New Framework for Future Dam Management

Across the Danube basin, some 450 major dams and reservoirs were recorded (UNDP/GEF DPRP 1999: Thematic Maps) but in fact thousands of other, small dams and weirs exist. Many of them, being already quite old, approach a process of re-licensing. Various dams are or will be discussed within the general needs of modern river management, enhanced by the postulations of the EU Water Framework Directive and by the growing public interest in river restoration.

The benefits and drawbacks of dams are being discussed for decades. While after World War II thousands of dams were build as symbols of technological progress and economic welfare, the improved knowledge of human intervention into natural processes since the 1970s ended this era. Apart from the fact that most of the hydraulically attractive sites for dam building were already used up, a number of new dam projects were stopped, postponed or given up over the last 20 years due to opposing public or environmental interests. Today, also the era of dam conflicts (e.g. in Hainburg/Austria 1984 or Gabcikovo-Nagymaros 1988-97) is history.

Over the last 15 years, systematic revisions of the water and river management laws were undertaken, prescribing an integration of economic and ecological objectives under the goal to preserve and restore the river's *ecological functioning* (e.g. Austrian water works law 1994).

The new EU Water Framework Directive goes even further by demanding that all bodies of surface water must achieve “good ecological and chemical status” by 2015. The practical implementation of this standard is subject of present discussions in a number of EU working groups, with a tendency to rather limit exceptions (see boxes).

The practical challenge that these new framework conditions set for river and dam managers can be observed in the present negotiations for a new license of the Vranov dam at the Dyje/Thaya river along the Austro-Czech border. The 39 km long and up to 58 m deep Vranov reservoir was built in this meandering river canyon in 1934 and serves peak power production and water supply needs. Apart from the fact that this deep reservoir disrupts the natural river continuum, its changed water quality (reduced sediments, temperature, nutrients, oxygen etc.) and the fluctuating discharge (twice a day increasing from 1 m^3/sec to 30-40 m^3/sec) pose serious problems for the downstream water ecosystem. As a result, the river character and its species composition (fish, zoobenthos etc.) is poorer and less stable than under natural conditions.

In 1991, the Czech national park “Podyji” was established along the river and its forested slopes. Its regulation prescribes that water management in the core zone has to prevent disturbances of the river ecosystem; also, the operation of the Vranov dam must secure an ecologically sound discharge regime (§ 11). Based on a scientific study of the Masaryk university (Helesic and Kubicek 1999), the national park now demands to increase the minimum discharge to 2.4 m^3/sec for the ecologically sensitive period November to August. This standpoint is supported - as a first step towards a comprehensive water management concept - by the Lower Austrian water management authorities and by the Austrian sister national park “Thayatal” on the southern banks of the river. The upcoming decision of the Czech authorities (district South Moravia) will also have a signal function for other dams in the Danube basin.

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Photo 1: Vranov dam at the Czech-Austrian border is one of the engineering facilities heavily modifying the character of rivers (© Nationalpark Thayatal).

Photo 2: New dam operation has to provide for more ecological water management in the transboundary national park along the Dyje/Thaya river (© Nationalpark Thayatal).