



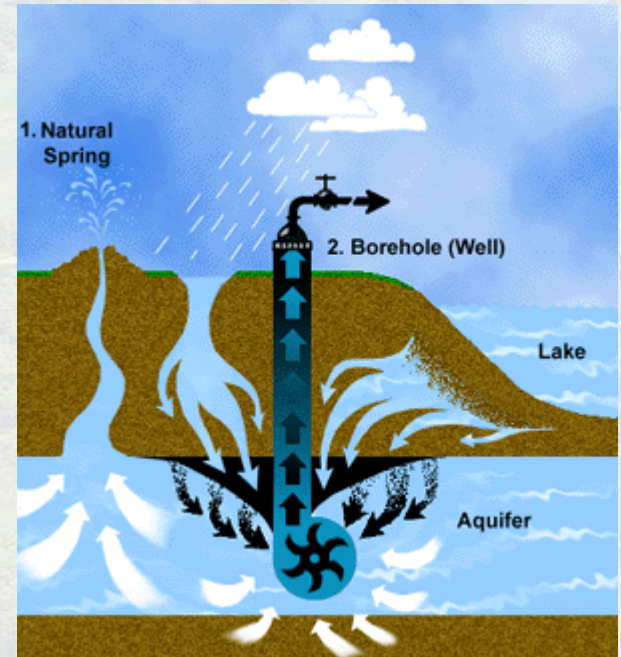
Comprehensive utilization of groundwater resources of the Danube River Basin

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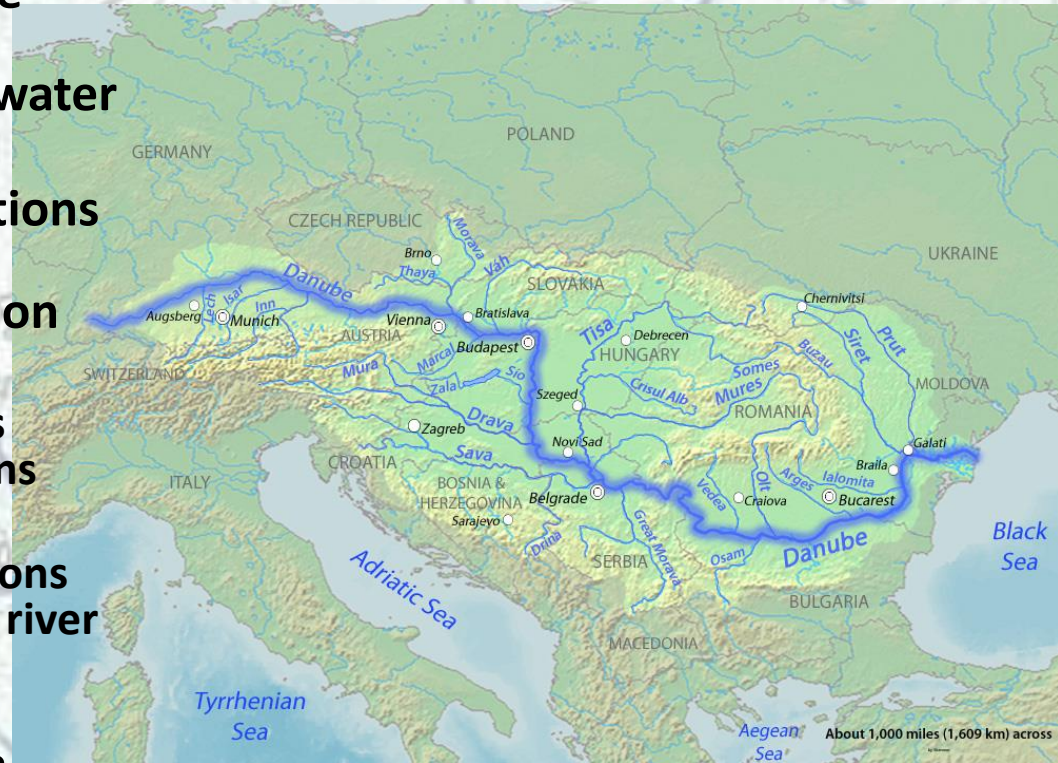
Groundwater

- makes up 22.8% of the Earth water resources, and 97% of freshwater available
- found primarily in aquifers, in layers of soil or gravel – natural storage system and media of conveyance
- replenished by precipitation, surface water sources, and other aquifers - thus human caused occurrence affecting one section will likely affect the *quantity, quality, or economic value* of the other
- Groundwater is often more essential for human welfare, than surface waters, serving as drinking water, and means of food production



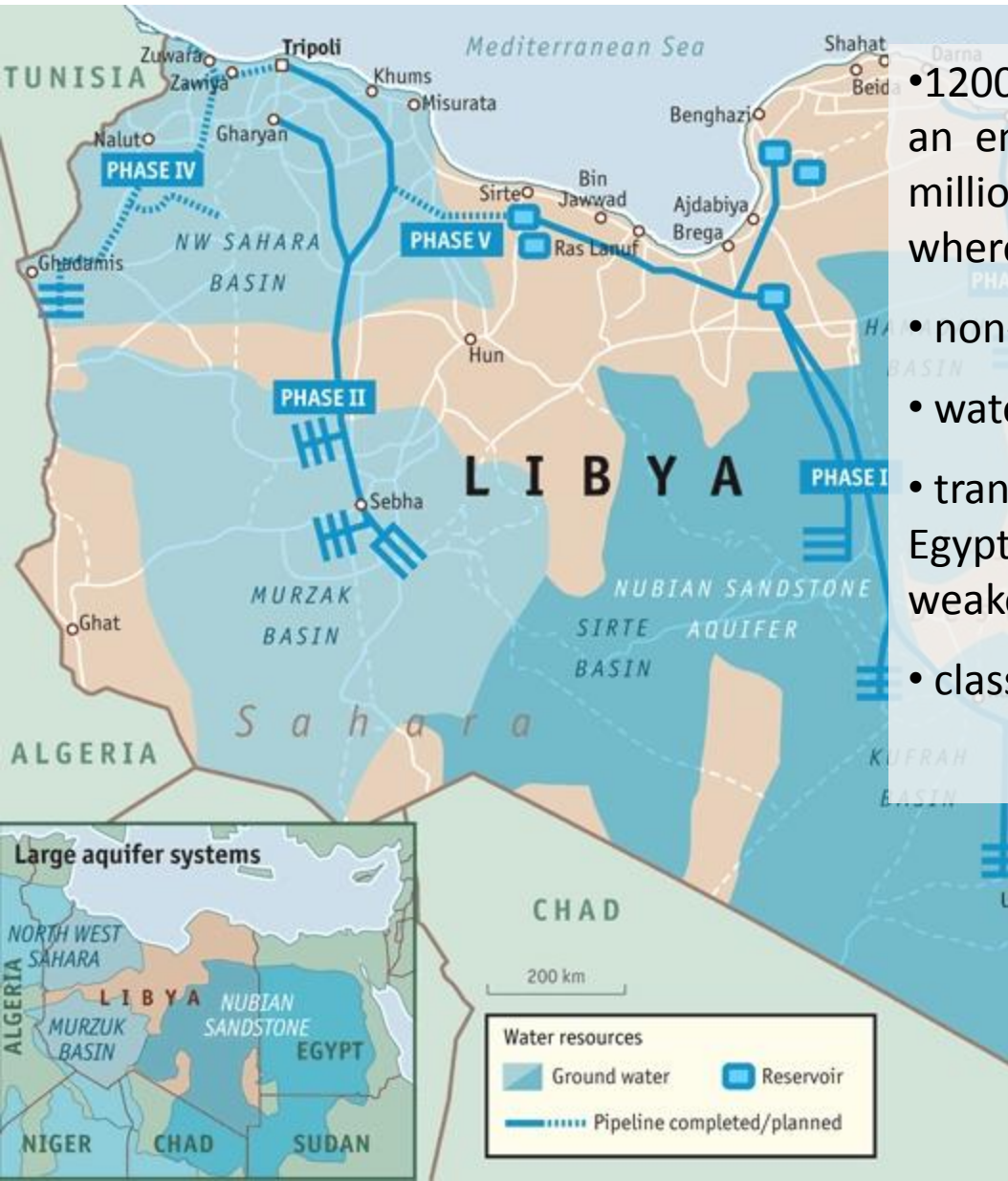
Danube River Basin

- the most international river in the world:
touches 11 countries, but draws water from 19 countries
- huge diversity of peoples and nations living in its basin – presents a challenge for a holistic preservation strategy:
 - forms borders, but also connects developed and developing regions together
 - riparian countries as well as nations with no direct connection to the river can affect water quality
- 60% of the population in the DRB depends on groundwater sources, mainly recharged by the Danube



Shared aquifers

Lybia – The Great Man Made River project



- 1200 km of pipeline, extracting water from an enormous ancient aquifer, delivering one million m³ of freshwater/day to the North, where 90% of the Libyans live
- non-renewable resource
- water is free of charge, as it's a human right
- transboundary resource (shared with Egypt, and Chad)– makes property rights weaker; creates a „pumping race”
- classic tragedy of the commons example



International law related to groundwater

More than 400 treaties deal with transboundary freshwater issues, from which approximately 100 mention groundwater.

1966 – Helsinki Rules on the Uses of the Waters of International Rivers

- pioneer role in recognizing the issue of connected groundwater bodies in an international context

1989 – Bellagio Draft Treaty Concerning the Use of Transboundary Groundwater

- recognizes the hydrologic interdependence between groundwater and surface water, thus suggests comprehensive groundwater management
- envisions that countries adopting the Draft will create bilateral or multilateral commission with authority over the transboundary groundwater; enforcement would still remain vested in the states

2011 – The Law of Transboundary Aquifers

- encourages states to make bilateral or regional arrangements for the proper management of their aquifers.
- main focus is on pollution control of shared resources
- establishes a set of guidelines and recommendations for the sustainable and peaceful sharing of groundwater resources
- its articles can be used for further elaboration of a convention between states.

- Article 4:

*„according to the principle of equitable and reasonable utilization ,
- [Aquifer States] shall establish individually or jointly a comprehensive utilization plan, taking into account present and future needs of, and alternative water sources for, the aquifer States; and
-They shall not utilize a recharging transboundary aquifer or aquifer system at a level that would prevent continuance of its effective functioning. „*

- Article 7:

*„Aquifer States shall cooperate on the basis of sovereign equality, territorial integrity, sustainable development, mutual benefit and good faith.
For [this] purpose, aquifer States should establish joint mechanisms of cooperation.”*

Current collaboration strategies

EU Strategy for the Danube Region

- „it is not about funding, it is about cooperation”

ICPDR & the Danube River Protection Convention

- the convention serves as the overall legal instrument for the cooperation on transboundary water management in the DRB:
 - to conserve and improve ground-, and surface waters; to prevent hazards and pollution; and to promote *rational use* of these resources
- the ICPDR's **Groundwater Task Group** considers issues related to the 11 groundwater bodies in the region, and identifies the main sources of pollution.

EU Water Framework Directive & Groundwater Directive

- pollution & quality control of GW:
 - prohibits direct discharges
 - sets the limits to abstraction: only the portion not needed for the support of natural ecosystems

Gabcikovo-Nagymaros case study

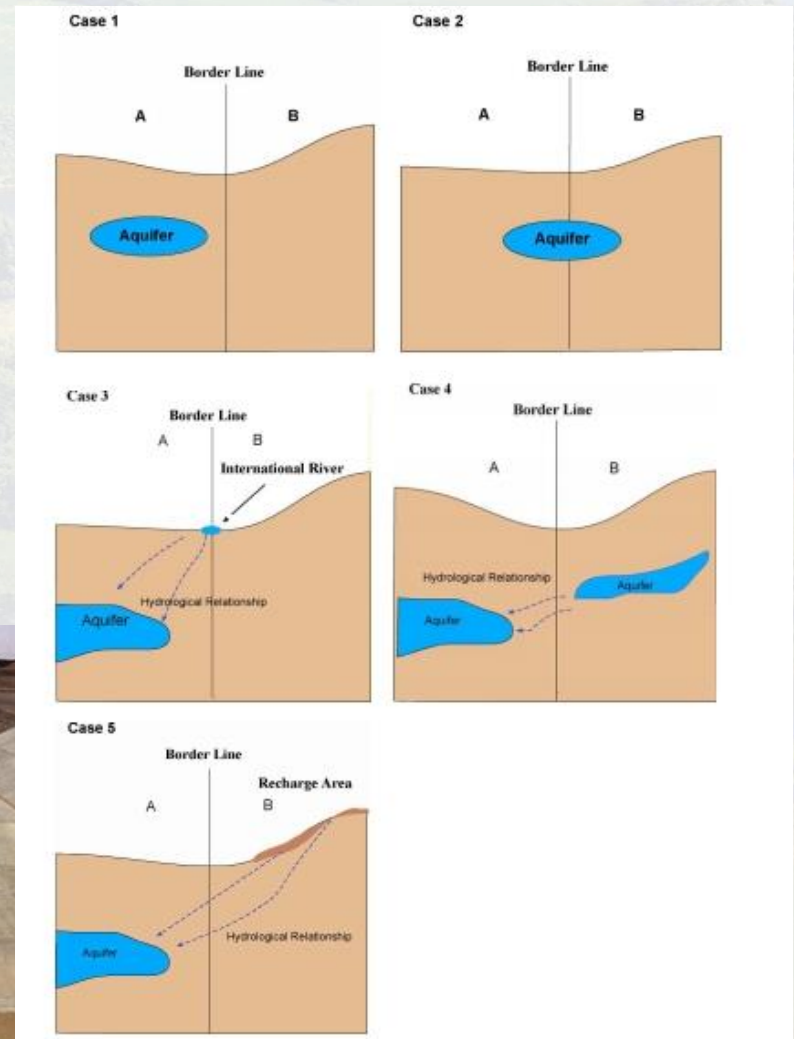
- Example of an international conflict ,which related to the implications to the status of groundwater, and was also put forward to the ICJ.



- the impoundment of water behind the dam and the intertwined question of potential pollutants leaking into the groundwater

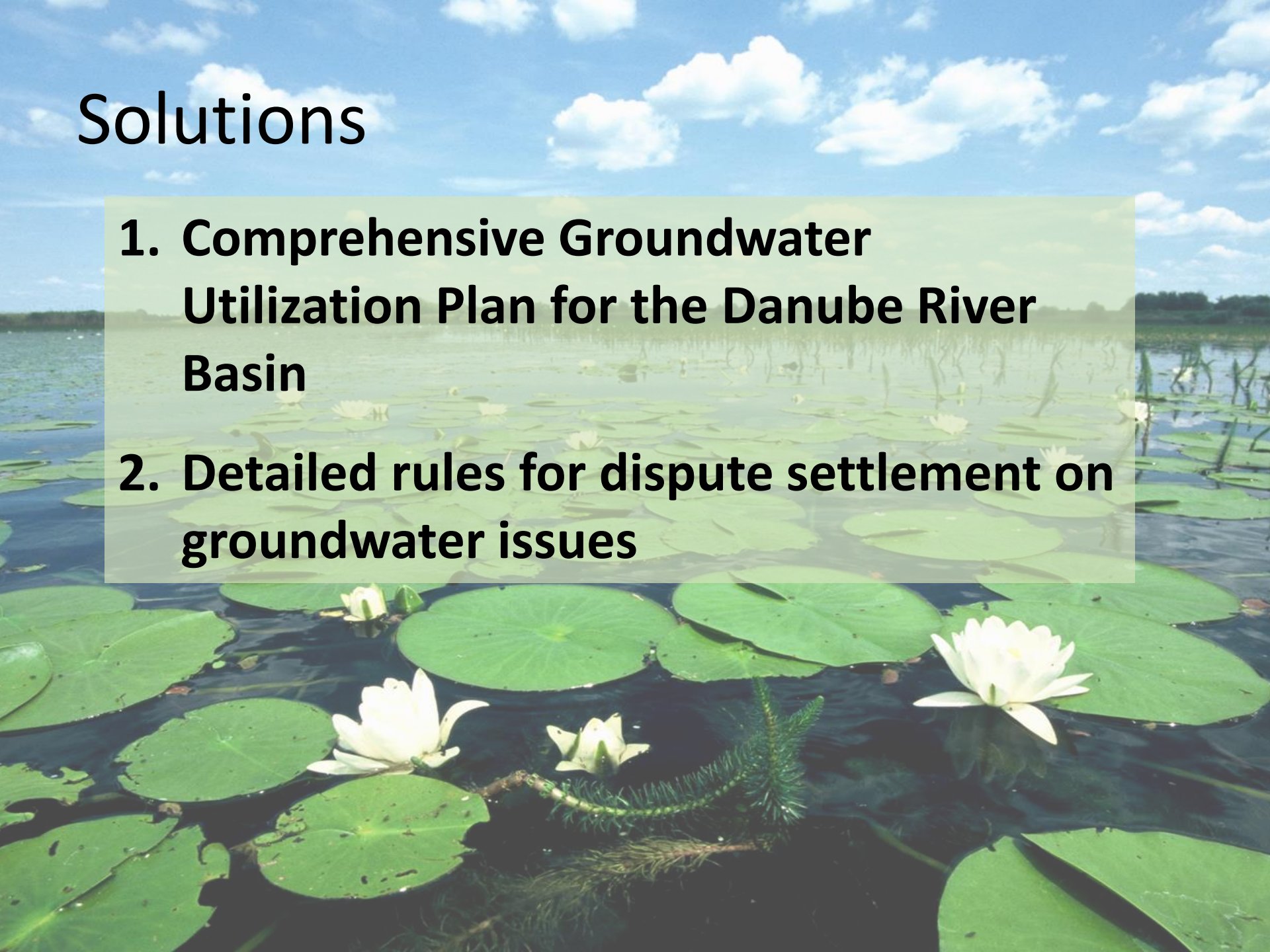
Type of conflicts related to groundwater use

- technical interactions, and constructions works that affect the quality of GW
- water abstraction from slowly-, or non-renewable aquifers for industrial or irrigation purposes
- exclusion of other parties of a shared resource



Solutions

- 1. Comprehensive Groundwater Utilization Plan for the Danube River Basin**
- 2. Detailed rules for dispute settlement on groundwater issues**





Thank you for your kind attention!