

An aerial photograph of a river system, likely the Vistula River (Wiślana) in Poland. The image shows a large, light-colored sandbar in the center, with several smaller islands and peninsulas covered in dense green forest. The river channels are dark and winding, creating a complex pattern around the landmasses. The overall scene depicts a natural, undisturbed freshwater ecosystem.

# The Main Pressures on Freshwater Ecosystems

Eef Silver – Wetlands International Europe

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# Freshwater ecosystems: overall picture

- European Environment Agency: surface waters in good ecological status: ~40%, good chemical status: 38%
- Rivers and transitional waters in relatively bad state
- Migratory freshwater fish: average declines: -93%  
(LPI for migratory freshwater fish, 2020)
- Wetlands: two thirds lost since 1900s, being destroyed three times faster than forests
- 95% of original floodplain area converted to other use
- 85% of habitats related to wetlands have an unfavourable conservation status





# Pressure: pollution

- Drivers: agriculture, industry and households
- Excessive nutrient pollution from agriculture (fertilisers); chemical pollution deposited from the air; emissions of heavy metals from industry; urban wastewater
- Other emerging sources: pharmaceuticals, microplastics
- Effects: toxicity, threat to public health, accumulation in food chain, habitat degradation



Source: EEA.

# Pressure: physical alterations

- Drivers: infrastructure and urban development, barriers being constructed for flood protection, hydropower, transport and irrigation; sediment dredging; channelization
- Effects: alteration of morphology and river flow, loss of floodplains, loss and degradation of habitats, especially for fish



# Protection need: natural rivers

Small percentage of Europe's rivers which still have exceptional natural values need higher degree of protection

## Zooming in

- Balkan and Mediterranean rivers: threat of hydropower expansion
- 5,300 are plants in operation, > 6,300 new planned, 202 under construction
- 186 fish species would be driven towards extinction
- Biggest threats: small HPP (capacity < 10 MW)



Photo by Szabolcs Papp on Unsplash

Source: Freyhof, J., Bergner, L. & Ford, M. (2020) Threatened Freshwater Fishes of the Mediterranean Basin Biodiversity Hotspot: Distribution, extinction risk and the impact of hydropower. EuroNatur and RiverWatch. i-viii + 1-348.

# Restoration need: River connectivity



- Fragmentation of rivers is one of the five main causes of biodiversity loss
- Magnitude of river fragmentation in Europe largely unknown
- Estimate: > 1 million barriers in Europe's rivers, or 1 barrier per 2 km of river
- More than 85% of all barriers are small (lower than 1-2 meters)
- Need to restore connectivity to restore natural processes, including dam removal, floodplain reconnection, wetland restoration

(source: [AMBER](#))

# EU Water Framework Directive

basis for protection & restoration of rivers

- WFD requires meeting standards for ecology, chemistry and quantity of waters to achieve 'good status'
- through protection, restoration, reduction of pollution and sustainable water management
- Thanks to WFD, degree of:
  - National legislation on water management
  - Water quality improvements
  - More stringent environmental impact assessment
  - Public participation
  - International river basin cooperation
- But: ongoing deterioration of rivers, outpacing restoration efforts