

Subsidising and leading the removal of small dams in Northern France

Stéphane JOURDAN and Jean-Luc CARPENTIER
Artois – Picardie Water Agency

✧ **Dam Removal Goes Alps!** ✧

Free online seminar about
the ecological, economic and social benefits of dam removal!
May 4th – 7th, 2021, 2-5 pm (CT)



Achieved with and special thanks for their help to :



. Elodie MAURICE

Caps et Marais d'Opale Regional Nature Park

. Benoît BLAZEJEWSKI α Benoît RIGAULT

Angling Federation of Pas-de-Calais



. Anne VIVIER α Sophie TUAUX

French Biodiversity Agency

. And Sandrine TRAISNEL α Hubert VERHAEGHE

Artois – Picardie Water Agency

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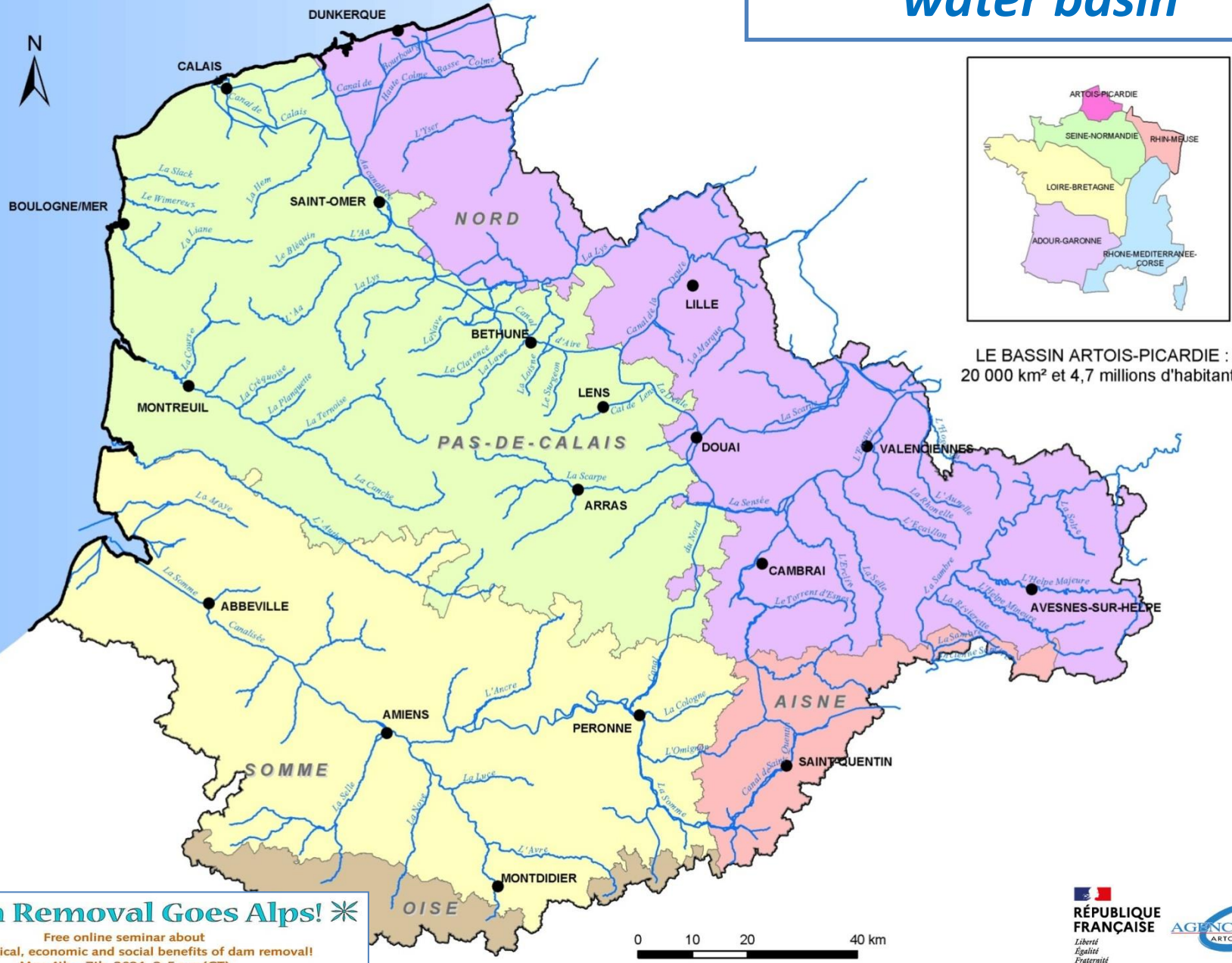
Stéphane Jourdan

Jean Luc Carpentier

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The Artois -Picardie water basin



The french network

EUROPEAN
Network



Contribution

Exchanges

NATIONAL CENTER

- Ministry of Ecology
- Water Agencies (**AEAP**)
- OFB
- DREALs
- Water Offices

NATIONAL
Network

TECHNICAL PARTNERS

- IRSTEA
- CNRS
- OIEau
-

PRACTITIONERS

Implementation

Public

- Local councils (EPTB, Syndicates)
- Associations, Federations
- Public Owners
- **AEAP**

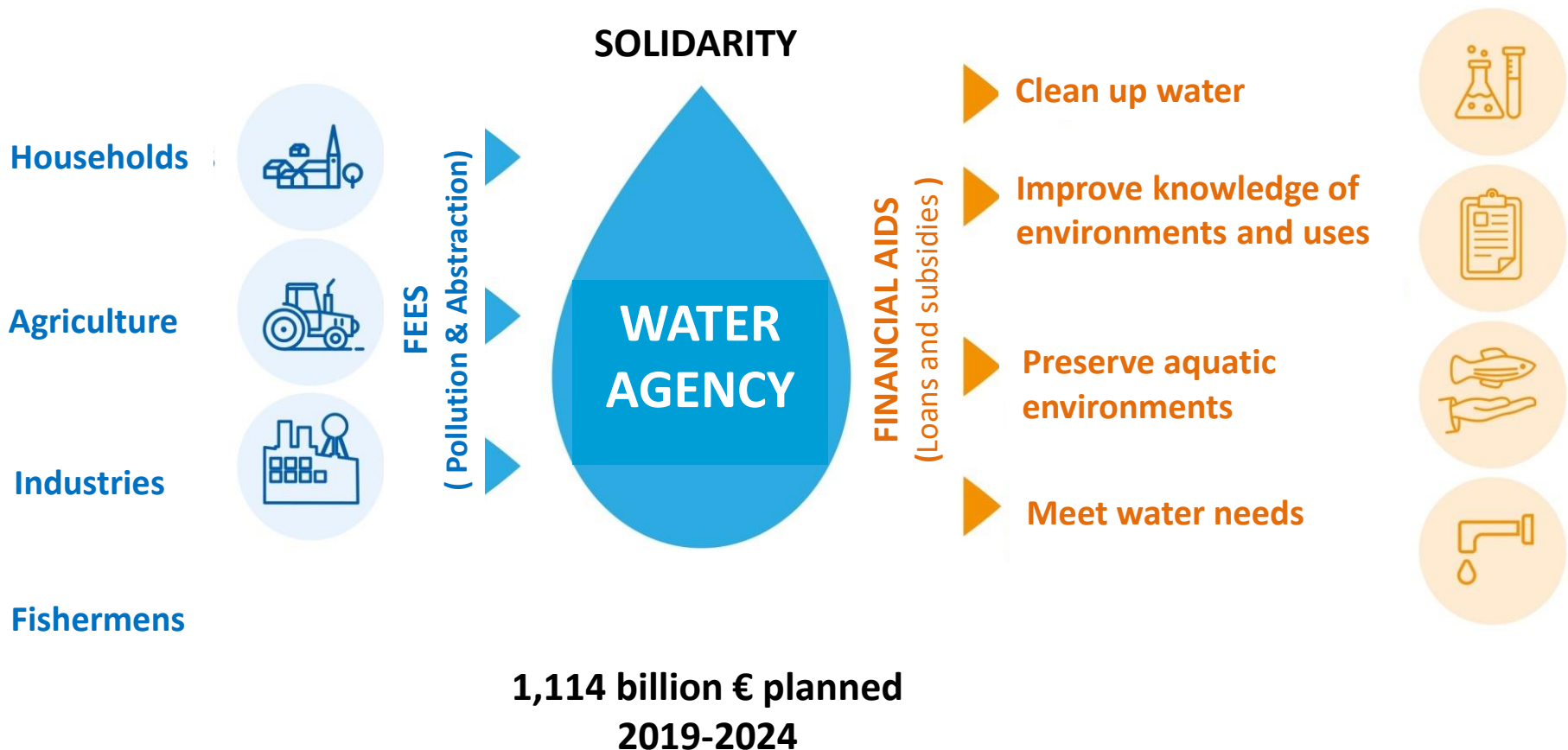
Private

- Consultancies
- Private operators
- Riparian owners and residents

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The Polluter Pays Principle & AEAP financial intervention program



2 river basin Districts (Scheldt and Meuse / Maas Rivers)



Hydromorphological elements supporting the biological elements

Hydrological regime

- quantity and dynamics of water flow
- connection to groundwater bodies

River continuity

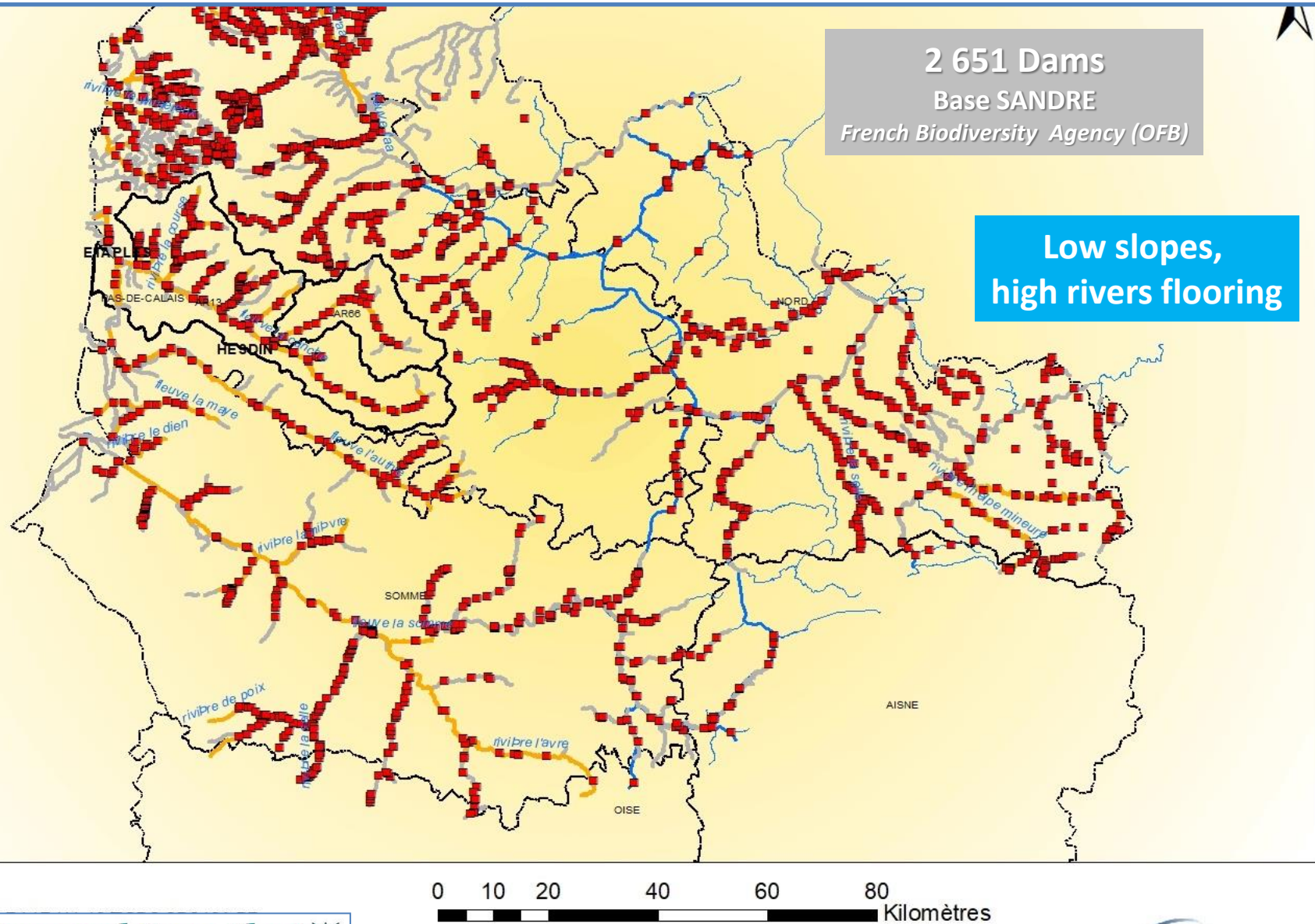
- French laws on river continuity
- « Basin » Policy

Morphological conditions

- river depth and width variation
- structure and substrate of the river bed
- structure of the riparian zone

Dams on Artois Picardie basin

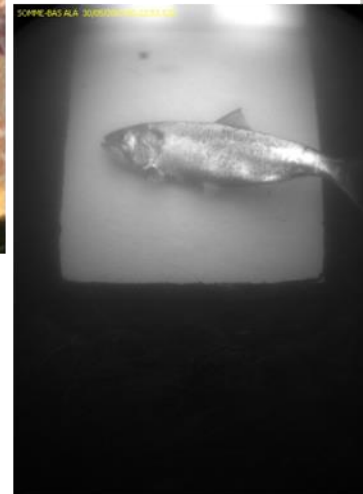
Fragmentation (1 dam per 2 km of rivers, 99 % minor than 2 meters high)



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What are stakes for migratory fishes ?



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Classified rivers



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Soils erosion / gullies => Impact on rivers



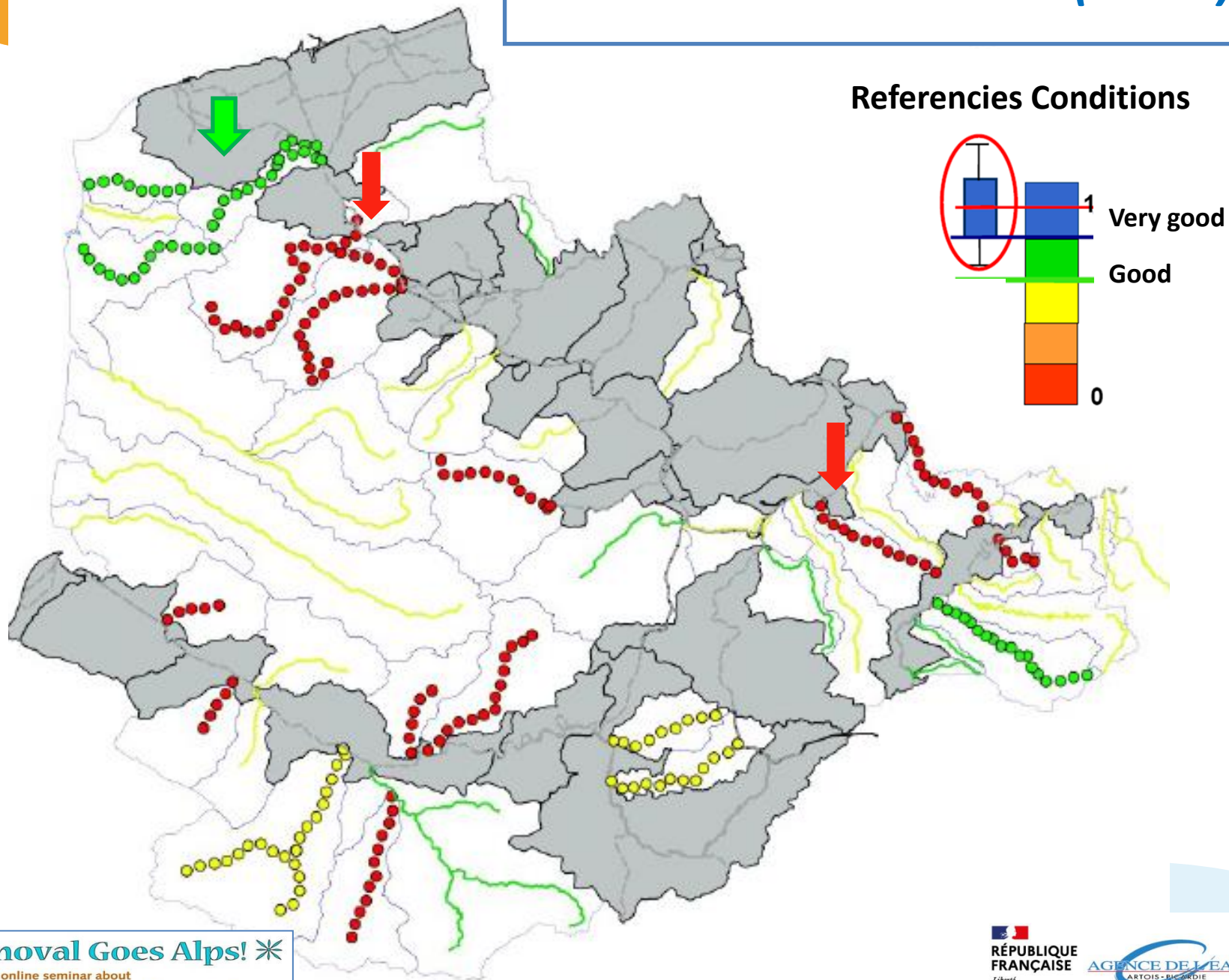
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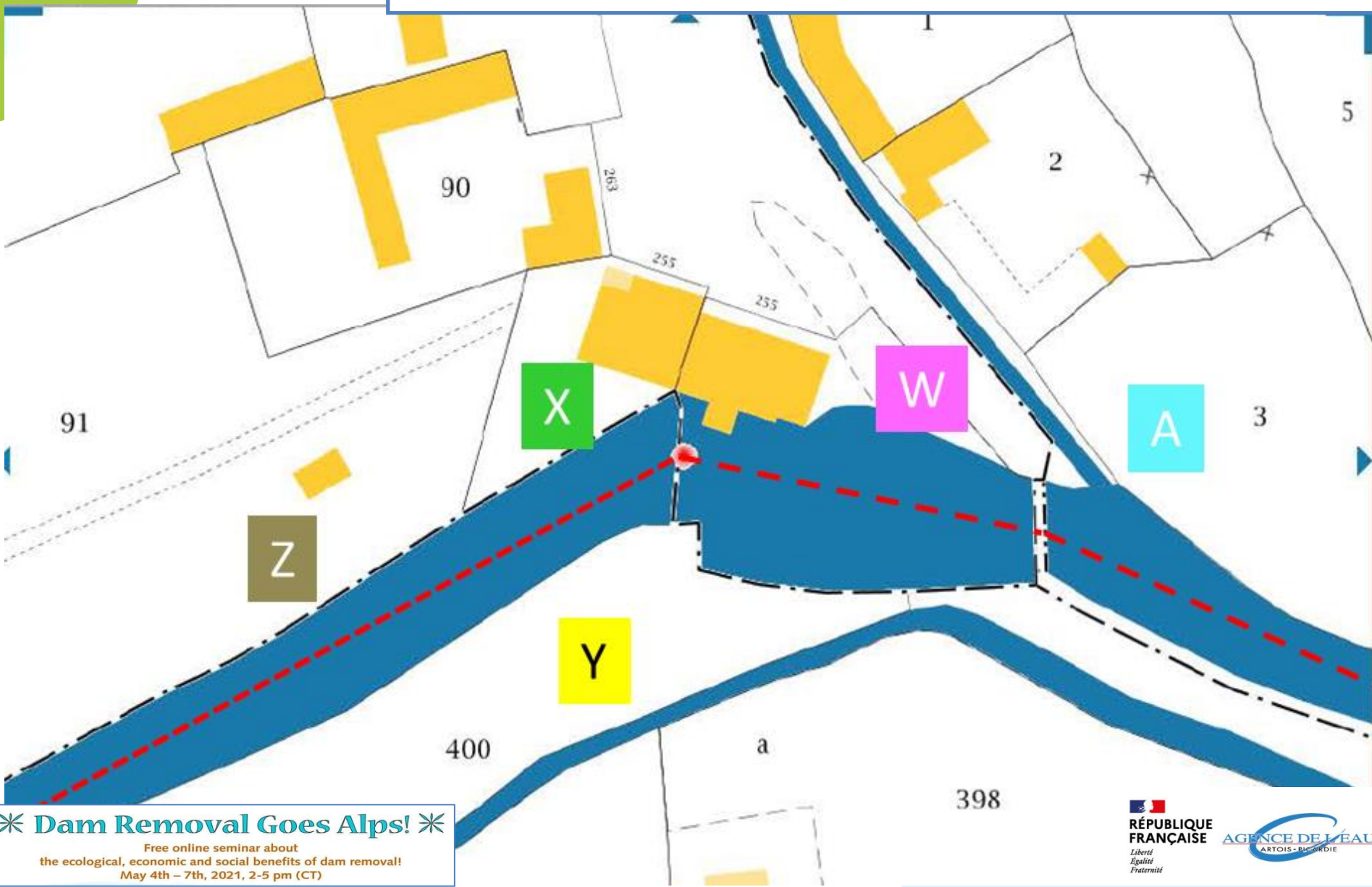




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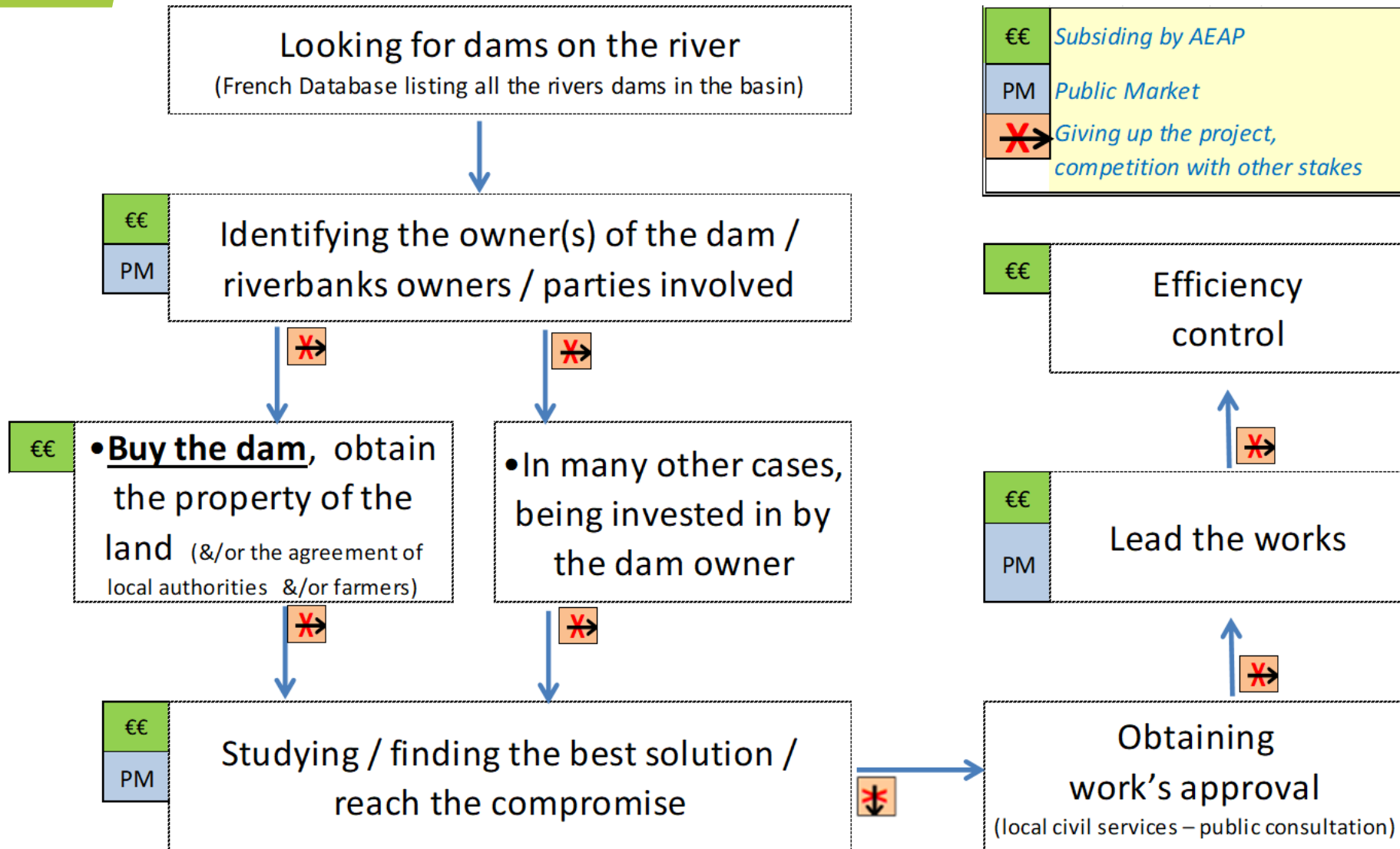
Private property Who is (are) the owner (s) of the dam ?



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Dam removal (Step by step !)



Subsidizing – grant funds up to :

=> 70 % of the projects for dam removals /

=> 40 % for fish ladders

Additional subsidizing from **UE funds**



and other partners as **Regional council**



(subsidizing € up to 100 % of the projects)

Dam removal in the Créquoise River



Before



After

Artois Picardie Water Agency ... or leading it

Sometimes, it is very « quick »
BUT in each case, it is a fight

- Cultural Heritage
- Duck pond
- Wetlands
- Wedding pictures
- Sound of the waterfall
- Floods
- NIMBY..

Build up a technical and
administrative file on the
benefits of dam removal

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https://professionnels.ofb.fr/sites/default/files/pdf/rex_r1_Crequoise_v3BD.pdf



BEFORE

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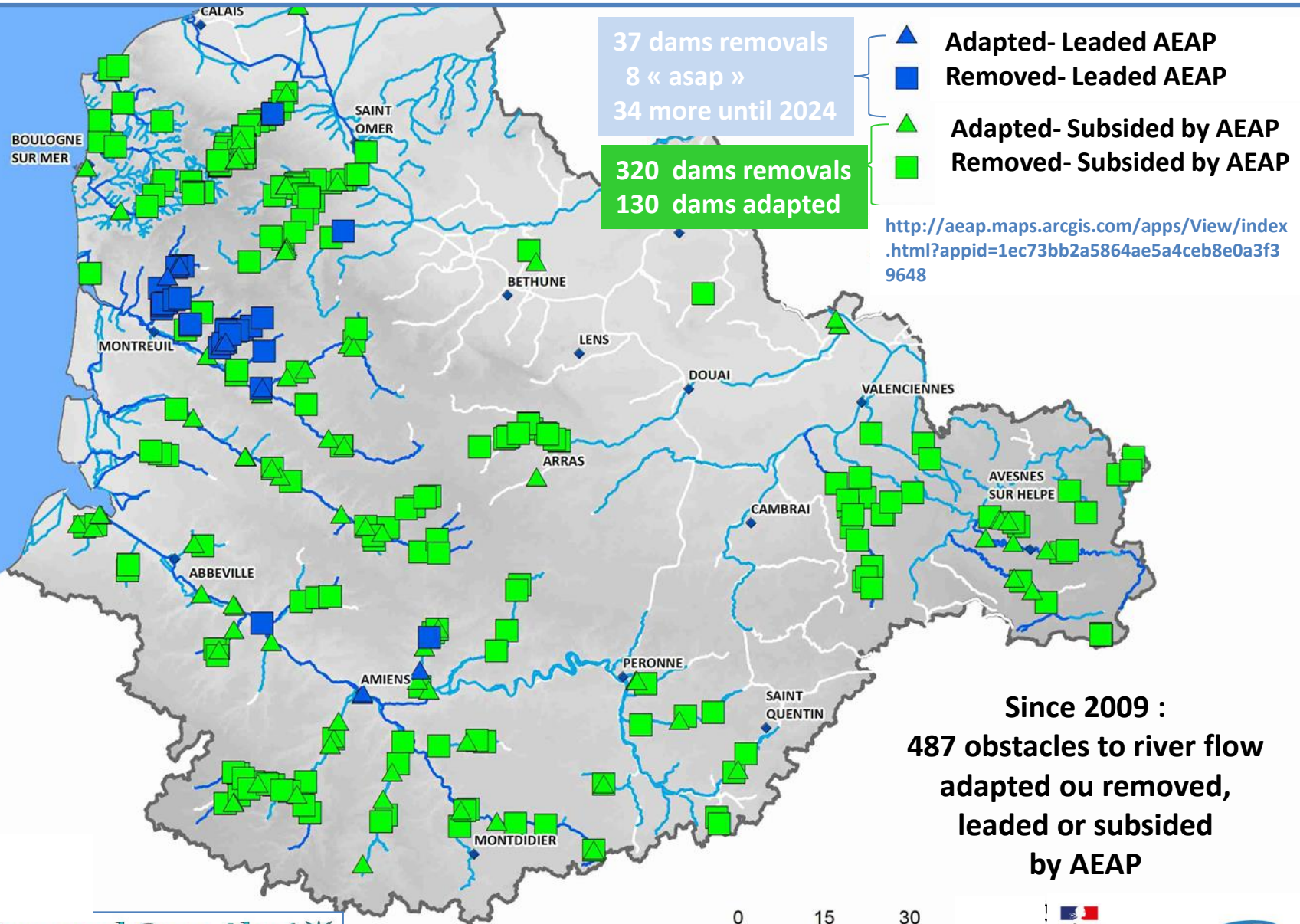
AFTER

- Dam kept for the cultural heritage of the mill remaining
- Rough block stone ramp
- No more water locks (gain on upstream river morphology)

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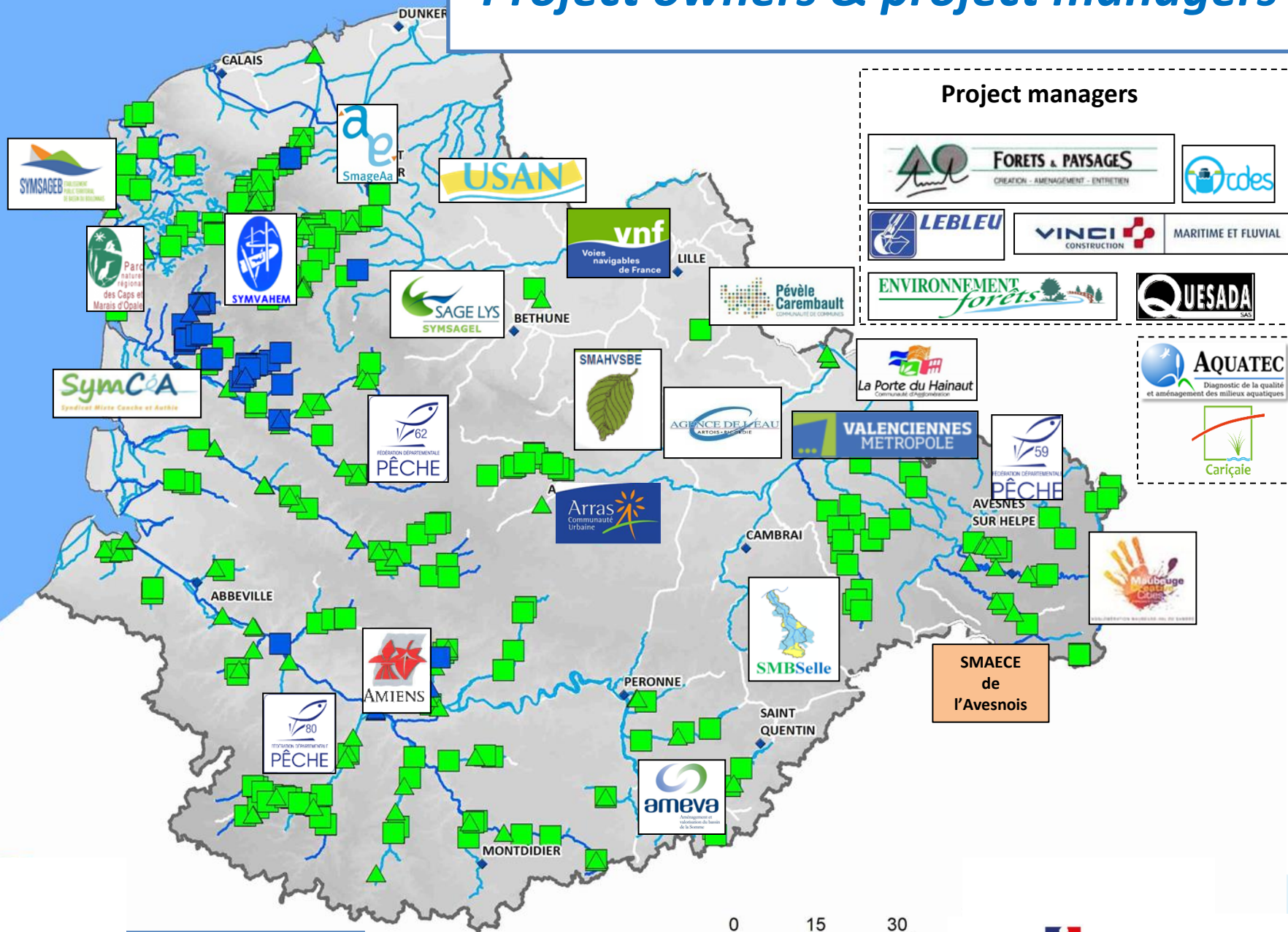
Obstacles to river flow removed or adapted since 2009



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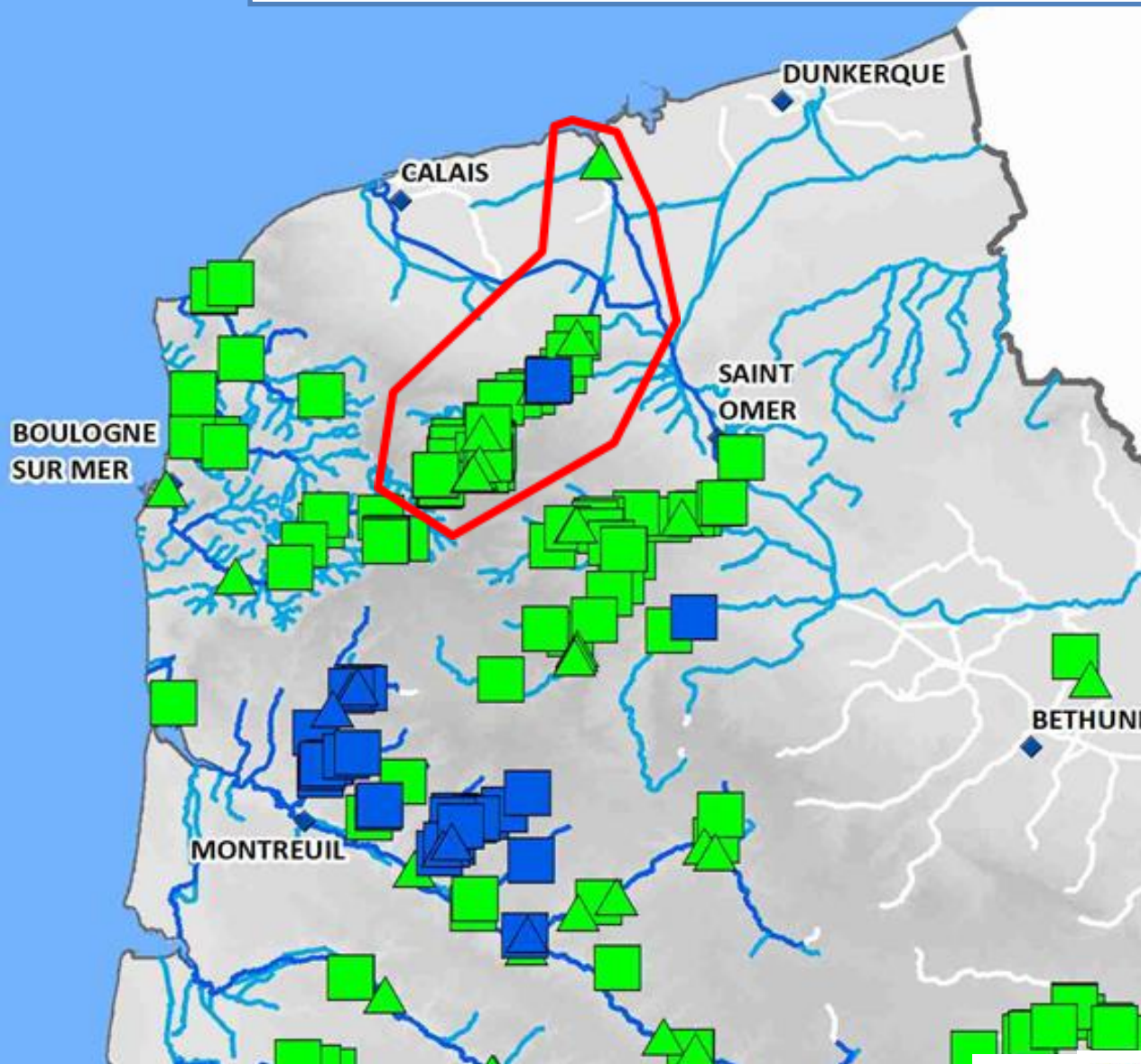
Project owners & project managers



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Dam Removal examples on Hem river




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River continuity on the Hem River



**North
Sea**



North
Sea



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River continuity on the Hem River - Guémy



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River continuity on the Hem River - Recques sur Hem



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River continuity on the Hem River - Zouafques



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River continuity on the Hem River – Delzoïde mill - Tournehem

Left arm



Right arm



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River continuity on the Hem River – Delzoïde mill - Tournehem



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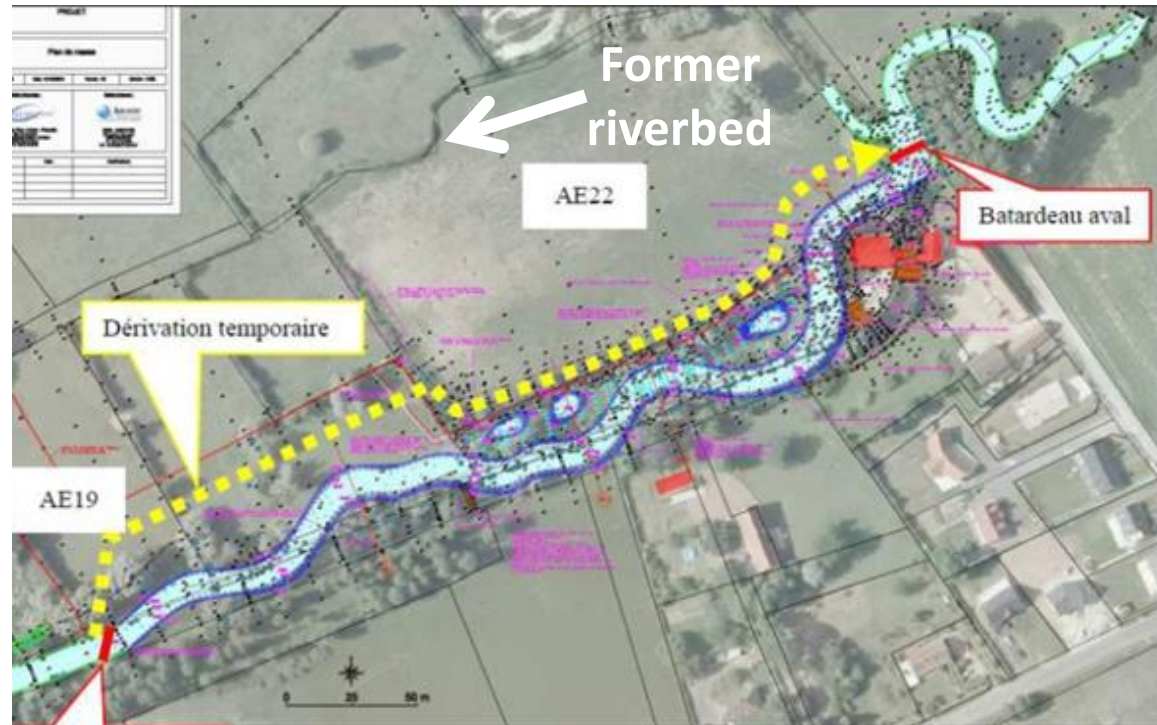
River continuity on the Hem River - Leulenne Mill - Tournehem

Leulenne mill

Left arm



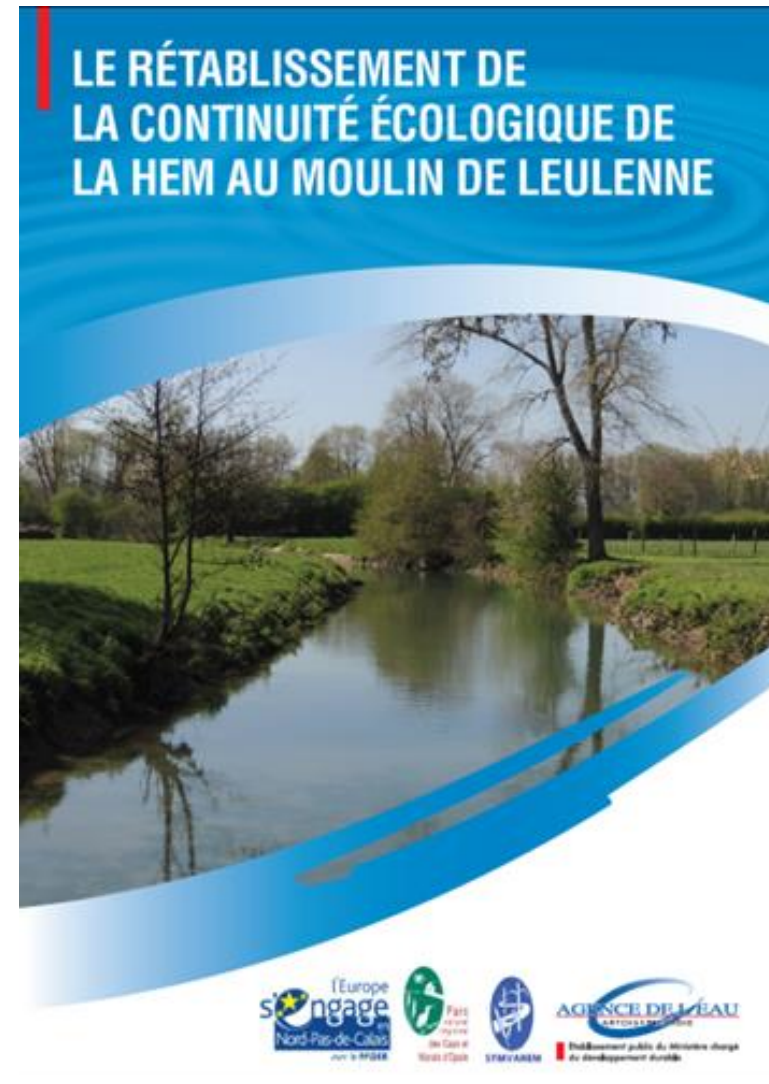
Right arm



Lowered targets of the project chosen due to the number of private owners and farmers – nevertheless, owning a dam or its land had allowed the river to be meandered again

Fears for floods after dam removal

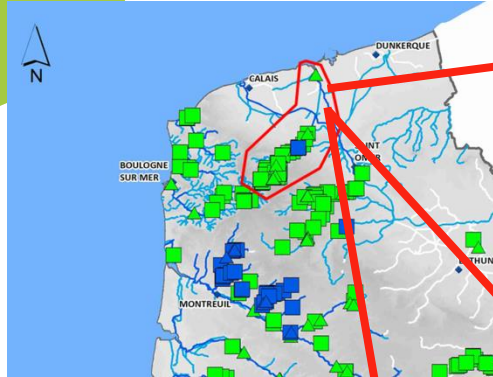
River continuity on the Hem River - Leulenne Mill - Tournehem



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River continuity on the Hem River : Exemplary Dam Removal



Included in
national network
of demonstration
sites (OFB)

Appliance of the
national Minimal
Scientific Monitoring
(MSM)



<http://aeap.maps.arcgis.com/apps/View/index.html?appid=1ec73bb2a5864ae5a4ceb8e0a3f39648>

River continuity on the Hem River : Exemplary Dam Removal



https://www.youtube.com/watch?v=Dm91L7uVLew&list=PL0Wd1JAI6QuGTPaP_8pHPnJAq3QaimSPe&index=2&t=0s



The technical portal

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River continuity on the Hem River : Exemplary Dam Removal

The **minimal scientific monitoring (MSM) guide** on hydromorphological river restoration works (HRRW)

To **improve the quality** of the monitoring of HRRW

To **propose a standardized monitoring** to evaluate the effects of HRRW

Web version (may 2019) :

<https://professionnels.afbiodiversite.fr/fr/doc-guides-protocoles/guide-l-elaboration-suivis-d-operations-restauration-hydromorphologique-en-cours-d-eau>

1st printing (july 2019): 1500 copies (out of print), 2nd printing on order



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River continuity on the Hem River : Exemplary Dam Removal

Hem river, a weir removal
for migratory fishes
and flood control



Sophie Tuaux

In the old days : straightening
and bypassing of the riverbed
+ building of a weir in order to
feed a watermill.

Nowadays : no more water
mill, no more migratory fishes
upstream and flood risk issues.

→ removing the weir +
upstream remeandering

Unaltered
Control

Upstream restored
(Impact 1)

Additional station
(physico-chemical
monitoring
downstream the village)

Downstream
restored
(Impact 2)

Sens de l'écoulement

La Hem

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River continuity on the Hem River : Exemplary Dam Removal

1. Sites existants

1. Effacement du moulin de la Leulenne sur la Hem – 1^{er} résultats avant / après

Suivi végétation - CBNB

Effets des travaux sur la qualité des végétations (lit mineur/berges) → calcul de l'Indice de qualité phytocénotique (IQPC)
Méthode qui permet d'attribuer une note à une portion de cours d'eau en fonction du substrat et des peuplements phanérogamiques aquatiques présents

IQPC	2016	2018
Restauration amont	8,79	15,17
Restauration aval	14,8	15,05
Témoins non altérés	16,83	16,43

Mauvais état à bon état écologique
→ proche TNA

→ Apparition d'une station de Potamot dense (*Groenlandia densa*) ; espèce aquatique d'intérêt patrimonial à l'échelle des Hauts-de-France

→ Recommandation de gestion : fauche ou pâturage extensif (sinon boisement nitrophile mésohygrophile de faible intérêt)



Suivis Nids de Pontes Migrateurs

Augmentation du nombre de nids

	2011	2012	2013	2014	2015	2016	2017	2018	2019
GS	10	7	9	12	8	13	28	/	45
LPF	71	74	98	17	47	/	133	156	175
LPM	4	2	0	6	3	/	/	1	/

GS

Moyenne 10 nids

Moyenne 35 nids

LPF

Moyenne 60 nids

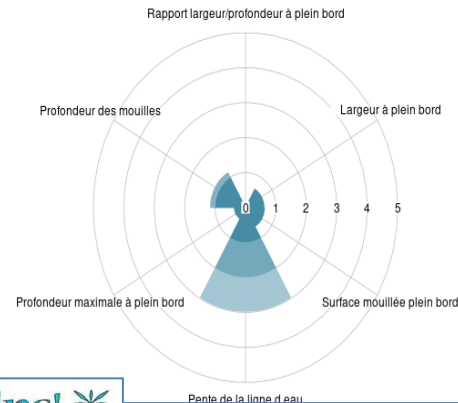
Moyenne 155 nids

3 X plus de nids depuis le rétablissement de la continuité



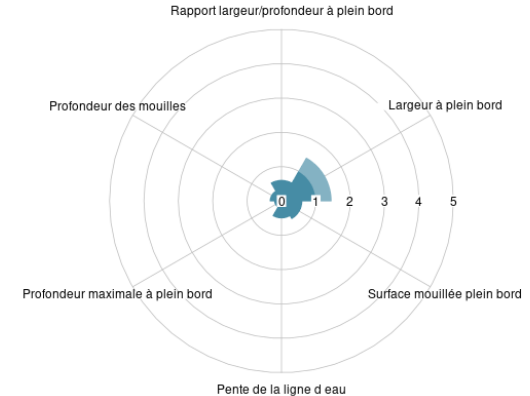
Indicateur Morphologique Global : HEM ET MEULESTROM A TOURNEHEM SUR LA HEM (62) IMG = 5.8

Station n°: 01002269; Opération n°: 3014
Date de réalisation : 2017-06-21
Modèle de référence = HER TABLES CALCAIRES



Indicateur Morphologique Global : HEM ET MEULESTROM A TOURNEHEM SUR LA HEM (62) IMG = 3.67

Station n°: 01002269; Opération n°: 3526
Date de réalisation : 2019-07-31
Modèle de référence = HER TABLES CALCAIRES



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River continuity on the Hem River : Exemplary Dam Removal

Number of nests of Migratory salmonids (GS) and Lamprey (LPF) on the Hem river basin 2011 à 2019.

	2011	2012	2013	2014	2015	2016	2017	2018	2019
GS	10	7	9	12	8	13	28	x	45
LPF	71	74	98	17	47	x	133	156	175

Migratory Fishes : Following Salmons and Sea Trout / lampreys reproductive nests



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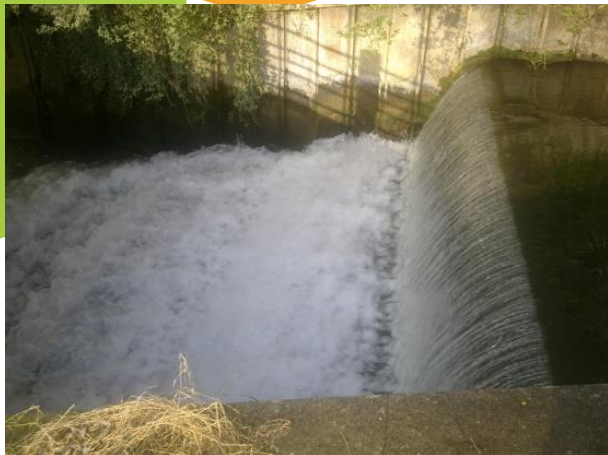
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. Dam removal is the best solution for the hydromorphology of the river and restoration of riffles / running rivers

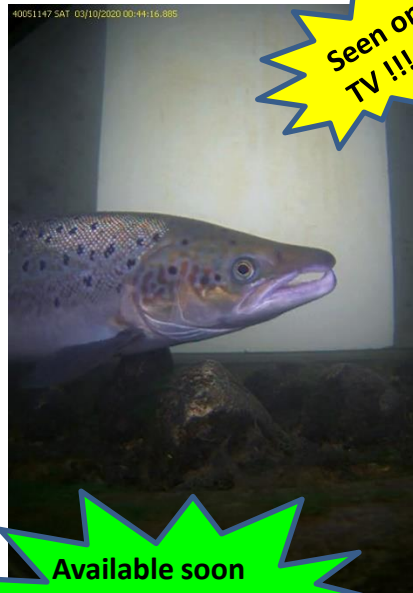
➤ Must always be the target (but reach compromises / agreements)

. Some fears about new French laws to develop hydropowering and keeping cultural heritage of old mills (lowering the ambition of river continuity)

Restoring rivers by removing dams



Restoring fish migration



Seen on
TV !!!

Salmon is coming
back...

Very strong
improvement for fish
migration on the
whole basin

Available soon
in each river
(Hope So...)

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UE council on Biodiversity
2030 target:
25,000 of flowing rivers



Thank you for your attention

« Rivières sauvages » © / Flowing rivers

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