

**KCP Proposal Round II:
Governing Water for Agriculture: What Institutions for Which Contexts?**

TTL: Florence Kondylis (DECOS)

Manager: Arianna Legovini (DECOS)

What is the Development Objective (or main objective) of this Grant?

This proposal seeks co-funding to support rigorous empirical research to document which low-level institutional arrangements are best suited to improve water resource management, and therefore expected yield, in rural areas of Sub-Saharan Africa and India. The outputs produced under this proposal will support countries in making informed decisions in real time to achieve higher results.

Irrigation interventions hold tremendous potential to help farmers cope with increasing climate variability and to ensure food security in many poorer regions of the world. Yet, failure to properly manage irrigation schemes often lead to failures of investments in this sector; empirical research in the field of water management is key in responding to these operational challenges. This proposal seeks funding to take principal agent theories to the field and support rigorous economic research on this topic in a variety of regions and contexts.

The projects include, but are not limited to:

- Small-scale irrigation and micro-dam management in Mozambique, Zambia
- Large scale irrigation in Ethiopia and Uttar Pradesh (India)
- Integrated multi-basin water management in Orissa and Tamil Nadu (India, irrigation and fisheries)

Capacity building at the client level will be emphasized throughout the implementation as researchers will work hand-in-hand with implementing agencies to build a culture of result-based management, thus directly promoting development effectiveness on the ground.

Table 1. List of Participating Projects

Project ID	Country	Region	Project Name
P092353	Ethiopia	AFR	Ethiopia Irrigation and Drainage: Domestic Use of Irrigation Water
P092353	Mozambique	AFR	PROIRRI: Sustainable Irrigation Development
P102459	Zambia	AFR	Irrigation Development and Support Project
P100735	India	SAR	Orissa Community Tank Management Project
P090768	India	SAR	TN Irrigated Agriculture Modernization and Water Bodies Restoration and Management Project
P050647	India	SAR	Uttar Pradesh Water Sector Restructuring Project

Summary description of Grant financed activities (text may be used in the Grant Agreement)

This proposal seeks co-funding to support a global research program on the theme of water and institutions for agricultural growth. In practice, the research team will work with World Bank project teams on the client side to establish a policy-relevant research agenda and bring rigorous evidence on what institutions are most adequate for managing water in a range of contexts. The co-funded activities include:

1. Develop teams
 - Counterpart, project and research working together throughout design and implementation
 - Set up a technical advisory group to bring the best analytical resources to all countries and projects within the initiative
2. Facilitate design & implementation of evaluations
 - Moderate process of critical thinking about government program
 - Identify policy questions, evaluation design, timeline and budget, and prepare concept notes and funding proposals
 - In-country stakeholders consultations, registration of trials and clearance with national authorities
 - Place field coordinator for day-to-day implementation support
 - Implementation modalities, guidance for data collection, management and analysis
3. Provide Technical advisory services on the following tasks:
 - Develop and harmonize methods, instruments and best practice approaches;
 - Clearing function for design and data collection protocols;
 - Ongoing monitoring & Intervention in case of quality failures;
 - Summarize lessons learned in materials that are accessible and relevant
4. Annual cross-country workshops which develop:
 - Client capacity development and training;
 - South-to-South sharing of experience and evidence;
 - Knowledge sharing of international experience.

Main risks related to the grant financed activities

Activity Risk Rating: Negligible or Low Risk

There are 2 main categories of risks associated with the grant financed activities. First, the government might decide not to implement the proposed impact evaluation. The risk of this event is minimized by involving the government from the very beginning of this process, including providing a one-week training on impact evaluation, and securing their agreement at every stage and by maintaining frequent interactions and communications between different members of the team. Second, the conditions in the field could change and prevent the impact evaluation team from carrying out its essential activities, such as data collection and field coordination.

What can/has been done to find an alternative source of funding? (optional)

The largest proportion of the costs for this impact evaluation, those relating to data collection, will be financed out of project funds (on average \$ 0.7 million per project). This proposal seeks co-funding for financing technical assistance to support the design and implementation of a country-driven model of impact evaluation for the proposed portfolio of irrigation projects. The funding requested represents about 6% of the total data costs and will be essential in delivering high quality analytical outputs and help each proposed project achieve higher results. The impact evaluation team also received co-funding from a number of additional sources to finance the technical assistance provided to government and project teams (SIEF, TFESSD, BPRP/LPRP, GAP) which the KCP allocation would supplement to make the proposed activity viable.

What is the general issue that the project addresses and what is its innovative value? Why is it of interest to the Bank?

Water is a central constraint on developing economies' agricultural production and the failure of institutions and users to manage water¹ resources effectively imposes large constraints on farmers' welfare and countries' food security. This failure to properly manage common pool resources (CPRs), such as water, is often referred to as "tragedy of the commons", whereby users cannot, in the absence of collective action and adequate institutions, escape from suboptimal resource allocation and management.

However, there is little evidence as to what institutions can solve this tragedy, and in what context. As climate variations intensify and promoting irrigated agriculture becomes the main policy option available, it is critical for development economists to address the issue of water management. This proposal seeks funding to take principal agent theories to the field and support rigorous economic research on this topic in a variety of regions and contexts.

There is not one tragedy of the commons. As Elinor Ostrom emphasizes², commons problems cannot be solved by a single policy prescription: institutional arrangements

¹ By water management, we refer to both to quantity and quality of the operation and maintenance required to ensure that an irrigation system functions.

² *Governing the Commons*, Cambridge University Press (1990).

operate in vastly different manners across settings. In addition, water management practitioners are hard pressed to find examples of successful and sustainable institutional arrangements. Researchers must therefore resort to new interventions to document, using rigorous impact evaluation tools, what arrangements work best in different contexts.

This proposal seeks funding to support rigorous research in a field that has is not only innovative but which also corresponds to one of the Bank's priority area: adaptations to climate change. In FY08-FY10, the Bank will be lending USD 200 million to five ongoing irrigation operations in Sub-Saharan Africa, while an additional USD 125 million spread across eight operations are in the pipeline.³ In FY11-FY12, another USD 300 million will be allocated to a total of nine irrigation projects. In India, the Bank average yearly jumped from 40 million a year in 1999/04, to 348 million in 2005/08. Yet, understanding how to best manage these large investments at the community and individual level is a key challenge for the development community. By producing rigorous research to document and solve key agency problems at the micro level, this proposal will contribute to securing high returns and steady agricultural yields in the face of climate variability.

Describe its development impact. Who will benefit and to what extent?

While client countries and donors are committed to investing large amounts in irrigation infrastructure, challenges remain ahead for the successful implementation of irrigation interventions. In particular, agency problems pertaining to users' repayment of irrigation fees (in cash or kind) towards the Operation and Maintenance (O&M) of their scheme, and therefore the sustainability of the returns to investment, remain unsolved.

The proposed research agenda will help governments from various regions and countries secure higher returns to their irrigation infrastructure investments. By testing different institutional arrangement side-by-side in the context of a specific investment, this research proposal will produce rigorous evidence to answer what arrangements work best. This will help project managers both on the Bank and on the Government side to adaptively manage for results by making informed scale-up decision during the life of the project. This will help the Bank and the client Governments secure higher returns and sustainability to investment.

What is the potential for replicability (including cross-country replicability)?

Few studies have, to this day, formally documented the effectiveness of various institutional arrangements on irrigation management at the community, sub-basin or tertiary irrigation block, level. The proposed research agenda will focus on a number of irrigation investments to test which institutional arrangement yield what results across a variety of social and economic situations. The use of rigorous evaluation methods will ensure internal validity for each study produced under the proposed research agenda.

³ Source: Africa Region Irrigation Business Plan, October 2007.

In addition to documenting the effectiveness of various water management institutions in a given context, the proposed research activity will work programmatically across a number of countries and contexts. This programmatic learning effort on a key topic will make local knowledge globally meaningful and, thus, come close to external validity. This will be done through three main channels. First, the survey instruments (questionnaires and protocols) will be shared by all studies under this research proposal, allowing for adaptation of the questionnaires to the local context. This will ensure comparability of the main results across countries. Second, rigorous baseline surveys will be implemented to document the existing resource-sharing arrangements within each project area. This thorough documentation of the initial conditions will allow for the results to be, to some extent, extrapolated to other similar contexts. Third, that all studies within this program are implemented by policymakers who form a community of practice will ensure that: (1) all studies share a coherent and strategic research agenda, and (2) the results are both policy-relevant and disseminated to an audience of practitioners. This will help other countries and practitioners gain access to these results and translate into further policy actions than those achieved within the initial portfolio.

Hence, although generalizing local knowledge necessarily poses analytical challenges, working programmatically helps individual studies achieve general policy relevance.

Give indications of country participation and ownership

This activity is part of the Bank's global program for impact evaluations in agriculture and local development, AADAPT (Agricultural Adaptations). AADAPT promotes a country-driven approach to evidence-based policy-making by technically supporting the implementation of joint Bank-client rigorous impact evaluations. Regional cross-country workshops were conducted (Africa: Addis Ababa, April 2009; India: Goa, December 2009) during which project teams on the client side, representatives from the Ministries of Agriculture and Water Resources as well as Bank operations TTLs received training on impact evaluation methodologies and evidence-based policymaking. With technical guidance from a technical advisory group, each project elaborated pertinent research questions for the impact evaluation of their projects. Each team also plays an active role in the impact evaluation activities and analysis.

In addition, the projects who will participate in the proposed research activity belong to a larger community of practice and benefit from AADAPT's programmatic activities, including technical advisory services and cross-country learning and dissemination events.

Summarize consultations within and outside the Bank (including with the recipient country) in the preparation of this proposal

FY 2008: The research team reaches an agreement with the Ethiopia Irrigation and Drainage Project (EIDP) TTL and client team to jointly carry out an impact evaluation of the project

December 2008: First technical visit to Ethiopia, the research team joins the operation team on a supervision mission and field visits are organized; the Concept Note for the evaluation is produced jointly with the client

January 2009:

- AADAPT is created in the Africa region;
- The research team agrees with the Mozambique Sustainable Irrigation Project (PROIRRI) TTL and client team (Ministry of Agriculture) to jointly carry out an impact evaluation of the project

March 2009: First technical mission to Mozambique, the research team joins the operation team on a preparation mission and field visits are organized; a preliminary draft of the CN is prepared jointly with the client

April 2009: The EIDP and PROIRRI teams participate in the first AADAPT Cross-Country Workshop, along with 20 other project teams in Agriculture and Local Development. Teams receive hands-on training in evaluation methods and improve their CN, which they present to the audience of researchers and policymakers

May-June 2009: Second follow-up mission to Mozambique under the PROIRRI and to Zambia under the Irrigation support project; teams finalize the CNs and the design of the project implementation, applies and receive co-funding from the BPRP TF

July 2009: The EIDP team receives co-funding from the SIEF to support the technical assistance of the evaluation

August-September 2009:

- Second follow up mission to Ethiopia under the EIDP; Call for Eols and TORs for the baseline survey are issued; a field coordinator is placed in Addis Ababa to provide daily technical assistance to the team
- AADAPT is extended to the South Asian Region and agreements are reached with SASDA and the clients that 13 projects will participate in the initiative, including the Tamil Nadu IAMWARM project, the Orissa Tanks project and the Uttar Pradesh Water Sector Restructuring Project

December 2009: AADAPT's first South Asian workshop takes place in Goa. Along with eleven other project teams, the TN IAMWARM, the Orissa Tanks and the UP Irrigation Support projects receive hands-on training on impact evaluation methods and prepare, with technical assistance from the AADAPT research team, a CN for the impact evaluation of their interventions. Each team presents their concept to the audience of researchers and policymakers

Jan 2010: Field coordinator is placed in Mozambique to provide day-to-day technical support to the PROIRRI team

Feb-Apr 2010: Follow up visits are scheduled to each India project team within the next 6 months; CNs are further discussed within the Bank and with the client teams and used for fund-raising purpose

April-July 2010:

- Participation of the research team in the Social Impact workshop at Columbia University to obtain feedback on proposed design and the social capital, collective action and coping survey modules
- The EIDP baseline is contracted and implemented
- Follow up visit to Mozambique PROIRRI, issue of call for EoIs and TORs are issued for the baseline survey
- First follow-up visits are organized for each of the India projects

What is/ are the questions the research/data project/analysis seeks to answer?

The proposed research will rely on principal agent theory to design context-specific, *a priori* "feasible" institutional arrangements and compare their relative performance. The main research questions correspond to the most salient commons problems when agents share a same CPR over an uncertain time-horizon and, therefore, have unequal discount rates. (The research questions below will be addressed by the overall portfolio of studies under this proposal; not all of them will be studied in any one study.)

1. Social inclusiveness of the Water User Associations

Main Research Question: What degree of social inclusiveness within a water user association (WUA) committee best promotes equality of water sharing across the command area and to enforce viable conflict resolution mechanisms? The gender of the WUA committee members will be an area of particular attention.

- *Relying on the existing institutional choice within the community:*
Does mimicking the existing collective action mechanisms

improve the performance of the WUA? How does this affect the social inclusiveness of the WUAs?

- *Instituting new institutional choice within the community*: Are formal electoral institutions over the formation of WUAs necessary and/or sufficient to provide voice and representation to marginalized groups?
- *Isolating potential tradeoffs between high management performance and high social inclusiveness of the WUAs*: In which contexts are they most salient? Do improvements in administration and process result in a more equitable distribution of shared water resources, and improvements in agricultural productivity?

2. Performance Monitoring & Fee Collection

Main Research Question: As water management amounts to a repeated game with uncertainty over future agents' decisions and time-horizons, what patterns of monitoring and accountability can emulate sufficient levels of collective action towards a cooperative, more efficient equilibrium?

- *What level of monitoring is optimal, and in which context?*
- *Optimal level of monitoring as a function of the initial levels of collective action*: Do lower levels of monitoring (associated to lower costs) produce similar management performance as higher monitoring in communities that have high initial levels of collective action?
- *Precommitment strategies for irrigation fee repayment*: Can precommitment strategies increase farmers' propensity to pay the irrigation fee? What timing is most successful in eliciting higher payment rates?

3. Incentives to improve water management

Main Research Question: In a setting where agents heavily discount the future pay-offs of their present decisions, what performance-based incentives can help achieve more optimal and sustainable resource use?

- *What performance-based incentives*: What performance indicators are most appropriate to measure the efficacy of WUAs management? Are social, financial or mixed incentives more cost-effective in eliciting higher performance of the WUA committees?
- *Side payments to induce compliance*: In situations where allocation of water is *de facto* inequitable across two identifiable types of users (e.g. appropriators upstream of a sub-basin vs.

those downstream), could users bargain over a side compensation to produce an overall more optimal resource allocation? (Cf. Coase Theorem)

Describe the broad analytical approach and specific methods to be used

For each study within the proposed research agenda, the research study is built into the project design to bring answers, in real-time, to the government and the Bank's most pressing operational questions. Two years after implementation of the tank management interventions, the project team will find out which intervention and incentive mechanisms delivered higher results and affect scale up accordingly.

In practice, each team will rely on rigorous counterfactual analysis to compare, side-by-side, the relative efficacy of 2 types of institutional arrangements on the inclusiveness and the performance of the water associations. In each project, the half of the water user associations will be randomly selected to participate in one type of institutional arrangement, while the other half will be assigned to another type, hence producing 2 treatment arms within the project area. By collecting high quality data on both treatment arms, the team will be able to isolate the causal, relative effect of one arrangement over the other, and to inform scale up accordingly.

The methodology will rely on high-quality primary and secondary tank-level and farm-level data to assess the impact of the project and inform project design in real time. Primary baseline data will be collected both at the envisaged water user association level (e.g. tank-level, tertiary block level, sub-basin level or scheme level depending on the scale of the irrigation infrastructure) and at the household level to provide an adequate counterfactual to measure the impact of each treatment arm. Each team will carry out two to three rounds of survey, tracking households and water user associations across rounds in order to build a panel dataset. Observing the same individuals and communities over time will help account for unobserved heterogeneity issues and the statistical inconsistency it causes in estimating the impact of an arrangement relative to another.

Collecting baseline information will be particularly useful to ensuring the policy relevance of the institutional arrangements tested. Indeed, the team will rely on baseline data collected for each project to document the existing institutional arrangements over CPR management (e.g. grazing land, boreholes or protected wells) and informal networks (e.g. funeral societies, labor groups, cooperatives) to isolate the existing collective action mechanisms in place within each area. Specifically, this will formally document which amounts of monitoring, incentives and commitment can be envisaged for each implemented arrangement in order to reflect the on-the-ground reality. Therefore, baseline results will help refine and address the above research questions, and design plausible institutional arrangements for the management for each context. This methodology is particularly adequate in the case of irrigation projects.

Indeed, the construction of the schemes extends over long periods of time, thus offering an opportunity for the baseline data analysis to feed back into the design of the interventions. The following details which interventions will be tested employing which methodology to address each one of the research questions posed above.

1. Social inclusiveness of the Water User Associations

- *Relying on the existing institutional choice within the community*
 - *Methodology:* By surveying the existing social capital and informal CPR management practices at baseline, the research team will identify the existing collection action mechanisms within the community. Where feasible and relevant, one group of WUAs will be randomly assigned to an arrangement that at least partially mimics the existing ones.
- *Instituting new institutional choice within the community*
 - *Methodology:* Where feasible and relevant, a random subset of WUAs will be assigned to a formal election process, allowing for a rigorous comparison with a non-electoral process.
- *Isolating potential tradeoffs between high management performance and high social inclusiveness of the WUAs*
 - *Methodology:* Various institutional arrangements will, in some contexts, produce different levels of inclusiveness within the WUA committee. Where this is the case, we will exploit the random assignment to the institutional arrangement to measure the causal effect of social inclusiveness on a range of performance indicators pertaining to equitability of the resource sharing.

2. Performance Monitoring & Fee Collection

- *What level of monitoring is optimal, and in which context?*
 - *Methodology:* Where feasible and relevant, randomly assign a subset of the WUAs within the project area to two different levels of monitoring (one high, one low) to rigorously compare their relative cost-effectiveness.
- *Optimal level of monitoring as a function of the initial levels of collective action*
 - *Methodology:* In project areas with high initial disparities in level of collective action, the random assignment to the 2 treatment arms (one with higher monitoring, one with lower

monitoring, see bullet point just above) will be stratified by level of collective action. This will allow us to exploit the random assignment to measure the heterogeneous effect of each treatment on each type of communities.

- *Precommitment strategies for irrigation fee repayment*
 - *Methodology:* Randomly assign one or multiple early irrigation fee payment scheme(s) (e.g. at the onset of the season, or at the end of the previous harvest) to subsets of WUAs within a project area.

3. Incentives to improve water management

- *What performance-based incentives*
 - *Methodology:* Exploit random assignment to various treatments (various performance targets and rewards) to compare their relative effectiveness.
- *Side payments to induce compliance*
 - *Methodology:* Randomly assign a side payment facilitation intervention (in the form of focus groups where the facilitators would assign responsibilities to the various types of users and aid a bargaining process) to one subset of WUAs to test the relative effectiveness of side payments over performance-based incentive schemes.

Summary of work program, in its entirety, specifying the activity (ies) for which KCP funding is sought

Under the proposal research agenda, two main types of activities can be defined:

1. Programmatic Activities:

- Set up and Coordinate Teams that merge operations, research and training;
- Annual workshops which develop:
 - o Client capacity development and training;
 - o South-to-South sharing of experience and evidence;
 - o Knowledge sharing of international experience.
- Technical advisory services on the following tasks:
 - o Develop and harmonize methods, instruments and best practice approaches;

- Clearing function for design and data collection protocols;
- Ongoing monitoring & Intervention in case of quality failures;
- Summarize lessons learned in materials that are accessible and relevant

2. Country-specific joint Bank-client impact evaluations through the following activities:

- Develop team
 - Counterpart, project and research working together throughout design and implementation
- Facilitate design & implementation of evaluations
 - Moderate process of critical thinking about government program
 - Identify policy questions, evaluation design, timeline and budget, and prepare concept notes and funding proposals
 - In-country stakeholders consultations, registration of trials and clearance with national authorities
 - Place field coordinator for day-to-day implementation support
 - Technical advisory services for data collection, management and analysis
- Dissemination of results through BBLs, seminars, conferences, to a varied audience (researchers, practitioners, donors and civil society)

This proposal seeks support from the KCP to co-finance:

- Set up and coordinate team that merge operation, research and training
- Facilitate design & implementation of evaluations
- Technical advisory services

Describe the specific deliverables or expected outputs from the project.

This proposal will co-fund analytical work activities, delivering the following outputs and deliverables:

- Each project team is trained to implement a result-based project management method and implements an impact evaluation (FY10/11);
- A follow-up mission is organized and an Impact Evaluation Concept Note (CN) is produced by each project team; each CN undergoes a formal review chaired by the relevant Country Director and, subsequently, an IE TA code is created for the corresponding IE (FY11);

- Baseline/Midline/Endline impact evaluation reports, outlining the changes in the intervention design made as a result of using an impact evaluation-based method of adaptive management (FY11/14);
- A research paper is produced and disseminated through conference presentations and publication in peer-reviewed journals; the IE is entered in a centralized, publicly available database (FY12/14).

Highlight capacity building aspects

The proposed research program is part of the Bank's global program for impact evaluations in agriculture and local development, AADAPT (Agricultural Adaptations). AADAPT introduces an innovative approach to strengthen the engagement of governments and development partners in the agricultural sector. This approach uses three main instruments: an innovative method of adaptive management of government programs using projects as learning vehicles; joint client-Bank evaluations to test short-term operational alternatives; and cross-sectoral analyses of the impact of agricultural interventions on development indicators.

The availability of rigorous evidence on which agricultural interventions work and in what conditions is limited. AADAPT makes a novel and important contribution to filling this gap on the efficacy and cost-effectiveness of various agricultural interventions. AADAPT is the first initiative to provide the coordinating mechanisms and organizational framework for project teams to conduct impact evaluations in collaboration with internationally renowned academic partners and local experts. This will enable governments and donors in the ARD sector to learn systematically about the performance of innovative rural development interventions — a direct contribution to the Bank's learning agenda in Agriculture.

AADAPT uniquely promotes institutional development at the country level by changing the way policy decisions are being made. Through the use of rigorous impact evaluation as an operational tool, lessons are learnt in real time and clients manage for results throughout the life of their projects. AADAPT will provide all support needed to turn this process into a joint client-Bank, learning-by-doing experience. The objective is to develop client capacity to implement a style of decision-making that tests alternative implementation options rigorously and scales up what works.

Impact evaluation teams combine operational and research knowledge. Teams from the government side have joined the initiative on a voluntary basis: AADAPT issued letters of invitation to the 2009 Addis Ababa and the 2010 Goa workshop to ministers of Agriculture and Water Resources. Ministers selected team members who would most benefit from the training and could take part in the impact evaluation of an operation implementation by their ministry. This selection ensures that impact evaluations are country-driven, and that the acquired knowledge helps those line Ministries implement evidence-based policymaking beyond the scope of one impact evaluation.

Outline dissemination plans and target audience

The design of the each proposed research study was disseminated to an audience of researchers, policy-makers and Bank TTLs during the AADAPT Addis Ababa (April 2009) and Goa (December 2010) workshops. During these workshops, the teams received important feedback from other country project teams as well as a large group of experts from various fields.

Each proposed study will produce at least two reports: baseline and mid-line. These reports and any other related analysis will be shared continuously with the project teams, the line ministries, and the World Bank team. Research papers will be disseminated during in-country seminars and at the World Bank, will be made available on the DIME website, and will be submitted for publication in peer-reviewed journals. Team members will also participate in a follow-up multi-country workshop for impact evaluations in agriculture in FY11/12 and share their experiences and results. The impact evaluation team will also draw on its extensive global network to share these results with a wider policy and academic audience.

If the grant is recipient-executed.

The grant is not recipient-executed.

Describe implementation arrangements, with specific attention to partnership, ie, the respective responsibility of other Bank units, other donors, local agencies, institutions, consultants.

This research program will be designed and implemented as a collaborative effort of the World Bank, the Ministry of Agriculture in Mozambique, the Ministry of Water Resources in Ethiopia, the Ministry of Agriculture and Cooperatives in Zambia, the Irrigation Departments of the Governments Tamil Nadu, Orissa, and Uttar Pradesh. The World Bank team involves AFTAR, AFTWR AFTPM, DECOS, DECRG and SASDA. Along with researchers from the University of California at Berkeley, Yale University and Emory University, the World Bank will provide technical assistance and capacity development to all project teams and government counterparts. For each project, the implementing agency is the lead of the proposed study.

Provide an implementation schedule by task/component (including beginning and end dates, as well as major milestones).

An extended-term consultant will be hired in the beginning of FY11 to help the implementation of the proposed studies and provide overall coordination to the program.

Regional AADAPT impact evaluation capacity-building workshops will be held on an annual basis (FY10, FY11).

For each individual impact evaluation, the main expected outputs for FY10 onwards are:

- Baseline survey data (FY10/11);

- Baseline impact evaluation report (FY10/11);
- Midline survey data (FY11/13);
- Midline Impact evaluation report (FY11/13);
- Endline survey data (FY13/15);
- Endline impact evaluation report (FY13/15);

Identify the team members under the project (bank staff, consultants, and local participants), including their organizational units, affiliations, responsibilities and disciplines (economists, demographer, etc).

Research Team

Arianna Legovini, Lead Impact Evaluation Specialist, Head of DIME, DECOS

Clair Null, Health Specialist, Emory University

Florence Kondylis, Economist, DECOS

Isabel Beltran, Economist, DECOS

Jeremy Magruder, Agricultural Economist, UC Berkeley

Markus Goldstein, Senior Economist, AFTPM & DECRG

Michael O'Sullivan, Economist, AFTPM

Mushfiq Mobarak, Economist, Yale University

Kinnon Scott, Senior Economist and Survey Specialist, DECRG

Bank TTLs

Francois Onimus, AFTWR

Indira Janaki Ekanayake, AFTAR

Patrick Verissimo, AFTAR

Rabih Karaky, SASDA

Winston Yu, SASDA

Government and Project Team Members

Sanat Mishra, Government of Orissa

Bhubaneswar Mishra, Govt of Orissa

V.K. Ravichandran, Tamil Nadu Agriculture University

Anurag Srivastava, Government of Uttar Pradesh, Irrigation Department

Paulino Balate, Ministry of Agriculture, Mozambique

Nelson Melo, Ministry of Agriculture, Mozambique

Hermina Pedro, Ministry of Agriculture, Mozambique

Agnelio Pita, Ministry of Agriculture, Mozambique

Ato Berhanu, Ministry of Water Resources, Ethiopia

Ato Hayalsew, Ministry of Water Resources, Ethiopia

Barnabas Mulenga, Ministry of Agriculture and Cooperatives, Zambia