

Restoring free-flowing rivers: a booster for WFD?

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EU-INBO INTERNATIONAL CONFERENCE

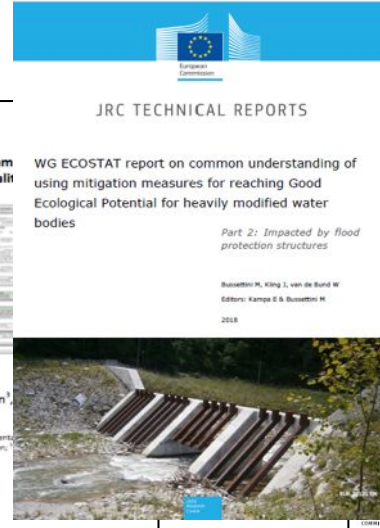
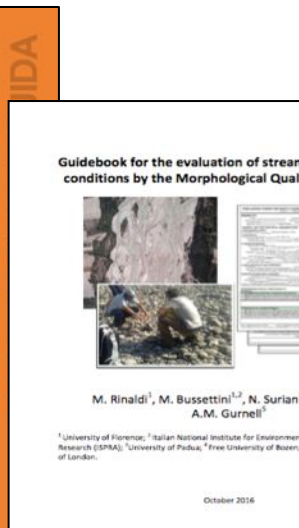
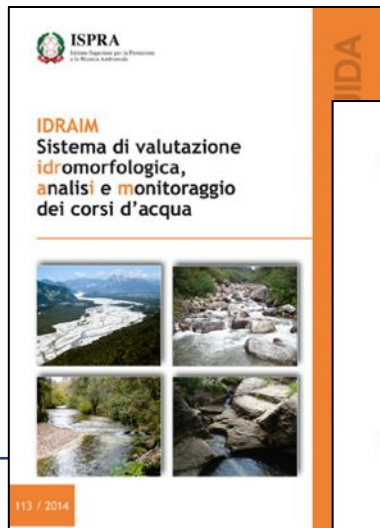
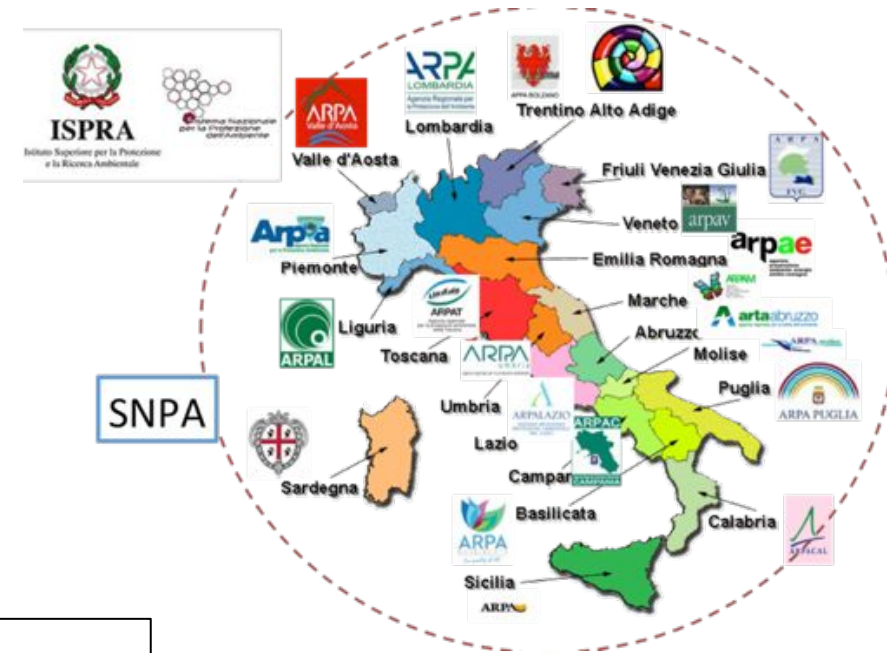
Implementation of EU Water Directive (WFD): the interest of integrating water, energy, food and ecosystems

Session 5 - Restoring free flowing rivers for humans and biodiversity: synergies with the WFD

Parma, 22 May 2025

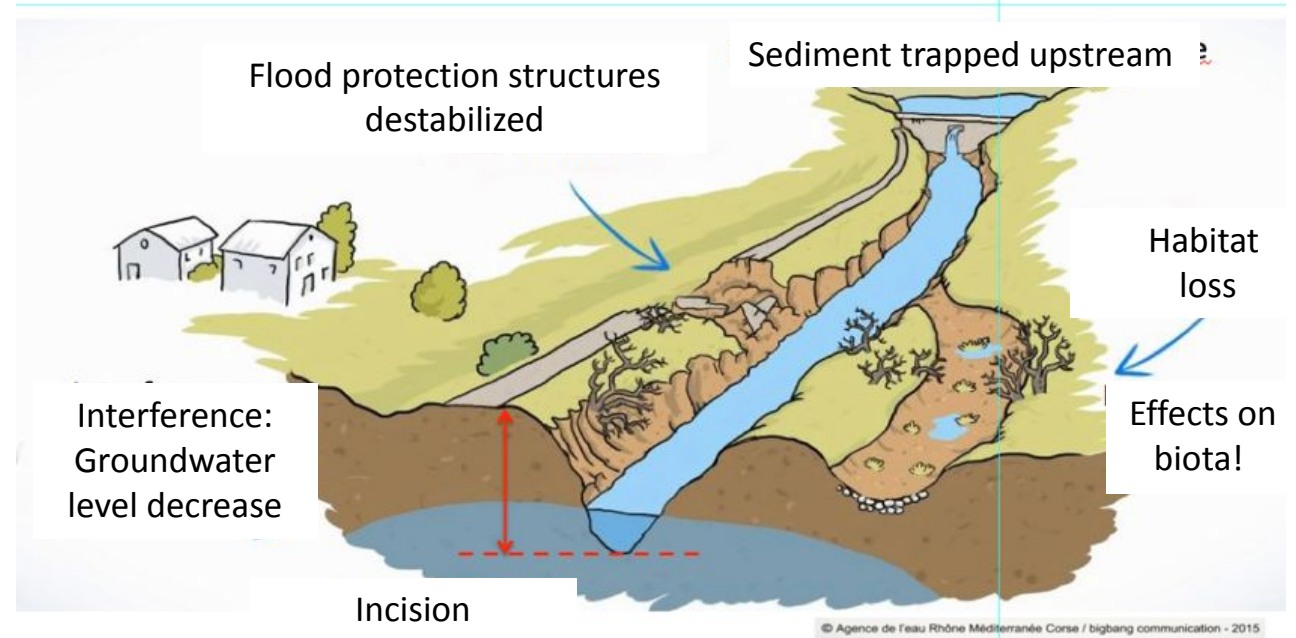
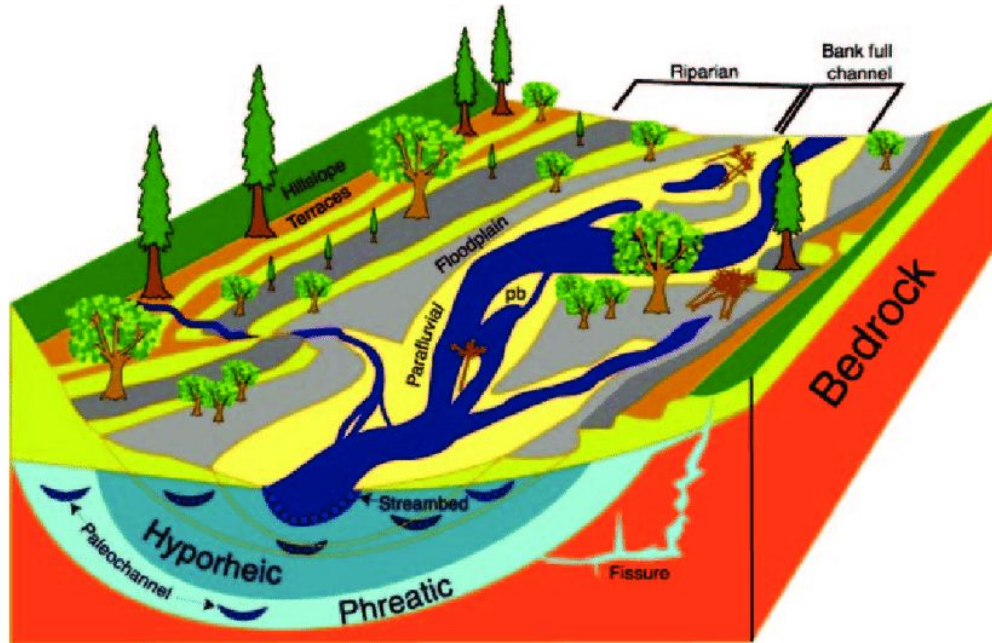
ISPRA - Italian Institute for Environmental Protection and Research

- Research /National node of a distributed system of regional EPAs
- Technical scientific «branch» of Italian MoE
- Applied research to develop and support environmental policies and legislation (monitoring standards, reporting, etc.)
 - WFD, FD, NRR methods, standards
 - WFD/FD CIS WGs
 - Free-flowing rivers working group
 - EEA
- Training and education on environmental issues
- Participation in national to global fora and research projects



What we (should) know from consolidated science

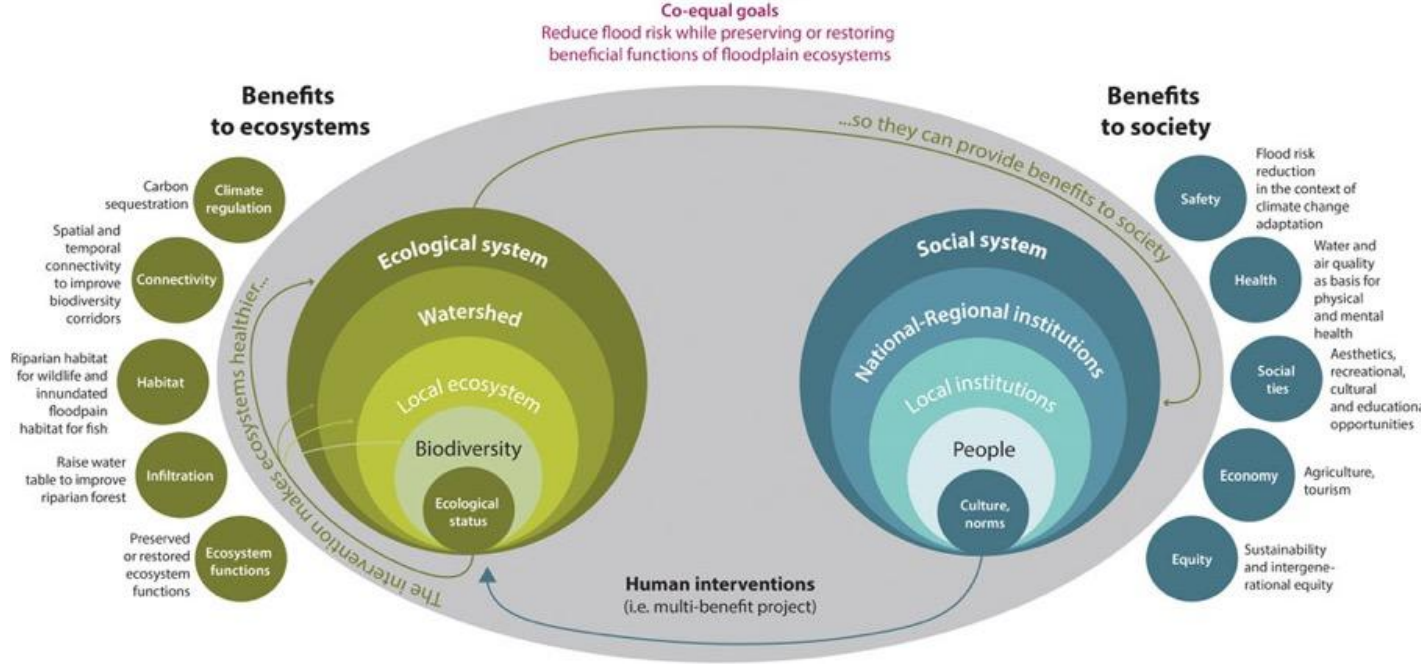
- Rivers in healthy conditions flow freely and provide a full range of ecosystem services
- Disconnection causes deterioration
- Restoring river connectivity is needed



Restoring river connectivity proves to be beneficial



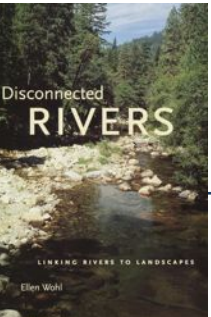
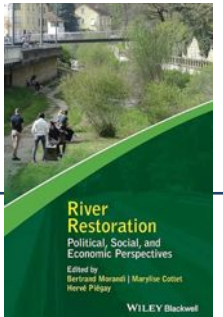
Mareit River, Italy
 Courtesy of Prof. Francesco Comiti



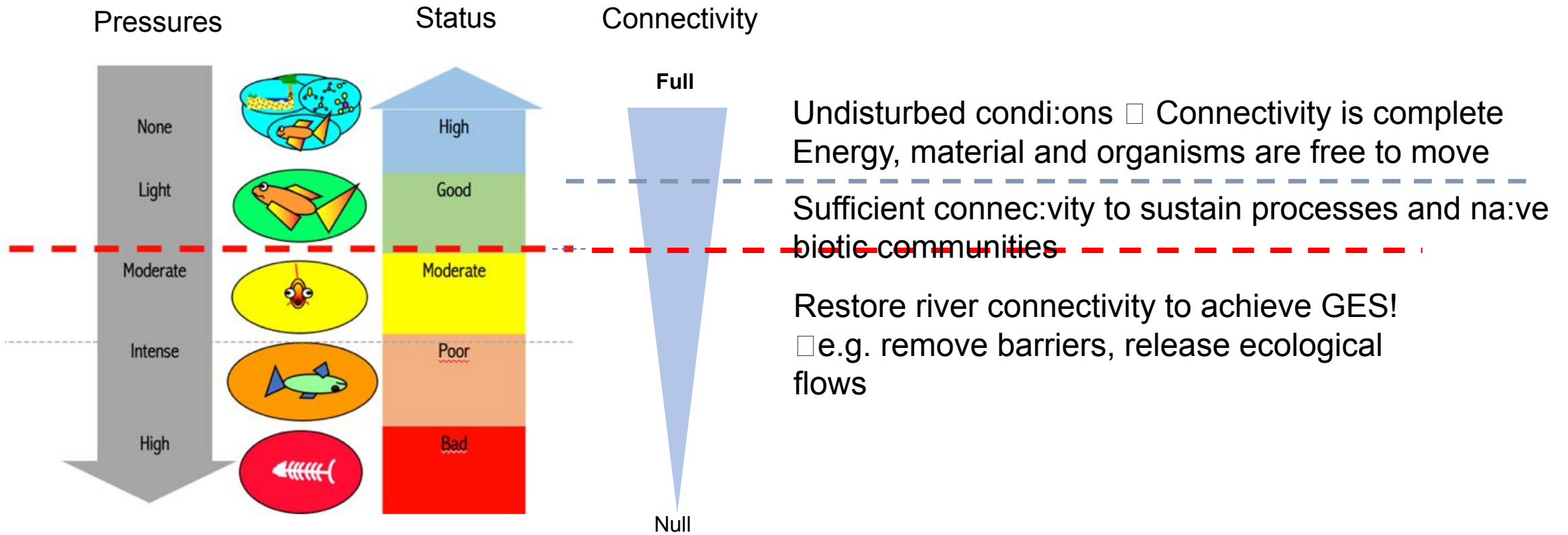
Serra-Llobet et al. 2022

Restoring longitudinal and lateral connectivity

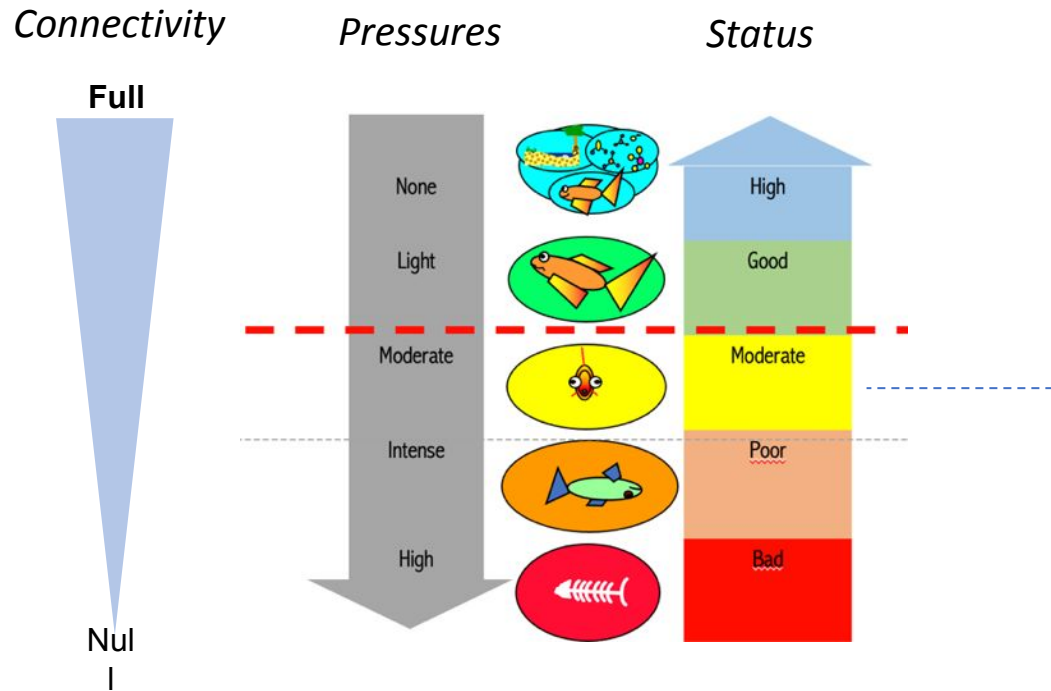
Habitats and ecosystem conditions +
 Natural water retention capacity +
 Resilience to CC + Flood risk -
 Maintenance costs -



WFD, river restoration and connectivity - 1



WFD, river restoration and connectivity - 2



Restore river connectivity to achieve GES
 e.g. remove barriers, release ecological flows

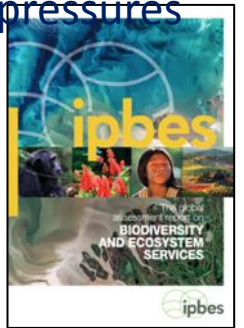


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«Ensuring good quality water in sufficient quantities for all legitimate uses»

Focus on hydromorphological pressures

- NWRM
- E-flows



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BDS decline

Focus on restoring FF rivers

202

EU Biodiversity strategy 2030

202

Nature Restoration Regulation

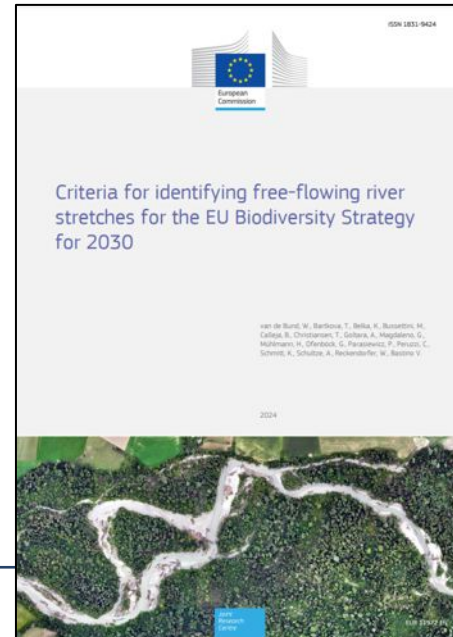
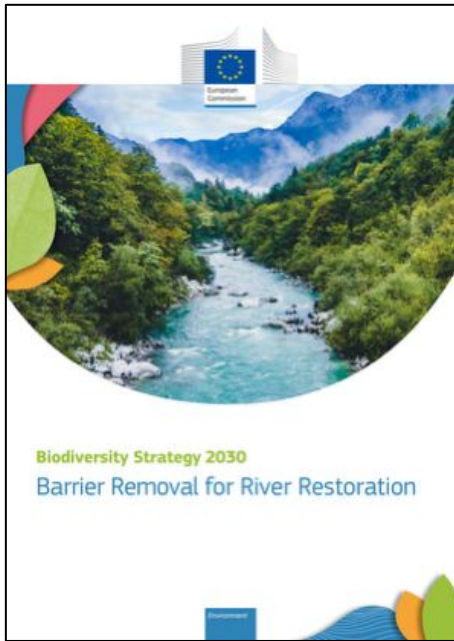


“More than one million barriers fragment Europe’s rivers”

Belletti et al. (2020), *Nature*

BDS 2030

Restore at least 25.000 km of **Free-Flowing Rivers**



Nature Restoration Regulation

Art. 9 Restoration of the natural connectivity of rivers and natural functions of the related floodplains

- Barrier inventory
- Identification of barriers to be removed
- Criteria and plan to remove barriers in 2030 (to 50)
- Other measures to complement removal

- Links with WFD
- Basic indications to restore river connectivity
- Scientific and financial resources

Step 1	HR	Length (km)	Step 2a Longitudinal connectivity	Step 2b Lateral connectivity	Step 2c Vertical connectivity	Step 3a Upstream pressure	Step 3b Downstream pressure
1	1.4		✗	✓	✓	✓	✓
2	1.7		✗	✓	✓	✓	✓
3	2		✗	✓	✓	✓	✓
4	1.6		✓	✓	✓	✓	✓
5	3.8		✗	✓	✓	✓	✓
6	1.9		✓	✗	✓	✓	✓

Restoring fl

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INDD

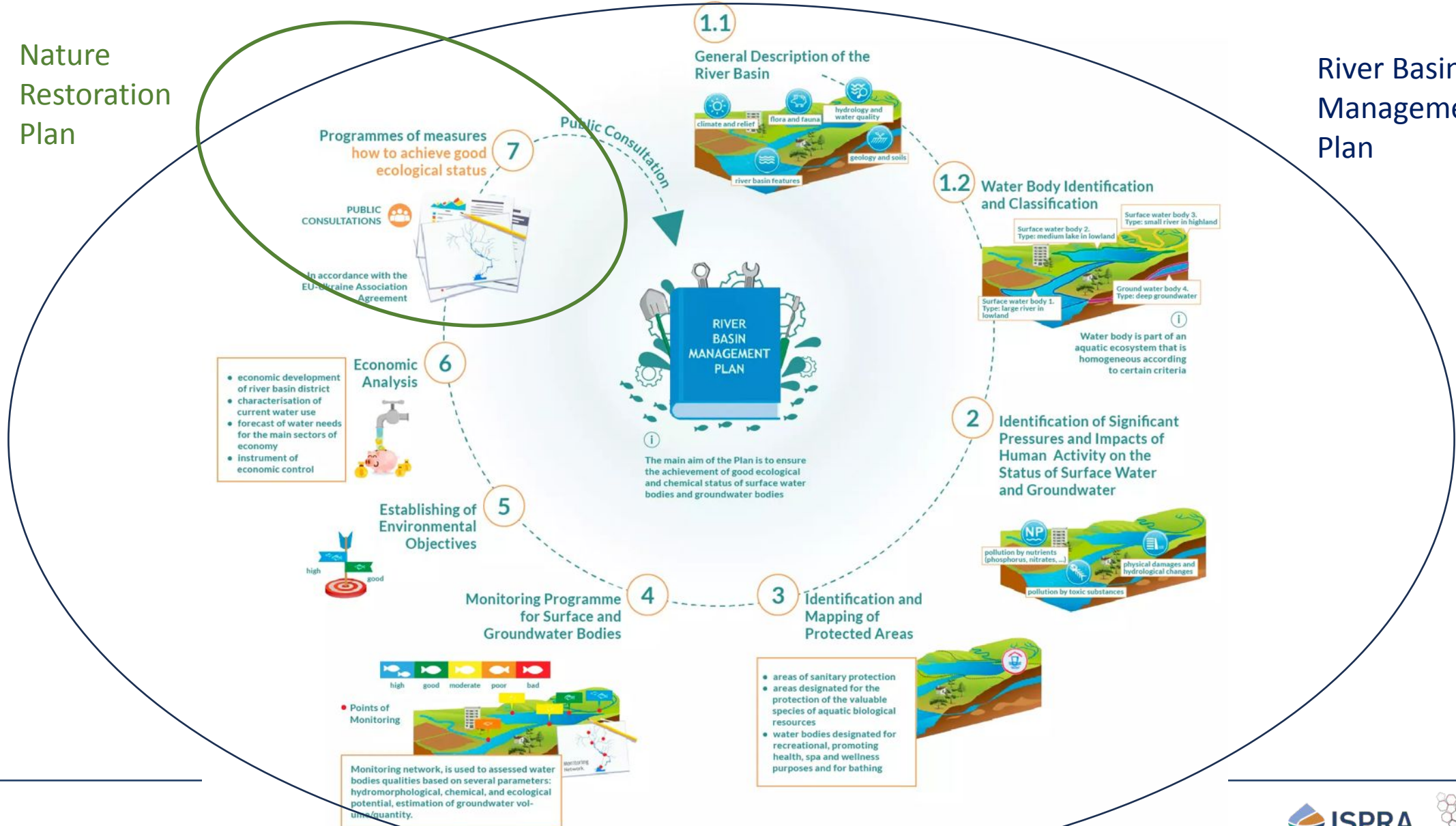
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Nature
Restoration
Plan

River Basin
Management
Plan

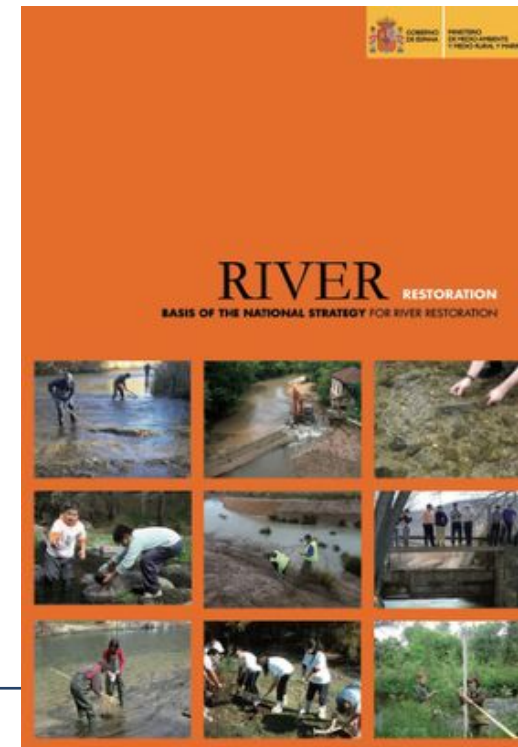


A great opportunity to «release» river restoration

- Awareness of how river systems work and respond to different actions
- Acceptance to redefine the space for our communities e.g. relocating properties and economic activities or convert activities, through a river basin scale approach and within the wider strategy for ecological transition
- Appropriate educational processes and time to assimilate those knowledge, concepts and ideas of a different way of managing river systems (e.g. Spain)
- All actors' engagement

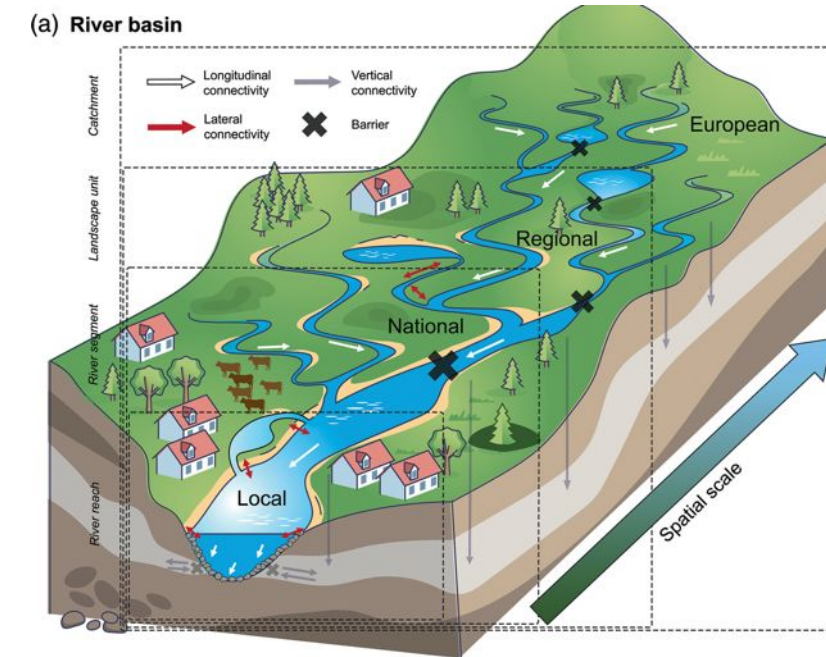
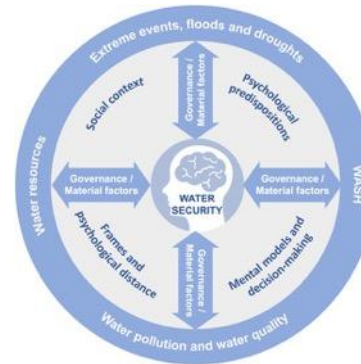
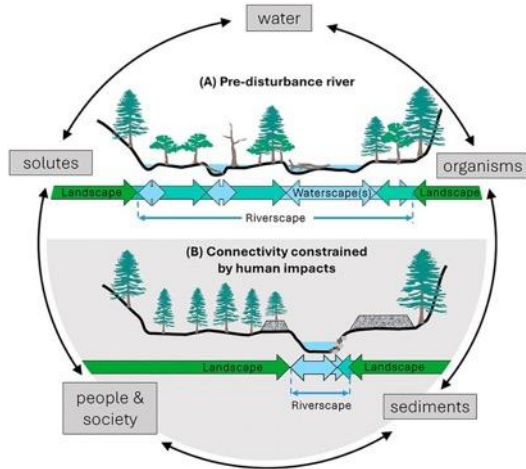


2010!



Restoring free flowing rivers is challenging

1 Scientific knowledge on geomorphic and eco processes must underpin water management and restoration strategies at the basin scale



(b) Challenges for restoring free-flowing rivers

	Local	National	Regional	European
		Establish methods for identifying integrated connectivity across river networks		
		Incorporate meta-ecosystem thinking in restoration planning		
		Consider conflict areas with other legislative frameworks		
		Consider the network structure of rivers and their connectivity dimensions		
		Prioritise actions to maximise quantity and quality of free-flowing river networks		
		Enhance awareness, stakeholder participation and citizen engagement		
		Develop a clear definition of free-flowing rivers, barriers, and reference areas		

2 Transparency and participation of public on how to redefine their space

3 WFD and the RBMPs need to be complied with, considered and integrated in any policy related to rivers or the use of their resources.

NRR is a great opportunity for RR and ecological transition

- Restoration as an inclusive process
- Investments in restoration outweigh costs

(million EUR,
estimates)

Financial support from EU (MFF)

Contributions to biodiversity in the EU budget over 2021-2027

Technical support from EU

Green Assist: Advisory initiative funded through LIFE. To create a portfolio of green investment projects. Accessible continuously. Free of charge for beneficiaries.

(million EUR,
estimates)

LIFE: Strategic Nature Projects (SNaPs): Support for the implementation of programs that integrate EU nature and biodiversity objectives into other policies and funding instruments.

TAIEX-EIR Peer to Peer: The TAIEX-Environmental Implementation Review (EIR) Peer2Peer programme is an EU technical assistance and policy support instrument to promote the high-quality implementation of EU environmental policy and legislation in Member States.

Let it flow

**Tagliamento
River**

Courtesy of W.
Bertoldi