



Topic 5

Economic approaches: how effective are they in reducing groundwater use and pollution?

Public water managers and stakeholders are increasingly aware of the role economics can play in designing groundwater management plans and policies. There is growing recognition that defining qualitative and quantitative objectives for sustainable groundwater resources as well as the identification of actions needed to achieve these objectives require investigation of the trade-offs between economic and environmental considerations. And water managers and planners recognise the role market-based instruments such as prices, taxes and tradable water rights can play in groundwater management.

Policy makers and planners expect three different contributions from economists. The first is a description of the hydro-economic system to better grasp the interactions between -and dynamics of- economic activities and groundwater resources. This may involve the building of hydro-economic models to simulate the expected impact of future trends in economic activities on groundwater resources, or vice versa.

The second type of contribution from economists consists in assessing and comparing the economic cost and/or benefits of different groundwater management options. Economists can help identify the least costly way to achieve a given environmental objective (cost-effectiveness analysis) or assess the net benefits of alternative management options (cost-benefit analysis).

The third type of contribution consists in the design of economic instruments such as prices, (abstraction/pollution) charges, taxes or tradable (groundwater) permits. The need to influence users' behaviour in order to improve the sustainability of groundwater resources is increasingly recognised by water planners, who call for the design and implementation of economic instruments to regulate water demand and pollution.

The main purpose of this session is to show how practical economics can throw some light on these different demands. The session will also discuss the needs for, and challenges involved in, integrating economics with technical expertise and knowledge, which is essential to ensure the relevance of economics for policy making in the field of (ground-) water management. Empirical contributions based on real case studies are particularly welcome. The session will be organised around the three following sub-topics.

1. Hydro-economic modelling. We invite papers presenting models that integrate hydro-geological and economic approaches, either through complex system modelling approaches or coupling with external models. Papers should also focus on the role of models as support systems (communication of uncertainty, use of models to explore possible scenarios, etc.) in decision-making processes.

2. Groundwater management options evaluation. Contributions presenting results of Cost-Effectiveness and Cost-Benefit analyses are invited. The session should cover the issue of the economic valuation of groundwater, discuss the usefulness and limitations of available valuation methods (stated preference techniques, damage cost, etc.). A link will be established with the session dedicated to the implementation of the European Water Framework Directive and of its daughter groundwater directive.
3. Economic instruments. Three types of contributions are invited: (1) empirical papers that assess the environmental, social and economic impacts of economic instruments implemented in different regions of the world (pollution or abstraction taxes, water markets, etc.); (2) papers that assess the impacts of economic instruments through micro-economic simulations; (3) papers that explore the potential impact of innovative economic instruments through experimental approaches (experimental economics, policy exercise, role-playing games, etc.).