



## CASE STUDY

# India: Groundwater governance

## Summary

Groundwater depletion is a serious issue in India. The government has approached the issue of declining groundwater levels largely through regulatory means. For the policy to be successful, it is crucial that users understand groundwater occurrence, cycle, and limited availability. Much effort has thus been placed on engaging farmers and communities. This case study demonstrates the importance to work with capacity building and social mobilization rather than physical solutions.

## Background

Groundwater depletion is a phenomenon that has been observed in large parts of India especially in the states of Punjab, Haryana, Gujarat, Rajasthan, Maharashtra, Andhra Pradesh, Karnataka and Tamil Nadu over the last three decade. The main cause for depletion undoubtedly is the overexploitation of the available groundwater resources.

A range of incentives offered under various developmental programmes have been the principle cause for overuse of precious groundwater resources leading to groundwater pumping far more than the rate of recharge.

Meanwhile, the planning commission's expert committee group on groundwater observed that more than 55% of all irrigation water needs in India are met from groundwater, and more than 80% of all rural water supplies are groundwater dependent. Additionally all the cottage and small scale industries are dependent on groundwater.

The increasing demand for groundwater over the years has also been due to the failure of surface irrigation projects to deliver water to farmers in the required time and in the desired quantities. This has forced more farmers and rural water supply agencies to invest huge sums on dependable irrigation source by way of drilling bore wells.

It is estimated that currently there are over 20 million groundwater structures in India. More than 15% of these structures have been abandoned due to lowering of groundwater levels or quality deterioration. Only 15% of the wells are functional for 3-6 months in a year.

Overexploitation of groundwater is thus a matter of great concern that has to be handled to limit the serious problem of failing wells in many states in India.

## Actions taken

The government of India has approached the issue of declining groundwater level largely through regulatory means. Following the recommendation of the water policy the central government drafted a model bill for regulating over exploitation of groundwater and made it available to the States for implementation.

The model bill laid foundation for the states to establish Groundwater Authority. It is very vital to control and regulate groundwater development, implement groundwater recharge structures and take penal action against those not following the regulations.

Andhra Pradesh has adopted a novel approach to the problem of depletion of groundwater. The core concept of the Andhra Pradesh Farmer Managed Groundwater System Project (APFAMGS) is that sustainable management of groundwater is feasible only if users understand its occurrence, cycle, and limited availability.

To achieve this end, the project has engaged farmers in data collection and analysis, building their understanding of the dynamics and status of groundwater in the local aquifers.

The organizational component of the project is the groundwater management committee, a village-level community based institution comprising all groundwater users in a community. Data gathered through hydrological monitoring of rainfall and groundwater levels are used to estimate the crop water budget.

As part of DSGM farmers adopted various strategies for getting the same or greater benefits from pumping less water from the ground. The farmers have demonstrated in several villages that groundwater use can be reduced appreciably through relatively simple practices at the farm level and by adopting new water saving techniques.

## **Outcomes**

The project resulted in a closer alignment of water availability and water use, and reductions in groundwater use have been realized through crop diversification and water saving irrigation methods. Importantly, farmers have not sacrificed profitability to reduce water use.

The impact of the APFAMGS interventions has been brought to the notice of various government agencies in different States. Regular interactions with the Director of Andhra Pradesh State Groundwater Department (APSGWD) have led to APFAMGS conducting a training workshop and exposure visits to the officers of the department. The training has helped the officers in designing their future work plan as well as increasing their ability to work with farmer communities in technical data collection and sustainable groundwater management.

## **Lessons Learned**

This case study emphasis on participatory rather than passive information gathering, use of non-formal means of education, attention to capacity building and social mobilization rather than physical solutions.

However, the improvements do not come from altruistic collective action but from the

individual risk management and profit seeking decisions of thousand of farmers.

This makes the APFAMGS model robust and replicable, as no authoritative leadership is required for enforcement of compacts.

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**Year**

2013

**Country**

India

**Region**

Asia

**Keywords**

Food and Nutrition , Stakeholder Engagement

**Thematic Tagging**

Gender , Water services

Language English

**Supporting Materials**

India: Groundwater governance

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Groundwater Management Plans, Civil Society Organisations

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**Source URL:** <https://iwrmaactionhub.org/case-study/india-groundwater-governance>