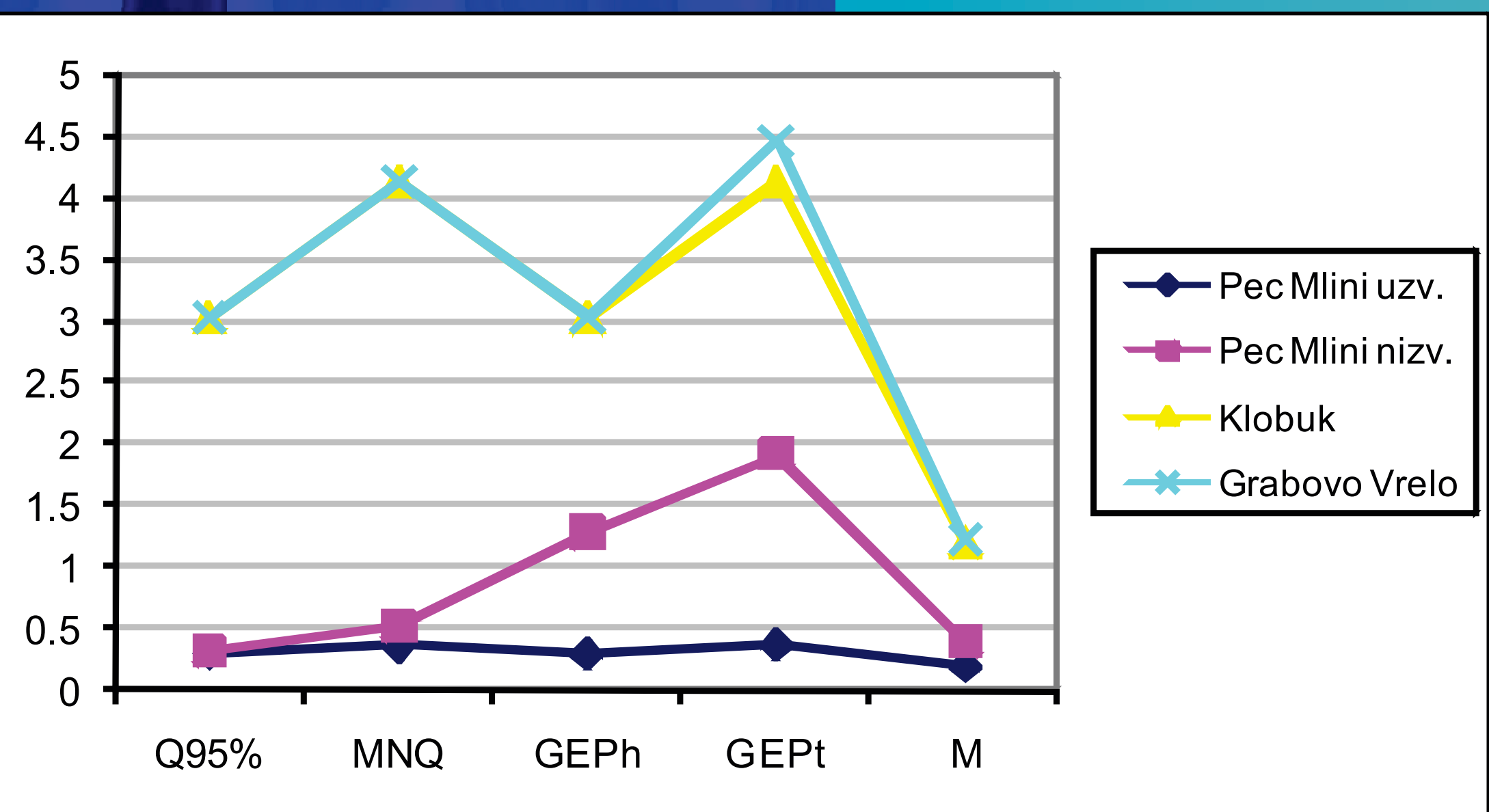


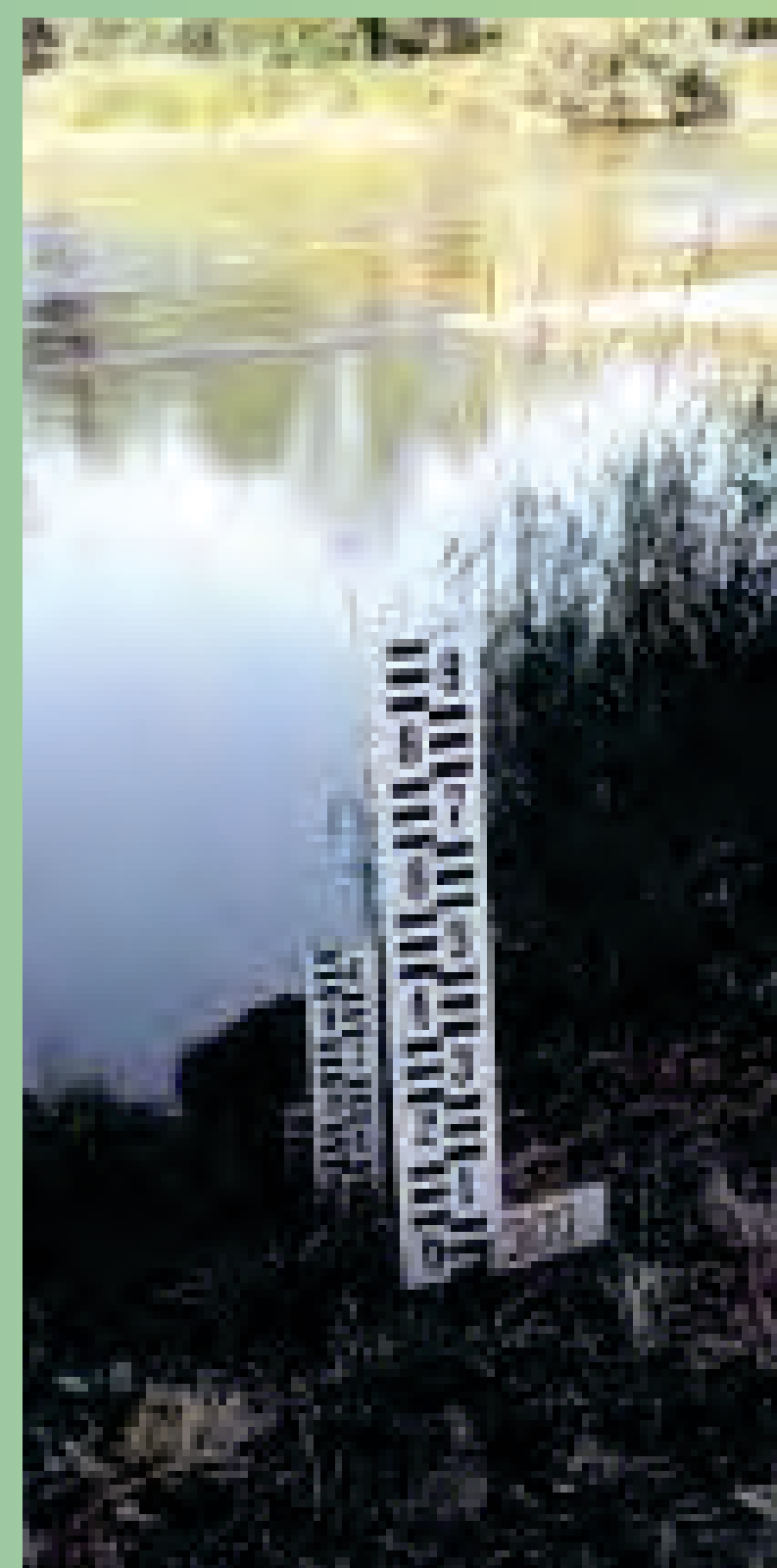
ENVIRONMENTAL FLOW - TOOL FOR RIVER BIODIVERSITY PRESERVATION AND RESTORATION IN BOSNIA AND HERZEGOVINA

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Rivers are conveniently used for different purposes, such as meeting the needs for drinking water, irrigation, pollution reception and transport, tourism, hydropower production etc. Some of these activities, underlining construction of reservoirs for the hydropower production, completely prevented fish migration, while the power plant operations where been focused only to the profit has made serious changes in the river biodiversity.

It was only recently that the environment has been accepted as a legitimate water user whose needs should be met, with a simultaneous increase in awareness of the damage arising from the previous practice of water resources management neglecting the environmental needs. The need to maintain ecosystems for the humans' benefits was largely adopted during the last century, with the new concept of sustainable development. Part of this concept is the **river flow regime needed to maintain the ecosystems at good status, called "environmental flow" (EF)** and it relates to equitable sharing of water for both the human needs and ecosystems needs.

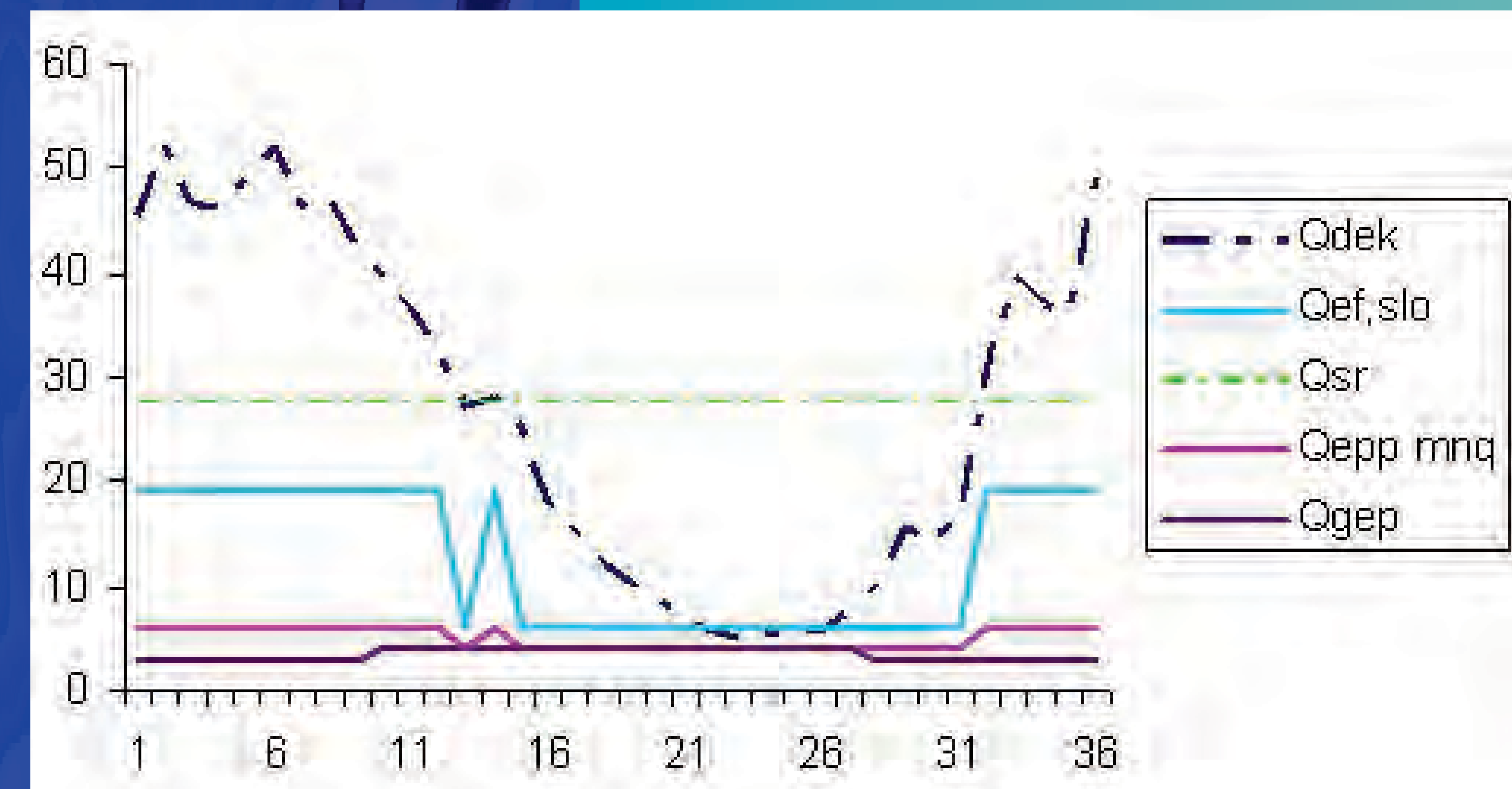
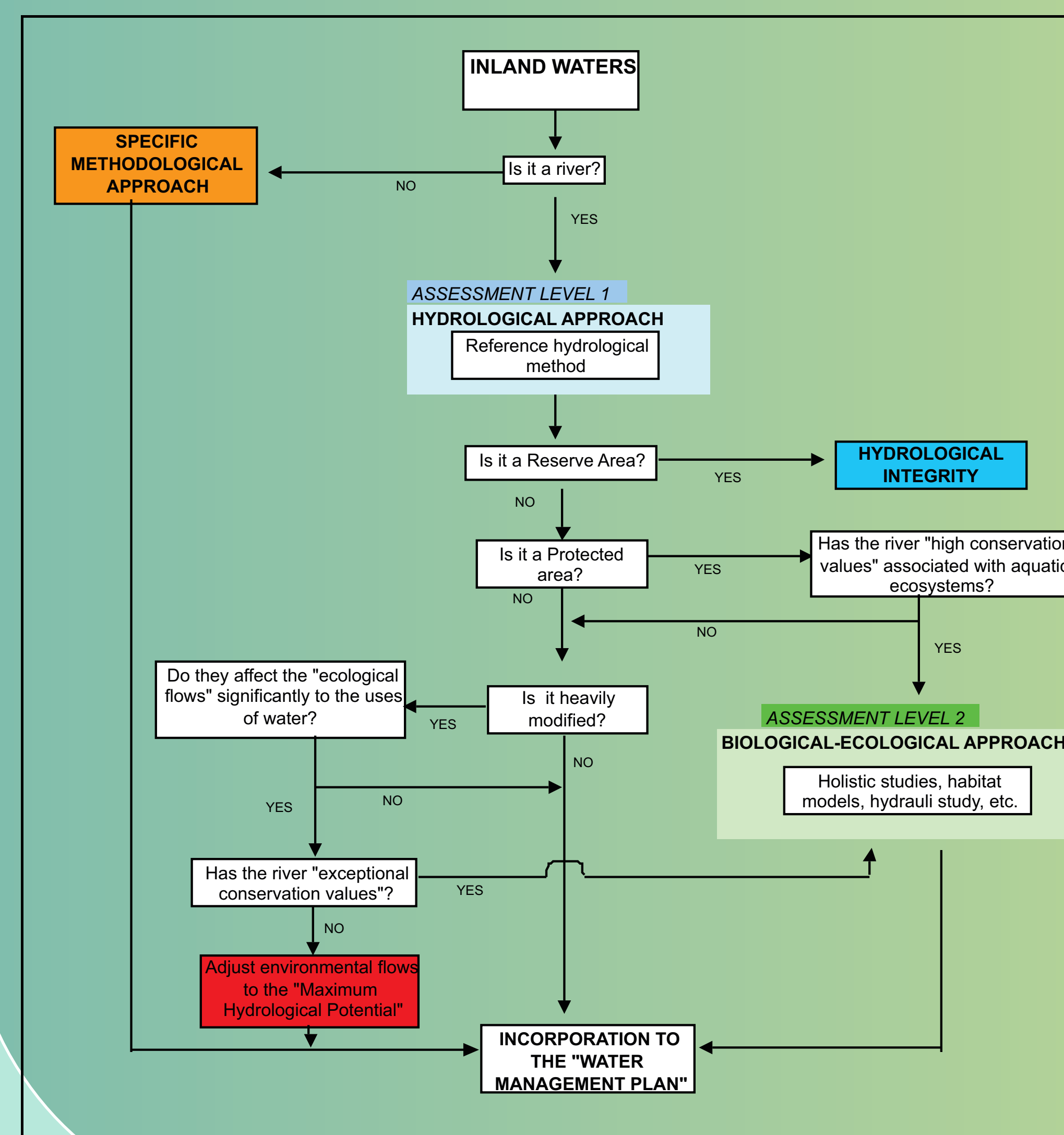


Ensuring environmental flow aims the preservation of part of the natural river flow sufficient to preserve downstream biodiversity. EF should actually imitate the natural river flow during the year and thus **provide conditions for the wildlife survival or river biodiversity restoration** when it was already heavily damaged by past management practices. Legal framework prescribing environmental flow is not an obstacle to hydropower development, but it strongly **contributes to mitigation of hydropower development impacts**. It is a sustainability framework that takes into account the needs of all users, including the nature, and **enables capacity building for effective integrated river corridor management**.

Through the process of transposition of EU water policy into legislation in Bosnia and Herzegovina (BiH), water management is streamlined towards protection and restoration of rivers or lakes and related ecosystems. Environmental flow was introduced as a new concept embedded in the Water Laws adopted in 2006 in both BiH entities. These laws stipulate that the environmental flow is determined on the basis of the conducted surveys in accordance with the methodology for its determination of separately issued regulations on the method of determining the environmental flow, taking into account the specificities of the local ecosystem and seasonal flow variations. Entity laws prescribe that, pending the adoption of such specific regulation or bylaw, environmental flow will be established on the basis of hydrological

characteristics of the water body for the typical season, as the minimum mean monthly flow of 95% probability of occurrence.

$$Q_{epp} = \begin{cases} 1,0 \times {}_{sr}Q_{\min} \text{ za } {}_{sr}Q_{DEK(j)} < Q_{sr} \\ 1,5 \times {}_{sr}Q_{\min} \text{ za } {}_{sr}Q_{DEK(j)} \geq Q_{sr} \end{cases}$$



Such a transitional provision is continued from earlier common practice in BiH, but it does not take into account seasonal variations in flow, does not take into account the real needs of downstream biocenosis, constant flow releases from numerous hydropower reservoirs do not recognize dynamics of fish species (as well as to the producers electricity), etc. So the adoption of EF by-law was necessary in order to ensure the preservation and restoration of the natural water related ecosystems. With its application Federation of Bosnia and Herzegovina (FBiH) is committed to restoration and preservation of rivers natural functions. **EF by-law does not prevent or slow down the development, but rather the opposite - dismiss the existing doubts and question whether to use water resources replaces the question how to sustainably use these resources.** Initial period of application of this by-law did not expose any major weaknesses, actual results will be monitored in the incoming years.

KEY WORDS: environmental flow, ecosystem, regulations