Name of the project	Efficient participatory irrigation institutions to support productive and sustainable agriculture in south Asia
ACIAR project number	ADP/2014/045
Start date and duration (years)	1 September 2016 (4 years)
Location	South Asia - India & Pakistan
Budget	$1,309,698
Project leader(s) and Commissioned Organisation	Professor Lin Crase, Head of School of Commerce, University of South Australia
Partner country project leaders and their institutions	Professor Vasant Gandhi, Indian Institute of Management (IIM) Kangkanika Neog, Council on Energy, Environment and Water (CEEW) Dr Bashir Ahmed, Pakistan Agriculture Research Council (PARC) Dr Samina Khalil, University of Karachi (UoK) Professor Bakhshal Khan Lashari, Mehran University of Engineering and Technology (MUET)

	Professor Muhammad Ashfaq, University of Agriculture Faisalabad (UoAF) Dr Junaid Alam Memon, Pakistan Institute of Development Economics (PIDE) Mr Syed Shaiq Hussain Abdi, Punjab Irrigation and Drainage Authority (PIDA) Sindh Irrigation and Drainage Authority (SIDA) to be advised

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Overview (100-200 words)

The project focusses on the devolution of responsibilities in irrigation to farmers. Broadly referred to as Participatory Irrigation Management/Irrigation Management Transfer (PIM/IMT), the project looks at the merits of this approach in different settings in south Asia.

The research uses economics to help local irrigation managers better understand where and when PIM/IMT works and consider if a different approach is needed. The project uses empirical data drawn from 4 jurisdictions – Sindh and Punjab in Pakistan, Assam and Bihar in India - all with some unique characteristics.

A large data set has been assembled using both paper-based and mobile tablet surveys. The data covers: overall institutional performance and its relationship to agro-economic variables; drivers of compliance; gender differences and their impact on participation in water groups and perceptions of performance; data on preferred charging regimes and broader institutional arrangements for managing water at the local level.

These data are unique, having been collected simultaneously across the 4 jurisdictions. The data is being pooled to undertake some preliminary statistical modelling. The results from this modelling will form the basis of a workshop in November. The workshop will also be used to fine tune the response to end users.

Research

Following detailed cases analysis, extensive survey data has been collected from a large number of households in Punjab and Sindh in Pakistan and Assam and Bihar in India. The sampling frame was designed to capture variation. For instance, in each jurisdiction effort was made to sample from households at the head, middle and tail of the irrigation network.

The overarching household survey focussed on institutional performance comprises over 1000 responses. This survey has several items that generate factors that, in turn, relate to institutional components. For example, a series of 5-10 questions capture the extent to which a water user group has clear compliance rules. In addition, the survey has information about agricultural performance and the impact of the water user group. These data will be used to model the most influential drivers of better agricultural and institutional performance.

The compliance survey is linked to the larger survey and specifically measures the various social, moral and economic influences on compliance behaviour. These data will also be modelled, likely using structural equation modelling.

Although not part of the initial project design, a gender survey was administered to measure the benefits and costs of being involved in water groups from a woman's perspective.

Two discrete choice experiments were also undertaken during data collection and these are in addition to the initial project design. These will be used to help parameterise a game theoretic model that suggests that farmers are unlikely to cooperate around payment of irrigation fees. The data will be used to help establish if varying the portion of fees held locally can shift farmers towards a cooperative outcome.

Achievements (max 200 words)

Improving the analytical skills and understanding of policy makers and officials involved in the roll-out of PIM is the overall aim of this project.
This research collaboration engages directly with policy makers and practitioner communities in India and Pakistan to achieve this aim. The team works closely with Sindh Irrigation and Drainage Authority, Punjab Irrigation and Drainage Authority and the irrigation departments in Bihar and Assam.
Each country has a reference group comprised of government officials from relevant organizations and individuals with a track-record of influence within policy circles to ensure that everyone involved in water/agricultural management is at the table and accounted for in the results and policy recommendations.
Project achievements to date include:

- Meetings and workshops held in each country to teach data collection methods, discuss the research and provide preliminary results have assisted with engagement and project progress.
- Training teams how to undertake surveys in their areas has led to higher engagement in the data collection process.
- Supporting team members (especially early career members) to develop and present materials at international forums and to field inquiries from government officials about the analysis.
- Sharing the results and lessons across countries and states/provinces has created a more open dialogue about the possible configurations of PIM and how it might function differently.
- Exposing farmers to the notion of choice within water institutions has stimulated local discussion about the options beyond the status quo.
- Involving women in data collection and insisting on the inclusion of women as survey respondents has provided additional depth to the research. It has also revealed significant differences in the way PIM is conceptualised by different groups.
- Providing high-ranking government officials from India and Pakistan with first-hand exposure to different water/agricultural management practices in Thailand and Australia. The former is based on a partnership model and the latter a service provider/customer model. These have been used to contrast the historical beneficiary/benefactor relationship between farmers and irrigation departments in India and Pakistan.

Impact story (if applicable and <200 words)

Moving from intuition to evidence

There is an intuitive appeal to handing farmers more responsibility for managing irrigation. Most would see greater involvement of farmers in decision about water timing, allocation and delivery as a good thing. But what is clear from the data is that not all farmer-managed irrigation works well.

By theoretically unpacking the motivations for farmers to cooperate around irrigation maintenance, it was possible to show that non-cooperation is quite likely for most settings. It was also possible to show how cooperation could be increased by changing the portion of irrigation fees that is held locally.

The project now has data that can be used to identify the thresholds at which uncooperative behaviour can be changed to cooperation. This will help irrigation officials critically appraise future roll-out of participatory irrigation.