



National Institute for Public Health
and the Environment
Ministry of Health, Welfare and Sport

An ecological perspective on a river's rights: a recipe for increased effectiveness?

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December 5th, 2019



Central questions

1. What does a river need to be healthy from an *ecological perspective*,
2. How do these needs relate to the conditions for effective water quality governance in both the planning and the implementation phase,
3. How would the transfer of rights serve the needs of a healthy river from an *ecological perspective*.



Approach from the European context (1/2)

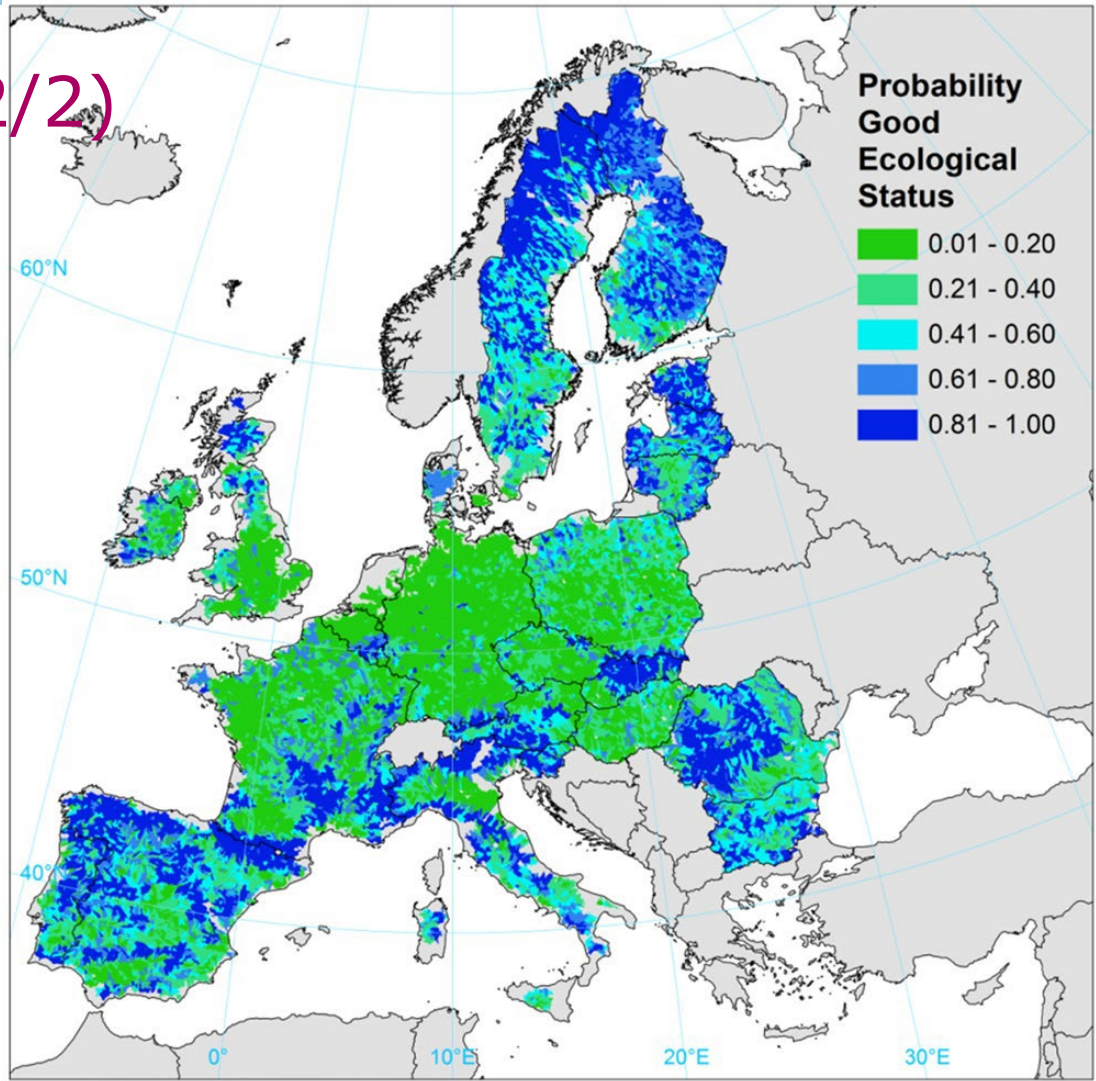
Ambitions

- SDG 6:
 - By 2020, protect and restore water-related ecosystems, including mountains, forests, wetlands, rivers, aquifers and lakes
- Water Framework Directive (2000/60/EC):
 - By ultimately 2027, achieve good ecological and chemical status for Europe's waters (surface water, groundwater, coastal water)



European context (2/2)

Projections WFD (2027)
European Environmental Agency
Grizetti et al. (2016)
DOI:10.1038/s41598-017-00324-3





Possible explanation

- Water issues: complex issues:
 - Multi levels,
 - Multi scales,
 - Multi-disciplines
- Different scholars and actors hold different perspectives on effectiveness
- Legal strand: transfer of rights to the river to increase effectiveness



Approach

- Identify a river's needs from literature
- Specify needs into specific objectives
- Identify governance conditions for those objectives
- Reflect impacts of the transfer of rights on realisation of objectives

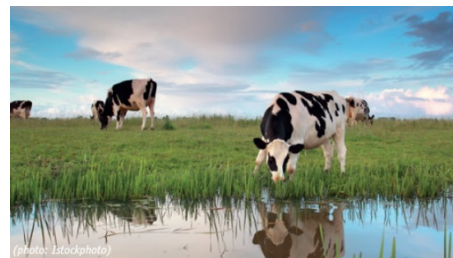


River's needs

Related to:

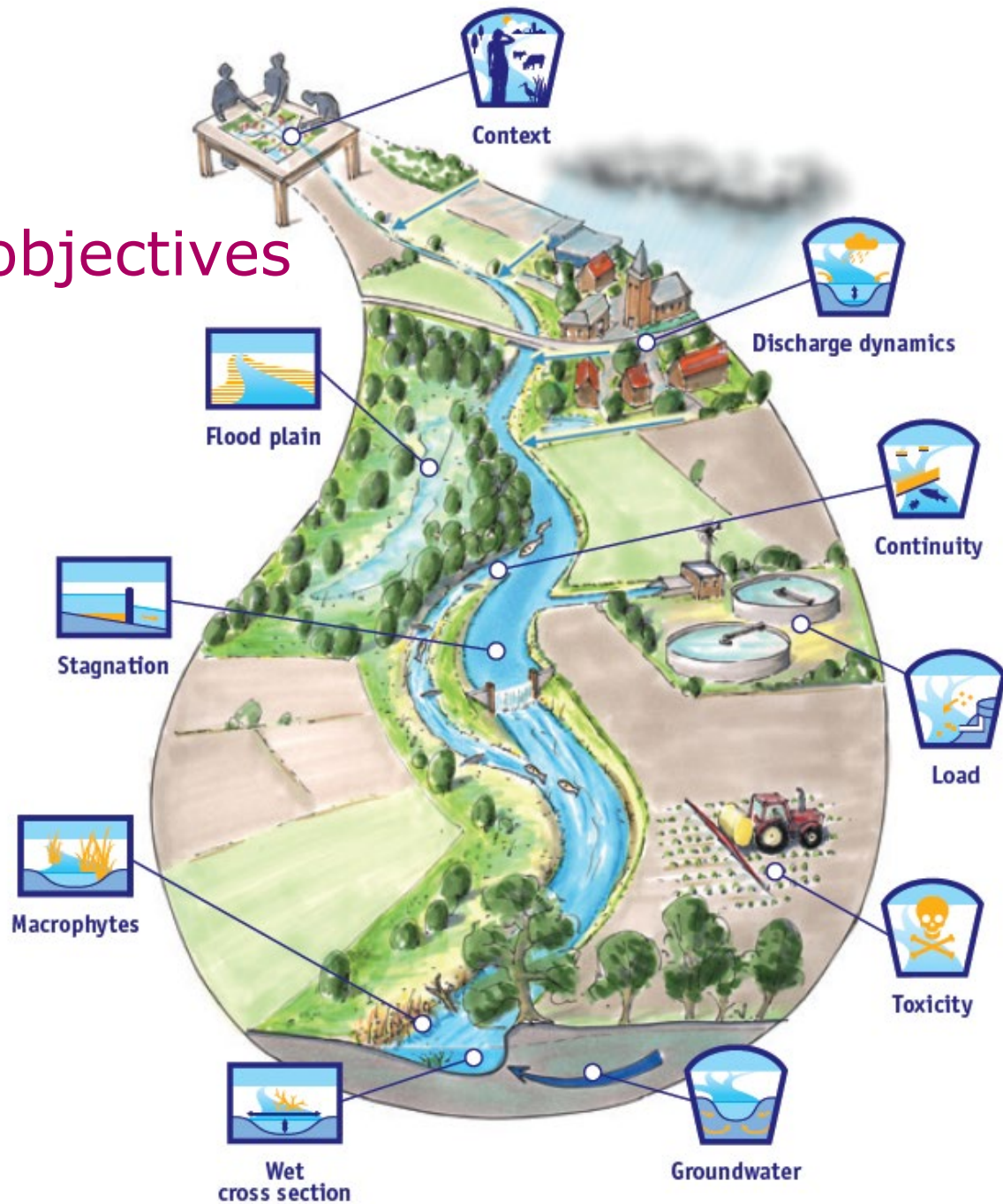
- Hydrology
- Morphology
- Physical-chemical requirements

Pictures from:
Mellor et al. 2018



River's needs into objectives

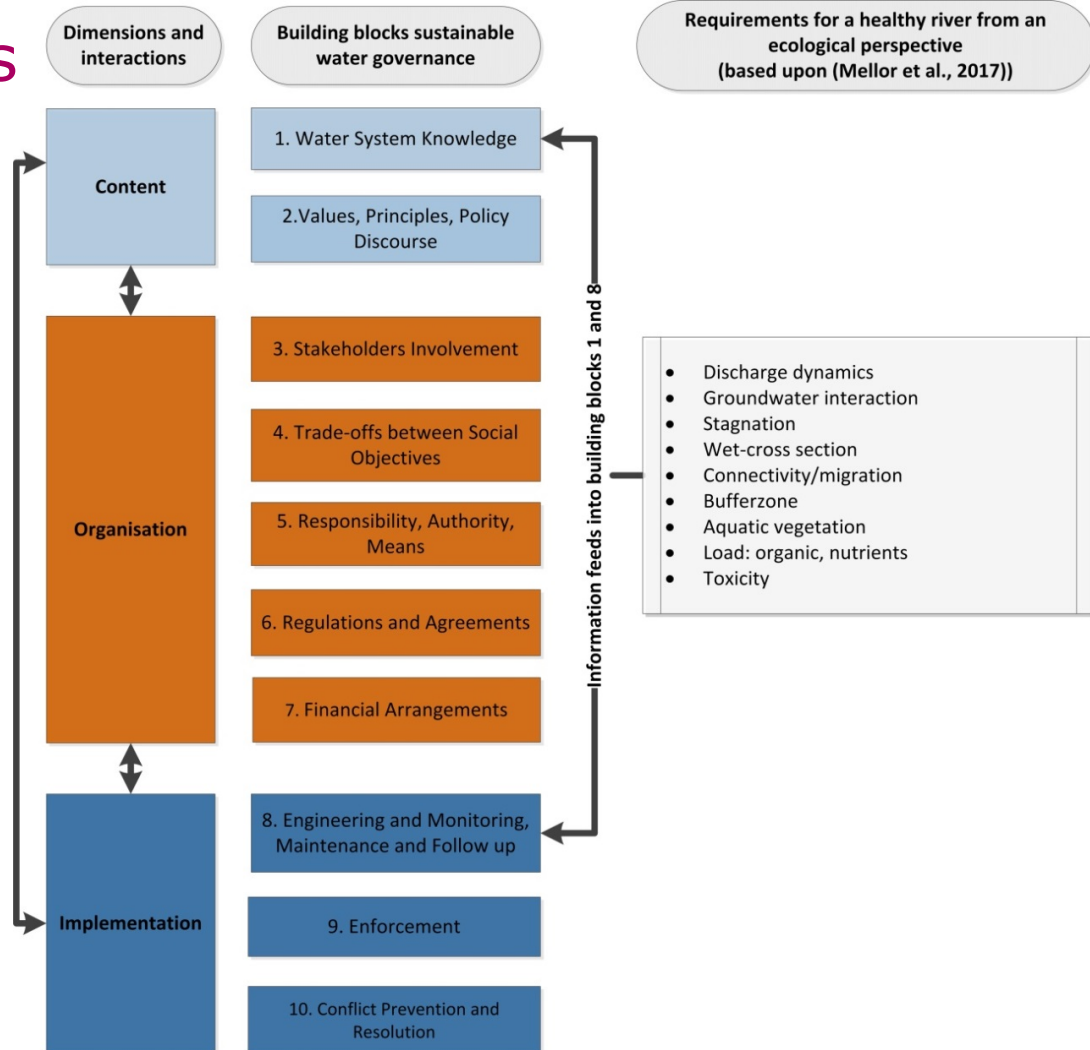
- More specific than general objectives WFD
- Annex II, WFD
- Dutch setting: running waters







Governance conditions

- Analytical framework for sustainable water governance
Van Rijswijk et al., 2014
doi:10.1080/02508060.2014.951828
- EKFs running waters NL
Mellor et al., 2017
<https://www.stowa.nl/publicaties/ecological-key-factors-method-setting-realistic-goals-and-implementing-cost-effective>





Results

	 Connectivity	 Load (organic, nutrients, salt)
Contribution to the ecosystem	Ability of sediment, organic matter and organisms to move in waterbody	<ul style="list-style-type: none"> Eutrophication leads to imbalanced oxygen concentrations Oxygen depletion due degradation of organic matter Algae blooms, excessive growth of aquatic vegetation, fish mortality
Anchoring of river's needs in WFD (2000/60/EC)	<u>Ecological status</u> (morphology) Article 4 Annex 5.1	<u>Ecological status</u> Articles 4, 10, 11, Annex 5.1 <u>Other EU directives:</u> <ul style="list-style-type: none"> Nitrate (91/676/EEC) Urban waste water (91/271/EEC and 98/15/EC)
Other functions with potential impact on river's needs	<ul style="list-style-type: none"> Shipping Energy supply 	<ul style="list-style-type: none"> Agriculture Human waste water effluent emission, run-off and overflows Industrial waste water effluent emission
Actors that could influence this impact	<ul style="list-style-type: none"> Regional water authority Federation of skippers Federation of agriculture 	<ul style="list-style-type: none"> Different EC Directorates and national Ministries Regional water authority Provinces Municipalities Federation of agriculture Regional farmers and agricultural contractors Industries
Administrative instruments in the Netherlands to protect river's needs	<ul style="list-style-type: none"> Regional water plans Project-related decision making or licensing 	<ul style="list-style-type: none"> National general regulations on use of manure (e.g. buffer zones) Provincial site specific conditions Additional requirements by water authorities or local municipalities Enforcement
Policy interventions	Trade-offs to other regional riparian functions: agriculture shipping, fishing, energy supply, flood management	<ul style="list-style-type: none"> Voluntary instruments (win/win) Financial incentives/grants Sustainable arrangements for agriculture(CAP) Information and advice to actors Capacity building for enforcement
Physical interventions (examples)	<ul style="list-style-type: none"> Remove weirs By-passes Fish passages 	<ul style="list-style-type: none"> Reduce emissions agriculture Upgrade waste water treatment plants, including stormwater overflow Reduce industrial waste water emission



Bufferzone

Regional water authority
Province



Discharge dynamics

Regional water authority
Upstream water authorities
National and riparian authorities



Load: organic material, nutrients

EU/National authority
Regional water authority
Provinces
Municipalities



Toxicity

Regional water authority
Upstream (water) authorities
National and riparian authorities
Provinces
Municipalities



Stagnation

Regional water authority



Groundwater interaction

Regional water authority
Province
Municipalities



Wet cross-section

Regional water authority



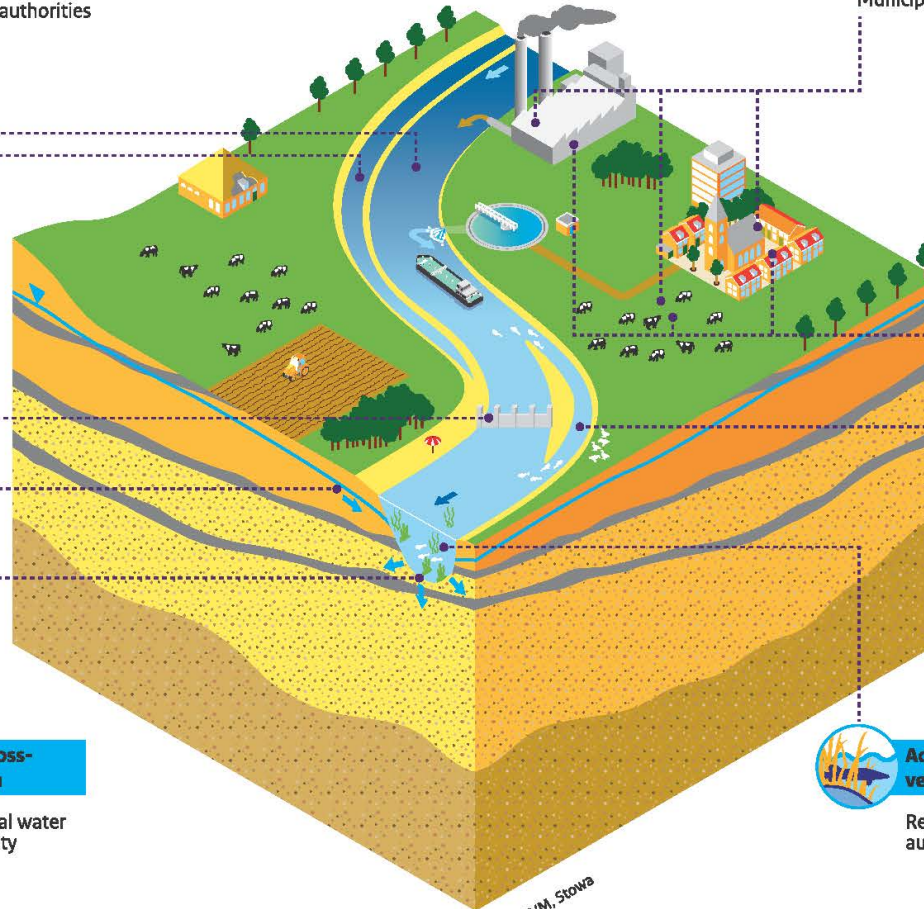
Aquatic vegetation

Regional water authority



Connectivity/migration

Regional water authority





Conclusions/reflections

- Different river's needs have different needs towards conditions of governance
- Transfer of rights: potential better raised voice, however:
 - Balance with other interests: priority setting not solved by transfer
 - Issue of scale and custodian