

Water Framework Directive implementation

Work plan to be delivered until 15 May



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1. Water Bodies

First step

- Develop three GIS layers for
 - Water category
 - Introduce new category for “underground rivers”
 - Typology
 - Use system B to take account for BiH specificities
 - Use geological parameters to develop cut off for groundwater, “underground rivers” and rivers.
 - Underground rivers to be depicted with their estimated course and clearly marking their intake area
 - Significant natural features
 - Confluence of rivers
 - Change in depth of lakes

Second step

- Control of the layers using expert judgement and on site knowledge
- Merge the three layers and produce one overall map: "*preliminary water body designation*"
- Introduce logical numbering for each water body

2. Reference sites

Reference Conditions Annex II.1.3

- For each water type find a site with *no or only very minor* anthropogenic alterations to their physico-chemical and hydromorphological quality elements
- Describe their hydromorphological and physico-chemical elements
- Determine or estimate the values for the biological quality elements

- If no reference sites are available
 - In case of natural water types
 - Use models and
 - Expert judgement
 - For artificial water types, i.e. reservoirs
 - Identify all possible mitigation measures which do not have a *significant adverse effect* on the use (hydropower)
 - i.e. ecological flow, sediment management, high chemical quality, fish bypass etc...
 - Estimate values for biological quality elements (at least fish fauna and macroinvertebrates) if all mitigation measures were implemented

3. Pressures and Impacts

Scoping exercise

- Provide metadata for pressures and impacts
- In order to indentify data and monitoring gaps
 - See excel sheet format to fill in

Pilot exercise

- Pilot cases
 - Hydropower on the Neretva
 - Urban Waste Water discharges in the Neretva
 - Drinking water abstraction in Radobolje

- Hydropower
 - Identify existing schemes
 - Refine water body delineation if necessary
 - Complete the following description for the hydro schemes:
 - Hydro scheme
 - Location and date of construction
 - Dam type and characteristics
 - Water intake and outflow locations
 - Mitigation measures? Ie.
 - » Fish bypass
 - » min flow and water levels
 - » sediment management
 - » others
 - Max min water head
 - Max and min flow
 - Energy potential
 - Average yearly Energy production

- Impacts upstream

- Length of river turned into a reservoir
- Average depth and width of reservoir
- Changes of vegetation and riparian zone
- Changes of sediment type and structure
- Changes of physico-chemical and biological quality elements (at least fish fauna and macroinvertebrates)

- Impacts downstream
 - Change of flow dynamics
 - » compare hydrograph before and after construction
 - Changes of vegetation and riparian zone
 - Changes of sediment type and structure
 - Changes of physico-chemical and biological quality elements (at least fish fauna and macroinvertebrates)
- Other impacts

- *Urban waste water*

- Identify collected sewage discharge points
- Refine water body delineation if necessary
- Complete the following description for **collected and uncollected sewage discharges:**
 - Nr of connected or not connected people
 - Estimated BOD, P and N discharge
 - Estimated impact on
 - oxygen and nutrient levels in the water body
 - Saprobic water classification if available
 - Other impacts

- *Drinking water abstraction*
 - Identify abstraction points
 - Refine water body delineation if necessary
 - Complete the following description
 - Type of abstraction
 - Dam, weir, pumps..
 - Nr of people supplied and volumes abstracted
 - Impact on hydrograph, in specific
 - Impact on summer low flows
 - Impact on physico-chemical and biological quality elements
 - Other impacts?