



# **Improvement of otter habitats in the area of Goričko with ecoremediation**

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# Conservation of otter population (*Lutra lutra*) in Goričko – Phase 1

LIFE04NAT/SI/000234





## Objectives

- To assure the viable population of *Lutra lutra* by maintaining and restoring its habitats in a favourable conservation status in the area of Goričko Regional Park.
- Estimation of actual population size of *Lutra lutra* in the region.
- To preserve, improve and safeguard the connectivity of main habitats of *Lutra lutra* population and its movement corridors over common territory in Austria, Slovenia and Hungary.
- To maintain and enhance the biological diversity of freshwater habitats in target area.



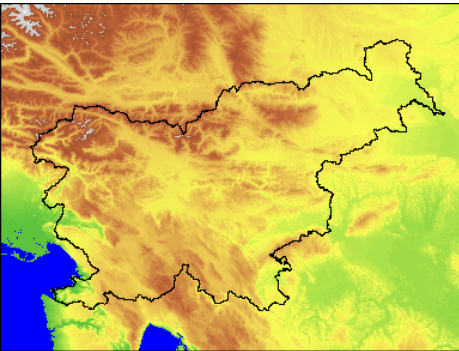
# Objectives

- To urge local and regional authorities to implement the conservation measures for the otter in all necessary levels of regional development plans.
- To raise public awareness and to contribute to the environmental education on a wider scale.
- To present the implementation of the EU conservation and environment legislation in everyday praxis.



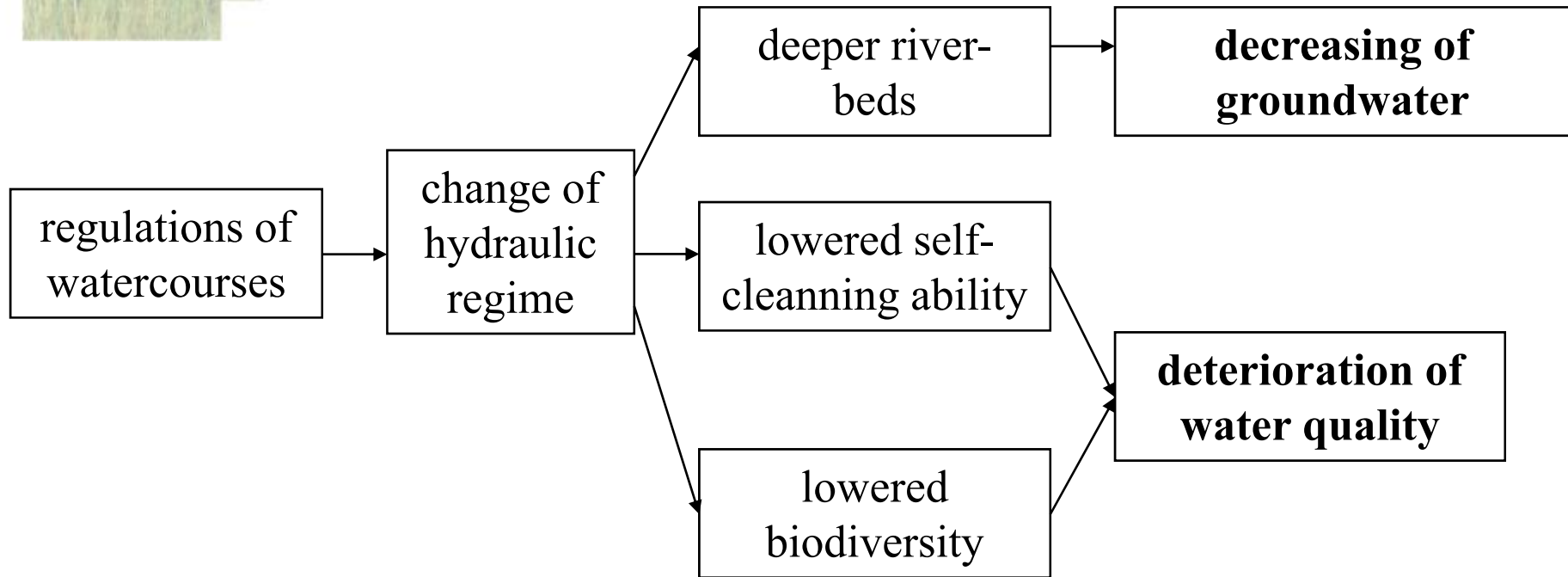
# Slovenia

Between 1973–1989, 35.000 ha of land was reclaimed by drainage and regulation of water streams that has caused riverbeds to dry up and **decreasing of underground drinking water level**. Regular monitoring of drinking water pollution at 40 spots shows **increased pollution** (e.g. atrazin, endrin, desetilatrazin, metholaclor, nitrate).





## Problem - Goričko















Lack of  
water

Low water  
quality

Low  
biodiversity

FISH, crustaceans,  
clams, small  
mammals and  
amphibians, birds,  
eggs, insects,  
worms, vegetation



*Lutra lutra*

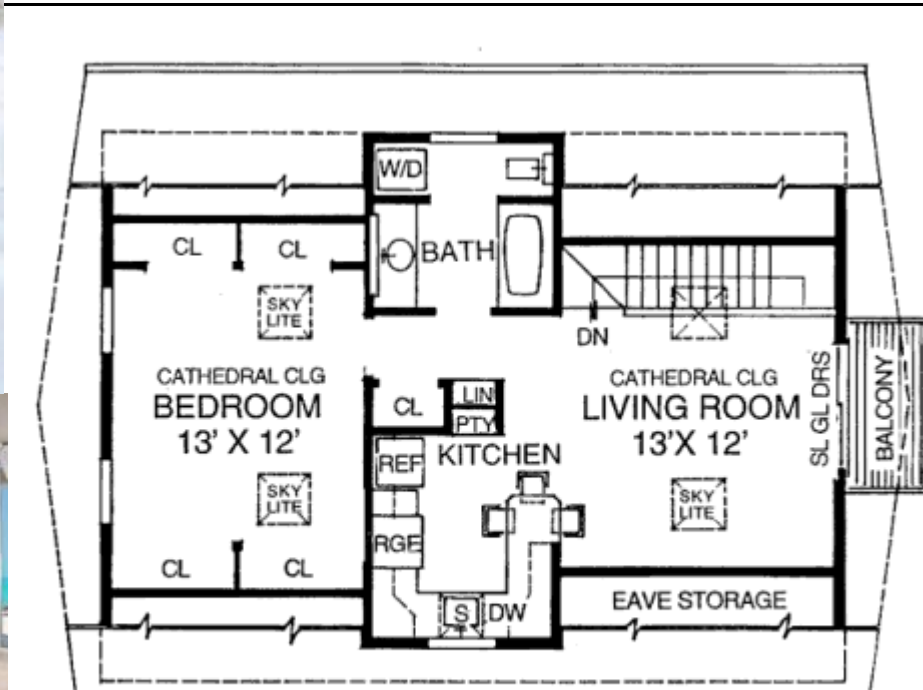


## **Factors - fish**

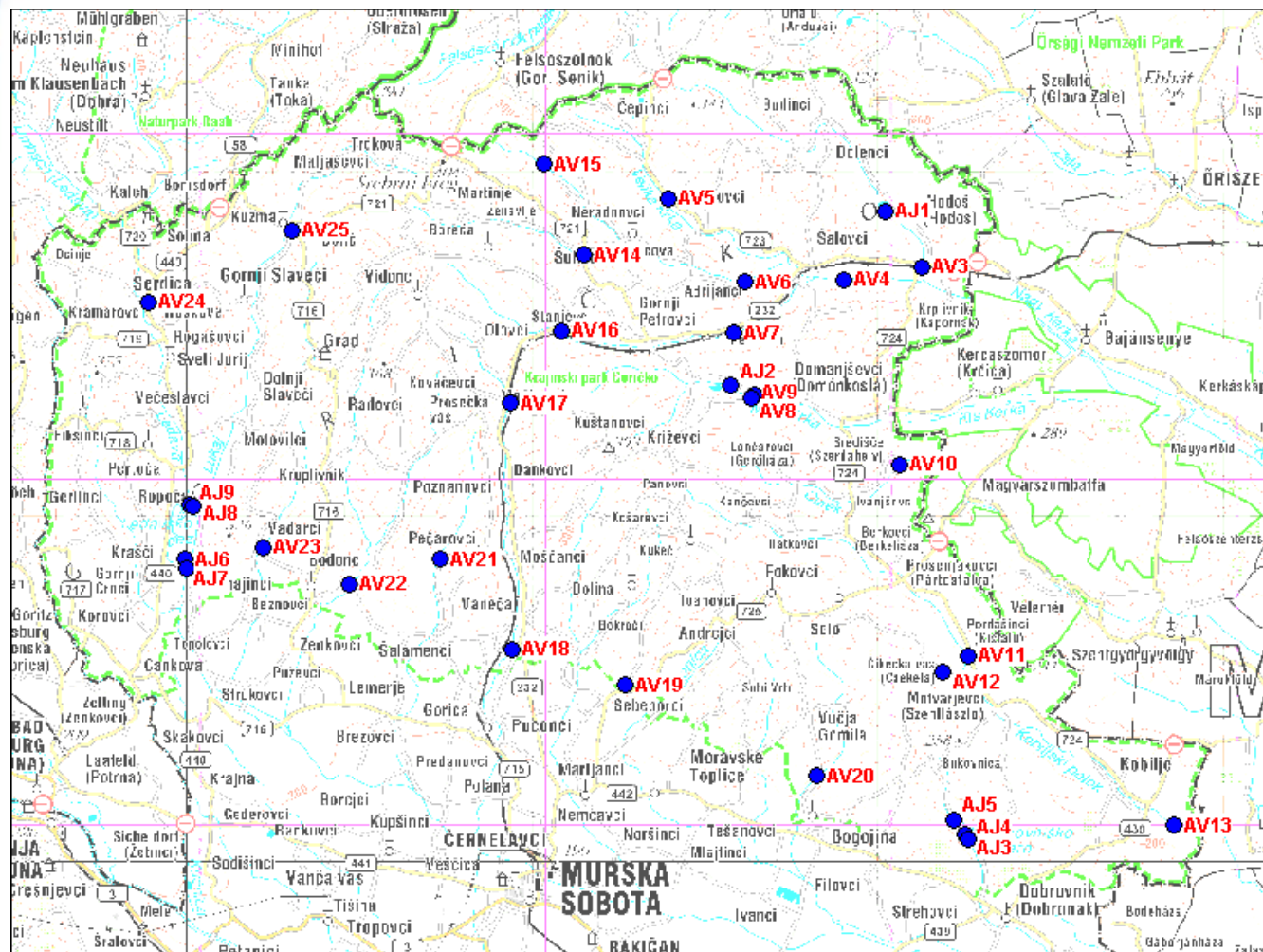
- Transition, fish passages
- Water speed
- Water depth
- Spawn areas
- Water quality
- Temperature
- Food
- Connection with flood areas
- Sediments

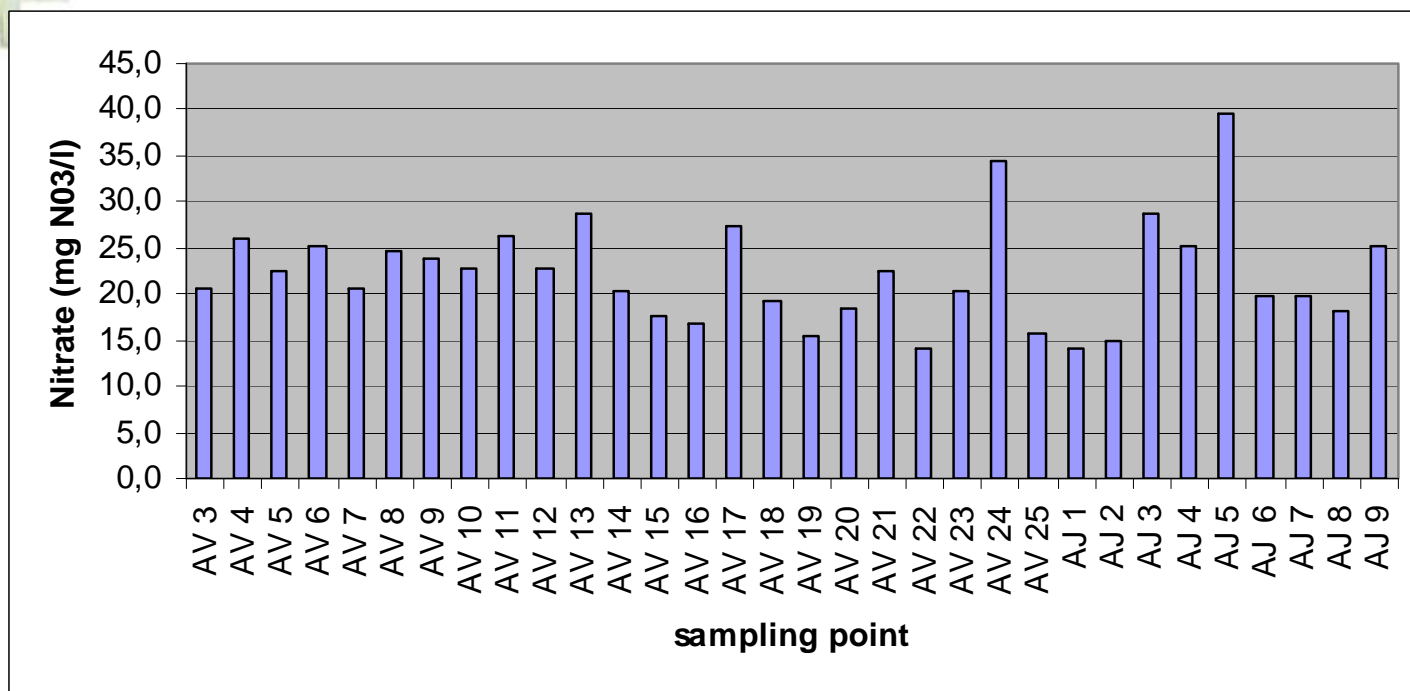
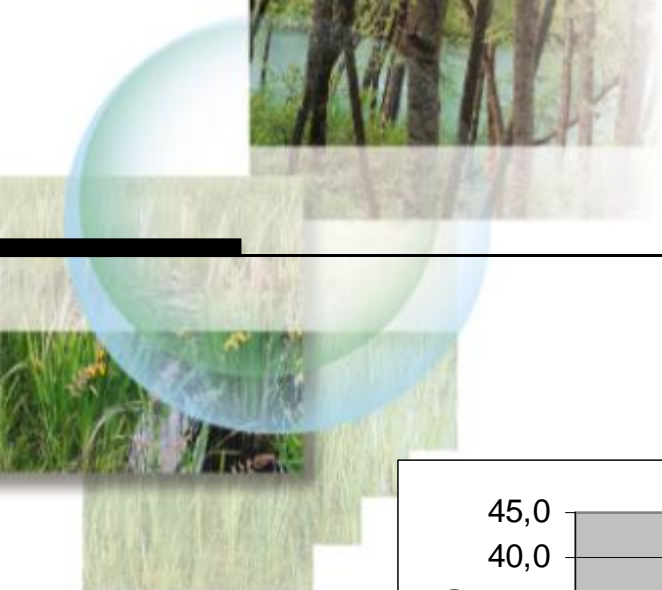
# Stream – fish apartment













## **The results of non-sustainable management were:**

- decreasing of the groundwater level;
- opening of the corridor with removing tree canopies as well as riparian vegetation on watercourse banks;
- the cover for otters disappeared, the leaving conditions for pray species became bad;
- there was less food available;
- the permeability of corridors had lowered;
- the risk for population fragmentation was higher.

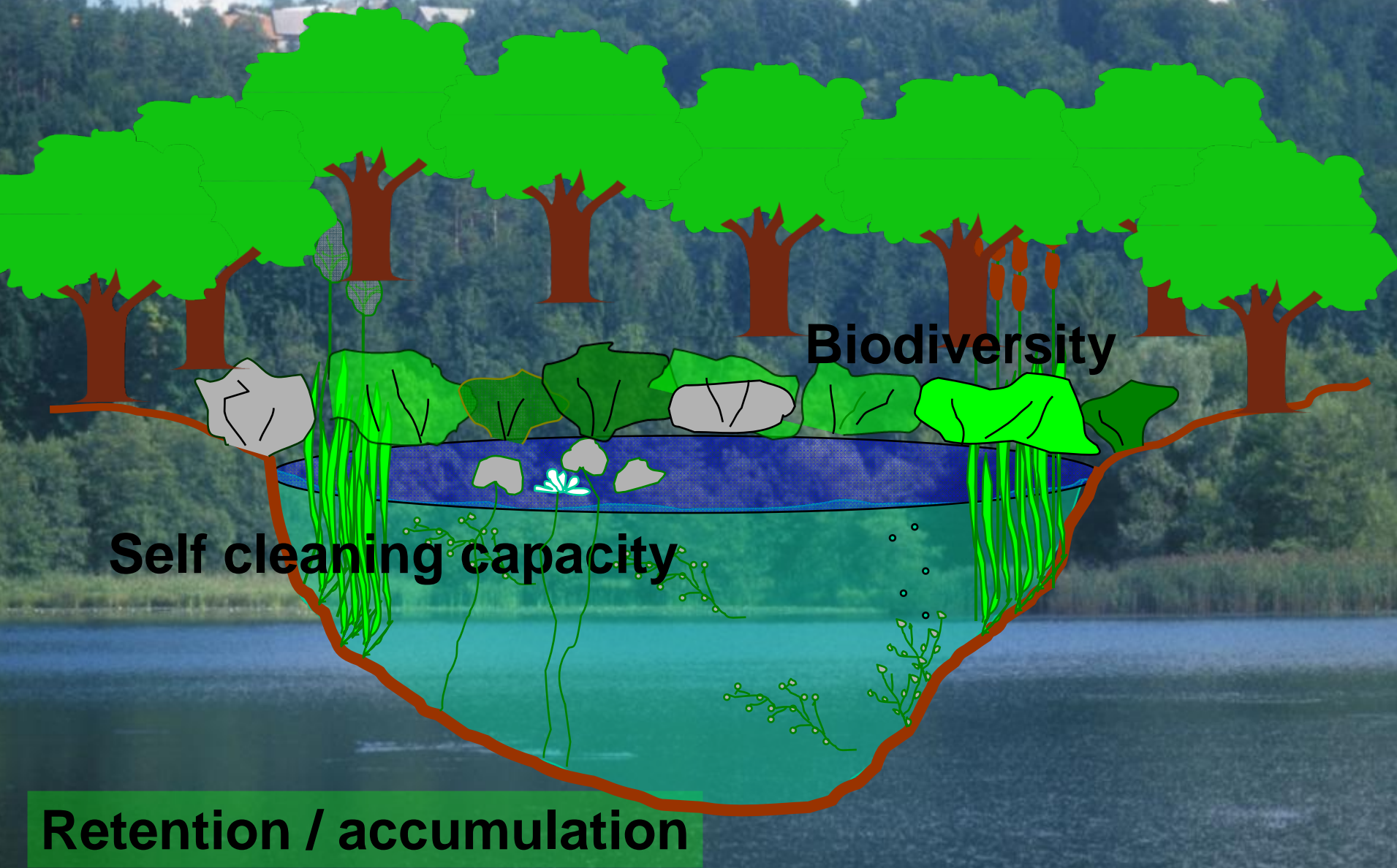


# **ECOREMEDIATIONS (ERM)**

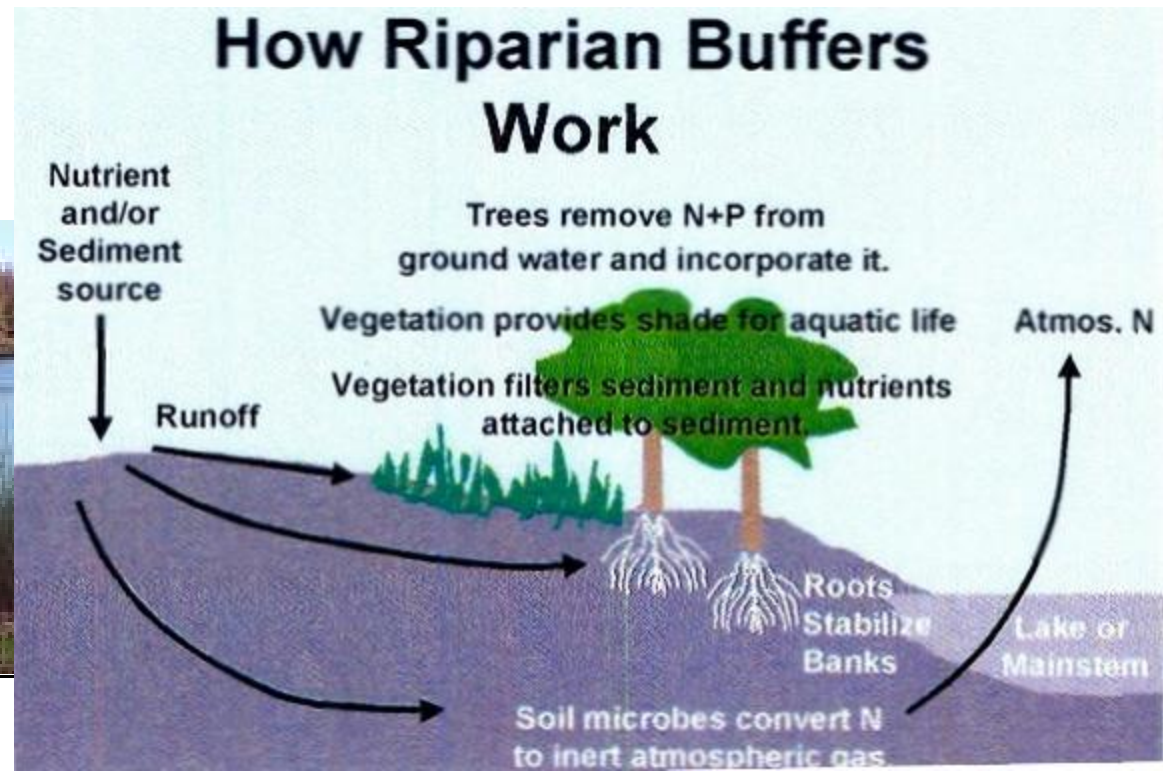
- Holistic approach comprises methods of protection and restoration of the environment by means of natural processes already existing in ecosystems;
- ERM technologies combine natural, co-natural and artificial ecosystems;
- Functions: strong buffering and purification capacity , high water retention capacity , contribute to higher biodiversity in the area.



# MULTIPURPOSE USE OF WATER ECOSYSTEMS



- **Riparian buffers, filter strips:** wooden, grass  
Are land areas of either planted or indigenous vegetation, situated between a potential pollutant source and a receiving surface water body







- **Vegetated Drainage Ditches**

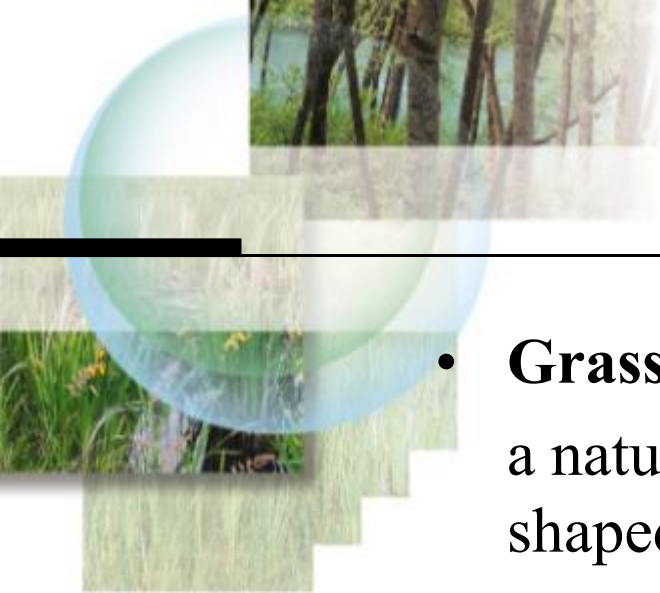
mitigation of agricultural contaminants can be realised through the existing vegetated drainage ditches, thereby reducing the potential risk to downstream receiving systems.

- **In-stream wetlands**

Wetlands in streams can reduce bank erosion, sediment, nitrogen and phosphorus.

- **Constructed wetlands**

Treatment of different waste waters.



- **Grassed waterway**

a natural or constructed vegetated channel that is shaped and graded to carry surface water at a nonerosive velocity to stable outlet.

- **Vegetative barriers**

narrow, permanent strips of stiff stemmed, erect, tall, dense, perennial vegetation established in parallel rows and perpendicular to the dominant slope of the field.

- **Wind buffers**

plantings of single or multiple rows of trees or grasses established for environmental purposes.





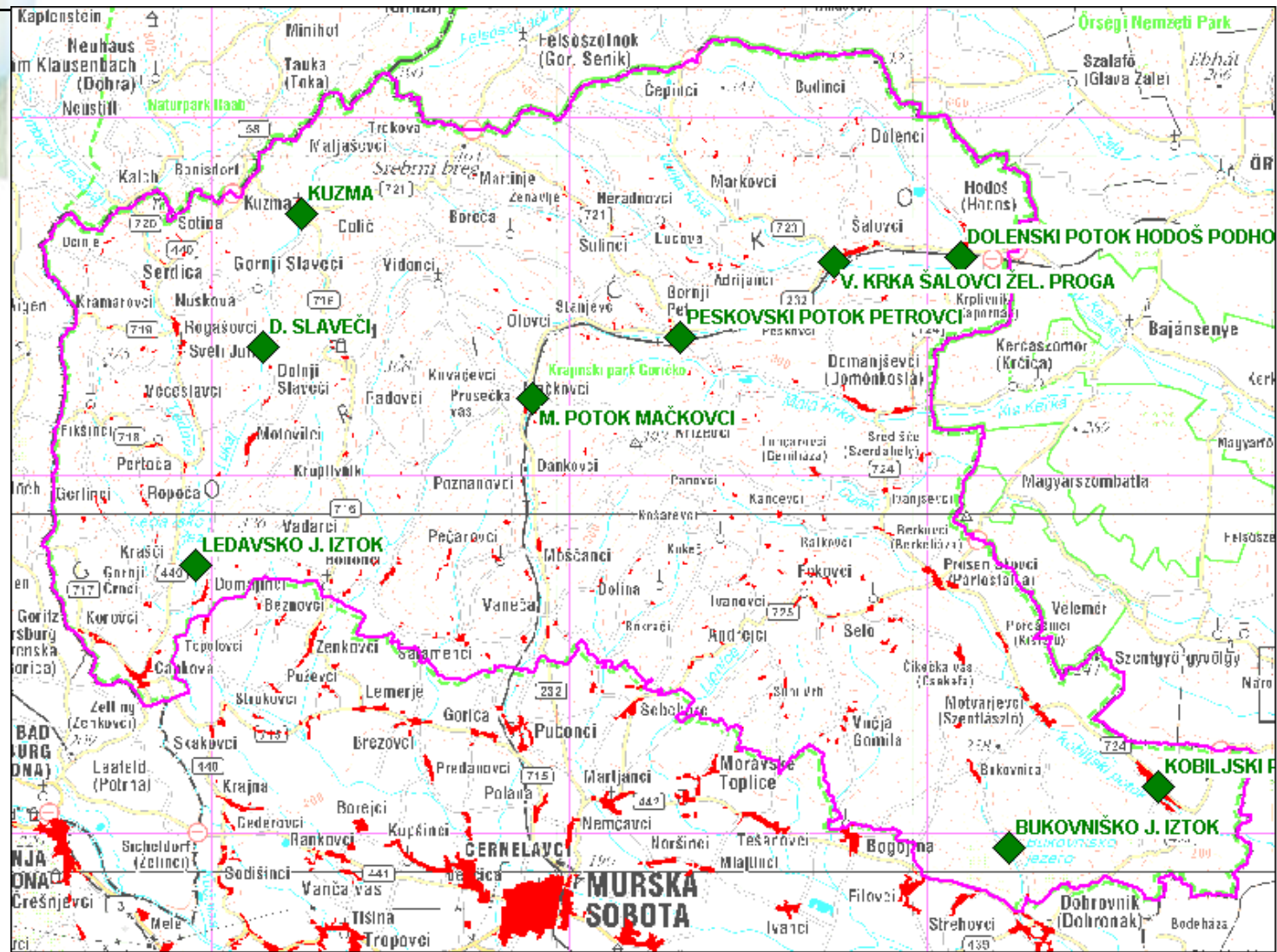


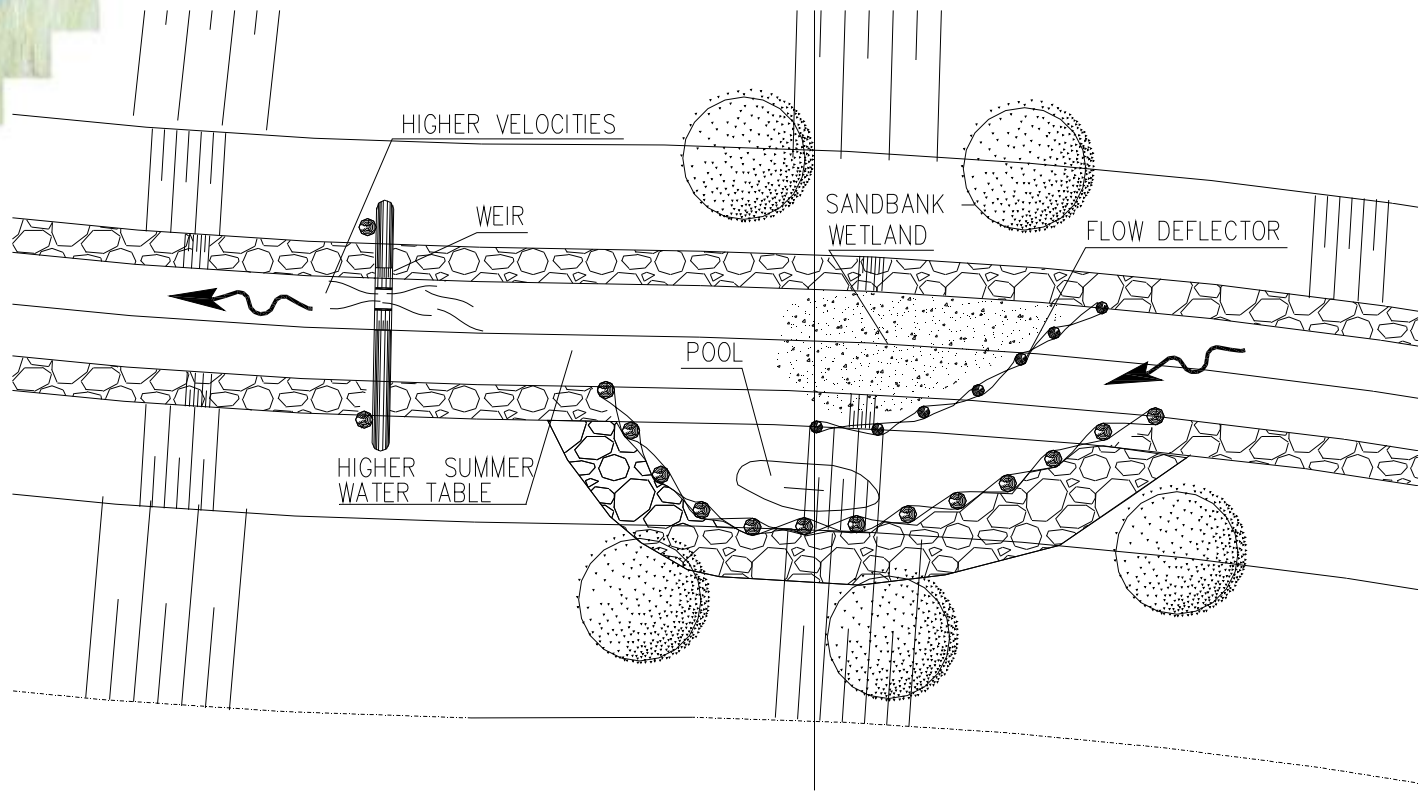
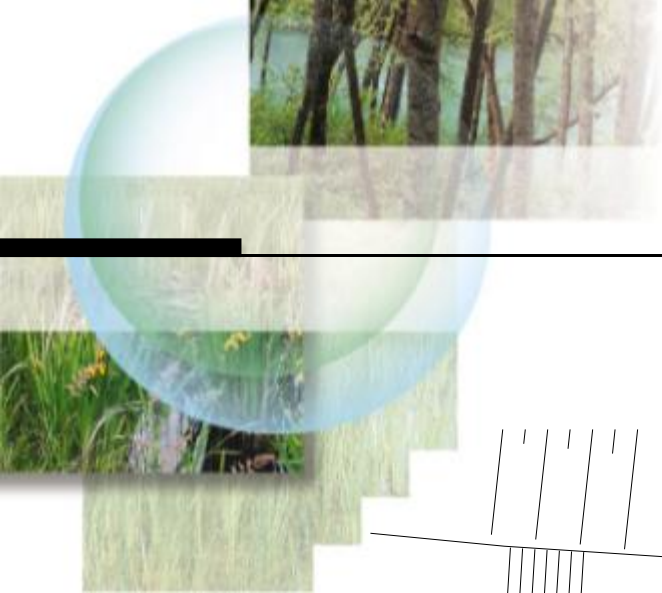
- **River revitalisation**

River restoration means that the ecological balance in a degraded water ecosystem is reestablished through the application of appropriate water management steps. This means that the structure and the function of water biotope is restored and the ecosystem, landscape and multipurpose use of land is defined;

- **Ecologically acceptable flow**

is defined as the quantity and the quality of water, which preserves the ecological balance in streams and riparian zones.







## Peskovski potok - before





# Peskovski potok - after





# Peskovski potok - after





# Mala Krka - before





## Mala Krka - after





# Kobiljski potok - before





# Kobiljski potok - after



## **Dolenski potok - before**





## Dolenski potok - after





# Ledavsko lake - before





# Ledavsko lake - after





# Bukovniško lake - before

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# Bukovniško lake - after





**Thank you!**