

GROUNDWATER GOVERNANCE IN ASIA

CAPACITY BUILDING THROUGH ACTION RESEARCH IN THE INDO- GANGETIC (IGB) AND YELLOW RIVER (YRB) BASINS

Since the 1970s, a significant increase in groundwater development, primarily in the agrarian sector has occurred in the Indo-Gangetic (IGB) and the Yellow River (YRB) Basins. An unprecedented expansion in the number of irrigation tubewells has occurred in these regions based on improved drilling and pumping technology, as well as subsidies for well construction and electricity. In India, more farmers now provide their irrigation water via private wells and pumps than rely on the government's canal irrigation systems.

Indo-Gangetic Basin



The situation is similar in north China. With groundwater generally being a reliable resource this development has had tremendous implications for agricultural production and productivity as well as the livelihoods of millions of poor farmers.

Yellow River Basin



The emanating downside of this groundwater boom is the mismatch between development and management, which has been manifested in the lack of control of the development and use of the resource and ultimately in the associated environmental and socio-economic effects. With groundwater resources being increasingly stressed due to intensive use, signs of overexploitation become evident. Permanent groundwater level declines, competitive deepening of wells, increased pumpage expenditures, drying up of rivers and streams are all well-known phenomena among many farmers, especially during periods of limited rainfall and drought. Excessive pumping also

Background

Groundwater development has been the most significant, yet overlooked, vehicle for water productivity and livelihood gains in IGB & YRB during the last half century.

However, sustaining and increasing benefits from groundwater in these rapidly changing economies present one of the most critical challenges to the five basin countries, not traditionally involved in proactive management of their underground water resources.

gives rise to problems with the quality of groundwater, examples being increased salinity due to seawater intrusion and secondary salinization. At the same time as overuse is a problem in many areas, increased groundwater use still offers big opportunities for poverty reduction in some areas such as the eastern IGB and limited parts of China.

Groundwater management per se is complex due to the invisible character of the resource and its common property nature and the associated difficulty in delimiting and quantifying the extent of the resource. Adding to this complexity is the fact that groundwater is being exploited by a large number of small-scale well-owners and operators (estimated at 15-20 million in the two basins) who are often neither registered, licensed, nor subject to enforced regulations, the population density, the growth rates and the generally strained agricultural economy of these regions.

Notwithstanding these overall considerations, it is apparent that at the heart of the limitation to sound and sustainable groundwater management in the two basins lie the lack of knowledge and institutional capacity to confront the problems effectively. Traditionally, institutional groundwater involvement has focused on the development side of the resource, whereas only limited interest and resources have been vested in groundwater research and groundwater management. At the same

time, capacity building focusing on integrated groundwater management in a developing country context is a relatively new endeavor for which development of systematic course material and interactive learning methods are highly needed.

Project purpose

In this context, the purpose of the project is to contribute to the enhancement of the capacity of existing institutions in the basin states involved in groundwater research and management to undertake more integrated, multi-disciplinary and sustainable approaches to groundwater governance. By involving practitioners directly in training and applied groundwater research and building lasting, inter-regional networks of practitioners and researchers, the project intends to seed a process of enduring change in the groundwater management sectors of the basin states (i.e. India, China, Pakistan, Bangladesh, and Nepal).

Project outputs

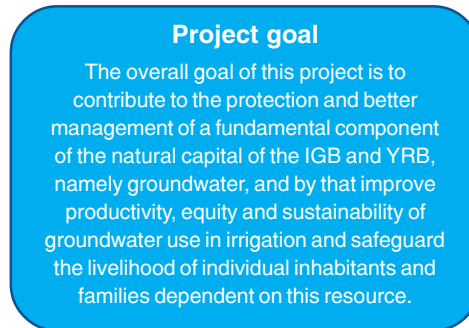
1. A world class training and action research program and curriculum on inter-disciplinary learning in groundwater
2. Inter-disciplinary studies on groundwater in various locations in IGB and YRB and related basins carried out by the teams of practitioner fellows attending the training program. Case studies of best practices and interesting institutional innovations in groundwater governance across different parts of the world will be part of this output
3. A groundwater governance toolkit, which tries to answer 'what works where' in groundwater governance
4. A cadre of 80 future young and senior leaders of groundwater sectors of the basin states who are better equipped for proactive and informed groundwater governance in the region

The training program consists of two annual courses, each comprising a 4 week interdisciplinary class-room training program and a subsequent action research phase encompassing field and institutional data and information collection within the two basins. The fellow research is guided by the principal researchers of the project who, in a collaborative interaction with the course participants, undertake the task of defining, coordinating, synthesizing and gap-filling the research provided by the fellows.

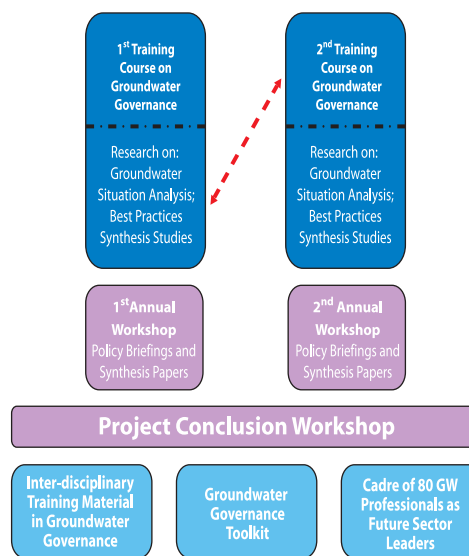
Target groups and beneficiaries

The project addresses the following target groups and beneficiaries in the basin states:

- Nodal governmental institutions and agencies involved in groundwater assessment and management, e.g. the Central Groundwater Board (CGWB) in India, the Water and Power Development Authority (WAPDA) in Pakistan, the Department of Irrigation in Nepal, Bangladesh Water Development Board (BWDB) in Bangladesh, and Yellow River Conservancy Commission (YRCC) in China
- Universities and other research agencies in the field of natural resource management
- Media workers involved in the news coverage of natural resources topics and information
- Civil society members, e.g. non-government organizations (NGOs), aid agencies and extension agencies who have ground level contact with the direct users of groundwater
- The ultimate beneficiaries are the farmers (both men and women), rural entrepreneurs, rural and urban consumers, and all those who are directly or indirectly associated with groundwater use



SGM: IWMI's "Sustainable Groundwater Management" Theme;
CA: CGIAR's Comprehensive Assessment of Water Management in Agriculture;
ITP: IWMI-Tata Water Policy Program



Dissemination of Results

Technical papers resulting from fellow and synthesis research will be published in refereed journals. Publications will also be disseminated through the project website <http://www.waterforfood.org/groundwater-governance> and

mailing lists of relevant organizations involved in groundwater management and capacity building, such as the WB, ADB, FAO, UNESCO, WWC, IWMI, IFPRI, GWMATE, NGWA, TWAS, IAEA, IGRAC, Cap-Net-GWP.

The inter-disciplinary training program and its course material developed in the project will be placed on the project website for free access and use by all interested individuals and institutions. It will be developed into a regular program for capacity building of groundwater managers and researchers across the developing world beyond the life time of the project and hence be useful to groundwater managers and practitioners who are not direct participants in the project.

Special publications called 'Water Policy Briefings' will be prepared for policy makers and grassroots actors. Each of these policy briefings will be backed by technical papers meant for the scientific community.

Media fellows trained in the project will produce popular, but scientifically sound media reports and programs, which will contribute to a wider dissemination of research results and creating a wider awareness among common people and policy makers about the issues relevant to groundwater management in South Asia and China.



Key strengths of the project, applying the proposed approach:

- a. the scientific research is more context-specific, relevant and responsive to the managerial requirements of groundwater governance
- b. learning by doing promotes better internalization of new ideas and frameworks than lecturing by others
- c. groundwater managers themselves would be far more effective in propagating a broader governance perspective amongst their professional colleagues than professional external lecturers
- d. capacity building and research emerge as joint, mutually enforcing processes and products
- e. inter-regional networks of researchers and practitioners created as part of the project will last beyond the lifetime of the same, endorsing long-term impacts of the project.

The partners

Lead Institution: The international Water Management Institute (IWMI)

Research partners: Institute of Rural Management (IRMA), **India**; Chinese Academy of Sciences (CCAP), **China**.

Other Partners (list not exhaustive):

Central Groundwater Board, **India**;
Bangladesh Water Development Board, **Bangladesh**; Dept. of Agricultural and Resources Economics, Department of Irrigation, **Nepal**; Water and Power Development Authority, **Pakistan**; Yelow River Conservancy Commission, **China**.

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Project funding: The project is supported by the Challenge Program on Water and Food (www.waterforfood.org).

Project duration: Apr. 2005 to Jul. 2008.