Freshwater Use and Biodiversity in Serbia

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Introduction

1. Benthic invertebrate community and sediment quality
2. Aquaculture production
3. Freshwater fishery
4. Fragmentation of river habitats
5. Mini hydropower plants

Sediment quality assessment

- One of the methodological procedures for assessing metal pollution in sediment is based on the following Indicators of Contamination:
  - → factor of enrichment (EF), Figure 3.
  - → geo-accumulation index (IgeoE)
  - → factor of contamination (CF)
  - → degree of contamination (CD)
- A calculation of the relevant indicators requires the use of "background" values, i.e. the natural background of metals in sediment
- Actual effects of sediment contamination must be considered by comparing harmful effects at aquatic ecosystem level

Figure 1. The Borska Reka River. Disposal of polluted effluents from Metallurgical Industries, 2018

Figure 2. The South Morava River. Disposal of solid waste contaminants

Enrichment factor (EF) – Pilot River Basin (the Veliki Timok),

Assessment of the extent of sediment pollution by metals

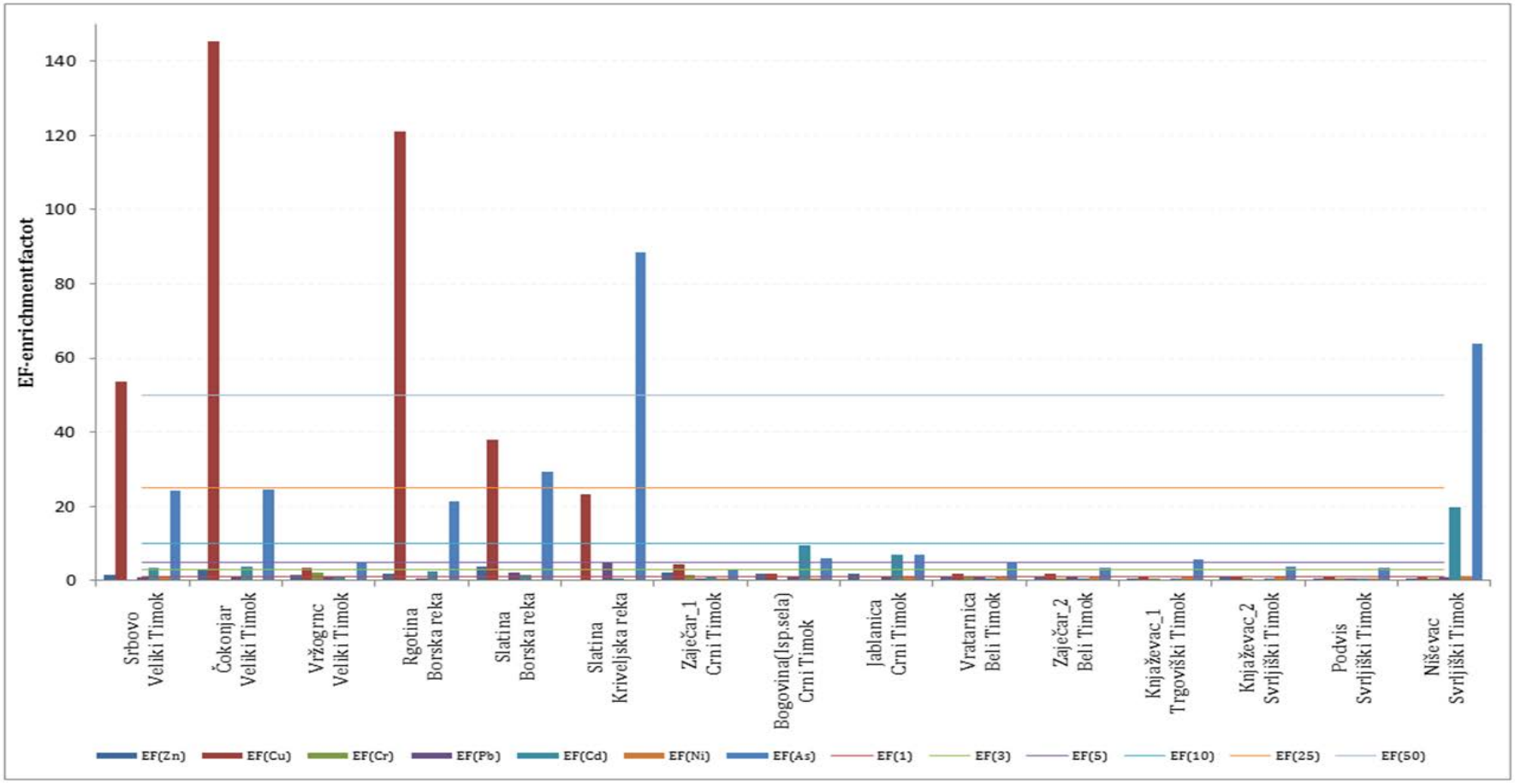
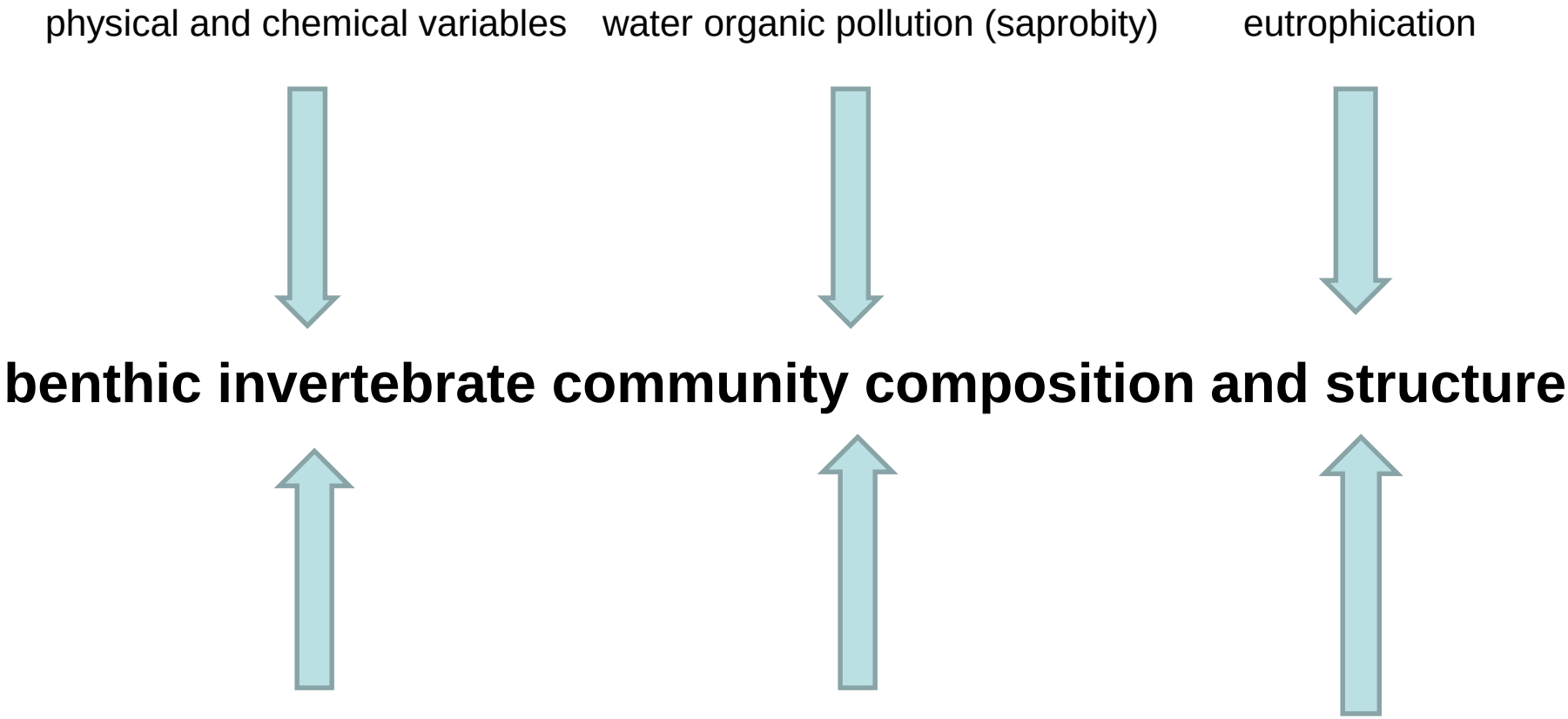


Figure 3. Metal enrichment factor (EF) in the sediments: No enrichment (EF < 1), minor (1 ≤ EF < 3), moderate (3 ≤ EF < 5), moderately severe (5 ≤ EF < 10), severe (10 ≤ EF < 25), very severe (25 ≤ EF < 50) and extremely severe (EF > 50) enrichment

Benthic invertebrate community and sediment quality



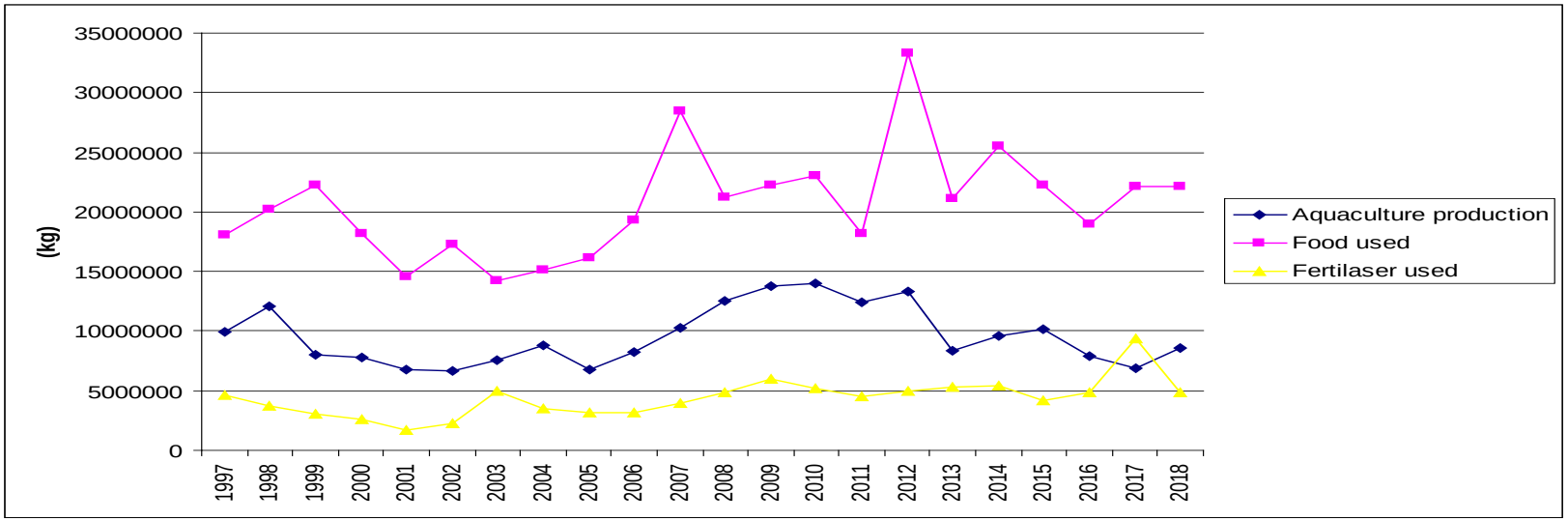
Taxa richness and sediment quality

- Benthic invertebrate assemblages
- Low number of taxa in benthic invertebrate community with the dominance of one or only a few taxa with high abundance - *lower sediment quality*
- High number of taxa with more complex benthic invertebrate community structure, its spatio-temporal variability as well as the presence of different functional feeding groups - *higher sediment quality*

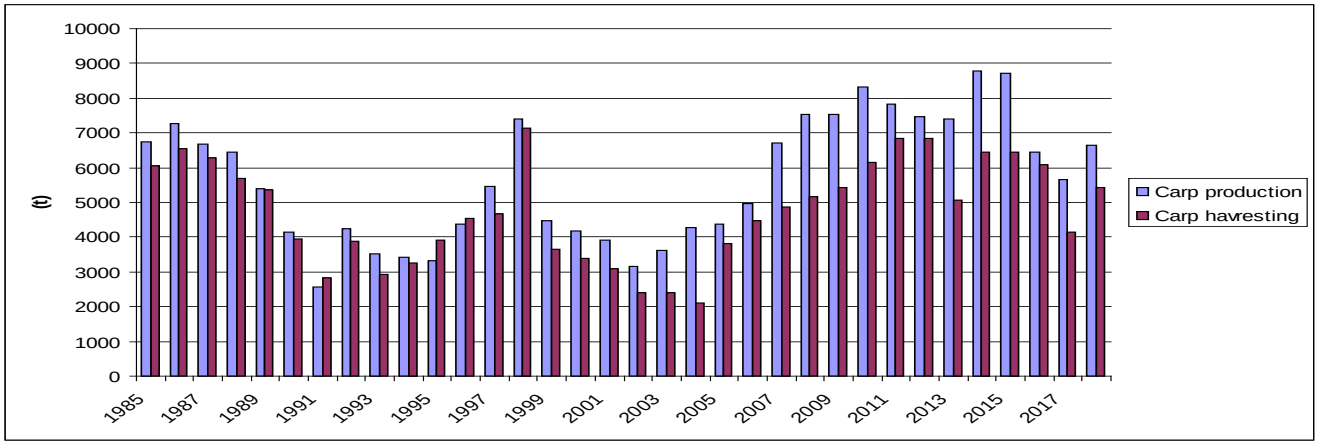
Indicators of sediment pollution

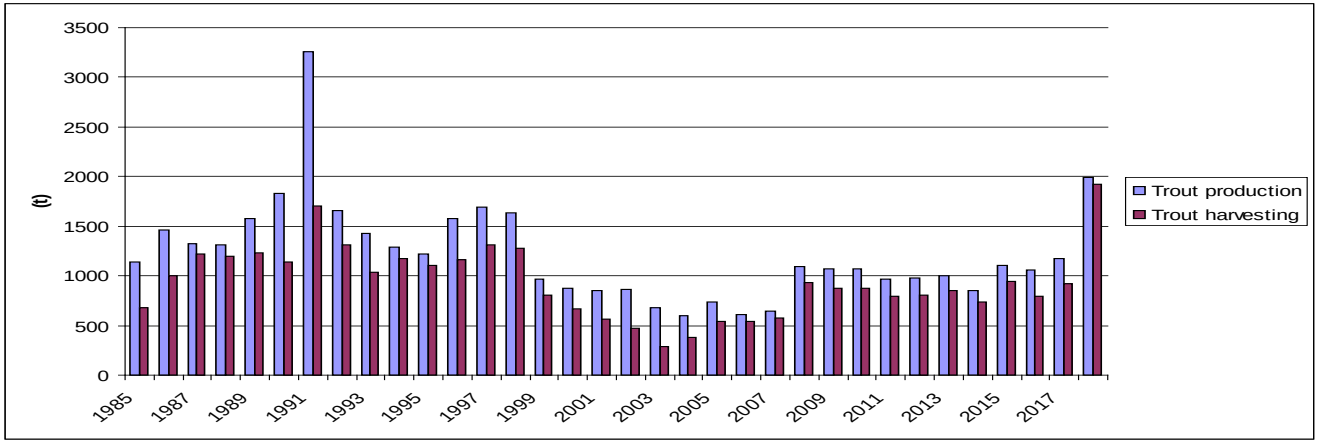
- Sediment pollution (primarily by heavy metals and pesticides)
- Natural background level of heavy metals in stream/river bed sediment
- Agricultural land use (anthropogenic impact)
- Inundation (torrents) - recent climate change effects
- transported/deposited sediment
- Bioaccumulation in larval instars of organisms and threshold values
- e. g. the caddisflies *Hydropsyche* spp. (Trichoptera) as indicators of heavy metal pollution in sediment

Aquaculture production

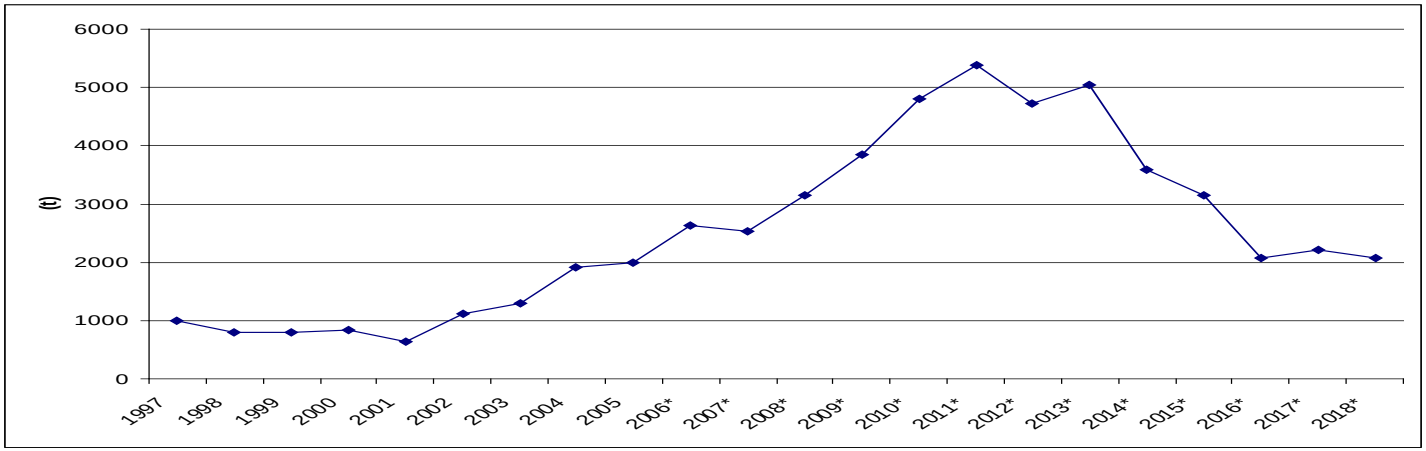


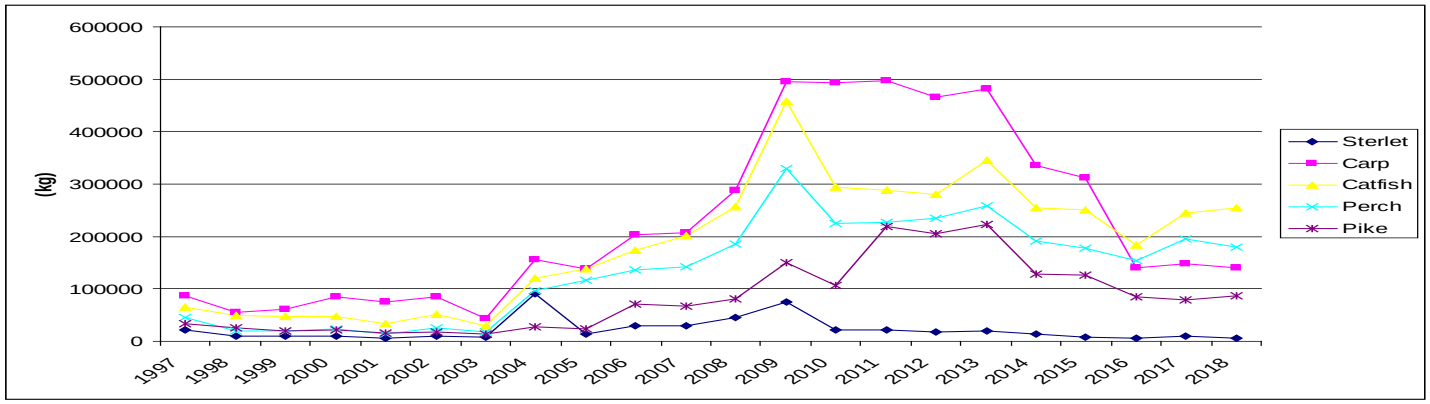
Aquaculture production





Freshwater fishery





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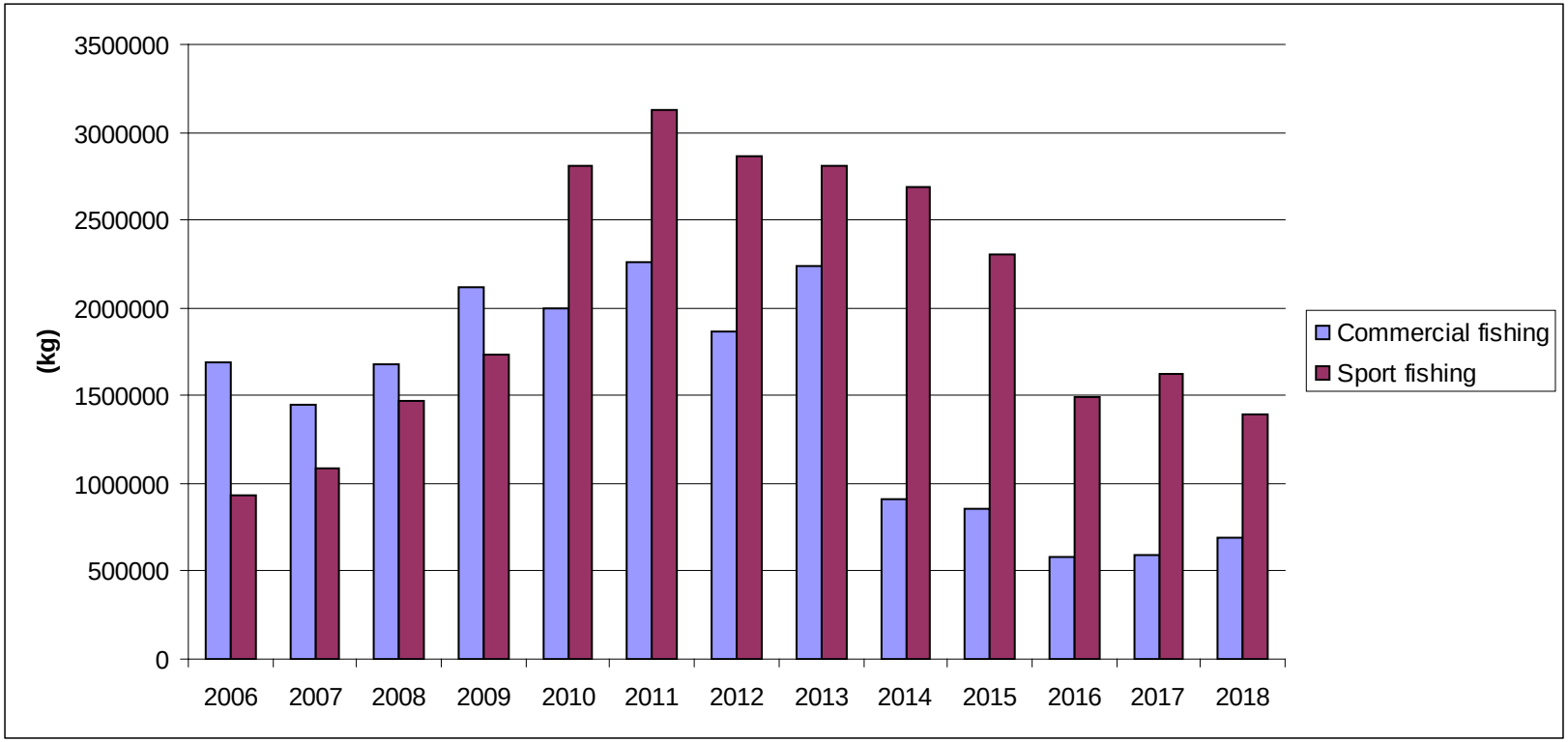
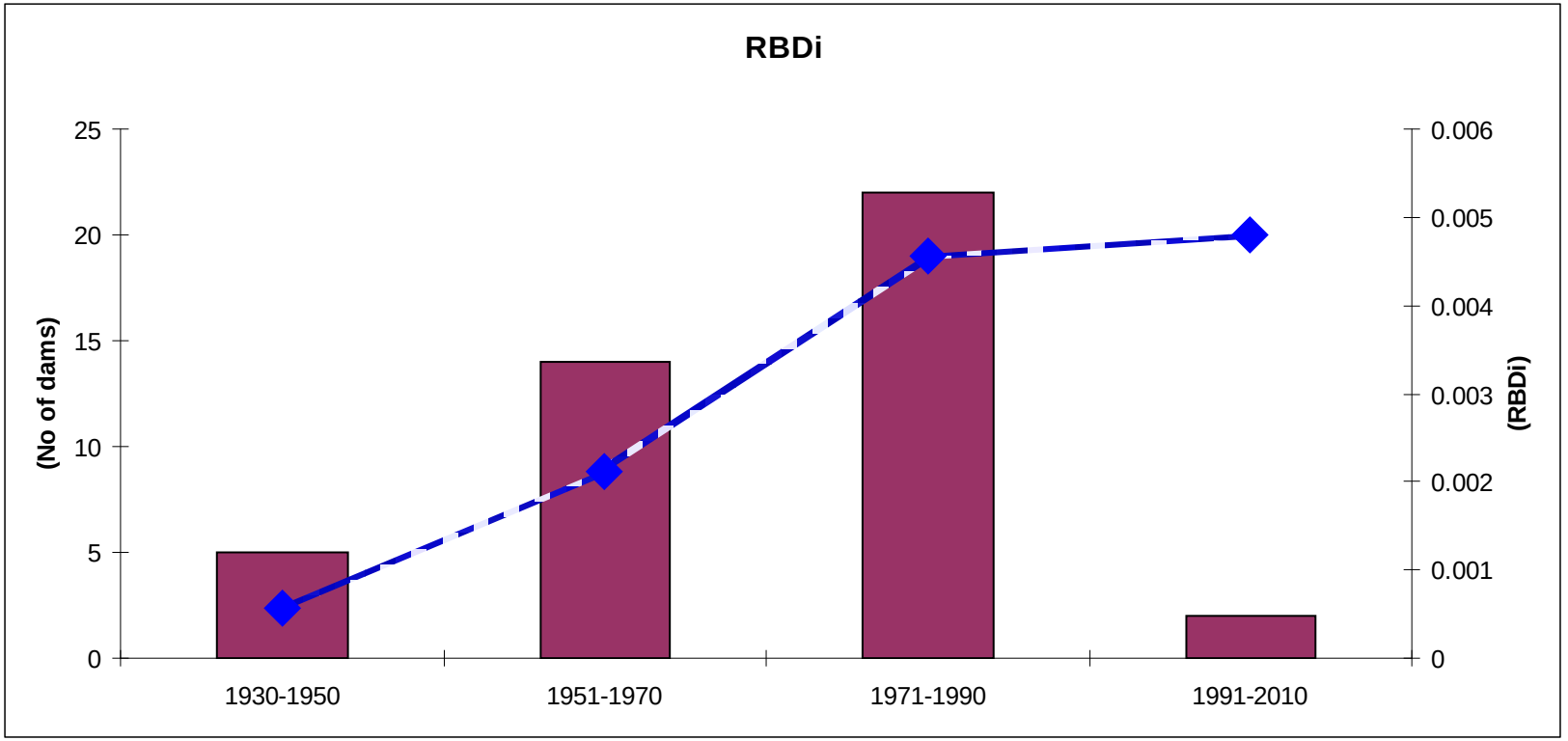
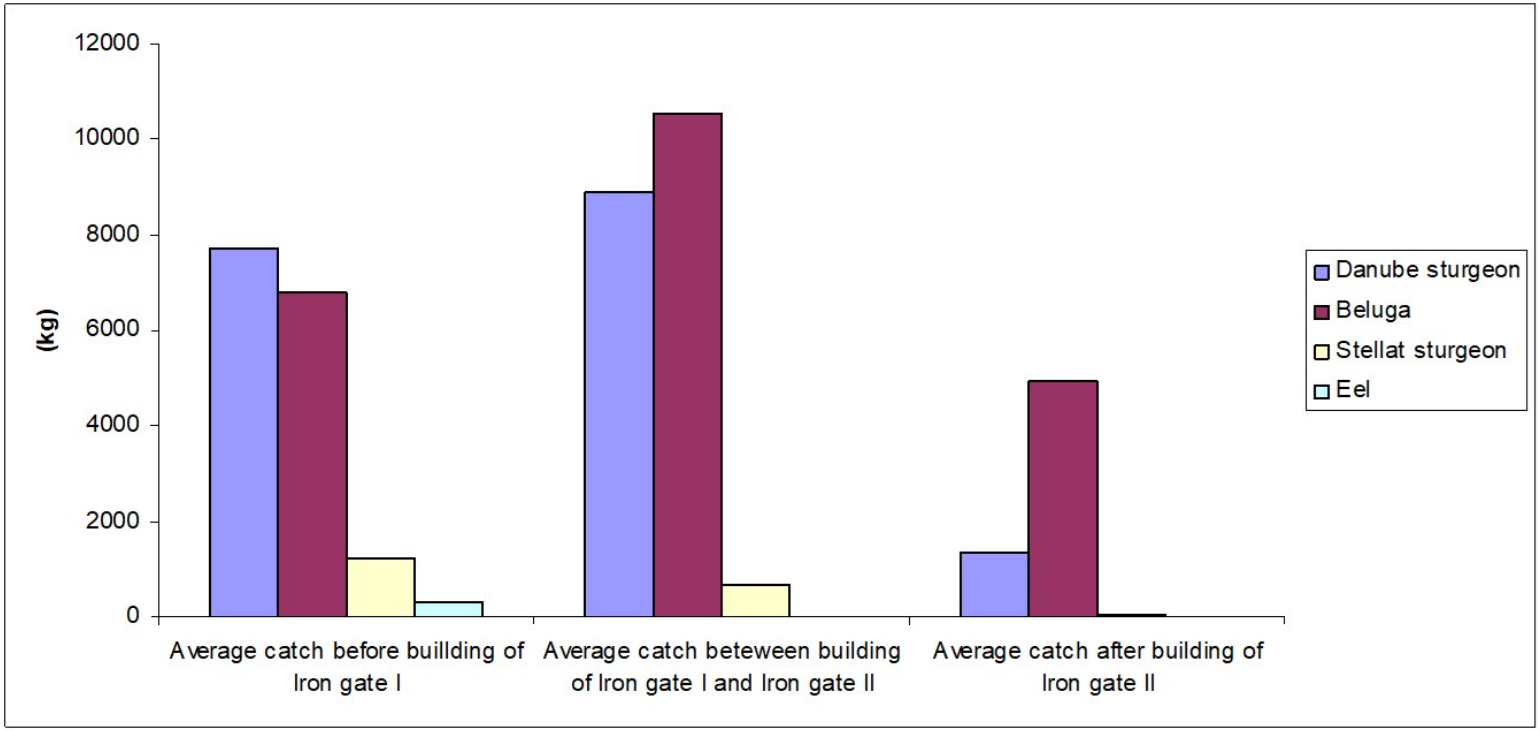


Fragmentation of river habitats



Effects of the Danube River Fragmentation



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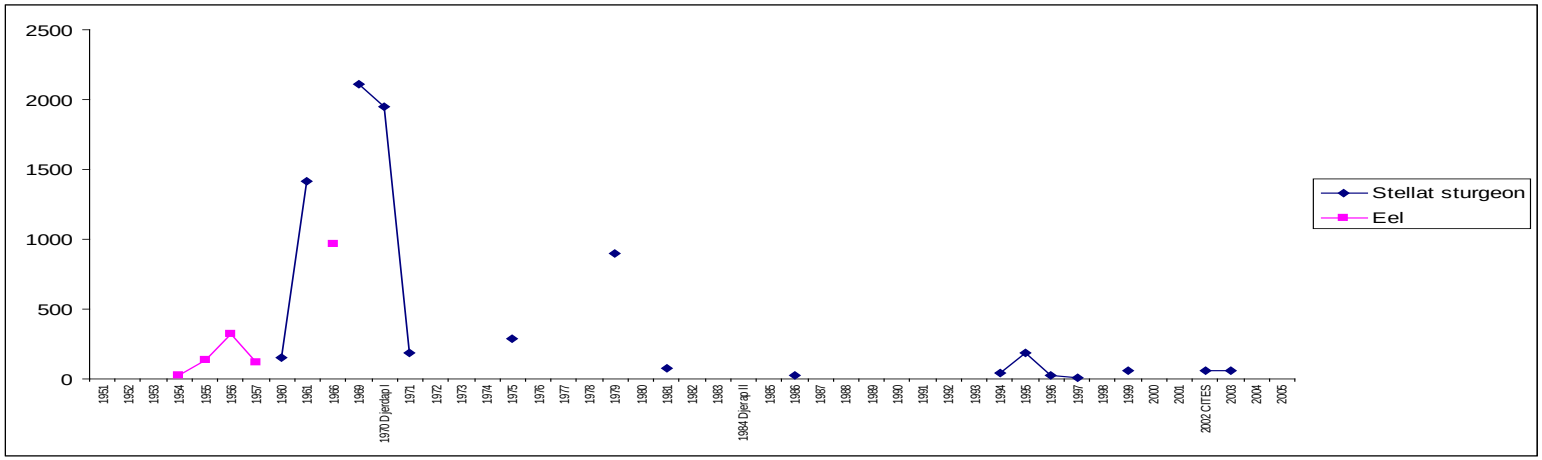
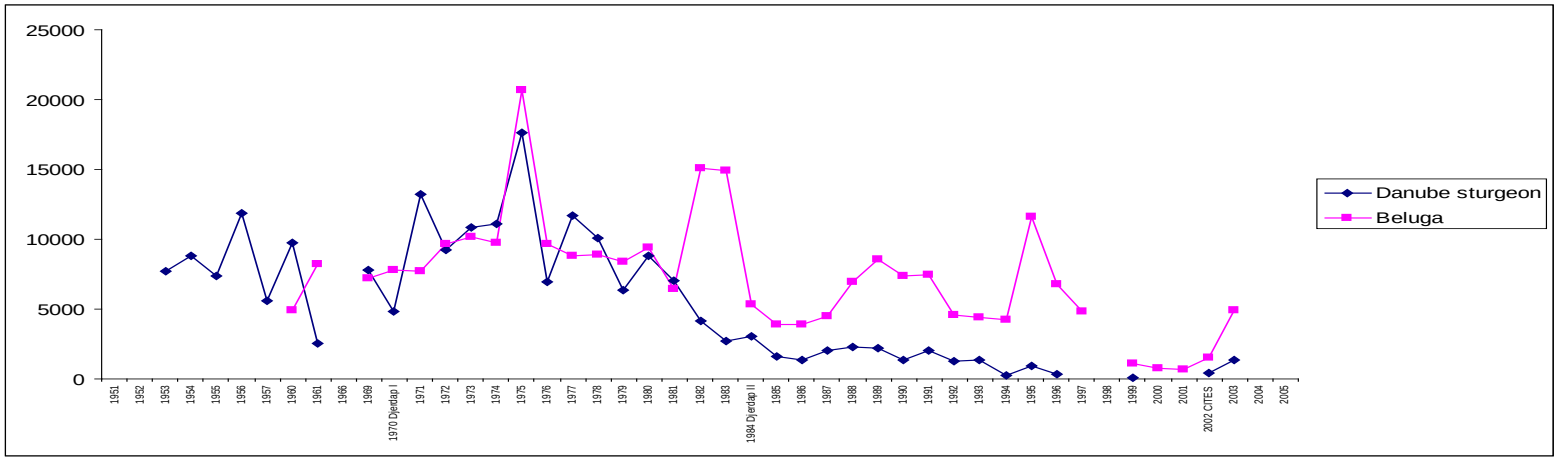
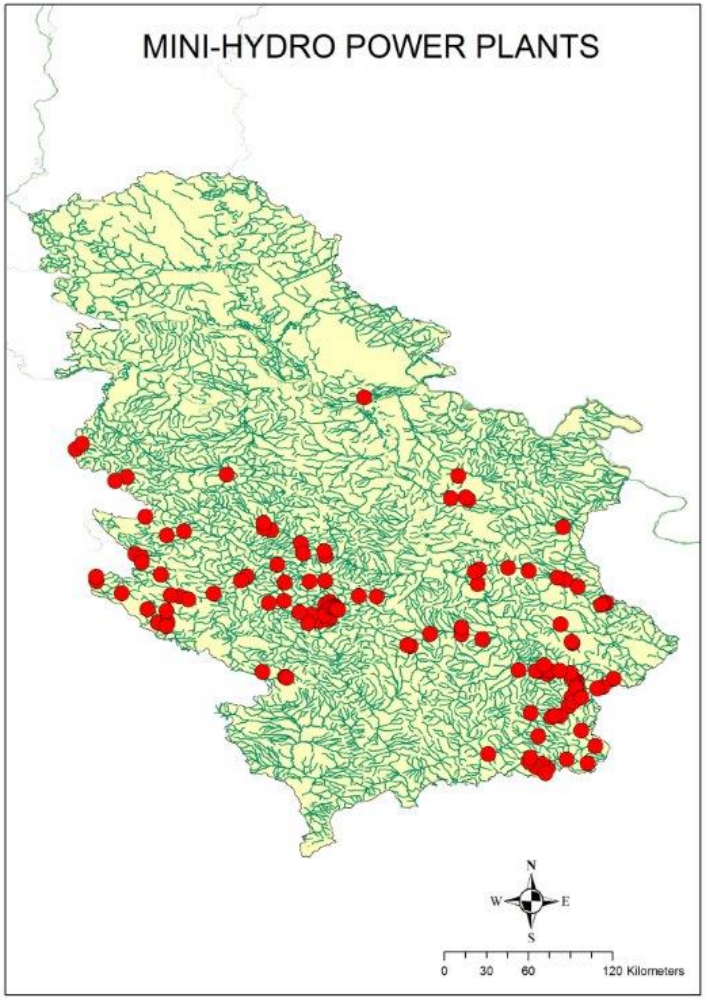
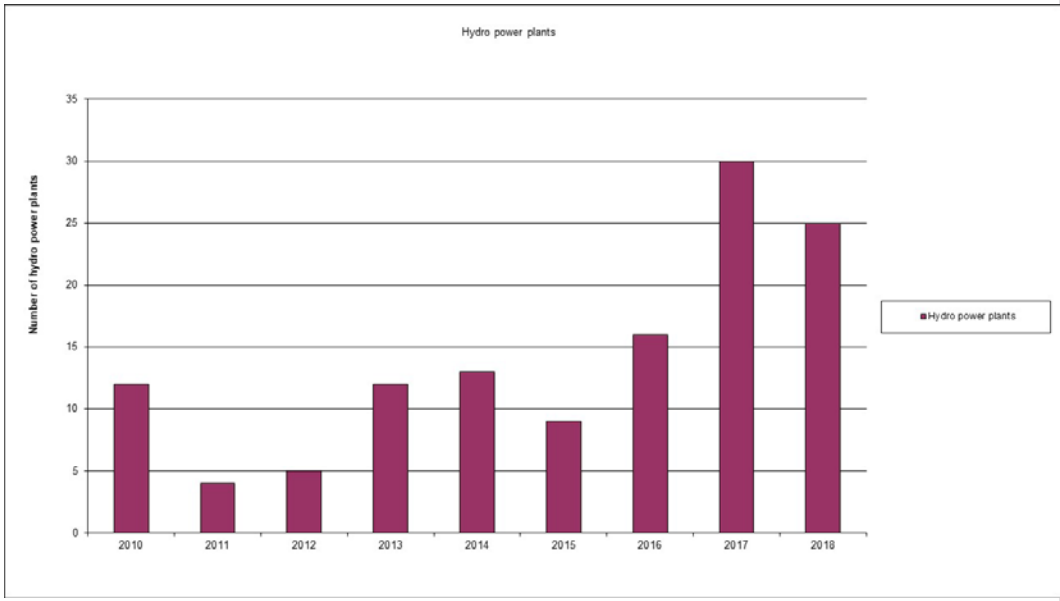


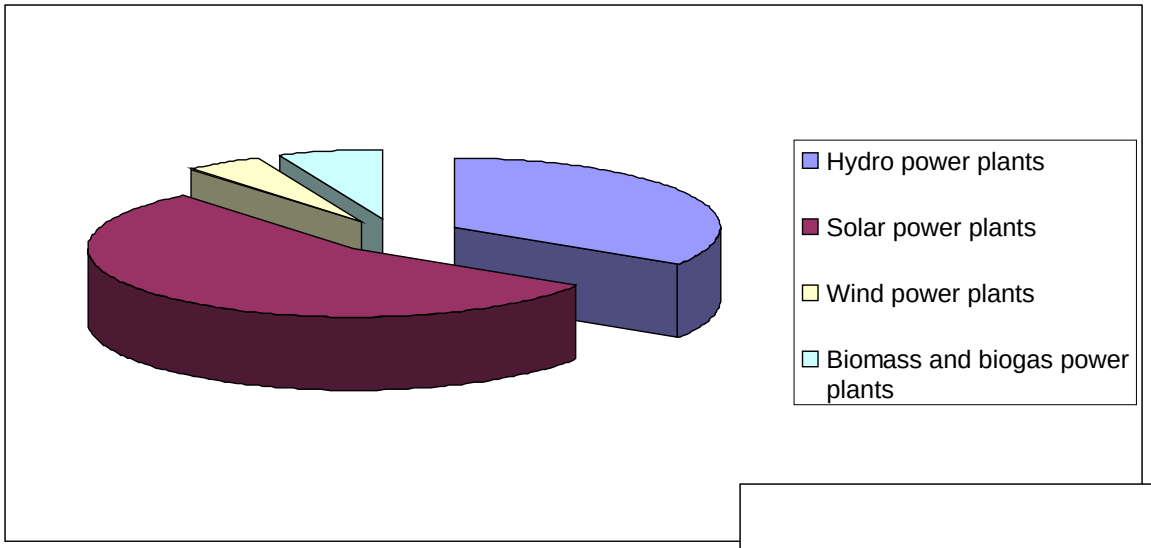


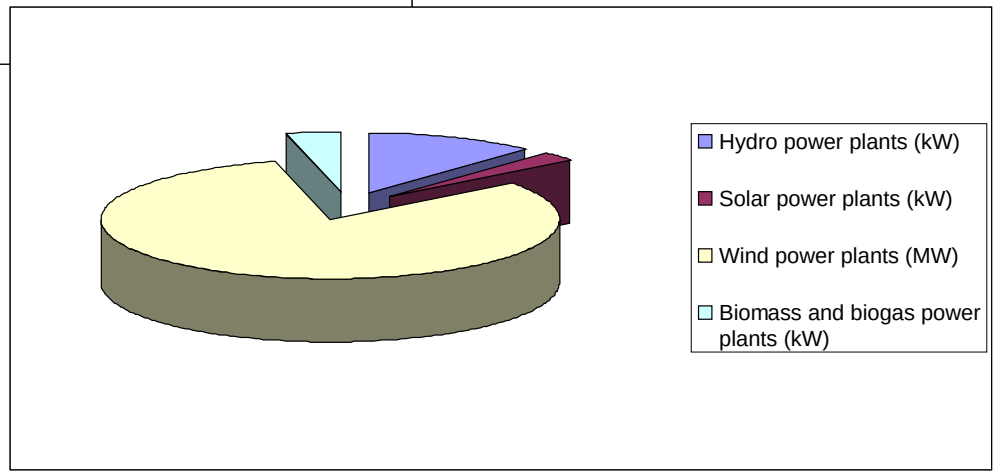
Mini hydropower plants





Renewable energy






Thanks for your attention!