



4TH WORLD WATER FORUM Invitation and Briefing

GROUNDWATER FOR LIFE AND LIVELIHOODS –THE FRAMEWORK FOR SUSTAINABLE USE

Theme II—Session FT 2.26 : 18 March 2006 at 2.30pm

In preparation for the 4th World Water Forum, the IAH Congress held an International Groundwater Roundtable at Zacatecas-Mexico in October 2004, with co-sponsorship from the IAEA, UNESCO-IHP and the World Bank, and important inputs from the WWC. This Briefing is a synthesis of the debate at that roundtable, which emphasised the global importance of groundwater and was a key step in setting down related policy issues and needs.



BACKGROUND

Groundwater – the Lifeblood of Development

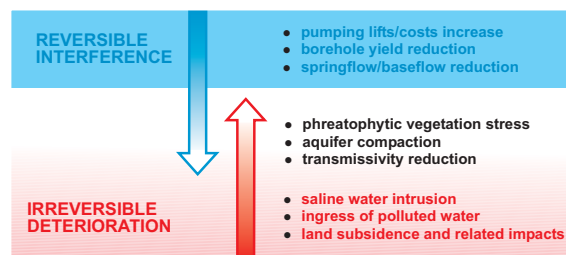
- Groundwater is vital to most nations and worldwide some 2,000 million people, large numbers of industrial premises and innumerable farmers depend on it. By volume, irrigated agriculture is the largest abstractor.
- Facilitated by improved hydrogeological knowledge, advances in waterwell drilling and in pump technology, massive groundwater use commenced in the industrialised nations in the 1950s and in the developing world from the 1970s.
- **Groundwater resource development has given great social and economic benefits** through provision of low-cost, drought-reliable and high-quality water supplies for urban areas, rural populations and crop irrigation (for example about 70% of EU drinking water, 80% of rural water-supply in Sub-Saharan Africa and 60% of Indian agricultural irrigation). Many countries thus now have large groundwater-dependent economies.
- Simultaneously groundwater has to play an integral role in sustaining ecosystems and landscapes in humid regions and in supporting unique aquatic ecosystems in more arid regions and along coastal belts.



THE CONCERN

Signs of Degradation of Resource Base

- The volume of groundwater stored in many aquifers is vast (representing 98% global freshwater reserves) but their active replenishment is finite and their quality can be degraded. Different aquifer types exhibit a wide variation in terms of their susceptibility to depletion side-effects and of vulnerability to pollution from the land surface.
- Inappropriate resource development, including depletion of reserves in some strategic aquifers for irrigation of low-value crops, is widely leading to **excessive groundwater level decline**. This can frustrate poverty alleviation by reducing access of the poor to groundwater and by mobilising naturally occurring contaminants, and also sometimes results in aquifer salinisation, land subsidence and damage to wetland ecosystems.
- Of equal concern is the **widespread pollution of groundwater** due to inadequate protection from urbanisation processes, industrial discharges and agricultural intensification.



Groundwater Resource Development - consequences of excessive abstraction

THE CAUSES

Factors in Resource Unsustainability

- All too often groundwater remains a neglected resource and funding for its management and protection **comes bottom of the 'environmental policy league table'**. There remains a widespread lack of understanding of groundwater linkages and dependencies, with too many still regarding it as an unlimited and uncoupled resource. The critical link with land-use practices in aquifer recharge zones is not adequately appreciated and respected.
- In some countries most investment in groundwater exploitation has been raised by private initiative and in others by government agencies with a narrow focus on immediate agricultural or urban development. And the **frequent absence of effective groundwater management agencies**, and disinterest in local groundwater issues at river-basin level, has meant that parallel investment in understanding and managing the groundwater resource base has not occurred.

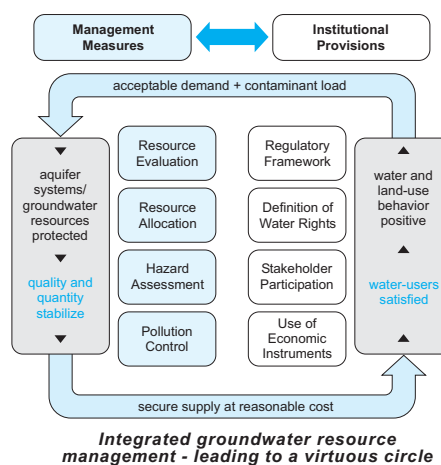
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THE NEED Proactive Groundwater Management



- Many nations need to appreciate their socio-economic and environmental reliance on groundwater and to invest in strengthening scientific understanding, governance systems and management partnerships before the resource is irrevocably degraded. This will be **vital for achievement of the UN-Millennium Development Goals** and also to sustain the improvement in human livelihoods, food security and poverty alleviation already achieved from groundwater use.
- Groundwater sustainability is a major challenge in the field of natural resource management because :
 - groundwater is a widely-distributed resource responding at basin scale but affected by a plethora of local users and polluters (farmers, small industry, communities, municipalities, etc)
 - the **behaviour of groundwater users and potential polluters is greatly influenced by national policy decisions affecting land and water use** (crop guarantee prices, energy subsidies, water-supply reliability, etc).
 Thus governance systems, resource policies and information provision need to relate to a wide range of scales. Moreover, different approaches to management are needed in the rural and urban environment.
- There is no simple blueprint for action due to the intrinsic variability of both hydrogeologic and socio-economic situations, even within individual countries (for example, Mexico, India, etc). But **groundwater systems are predictable and manageable given reasonable scientific diagnosis and adequate monitoring**, and despite the frequent institutional impediments it is always feasible to make incremental improvements in aquifer management and protection.
- Protecting aquifers as common property cannot be addressed directly by command-and-control management (as used for surface water resources) and regulatory agencies need to adopt a more flexible and adaptive approach that mobilises groundwater and land users as partners in the management process.

- **Government agencies need to be enabled as 'guardians of groundwater' in the public interest to work with local stakeholders** on resource administration, protection and monitoring, whilst also acting in the broader resource planning context. For this it has been recognised that there is an enormous need for capacity building in groundwater resource management.



THE PROPOSAL A Global Groundwater Policy Initiative



- The IAH has developed a proposal to the **Global Environment Facility (GEF)**, through the **World Bank as Implementing Agency**, for a **'GEF Medium-Sized Project'** to identify key groundwater policy needs at macro-level. These would be agreed through thematic workshops at regional centres, refined as coherent and integrated messages, and delivered to the appropriate political for regional development and environmental action.
- One might ask whether it is necessary to mobilise international political action on policy support for groundwater when it is clear that practical steps in groundwater management need to be taken from the 'bottom-up' (via local government-community partnerships). However, it has become equally clear that unless 'bottom-up action' is complemented by **'top-down facilitation'** – in terms of national political will to act on groundwater resource planning, governance and investment in local groundwater management agencies (with appropriate mandate, staff and budget) – then progress will be patchy and of questionable social sustainability.
- The World Water Forum is encouraged to support such action in respect of :
 - Policy** – more focus on groundwater in economic and land-use policy, recognising the constraints on groundwater resource availability and the interactions with land-use management which are often ignored.
 - Governance** – more commitment and investment in governance institutions for groundwater at appropriate scale, which mobilise local government-community partnerships to manage and protect the resource and inform policy at basin and regional scales.
 - Information** – better policy and governance need to be founded on sound information, which will mean (a) improved dissemination of existing information on groundwater resource and quality status and (b) not neglecting investment on key facets of groundwater monitoring to enable advances in scientific techniques to be reliably applied.



International Association of Hydrogeologists
**THE WORLDWIDE
GROUNDWATER
ORGANISATION**

IAH is an international organisation for scientists, engineers and other professionals with an interest in groundwater resource planning, management and protection. It was founded in 1956 and has grown, with the increasing social and environmental importance of groundwater, to a membership of just under 4000 in 140 countries. We welcome into membership all those, from whatever country, discipline or level of technical knowledge, who want to improve their understanding of groundwater issues and support its better management.

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