Monitoring and Assessment of Transboundary Groundwaters in Europe: the work of UNECE

Workshop on transboundary aquifers

John Chilton
British Geological Survey
The UNECE Water Convention

- Signed in March 1992
- Entered into force in October 1996
- 34 countries and the European Union have ratified the Convention
Parties to the Convention
Aims of the Convention

- Protection of transboundary waters - prevent, control and reduce pollution and overuse
- Integrated management of transboundary waters
- Reasonable and equitable use of transboundary waters
- Conservation and restoration of ecosystems
Mandate of the Working group (1994)

give guidance on the implementation
of the Convention
for
monitoring and assessment of
transboundary waters

• methodological aspects
• institutional support
• co-ordination of activities
Groundwater guidelines

objectives

to assist governments and joint bodies to set up and operate systems for transboundary groundwater monitoring and assessment

character

the guidelines are more strategic than technical

structure

based on the monitoring cycle

Definitions, specific aspects of groundwater monitoring (characterisation of aquifers), integrated approach
The monitoring cycle

1. Data collection
2. Monitoring programmes
3. Assessment strategies
4. Information needs
5. Water management
6. Data handling
7. Data analysis
8. Assessment and reporting
9. Information utilization

The monitoring cycle is a continuous process that involves identifying information needs, developing assessment strategies, implementing monitoring programmes, collecting data, analyzing data, handling data, reporting assessment results, and utilizing information for water management.
Aquifer types

← Like this?

Or like this? →
# Water uses and issues in the Mures/Maros basin

<table>
<thead>
<tr>
<th>Issue/problems</th>
<th>Drinking water</th>
<th>Ecosystem functioning</th>
<th>Fishing</th>
<th>Recreation</th>
<th>Irrigation</th>
<th>Industrial use</th>
</tr>
</thead>
<tbody>
<tr>
<td>Organic pollution</td>
<td>X</td>
<td>X</td>
<td>X</td>
<td>X</td>
<td></td>
<td>X</td>
</tr>
<tr>
<td>Bacterial pollution</td>
<td>X</td>
<td></td>
<td></td>
<td></td>
<td>X</td>
<td></td>
</tr>
<tr>
<td>Eutrophication</td>
<td></td>
<td>X</td>
<td></td>
<td></td>
<td></td>
<td>X</td>
</tr>
<tr>
<td>Pollution by hazardous substances</td>
<td>X</td>
<td>X</td>
<td>X</td>
<td></td>
<td>X</td>
<td>X</td>
</tr>
<tr>
<td>Accidental pollution</td>
<td>X</td>
<td>X</td>
<td>X</td>
<td></td>
<td></td>
<td></td>
</tr>
</tbody>
</table>

**Stress Levels:**
- **Red**: High stress
- **Yellow**: Medium stress
- **Blue**: Moderate stress
Inventory of transboundary aquifers

- location, extent and type
- uses, problems, pollution sources
- status and trends
- monitoring activities
- legal and institutional aspects
- bilateral agreements

1997, led by Hungary
Inventory of Transboundary Groundwaters

Legend:
- Country which responded to inventory
- Transboundary aquifer indicated by one country
- Transboundary aquifer indicated by both countries
Current activities in groundwater – as requested by the Meeting of the Parties

• preparation of common strategic guidelines for all transboundary waters – *completed and published*

• the Parties decided at their 3rd and 4th meetings to prepare an assessment of transboundary waters – *rivers, lakes and groundwaters*

• this assessment is being prepared for the Belgrade Ministerial Conference on Environment for Europe in October 2007

• pilot projects for guideline implementation – *Aggtelek Karst (HU/SK, under way) and Bug river basin (PL/UA/BY, proposed)*
Assessments – rivers and lakes

- assessment of the water quality situation and monitoring programmes
- proceeding well for rivers and lakes – led by Finland with network of supporting colleagues providing data
- will be comprehensive for all of Europe
- if the smallest are excluded, this still leaves 130 transboundary rivers and lakes
Assessments - groundwater

More selective approach for groundwater:

- the Balkan region – led by BGS (John Chilton)
- the Caucasus and Central Asian Republics - led by Slovak Hydrometeorological Institute, SHMU (Peter Roncak)

Meeting of the groundwater core group of the WGMA in Paris in April 2006, hosted by UNESCO

Scope of assessment agreed, questionnaire designed

Approved by the WGMA in May 2006, distributed in July 2006

Collaboration with INWEB established for SEE region

Workshop in Thessaloniki in April 2007
Types of transboundary aquifers

1. State border follows surface water catchment and groundwater divide, little transboundary groundwater flow.

2. Surface water and groundwater divides separate from state border, recharge in one country, discharge in adjacent.

3. State border follows major river or lake, alluvial aquifer connected to river, little transboundary flow.

4. Large deep aquifer, recharged far from border, not connected to local surface water and groundwater.

Developed for questionnaire
Driving forces

Pressures

State

Impacts

Responses

DPSIR framework
• Regional geology produces two distinct main aquifer types – karstic limestones of the Dinarides and alluvium in the plains of the Lower Danube and tributaries

• Both are hydrogeologically very vulnerable to pollution and often closely linked to surface waters

• Groundwater is very important, often providing >75% of total water use and generally dominant for drinking water

• More than 60 transboundary groundwaters in this region alone, but not all are currently recognised as such by both neighbours
SEE Assessment – main conclusions 2

• General status remains good, little evidence of widespread degradation of quantity or quality, or of transboundary impacts

• But may reflect recent history and economic situation

• ICPDR is an established facilitator for collaboration in water management in the region and was widely referred to

• Need bilateral agreements for joint identification, monitoring and data exchange and management

• Scarcity of data highlighted; some from short-term projects but need more systematic and sustained approaches to monitoring
What’s next?

- WGMA, Helsinki, June 2007 will approve assessment
- Presentation at Belgrade Ministerial Conference
- Balkans Action Plan for Transboundary Water Cooperation (priorities for groundwaters)
- Pilot projects/capacity building activities
- Other joint activities with UNESCO, GWP and other partners