INTEGRATED SAFEGUARDS DATA SHEET
APPRAISAL STAGE

Report No.: ISDSA1592

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I. BASIC INFORMATION

1. Basic Project Data

Country:	India	**Project ID:**	P122770
Project Name:	Uttar Pradesh Water Sector Restructuring Project Phase 2 (P122770)		
Task Team Leader:	Winston Yu		
Estimated Appraisal Date:	18-Feb-2013	**Estimated Board Date:**	28-May-2013
Managing Unit:	SASDA	**Lending Instrument:**	Specific Investment Loan
Sector:	Irrigation and drainage (35%), General water, sanitation and flood protection sector (25%), Crops (25%), Agricultural extension and research (15%)		
Theme:	Other rural development (25%), Water resource management (25%), Rural services and infrastructure (25%), Administrative and civil se rvice reform (25%)		

Financing (In USD Million)

Financing Source	Amount
BORROWER/RECIPIENT	154.44
International Development Association (IDA)	360.36
Total	514.80

Environmental Category:	A - Full Assessment
Is this a Repeater project?	No

2. Project Objectives

(a) Strengthen the institutional and policy framework for integrated water resources management for the entire State; and
(b) Increase agricultural productivity and water productivity by supporting farmers in targeted irrigation areas.

3. Project Description

The total project cost is $514.8M (including physical and financial contingencies). The project will consist of the following components:

Component A: Strengthening of State-Level Water Institutions and Inter-Sector Coordination ($18M)

This component aims to provide support to the institutions in the state responsible for overall integrated water resources management and implementation of the State Water Policy. This directly contributes to the PDO of strengthening the institutional and policy framework for water management in the state. This would include strengthening the (a) independent Uttar Pradesh Water Management and Regulatory Commission (UPWAMREC), which was created under an Act (2008) passed by the legislative assembly, (b) the technical secretariat of the UPWAMREC, the State Water Resources Agency (SWARA) and Data Analysis Center, and (c) the primary training institute for Irrigation Department engineers, the Water and Land Management Institute (WALMI).

(a) Component A1: Operationalizing the State Water Regulatory Commission. ($3M) The Uttar Pradesh Water Management and Regulatory Commission (UPWAMREC) has been created under an Act (2008) passed by the legislative assembly. Functions of this 'Regulator' include, inter alia, approving the Integrated State Water Basin Plans, determining the allocation and distribution of entitlements for various uses of water (e.g. urban, agriculture, energy) as defined by the State Water Policy, reviewing and providing clearances to new water resources project, establishing a system of enforcement, monitoring, and measurement of entitlements, promoting better water management techniques and setting water supply standards, fixing and regulating a water tariff system, and to aid and advise the State Government on any matter referred to the Commission. This sub-component will build the capacity of the UPWAMREC to implement the power, functions, and duties of the Commission. This will include primarily training, a panel of experts, staffing, and various workshops and study tours. To the extent possible, given the political nature of this entity, specific activities will be piloted (e.g. review of new project proposals) to demonstrate the independent, impartial role that the Commission may play.

(b) Component A2: Strengthening the Knowledge Base and Analytical Capacity for Integrated Water Resources Management ($13M). The State Water Resources Agency (SWARA) and the Data and Analysis Center (DAC) have been created and are functional. These two entities should eventually be merged into one body. These two agencies currently support the UPWAMREC. The function of SWARA is to develop and provide State-level inter-sectoral analysis on water allocation, planning, and management for the optimal use of surface and groundwater uses. The function of DAC is to collect, verify validate, analyze, and store data related to water resources management for each river sub-basin in the State. This component will improve the knowledge base and analytical capacity of these two institutions. This will include, amongst other things (1) a proposal to develop an integrated water information system (IWIS) for the entire state (much like what is done under the Hydrology 2 Project), (2) the preparation of basin plans for critical basins in the State including the development of decision support systems and hydrologic modeling tools, (3) the commissioning of a study to examine inter-sector water allocation issues, (4) an assessment of the impact of climate change on the overall water resources in the state, and (5) the development of a Flood Management Information System (FMIS) for the entire State, including flood forecasting tools for identified critical basins (e.g. Rapti Basin). The flood management activities will be coordinated with various disaster risk management communities in the state to operationalize the knowledge being generated.

(c) Component A3: Strengthening the Water and Land Management Institute ($2M): This sub-component aims to strengthen the existing Water and Land Management Institute such that it provides targeted, practical and effective training and capacity building services to UPID and water users. Activities envisioned to transform this training institute include: the hiring of additional long-

term faculty from multiple disciplines (engineering, agriculture, social sciences, and extension services) to improve the quality and scope of training for UPID engineers and upgradation of facilities including the development of a learning laboratory (including equipment to demonstrate new irrigation techniques, modern sensors, an open channel hydraulics lab). WALMI will also be supported to provide training to engineers (and awareness building) to support the Irrigation Department's role implementation of the Participatory Irrigation Management (PIM) Act.

Component B: Modernization and Rehabilitation of Irrigation and Drainage Systems ($305M)

The inefficient performance and poor condition of canal and drainage infrastructure in the State is a major contributor to the poor water service delivery observed by many farmers (particularly in the tail reaches) in these canal commands. Learning lessons from the pilot rehabilitation and modernization investments in the Jaunpur Branch (in the Sarda Sahayak System), this component expands to new areas identified critical by the Government of Uttar Pradesh. This component represents the major infrastructure and civil works component of the project (almost 60% of the total project costs). This component directly contributes to improving agricultural productivity as reliable, timely, and measured quantities (i.e. restoring the system to its original design discharges) of irrigation water are important determinants of agricultural performance. Moreover, rehabilitation and modernization (by way of improved control and regulation) will help to improve system-wide water use efficiency by reducing losses.

(a) Component B1: Expansion of Irrigation and Drainage Investments ($288M). This sub-component will rehabilitate and modernize irrigation and drainage infrastructure in parts of the Sarda Sahayak System (Haidergarh Branch from 23 km and down), three reservoir commands in Bundelkhand (Rohini, Jamni, Sajnam Dams), and the Lower Ganga Canal (and Parallel Lower Ganga Canal) System. For parts of the system, rehabilitation and modernization will be taken up to the outlet level. For other parts of the system, only branches will be taken up (details given in Annex 1). The total cultivable command area to be attributed to the project interventions will be about 465,000 ha (assuming 45% of the CCA is attributed to the branch-only areas). Preparation of detailed surveys and designs will be done for the entire project area canal commands (estimated to be around 1,273,000 ha CCA). The overall aim with these interventions in the 465,000 ha will be to improve the capacity and operation of the systems to ensure timely, assured, controlled, and measured water delivery and distribution. This would include updating topographic and cadastral surveys, updating hydrologic assessments, installing improved operation and discharge measurement devices (e.g. flow meters), rehabilitation of canals, drains, and pucca structures, introducing silt traps where technically advantageous, rationalization and modernization of outlets, modernization of head and cross regulators, duckbill weirs, village road bridges, vertical drainage, and canal lining in critical areas. The primary outcome of this rehabilitation and modernization work is to bring these systems back to their original design performance (i.e. enhance discharge and drainage) and improve operability of the system (i.e. meeting agreed rosters with local water users associations). This component will build upon the design features prepared in UPWSRP Phase 1 and build on the lessons learned during implementation.

(b) Component B2: Modernization of Regulation System and Service Delivery in Phase 1 Areas ($2M). This component will introduce additional methods of control and operation in the UPWSRP Phase 1 areas (i.e. Jaunpur Branch) where modernization was not completed (e.g. Haidergarh head regulator). This includes the installation of controllable and measurable inlets to the minors (with close participation of WUAs) to provide the basis for volumetric water charges, proportional, non-adjustable water dividers having a measurement facility for outlets to the field channels, modern

measur ement devices, and SCADA and telemetry systems (as required).

(c) Component B3: Groundwater Management Activities ($15M). This sub-component aims to strengthen the groundwater assessment in the state, upgrade groundwater level monitoring network and demonstrate implementation of groundwater management interventions following preparation of aquifer management plans for an over exploited watershed/catchment in the project area. This activity, which will be implemented directly by the Groundwater and Minor Irrigation Department, will encourage greater integration between this department and the Irrigation Department (i.e. conjunctive use). The groundwater assessment will be improved through the integration of knowledge developed by various stakeholders, use of advance hydro-geological models, remote sensing applications and up-gradation of water level monitoring systems. Initially, the development of aquifer management plans will focus on an over exploited watershed in the Phase 2 project areas (e.g. Araon block in Firozabad) where the majority of information will be made available through Component B1 (Irrigation Department). The development of an aquifer management plan shall be based on an understanding of the groundwater dynamics through geo-physical measurements, modeling micro-level hydro-geologic site investigations, and aquifer parameters tests.

Component C: Consolidation and Enhancement of Irrigation Institutional Reforms ($43M)

This component will enhance the efficiency of the Uttar Pradesh Irrigation Department (UPID) and strengthen the PIM approach both in the department as well as in the community. The aim is to improve the efficiency of UPID personnel through the provision of advanced IT based tools, performance-based systems for staff evaluation, modern survey and design techniques as well the overall management of the department through administrative and managerial skills enhancements and tools (e.g. management information systems). Through this business process re-engineering and strengthened governance approach (started under the Phase 1 operation), a more flexible, accountable, and responsive Department can be nurtured. Moreover, a strengthened role for water users associations and the concomitant Department role in this agenda will be critical. The passage of the Participatory Irrigation Management (PIM) Act in 2009 was a major reform enacted under the previous Phase 1 operation. This requires further support and nurturing. Enhancing these reforms and building greater farmer participation in water management are crucial to achieving the development objective of improving agricultural productivity and water-use efficiency.

(a) Component C1: UPID Modernization and Capacity Building ($25M). This sub-component aims to provide the training and tools such that UPID may re-orient itself towards a more professional and responsive irrigation service delivery agency that is accountable to its farmer clients. As part of UPWSRP Phase 1, a substantial training program was delivered involving over 4500 UPID participants covering topics ranging from the technical (e.g. AutoCAD, GIS, Canal-Mod, MASSCOT) to the managerial. Almost 2000 officers were given basic computer training as the Department was computerized and an extensive management information system (MIS) for business processing put in place. This sub-component will continue capacity building efforts including among other things intensive and extensive training on advanced surveying techniques, GIS, modern control and measurement approaches, computers and IT systems, participatory irrigation management (through primarily WALMI), project management, and financial management. The Indian Institute of Management identified the training needs of the department and the program is tailored to different functions within the UPID. The IT section of UPID, the Information System Organization (ISO), will also be further modernized including strengthening of staff, creating a centralized IT help desk, and strengthening the LAN and WAN systems across the divisional offices. A dedicated irrigation control center (connected to real-time water level sensors in the field) has also been created

and will be equipped with modern facilities. Some equipment will also be provided to enhance the maintenance capacity of the Department (e.g. weed cutters, small dredgers, and customized earth moving machines). Finally, special focus and effort will be given to re-orienting field engineers towards a more performance based institution vis-à-vis "client" (i.e. water user association) satisfaction and field-level delivery metrics, in particular actual measured deliveries against the agreed roster at the beginning of the irrigation season and information provided to WUAs on changes in the roster. Special contractual relationships (between the Department and the water users association) may also be explored on a pilot basis for selected minors in the system.

(b) Component C2: Water Users Associations (WUAs) Strengthening and Implementing Participatory Irrigation Management ($18M). This sub-component will support the strengthening and development of water users associations and provide a framework for training and mainstreaming PIM throughout the State. The vision of the participatory irrigation management approach to irrigation water delivery (as defined in the 2009 Act on Participatory Irrigation Management - PIM is to build the capacity of these local associations (WUAs)to monitor the current status of the irrigation system under their control, participate actively in discussions on system design and implement rehabilitation of minors with the UPID, carry out on farm development (OFD) works where required, manage themselves the local water distribution, assess water charges, manage finances, operate and maintain local infrastructure, resolve conflicts, encourage conjunctive use of surface and ground water for intensified and diversified agriculture production system and promote greater efficient water use. Equally important is enhancing the ability of the UPID Engineers to work more in partnership with farmers as clients to help them manage the system at local level and substantially improve water use efficiency and productivity. Since the 2009 Act, 8858 WUAs at the outlet levels, 805 WUAs at the minor levels, and 28 WUAs at the distributary level have been formed in the Phase 1 areas. The key project activities will be to scale this up in the Phase 2 areas and make existing and proposed WUAs functional. This will be done by focusing on three key areas (a) mobilization of communities, (b) generation of awareness amongst communities of the PIM Act, and (c) capacity building and training of WUAs. Mobilization of communities will be focused on the Phase 2 project areas and will be implemented by NGOs. The generation of awareness on PIM will be through the use of a variety of media (e.g. pamphlets, community radio and TV, workshops, paintings and leaflets, etc) and will be for the entire State. This awareness generation is to be implemented by the State Institute of Rural Development (SIRD). For the capacity building and training of WUAs, emphasis will be placed on governance (e.g. WUA roles and responsibilities, organizing meetings, liaison with users), technical matters (e.g. maintenance inspections, preparation of estimates, measurement of works), financial management (e.g. maintaining financial records, preparation of annual budgets) and water management (e.g. recording of irrigated area, preparation and implementation of warbandi). This will be delivered in the Phase 1 and 2 areas through the SIRD. WALMI Lucknow will be the key training agency to reorient UPID Engineers towards PIM (Component A3). Finally, special contractual relationships with the UPID and participation in a performance system for field engineers (as "clients") will be used to enhance accountability and feedback for irrigation deliveries.

Component D: Enhancing Agriculture Productivity and On-Farm Water Management ($36M)

This component (to be implemented directly by the Department of Agriculture) aims to improve the overall agriculture productivity and water-use efficiency at the field level. This component will focus on both Phase 1 and 2 outlet command areas where improvements in irrigation water availability and timely support to water users associations will be integrated with improved agriculture production and on-farm water management practices. The component will use a

specifically developed Farmer Water School (FWS) approach (see box), targeted at the area below the outlet as a mechanism to introduce improved agronomic and water management practices, and also to develop the institutional capacity of the WUAs for water management and operation and maintenance. The FWS will be a group of 20 – 30 farmers serving about 15 – 20 ha of a single outlet. The concept of FWS will borrow heavily from the FAO Farmer Field School models implemented successfully in over 90 countries worldwide. Some of the types of activities that may be part of the FWS curriculum (to be decided and agreed upon by the participant farmers themselves) include: (i) season-long farmer field studies on a range of crop approaches e.g. ridge and furrow irrigation, border irrigation, raised and sunken beds, etc, (ii) crop and water budgeting sessions, (iii) community interactions and consultations, (iv) field days for identified crops, and (v) soil testing for integrated plant nutrient management. A network of trainers will be developed under the project to support the FWS. FWS to FWS interactions will also be facilitated. In addition to the emphasis on FWS, this component will also support (i) a limited number of demonstrations/adaptive research trails, (ii) field level physical works related to improved water use efficiency (laser leveling, sub-plots, border check, raised beds, etc), (iii) field days (block level), (iv) exposure visits, (v) staff capacity development, and (vi) purchase of equipment (such as tensiometers and leaf color charts).

Component E: Feasibility Studies and Preparation Activities for the Next Phase ($2M)

This component is to prepare detailed surveys and designs for future Phase 3 areas. These new areas will be identified by the Government of Uttar Pradesh and will make use of similar design principles (and the lessons learned) adopted under this Phase 2 operation. The resource requirements for the preparation of these future investments will be revisited at project mid-term.

Component F: Project Coordination and Monitoring ($25M)

(a) Component F1: Project Activities Coordination Team ($23M): The existing multi-disciplinary Project Activities Coordination Team (PACT) (established under UPWSRP Phase 1) will provide overall coordination and project management. This component is designed to assist the PACT with its role in facilitating and guiding the implementation and monitoring of all project activities, ensuring synergy and coordination amongst activities and Departments (Agriculture, Groundwater, Remote Sensing Agency, State Institute for Rural Development), and in preparing consolidated reports and facilitating training and study tours. Key activities include managing critical support consultancies such as the Monitoring and Evaluation consultancy and a consultancy to provide third-party construction quality support. Monitoring and evaluation will guide project implementation by conducting input and output monitoring, process monitoring, impact assessment, and by providing feedback to PACT on recommended adjustments. It will also provide feedback on client satisfaction with UPID performance. Monitoring and evaluation will make use of state-of-the-art information and communication technologies for field data collection, in particular mobile-based technologies with GPS systems. The PACT will also play a fiduciary role in the overall project, including providing support on procurement.

(b) Component F2: Monitoring of Crop Performance using Remote Sensing Imagery ($2M). Following the successful model adopted under the Bank-financed UP Sodic Lands Project, this component will support the services of the UP Remote Sensing Applications Center (RSAC) in monitoring of the project area using satellite imageries. RSAC has independently been monitoring crop acreage and production numbers since 1988 for the major agricultural crops in UP (e.g. wheat, paddy, sugarcane, and mustard crops). Under this component, RSAC will throughout the life of the project prepare annual reports for the project areas tracking a wide range of parameters including

cropping intensity, cropping calendar, acreage and productivity, irrigated areas (under the canal command and groundwater), and land use at the cadastral levels. Some ground truth data will also be collected from the field during key times during the three cropping seasons in all the study districts.

4. Project location and salient physical characteristics relevant to the safeguard analysis (if known)

The physical interventions under Component B are targeted to rehabilitate and modernize the irrigation and drainage system largely in16 districts , which have been identified by the GoUP as priority areas. These include irrigated areas of the Lower Ganga Canal system, areas along the Haidergarh Branch (23 km and down in the Sarda Sahayak System) and for three reservoir systems in the drought-prone Bundelkhand region. The Agricultural productivity enhancements (Component D) will also be introduced in both these Phase 2 areas and earlier Phase 1 areas (in the Sarda Sahayak System). In addition, the project has institution strengthening components that are state-wide (Component A, and Component C).

The project locations are focused along existing irrigation channels in Lower Ganga and Haidergarh Branch systems. In a strict sense the project locations include the canal banks and the farmlands that are supplied irrigation waters along these canals. These canals are located in the Ganga basin, the physical characteristics of which is essentially alluvium floodplains that are, over the years, converted into agricultural farmlands and other land use. The project area also includes command areas of three selected dam systems in Bundelkhand, the poorest area of Uttar Pradesh. The landscape of Bundelkhand is characterized by low rainfall, drought-prone conditions, and marginal lands. A severe continuous four-year cycle of drought during 2004-08 (more than 25% deficit against the annual averages) led to reduced sown area, loss of productivity, crop failures, and non-availability of forage, grass and fodder. There is high dependence on groundwater in Bundelkhand and only 25% of the total net-cropped area is irrigated reflecting the lowest irrigation intensity in the state.

5. Environmental and Social Safeguards Specialists

Shankar Narayanan (SASDS)

Anupam Joshi (SASDI)

6. Safeguard Policies	Triggered?	Explanation (Optional)
Environmental Assessment OP/ BP 4.01	Yes	The proposed investments on irrigation infrastructure and water management activities could have adverse but geographically limited environmental impacts. The physical works of the project are rehabilitative in nature and since no new canals are proposed for construction, significant adverse environmental or social impacts are not anticipated. Most impacts are likely to be limited to the rehabilitation phase of the physical infrastructure and, therefore, would not have any long-term adverse impacts. A full environmental and social assessment has been carried with a range of mitigation action proposed as part of Environmental and Social Management Framework (ESMF). Wherever required,

		Environmental Management Plans (EMP) are also prepared.
Natural Habitats OP/BP 4.04	No	The project investments would not convert any critical or non-critical natural habitats. Any identified adverse impact is limited in nature and scope, both spatially and temporally, and is unlikely to impact any natural habitat. Further, any unlikely adverse impact on natural habitats by inclusion of critical or non-critical habitats would be addressed through the screening criteria included in the ESMF and an EMP prepared to deal with such possibilities.
Forests OP/BP 4.36	No	No investments on forests or forestry operations are planned and no adverse impacts anticipated.
Pest Management OP 4.09	Yes	Although the project does not plan to finance any pesticides, there is a possibility of induced impact of greater pesticide use due to increased agricultural intensification and diversification. An EMP on pest management has been prepared that provides for enhancement of integrated pest management activities. Banned pesticides and those included in the WHO Scheduled Lists would not be financed.
Physical Cultural Resources OP/ BP 4.11	No	No physical and cultural resources are included in the project financed locations and no impacts anticipated on any such resources, as the physical activities are restricted to existing canals and canal banks and on private farmlands.
Indigenous Peoples OP/BP 4.10	No	The Environment and Social Assessment carried out has confirmed that the proposed project area has very few tribal community households residing in the project areas and do not represent indigenous people as per OP 4.10 (e.g. mainstreamed into the local culture, do not differ in nature considering social, cultural, economic and political institutional perspectives, etc). Therefore, the Bank OP 4.10 on Indigenous Peoples is not triggered.
Involuntary Resettlement OP/BP 4.12	Yes	Even though it is unlikely that the rehabilitation and modernization of the irrigation systems in the UPWSRP Phase 2 Project area would call for any involuntary resettlement, this policy is triggered to provide for any such requirement that might arise and to ensure that remedial action incorporates the requirements of OP 4.12.

Safety of Dams OP/BP 4.37	Yes	No significant impacts are anticipated due to inclusion of the command areas of three dams in Bundelkhand under the project. A Dam Safety Cell in the State of Uttar Pradesh would be suitably strengthened to ensure issues of dam safety are addressed. An independent safety assessment of the three dams was completed and the findings reveal that there are minimal risks in relation to dam safety. The selected dams would be supported, as required to address any safety issues under the World Bank financed Dam Rehabilitation and Improvement Project (DRIP) under implementation in parallel. The Uttar Pradesh is a participating state in DRIP.
Projects on International Waterways OP/BP 7.50	Yes	Although the project is in an international river basin (Ganges), no significant impact is anticipated upstream or downstream on water quality or quantity given the nature of interventions, which are rehabilitation and modernization of the existing irrigation infrastructure. Given the nature of this project, though the OP is triggered, an exception to notification has been granted similar to the one granted in Phase I.
Projects in Disputed Areas OP/BP 7.60	No	The project does not include any disputed areas.

II. Key Safeguard Policy Issues and Their Management

A. Summary of Key Safeguard Issues

1. Describe any safeguard issues and impacts associated with the Restructured project. Identify and describe any potential large scale, significant and/or irreversible impacts:

Given the limited spatial and temporal nature of project impacts arising out of planned investments, no potentially large scale, significant and/or irreversible impact is envisaged. While the project is designed to benefit farming communities through investments on rehabilitation of irrigation systems and allied agriculture activities, the implementation of proposed components of the Project may result in adverse impacts on people and land, if not identified and appropriately mitigated. Increased water logging along rehabilitated canals leading to formation of sodic soils is often seen as a long-term impact (over one to two decades) but is unlikely, as seepage along canals would decrease once they start carrying irrigation water as per their design discharges and with effective irrigation control structures in place. Planned investments on the drains and spillways/ escapes would also improve overall drainage in the command areas and reduced chances of water logging. The participation of Water User Associations (WUA) would further ensure improved maintenance of irrigation infrastructure and thereby reduced seepage and water logging.

Adverse environmental impacts may arise due to certain planned activities, like disposal of silt during rehabilitation of irrigation infrastructure, construction and installation of irrigation control

structures, small bridges over canals, increased used of agro-chemicals for increasing crop productivity etc. The ESMF provides appropriate mitigation measures to reduce, contain and even reverse some of these potential impacts. Adverse impacts could arise due to poor construction quality and unsafe construction practices, but these would be addressed by Quality Supervision Protocols that would be followed by the PACT, in a combination with Quality Assurance Consultants and their own engineers.

2. Describe any potential indirect and/or long term impacts due to anticipated future activities in the project area:

Being a project that aims to modernize and rehabilitate existing irrigation structures with no new structures or irrigation systems being established, there is likely to be very little potential indirect and/or long-term impacts due to future activities.

Planned investments on strengthening irrigation and enhancing agricultural production could lead to increased cropping intensity in project areas. This could indirectly result in increased dependence on groundwater and increased use of agro-chemicals in future. This could have some adverse impacts on groundwater quantity and quality as well as issues related to increased use of pesticides. However, the proposed investments on improving irrigation water service delivery, if implemented properly, would reduce the chances of increased withdrawal of groundwater in project areas. Project would support the conjunctive use of irrigation sources that would also help rationalize the groundwater extraction. Similarly, planned investments on agriculture would also promote increased use of organic inputs and Integrated Pest and Nutrient Management (IPNM) practices through awareness building of WUAs.

3. Describe any project alternatives (if relevant) considered to help avoid or minimize adverse impacts.

Since this second phase is effectively an on-going modernization and rehabilitation of existing irrigation and drainage infrastructure in the State, there is limited scope for considering alternatives to achieve intended development objectives. One alternative considered, but rejected was to create new irrigation infrastructure in the targeted areas. Instead, learning from the first phase would be applied under the project to improve irrigation water service delivery. A No Project scenario was also considered but rejected, as there is a dire need to improve irrigation service delivery and increase farm productivity to ensure food security, as well as reform the water resources management to meet the demands of a fast growing population especially in the context of perceived increased difficulties due to projected vulnerabilities related to climate change. Another alternative considered and adopted is to also invest in groundwater management to pilot real time conjunctive use of the two irrigation approaches. Conjunctive use is a potential management option in areas where both surface water and groundwater are amply available. A dual roster for groundwater and surface irrigation water may be an effective option for improving water resource sustainability in irrigation commands. This has been incorporated as a sub-component.

4. Describe measures taken by the borrower to address safeguard policy issues. Provide an assessment of borrower capacity to plan and implement the measures described.

During project preparation, the borrower contracted an experienced and independent consulting agency for undertaking an Environmental and Social Assessment for the proposed project investments. This agency had the experience of conducting a similar ESA during Phase I of the project. The current assessment covered the three geographical focus areas of the project – the Bundelkhand region (including Rohini, Jamni and Sajnam Dam systems), the Lower Ganga Canal command areas and the Haidergarh Branch (23 km and down) command areas. The final draft

reports were publicly disclosed for inviting stakeholder comments, including a copy translated in Hindi. The ESA presents a range of baseline environmental issues in the project areas, the socio-economic status of relevant stakeholders and a cross-sectional view of stakeholder views highlighting key environmental challenges and issues. Based on this exercise, and in context of project investments, the ESA includes screening criteria that places proposed project investments into three categories based on the magnitude of potential adverse impacts. Specific Environmental Management Plans (EMP) have been developed to mitigate any anticipated adverse impacts based on the category of sub-projects. The ESA also includes a detailed ESMF that would guide the implementation of a set of mitigation measures to address any potential adverse environmental impact. It would also help upscale the potential positive benefits from project investments. A role and responsibility matrix is included in the ESMF for ensuring timely monitoring of mitigation actions.

Similarly a Resettlement Policy Framework (RPF) that outlines the resettlement principles, organizational arrangements and design criteria to be applied for conforming with the OP 4.12 on Involuntary Resettlement has been prepared as part of the ESA. Sub-projects that may require involuntary resettlement would be screened to ensure their compliance with OP 4.12.

In addition to addressing the potential environmental impacts through the EA and the ESMF, the provisions related to the safety of dams included in the project are dealt through the Dam Safety Cell (DSC) under the Chief Engineer Design in UPID. An independent assessment of the three dams involved in the project was undertaken. The DSC would be strengthened during project implementation to ensure that all the requirements of OP 4.37 are met satisfactorily. The strengthening of DSC would be undertaken through the ongoing World Bank funded Dam Rehabilitation and Improvement Project (DRIP) in which State of Uttar Pradesh is also participating. The three dams would be supported to improve operation and maintenance procedures, undertake any remedial work or safety related measures and enhance various emergency preparedness plan. Emergency provisions are currently in place as per the state and federal norms.

After several years of engagement working closely with the Bank team, PACT has gathered significant knowledge about World Bank procedures at the sector (institutional risk) and project (implementation risk) levels. Technical help would be contracted to supplement the efforts of PACT in addressing safeguards related issues. Further, the borrowers has already enacted and adopted the Participatory Irrigation Management (PIM) Act that transfers the responsibility of allocating and managing irrigation waters at the community level. The Uttar Pradesh Irrigation Department (UPID) would ensure establishing and supporting WUAs to address some of the social safeguards issues relating to participation, inclusion, gender mainstreaming and transparency in decision making while allocating resources.

5. Identify the key stakeholders and describe the mechanisms for consultation and disclosure on safeguard policies, with an emphasis on potentially affected people.

The project stakeholders include farmers in the rain-fed area, Water User Associations (WUAs), women SHGs, PRIs, NGOs and government line departments and agencies. As part of environmental assessment, wide ranging stakeholders' consultations were undertaken in project areas with various stakeholder groups. These consultations were held at individual, household and village/community levels in the field and also with PRIs and included Focused Group Discussions. In addition, the design and survey consultants also undertook Walk Through Surveys with local community representatives and engineers from field divisions. The ESA report highlights the key

feedback that emerged from these consultations. Further, no involuntary resettlement is envisaged under the project and there are no significant proportions of indigenous communities (tribal) in the project areas. These limit the nature and scope of adverse social impacts in the project areas. The project's implementing agency, PACT, has the benefit of having implemented the first phase of the project in the Ghagra Gomti Basin and, therefore, has a good understanding of the Bank's safeguards policies and the importance of compliance with these. This familiarity would be useful in implementing various mitigation measures.

B. Disclosure Requirements

Environmental Assessment/Audit/Management Plan/Other	
Date of receipt by the Bank	15-Oct-2012
Date of submission to InfoShop	16-Oct-2012
For category A projects, date of distributing the Executive Summary of the EA to the Executive Directors	12-Feb-2013
"In country" Disclosure	
India	03-Oct-2012
Comments:	
Resettlement Action Plan/Framework/Policy Process	
Date of receipt by the Bank	08-Feb-2013
Date of submission to InfoShop	08-Feb-2013
"In country" Disclosure	
India	23-Jan-2013
Comments:	
Pest Management Plan	
Was the document disclosed prior to appraisal?	Yes
Date of receipt by the Bank	15-Oct-2012
Date of submission to InfoShop	16-Oct-2012
"In country" Disclosure	
India	03-Oct-2012
Comments:	
If the project triggers the Pest Management and/or Physical Cultural Resources policies, the respective issues are to be addressed and disclosed as part of the Environmental Assessment/ Audit/or EMP.	
If in-country disclosure of any of the above documents is not expected, please explain why:	

C. Compliance Monitoring Indicators at the Corporate Level

OP/BP/GP 4.01 - Environment Assessment	
Are the cost and the accountabilities for the EMP incorporated in the credit/loan?	Yes [×] No [ ] NA [ ]
OP 4.09 - Pest Management	

If yes, has the PMP been reviewed and approved by a safeguards specialist or SM? Are PMP requirements included in project design?If yes, does the project team include a Pest Management Specialist?	Yes [ ] No [ ] NA [×]
OP/BP 4.12 - Involuntary Resettlement	
If yes, then did the Regional unit responsible for safeguards or Sector Manager review the plan?	Yes [×] No [ ] NA [ ]
OP/BP 4.37 - Safety of Dams	
Has an Emergency Preparedness Plan (EPP) been prepared and arrangements been made for public awareness and training?	Yes [×] No [ ] NA [ ]
OP 7.50 - Projects on International Waterways	
Has the RVP approved such an exception?	Yes [×] No [ ] NA [ ]
The World Bank Policy on Disclosure of Information	
Have relevant safeguard policies documents been sent to the World Bank's Infoshop?	Yes [×] No [ ] NA [ ]
Have relevant documents been disclosed in-country in a public place in a form and language that are understandable and accessible to project-affected groups and local NGOs?	Yes [×] No [ ] NA [ ]
All Safeguard Policies	
Have satisfactory calendar, budget and clear institutional responsibilities been prepared for the implementation of measures related to safeguard policies?	Yes [×] No [ ] NA [ ]
Have costs related to safeguard policy measures been included in the project cost?	Yes [×] No [ ] NA [ ]
Does the Monitoring and Evaluation system of the project include the monitoring of safeguard impacts and measures related to safeguard policies?	Yes [×] No [ ] NA [ ]
Have satisfactory implementation arrangements been agreed with the borrower and the same been adequately reflected in the project legal documents?	Yes [×] No [ ] NA [ ]

III. APPROVALS

Task Team Leader:	Winston Yu	
Approved By		
Regional Safeguards Coordinator:	Name: Sanjay Srivastava (RSA)	Date: 11-Feb-2013
Sector Manager:	Name: Simeon Kacou Ehui (SM)	Date: 12-Feb-2013