

“COUNTING OUR GAINS”: WORKSHOP ON BENEFITS OF TRANSBOUNDARY WATER COOPERATION

Sharing experiences on their identification, assessment and communication

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Workshop on Benefits of Transboundary Water Cooperation: “Counting our gains”

Session 7: Communication benefits

THE MESTA/NESTOS RIVER BASIN shared between BULGARIA and GREECE

Introduction to the transboundary river basin

Since the 90s, UNESCO Chair/INWEB: the International Network of Water/Environment Centres for the Balkans, an NGO hosted by the Aristotle University of Thessaloniki, Greece has chosen the Mesta/Nestos River Basin as a case study for developing transboundary water cooperation and management (Ganoulis et al. 1996, 2000, 2006, 2011).

The river rises in the Rila and Pirin mountains in southern Bulgaria and flows some 230 km through Bulgarian and Greek territory before emptying into the North Aegean Sea. About 126 km of the river flows through Bulgaria and about 130 km through Greece, with a total catchment area of 5,613 km² (2,770 km² in Bulgaria and 2,843 km² in Greece). The Mesta/Nestos River is the most important water resource in the region and has been the subject of bilateral negotiations for many years. For both countries it provides municipal water supply, irrigation, and hydroelectric power production. The UNESCO/INWEB cooperative programme was evaluated as a demonstration UNESCO/HELP basin project and addresses three main challenges: (1) *competing water uses* that are increasing after Greece has built downstream a series of hydro-electrical plants and Bulgaria now struggles upstream for a rapid economic growth in a market economy, (2) *environmental concerns* that are very high in the upper basin in Bulgaria (Pirin National Park) and in the delta region in Greece (legally protected by the international RAMSAR treaty and the European network NATURA 2000), and (3) *water and climate*: there is a desperate need for reliable seasonal and multi-annual forecasts of water availability, both for cropping investment decisions at farm level, and for operators of irrigation and hydroelectric power dams, in planning their regime of investments and operation.

The partners and stakeholders of the consortium comprises: Mesta (Bulgaria): 9 institutions (Ministries, Regional Administration and Regulation, Research and Education, NGOs) represented by 14 partners and Nestos (Greece): 12 institutions (Ministries, Regional Administration and Regulation, Research and Education) represented by 27 partners. Although both countries as full members of the EU should apply the EU/Water Framework Directive, no common river basin management plans were developed until today.

Transboundary water cooperation: key achievements and challenges

The main objective of the Mesta/Nestos/UNESCO/INWEB cooperative programme is to improve cooperation between the two parties by developing a better understanding of the hydrological and environmental issues in the river basin, communicating results of scientific research by using open-source advanced information systems and also promoting capacity building, training and education. In order to increase institutional and local capacity in decision making, water governance and integrated water management, stakeholder seminars, dedicated workshops and cooperative Internet-based tools were developed (Ganoulis et al., 2013).

Key achievements:

- Integrated design of a new dam in Greece (Temenos): sustainability of the new dam project was analysed by combining hydrological, environmental and economic models (Skouloukari et al., 2011)
- Optimum use of pesticides and irrigation water in the delta region in order to avoid nitrate pollution. Sustainable agricultural practices
- Analysing effective measures against coastal erosion and sea water intrusion in the delta region (und

Key challenges:

- Conflicts in water uses mainly between energy production and agriculture
- Ensuring the minimum flow rate (ecological flow) in summer and during the period of droughts
- Ecosystem conservation and biodiversity
- Climate change. Effects of snow covering on summer minimal river flow rates.
- Water pollution in the river at the border area.

Benefits of transboundary water cooperation

Although INWEB contributed to making progresses in many fields, such as data and information sharing, developing transboundary diagnostic analyses and suggesting effective water governance models, in this part of the Balkans-South Eastern Europe (SSE) international cooperation at the basin level continues to be fragile. Problems of minority groups, perceptions of injustice and nationalistic tendencies continue to pose a threat to the stability and socio-economic development of the region.

Main qualitative benefits that have been generated so far may be listed as follows:

Economic benefits within basin from:

- irrigated agriculture especially in the river delta region: increase productivity while avoiding salt water intrusion from the sea
- hydroelectric power generation: use of dams in cascade while ensuring environmental protection
- ecological flow rates and free flow of fisheries
- water supply of cities and settlements
- eco-tourism development, including water-related recreation
- reducing risks of floods and mainly droughts
- mitigation of climate change impacts on ecosystems and humans.

Economic benefits beyond basin from:

- development of international energy infrastructure networks
- opening markets for goods, services and labour
- generating cross-border investments.

Social benefits:

- reducing unemployment
- improving human health

Environmental benefits:

- preserving biodiversity
- supporting migratory bird habitats

Geopolitical benefits:

- reducing military defence spending
- improving political stability

Assessment of transboundary water cooperation

In this region of Europe, water cooperation among countries is vital because a large amount of surface and groundwater resources are shared by two or more countries. Taking only the Sub-Danubian transboundary river and lake basins and the internationally shared aquifers into account, more than 80% of the water resources in this region are transboundary (INWEB, 2008).

A UNESCO/HELP reference panel was formed under the supervision of the scientific committee for the monitoring and evaluation of the on-going activities. The UNESCO Chair/INWEB was assigned as the coordination institution. Milestone evaluation reports and also presentations and results from workshops, seminars and stakeholders meetings are made publicly available on the INWEB Web site (www.inweb.gr).

This site is now under updating in order to better reflect the Mesta/Nestos HELP programme and will also be used as a means for stakeholder's communication and interaction.

Methodology for achieving the cooperation benefits

As illustrated in the following figure, UNESCO/INWEB developed in the Mesta/Nestos River Basin a conceptual model for shared water management, based on promoting cooperation, analysing the hydrological and environmental characteristics at the river basin scale, assessing the shared benefits and communicating interactively with the policy level, including decision makers and stakeholders. The model is based on seven steps and may be adapted to any case study of transboundary waters as follows.

- (1) Stakeholder Consultation and Collaboration (SCC): this step should interact with every one below;
- (2) Transboundary Characterisation Analysis (TCA)
- (3) Agreement on Data Collection, Data Sharing and Common Monitoring Systems (CMS)
- (4) Developing a Common Action Plan (CAP)
- (5) Hydrological and Environmental Modelling (HEM)
- (6) Scenario Analysis and Shared Benefits Allocation (SBA)
- (7) Transfer of Models and SBA to Stakeholders, Applications at local scale.

Step 1 is aiming to address the lack of communication between scientists, experts, water managers public decision makers and other interested citizens/stakeholders. In the Mesta/Nestos case study it was initiated with the organisation of a series of workshops and roundtables. Furthermore, this step should be active during the all process, in order to achieve an effective transboundary water resources management.

Step 2: TCA analysis focus on improving our understanding of the hydrological, ecological and environmental characteristics at the river basin scale, in order to identify issues of transboundary concern and their causes. TCA is the baseline for interventions and priority actions that are specified in the Common Action Plan (CAP).

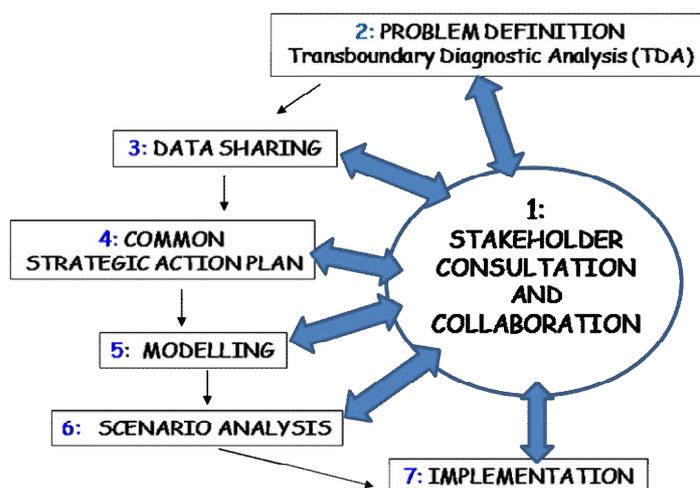
Step 3 targets the development of common protocols on data collection, installation of monitoring networks and sensors, in situ measurements in both countries and last but not least sharing the available information between the two countries.

Step 4: CAP serves for assessing and prioritising water management issues.

Step 5: HEM is used for investigating the importance and impacts of these issues. For Mesta/Nestos the models coupled hydrological modelling, hydropower production, economic and agricultural models with climate change scenarios (Skoulikaris & Ganoulis, 2011).

Step 6: The simulation results set the base for scenario analysis and the development of SBA with the use of multi-criteria decision analysis methods (Ganoulis et al., 2008).

Step 7: The final outputs are communicated to stakeholders and water management authorities for local applications.



A conceptual model of effective transboundary water cooperation and management.

Communication of the results

Being part of the extended UNESCO organisation means that INWEB seeks to promote cooperation, capacity building, and access to new knowledge in the Balkan countries and developing regions outside Europe.

The UNESCO Chair/INWEB focuses on two main communication activities:

- promoting results from innovative research and educational programmes, and
- contributing to bridging the gap between academic research and practical implementation of new knowledge in the field.

The world today is undergoing a historic transformation with the explosion of new Information and Communication Technologies (ICTs), which have drastically changed ways of international cooperation through the development of intra- and inter- electronic networks. The use of new WEB-based technologies for regional networking and distance cooperation presents an opportunity to face challenges in a new way.

The UNESCO Chair/INWEB has developed and maintains on its website different geo-referenced open-source cooperative information systems, with the principal aim of facilitating cooperation and exchange of experience between scientists and stakeholders working in different socio-economic environments on the management and governance of transboundary water resources (www.inweb.gr). During the project implementation, an interactive map using Google Map and Google Earth technologies was initially developed for all transboundary basins in the region. This was based on existing maps indicating basic geographic information transboundary water basins (location, boundaries, extent) (Version 1 of the Geo-referenced information system).

After collecting and working on the data and the descriptive questionnaires submitted by the national experts of the countries participating in the project, the initial geo-referenced information system was updated (Version 2 of the Geo-referenced information system).

The final version of the Geo-referenced information system couples a Google cloud database, in which all the relative information is stored, with Google-Fusion Tables technology, in order to spatially distribute the information on the total study area. JavaScript and the HTML5 programming languages were used for the creation of the platform. Furthermore, both these languages were used for sending requests and exchanging data asynchronously between browser and server to avoid full page reloads. Geographic Information Systems (GIS) tools were used for the homogenization of the different vector files representing the aquifers (namely shape files) and for their projection to a common projection system (namely WGS 84). The final version includes the following:

- Presentation of a summary of the main data on each basin (excerpts from questionnaires)
- Option to download descriptive information on the basins in pdf format (questionnaires)
- Option to download the national reports on each aquifer in pdf format
- Pop up box with attributes for each country participating in the project
- Integration of a "Search" module
- Selection between 4 different background thematic google maps
- Visualization of the spatial extent of the basins
- Demonstration of a comprehensive legend tool
- The ability to leave comments, either of a general nature, or related to a specific geo-location.
- Automated e-mail notification to the identified project recipients whenever comments are made.

Feedback

Modern Information and Communication Technologies (ICTs) can provide interaction between different groups of users and provide distance-based collaborative tools. In the open source software developed by INWEB a feedback menu was incorporated in order for comments to be sent to the project participants.

There are two types of comments: (i) General comments and (ii) Comments referring to a specific geo-location. In the latter case, users should click on the map and the coordinates of the specific location are automatically integrated into the comments form.

Strengthening the transboundary water cooperation: key messages and lessons learned

Collaboration is a tool to transcending and crossing «boundaries» between different administrations, institutions and groups of stakeholders within the same country or between countries. When rivers, lakes and aquifer systems cross political boundaries, the issue of having good management and governance of water resources becomes very complex and difficult to attain. Again the key for resolving such problems is collaboration between institutes, decision making authorities, water professionals and stakeholders.

Governance is much broader than government and it refers to different social mechanisms of decision making, including political entities, governmental institutions, state and private organisations, NGOs and groups of citizens with different interests. Because environment and water are intimately linked to a variety of socio-economic activities, such as agriculture, energy production and industry, “environmental” and especially “water governance” become challenging issues, as traditional concepts of government are changed at different levels:

- At the international level, national governments are losing power and the exclusive authority for protecting national interests, because of economic globalisation, improved communications and increasing capital flows across national borders.
- At the national level, the private sector is increasingly involved for providing services and policy in areas traditionally under governmental control.
- At the local level, the public society and different community associations and networks replace traditional activities of the public sector and are weakening the influence of national authorities.

In the water sector, which is very much related to food and energy production, all these changes require a rethinking of social processes and the structure of economic activities, reflected in the development of the new concept of “water governance through collaboration”

Ongoing social and political problems continue to pose a threat to stability in the Balkans. This atmosphere, in some cases, has hindered INWEB's ability to develop transparency and sharing, and it has sometimes been difficult to achieve full cooperation between stakeholders. There is no real precedent for data sharing on an international basis in the Balkans, and a certain amount of hesitancy may be encountered when cooperation is proposed.

One of INWEB's greatest achievements, however, has been to establish the framework under which scientists can cooperate and work together on various joint projects. The fact that UNESCO/INWEB has facilitated the forging of personal links and trust is reflected in how individual scientists present cooperative projects to their respective national institutions. This result cannot be quantified, but it clearly cannot be disregarded. Overall, the work of the UNESCO Chair/INWEB at the Aristotle University of Thessaloniki demonstrates that effective networking and information sharing are strategic instruments to promote peace and stability through transboundary water resources governance and management.

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