



December 2016

Improving ground water management to enhance agriculture and farming livelihoods in Pakistan

Overview

This project is a step toward more effective groundwater use for social, economic and environmental benefits.

Pakistan's population of over 180 million relies heavily on agriculture, which contributes 21% of the country's Gross Domestic Product and over 40% of its employment. Around 95% of the country's water consumption is used for agriculture, and the pressure on available resources is increasing.

Surface water supply is highly variable, particularly for farmers at the tail end of canals in Sindh and Punjab provinces. Dependence on groundwater has rapidly increased with over one million tubewells in use, mostly owned by private farmers. Continuous decline in groundwater levels and spread of salinisation is rendering fertile lands unusable and undermining livelihoods, especially of poor smallholder farming families. Electricity subsidisation, inefficient irrigation practices and lack of regulation exacerbates groundwater over-extraction. Lack of reputable and extensive data and information, lack of awareness about groundwater management, and socio-political and institutional constraints compound the challenge to maintain productive and sustainable groundwater use.

The core of this project is collaboration through partnerships to address the complexity of achieving effective, fair groundwater management. This project aims to build the capacity of researchers, farmers, farming communities and relevant government and non-government agencies to improve groundwater management in ways that enhance farming family livelihoods in Pakistan. Building capacity means building skills, knowledge and confidence, alongside the provision of tools and processes.



Seepage from the main canal had affected nearby farms with raised water table. Pumping water back into the canal has helped replenish productivity. Nawabshah in Sindh province.

ACIAR project number

LWR/ 2015/036

Start date and duration

July 2016 4 years

Location

Pakistan

Budget

\$2,050.000

Project leaders and
 Commissioned
 Organisation

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Research

The objectives are to:

1. Develop and articulate a shared understanding of sustainable groundwater use for agriculture and the need or improved management in Balochistan, Punjab and Sindh provinces.
2. Develop, with collaborating stakeholders in each case study, groundwater management tools and options that have the potential to enhance livelihoods of farming families.
3. Enhance capacity and institutional arrangements for post project adoption of tools and options developed in objective 2 by collaborating with stakeholder organisations.

Institutional arrangements include the rules, norms and strategies that shape the decision-making of individuals and organisations. Collaborating stakeholders include Australian and Pakistani research partners and additional collaborating organisations including farmer organisations and relevant non-government organisations.

The project is designed to provide an enabling environment for communities to participate in the research process and to develop socially acceptable solutions.

The project's three case study locations comprise different agro-ecological settings:

- (1) the Lower Bari Doab in Punjab
- (2) Pishin Lora Basin in Balochistan
- (3) the Nawabshah and Khairpur Districts of Sindh.

Key outcomes by the end of the four year project:

1. Farmers, farming organisations and partner non-government organisations have started introducing improved groundwater management practices
2. Government agencies in Pakistan have started developing/ demonstrating improved groundwater-related planning, monitoring, management strategies, options and policies
3. Relevant provincial-level government agencies, non-government organisations and farming organisations have developed effective partnerships for ongoing discussion on groundwater management issues and solutions

The research is carried out in an informal partnership with two other ACIAR initiatives:

1. Developing approaches to enhance farmer water management skills in Balochistan, Punjab and Sindh, led by Dr Sandra Heaney Mustafa (University of Canberra)
2. Efficient participatory irrigation institutions to support productive and sustainable agriculture in south Asia, led by Prof. Lin Crase (University of South Australia).

Achievements

1. Strong partnerships within the project team have been developed.

For example:

- The research proposal was developed through extensive local input through two workshops with project partners in Pakistan in August 2015 and February 2016.
- The Inception Workshop, held at University of Agriculture Faisalabad, Punjab, from 29 Aug to 3 Sep 2016, achieved its key aims of (1) nurturing and confirming a shared purpose for the project, (2) ensuring each team member understood their roles and responsibilities, and (3) establishing a detailed work schedule for project's first year.

2. Participatory research has been embedded in the project.

For example:

- Training in co-inquiry research methods involving Participatory Rural Appraisals (PRAs) was carried out from 27 Nov to 3 Dec 2016 at Mehran University, Jamshoro, Sindh.

3. Existing knowledge is being collected and assessed.

For example:

- Three Provincial PRA research teams have been established, and are developing co-inquiry research partnerships and activities for early 2017.
- An extensive literature review, focused on the study areas, is underway.
- A field trip was organised by Sindh Irrigation Department (SID) on 2 Dec 2016 in Shaheed Benazirabad district to appraise the team on the current state of groundwater in the district and in particular the activities supported by SID.