Water Knowledge Hub

CASE STUDY

Transboundary: Addressing management issues in a complex environment - Tisza River Basin

Summary

The Tisza River faces deteriorating water quality as well as floods with increasing frequency and levels. These issues are exacerbated by climate change. Action has been taken, both by national authorities, international actors and NGOs to develop more adaptive management schemes. The key lesson is that in water management, the biggest problem is the weak coordination among different fields and interests – such as agriculture, nature, navigation, flood defence.

Background

Transboundary water resource and flood management issues are of major concern globally. In Europe, this concern was dramatically increased upon the catastrophic transboundary cyanide and heavy metal pollution accidents in the Tisza River Basin in 2000. Moreover, due to increasing frequency and discharges of floods during the last 70 years and, on the contrary, scarcity of adequately clean water resources in dry periods produce a degree of vulnerability of the population living in the Tisza floodplains as well as of the unique freshwater wetland ecosystems. Moreover, the international Tisza river basin is situated at the current borderline of the EU between Hungary and the Ukraine and thus the national and regional water management might follow different frameworks for the one river. The Tisza river is one of the biggest tributaries of the Danube with a total catchment size of 157,218km^2 (14.4 million inhabitants) that covers in different parts the territories of Ukraine, Slovakia, Hungary, Romania and Serbia and Montenegro. Next to problems of water quality and pollution, one of the major problems and a big challenge the Tisza river basin is faced are floods with increasing frequency and level. Alongside climate change, there are a number of anthropogenic factors increasing flood risk and damage caused by floods in the Tisza river basin. Among them the most important are reduction of water storage capacity by river regulation, deforestation, urbanization and surface sealing in the river valley due to human activities (settlements, commercial infrastructure, agriculture) in flood-prone areas. As a consequence of climate change (CC) summer droughts affect the basin with increasing frequency. Socio-economically, the Tisza basin is characterised by major spatial disparities of mean income, unemployment and net-migration.

Actions taken

In the Tisza case study stakeholder participatory process was organised and conducted in collaboration with local Hungarian and Ukrainian scientific partners which have been

contacted and integrated in the Tisza case study team in the preparation phase of the project. For their selection their command in water and river basin related scientific background as well as their involvment in national and international projects on water and river basin management was decisive.

Together with the local scientific partners the stakeholder elicitation process was initiated taking into account the idea to involve key stakeholders and experts from different levels such as ministries, regional and local water management as well as NGOs.

Different focal points of research were formulated, such as

- Developing a sustainable model and a management game for sustainable floodplain (land use) management at a regional scale (50 km^2) for the Northern Hungarian Tisza floodplains
- Developing a model for flood risk management for the Northern Tisza floodplains in Ukraine and Hungary
- Generic framework for an Integrated Monitoring and Information System for the Tisza River basin, based on WFD requirements
- Application of knowledge elicitation tools to incorporate tacit knowledge into the learning processes.

These points of research were reflected in research and action plan, coordinating project activities. To address flood risk, several workshops, mental modelling sessions, tool development sessions, Training for Trainers activities took place. These session used an array of participatory techniques like group model building and conceptual/mental modelling as well as knowledge elecitation tools to involve expert and empirical (local) knowledge and to structure local insights on the research points.

Subsequently, as an important part of the participatory process, a stakeholder-driven definition and selection of major IWRM related research needs to be addressed in the Tisza Case Study took place in several kick-off meetings.

Outcomes

The project facilitated a dialogue between scientific researchers and basin stakeholders to increase system understanding and social learning h in the Tisza river basin. Within project actitivities, the overall set-up of the stakeholder involvement and participation approach in the Hungarian and Ukrainian part of the Tisza river basin has been studied. Such research facilitated stakeholder-driven process of formulating and defining water-related problems to be tackled in the basin.

Social learning in river basin management refers to developing and sustaining the capacity of different authorities, experts, interest groups and the public (as stakeholder) to manage their river basin effectively. Collective decision making and conflict resolution as integral elements of this process require that the stakeholder recognize their interdependence and differences (e.g. as a result of competing interests) and find a way to deal with them constructively. Additionally, they need to learn and increase their awareness about their biophysical environment and about the complexity of social interactions, thus the complex socio-ecological water management system they are living in.

Various workshops and train-the-trainer activities familiarized stakeholders with individually

applied stakeholder participation and involvement methods and tools. These range from the conduction of questionnaire surveys and (semi)-structured interviews to the application of information and communication tools (ICT) like mental/cognitive mapping, a knowledge elicitation tool (KnETs) or conceptual and system dynamics modelling in the scope of workshops or group model building sessions.

Lessons Learned

Regional water management suffers from weak coordination among fields/interests and overlap of responsibilities across levels. Water managers tend to adhere to traditional technical water management while alternative measures and risk mitigation options are rejected at decision-making stage.

Local actors are aware of climate change concerns and open for new adaptive approaches, such as integrated floodplain management. Civil society provides ecological services – such as the sponge effect, shallow flooding to improve solid forming processes in carbon sequestration.

Economic weakness and dependence on national budgets in most of riparian states might endanger all positive developments.

Water as a commodity, as a common value to protect is not a guiding principle in the transboundary catchments.

Transboundary cooperation is limited to “high level issues” and not tackling important threats such as PEP waste pollution from Ukraine or increased risk of potential mining sludge spill due to flash floods in Romania.

Contributing Authors
Iarochevitch, Alexej, Flachner, Zsuzsanna

Corresponding Author
Haase, Dagmar

Corresponding Author Contact
dagmar.haase@ufz.de pripyat@i.kiev.ua flachner@rissac.hu

Organisation
Helmholtz Centre for Environmental Research - UFZ

Year
2009

Country
Hungary, Romania, Slovakia, Ukraine

Region
Europe

Keywords
Transboundary cooperation , Floods and Droughts , Danube River Basin

Thematic Tagging
Climate , Water services , Youth , Gender , Ecosystems/Nature-based solutions , Transboundary
Language English

Supporting Materials
Transboundary: Addressing management issues in a complex environment - Tisza River Basin

Related IWRM Tools
Integrated Flood Management Plans, Training Water Professionals , Stakeholder Analysis, Shared Vision Planning and Collaborative Modelling, Serious Games

---