



# Hungarian wetlands and their land use



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# What is a wetland under the WFD

*WFD CIS Guidance Document No 12 –Horizontal Guidance on the Role of Wetlands in the Water Framework Directive*

- Wetlands are diverse, hydrologically complex ecosystems, which tend to develop within a hydrological gradient going from terrestrial to mainly aquatic habitats.
- There is a wide range of definitions and interpretations of the term 'wetland'. These definitions tend to reflect different national traditions as well as differences in the characteristics of the environment across Europe.
- From an ecological perspective, wetlands are heterogeneous but distinctive ecosystems which develop naturally, or are the product of human activities.
- Their biogeochemical functions depend notably on a constant or periodic shallow inundation by fresh, brackish or saline water, or saturation at, or near, the surface of the substrate. They are characterised by standing or slowly moving waters. Common features include hydric soils, micro-organisms, hydrophilous and hygrophilous vegetation and fauna which has adapted to chemical and biological processes reflective of periodic or permanent flooding and/or water-logging.(2.1)



# Hungarian lakes

## Oxbow lakes (46 WBs - 24%)

- Reclaimed side oxbow (36 WBs – 19%)
- Floodplain oxbow (10 WBs – 5,3%)

Oxbow lakes are unique creatures among WBs.

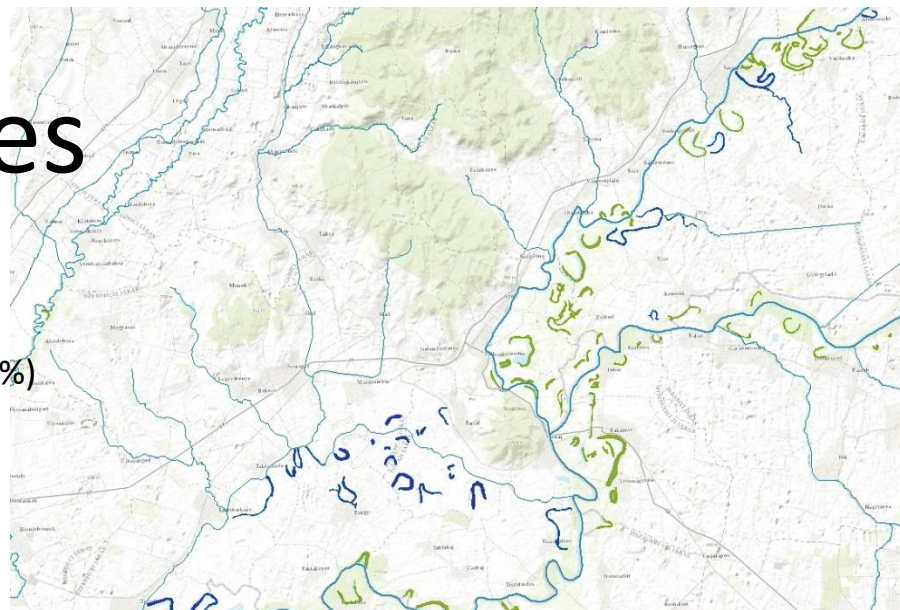
During the 19-20th century the lowland rivers were regulated, mainly for to gain more arable land. There exist also oxbow lakes cut off naturally.

Above 4 ha, 237 oxbow lakes exist in Hungary. (Danube catchment (57), Tisza catchment (180)).

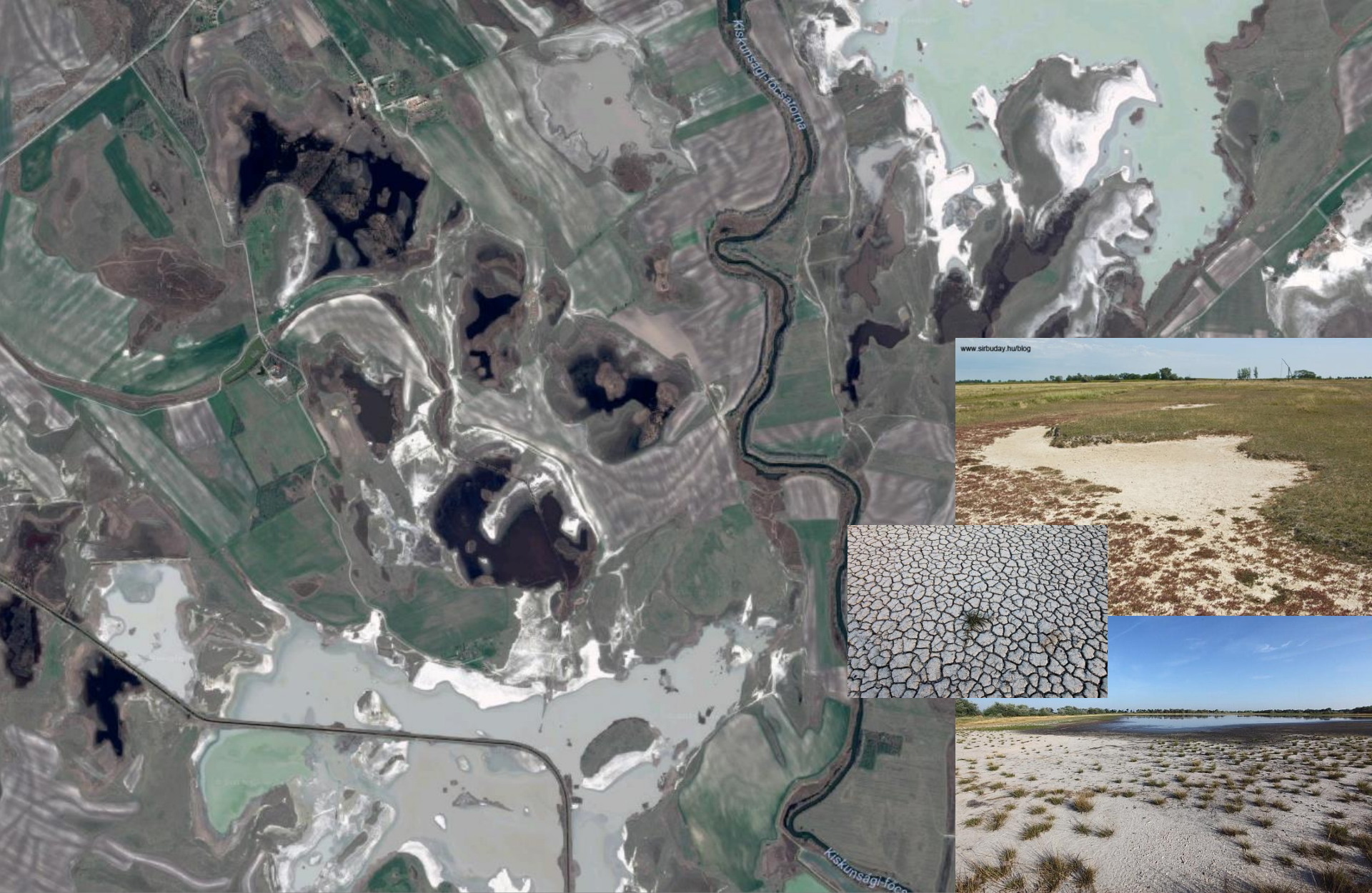
Floodplain oxbow lakes 78, 159 reclaimed side oxbows (total area nearly 7000 ha).

Oxbows are often used for fishing, angling, recreation, they are reservoirs of excess water, irrigation water.

These lakes are mainly assessed for bathing water quality and in few cases during biological investigation (often only for unique species – like dragonflies).







[www.sirbuday.hu/blog](http://www.sirbuday.hu/blog)

Sodic lakes are typical under continental climate. Hungarian sodic lakes are the westernmost occurrences. They are intermittent lakes, mainly depending on ground water ascending flow. Ecology is unique: halophilous populations, birds. They are often used as excess water reservoirs, angling/fish lakes.





## Balaton, Velencei-tó, Fertő-tó - Hungarian large lakes.

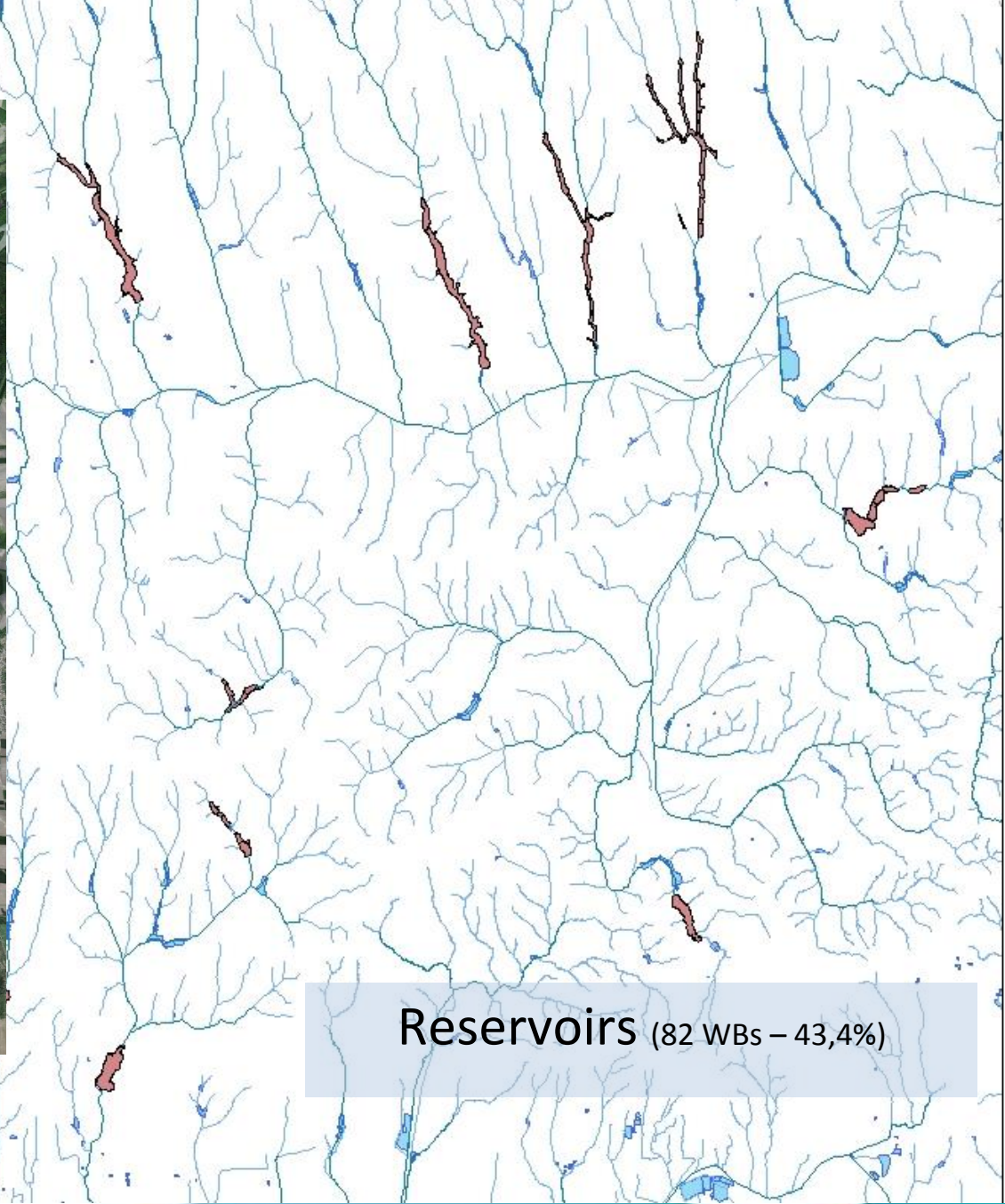
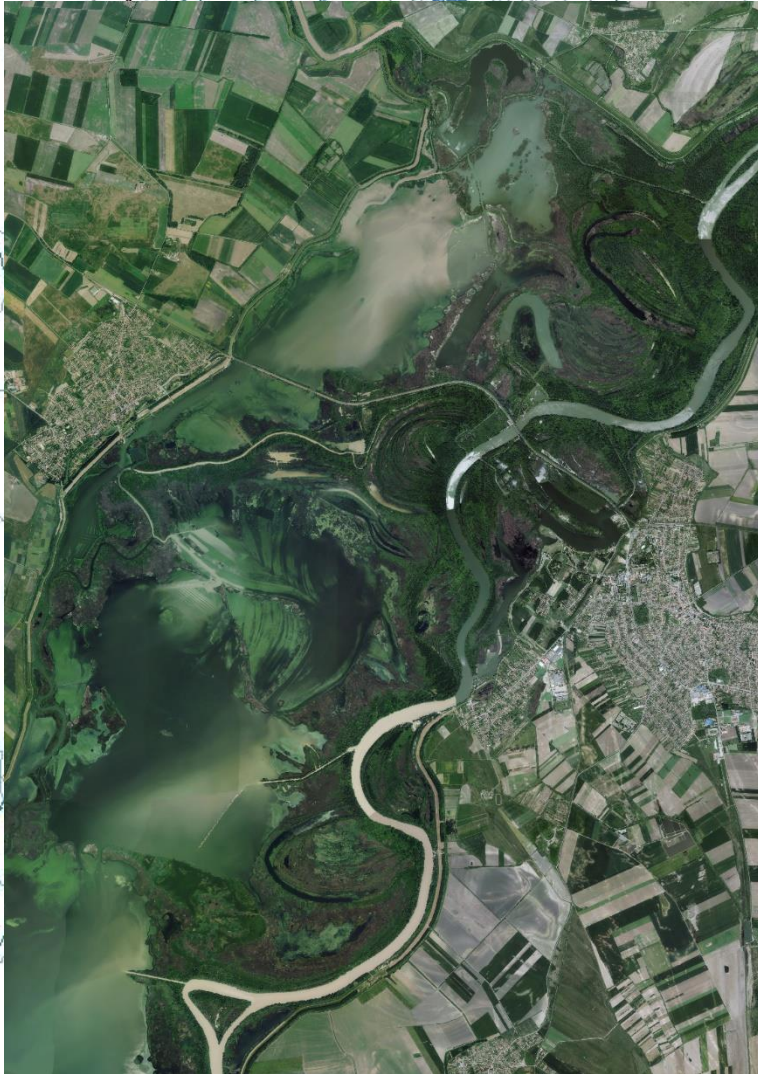
- Balaton (592 km<sup>2</sup>) is unique with high pressures of recreation and settlements.



- Fertő (315 km<sup>2</sup>) and Velencei lake (26 km<sup>2</sup>) are sodic with significant areas of reeds. Velencei lake suffers also from pressures of recreation.







Reservoirs (82 WBs – 43,4%)

Mainly fishponds (built in chains) - but also Lake Tisza.





# Floodplains

## Szigetköz



Floodplains suffer under  
Disconnection from  
the river.

River bed deepening is  
due to river regulation,  
transversal structures  
and land use changes.

Floodplain level is rising  
as floods use active  
floodplain as sediment  
deposit areas.

## Gemenc

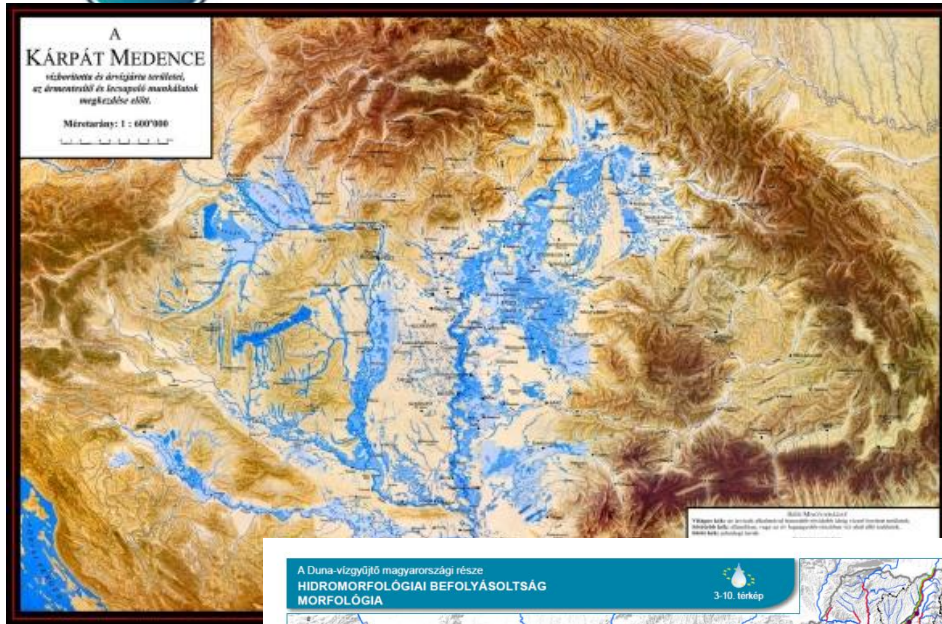




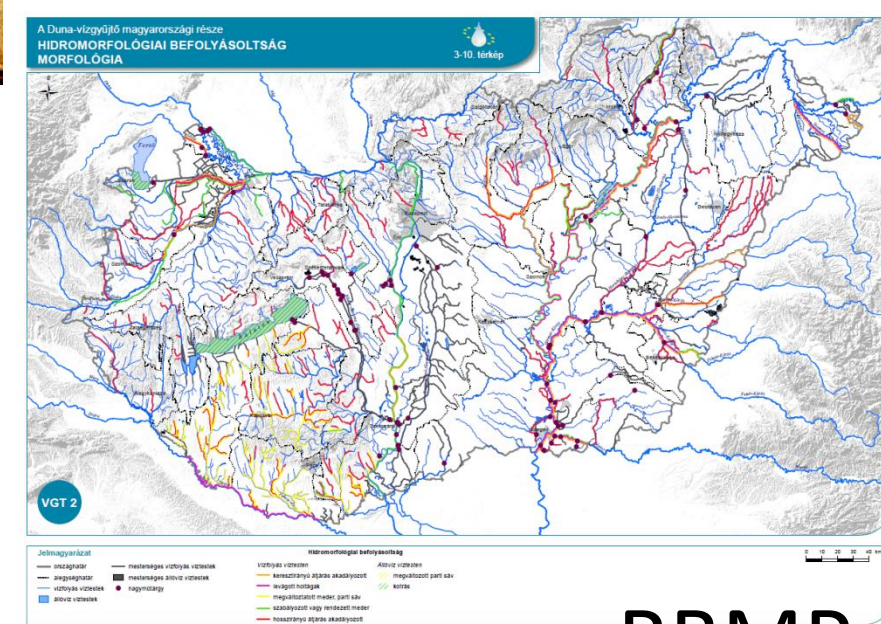
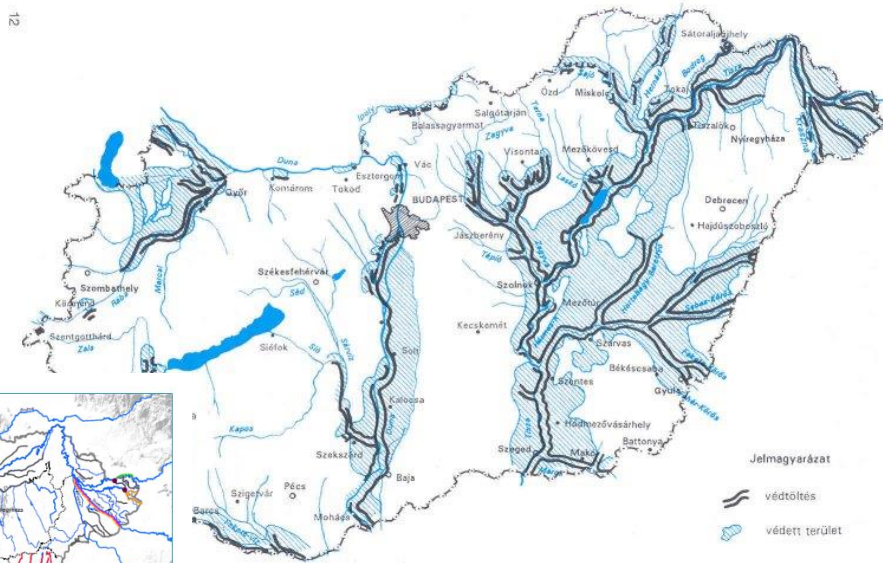


Until mid 1800s

Flood risk



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RBMP map: morphology





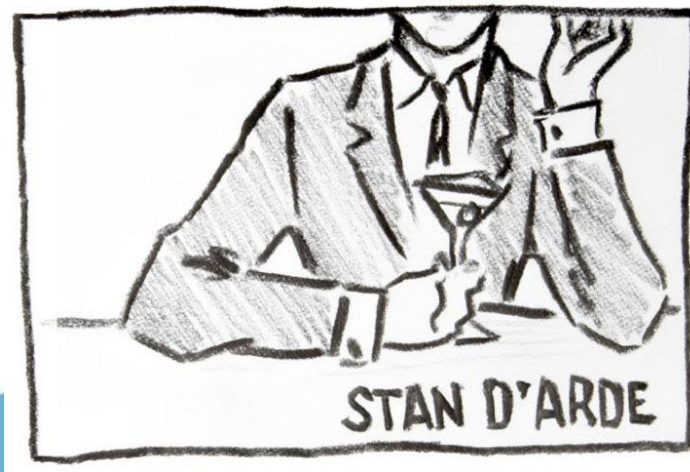
# WFD and hydromorphology

The European Commission recognized under the two cycles of the WFD

that good status of the waters fails mostly on hydromorphology and diffuse pollution.

Steps are taken to understand more the processes in waters, eg. standards are under preparation for

- Hydromorphology of rivers (2 standards: description of processes and assessment)
- Hydromorphology of lakes (2 standards)
- River restoration







# Hydromorphology assessment methods

- Catchment → Landscape → Valley segment → Reach
- River bed / banks / floodplain
- Morphology / Hydrology / Continuity



Monitoring  
before – after  
(during?)





# Hydromorphological problems

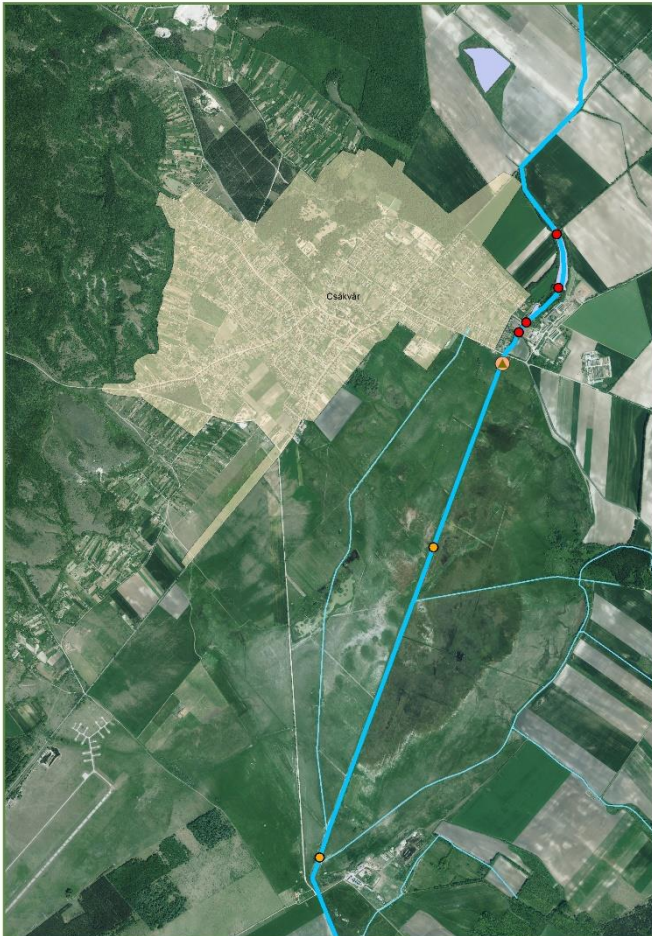
- Flood protection and river/lake maintenance is using old methods (grey infrastructure) (e.g. trapezoid river beds without trees on river banks)
- Soil erosion (land use problems)
- Morphological alterations (planform, bed form, floodplain – not self-sustaining systems)
- Rehabilitations are lacking of holistic views
- No value of aquatic plants (reed, rush, cattail, willow)
- Dredged material is regarded as waste, not as reuseable material





# Good examples

## Provertes



- ensuring the preservation of the diversity of natural assets (species and habitats) and maintain landscape diversity;
- fostering the preservation of Hungarian domestic animal varieties and gene stock by extensive management;
- implementing habitats reconstruction and habitats development on degraded habitats and landscape reconstruction, respectively;
- promoting the production of healthy local products of high nutrient value;
- implementing traditional landscape use;
- ensuring the preservation of rural lifestyle and livelihood through pursuing traditional activities;
- enhancing the revitalisation of forms of living and crafts close to disappearance and their related traditions





# Hortobágy fish ponds







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Thank you for your attention!