Water using system in Hungary

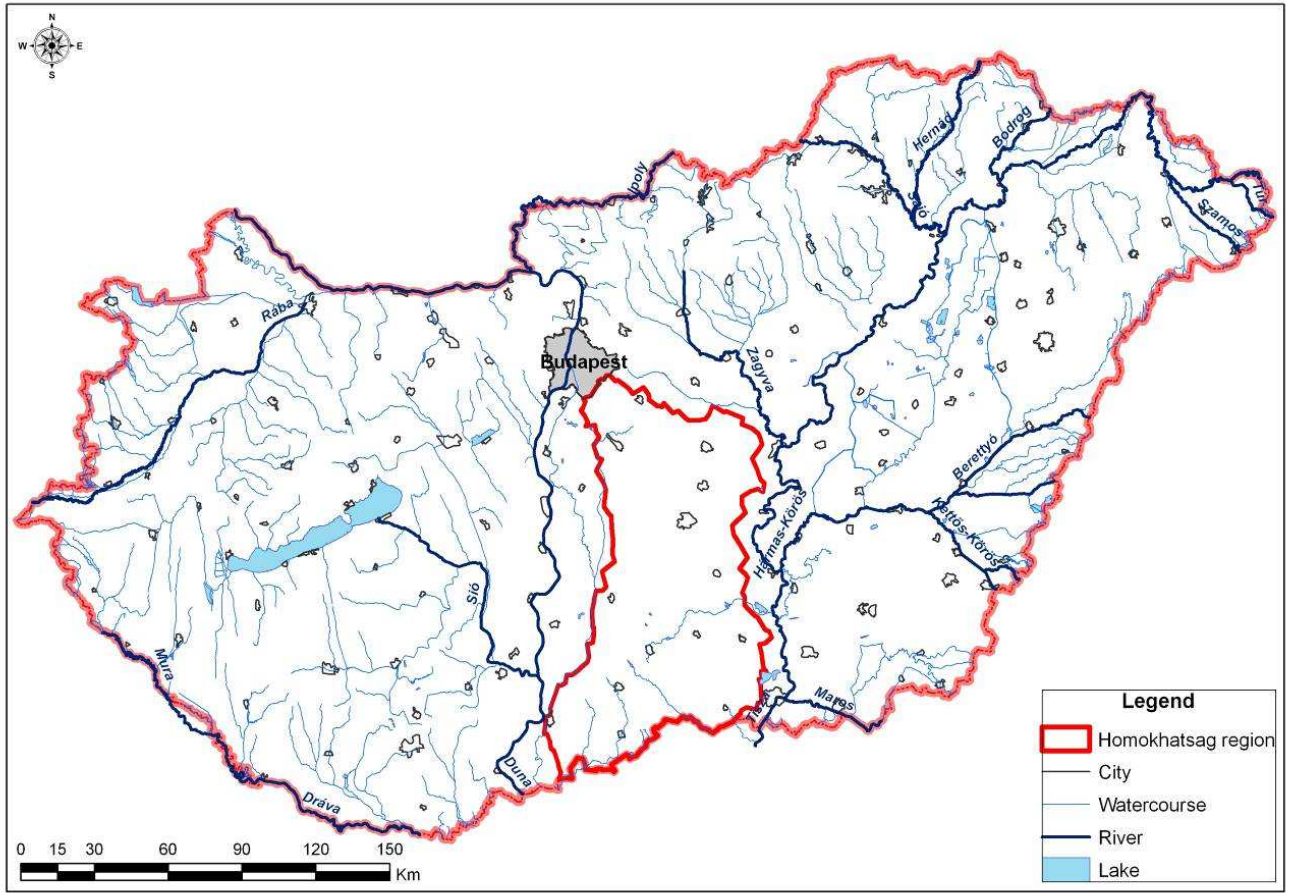
Hungary is a rich country in fresh water basin

the issue?

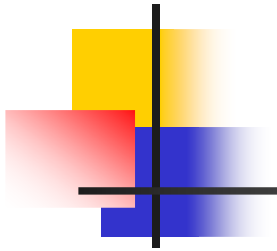
Hungary:

Situated in the Carpatian basin

Hungary:
More than 90% of the surface waters come from aboard

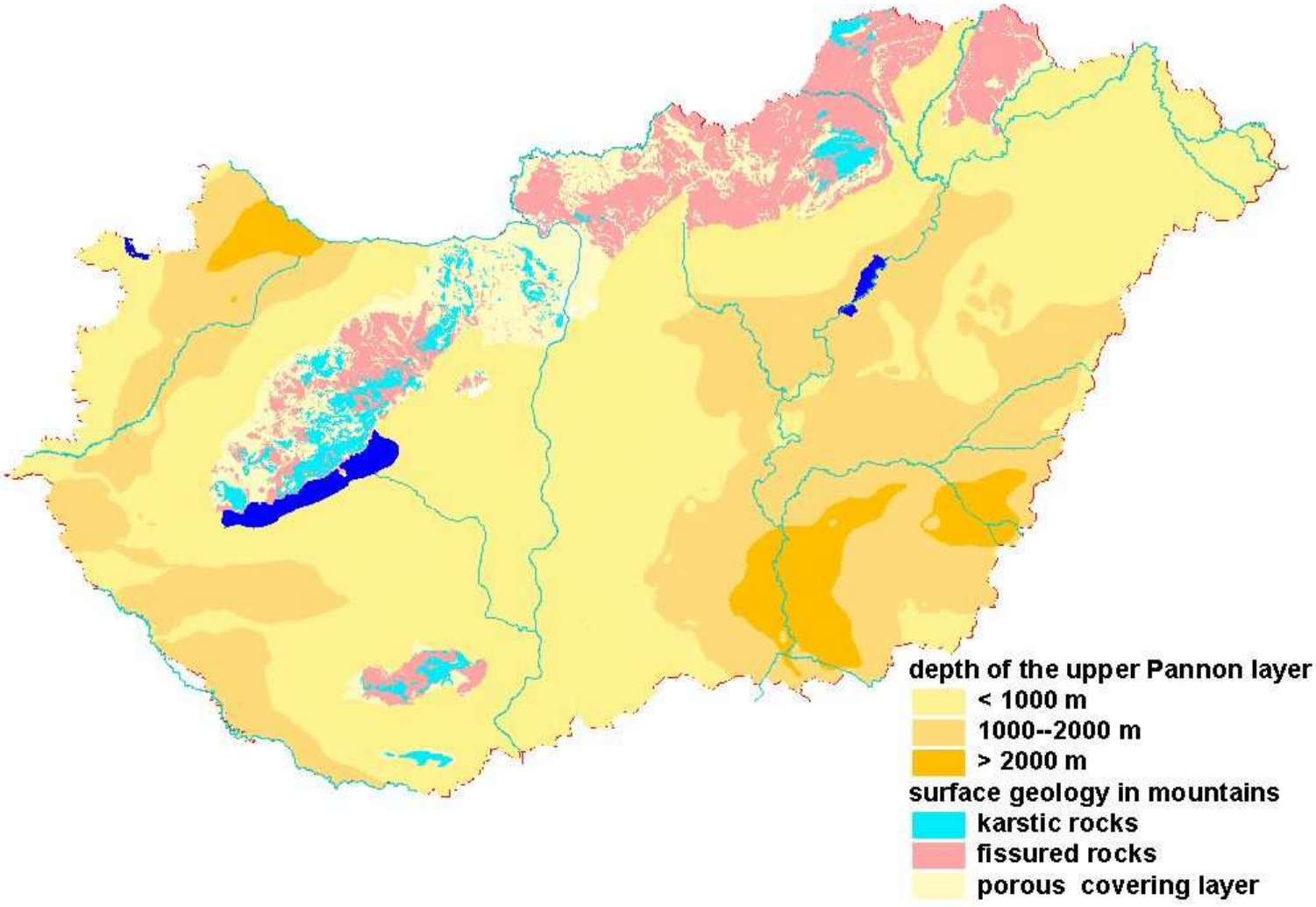


Statements of the Water Framework Directive



- Water is not a commercial product like any other but, rather, a heritage which must be protected, defended and treated as such.
- HU mission is
- To prevent the deterioration of aquatic ecosystems
  - Long-term protection of available water resources
  - Enhanced protection of the aquatic environment
  - To ensure the progressive reduction of pollution of surface- and groundwater
  - To achieve the „good water status" until 2015

GROUNDWATER AQUIFERS



- Groundwater resources are available almost everywhere
- Thick alluvial deposits in the major part of the country,
- Karst aquifers in the mountainous regions

Aims and requirements

- To reach „good water status"
- Water quality protection should be more coordinated with water resources management
- The unit of the water management is the river basin
- To make a plan for river basin management
- Have to observe the ongoing processes (monitoring)
- To apply the economic analysis in the decision making procedure of river basin management, insist on the Principle of „Polluter pays"
- Appearance of recovery of costs for water services
- To apply the Principle of subsidiarity

Tasks to complete in the river basin areas

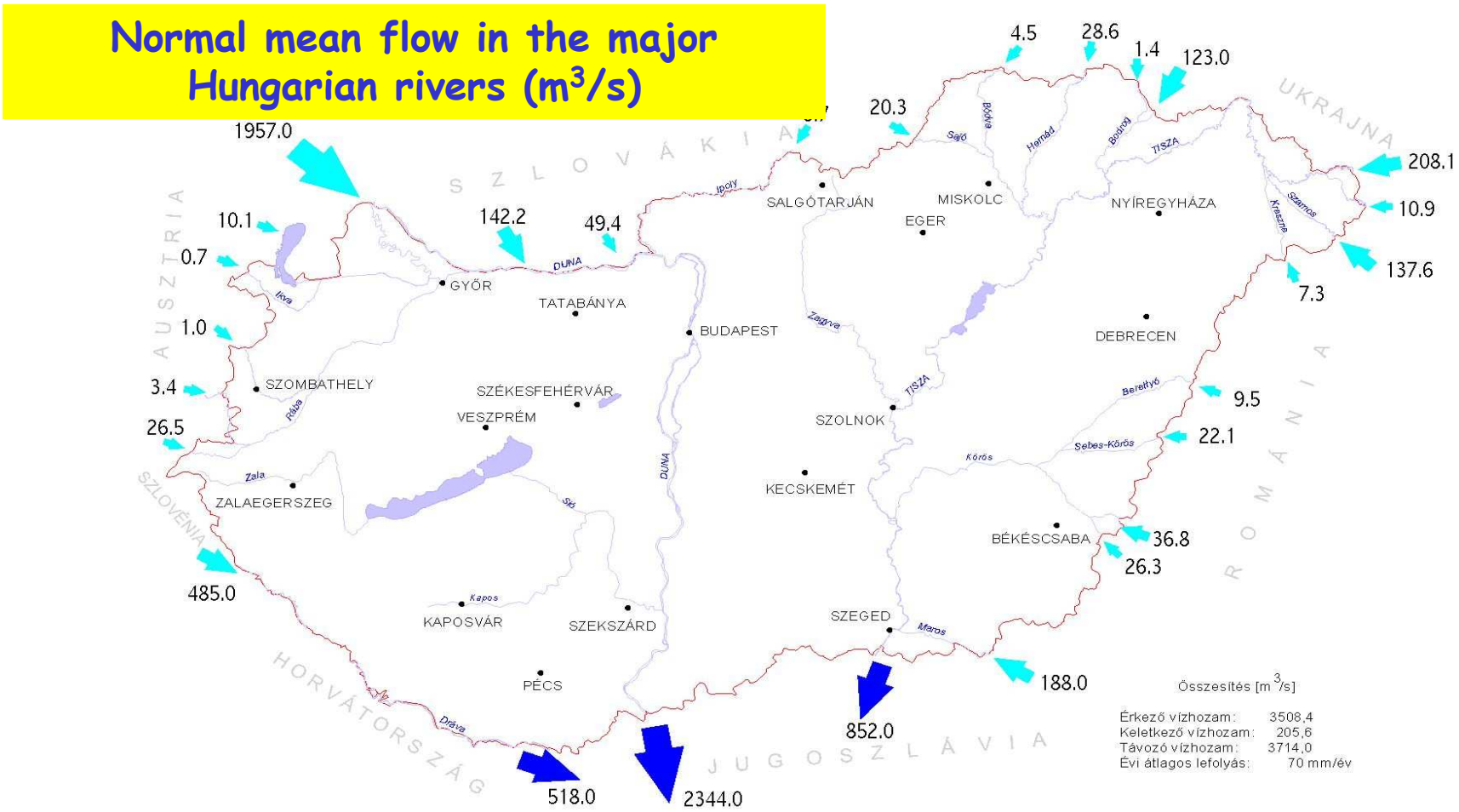
- To determinate the protected areas
- To identify drinking water bodies
- To determinate surface water bodies and groundwater bodies, and to establish the monitoring system
- To ensure the progressive reduction of pollution of surface- and groundwater
- To enhance the safety of flood-protection
- To identify the point and diffuse pollution sources
- To regulate the emission limit values
- To prepare the programme of measures to the period of 2000-2015
- River basin management approach instead of member states' borders

Hungary is situated within the drainage basin of the River Danube, in the lowest part of the Carpathian Basin

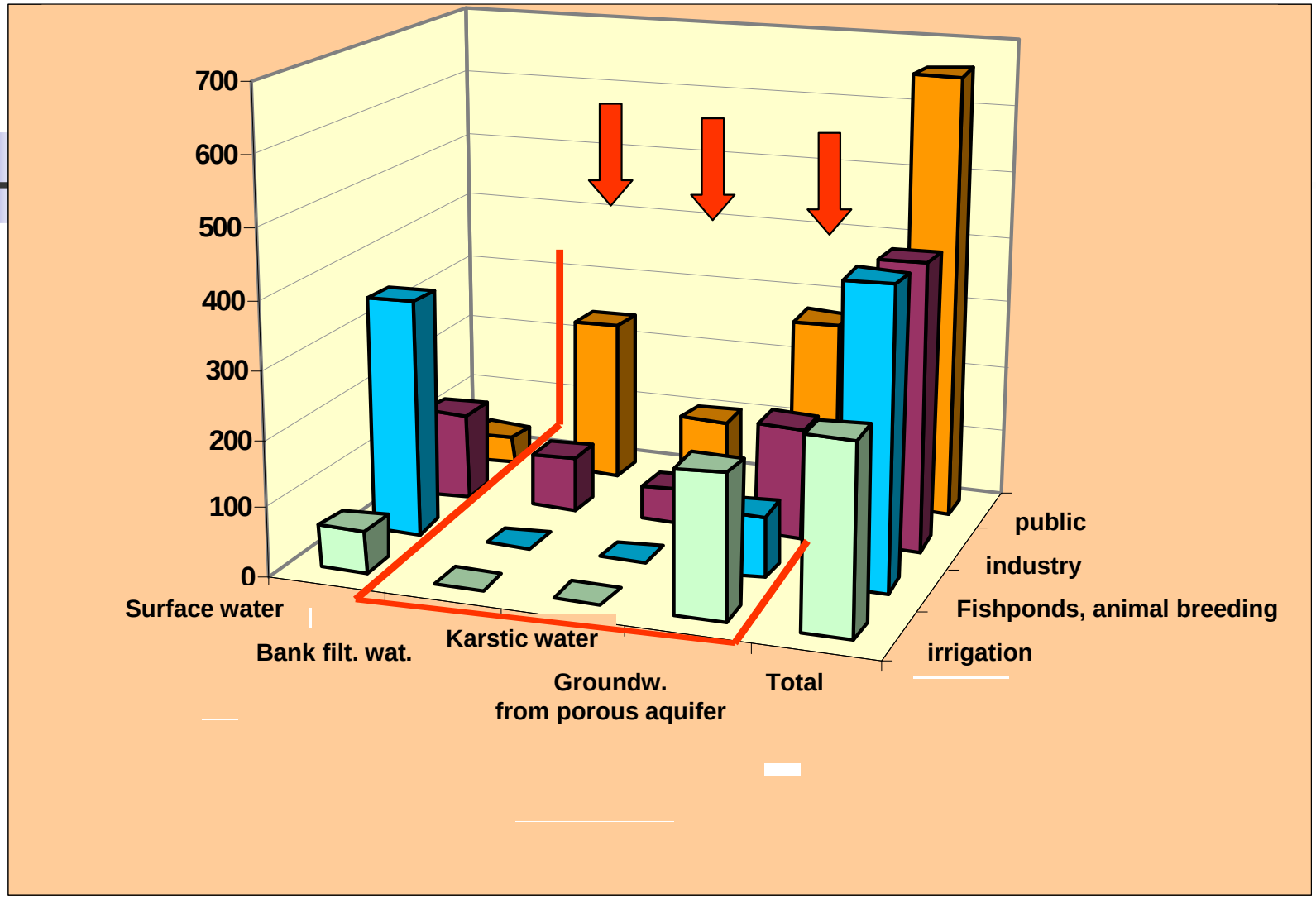
Flood plains covering close to one-quarter of the country's territory, affecting 2,5 million inhabitants in 700 settlements.

95% of the surface water resources of the country originate abroad

Normal mean flow in the major Hungarian rivers (m^3/s)



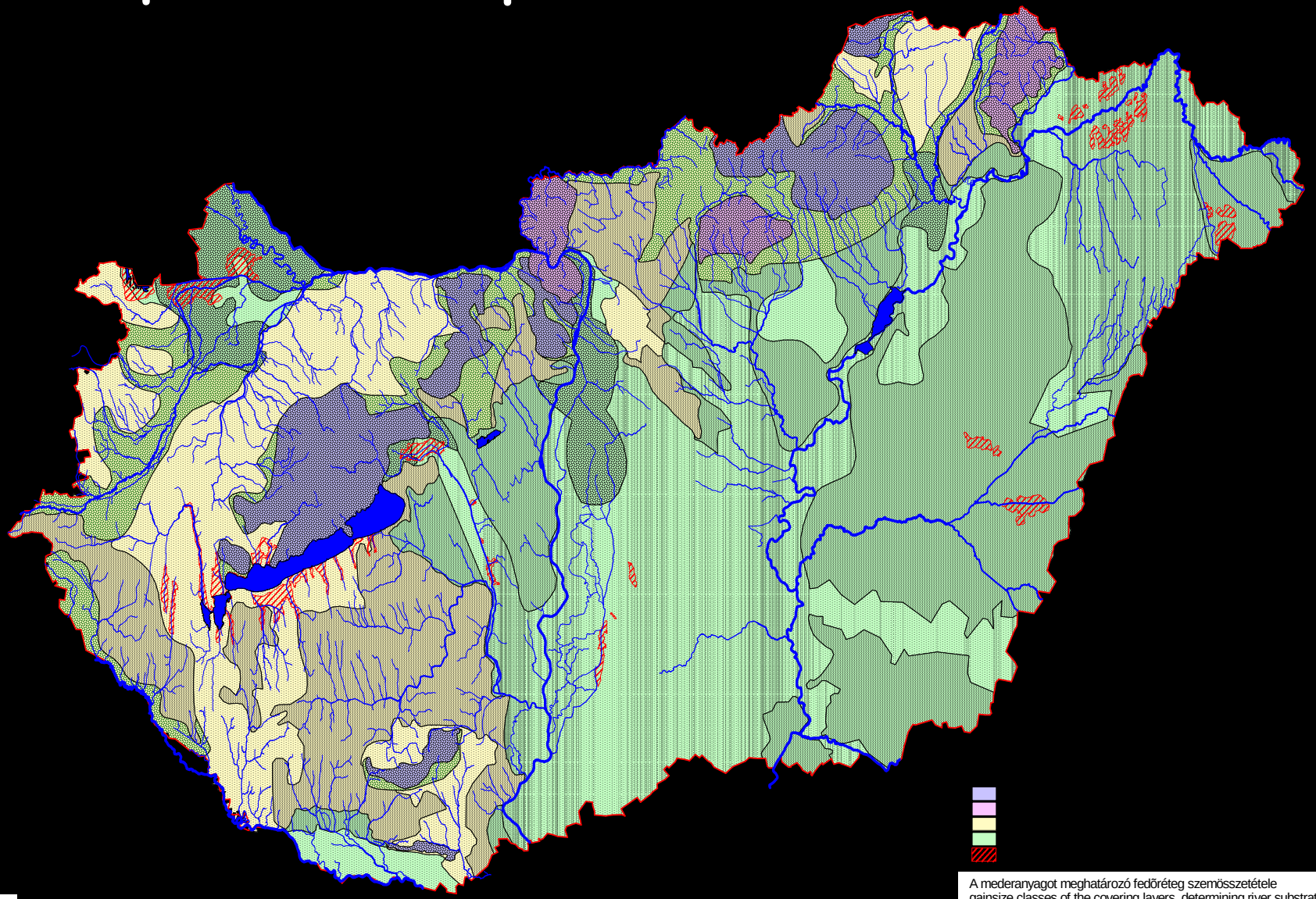
EXTENDED USE OF GROUNDWATER



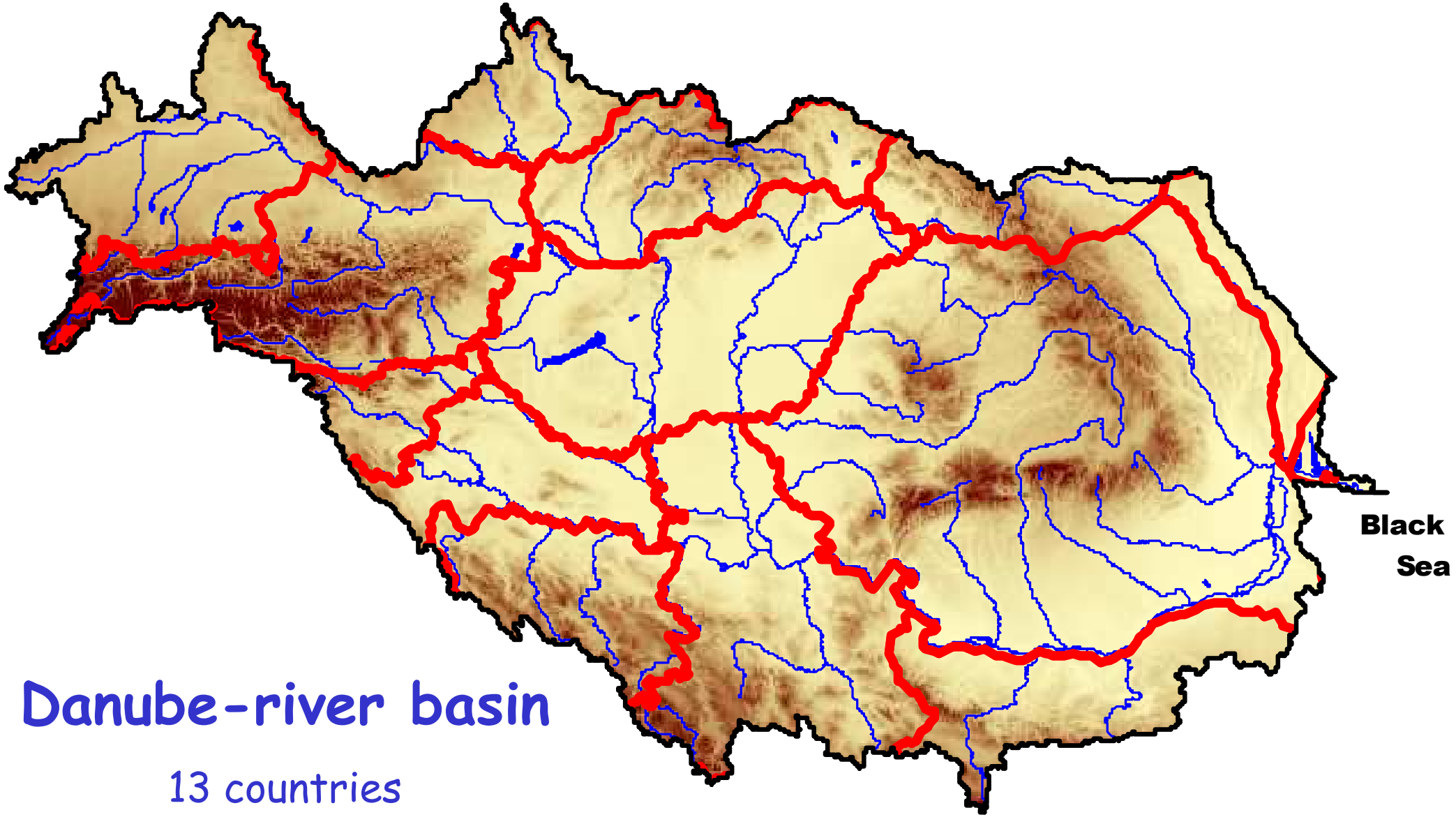
Except cooling water, 2/3 of the total use is from groundwater

95 % of the drinking water is from groundwater

Aquatic landscapes



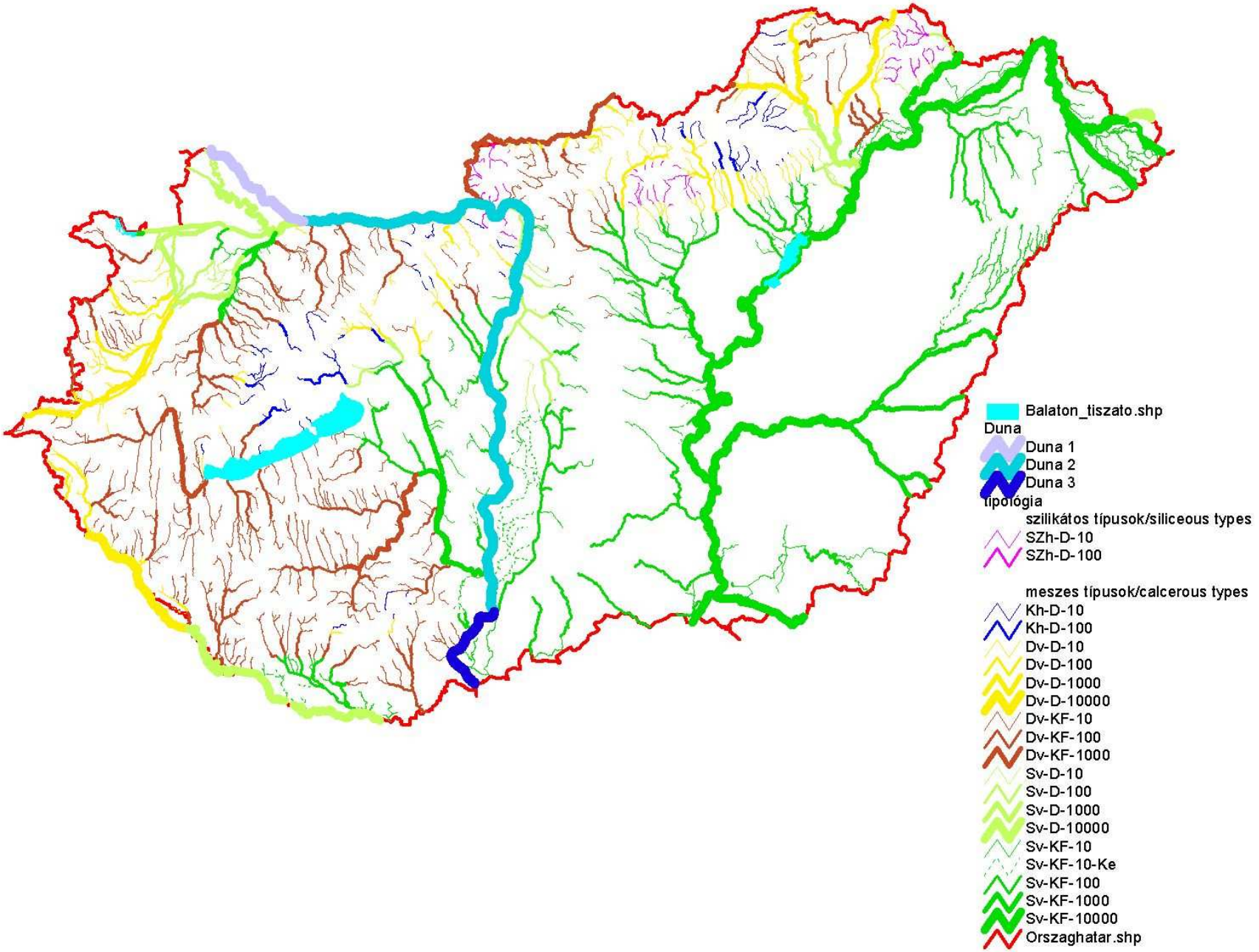
A mederanyagot meghatározó fedőréteg szemösszetétele
gainsize classes of the covering layers, determining river substratum:



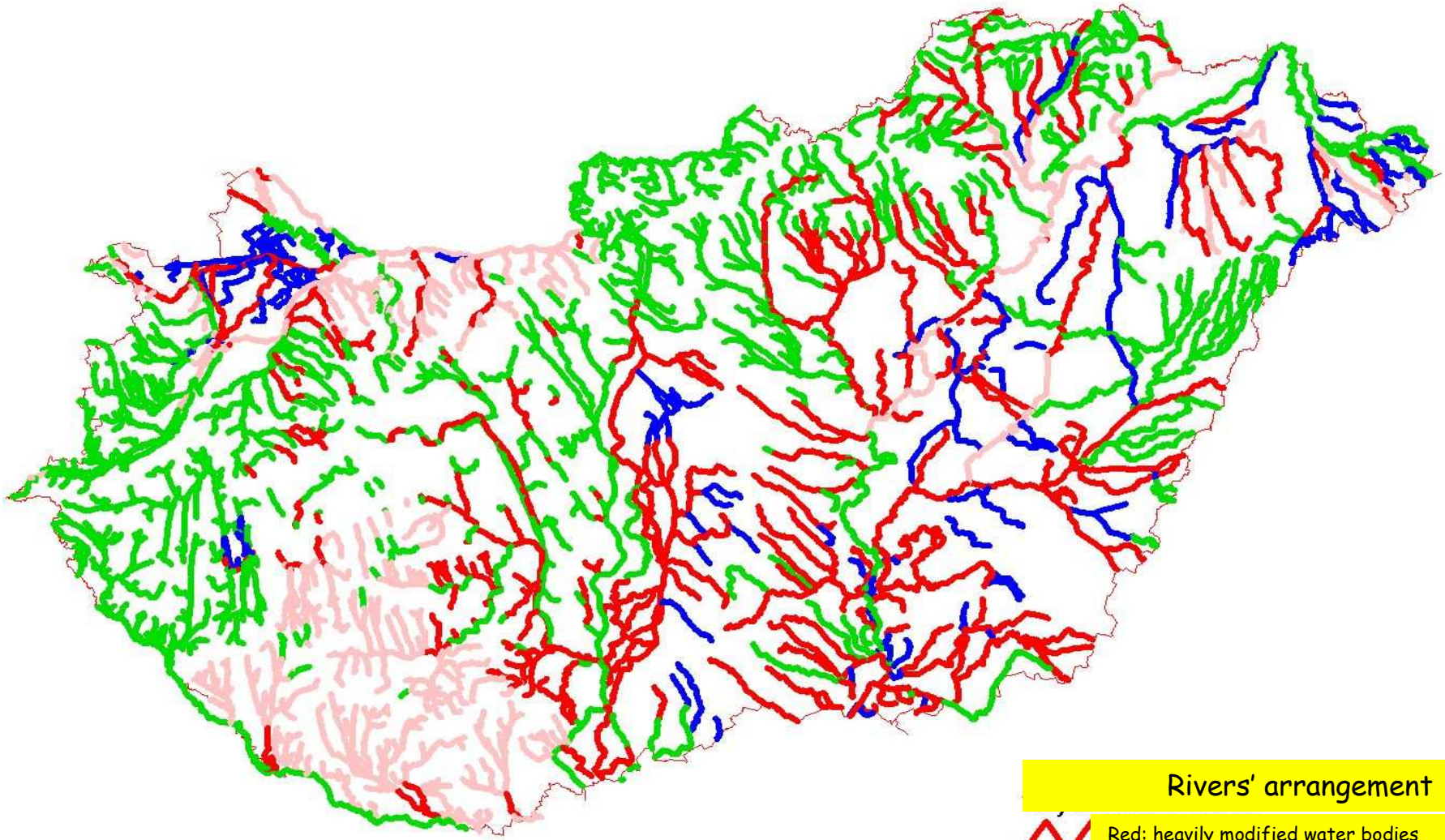
Danube-river basin

13 countries

River sections according to types



Arrangement of streams in the point of human activities' impact



Rivers' arrangement

Red: heavily modified water bodies

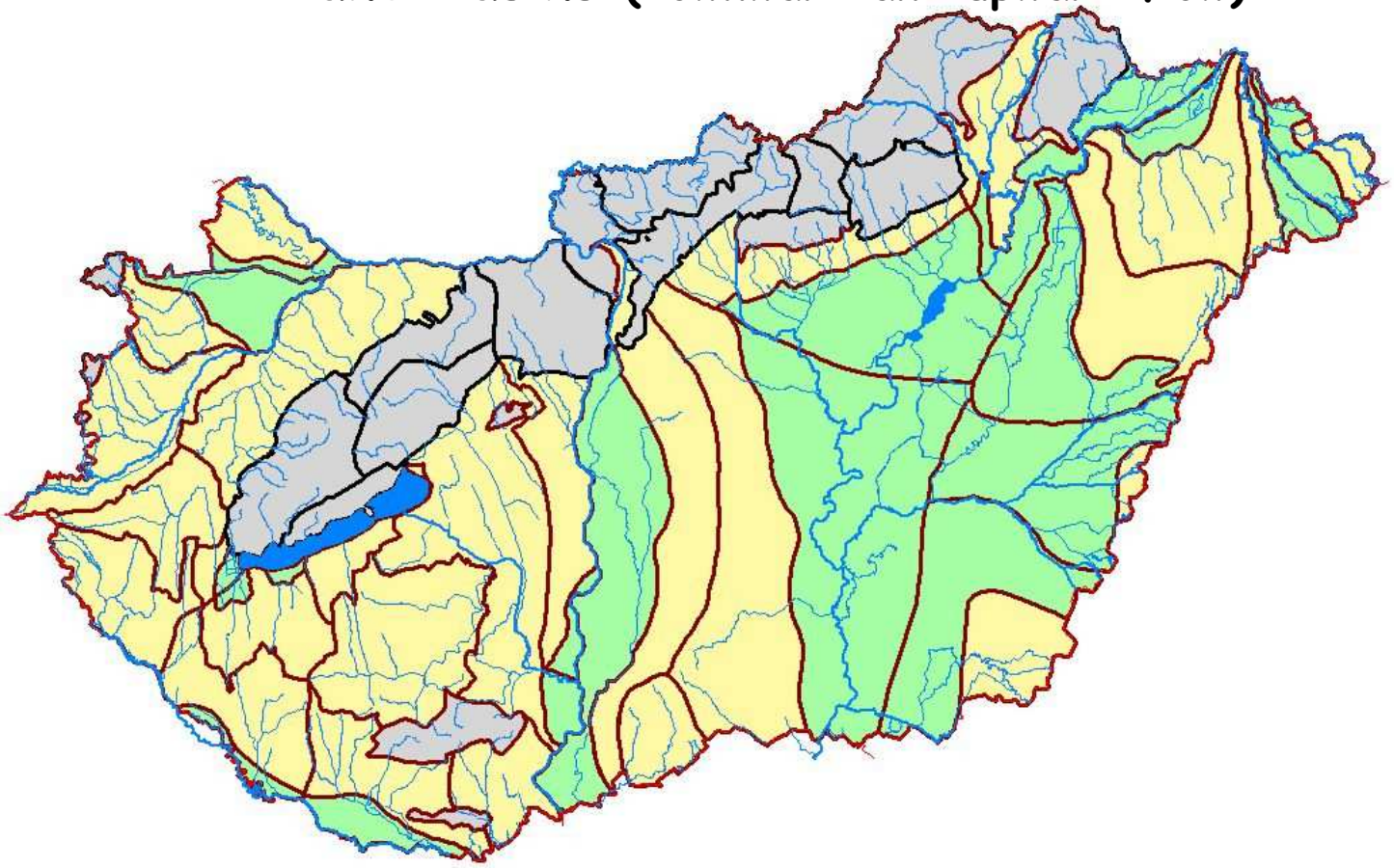
Pink: possibly heavily modified water bodies

Blue: artificial water bodies

Green: natural water bodies

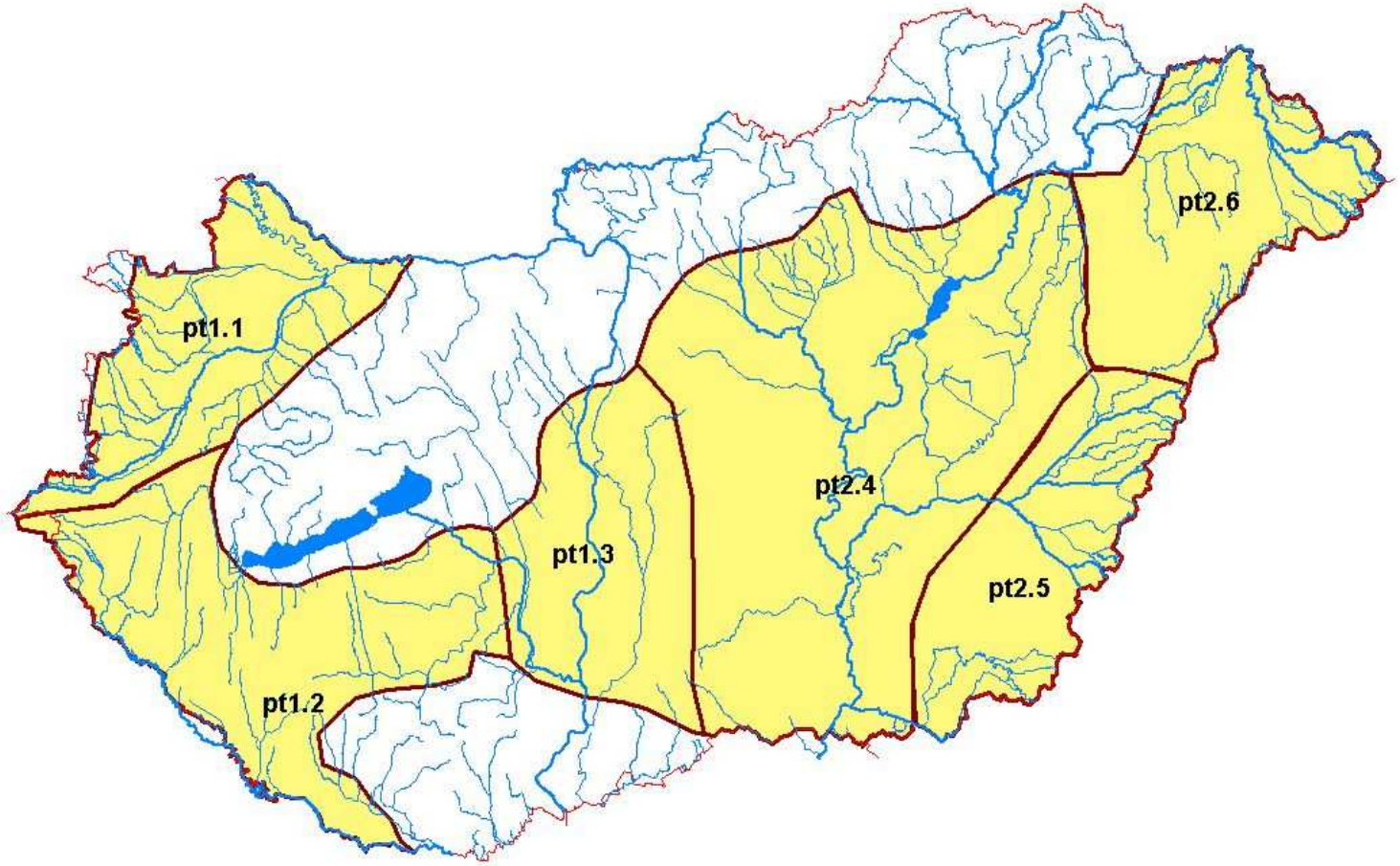
Identification of groundwater bodies

1st layer: mountains (surface catchment, geological units) and basins (downward and upward flow)



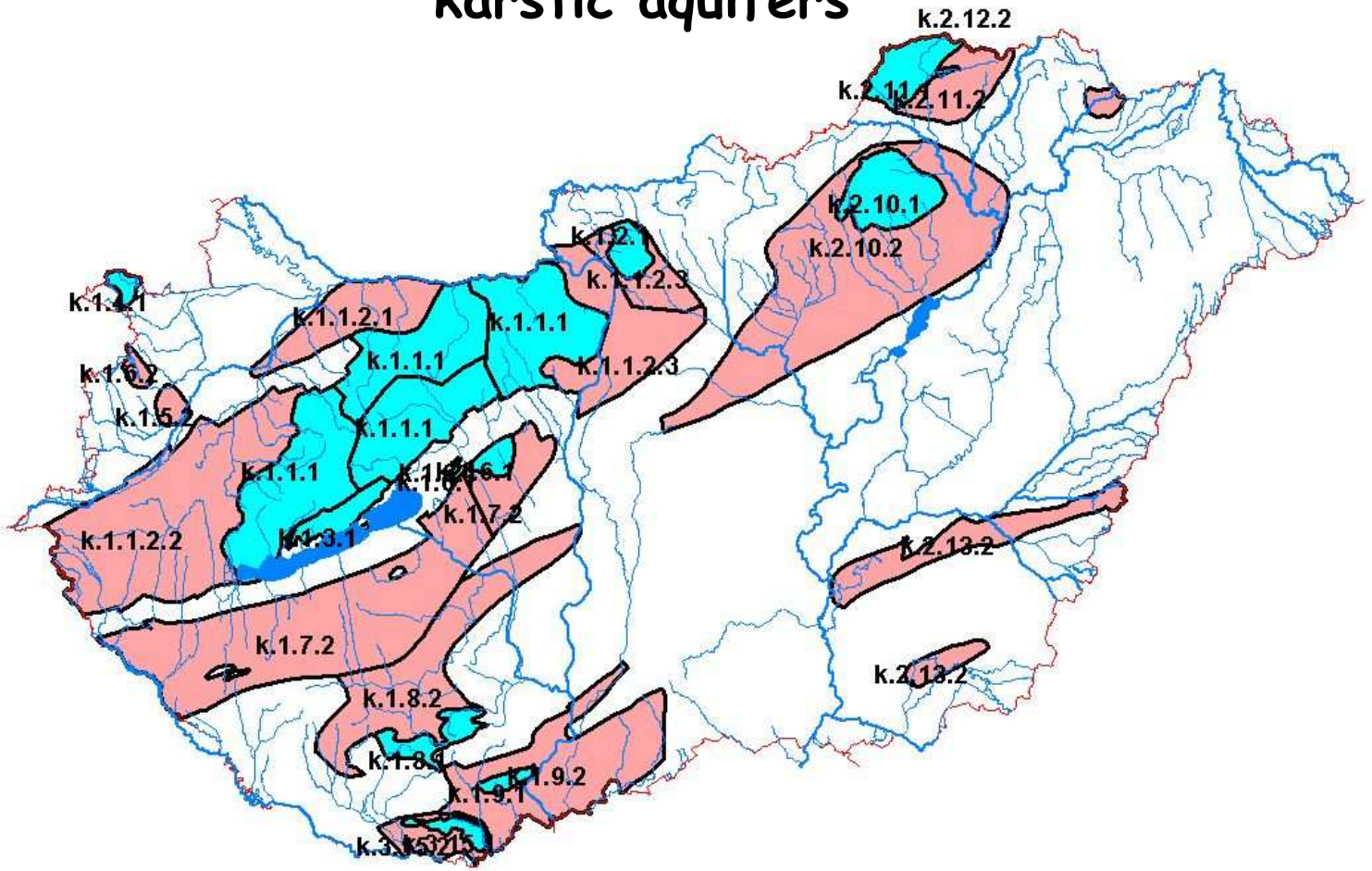
Identification of groundwater bodies

2nd layer: thermal water in porous aquifers



Identification of groundwater bodies

3rd layer: Water bodies in cold and thermal karstic aquifers



According to the Act 2003/120 (Hungary)

- Preparation the programme of measures to achieve the good water status, including the protection of water resources and sustainable using
- Preparation of water management plans
- To retain the possibilities of water utilization, observation and evaluation of status, analysis the impact of human activity
- Reasonable use of water resources, application of legal and economic regulations (Water Resources Charge)

According to the Act 2003/120 (HU)

- Determination, marking and standardization of the groundwater bodies
- Assembling the sub-basin district plans
- Analysis of loads and effects causing hydromorphological and water chemical changes (natural, artificial, and heavily modified statuses)
- Integration of loads into a MS SQL database system, which are: water intakes, water inflows, inter-basin diversions, objects and activities influencing the flows and outflows

Typology for rivers

B-typology

Topography (landscape, elevation, slope)

Geology (hydrogeology)

→ sub-ecoregions

Substratum

→ aquatic landscapes

Size of the catchment

→ B - typology

River types

Sub-ecoregions	Substratum	Size of the catchment
Siliceous mountainous regions	coarse	small, medium,
Calcerous mountainous regions	coarse	small, medium,
Calcerous hilly regions	coarse	small medium large very large
	medium - fine	small, medium, large
Calcerous plains	coarse	small medium large, very large,
	medium - fine	small, small, medium, large, very large,
Organic (peaty) regions		small medium

well types in Hungary