

Forests and Water Management

Kapchorwa conference
The Future of Forests

Mount Elgon National Park

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EU Sustainable Value Chains



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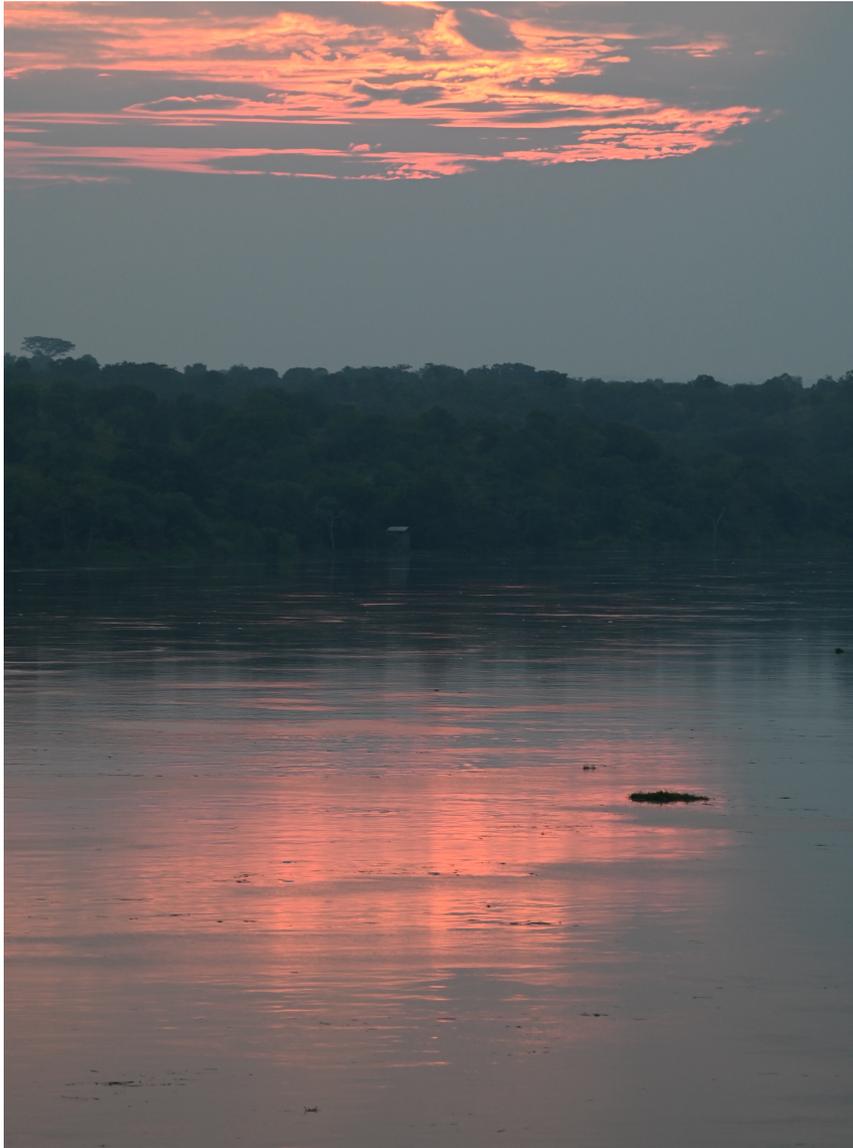


Table of content

- Synergies, convergences?
- International Law
- EU Law

Synergies, convergences?

Forest conservation plays a crucial role in maintaining water quality and quantity.

Water quantity benefits: by intercepting precipitation, evaporating moisture from vegetative surfaces, transpiring soil moisture, capturing fog water and maintaining soil infiltration, forests positively influence the water yield, regulate water flow, and reduce drought stress.

By maintaining or improving soil infiltration and soil water storage capacity, forests influence the timing of water delivery.

By retaining excess rainwater, forests help to reduce run-off, thus reducing damage from flooding, and help in mitigating the effects of drought.

Water quality benefits: forests minimize impairment of water quality by reducing soil erosion, sedimentation, and pollution. Accordingly, undisturbed forests often have the highest water quality

Forests provide shade, thus reducing the water temperature.



Synergies, convergences?

Forests make important use of water.

Trees use water at their highest rate when they have reached their final height and during the most intensive growth stage.

Either too little water (as a result of insufficient precipitation or a reduction in groundwater availability), or too much (i.e. waterlogging), can have a negative effect on forest health.

Forest, Water, and Biodiversity

Canopy structure of mixed species plantations reduce transpiration, imposing less pressure on water if compared to mono-species plantations.



Forest, Water, and Climate Change Synergies, convergences?

Climate change: Under climate change conditions drought and wet extreme events are expected to intensify in the next decades.

Forests are thus essential to mitigate and adapt to the impacts of climate change.

The need for clean, abundant, consistent water supplies is likely to increase as the climate changes and the human population continues to increase (4 billion people are affected by water scarcity).

Proper forest management is also essential to contribute to the Sustainable Development Goals (SDGs)



Synergies, convergences?

Proper forest management is also essential to contribute to the Sustainable Development Goals (SDGs)

- **SDG n. 3** (Ensure healthy lives and promote well-being for all at all ages),
- **SDG n. 6** (Ensure availability and sustainable management of water and sanitation for all)

Water sensitive forest management

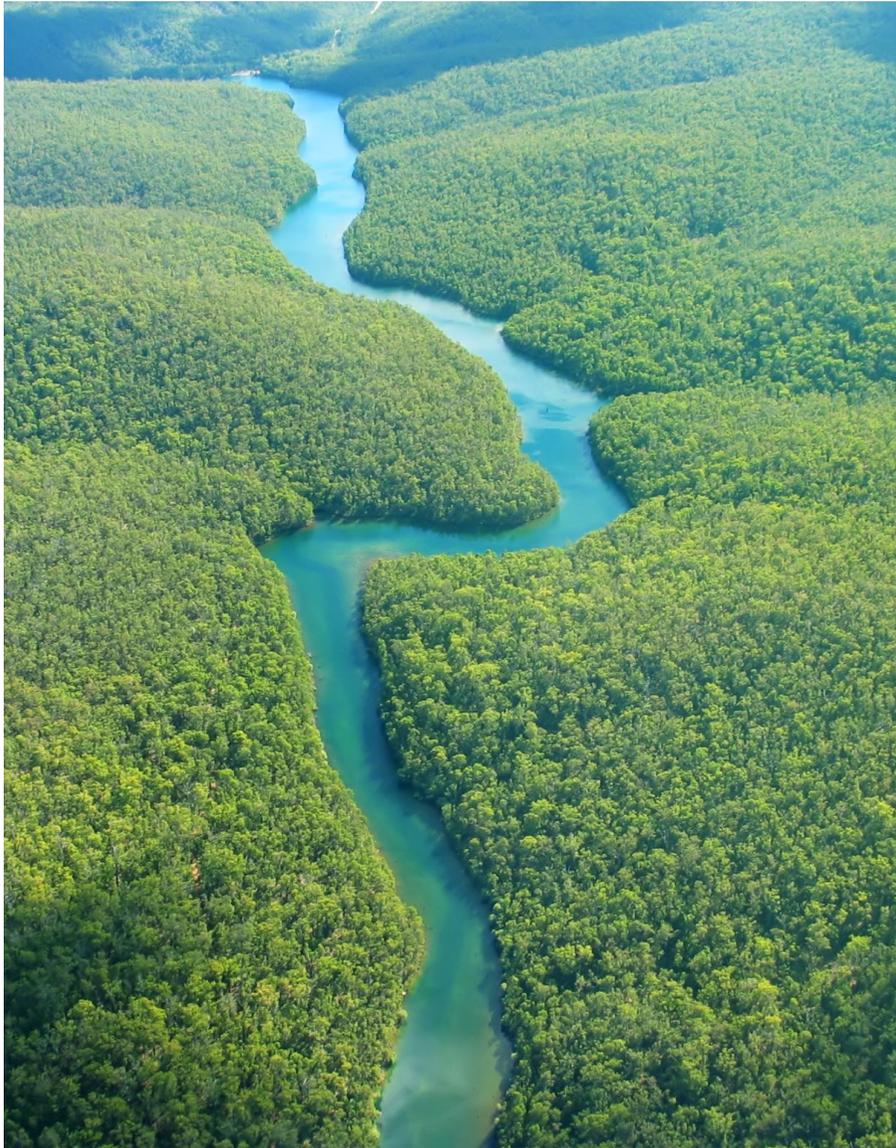
A forest is not managed primarily for water.

Growing forests can have a direct impact on water availability. Planted forests use more water than natural forests due to a “plantation effect” in which trees planted at the same time and growing at the same high rate result in high water demand.

Water infiltration and retention are encouraged in forest soils by dense, deep root systems and a thick and porous organic top layer

- maintain permanent vegetation cover,
- limit the compaction of soils,
- maintain a high amount of organic matter in the soil,
- increase the “surface roughness”, which helps increase water infiltration). maintaining a good tree cover





Water sensitive forest management

Competing trade-offs between water and non-water natural resource demands from forests (biodiversity, albedo effect, etc.) is a major forest management challenge.

International Environmental Law Ramsar Convention

During the last 50 years, 20-35% of mangroves have disappeared.

Mangrove forests have been converted into fishponds and agricultural areas or have been removed to make way for urban sprawl and coastal development.

The Ramsar Convention has promoted the designation of mangrove wetlands as Wetlands of International Importance.



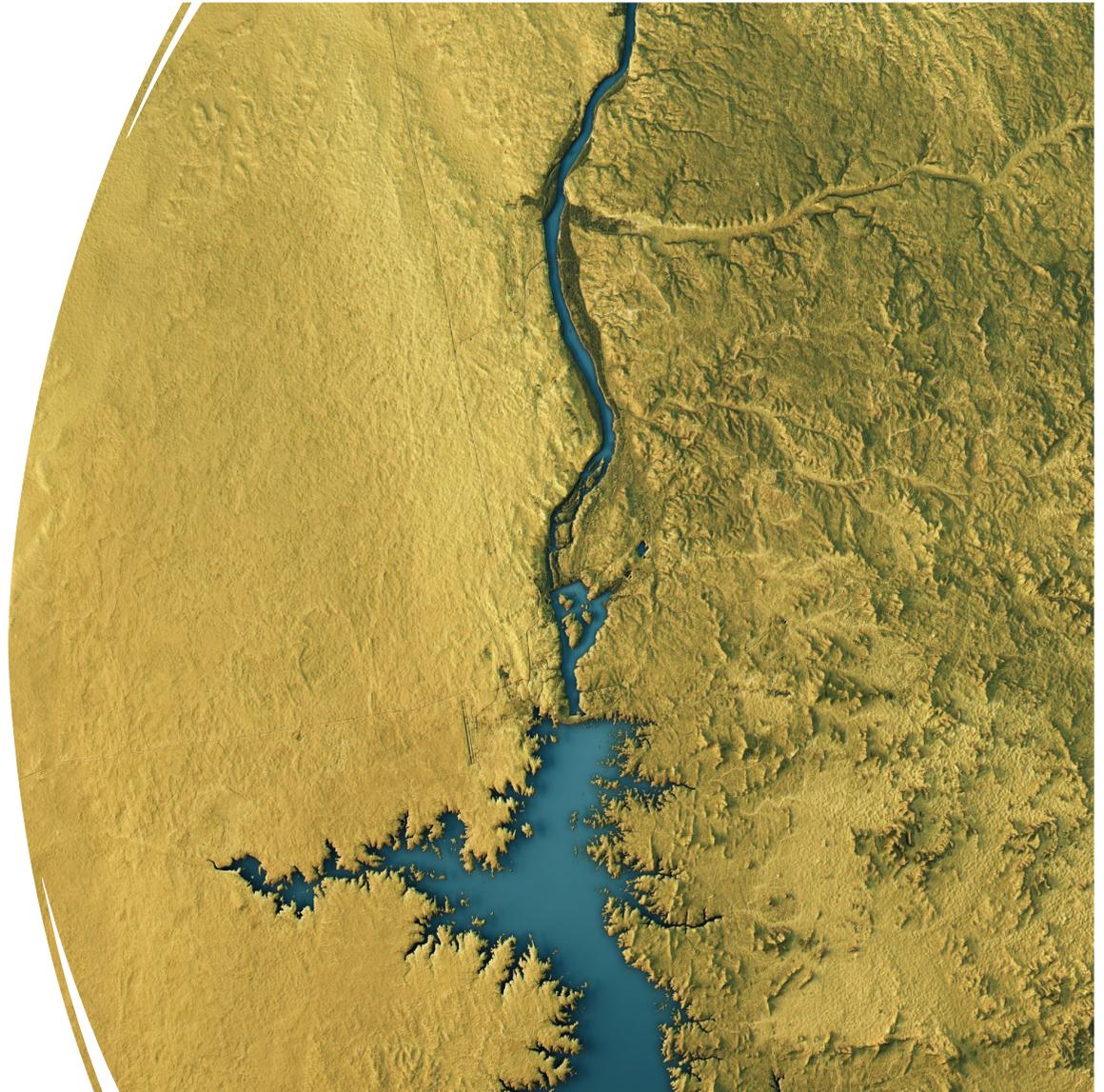
The EU Water Framework Directive (WFD)

The EU Water Framework Directive (WFD) focuses on achieving good qualitative and quantitative health of EU water bodies, including rivers, lakes, and groundwater.

Scope: Encompasses inland, including lakes, transitional, coastal waters as well as underground waters.

Goals: achieve good status in all bodies of surface water and groundwater by 2027. Good status is comprised of four assessments:

- Ecological and Chemical status of surface waters, Chemical status of surface waters,
- Ecological and Chemical status of groundwaters.

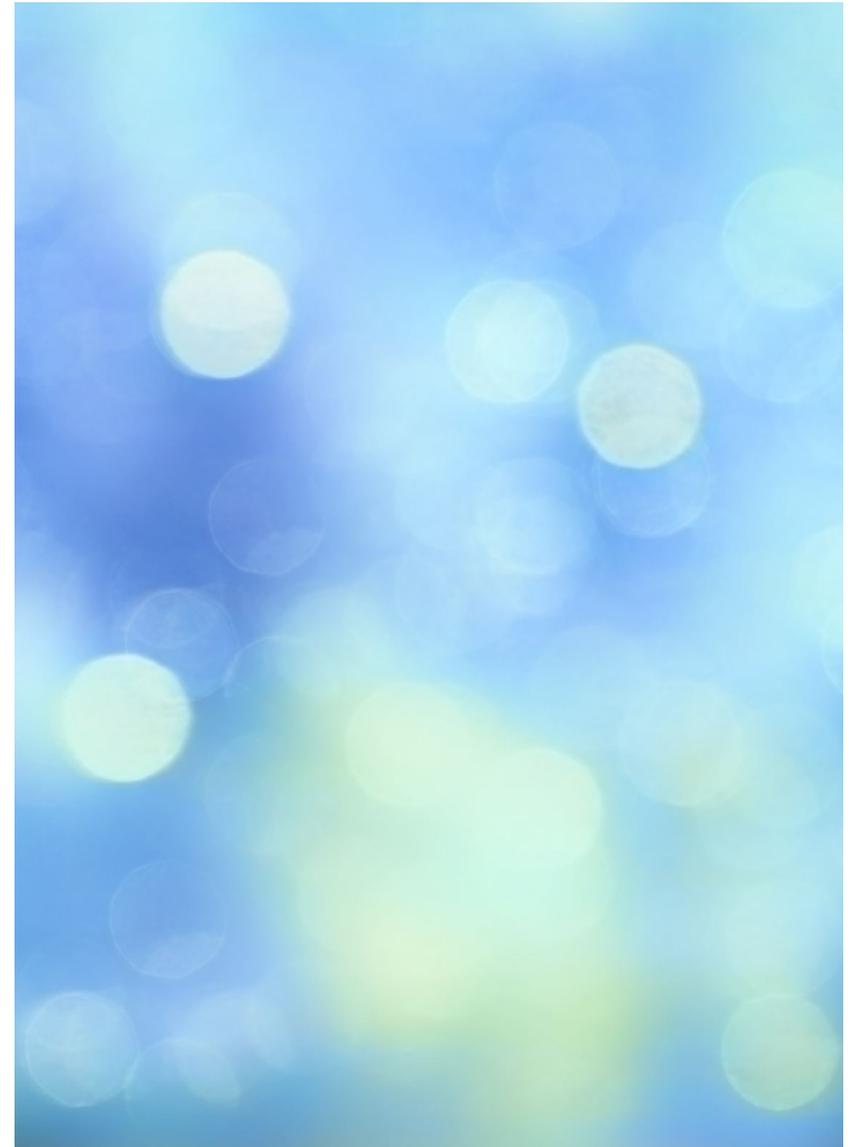


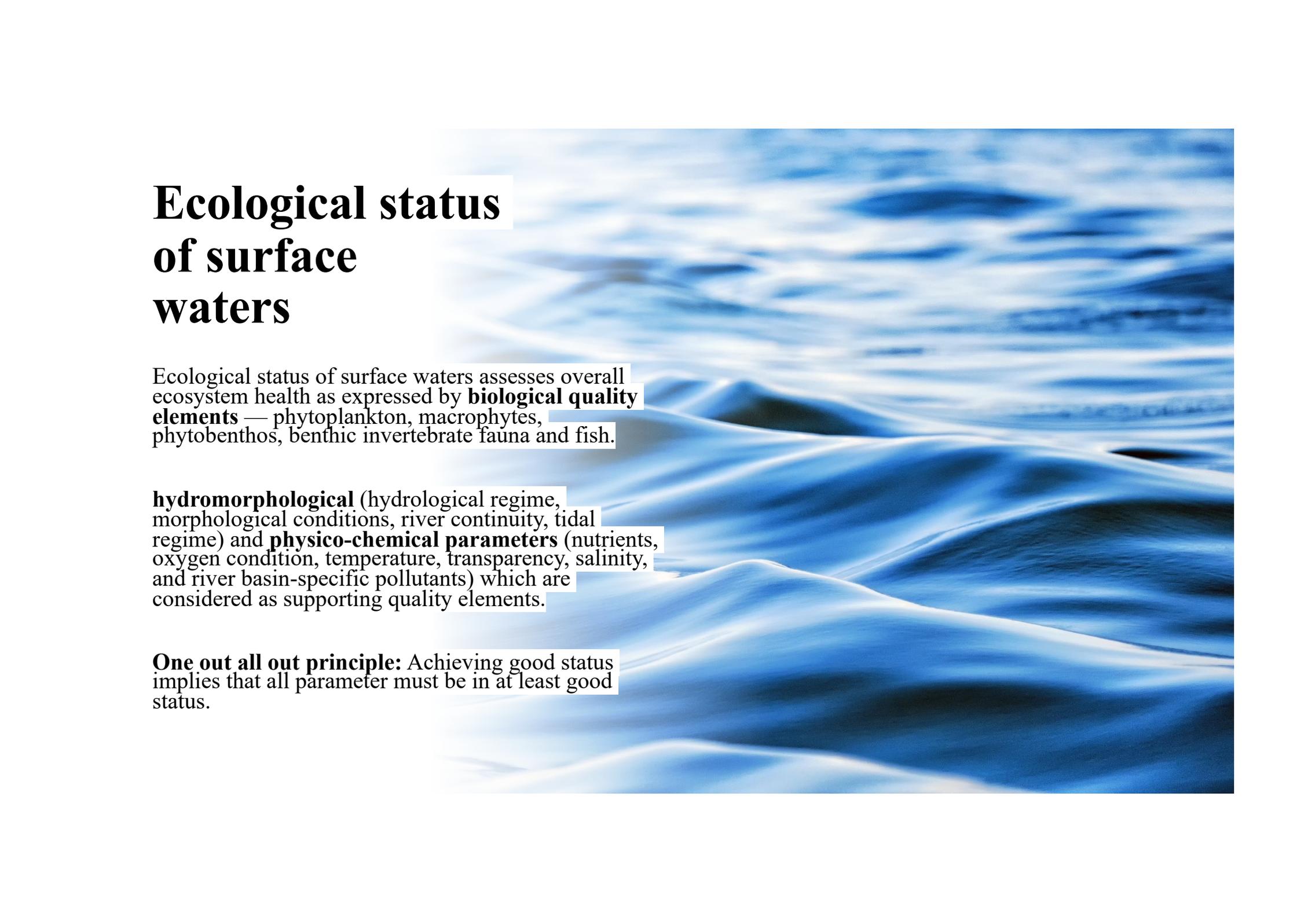
EU Water Framework Directive (WFD)

Integrated approach to water management, respecting the integrity of whole ecosystems.

River basin district approach to ensure that neighbouring countries cooperate to manage the rivers and other bodies of water they share.

River Basin Management Plans (RBMPs) and Programmes of Measures (PoMs) aim to protect and, where necessary, restore water bodies in order to reach good water status, and to prevent deterioration.





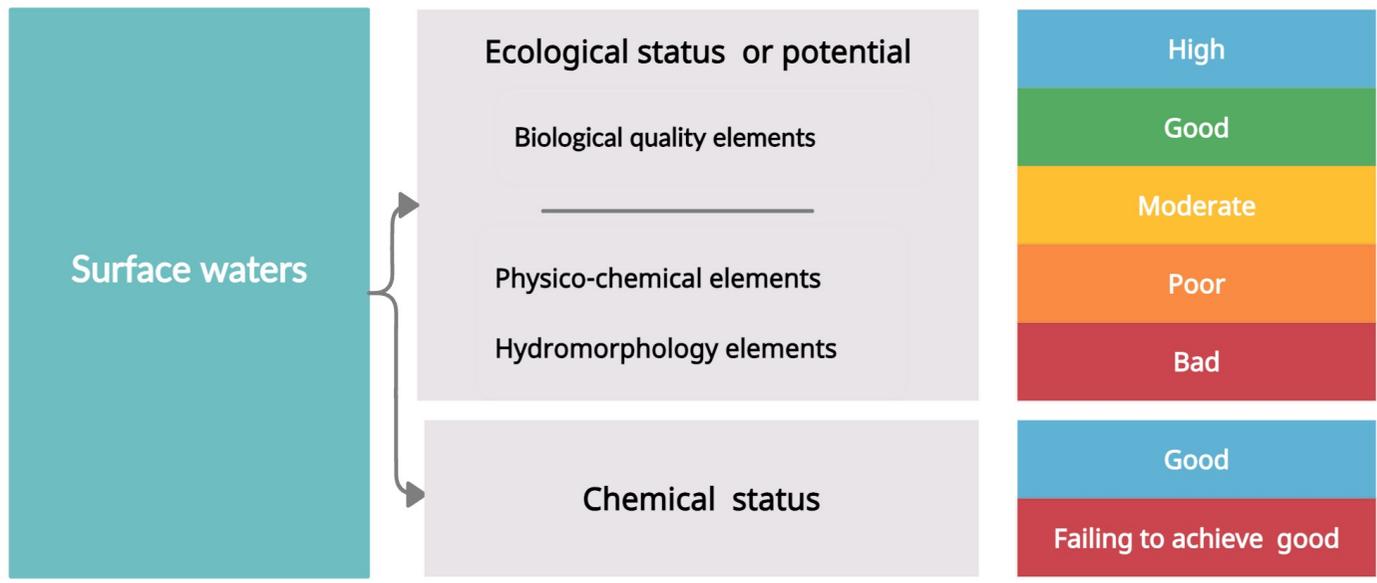
Ecological status of surface waters

Ecological status of surface waters assesses overall ecosystem health as expressed by **biological quality elements** — phytoplankton, macrophytes, phytobenthos, benthic invertebrate fauna and fish.

hydromorphological (hydrological regime, morphological conditions, river continuity, tidal regime) and **physico-chemical parameters** (nutrients, oxygen condition, temperature, transparency, salinity, and river basin-specific pollutants) which are considered as supporting quality elements.

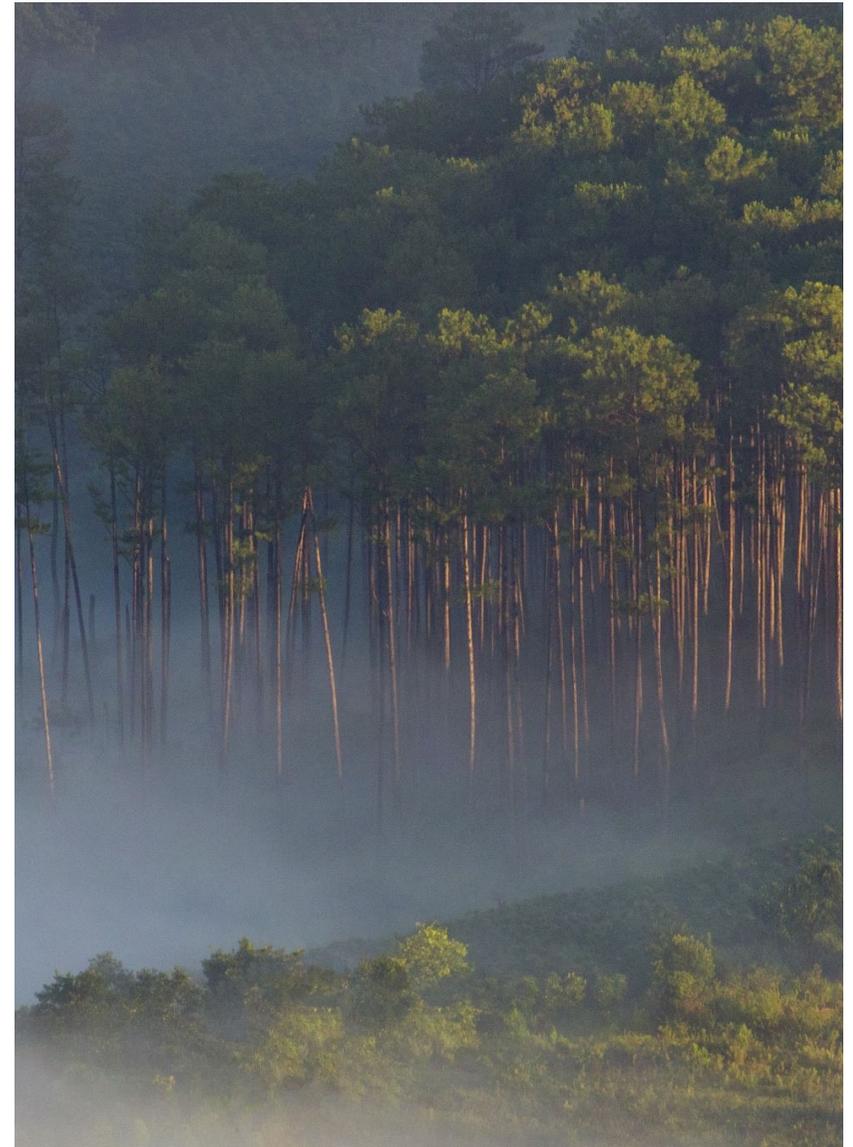
One out all out principle: Achieving good status implies that all parameter must be in at least good status.

Assessment of status of surface waters and groundwater according to the WFD



Forests

- At European level, forests are closely connected to the hydrological network.
- While forests are not a direct focus of the WFD, they play a crucial role in maintaining water quality and achieving good ecological status.
- Well-managed forests can support the WFD's objectives by providing natural filters, habitat connectivity, soil conservation, and contributing to integrated river basin management.



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