



**ICOLD EUROPEAN CLUB**

**Working Group on European Water Framework Directive  
(Topical Focus of the Perspective of Reservoir Operators)**

**FINAL REPORT**

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## **IMPLEMENTATION OF THE EU WATER FRAMEWORK DIRECTIVE (Topical Focus of the Perspective of Reservoir Operators)**

- **General:**

The European Union Directive 2000/60/EC, the Water Framework Directive (WFD), is establishing a framework for a uniform policy and actions in the field of water. Its goal is to secure and improve the conditions of European water bodies at a comparable level. In the WFD, water body hydromorphology plays an important role in the initial evaluation and rating of the surface water bodies. This may result in a potential conflict with several traditional water uses based on large reservoirs like hydropower, irrigation^ drinking water supply, flood protection and others. The WFD and its associated guidance papers have the main focus on ecological criteria and give only secondary consideration to economic as well as social and regional political requirements. The WFD therefore constitutes a potential endangerment of European hydropower, which represents by far the most significant renewable, non-pollutant energy source within the European electricity generation sector, recognized and promoted accordingly in the EU Directive for promotion of renewable energy in Europe.

For the mediterranean countries irrigation and drinking water supply based on large reservoirs are extremely necessary, and in most of the European countries barrages are also built for flood protection. The multipurpose usage of reservoirs is common practice. It should also be stressed that new reservoirs will be necessary in the future, especially for drinking water and flood protection. In many countries the existing reservoir capacity is slowly reduced by sedimentation.

On this background ICOLD European Club would like to make statements on the following issues.

- **Heavily modified water bodies:**

The definition of "heavily modified water bodies (HMWB)" is important from the perspective of the reservoir operators and is considered as necessary for the implementation of the WFD. Our opinion is, that all water bodies influenced by a water storage scheme should be possible to designate as HMWBs. The designation of natural water bodies in between HMWBs of such a scheme may result in a significant limitation of the total scheme.

The designation of HMWBs should take place with as little bureaucracy as possible. In the investigation of alternative electricity generation technologies in particular, a restoration scenario for hydropower plants would always be required. Particularly for larger hydropower schemes, such scenarios are economically and ecologically of a purely hypothetical nature. An environmental sustainability analysis of such a project would have to consider not only the water body it self but also the full range of economical and social consequences. Evaluation of a mixture of "other means" of generating the same amount of energy will have to include CO2 accounting and technical considerations/limitations of the whole electricity generation system.

Moreover, it should be kept in mind that evaluations of alternatives within a fully developed electricity market will require hardly acceptable practical difficulties and costs.

It is also very important that in the case of irrigation and drinking water storages the whole scheme including the downstream area may be designated as HMWBs.

- **Artificial water bodies:**

Primarily due to manipulation of the water level during the yearly cyclus, reservoirs are bodies of water that do not occur in nature. It is hardly possible to find suitable references when evaluating

reservoirs. Therefore it should be possible, in special cases, to consider them for designation as artificial water bodies. The same applies to the canal section of run-of-the-river power plants, irrigation channels, etc...

- **Environmental minimum flow:**

The determination of environmental minimum flow should be based on expert analyses individually for each scheme, depending on the local situation. The application of general operating rules and formulas, that sometimes have no applicability to high mountain areas, should be rejected. The main goal should be to achieve a good ecological potential and not to implement new rules of regulations.

In river sections where an ecologically good potential already has been reached with a certain environmental discharge, no changes should be necessary. At high head hydropower plants the benefit for the environment must be carefully balanced against the loss of production due to increases of the environmental minimum flow.

- **Peak discharges:**

The peak discharge problem primarily in connection with the operation of storage power plants may become one of the main challenges in connection with implementation of the WFD. Operation of high head facilities as freely as possible is enormously important for the utilization of hydropower as part of the total electricity system. In the energy mix of Europe, ancillary services is most efficiently provided by hydropower, because of its reserve function and regulating possibilities. Hydropower is unique in responding both to firm power needs and peak loads. Use of other renewable sources like wind power needs such qualities as a backup and a complement. The liberalization of the energy market has also shown that the reservoirs are necessary to handle the system.

One possibility could be to classify not only the reservoir itself but also part of the downstream river stretches as heavily modified or artificial - at least for existing facilities where no moderating reservoir is possible for technical or economic reasons. A limitation of the fluctuation of the discharges can lead to considerable economic losses.

- **Contradiction versus other EU Directives**

The energy producers are confronted with a series of other European Union directives (directives on the topics of renewable energy, supply security, etc.), which often are in contradiction with the WFD. If the electricity generation from the hydropower plants is significantly reduced by the WFD, it will hardly be possible to fulfill the requirements of the other directives. Europe cannot reject the current largest source of non-polluting, renewable energy, hydropower. The aim must not only be to maintain the utilization of this source at the present level, but to increase its relative proportion of the energy mix.

- **Preservation of ecological continuum:**

The preservation of ecological continuum is one of the central requirements of the WFD. In the newer run-of-the-river hydropower facilities, these requirements are sometimes fulfilled. The adaptation of old facilities to such requirements will, however, require significant investments.

It should therefore be considered that the construction of fish ladders and other similar mitigating measures might only be necessary to the extent that the reproduction of the local fish species is assured. More in depth considerations on fish migration require holistic concepts.

- **Water pricing:**

In connection with reservoirs the WFD leaves much open with regard to the introduction of cost-recovery for water services. Should the internalization of external costs become a topic, this must be matched with internalization of the external benefits. Environmental costs are usually considered during the licensing process, and are thereby in general included in the development costs.

Development of new hydropower schemes has usually included a wide range of economic considerations. During the course of further hydropower plant expansion, other significant impositions have usually been included (high water protection, navigation, infrastructure improvements, base stabilization, etc.), without a corresponding compensation to the power companies.

We also want to stress that the nature of hydro power is a water use and not a water service.