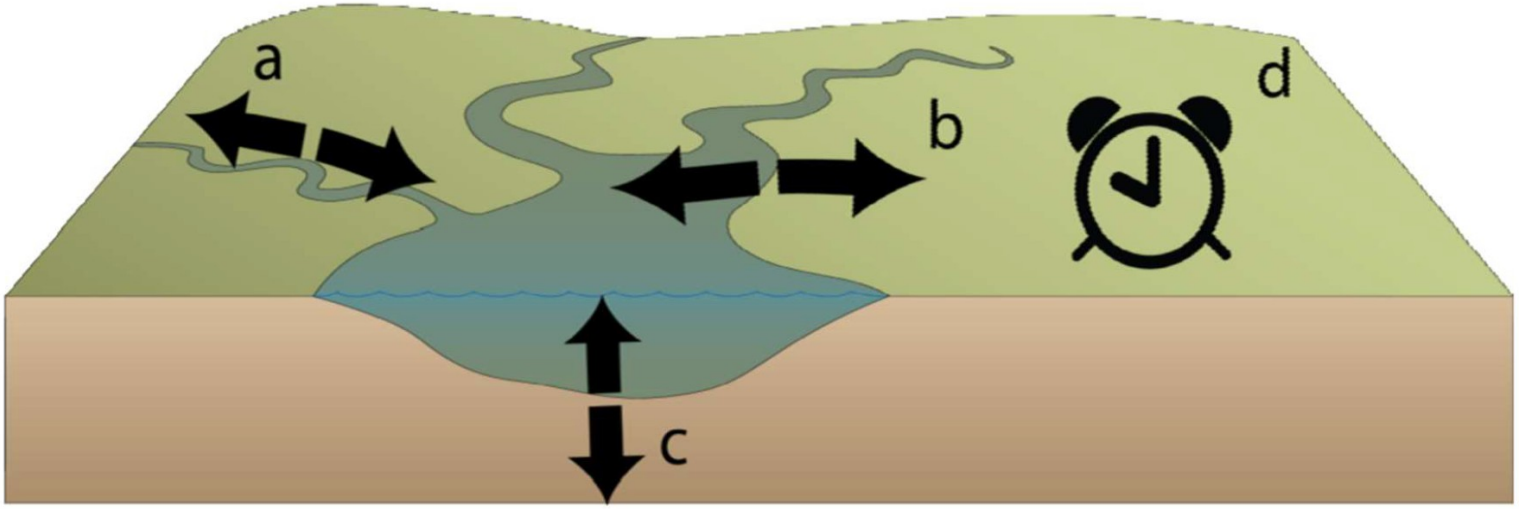
LA CONTINUITÀ FLUVIALE TRA NUOVE INTERRUZIONI E NECESSITÀ DI RESTAURO

ing. Giuliano Trentini
g.trentini@cirf.org

The Guardian (Alamy)

La risorsa idrica nel contesto di emergenza climatica
Giornata di studi
Montelupo Fiorentino 6 marzo 2024

La connettività ha quattro dimensioni



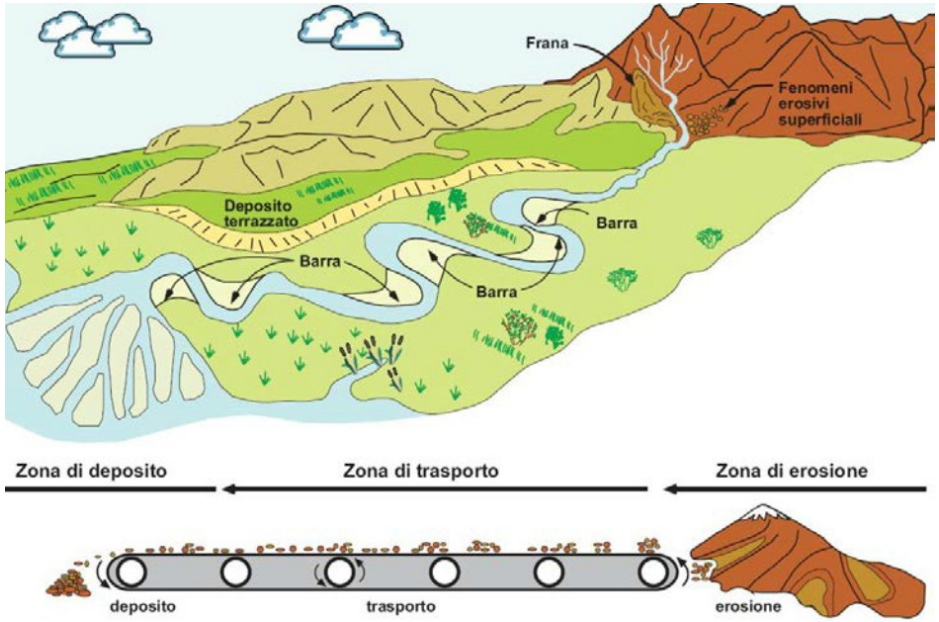
a) Longitudinale

b) Laterale

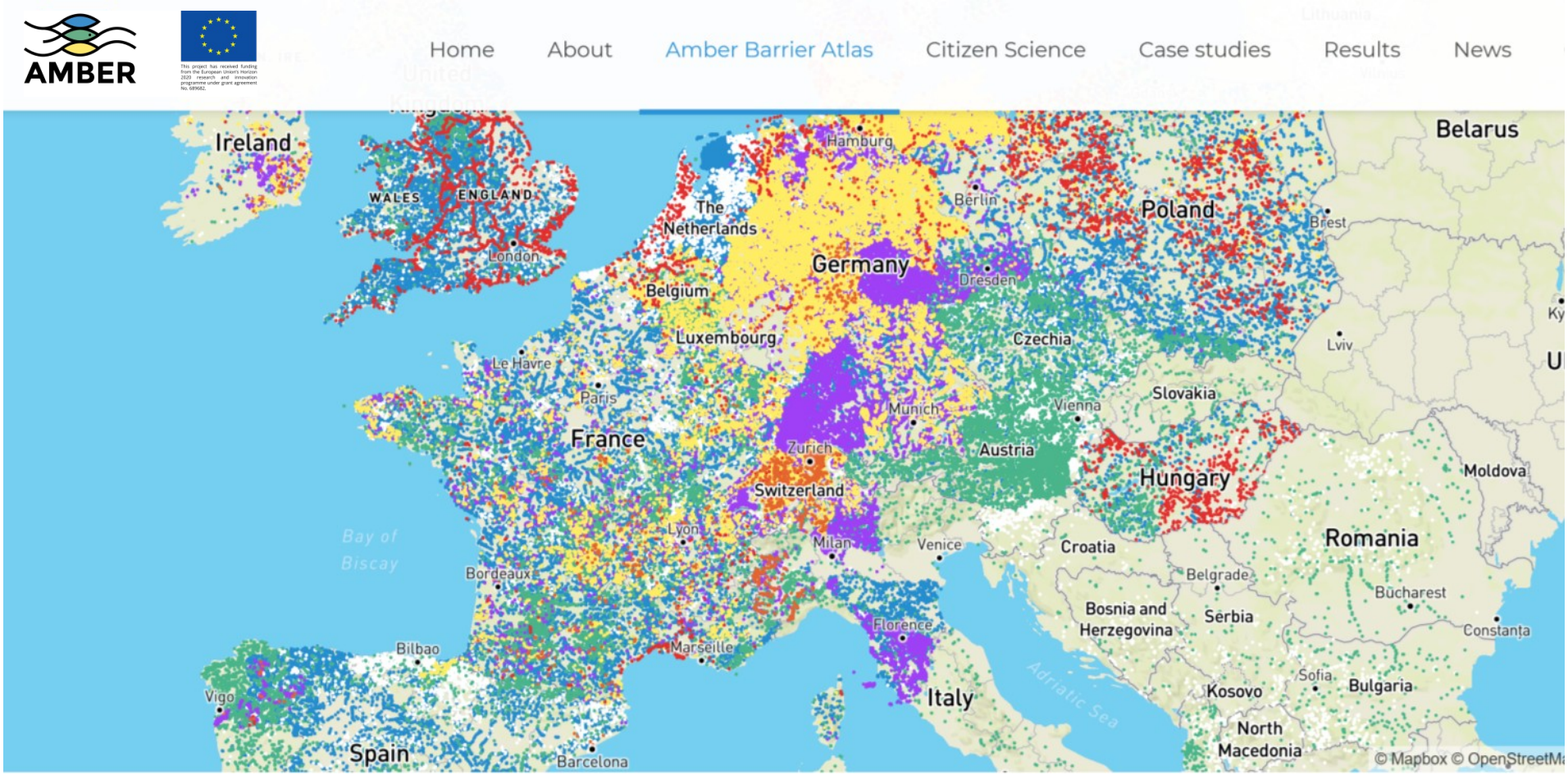
c) Verticale

d) Temporale

Connettività longitudinale

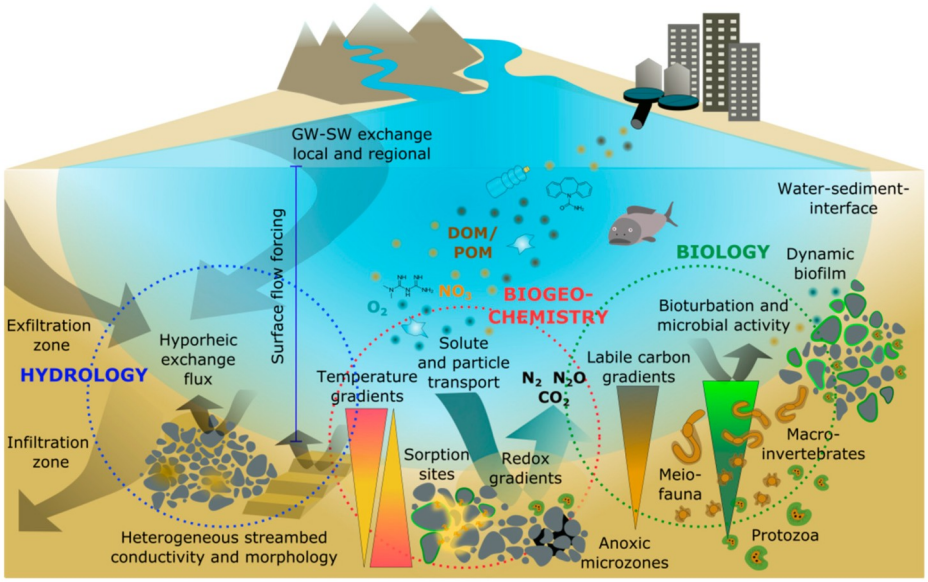


Oltre 1 milione di sbarramenti censiti in Europa

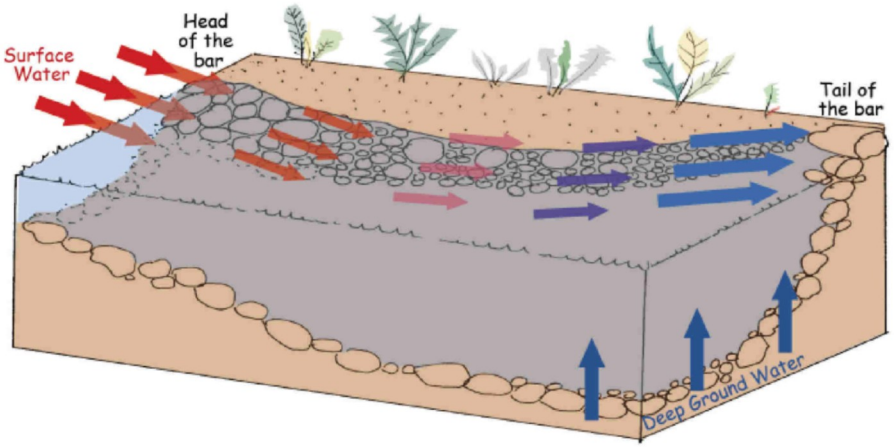


Connettività laterale

Connettività verticale

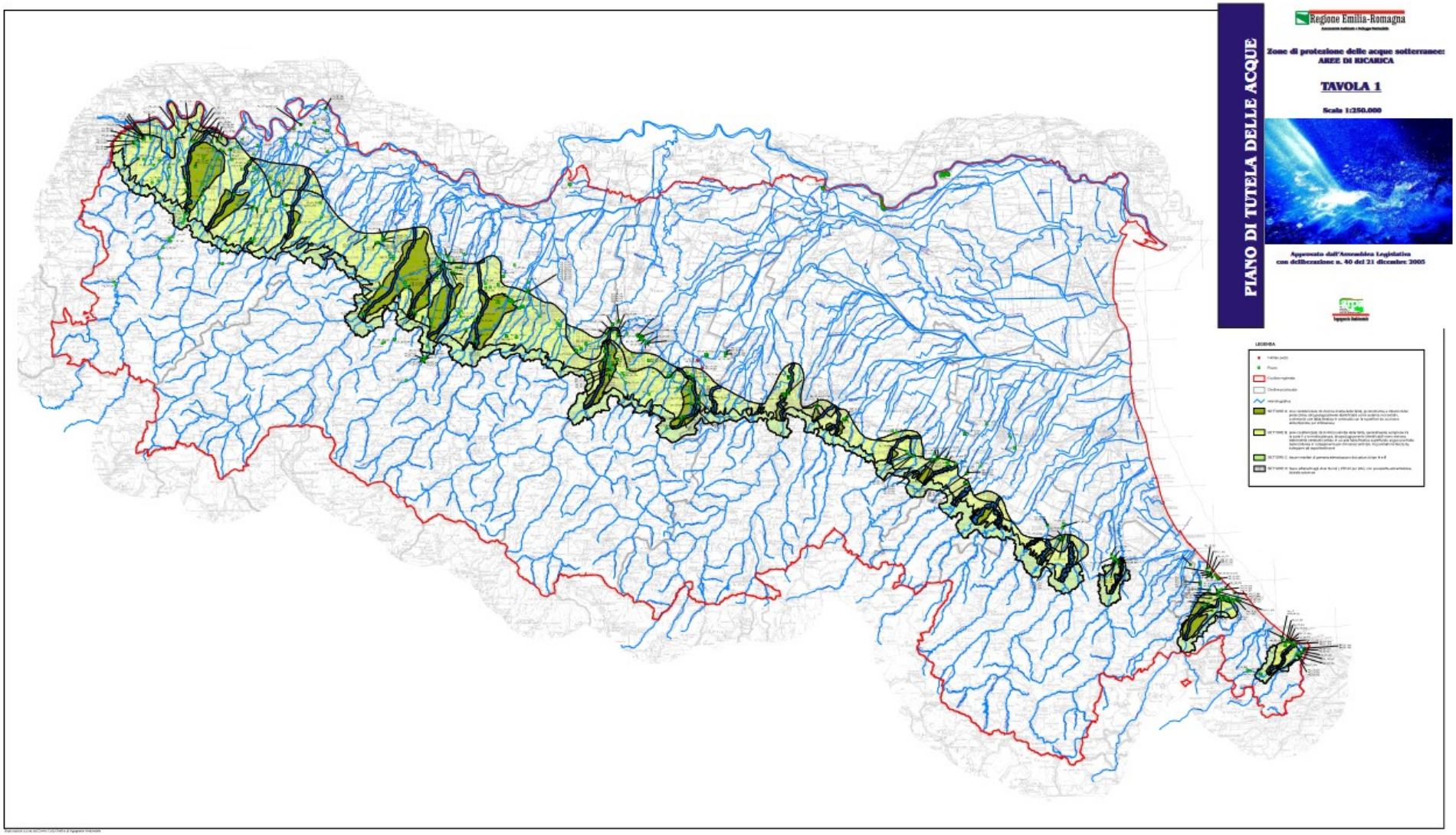


Lewandowski et al., 2019



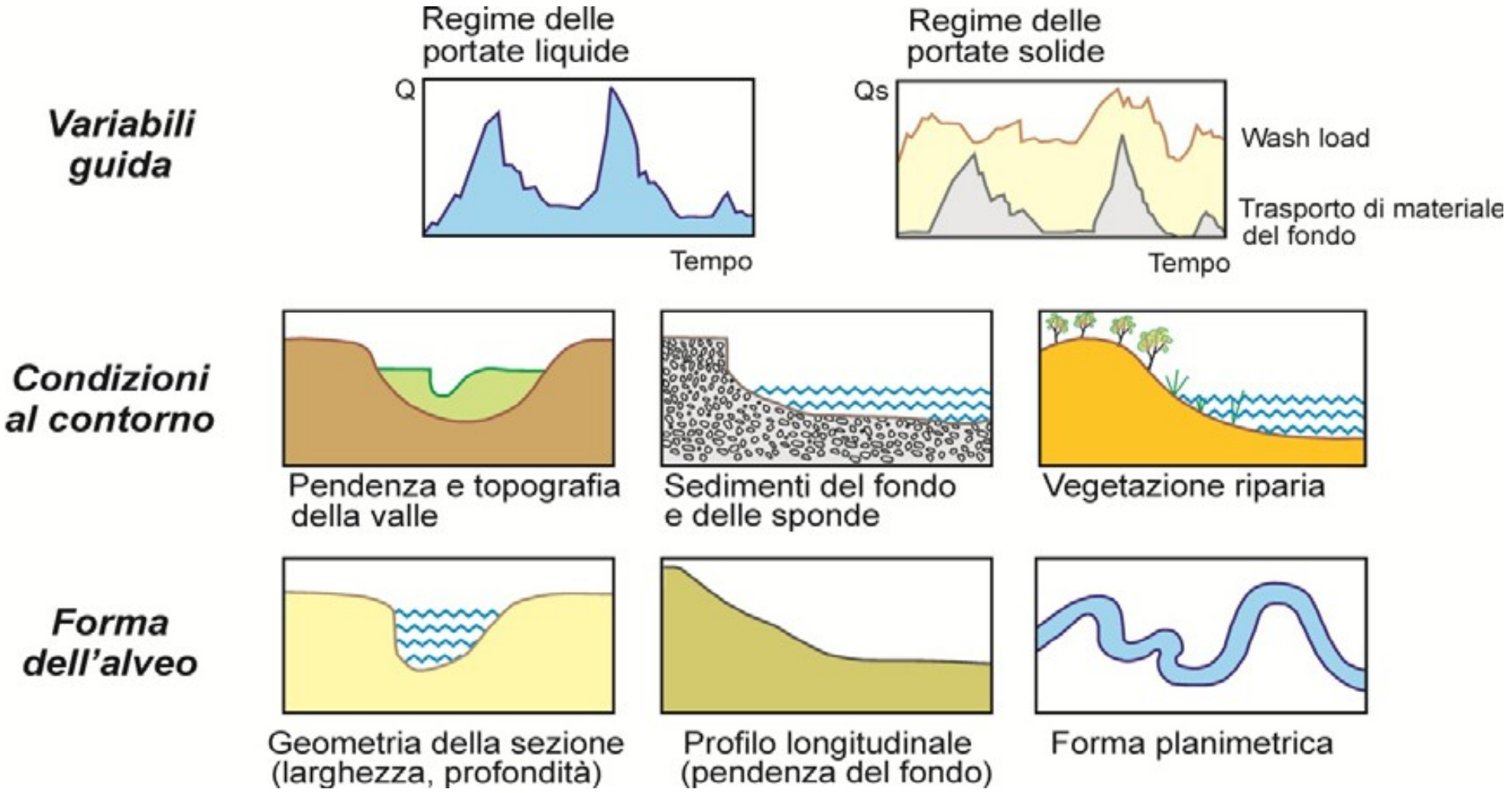
Dole-Olivier et al., 2018

Ricarica della falda



https://ambiente.regione.emilia-romagna.it/it/acque/approfondimenti/documenti/piano-di-tutela-delle-acque-2005/zone-di-protezione-delle-acque-sotterranee/zone-di-protezione-delle-acque-sotterranee/view

Connettività temporale



www.freeflowingrivers.eu

La salute dei fiumi del mondo è **gravemente minacciata**.
Ma c'è ancora speranza se agiamo ora.

I fiumi sono sistemi complessi le cui dinamiche plasmano la vita sulla Terra così come la conosciamo. Ospitano un'ampia gamma di specie d'acqua dolce, e trasportano sedimenti e nutrienti. Formano zone umide, delta e pianure alluvionali che nutrono la flora, la fauna e le comunità umane e ci proteggono da inondazioni, siccità e altri disastri naturali. Raccolgono l'acqua dall'atmosfera e dal suolo e rimpinguano le falde acquifere, che sono fondamentali per la nostra sopravvivenza.

Le barriere si rimuovono

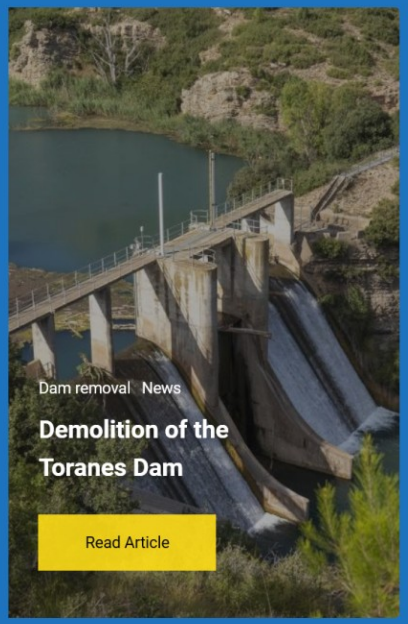
DAM REMOVAL EUROPE

4,984

Dams Already Removed*

*based on data from France, Sweden, Finland, Spain, England and Wales, Scotland, Denmark, Portugal, Italy, Switzerland, Estonia, Germany

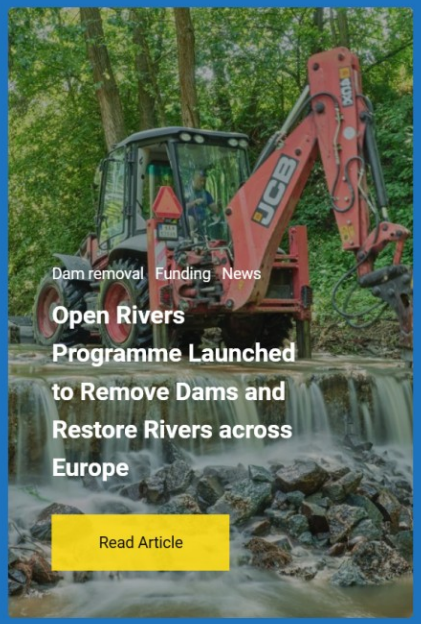
View map



Dam removal News

Demolition of the Toranes Dam

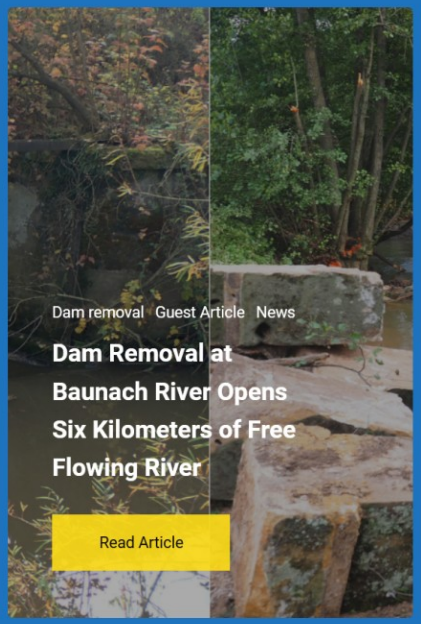
Read Article



Dam removal Funding News

Open Rivers Programme Launched to Remove Dams and Restore Rivers across Europe

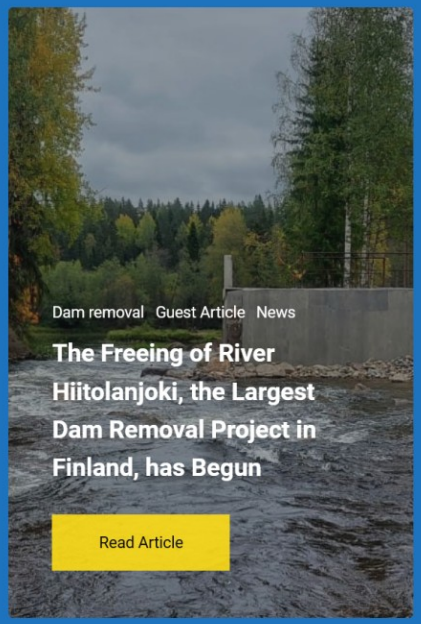
Read Article



Dam removal Guest Article News

Dam Removal at Baunach River Opens Six Kilometers of Free Flowing River

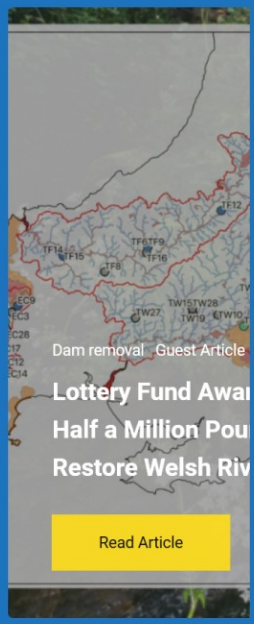
Read Article



Dam removal Guest Article News

The Freeing of River Hiitolanjoki, the Largest Dam Removal Project in Finland, has Begun

Read Article

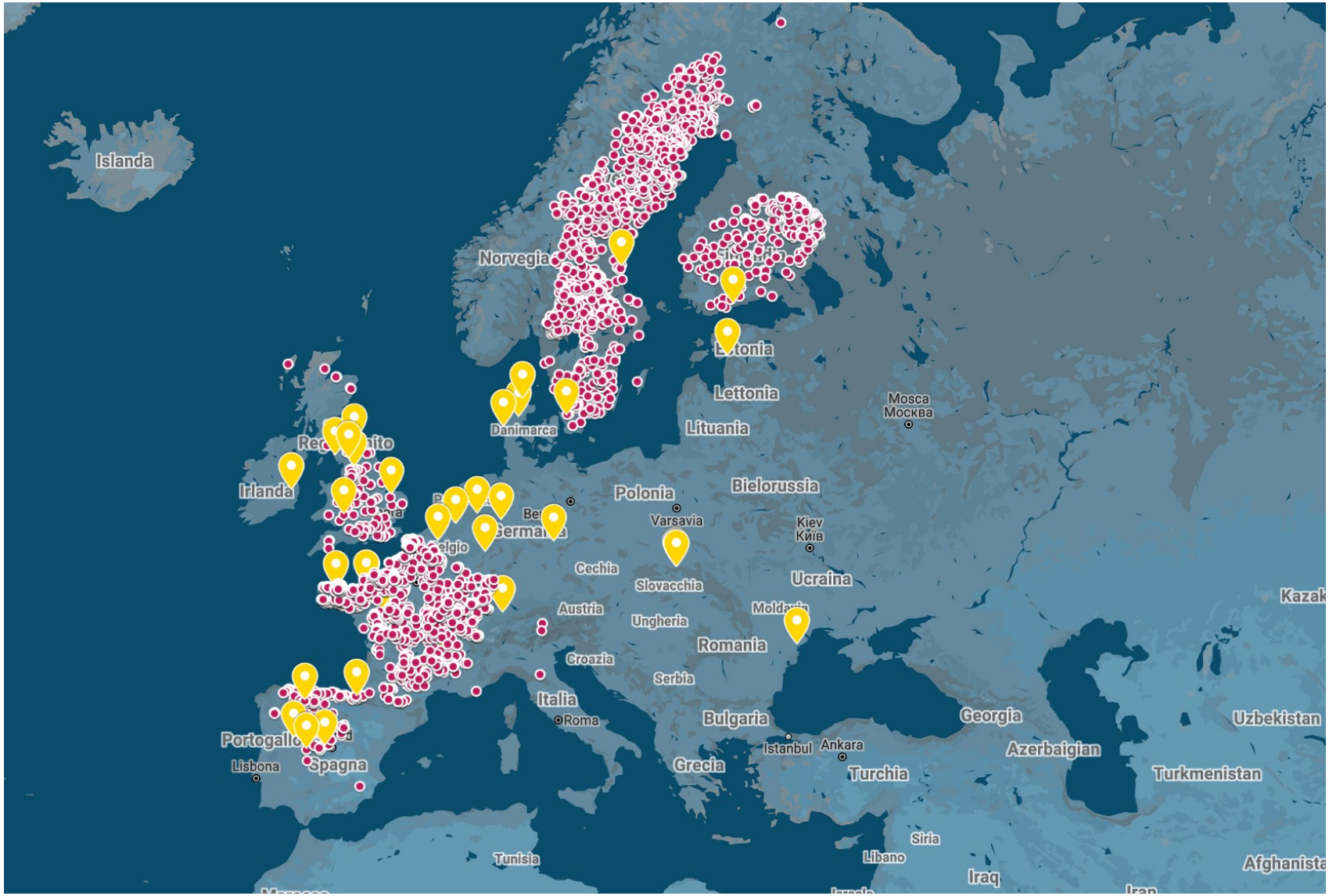


Dam removal Guest Article

Lottery Fund Awa Half a Million Pou Restore Welsh Riv

Read Article

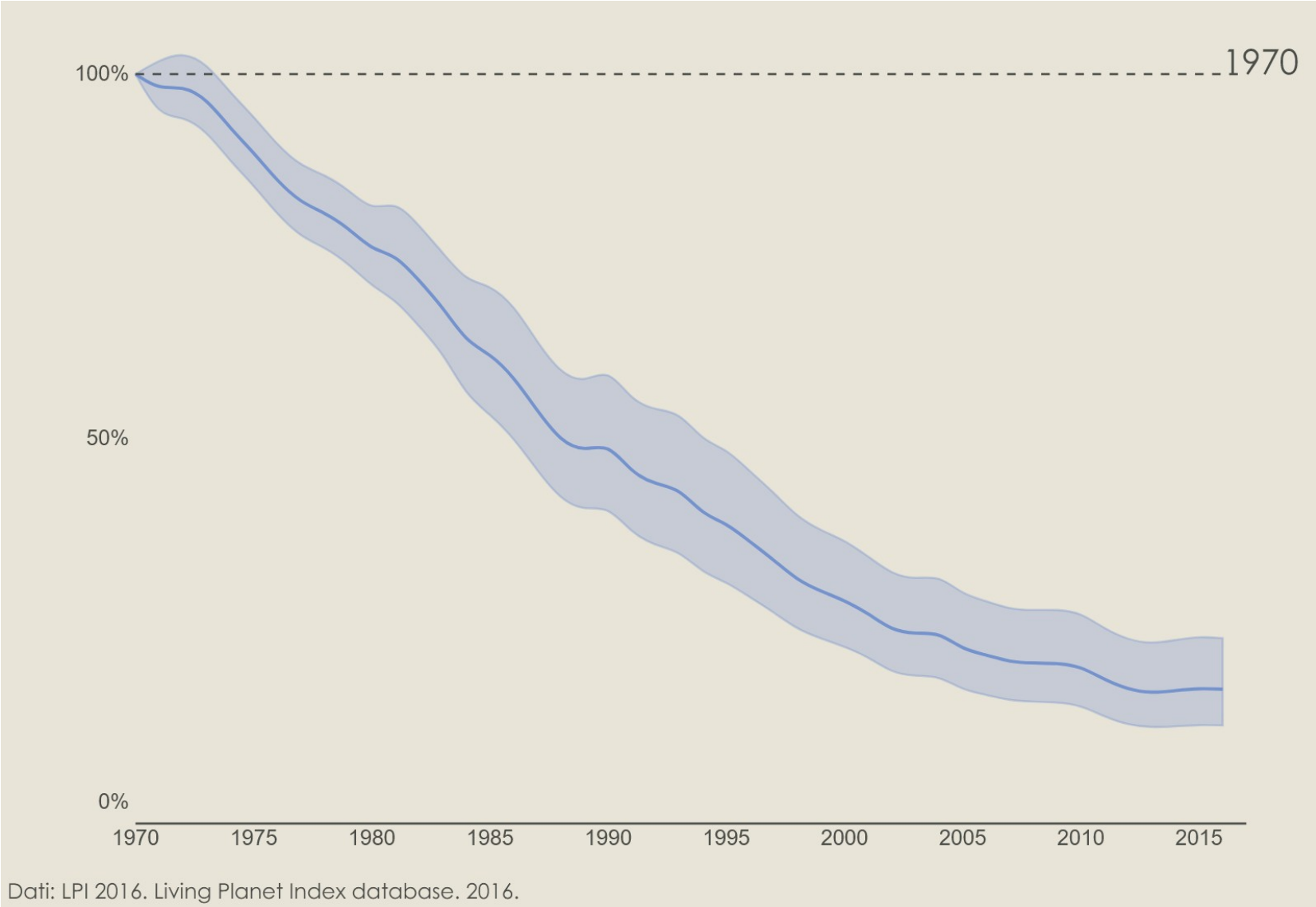
Case Studies



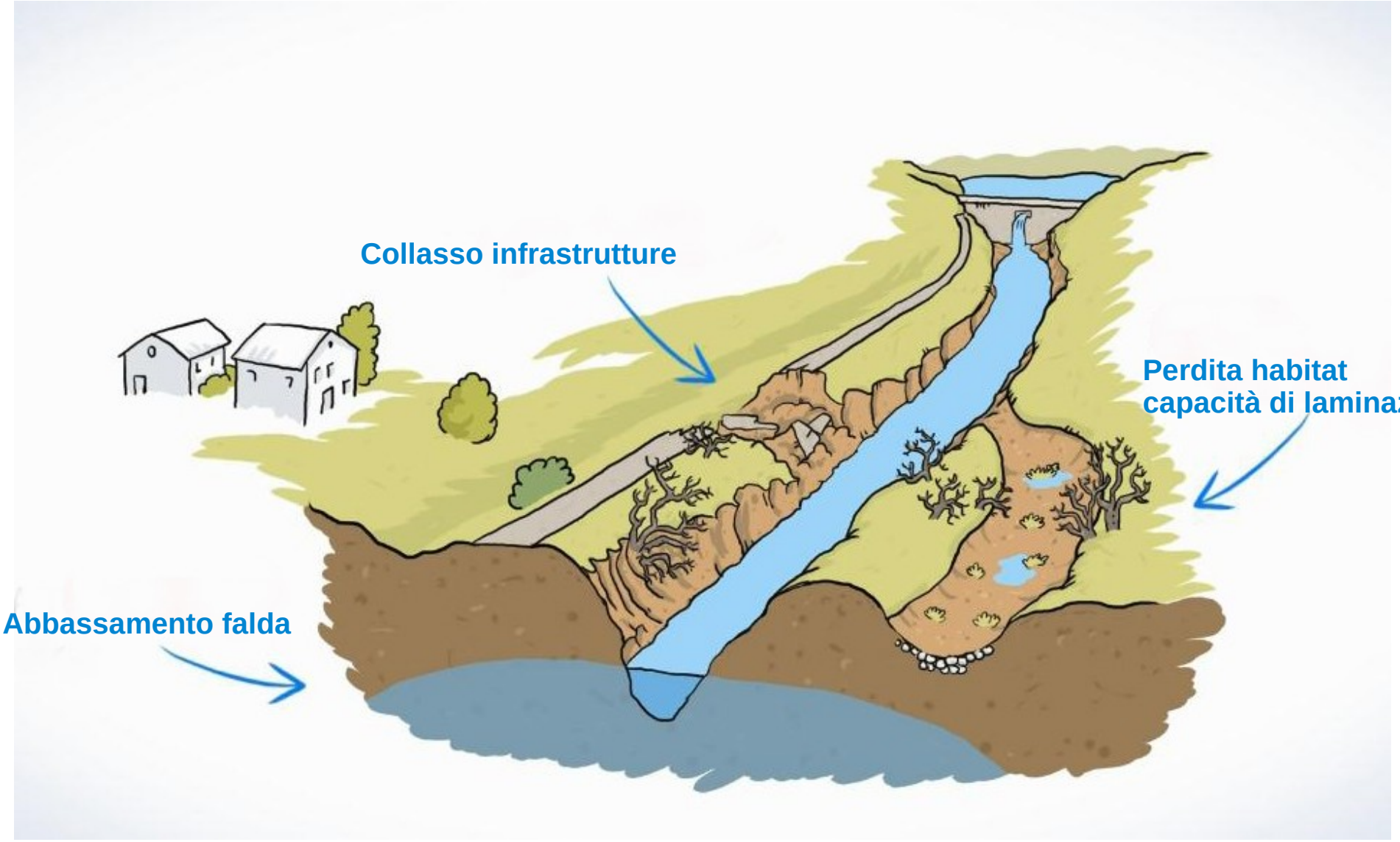
https://damremoval.eu/dam-removal-map-europe/

- STRATEGIA EUROPEA PER LA BIODIVERSITÀ
  - recuperare almeno 25.000 km di fiumi a deflusso naturale, rimuovendo barriere e opere di regimentazione non necessarie e rinaturando le piane alluvionali;
- NATURE RESTORATION LAW
  - **Art. 9** Ripristino della connettività naturale dei fiumi: inventario delle barriere alla connettività longitudinale e laterale e individuazione di quelle da rimuovere, per arrivare ad almeno 25mila km di fiumi a flusso libero entro il 2030

Declino delle specie ittiche di acqua dolce



Gli effetti indesiderati ampiamente noti

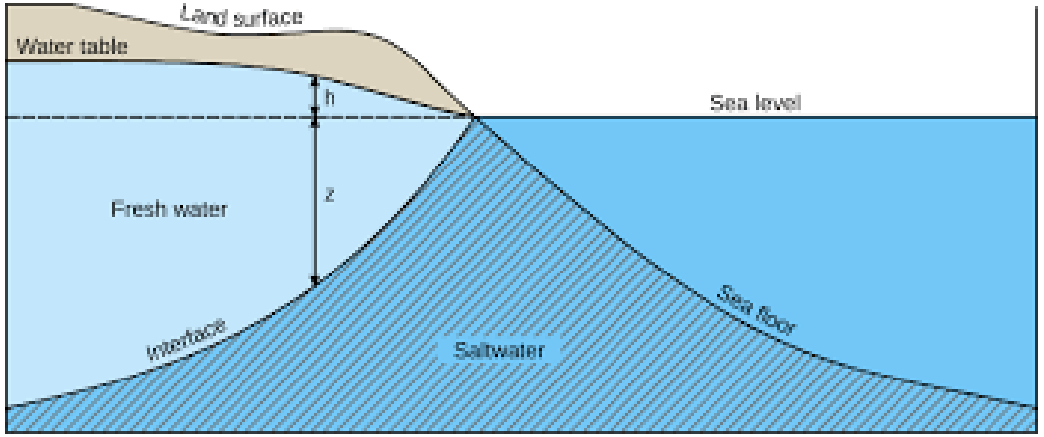


CAI Sezione Firenze

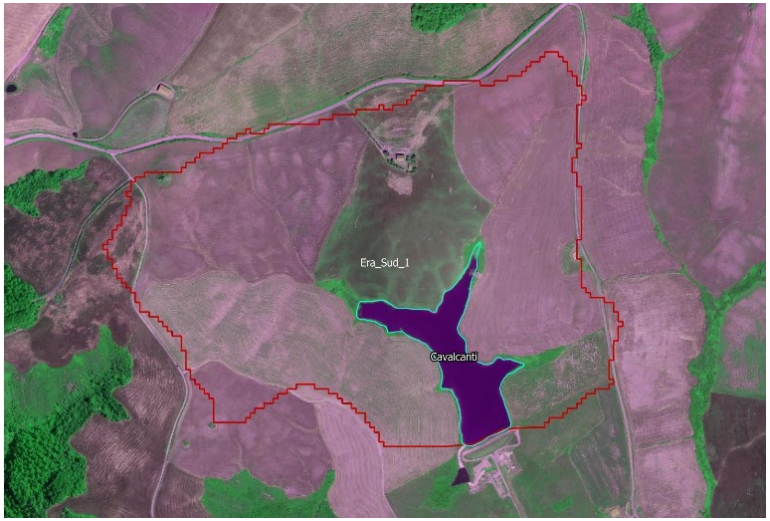

OFC54 Regione Toscana - IGM_RT, OFC13 AGEA_RT
100 m
200 ft
1 : 5.000


OFC54 Regione Toscana - IGM_RT
100 m
200 ft
1 : 5.000


1996
2006
2012
(c) Mike Page


Land surface
Water table
h
Sea level
Fresh water
z
Sea floor
Interface
Saltwater

Chi programma la gestione dell'interrimento?



sustainability

MDPI

Article

Assessing Soil Erosion by Monitoring Hilly Lakes Silting

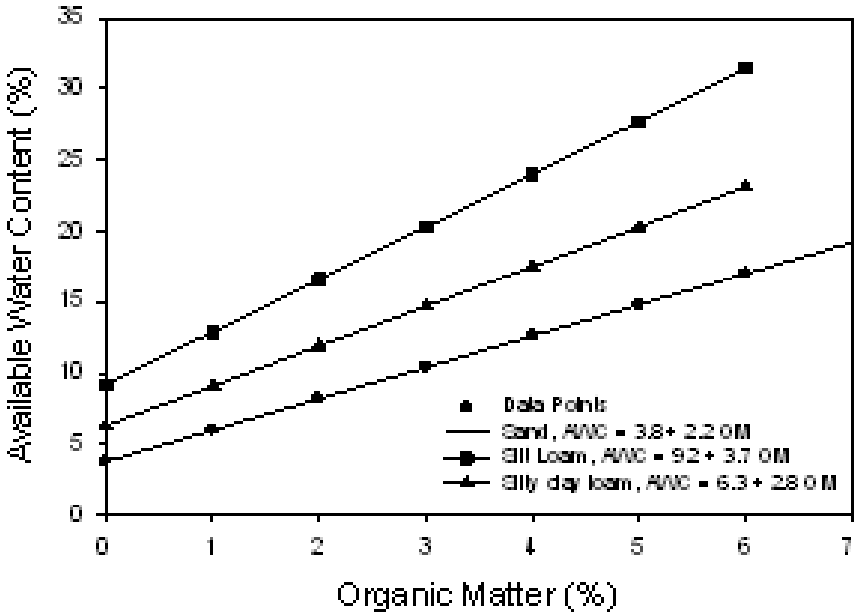
Yamuna Giambastiani [1,*], Riccardo Giusti [1], Lorenzo Gardin [1], Stefano Cecchi [1], Maurizio Iannuccilli [1], Stefano Romanelli [2], Lorenzo Bottai [2], Alberto Ortolani [1,2] and Bernardo Gozzini [1,2]

[1] CNR-IBE, National Research Council, Institute of Bioeconomy, 50019 Florence, Italy; giusti@lamma.toscana.it (R.G.); gardin@lamma.toscana.it (L.G.); cecchi@lamma.toscana.it (S.C.); iannuccilli@lamma.toscana.it (M.I.); ortolani@lamma.toscana.it (A.O.); gozzini@lamma.toscana.it (B.G.)
[2] Environmental Modelling and Monitoring Laboratory for Sustainable Development, LaMMA Consortium, 50019 Florence, Italy; romanelli@lamma.toscana.it (S.R.); bottai@lamma.toscana.it (L.B.)
* Correspondence: giambastiani@lamma.toscana.it

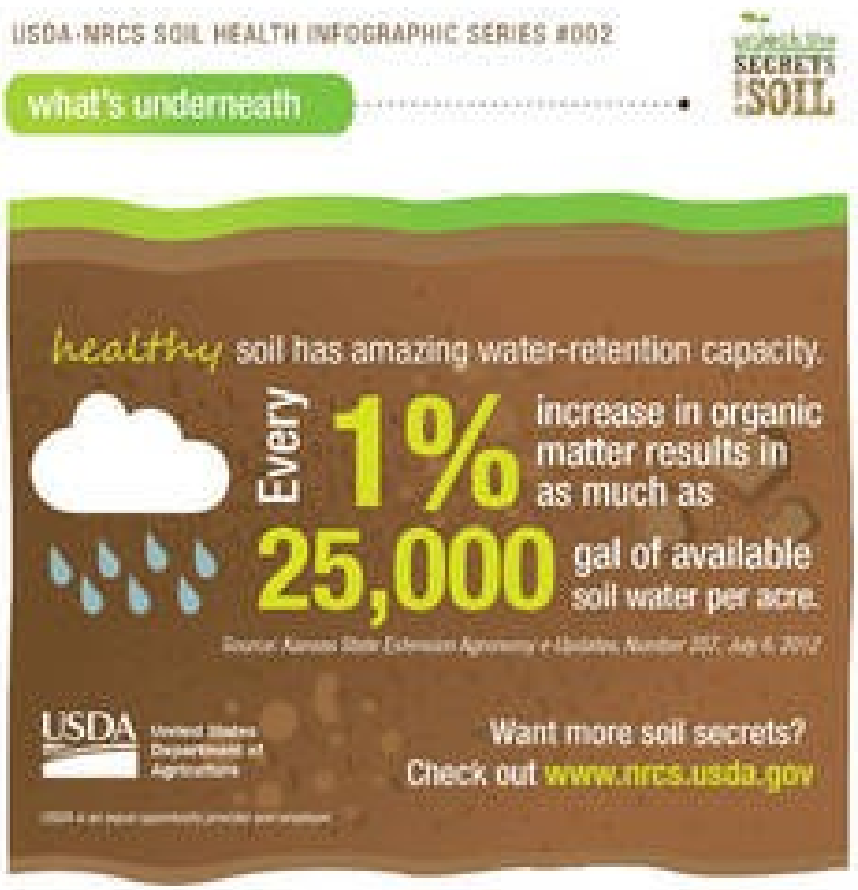
Table 3. Lake parameters for the years 2010 and 2018: surface area, volume, variation (in volume, percentage and percentage per year), and silting rate, the latter normalized to the lake surface area. For 2010, we show harmonized volumes, indicated as 2010 h.

	Surface (m^2)		Volume (m^3)		Variation			Silting	
GID	2010	2018	2010-h	2018	m^3	%	%/y	Mg	Mg/y
1156	7570	7599	24,855	21,597	−3258	−13.1	−1.6	2821	353
2629	38,875	39,942	116,826	108,254	−8572	−7.3	−0.9	7423	928
3036	49,986	47,241	217,520	215,144	−2376	−1.1	−0.1	2057	257
5171	35,293	32,713	208,807	159,454	−49,353	−23.6	−3.0	42,740	5342
7438	20,729	19,561	67,659	64,228	−3431	−5.1	−0.6	2971	371
7719	35,080	33,029	80,651	79,407	−1244	−1.5	−0.2	1077	135
8454	48,412	46,044	296,296	261,833	−34,463	−11.6	−1.5	29,845	3731
8477	13,389	16,747	18,018	15,315	−2703	−15	−1.9	2341	293
8967	8059	9654	5792	4141	−1651	−28.5	−3.6	1430	179
8969	7744	9180	15,220	12,070	−3150	−20.7	−2.6	2728	341
11525	21,246	24,886	57,625	57,238	−387	−0.7	−0.1	335	42
12964	22,135	19,204	60,549	23,953	−36,596	−60.4	−7.6	31,692	3961

Il suolo come serbatoio



USDA-ARS National Soil Tilth Laboratory



284 mc/ha

E se non piove?

Diga di Abdelmoumen, Marocco, ottobre 2020 (FADEL SENNA/AFP via Getty Images)

GRAZIE PER L'ATTENZIONE!!!

Ministry of the Environment, Estonia