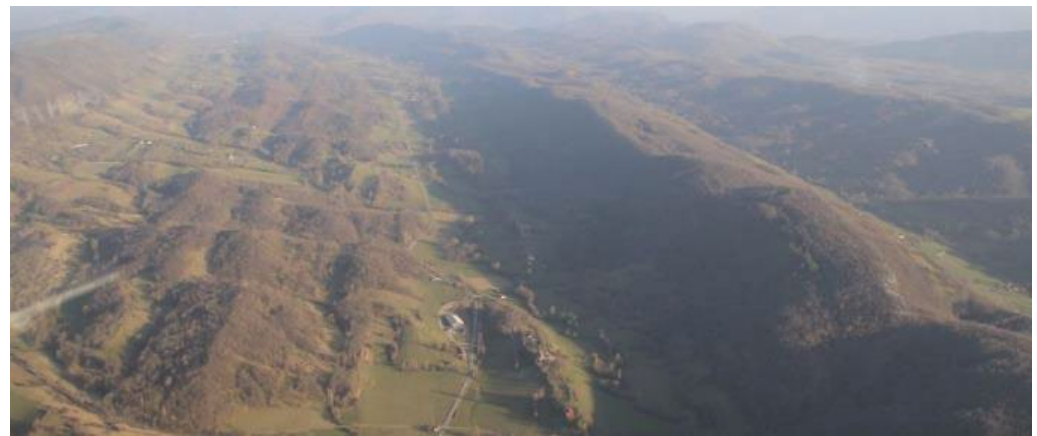


Implementing nature-based solutions in the Lèze valley, France



- 1. Managing rivers & flood prevention in the Lèze valley**
 - 1.1 The Lèze valley**
 - 1.2 Water challenges**
 - 1.3 SMIVAL**
- 2. Previously implemented NBS**
- 3. The Spongeworks project**
- 4. Perspectives**

The Lèze valley



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Water challenges



- **Floods & mud flows**
- **Water quality**
 - Nitrogen
 - Phosphorus
 - Weirs
 - Low water level



Existing sponge measures

- ✓ Grass strips & hedges
- ✓ Flood breaking hedges (30km planted 2009-2018)
- ✓ Agroecological practices (crop rotation, green cover, mulching, low till agriculture, and crop and livestock integration)
- ✓ Agroforestry & hedges
- ✓ Agroforestry & low tillage
- ✓ Low carbon agricultural practices



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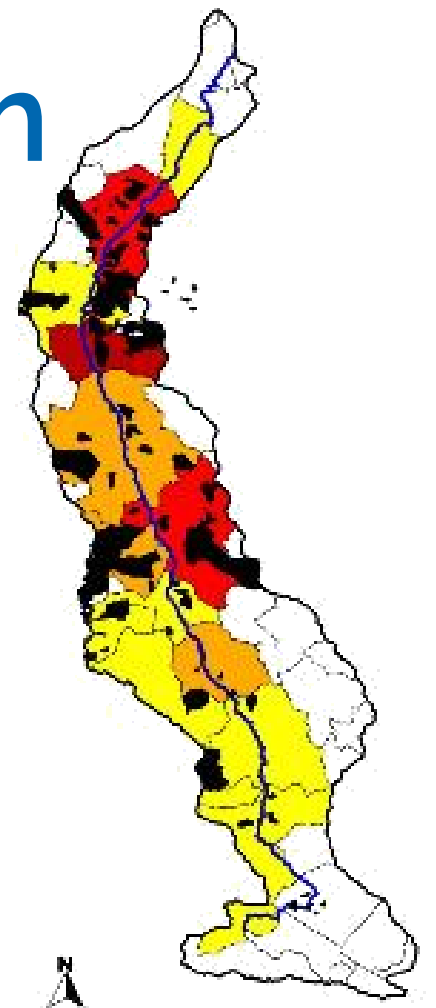
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Hedgerows planting program

To mitigate soil erosion risk

- ✓ Follow up flood and mudslide events
- ✓ Local concertations
- ✓ Implementation of public actions and works with municipalities



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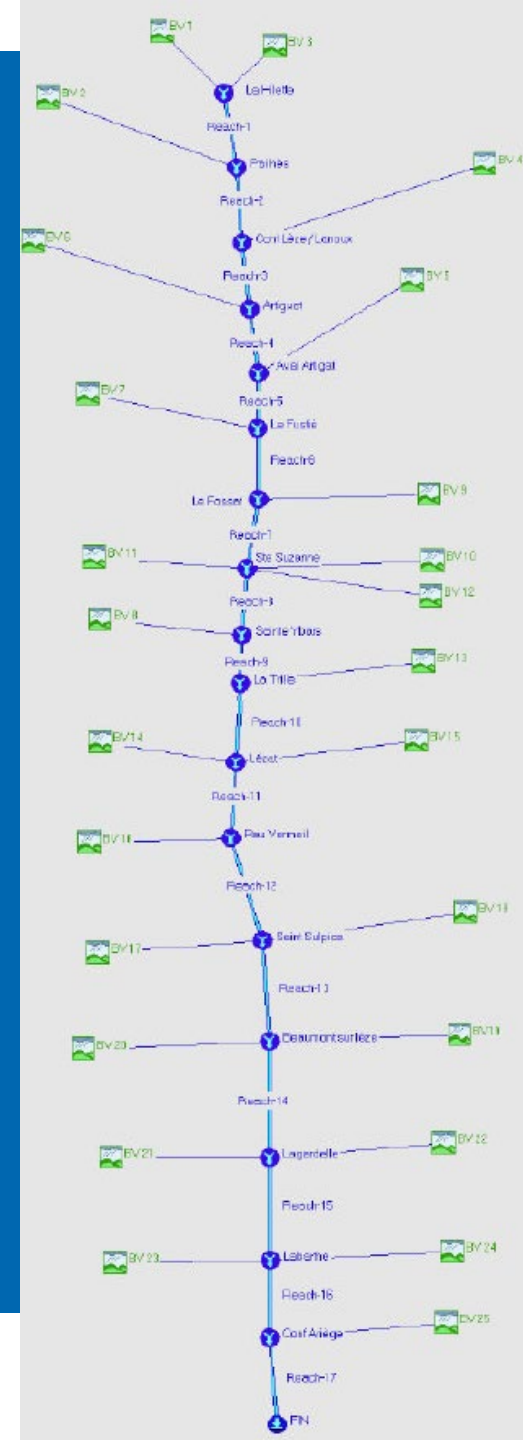
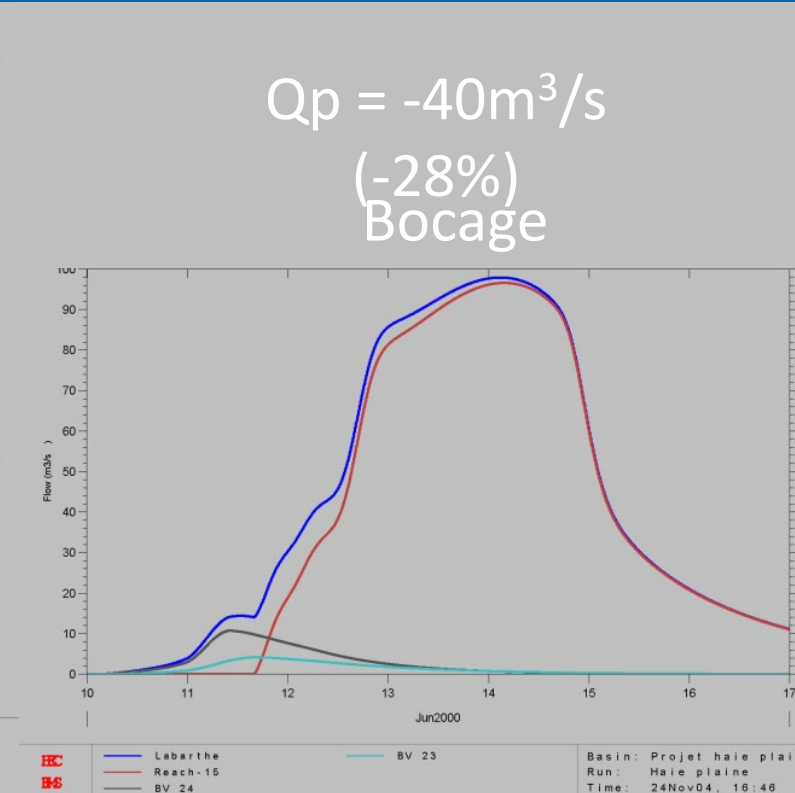
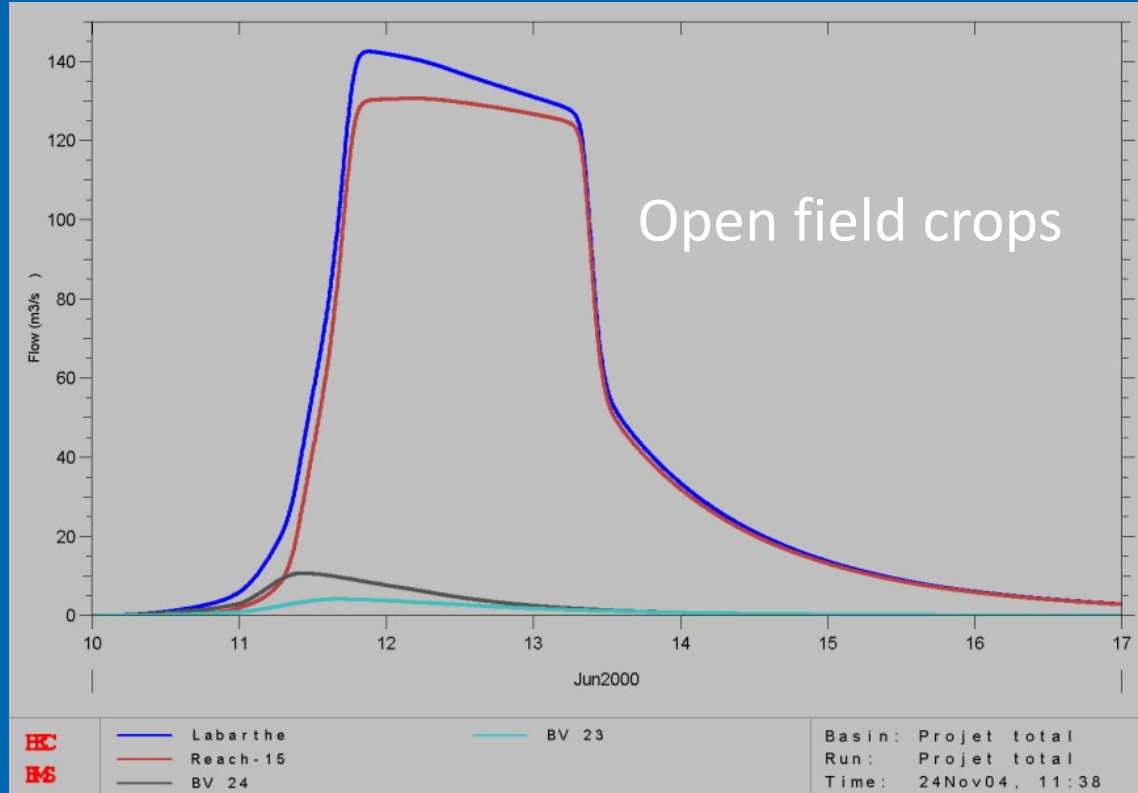
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Flood breaking hedges

Hydrologic modelization

! Hypothesis: open field crops $\neq$ reality $\neq$ bocage



Flood breaking hedges

2D hydraulic modelization

No effect on peak flow

+10% transfert time on 40 km

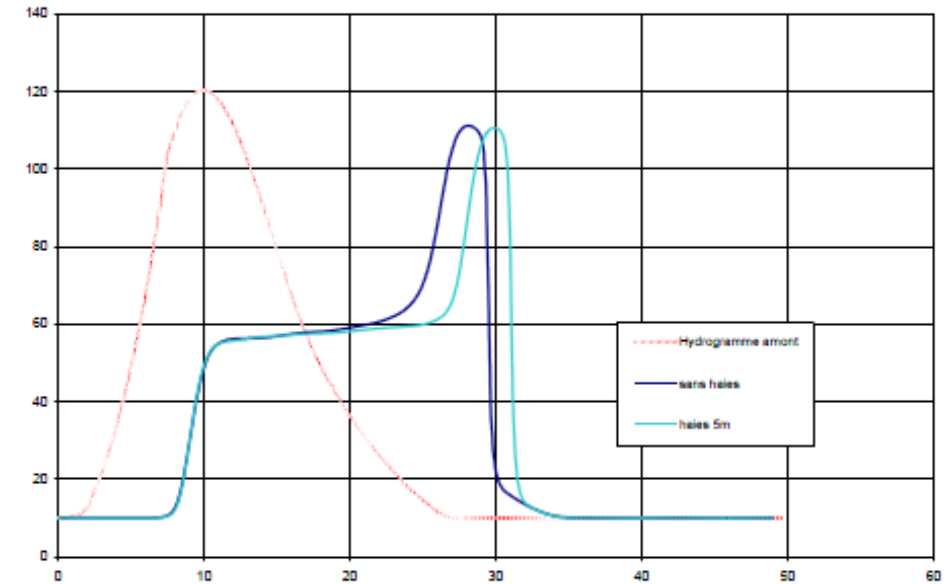
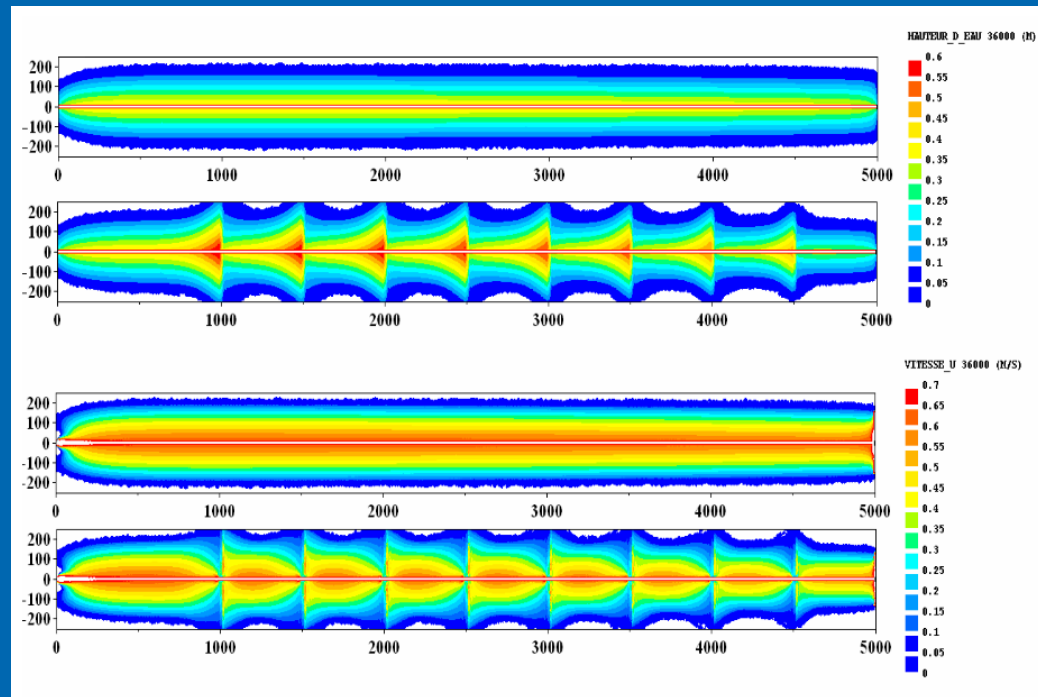
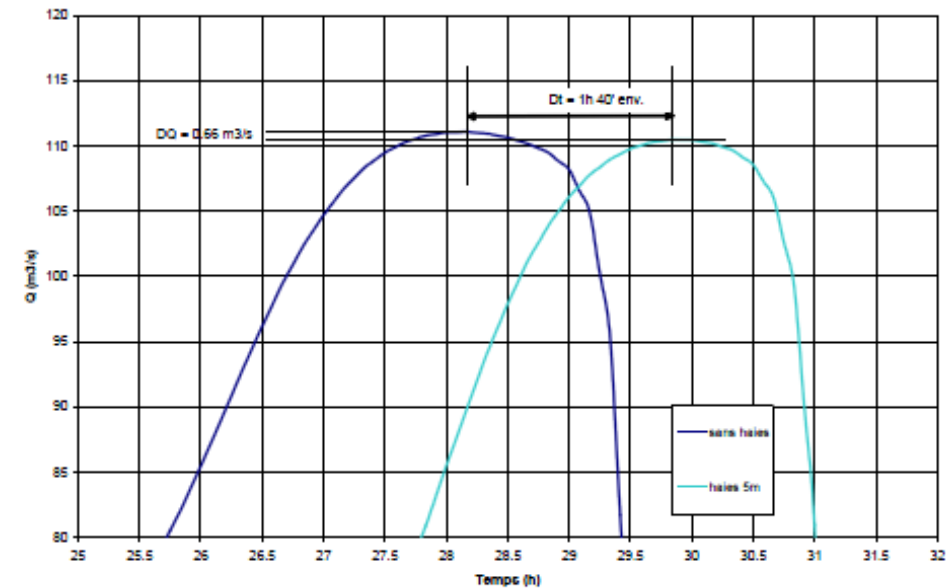


Figure 31 : Hydrogrammes amont et aval (40 kms)



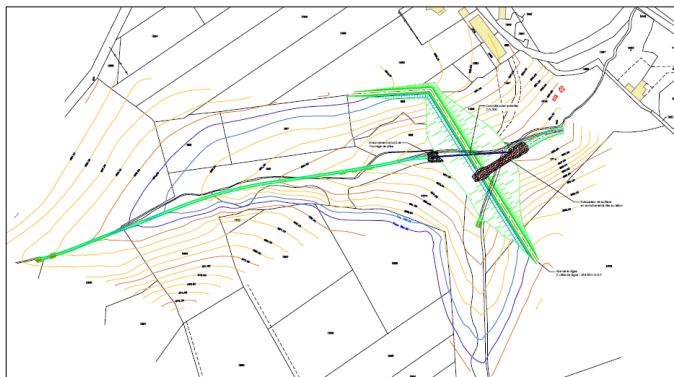
Flood breaking hedges



Aforestation

To mitigate flood & soil erosion risks

- ✓ Dam project (draft)
- ✓ Purchased land
- ✓ Vegetation growth



ETUDE HYDRAULIQUE COMPLEMENTAIRE DU PAPI LEZE			
Phase 3			
Scénario C - Tranche 1 - Ecrêteur du Fossat (Commune du Fossat)			
Etchelle : 1 / 5000			
Cote structure :	253.20m N.G.F.	Cote crête de digue :	254.00m N.G.F.
Cote déversoir :	253.00m N.G.F.	Largeur crête de digue :	3.50m
Volume nominal stockée :	67.532m³	Pente talus amont et aval :	3/1
Cote PHE Q5000 :	254.00m N.G.F.	Volume remblais (hors tal) :	24.785m³
Linéaire total digue :	250m	Emprise digue :	7.288m²



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Beaver dam analogs

To restaure river streams

- ✓ Learning by doing
- ✓ Low-tech solution
- ✓ Participative works



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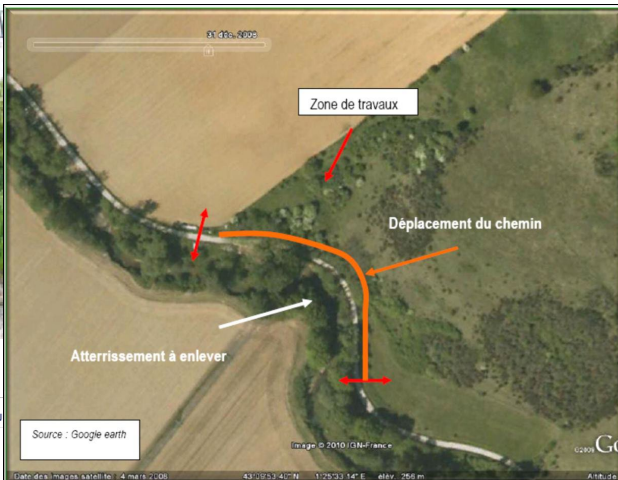
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Managing bank erosions

To stabilize banks

- ✓ Evaluation of erosion speed & risks
- ✓ Push back the stakes as soon as possible
- ✓ Willow cuttings



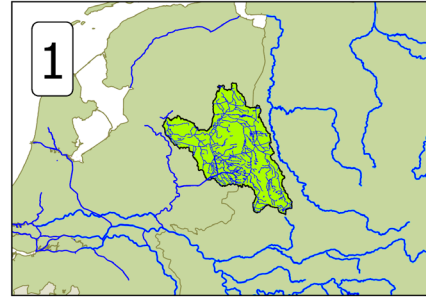
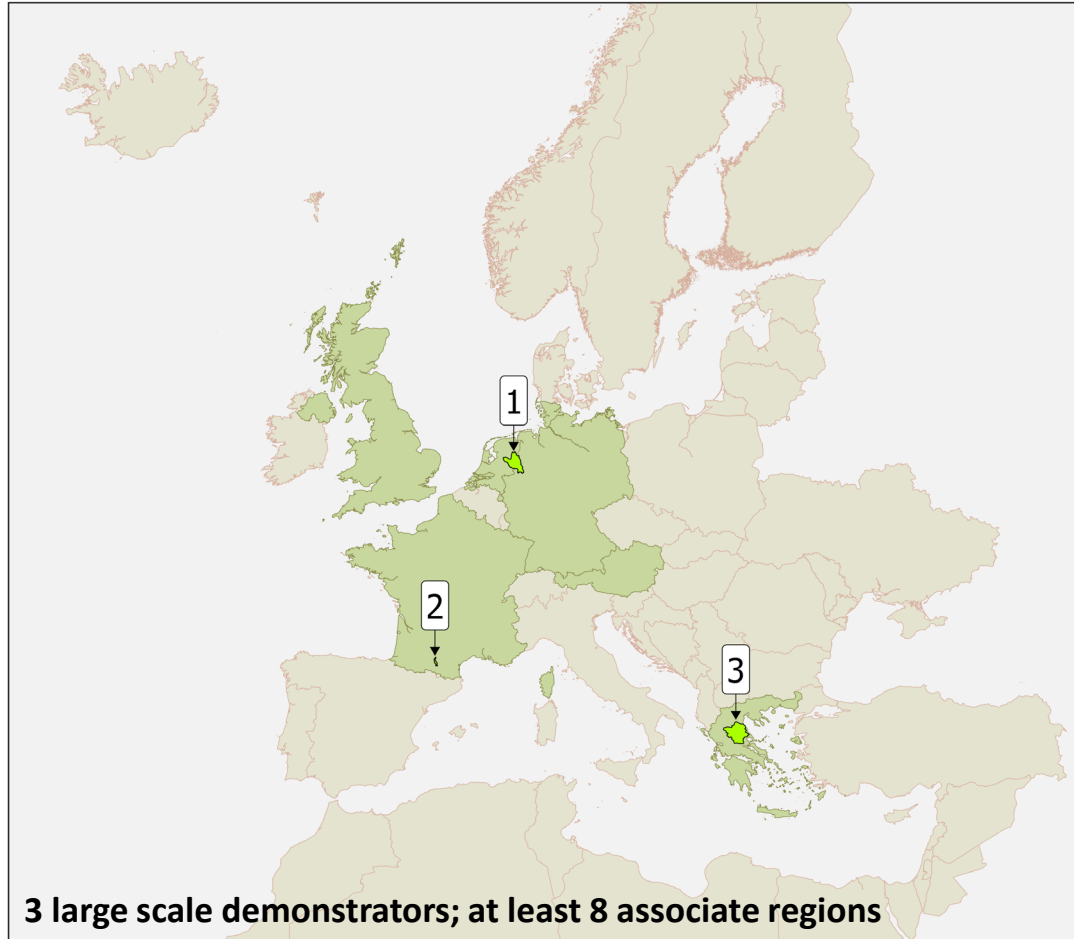
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SpongeWorks: Sponge strategies at landscape scale

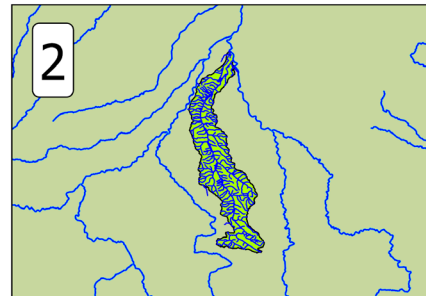


SpongeWorks: Demonstrators and associated regions



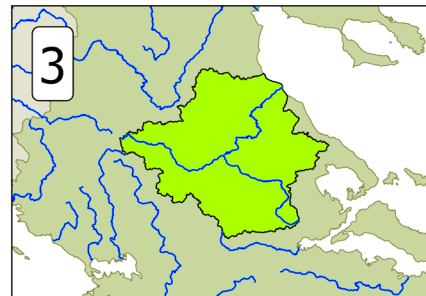
Vecht River Basin

Cross-boarder lowland basin; complex institutional setting with many authorities in 2 member states
Current main focus: water management for floods and droughts; Improving Water Framework Directive and biodiversity goals



Lèze River Basin

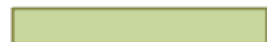
Hilly agricultural catchment, with many small rural communities
Current main focus: floods and related soil erosion management
Water quality improvements



Pinios River Basin

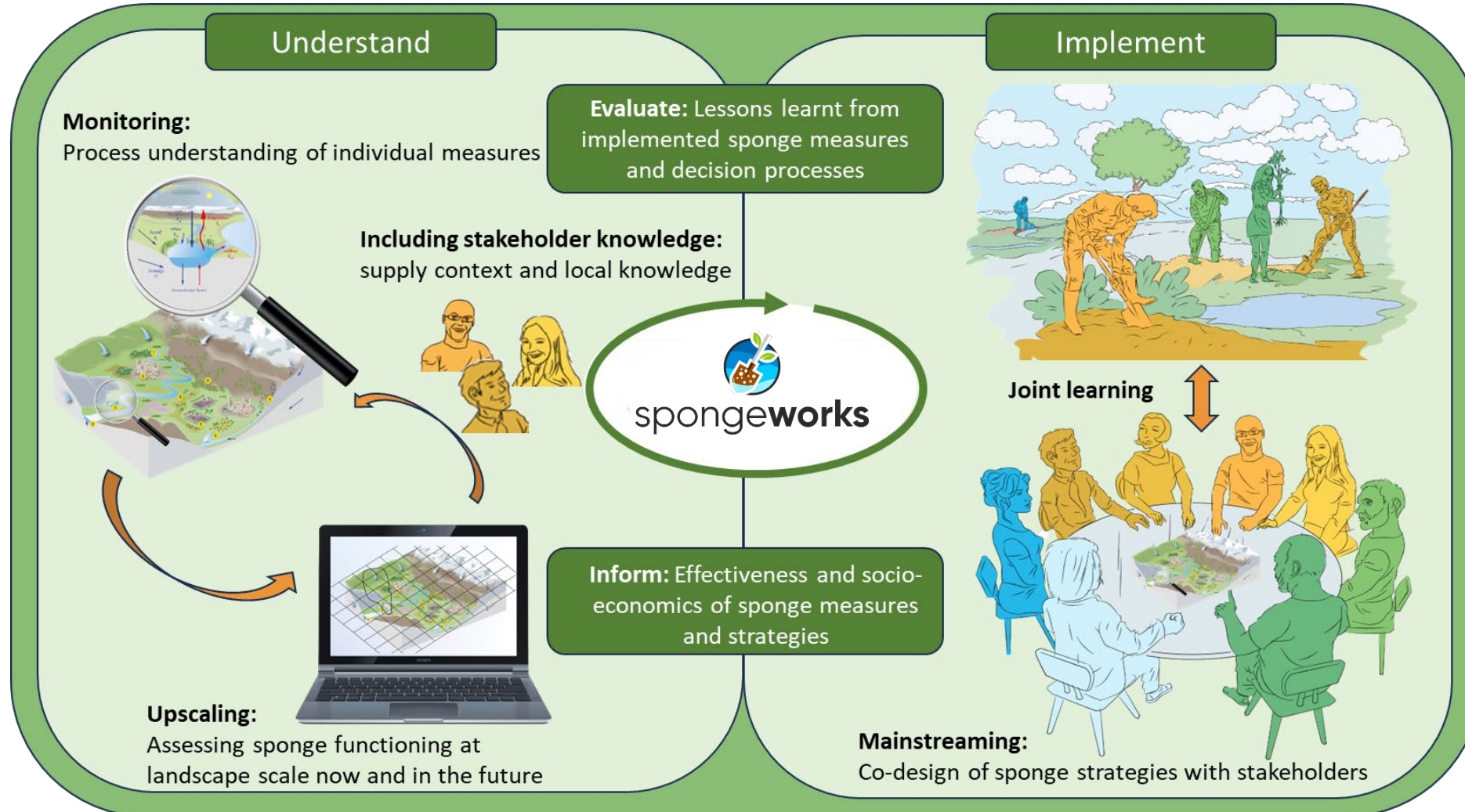
Intensive agricultural catchment under severe droughts with **many agricultural organisations**
Current main focus: (ground-)water scarcity and soil management
Water quality improvements

 Demonstrator basins

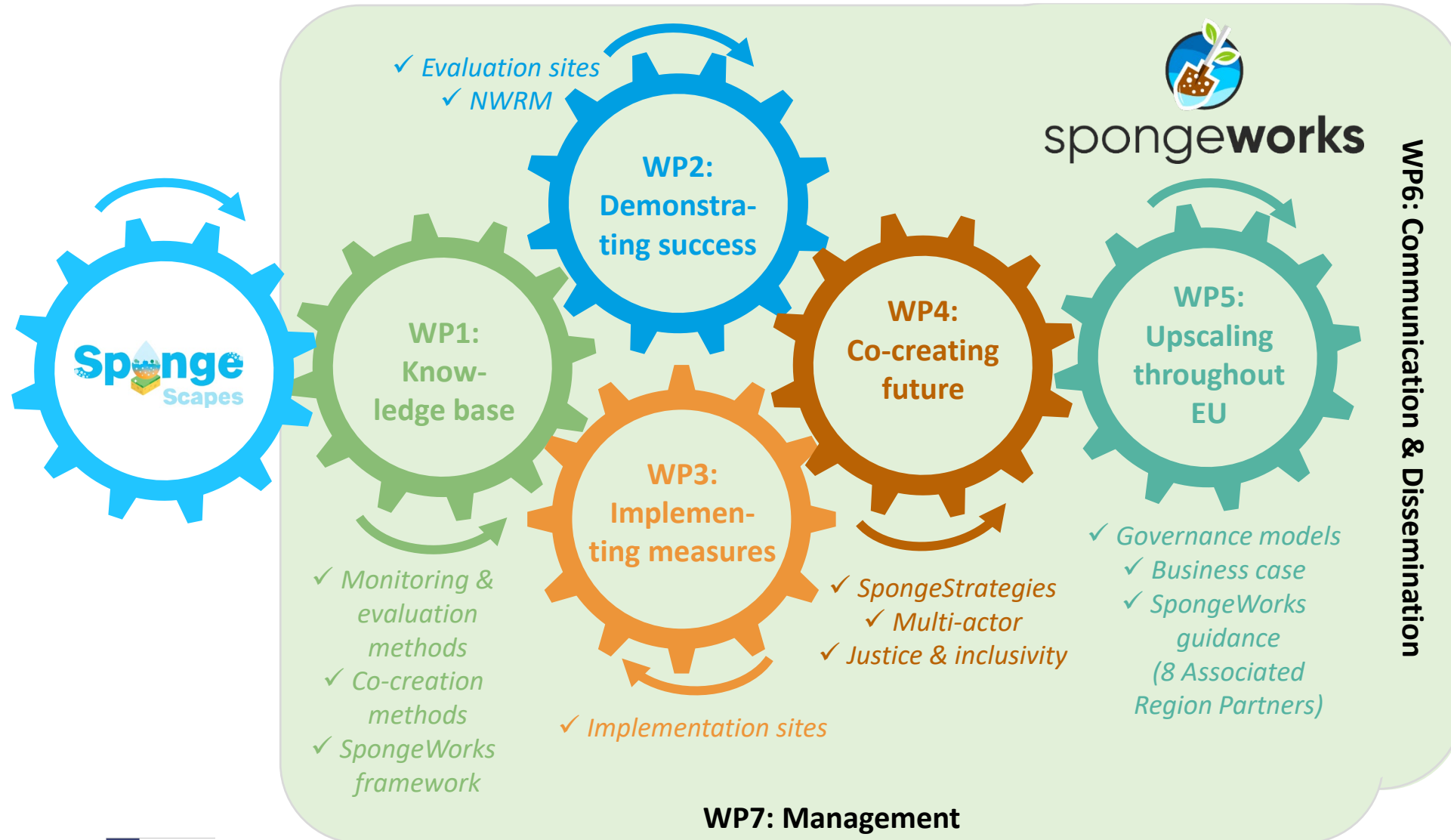
 Territories covered in consortium

 Territories targeted with AR programme

SpongeWorks: Approach



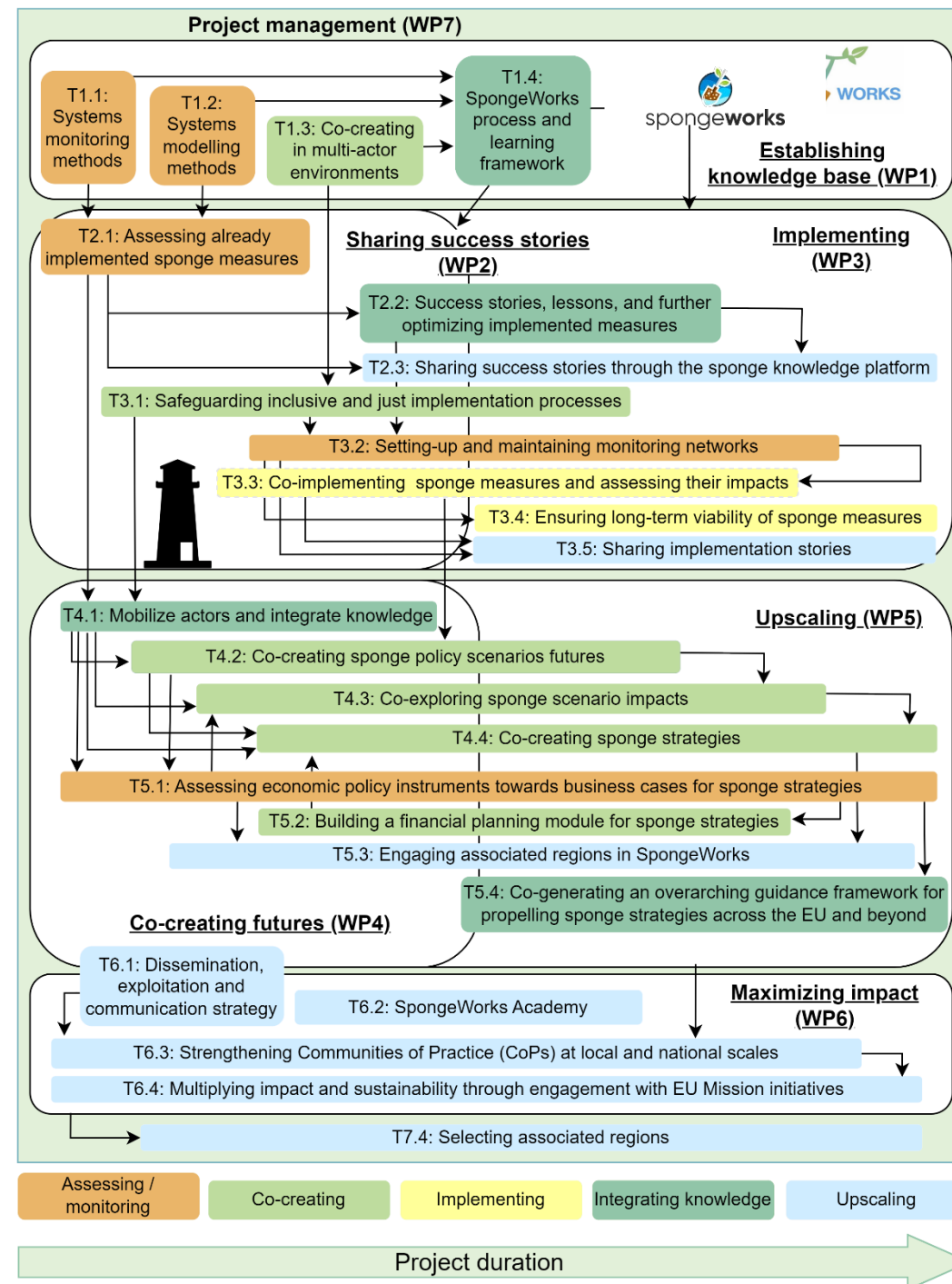
SpongeWorks: Work packages



SpongeWorks: Interactions

High interdependence:

- Close cooperation imperative



28 consortium partners + 8 associated regions

Research partners



Deltares



UNIVERSITY OF TWENTE.



Practice partners



SWRI
Soil & Water Resources Institute



e-trikala



PASECO

Gemeente Hardeberg



Associated regions



Knowledge partners



Decentralized Administration of Thessaly-Central Greece



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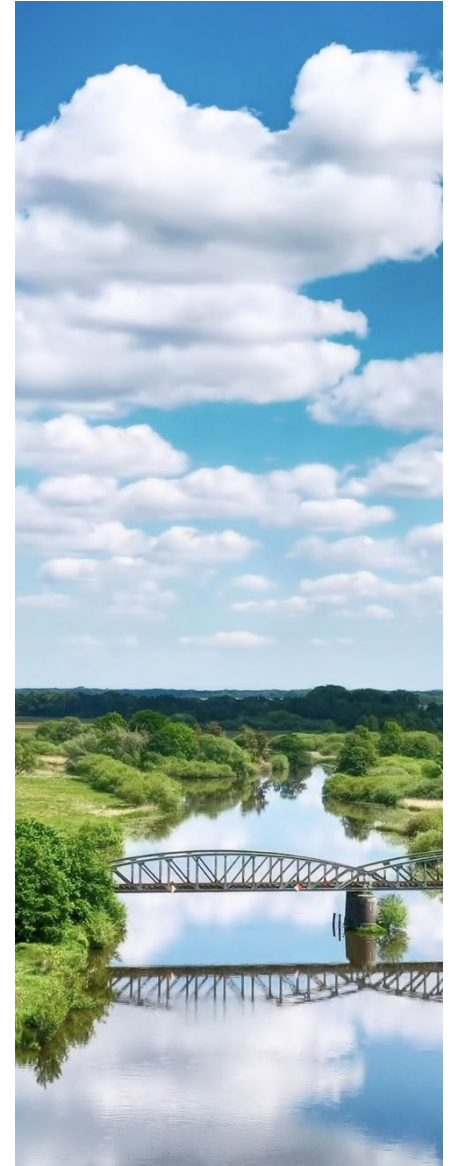
Lessons learned

Identified brakes

- Low impact of NBS on peak flow, unless it is a small flow
- To convince land owners & farmers
- Some administrative & financial issues vs. free market (*de minimis*)

Identified levers

- Combine sponge measures to reach higher effect
- Large concertation: you never know!
- Speak about successful stories
- Learn by walking, small steps: will it be enough?



My key messages

- Sponge measures are probably **cost effective** if we **include every environmental services** in **long term analysis**
Will SpongeWorks prove it?
- **Combine** NBS with structural and non structural actions
- NBS = **keep some space** for water and nature
- Let's **not wait to act** and **involve citizens**



Thanks for your
sponge attention



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