

## CONCLUSIONS

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**ABSTRACT:** *The major objectives of the project have been reached. The project developed guidelines for water supply companies and regulatory authorities to manage the groundwater quantity and quality simultaneously. Besides the creation of a powerful database and of a mathematical model of the aquifer, the partnership in sustainable water management of the Hungarian and Romanian specialists is another important outcome of the completed project.*

Although many countries and hydrogeological experts had been aware of the importance and complexities of the management of transboundary aquifers since the early 1970s, very little was done to elevate the problem in international circles. In contrast transboundary rivers have received much greater attention leading to several treaties and conventions. Few treaties exist for aquifers. On the other hand, there is very little international experience in approaches or methodologies advocated for the common modeling and the shared management of transboundary groundwater resources. The significant differences between transboundary aquifers and rivers have not been pointed out in the existing treaties, resulting generally in a poor appreciation by decision makers of the value of the groundwater resources.

Due to the increasing need for drinking water, one of the main objectives of the groundwater modelling work is to make possible a sustainable management of the regional groundwater resources on both sides of the Hungarian-Romanian border. The Somes - Szamos groundwater resources are very important for a population of about 445.000 inhabitants in Romania and Hungary. Many end-users consisting in state-owned organizations and private companies, all of them being directly concerned by groundwater use or supply, have been involved in the project.

It was clear right from the beginning that the proposed goal is only achievable when the involved scientists could find a healthy and fruitful scientific and technical collaboration. The NATO Science for Peace Programme has provided the participants with a perfect shelter

to carry out this challenging topic. Started in January 2000, this project was ended in July 2004. Most of the foreseen objectives are reached.

On the basis of the obtained modelling results, the international project is developing guidelines to provide both water supply companies and regulatory authorities the means to manage the groundwater quantity and quality simultaneously. It was of course the occasion to exchange the data between Hungary and Romania to develop a common database, which can be maintained and expanded by the scientists of both sides and end-users in the future. This project also provides the end-users (national authorities, local waterworks, municipalities and environmental agencies) with useful information to supply adequate quantity and high quality of water for the citizens in this region. Some beneficial nature conservation aspects of the proposed project could also be highlighted.

One of the major products of the project is a mathematical, computer-based groundwater flow model. Several conclusions presented in this report are drawn from the results of different modelling scenarios. Some advantages of the created model are that it can be updated with new data, and it is flexible enough to simulate any number of water-withdrawal scenarios. Solute transport models simulating local groundwater contaminations have been developed.

A very positive scientific and technical collaboration exists now between project partners and the dynamic of the project is inducing the exposure of young scientists to the international scientific community. The completed program

can serve as a very good example to strengthen the official Hungarian and Romanian relations and political collaborations connected to surface water and groundwater management. The partnership in sustainable water management is seen to be an important outcome of the completed project.

A final workshop was held in June 2004 in Cluj-Napoca (RO) with all end-users and deci-

sion makers from Romania and Hungary. All the technical results of the project were discussed and decision makers have announced advances concerning the extension of the Joint Romanian-Hungarian Hydrotechnical Commission's field of activity to groundwater issues. This agreement will be applied to all trans-boundary aquifers shared in common between Romania and Hungary.

#### *Aknoledgements*

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