



The MARVI Declaration

Groundwater: A Common Resource – A Shared Responsibility

Preamble

More than half of India is undergoing serious water stress. The accelerating and alarming rate of groundwater depletion continues unabated. In rural communities, groundwater decline constrains food production, jeopardises farm incomes, catalyses increased urban migration and fractures community cohesion and harmony. Rural women and girls spend more time carrying water, pumping costs increase, groundwater salinity may increase and surface streams and dependent aquatic ecosystems continue to be degraded. We fear for the future of our villages.

Groundwater quality is also at risk. Large areas are experiencing increases in natural fluoride and arsenic contamination. Often unregulated human and industrial wastes from cities and industry are polluting groundwater, sometimes irreversibly, but those involved in polluting fear no consequences.

MARVI – '*Managing Aquifer Recharge and Sustaining Groundwater Use through Village-level Intervention*' is a project funded by the Australian Centre for International Agricultural Research (ACIAR) and it has been in operation in the States of Gujarat and Rajasthan since 2012. The MARVI project team organised a National Workshop titled '*Groundwater Monitoring, Planning, Recharge and Sustainable Use: Village Level Participatory Approaches and Tools*' during May 30-31, 2017 in Ahmedabad, India.

The primary aim of the workshop was to facilitate an active, vigorous and open dialogue to discover ways to strengthen the institutional capacity and frameworks for effective village-scale groundwater management. The shared lessons from the MARVI project and similar Indian groundwater projects were central to priming deliberations and exploring novel solutions. Crucially, the workshop provided hands-on experience/demonstration of field tested MARVI tools and methodologies to effectively implement MAR works, assist communities craft both cooperative strategies and village level demand management.

The infrastructure, governance and institutional challenges of groundwater were addressed and formulated actions were discussed and demonstrated at the workshop. The workshop was attended by over 120 policy makers, researchers, planners, government officials, NGOs, private sector specialists, farmers and community groups.

Engaging Villagers for Shared Responsibility

The recent MARVI experience in the Meghraj and Dharta watersheds of Gujarat and Rajasthan has shown that some villagers, called *Bhujal Jankaars* (BJs - groundwater informed), can learn how to monitor, understand and take responsibility for collectively managing their groundwater. BJs are a cohort of farmers selected for specialised training to

monitor and manage surface and groundwater coupled with enhanced skills to inform village level decisions. BJ training involved the measurement of watertable depth, rainfall amounts and check dam water levels and recharge rates. They became village champions of water conservation through mulching, irrigation management, contour bunding and the value of selecting high valued low water use crops. At completion of a rigorous training programme the BJs could also identify and mitigate polluted water and prioritise check dams for desilting. By combining their traditional knowledge with modern technologies, such as the MyWell mobile phone app, BJs are continuing to help their villages develop water security plans, adjust areas of crops in the Rabi season based on groundwater availability at the end of monsoon and widely share data and knowledge.

What have we learnt in MARVI?

Based on the MARVI experience, villagers have shown that with sufficient resources and guidance they are capable of and willing to measure and understand their groundwater and equip themselves to self-manage their groundwater future. Villagers can do what government has not been able to do directly. State and Central Governments are increasingly alert to their new role in supporting participatory groundwater management and ensuring communities have the skills and knowledge needed to be effective in democratising the management of groundwater in rural India.

A detailed socio-economic study in the MARVI project helped in understanding the needs and aspirations of villagers leading to a shared and plausible vision of what is possible to improve their livelihoods and those of their children. The future visions reveal a palette of home grown solutions articulated, endorsed and supported by the community, including a ban on drilling new tube wells, and consideration of village level groundwater cooperatives.

A key to groundwater management is the imperative of whole of aquifer governance. Some aquifers underlie many villages or districts and everyone will need to cooperate to secure their water future. Understanding the aquifer capacity and limits is necessary. Foregoing short term self-interest and the adoption of longer term cooperative approaches at multiple levels will be necessary to sustain the aquifer and all dependent communities. Novel mechanisms will be needed to enable cooperation over large distances; democratising the management of groundwater in rural India. The village level options and capacities revealed during the MARVI programme represent a logical and coherent foundation to assist other groundwater communities in India faced with similar groundwater stresses.

What needs to happen?

Investment is needed in selecting, training and accrediting BJs at village level and their facilitators at local, state or national level. Action is needed to support BJs through qualified, locally based facilitators to collect reliable, verified measurements that will enable the formation of empirically based, village-level groundwater management plans, including supply and demand-side measures leading towards self-reliance.

Government and communities need to ensure the formation of surface and groundwater management plans to embrace the principles of procedural fairness and distributional equity from village to whole of catchment levels. The voices and active participation of women are critical to success as are those of the most vulnerable and disadvantaged communities. All relevant options to address groundwater security, surface water flow requirements and

water quality protection require careful and thoughtful deliberation. The convergence and recognition of the value of both indigenous knowledge and scientific knowledge is a vital ingredient in an expanded suite of groundwater options.

Governments need to set or revise policies on water management, watershed management, water supply and sanitation, agriculture, rural development, energy and pollution control that are consistent with aquifer scale groundwater management. We need to actively support and facilitate capacity building, institutional development and participation and cooperation among all stakeholders.

To support implementation, community awareness must be raised through media of all types, school and community resource books and photovoice books. Also, we need to make readily available the necessary technical publications in all required languages. We need to promote the use of groundwater monitoring tools, including the “My well” mobile phone app, watertable depth measurement kits, water quality probes and gaugeboard templates for check dam water level measurements. These tools that align with village technical capacities allow both a rapid increase in the monitoring of rainfall, wells and recharge structures at village level. Collated groundwater data will be reported online and will be accessible for use in advancing water security plans.

Efforts need to be made to develop an inventory of all recharge structures at the state and national level. Existing recharge structures require sustained monitoring to further refine siting and the design of new MAR structures, improve cost effectiveness of silt removal, and quantify the economic impacts of these investments in recharge enhancement alongside demand-side measures. Based on the MARVI experience and some further work, Excel™ based tools can be developed to estimate groundwater recharge volumes at the end of the monsoon and assess the performance of recharge structures using data from monitoring rainfall and check dams.

Each village can be different from the point of view of groundwater management and therefore groundwater management actions should be based on the diversity of socio-economic attributes. A singular reliance on a uniform, ‘One size fit all’, approach will not help in the effective management of groundwater or achieve high returns from public investments for groundwater projects.

It is also becoming obvious that groundwater management actions need to be trans-disciplinary, trans-departmental, trans-ministry and holistic to achieve long lasting village water security. Also, groundwater management needs to start from the village level and evidence from MARVI indicates effective groundwater cooperation and sustainable water sharing can be attained at the village and aquifer level. Further, urban and peri-urban areas are significant users of groundwater and rain water harvesting and recharge actions can be readily implemented in urban areas to reduce the stress on village groundwater resources.

Specific Actions

Groundwater Literacy and Community Capacity Building

- Create mass awareness on groundwater management through television, radio, newspaper and other means.
- Make significant investments to build the capacity of the community, particularly groundwater literacy that will dispel myths about groundwater availability and flow.

Further, ensure that groundwater literacy is prominent in schools and communities to create local groundwater champions. A user friendly and well-illustrated book, *'Our Groundwater – A Resource Book'* is available in English, Hindi and Gujarati.

- Implement programs to develop community-led village water security plans using village rainfall, groundwater levels, check dam and water quality data monitored by villagers themselves.
- Make groundwater quality and quantity management a part of main stream education.
- Declare 2018 *'The National Year of Groundwater'*.

BJs (Bhujal Jankaars)

- Build the capacity of BJs to provide reliable and validated local water data to develop village water security plans. Resources for BJ training have been developed and fine-tuned to suit local conditions.
- Formally connect BJs with Gram Panchayats and facilitate BJs' involvement in any groundwater and other natural resources management schemes of the government implemented by Gram Panchayats.
- Recognise the collection of reliable watertable, rainfall, check dam water level and water quality data by BJs and make them widely and easily available.
- Facilitate BJs to play a significant role in the implementation of the 'five waters' concept that involves integrated management of rainwater, surface water, groundwater, soil water and wastewater.
- Establish a 'National BJ Institute' that is coordinated by organisations such as Arid Community and Technology (ACT) with virtual BJ Institutes established in other states to assist in 1) the training of BJs and 2) their on-going involvement and capacity building in village groundwater management.
- There is also a need to extend the BJ concept to urban areas (Urban BJs) to help with urban groundwater recharge and management. This is because any water scarcity in urban areas can lead to the importation of groundwater by urban dwellers from nearby peri-urban and rural areas through water tankers and other means and thus reducing the groundwater availability for agriculture.

Integration, Institutional and Policy Actions

- Integrate demand management with current programs such PMKSY (Prime Minister's Agricultural Irrigation Scheme) and MGNREGA schemes at the national level.
- Secure water rights and associated responsibilities and obligations needs urgent clarification. Groundwater is a common pool resource accessed by multiple users and stakeholders at the village and aquifer levels.
- State and Central Government policies need to be designed and evaluated for sustainability of surface water and groundwater resources.
- Develop an inventory of recharge structures and monitor them for their performance and desilting.
- Initiate a crowdsourcing program to measure rainfall in every village of India by farmers (citizen scientists) and collect the data through using the MyWell app that can work with smart phones with internet connection or with an ordinary mobile

phone by sending data through an SMS. The one-off investment required for doing this will be less than Rs 250 per village with little on-going costs.

- Cropping patterns should follow the patterns of groundwater and surface water availability in any given year. Further, farmers need to be given incentives to grow crops that have higher water productivity and therefore policy incentives need to be designed appropriately.
- Stringent measures are required to restrict the discharge of polluted water that can infiltrate aquifers.
- Consider providing tax incentives or economic instruments for activities that support groundwater recharge and management.

*“True democracy cannot be worked by twenty men sitting at the centre. It has to be worked from below by the people of every village. “Mahatma Ghandi **Harijan, 18-1-‘48**”*

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