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Sustainability Research + Innovation Congress 2024 - Sustainability Science Days

Reviving Europe's rivers: challenges and opportunities from the new nature restoration law

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5 reasons for implementing the nature restoration law

➤ Increase biodiversity

➤ Secure nature based solutions:
cleaning water and air, pollinating
crops, and flood protection

➤ Limit global warming

➤ Build up Europe's resilience and strategic
autonomy, preventing natural disasters
and reducing risks to food security

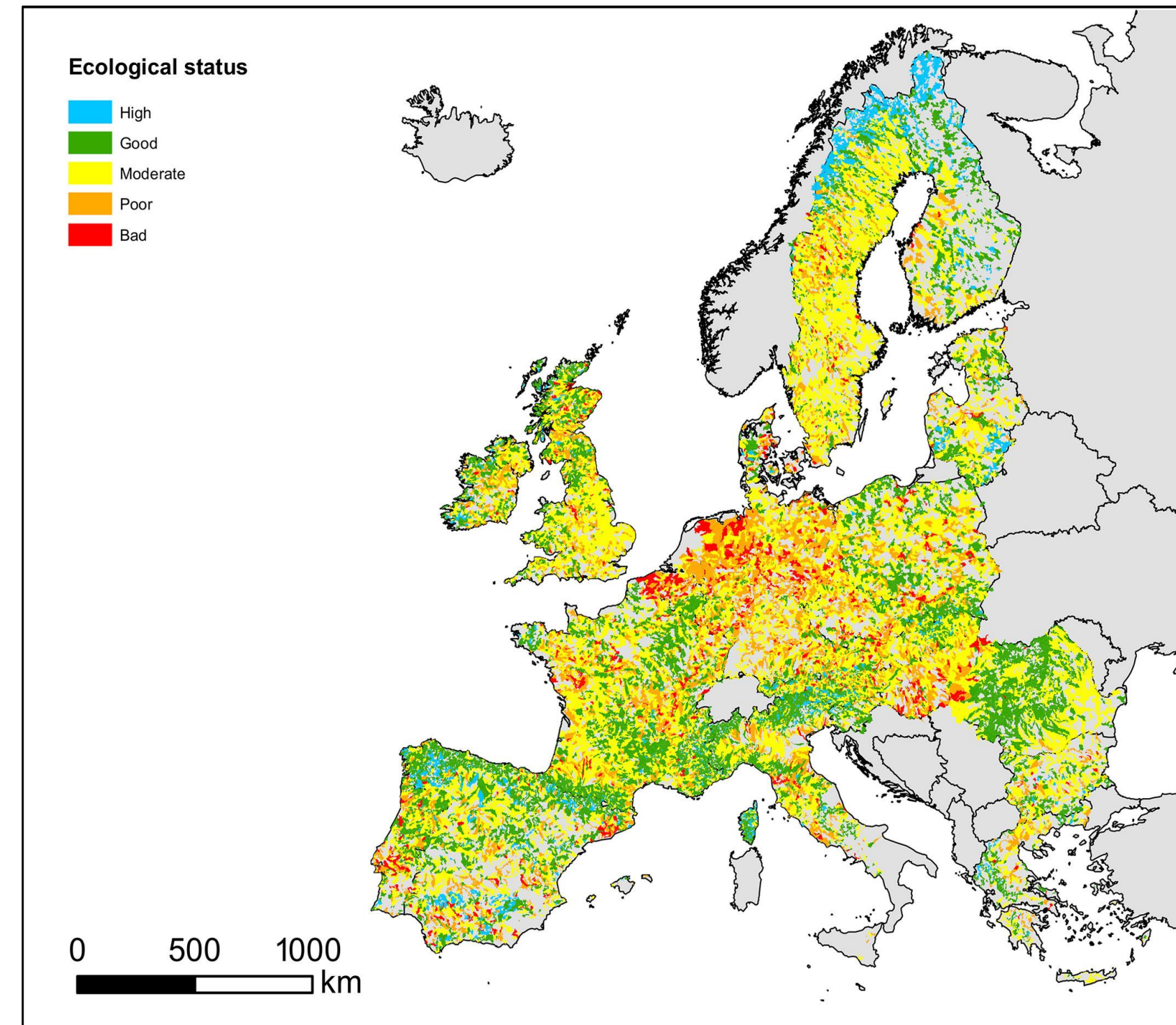
➤ It is a key element of the EU
Biodiversity Strategy (BDS)

5 reasons for restoring 25.000 km of free-flowing rivers BDS target

- Increased flood protection
- Increased protection of freshwater biodiversity
- Increased water storage capacity in floodplains
- Increase nutrient and sediment transportation
- Reduce global warming effects

Ecological state of rivers in the EU

A synthetic judgement as high, good, moderate, poor or bad, based on biological quality elements (BQEs, that are phytoplankton, flora, invertebrate fauna and fish fauna), combined with information on physico-chemical and hydromorphological conditions (Water Framework Directive).



Lemm et al. (2021) *Global Change Biology*, 27(9), 1962-1975

River connectivity in the EU

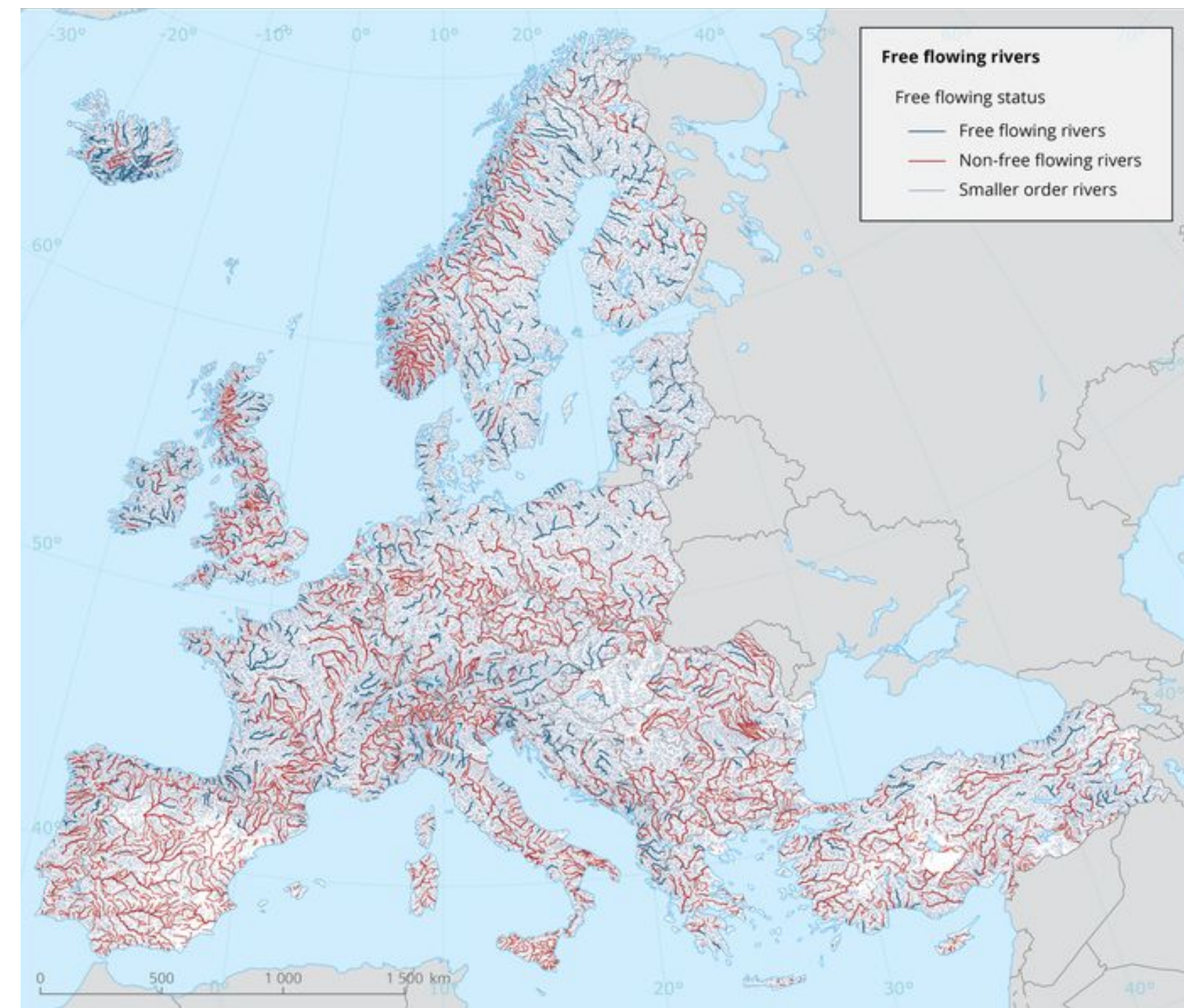
1.2 million instream barriers in 36 European countries
(mean density 0.74 per km)

68 % structureless or less < 2m in height → 61 %
underestimated barrier number

Highest barrier densities in central Europe

Lowest barrier densities in alpine areas

Main predictors: agricultural pressure, density of
river-road crossings, extent of surface water and
elevation



Belletti et al. (2020). Nature, 569(7755), 215-221

Grill et al.(2019).

<https://www.eea.europa.eu/data-and-maps/figures/free-flowing-rivers-in-Europe>. Modified 2022

Seven challenges to connect Europeans rivers



Stoffers et al. (2024). WISE: Water, e1717

A guide to restore and conserve free flowing rivers



Set achievable targets



Recognize the four dimensions of river
ecosystems connectivity



Landscape planning needs a wide
context



Deconstruction is more cost intensive
than protection



Resolving conflicts and finding
territorial compromises



Stakeholder involvement



Continuous and regular monitoring

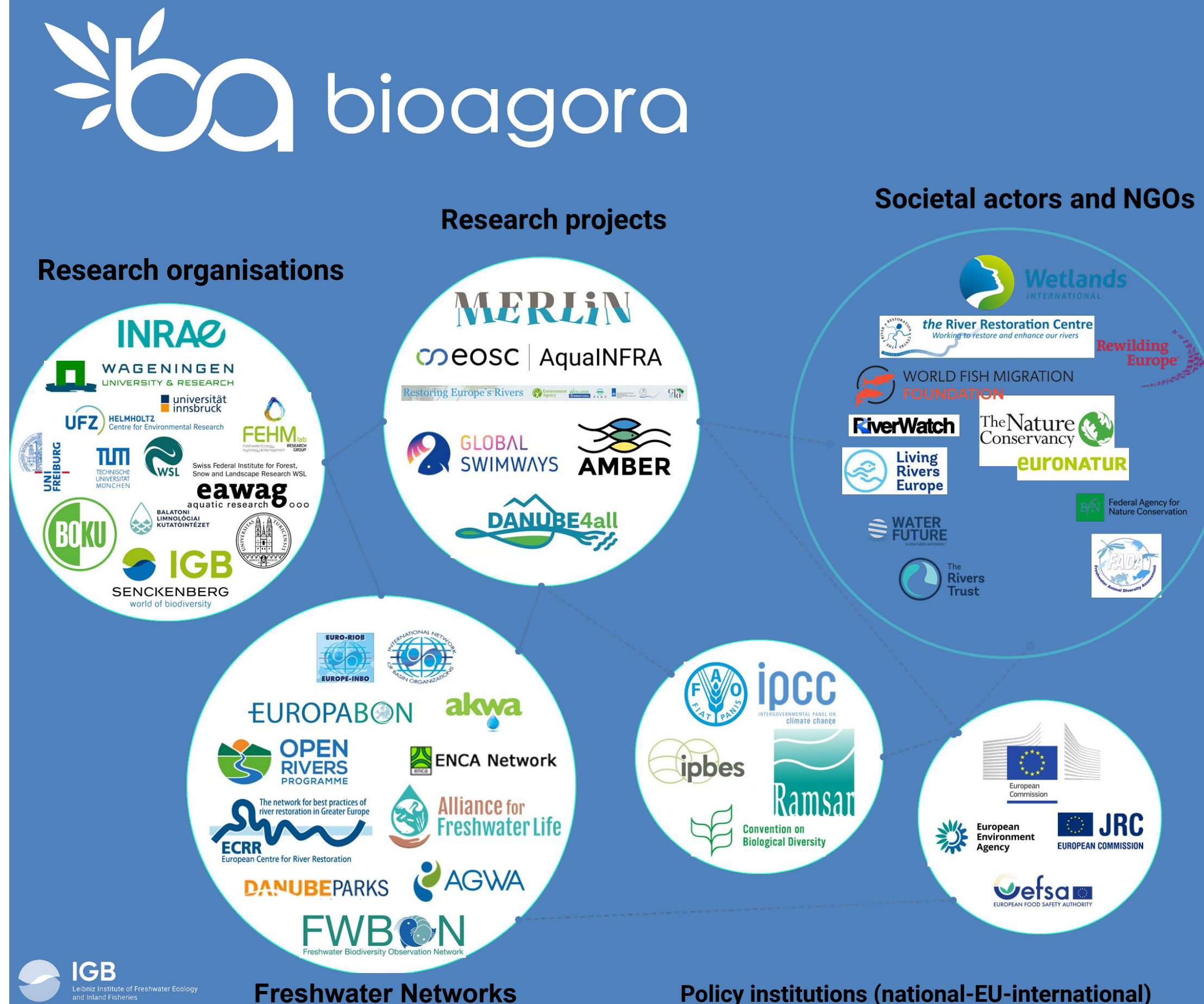
Actors and networks

Lots of existing networks

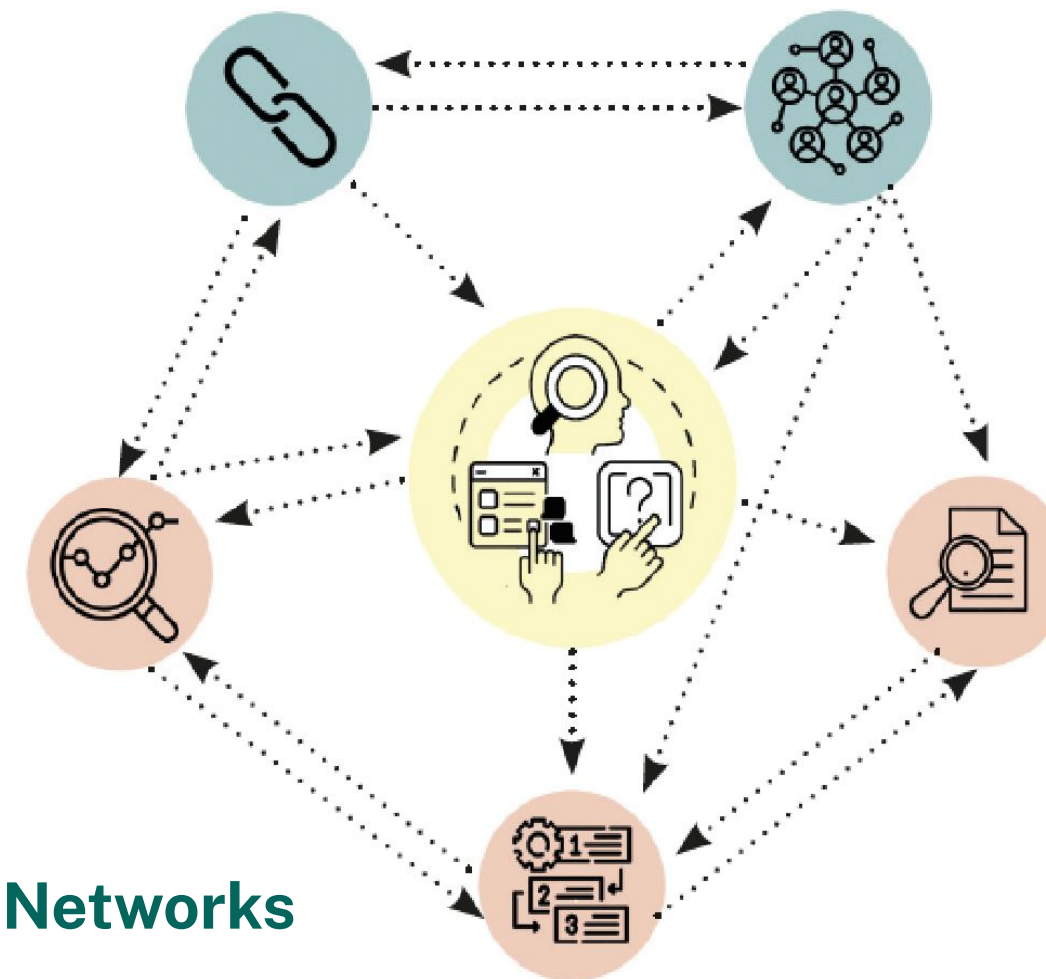
Usually maintained via project collaboration (EC funding)

Many societal actors involved

Some individual actors are key to composition, momentum and stability
→ “champions”



Developing a Science Service



Creating & Supportin Active & Thematic Networks

-  Linking up with biodiversity policy & strategies
-  Activating topical networks

Answering & Anticipating requests

-  In-depth/Urgent requests

Transforming the Science & Policy Process

-  Supporting & monitoring biodiversity mainstreaming
-  Research prioritization
-  Horizon scanning

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● Creating and Supporting Active & Thematic Networks

Overview of research projects

Review past/current proposal and ongoing EU projects

Identification and connecting with ongoing EU projects
on river restoration via the EU BioDivRestore Hub

● Transforming the Science & Policy Processes

Opinion paper on best practices and policy recommendations

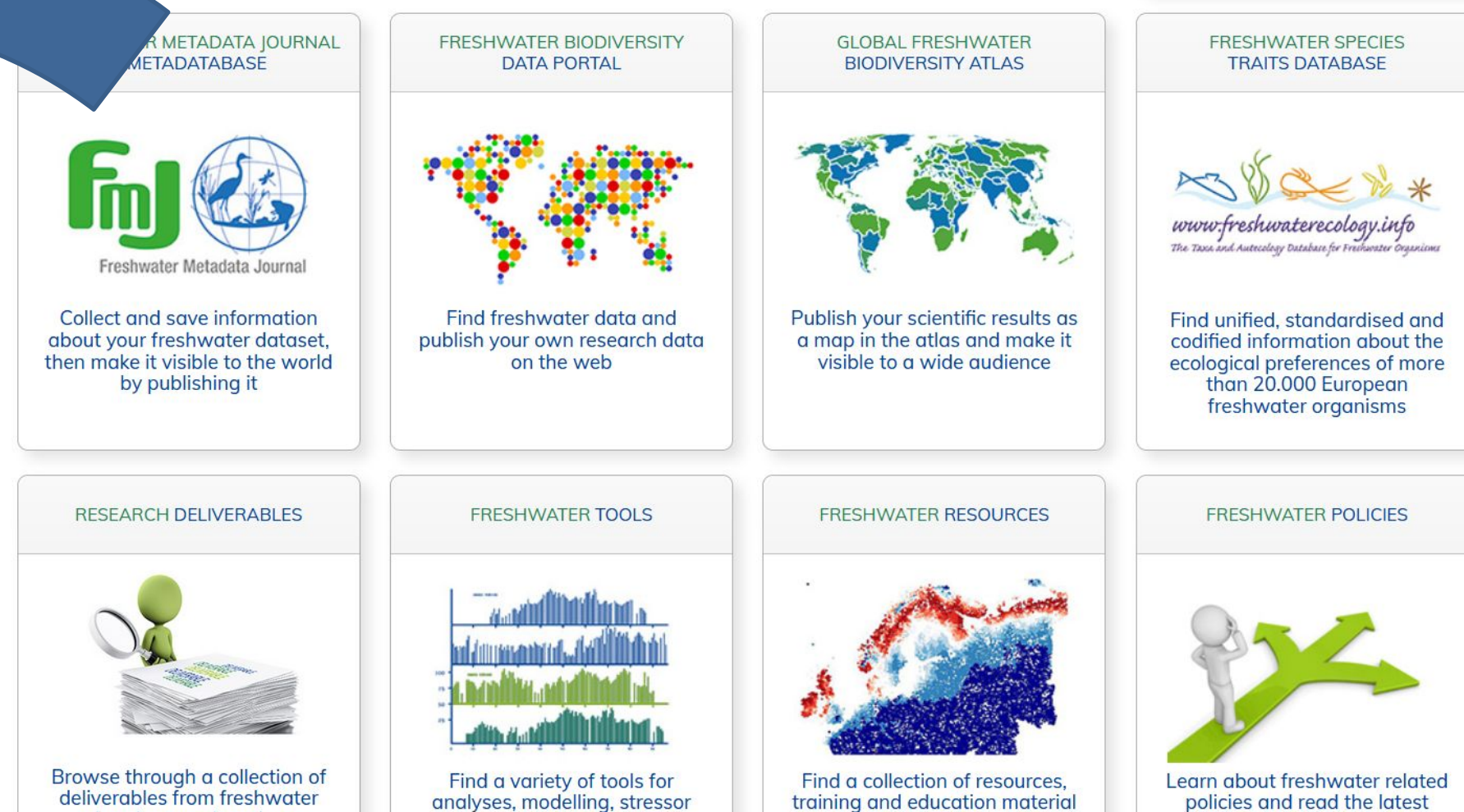
Online questionnaire, research prioritization

Workshops e.g. SPI workshop River Drôme (23-27 Sept.)

Freshwater Information Resources



<http://www.freshwaterplatform.eu/>



Answering & Anticipating Request

Ticketing system by the EU Knowledge Center Biodiversity

The Freshwater Information Platform (since 2015) gathers knowledge from ongoing and finalized research projects

Coordinators: IGB, University of Natural Resources and Life Sciences in Vienna (BOKU), the University of Duisburg/Essen (UDE) and the Royal Belgian Institute of Natural Sciences (RBINS) in Brussels

Developing Answering & Anticipating Request



Test responding to knowledge requests from the EU Commission
→ EU river cluster network and the EU BiodivRestore Knowledge Hub

Organise workshop at European Conferences to test a design thinking approach for the Science Service's 'answering request'

Gaps



A lot of research prioritization is addressed to social science, but we lack interdisciplinary research



The Biodiversity Strategy and the sector Environment often lack economic impact compared to the sectors Climate, Transport and Food



FAIR (findable, accessible, interoperable and reusable data principles) need to be improved and extended to the network of actors (data on experts)

Next steps



Increase access to the existing networks and actors



Assess capacity gaps of actors and facilitate capacity building



Increase inter- and transdisciplinary research



Improve inclusiveness of the network



Create a community to answer knowledge needs/ engage with policy

Thank you!

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