Transboundary Groundwaters

(20 years of assessing; achievements and challenges)

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Assessment of Transboundary Aquifers

- Most of the countries share aquifers
- Changes of groundwater quality and quantity can lead to international problems but sharing a resource is also a platform for cooperation
- Cooperation is required to mitigate or eliminate problems and increase the overall benefit from groundwater
- Harmonisation: differences in languages, classifications and reference systems, policy, legal and institutional structure
Inventory of Transboundary Aquifers 1999
TBA Assessments in South-East Asia 2006

LEGEND
- major groundwater basin
- area with high recharge (>150 mm/yr)
- area with middle recharge (15-150 mm/yr)
- area with low recharge (<15 mm/yr)
- area with complex structure
- area with high recharge (>150 mm/yr)
- area with middle recharge (15-150 mm/yr)
- area with low recharge (<15 mm/yr)
- area with local and shallow aquifers
- Transboundary aquifers
TBA Assessments in Central Asia 2007
Assessment of Transboundary Aquifers
There is a **global baseline** available prepared by >330 experts from >130 countries!

**Assessment of Transboundary Aquifers**

- Interdisciplinary **methodology** developed
- **Legal framework** (UN Watercourse Convention, Helsinki Convention, Draft articles of the ‘Law of Transboundary Aquifers’) to build regional and bilateral agreements, such as the Guarani Aquifer System
- First structured and publicly accessible **information system** on transboundary aquifers
TBA Information Management System
TBA Assessment and Management

- Nubian, Guarani, Limpopo Basin, NW Sahara, Iullemenden, DIKTAS …
- Mostly concentrate on one aquifer (system) allowing in-depth analysis:
  - Improving state of knowledge (TDA)
  - Establishing/improving cooperation mechanisms
  - Facilitating harmonisation & priority reforms (SAP)
Transboundary Aquifers of the World
- Update 2021 -

Legend
Occurrence and extent
- aquifer
- overlapping area

Type of TBA delimitation
- confirmed boundary
- unconfirmed boundary

Geographic elements
- rivers
- lakes
- detailed maps

Prepared by IGAC

Base maps

Map projection
- Robinson projection, geographic coordinates, azimuthal WGS9 
longitude of central meridian 0°

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Disclaimer
The boundaries and names shown and the designations used on this map do not imply official endorsement or acceptance by the United Nations. A full disclaimer is available on the back of this map.
Most of the large aquifers under stress are transboundary

TBAs and Global Water Security
Need for Transboundary Cooperation
Main TBA challenges

• Data & information **harmonisation** across borders
• Lack of **monitoring data**, quantity and especially quality
• Selecting **priority areas** and/or issues within a TBA
• The establishment of **cooperation** mechanisms and trust building
**Transboundary Aquifers**

Aquifers are underground layers of water-saturated rock or sediment that can provide a significant source of water for human use. Transboundary aquifers are those that span national borders and can be shared by two or more countries. The management of these shared resources requires international cooperation to ensure sustainable use and avoid conflicts.

The International Groundwater Resources Assessment Centre (IGRAC) is an organization that supports the implementation of transboundary groundwater management projects. IGRAC’s mandate is to improve the livelihoods of people through sustainable groundwater management, which involves the development and implementation of aquifer management plans, the establishment of international cooperation mechanisms, and the provision of technical support and training.

IGRAC’s activities are guided by the United Nations guidelines for the management of transboundary aquifers, which emphasize the importance of international cooperation and the need for equitable and sustainable water management. The organization also works to build the capacity of governments, civil society, and stakeholders to manage shared groundwater resources effectively.

IGRAC’s work is supported by a network of experts and partners, including government agencies, academic institutions, and NGOs. The organization’s projects are funded through a combination of grants, donations, and international cooperation agreements.

IGRAC’s projects focus on developing and implementing transboundary groundwater management plans, which involve the identification of shared aquifer boundaries, the assessment of groundwater resources, the development of management strategies, and the implementation of technical and institutional measures.

IGRAC’s work is particularly important in regions where shared groundwater resources are under pressure from population growth, economic development, and climate change. By ensuring the sustainable management of these resources, IGRAC is helping to ensure that future generations will have access to this vital resource.
Concluding Remarks

• Keep fostering international cooperation: climate change and human impact on groundwater resources do not stop at administrative borders.

• Place transboundary aquifers in a context of relevant broader societal/environmental issues.

• Use multidisciplinary approach that includes fact finding, strengthening collaboration mechanism and joint action program/prioritization.

• Step up groundwater monitoring: assessment is not complete- and no predictions can be made without an analysis of historical data.

• Use the international protocols as a framework and (in)formal, local agreements as a building block.

building trust asks for understanding and patience
Thank you for your attention