



working towards integrated river restoration and management

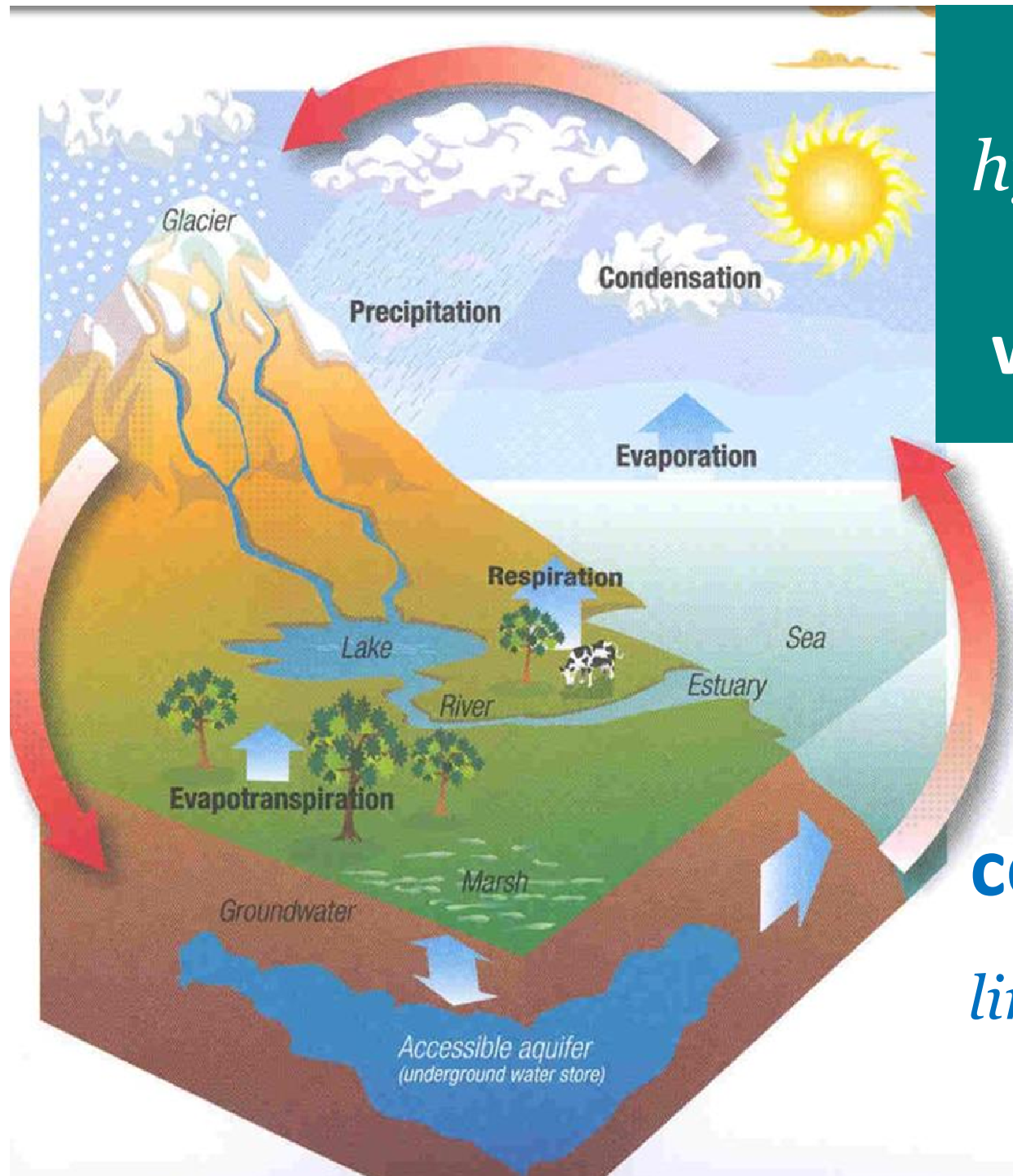


rivers – our water arteries



water scarcity
in >200 river basins
with 2,670 million people

LPI



the
hydrological cycle
and
wetland concept

rivers
are the
central element
linking it all together

what are the issues ?

eutrophication (agricultural runoffs and diffuse pollution)

drainage and land reclamation

water **abstraction**

artificial **channelizations**

decreasing **water levels**

sedimentation and siltations

dredging impacts

effects of **dams** and barrages

salt water intrusion

altered underground **flows**

agriculture and forestry effluent **pollutants**

household and urban **sewage** and waste waters

industrial and military effluents

persistent **drought**

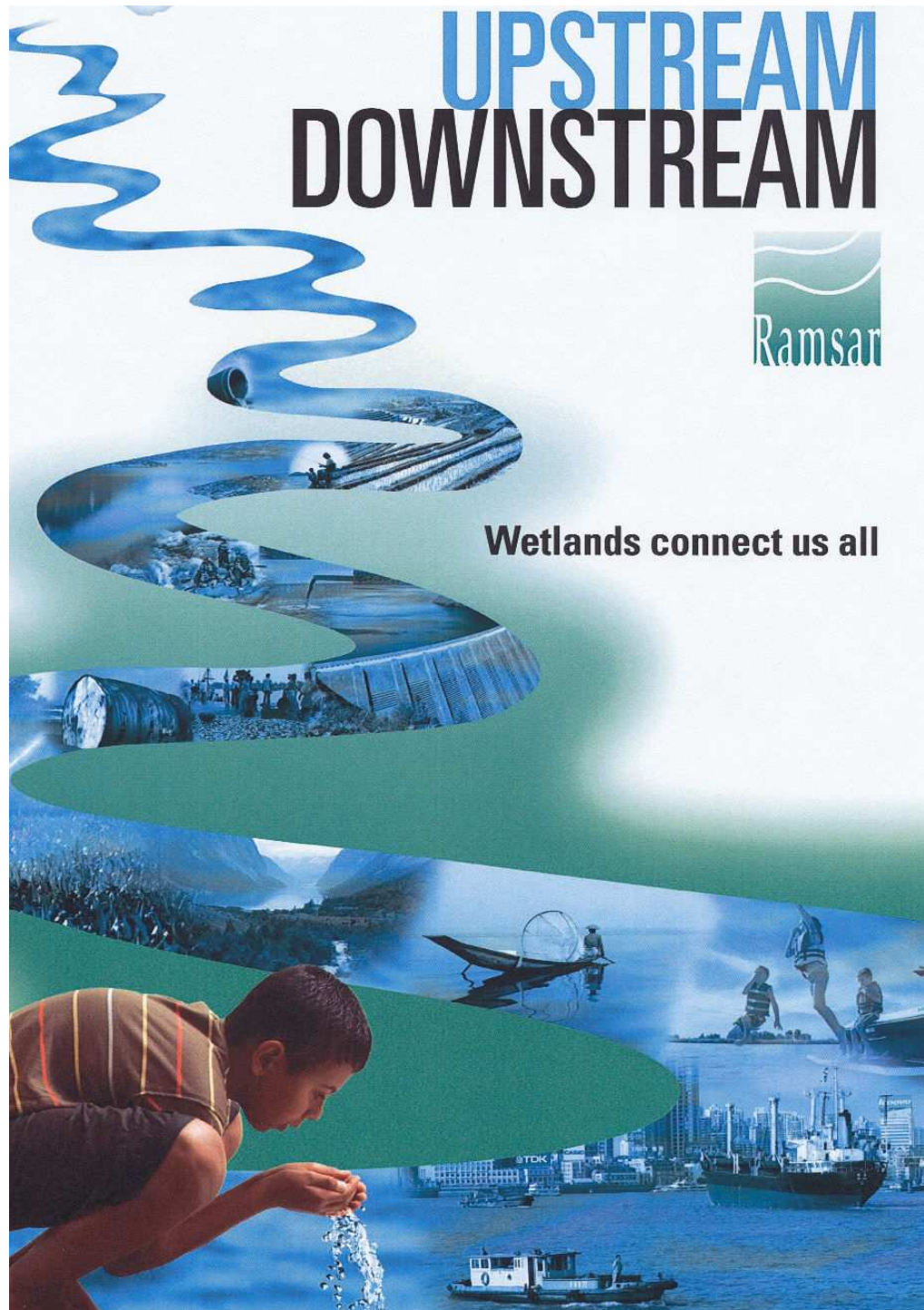
lasting **desertification**

*a ranked list of causes
throughout Europe*





bringing back water **to the ecosystem**



longitudinal flows



*for migration of fish, birds, others
to stop invasive species*

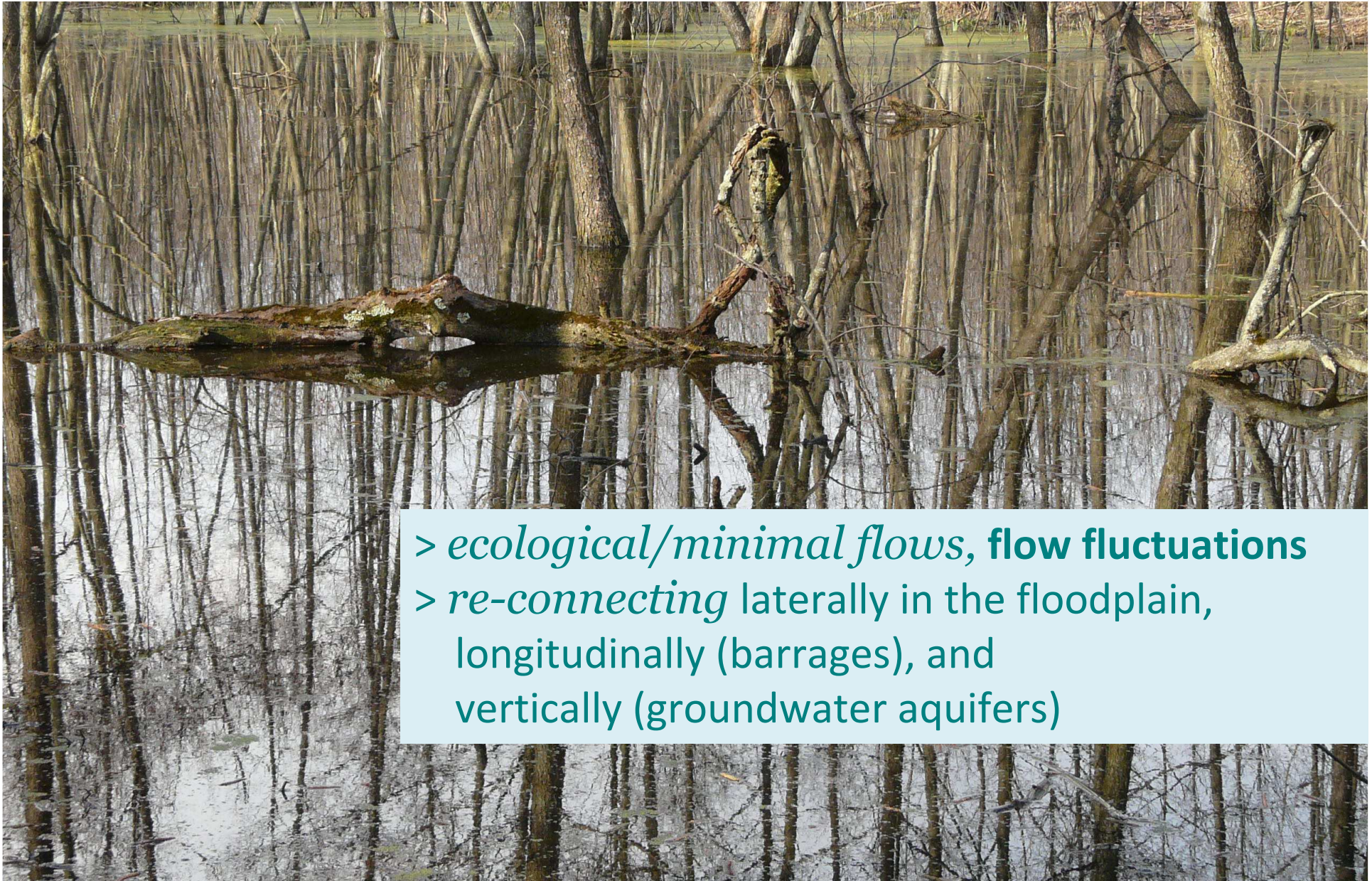
managing migration corridors

restoration of **entire floodplains**



lateral **flows**

surface – groundwater interactions

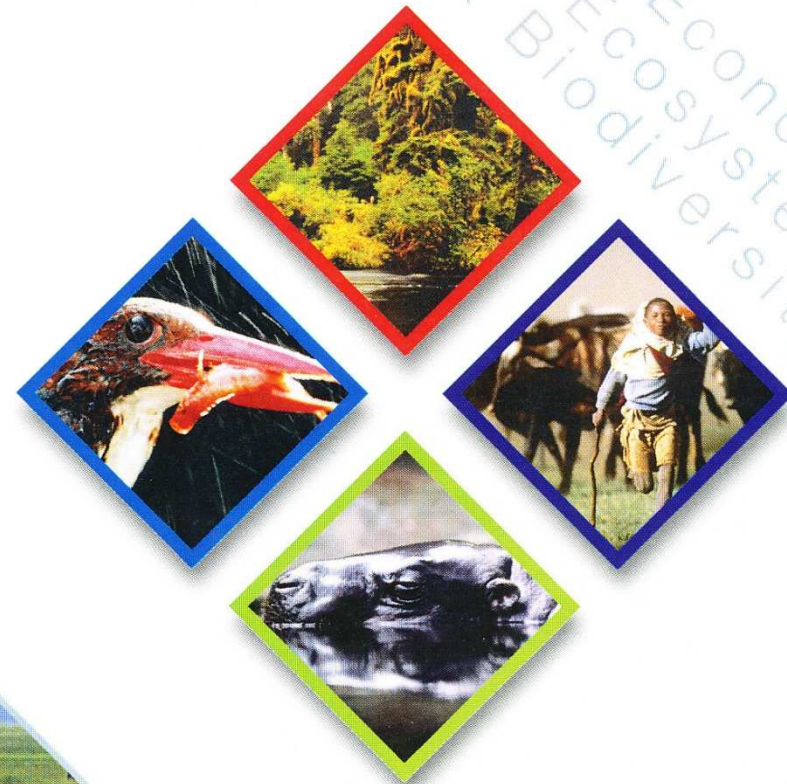
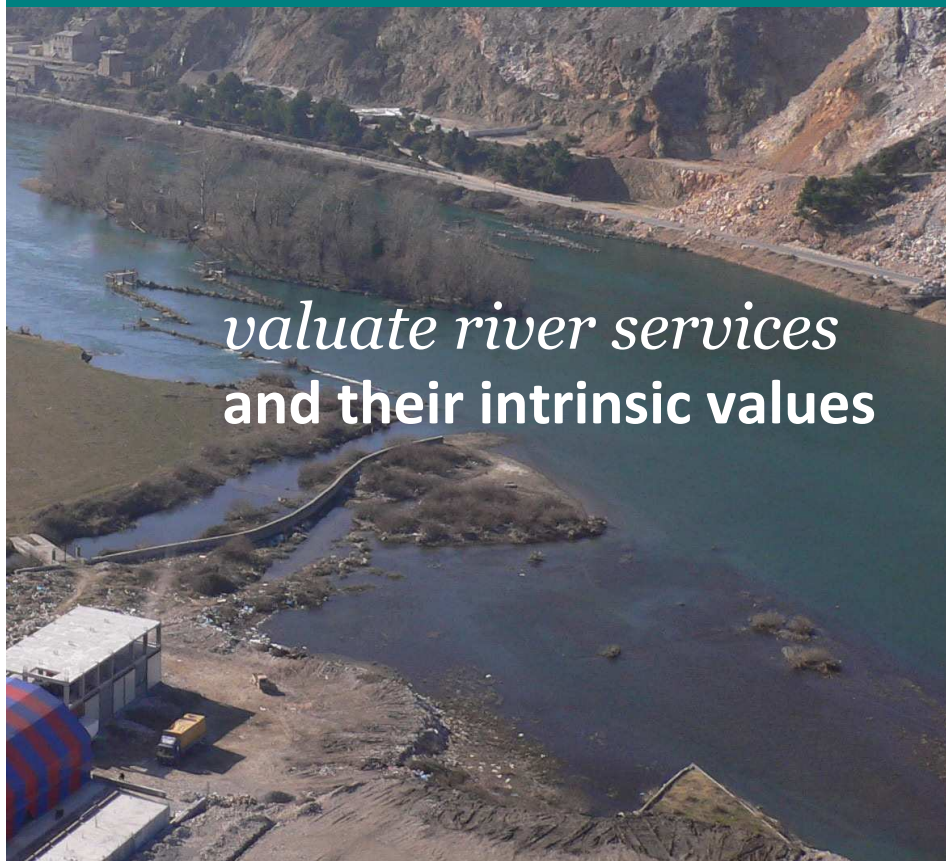


- > *ecological/minimal flows*, **flow fluctuations**
- > *re-connecting* laterally in the floodplain, longitudinally (barrages), and vertically (groundwater aquifers)



The Economics of Ecosystems and Biodiversity (TEEB)

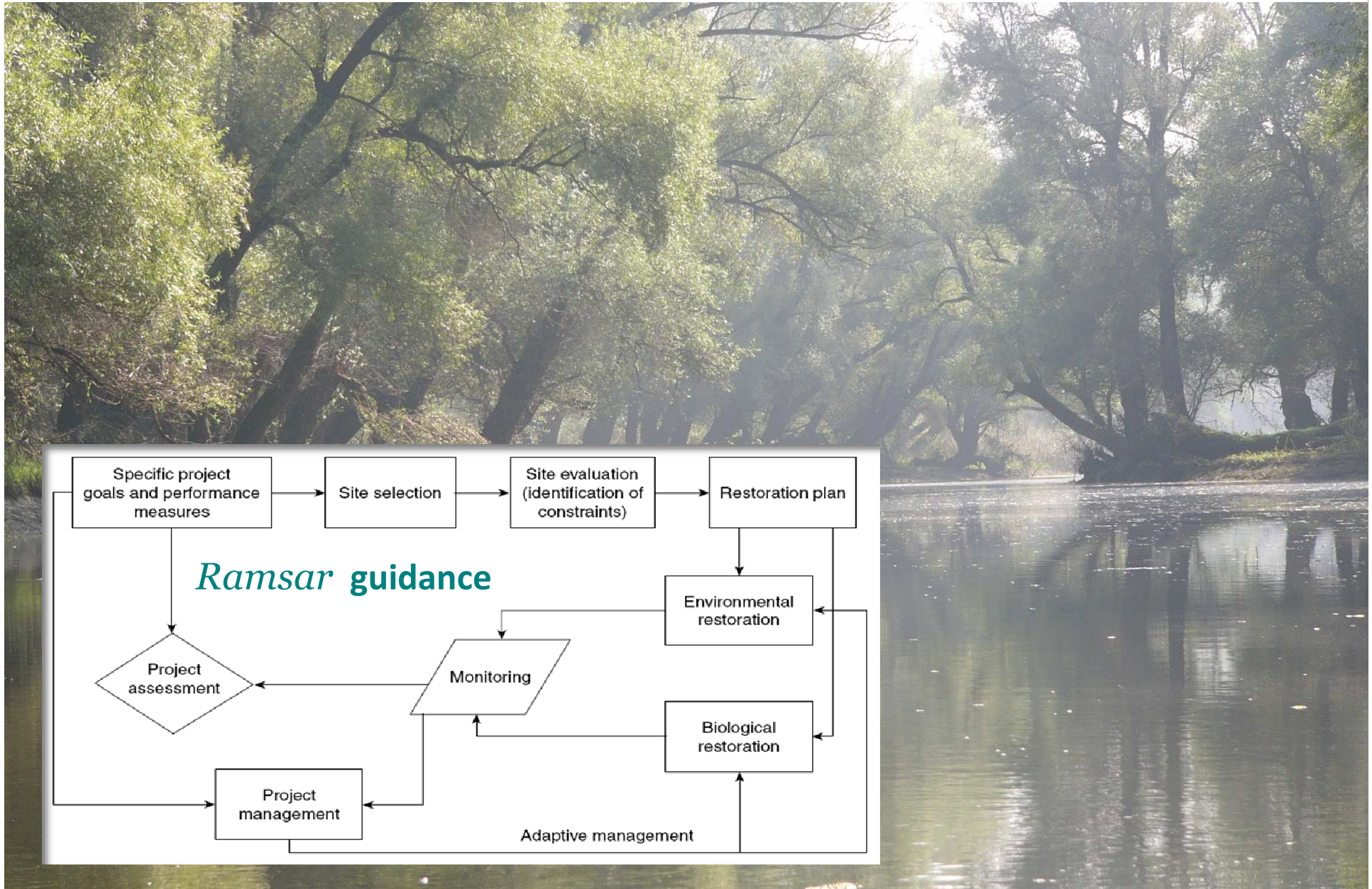
improve measurement and assessment for better management
integrate the value of water and river ecosystems into decision-making
transforming the management approach



costs of no action vs. restoration



restoration – what for > where > constraints > how





essential ecosystems to restore:

riverine floodplains in **lowlands** and **mountain** areas



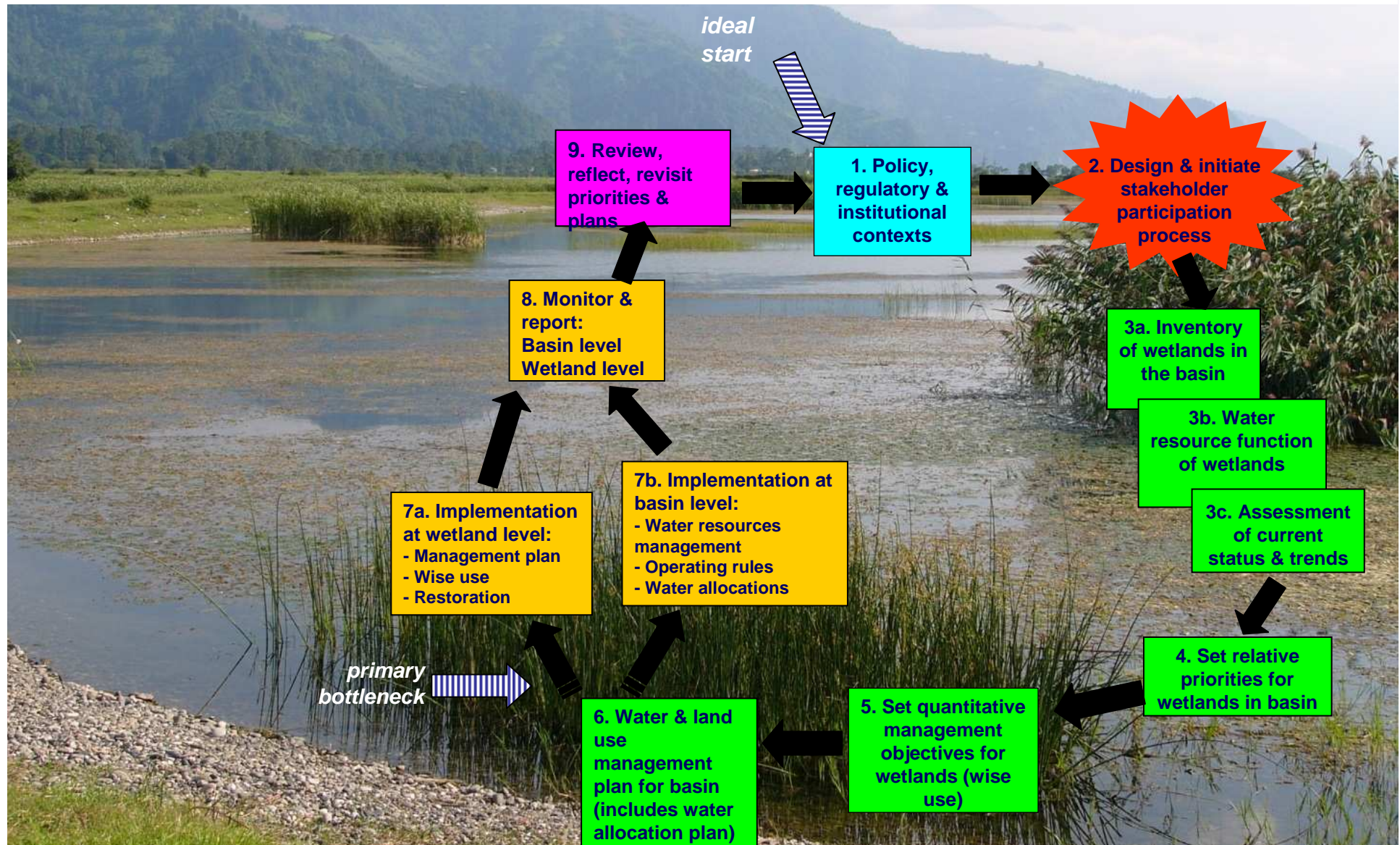
natural solutions – **cheaper solutions**



link upstream services **with downstream users**
define objectives and benefits **to focus investments**

«critical path»

to link the catchment basin with the local ecosystem



Critical Path offers a road map

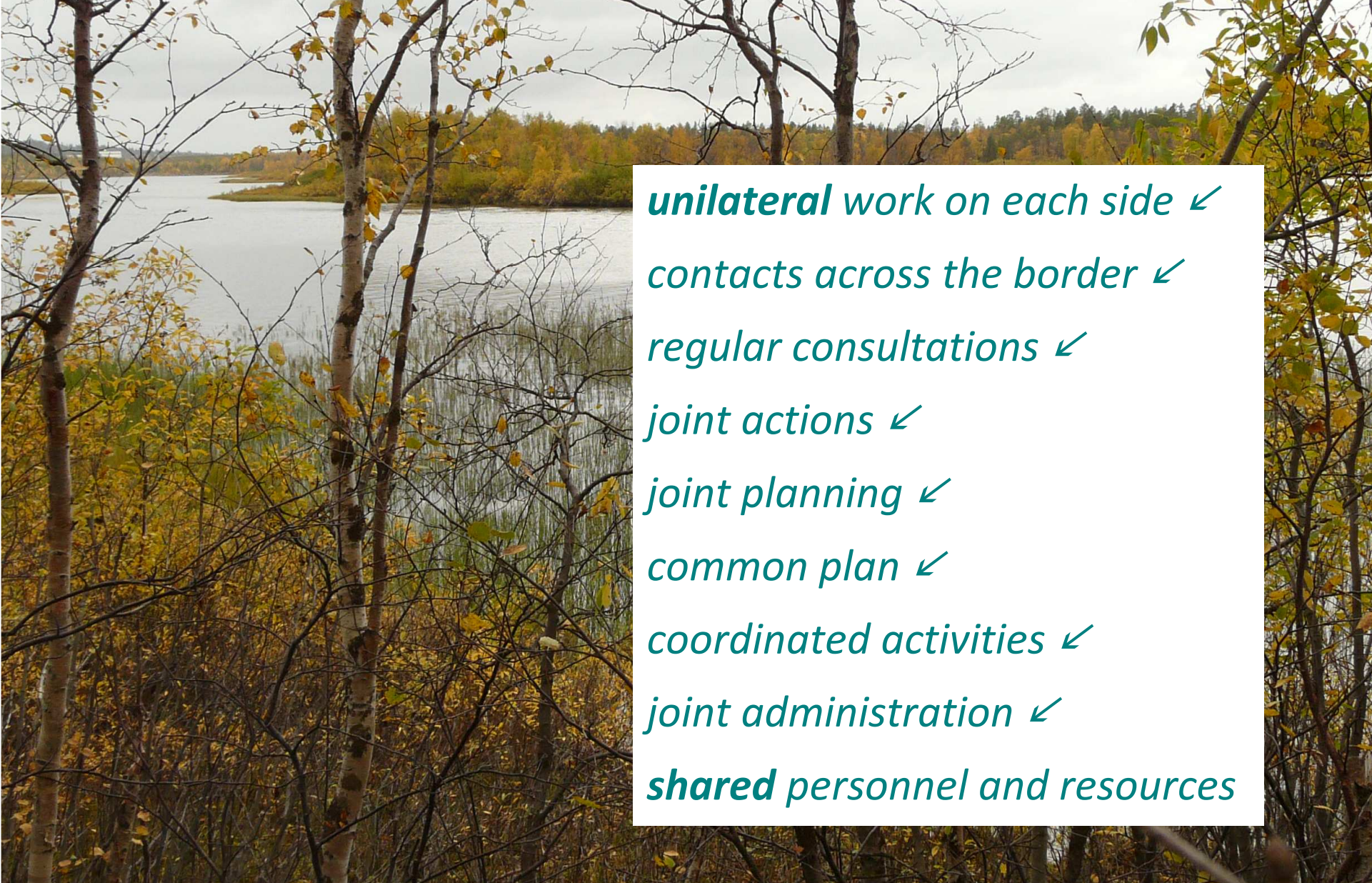


based on implementation experience
obstacles common to many situations
initiate activities progressively
from basin scale down to site scale

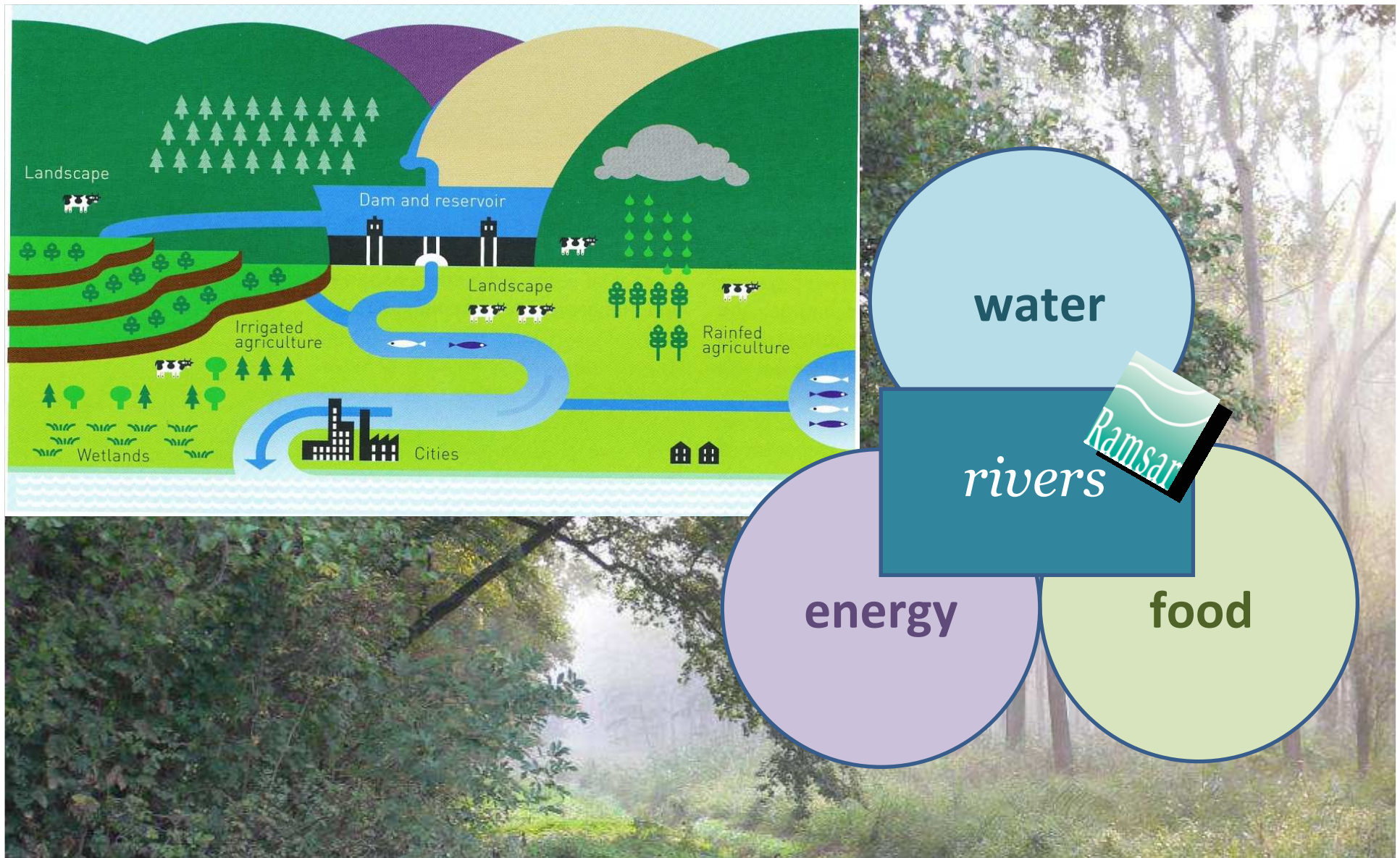
transboundary basin cooperation



the process of **transboundary cooperation**



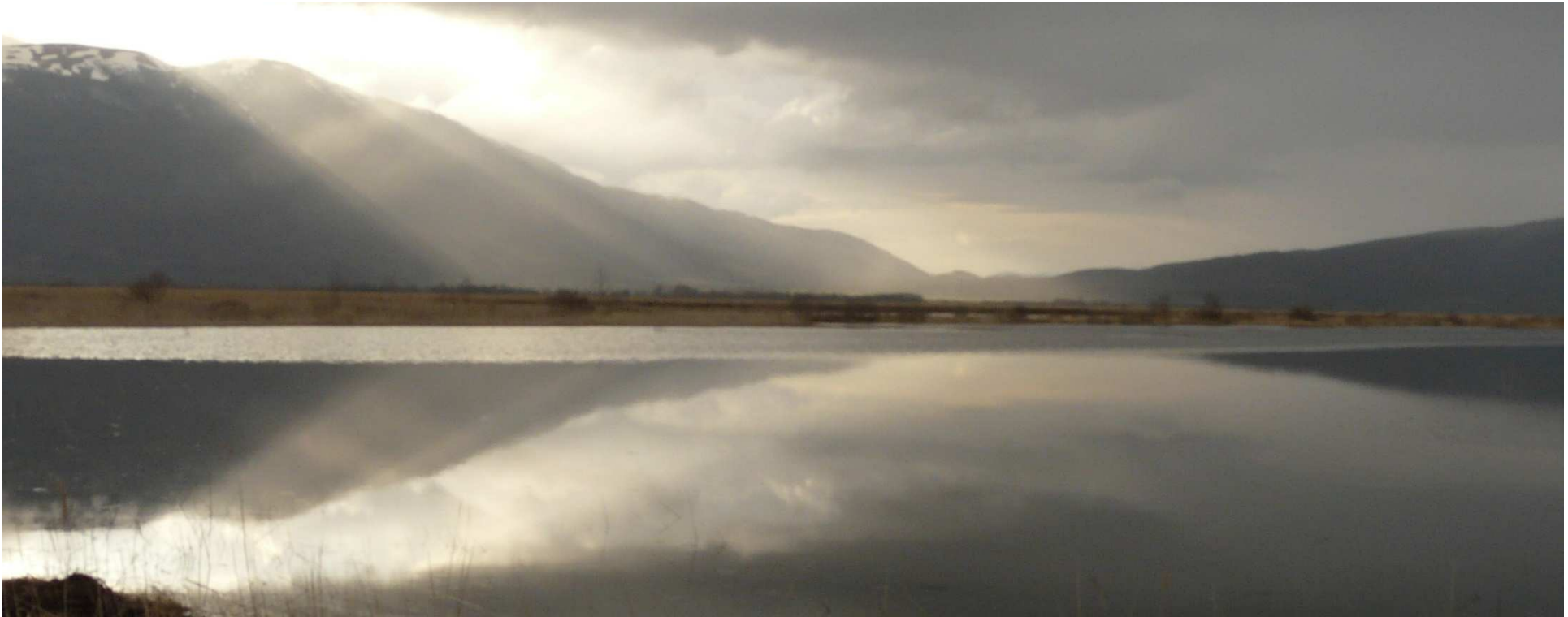
unilateral work on each side ↙
contacts across the border ↙
regular consultations ↙
joint actions ↙
joint planning ↙
common plan ↙
coordinated activities ↙
joint administration ↙
shared personnel and resources



*rivers – often provide the nexus (link)
for sustainable natural resources management*

flood alleviation may be the main driver

but other objectives create synergies, add benefits and reduce costs



supply of clean water, fish, fiber, timber and other products, energy, biodiversity
water retention and purification, groundwater replenishment, climate improvement
nutrient cycling, sediment retention, landscape restoration, human well-being
supporting leisure, recreation, education, tourism, sport and other human activities

urgency – to engage with other sectors



support exchange and networking among different actors



energies
navigation

*urbanisation
migrations
extractions*

offer space to allow river dynamics to operate

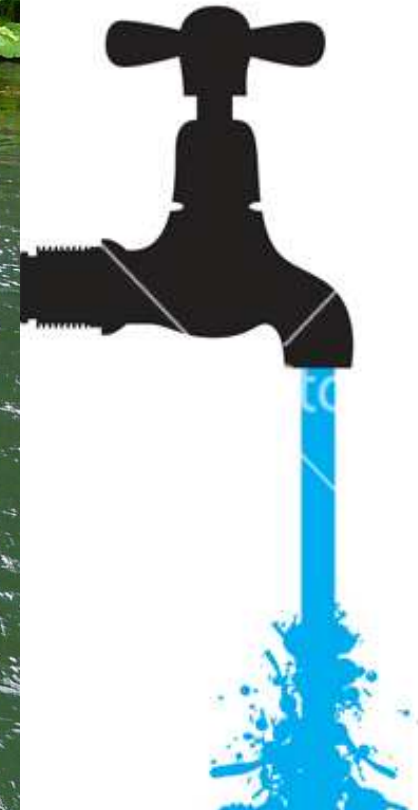
working on river culture



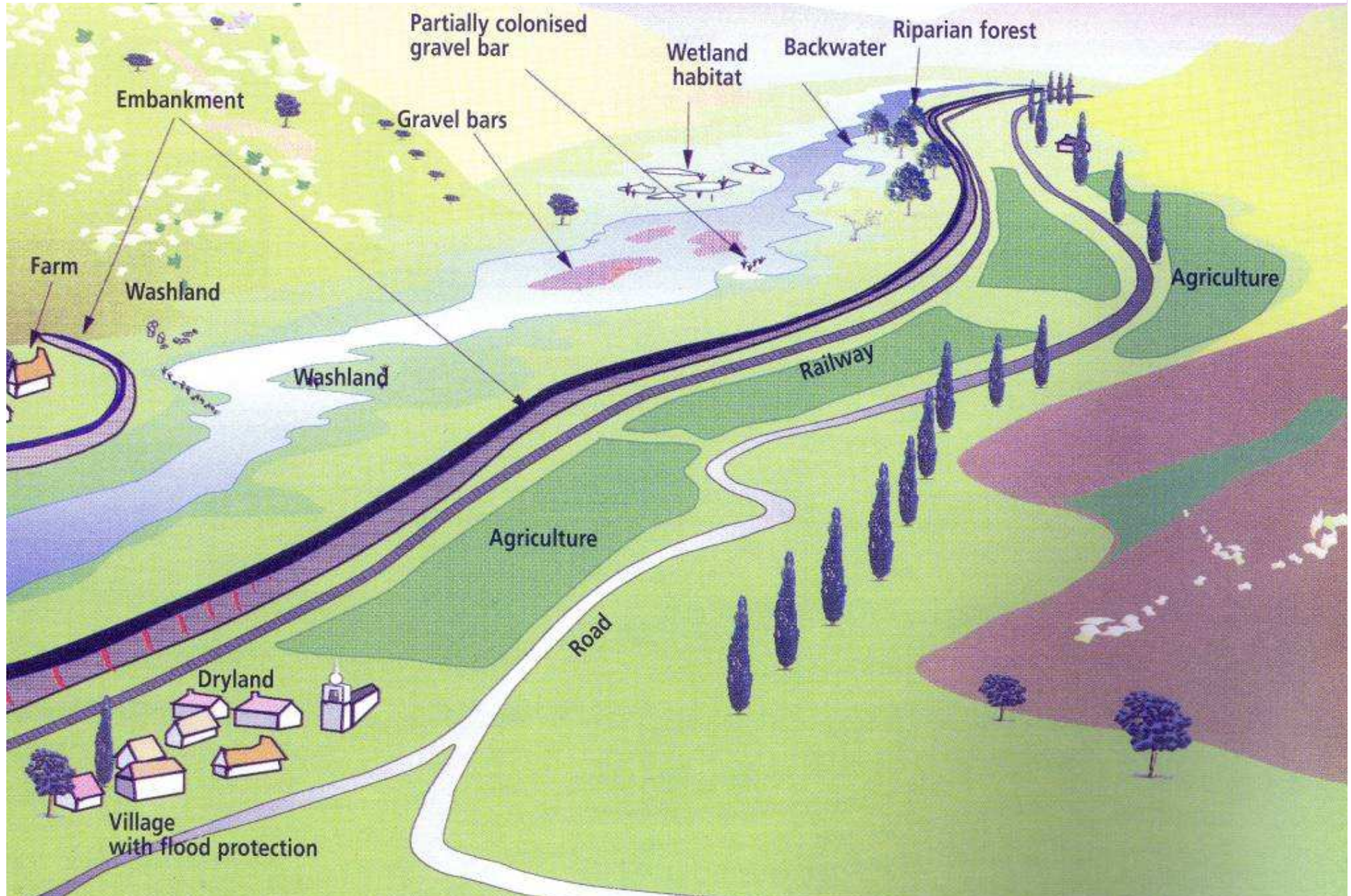
links between **biological and cultural diversity**

history, tradition, archeology, beliefs

an ecosystems approach to water management



water and *water-related ecosystem* management



Ramsar, Helsinki & New York Conventions together

1971

1992

1997

2015

a global governance framework
**for river restoration and
integrated floodplain & basin management**

