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Development of scientific tools for monitoring the health of aquatic ecosystems

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Humanity is faced nowadays with the major problem of water availability and quality which is a conseqquence of growing demand for water as well as the decline of water quality and quantity. It is not an exaggeration to claim that, without effective management of aquatic ecosystems, the future social and economic development of the world will suffer serious constraints or will be placed significantly at risk. Taking into consideration the fact that the world is rapidly changing, current practices of water management must also change. Developed and developing countries will have to adopt the most effective policies for the management of aquatic ecosystems. They will also have to start using the best techniques for water monitoring. The nature of future problems that could arise in aquatic ecosystems must be carefully anticipated and then objectively analysed in the light of the expected changes.

The Water Framework Directive (WFD) requires a holistic knowledge of abiotic and biotic structure and processes that determine the functioning of aquatic ecosystems. Ecological indicators are provided to monitor the ecosystem responses to anthropogenic pressures. We will summarize in this presentation ecological indices that can be used for effective and accurate monitoring of aquatic ecosystems. Different contexts where these indices can be used for environmental health monitoring will be also analysed.