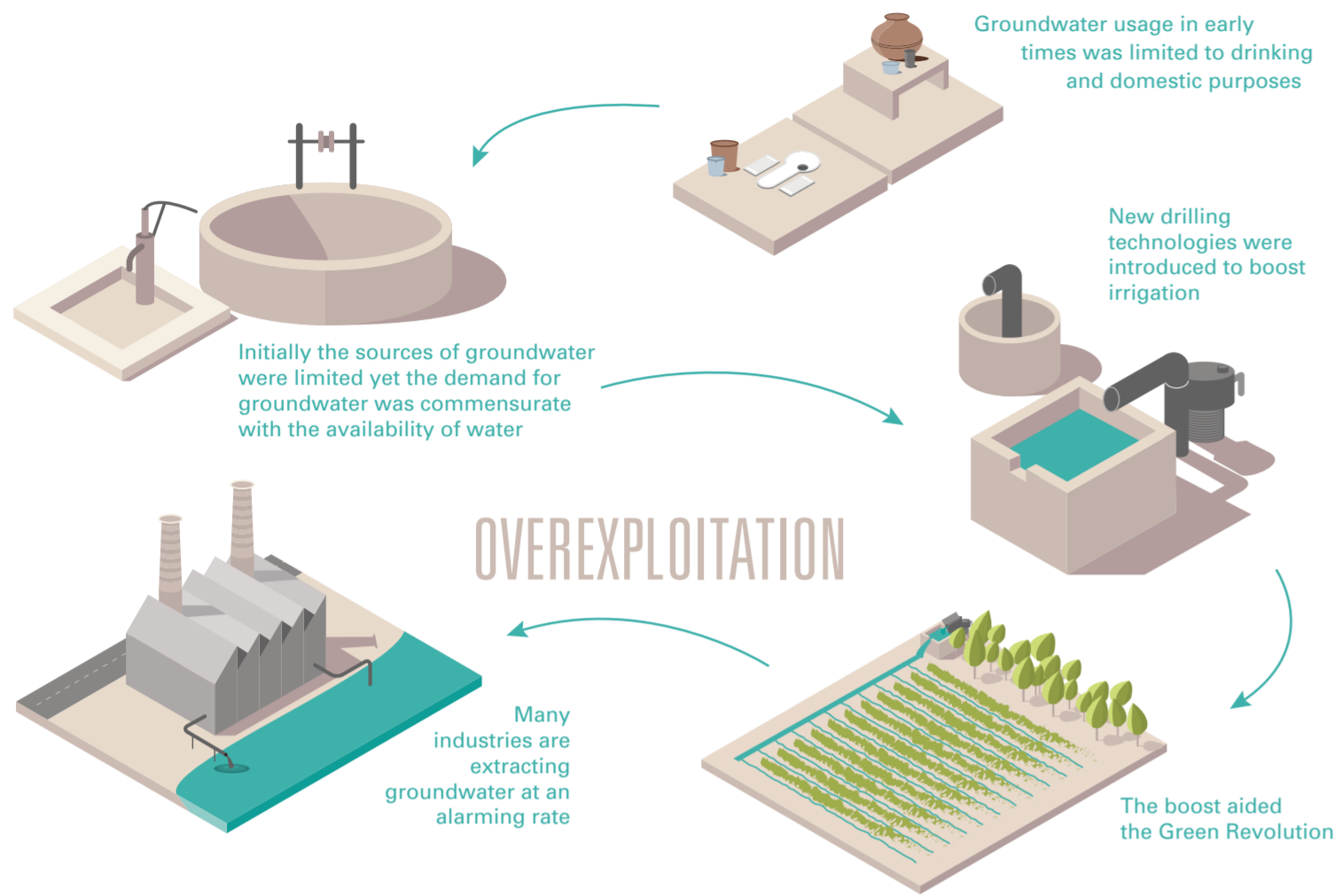


GROUNDWATER

An endangered resource in India

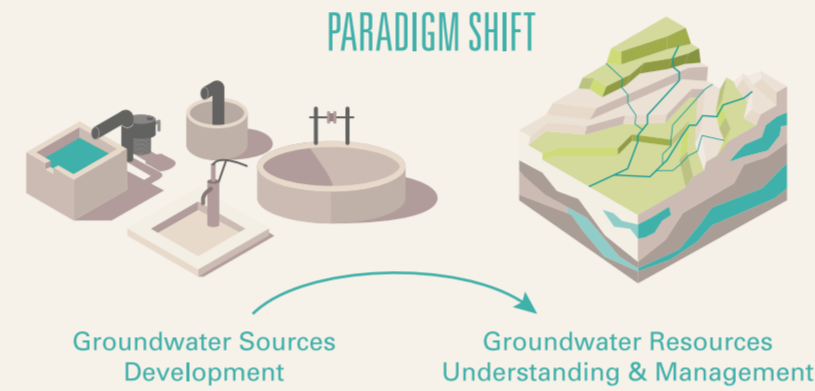


PARTICIPATORY GROUNDWATER MANAGEMENT

Participatory Groundwater Management (PGWM) is a collaborative program between Arghyam and partner NGOs across India to build a sustainable model for groundwater management. Groundwater is a common pool resource (CPR) by definition, but its management seldom reflects CPR principles. PGWM is an aquifer-based and community-centric approach that has emerged as an alternative for managing groundwater as a common pool resource.

The current, conventional knowledge base on groundwater has little space to fill the existing gaps between what is desired in practice and policy and the academic pedagogy of groundwater. This major challenge is addressed in the program by enabling the local communities to take informed decisions about water use, cropping pattern and crop water management through water budgeting.

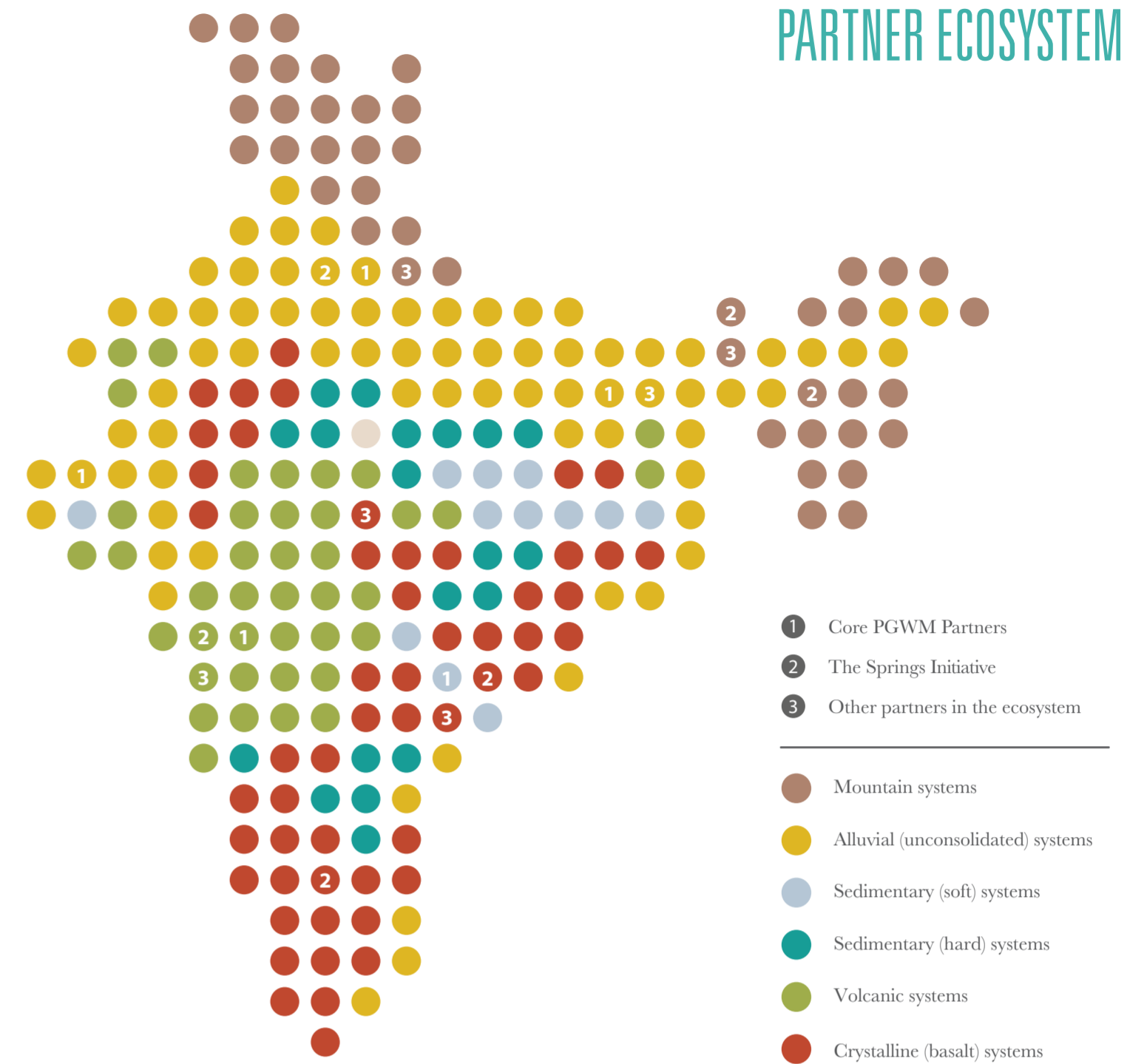
Arghyam launched PGWM in January 2011 with – ACWADAM (Advanced Center for Water Resources Development and Management), ACT (Arid Communities and Technologies), WASSAN (Watershed Support Services and Activities Network) and PSI (People's Science Institute). Megh Pyne Abhiyan (MPA) joined soon after the launch of the program.



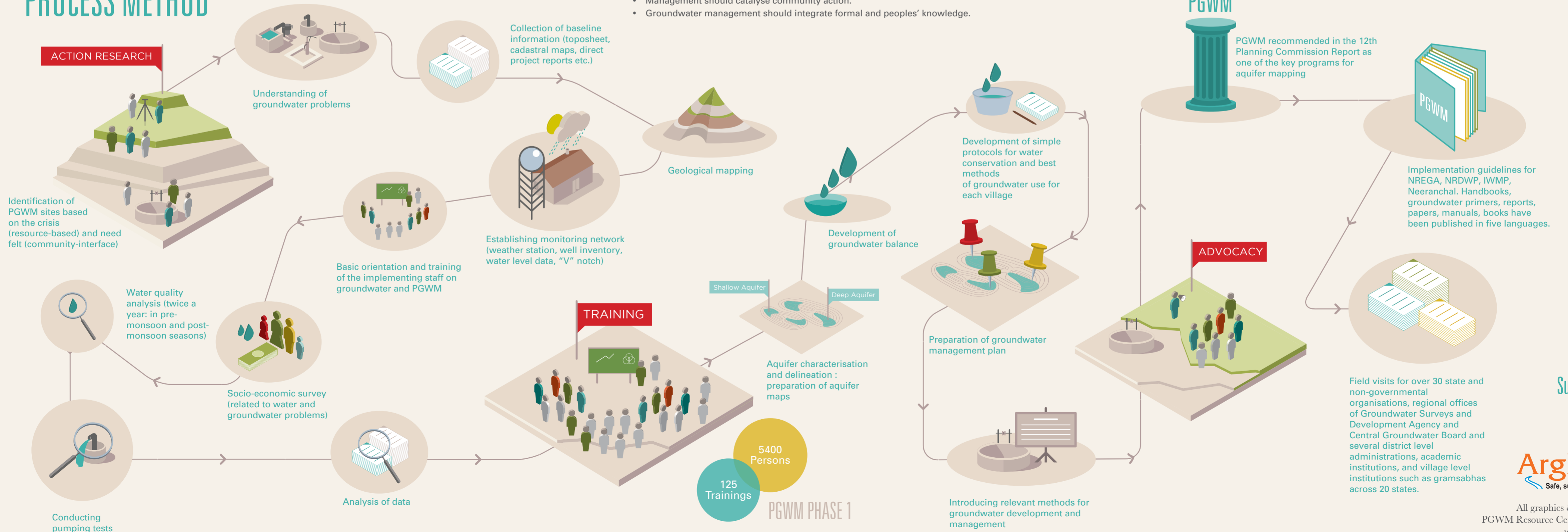
PGWM Principles

- Groundwater is a common pool resource.
- Use an aquifer-based understanding for groundwater management.
- Groundwater management must be understood across different uses.
- The units of groundwater management should be aquifers, watersheds and habitations.
- Groundwater management requires long term engagement.
- Management should catalyse community action.
- Groundwater management should integrate formal and peoples' knowledge.

PARTNER ECOSYSTEM



PROCESS METHOD



Supported by



All graphics & photographs by PGWM Resource Centres or Arghyam www.arghyam.org

Helping a water-stricken village in Maharashtra achieve drinking water security

In the drought prone village of Randullabad in Satara district of Maharashtra, a three year long watershed development project undertaken with PGWM principles brought the village back from the brink of drinking water scarcity crisis to becoming a water-sufficient village. The project involved recharge of regional aquifers, geological mapping, testing of water quality and establishing usage protocols for drinking and irrigation. Drilling of borewells was banned and 90% of wells in the village were used on a sharing basis as farmers took turns to irrigate their lands. Groundwater recharge and discharge areas were demarcated. As a result of these interventions, groundwater levels have improved and local water structures have been revived. The impact of the program is seen in improved kharif productivities, improvement in irrigation and water use efficiency, improved equitability particularly for farmers and improved drinking water security.

Borewell pooling — reducing Telangana farmers' burdens substantially

For farmers in Telangana, borewell drilling was proving to be a very expensive way to extract groundwater. Several farmers were unable to repay the loans they had taken for drilling, leaving them worried and anxious about their future. Under a PGWM project – Karavu Kavacham (the Drought Shield Program), an experiment was conducted with five borewells and five farmers in a single watershed. The outcome of the experiment was introduction of the concept of borewell pooling wherein borewell farmers shared water with non-borewell farmers. A water grid was created by connecting the wells through a long pipeline with several outlets to reduce wastage by seepage and evaporation. Water conservation was an immediate outcome, financial condition of the farmers improved and drinking water was made available throughout the year.

PARTICIPATORY GROUNDWATER MANAGEMENT

A collective effort towards addressing India's water security



A shallow well in Muthalane, Pune District



Borewell pooling – a boon for Telangana farmers
Gamlibai, a farmer from Ranga Reddy district

PGWM Resource Centres



Advanced Center for Watershed Resources Development and Management (ACWADAM)



Arid Communities and Technologies (ACT)



People's Science Institute (PSI)



Watershed Support Services and Activities Network (WASSAN)



Megh Pyne Abhiyan (MPA)

How social regulation in five villages in Himachal Pradesh ensured enhanced water quality

The villages of Luhali, Dhyali, Sattar-bhadon, Thanakasoga and Dandor in Himachal Pradesh faced water shortage and water quality problems such as bacteriological and chemical contamination. A PGWM action plan was conducted to remedy this. A survey was conducted and it was found that despite being located on different sides of the valley, these five villages shared a common aquifer system. This fact was hitherto unknown so awareness activities were extensively conducted which included informing villagers about the contamination and establishing a sanitation protocol for the five villages to follow. A Water Management Committee and Water User Groups (WUG) were formed to put together a set of social regulations that included giving villagers responsibility of protecting, recharging and cleaning their mutual resources. Thanks to the implementation of PGWM, recharge work, source protection and discharge of the springs increased over the course of the intervention. Water quality improved when the level of bacteriological and chemical contamination decreased. Social fencing was one of the major outcomes of this program as recharge sites were protected.



Local talent leading from the front
Veljibhai, a para-hydrogeologist

Action Research across the alluvial flood plain of North Bihar

The communities in North Bihar were using chemically (iron and arsenic) and biologically contaminated hand pumps. Under PGWM guidelines, action research work commenced to help these communities develop an aquifer-based understanding of groundwater and evolve different options of long term engagement with this common pool resource. One of the core aspects was to make a commitment to shift to community owned and managed dug wells (from the contaminated hand pumps), despite the long disassociation between community and dug wells. To add to the longevity and safety of the dug well, these communities innovatively engaged with the issue of design of the structure, hygiene, sanitation and solid and liquid waste management at the individual household level. The acceptance of *phaydemand shauchalay* (ecological sanitation), *phaydemand sokta* (banana circle) and *phaydemand compost* (compost) was encouraging feedback to the entire process of PGWM in the alluvial flood plain of North Bihar.



Protecting springs in Himachal Pradesh

Tapping into the local talent and training them to become para-hydrogeologists

Capacity building is one of the key areas PGWM focuses on. In a span of three years, a cadre of hundreds of para-hydrogeologists has been built. These professionals are chosen from groups of local youth, government staff and local NGO staff who work on the ground. They learn, among other aspects of PGWM, how to make groundwater and aquifer maps. Additionally, extensive training programs spanning over weeks are conducted for management and decision making officials of organisations, networks, governments, technical assistants, watershed assistants of IWMP (the Government's Integrated Watershed Management Program) and more. In Gujarat alone, in three years 1815 people have been trained and made ready to work on groundwater management.



Collective thinking and action - KSS, Saharsa