

PHILOSOPHY OF RIVER PROBLEMS LOCAL TO REGIONAL - STATIC TO MOBILE

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The three largest European rivers, the Volga, the Danube, and the Dnepr, drain one quarter of the continent, but are small by world standards, their catchments ranking 14th, 29th, and 48th, respectively. The 31 largest rivers in Europe, all of which have catchments exceeding 50,000 km², drain approximately two-thirds of the continent.¹ According to this statistic, thirteen of twenty-five major river basins in Europe are basins of transboundary rivers, and the Danube is the largest transboundary river basin in Europe.

Developing the Slovak-Hungarian section of the Danube

One of the special problems is the state of the Black Sea, where continuous polluting in the last decades has set conditions for an ecological time-bomb. It is said that the greatest polluters are the rivers mouthing to the Black Sea, and the greatest of these is the Danube.

This problem, together with the question of water pollution in individual countries of the Danube basin, has become one of the main topics in discussions concerning the solution of environmental problems in countries of Central and Eastern Europe.

These countries started to deal seriously with the efficient repair and improvement of the environment. Their first topic was the question of the water quality in the Black Sea, and then, recognising the cause of this, in the Danube river. At the same time, Western countries sent their experts to assist in formulating tasks suitable for international co-operation, and in allocating technical and financial support for solving the environmental problems. These activities overlapped and resulted in a number of project proposals. Not all of these were realistic, and some of them were duplicated. Some were not even in accordance with the national priorities of individual Danubian countries.

The concept of river basin management requires that decisions affecting the river should be taken within the context of the river basin as a whole. The key issues are water resources and the licensing of exploitation, water quality and the licensing of polluting discharges, flood control and flood protection, and the protection of ecosystems and habitats. It can be extended to the issuing of permits for, and controls on, land use - construction, agriculture, industry, solid wastes - where diffuse polluting inputs may affect ground and surface waters. This leads logically to integrated river basin management, i.e., the management of all environmental compartments on the geographical basis of the river basin.

Unprecedented development of water and soil resources and their exploitation and pollution have taken place in most of the Danubian countries during the last few decades. Some of the projects have been beneficial but some of them are affecting the environment adversely. Most of the projects were planned and executed without proper consideration of the complex interrelationships and developments between people, water, soil, and the environment.

It also should be considered that the idea of utilising the enormous energy of the Danube dates back to the beginning of this century. However, it took nearly fifty years until progress in science and technology was ready for the implementation of such projects. In the 1950s and 1960s, studies of the development of the short Slovak stretch of the Danube were under way by survey and research. In parallel, Hungary studied the possibility of constructing a dam in the favourable site near Nagymaros. Part of this work has already been done. The upper part of the Gabčíkovo Project has been in operation for almost five years. However, there is an international dispute about the project between Slovakia and Hungary.

The full environmental impact of such a project will be observed, of course, only after a longer period of dam operation. But when talking about the environmental impact of the Gabčíkovo Project today, the research has to include the following areas: influence of the groundwater level and impact on agriculture, forestry and fishery; state of the floodplain forests in the inland delta; influence on the people living along the Danube; quality of surface water; quality of groundwater; river-bed erosion and others.

Therefore, a review of the results and experience from the monitoring of the soil and agriculture, forests, unsaturated zones, biota^{2,3} and groundwater⁴ in the territory influenced by the Gabčíkovo dam, can be of great help, and will also be an essential part of further conclusions. First results of the environmental impacts, based on the joint Slovak-Hungarian monitoring, have recently been published by Lejon.⁵

When examining the ecological risks and benefits of the Gabčíkovo waterworks, the environmental situation of the Danube, upstream and down-stream of this project, has to be considered first. That is why it is also necessary to consider a review of the management practices of the

river basin, as defined in the Strategic Action Plan for the Danube River Basin for 1995-2005.⁶

Transboundary river problems

In each case of transboundary rivers, several problems in river management and water exploitation arise. As mentioned by Caponera⁷ on the example of the Mekong river, there has to exist some institutional framework that covers major principles: freedom of navigation; commercial establishments; joint programs of development of ways of communication and relations by river; establishment of joint regulations for river or water utilisation; respective fishing rights, etc.

Following the above, several local and regional river problems frequently appear but have not always been considered. Local river problems include:

- division of fishing rights or rights on river beds
- adjustment of boundaries when channels are diverted
- claiming tolls on navigation and duty on crossing the river
- building bridges and collecting tolls on bridges
- escaped animals, prisoners or debtors
- raising the river for mills and building weirs for these mills
- the right not to lower the water for navigation purposes
- drawing water for drinking or for non-riparian use, i.e. felling, panning for gold by machine, etc.
- rights to game from river banks
- the right not to have the water polluted by sewage or other effluents

As for the regional/national river problems, we can consider all of the above, on a larger scale, plus the rights of non-contiguous lands to use the river for navigation and for the passage of migrating fish, and to exploit the river and the bed sediments with or without damage to other users. Similarly, for pollution, the large-scale removal of water and the diversion of river channels have to be considered. In addition, the rights of transit, refuge or repair in war-time, have to be taken into account as well.

Various combinations of influence can have different effects. Many river problems, such as flow control and conservation measures, influence down-stream territories, while other problems, like migrating fish and navigation, operate in and affect upstream territories. Thus, disputes arise, more or less exacerbated by the superimposition of other, unrelated problems, including religion, politics, recent aggression, relative prosperity and expanding versus contrasting economies. Different communities are more or less touchy about such matters, according to their tradition or their perception of unequal treatment on previous problems and have more or less successful ways of solving disputes. But it would be interesting to see how disputes over water boundaries are solved within the community, between villages or counties, within the same community, or between communities. There are several such questions to answer, but the subject needs careful consideration as a new chance for people and nature.

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