



Project Numbers: SC 100903 IND and SC100905 IND
November 2014

India: Support for the Implementation of the
National Water Mission by State Governments in
India: Scoping Study for a National Water Use
Efficiency Improvement Support Program

Final Report
Volume 3: Program Concept Paper
(Financed by the ADB)

Prepared by

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Water Resources and Irrigation
Management Specialist

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Asian Development Bank

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This study was undertaken by South Asia Environment, Natural Resources and Agriculture Division (SAER) and India Resident Mission (INRM), Asian Development Bank (ADB), by a team comprising of Arnaud Cauchois¹, Harish Kumar Varma², Martin A Burton³, and Amarjit S. Dhingra⁴.

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**SUPPORT FOR THE IMPLEMENTATION OF THE NATIONAL WATER MISSION BY
STATE GOVERNMENTS IN INDIA: SCOPING STUDY FOR A NATIONAL WATER
USE EFFICIENCY IMPROVEMENT SUPPORT PROGRAM**

VOLUME 3: DRAFT PROGRAM CONCEPT PAPER

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CURRENCY EQUIVALENTS

(as of 9th August 2013)

Currency Unit	–	Indian Rupee (Rs)
Rs 1.00	=	\$ 0.0168
\$1.00	=	Rs 60.68

ABBREVIATIONS

ADB	-	Asian Development Bank
AMP	-	Asset management plan
BCM	-	Billion cubic metres
CAD	-	Command Area Development
CCA	-	Culturable Command Area
CWC	-	Central Water Commission
EA	-	Executing Agency
FAO	-	Food and Agriculture Organisation
FYP	-	Five Year Plan
GO	-	Government Order
GOTN	-	Government of Tamil Nadu
Ha	-	Hectare
ID	-	Irrigation Department
ITES	-	Information Technology Enabled Systems
ISF	-	Irrigation service fee
IWRM	-	Integrated water resources management
MFF	-	Multitranches financing facility
MMI	-	Major and medium irrigation
MOM	-	Management, operation and maintenance
MoWR	-	Ministry of Water Resources
NAPCC	-	National Action Plan on Climate Change
NGO	-	Non-governmental organisation
NIMF	-	National Irrigation Management Fund
NWM	-	National Water Mission
O&M	-	Operation and maintenance
PC	-	Planning Commission
PIM	-	Participatory irrigation management
PTCU	-	Project Technical Coordination Unit
PPP	-	Public-private partnership
PPTA	–	Project preparatory technical assistance
RPA	-	Rapid performance assessment
SPV	-	Special Purpose Vehicle
WALMI	-	Water and Land Management Institute
WUA	–	Water Users' Association
WUE	-	Water use efficiency

NOTES

In this report, "\$" refers to US dollars.

I. INTRODUCTION

A. Rationale

1. The National Water Use Efficiency Improvement Support Program (the Program) will support the National Water Mission (NWM) and the 12th Five Year Plan (FYP) reform agendas aimed at improving water use efficiency and agricultural production on major and medium (MMI) schemes in India. The Program, administered through central government, will support States in implementing the 12th Five Year Plan's reform agenda of a "paradigm" shift in the way that irrigation schemes are managed operated and maintained. This paradigm shift requires that Irrigation Department (IDs) *"move away from a narrow engineering-construction-centric approach to a more multi-disciplinary, participatory management approach for MMI schemes, with a focus on command area development and a sustained effort at improving water use efficiency"*⁵.

2. The program will support both physical and non-physical (management/institutional) initiatives focussed on improving the performance and water use efficiency of MMI schemes. Physical infrastructure will be upgraded/ modernized to improve the ability to convey, control and measure irrigation water, management will be strengthened to improve the planning, delivery and monitoring of irrigation water and institutions will be strengthened to better support and implement participatory irrigation management and improved water management. Issues in these areas have been identified by a number of studies⁶ and include, on the physical side, irrigation designs not matching current needs, systems designed for protective, rather than productive, irrigation, faulty design, changed hydrology, incomplete CAD and lack of field channels, lack of control and measuring structures, inadequate maintenance and maintenance funding, absence of needs based budgeting, lack of asset management plans and limited maintenance by water users associations (WUAs). On the main system management and institutional side issues identified are a focus on construction of new schemes, rather than management of completed schemes, lack of service delivery ethos, little accountability to water users, lack of user participation, outdated management information systems, lack of MOM knowledge and skills, inadequate scheduling, water charges not linked to service delivery or to actual MOM costs. At the distribution level (distributaries, minors and below) issues include the large number of landholdings, lack of functioning water users' associations, inadequate support for forming and supporting WUAs, poor on-farm water management and maintenance, lack of funds for WUAs (limiting their ability to hire O&M field staff) and low levels of adoption of modern technology and practices. The institutions providing support and advice to Irrigation Departments, WUAs and water users are also weak – WALMIs only exist in 14 States and are, in general, inadequately staffed and resourced, there is limited NGO capability to support PIM and on-farm water management and limited staffing and water management knowledge and experience within the extension services.

3. There is a compelling need to improve the performance and productivity in the irrigation sector, which consumes over 80 percent of the total water resources abstracted for human use. According to the 12th Five Year Plan the country's water budget, based on Ministry of Water Resources (MoWR) estimates, shows utilisable water of 1123 billion cubic metres (BCM) against a current estimated demand of 710 BCM. The Standing Committee of the Ministry of Water Resources estimates that this water demand will rise to 1093 BCM by 2025. Other calculations, however, are not so optimistic, with the 2030

⁵ Para 5.5, 12th Five Year Plan, Planning Commission, Government of India

⁶ 12th FYP Working Group on MMI and CAD, NWM Working Groups on Surface Water Management and Efficient Use of Water for Various Purposes, FAO MASSCOTE studies, CWC studies of 30 MMI schemes

Water Resources Group (2009) predicting that with the current pattern of demand for water about half the demand will be unmet by 2030.

4. Whilst figures taken on a national basis might give some indication of the overall water resources balance they hide the reality in individual river basins. Studies by the International Water Management Institute (Amarasinghe et al, 2004)⁷ found that as a result of rising water demand many river basins will be physically water scarce by 2050⁸. According to Amarasinghe of the 19 river basins in India, 8 already have a potentially utilizable water resource of less than 1,000 m³/capita, with a further 7 currently with less than 1,500 m³/capita. Only the Narmada (2,448 m³/capita) and the Mahanadi (2,341 m³/capita) river basins have adequate water resources available into the foreseeable future. By 2050 10 river basins, with 75 percent of the total population, will have developed all of the potentially utilizable water resources; with the consequence that water reallocation between sectors will be a necessary and common occurrence in these basins. It is predicted that in many basins groundwater, with the current levels of recharge and groundwater use patterns, will be in severe crisis; some already are at catchment and sub-basin level.

5. The ultimate irrigation potential in India is assessed as 140 million hectares, of which around 112 million hectares has been realized by the end of the 11th Five Year Plan (2011-12). Of this figure 42 mha has been created under major and medium irrigation (MMI) schemes and 60 mha under minor irrigation schemes. Of the 112 mha about 99 mha (88 percent) is estimated as being utilized. Many of these irrigation schemes are operating at low levels of water use efficiency; with average figures of 38 percent being quoted⁹.

6. As mentioned above Working Groups convened by the NWM and the Planning Commission and studies by the Central Water Commission (CWC) and the Food and Agricultural Organisation (FAO) have identified a range of issues facing MMI schemes. To address these issues the 12th Five Year Plan has established the National Irrigation Management Fund (NIMF) which will reimburse to each State Irrigation Department a matching contribution to its own irrigation service fee (ISF) collection from MMI schemes on a 1:1 ratio. To provide encouragement for PIM a bonus will be paid where the water users association (WUA) collects the ISF and is allowed to retain 50 percent and their federations at the distributary level are allowed to retain 20 percent of the collected amount. An additional bonus will be paid where the ISF accrues through volumetric water supply to WUAs under an irrigation service contract.

7. Currently irrigation service fee collection rates are low. In Andhra Pradesh in 2007-8 the revenue collected from all irrigation schemes was only Rs 690 million (5%) from an assessed Rs 2,842 million¹⁰. With approximately 44 percent of the total area in the State being under MMI schemes the potential additional income to the State through the NIMF is around Rs 1,250 million, of which, at the current collection rate, only Rs 62.5 million could be claimed under the NIMF.

8. To avail themselves of the full benefit of these additional funds State Irrigation Departments need to increase the level of ISF collection, for which they will need to improve the level of service and thus the ability and willingness of water users to pay the ISF. In this context it is anticipated that States will need advice and technical assistance

⁷ Amarasinghe, U.A., Sharma, B.R., Aloysius, N., Scott, C.; Smakhtin, V. and de Fraiture, C. 2004. *Spatial variation in water supply and demand across river basins in India*. Research Report 83, International Water Management Institute, Colombo

⁸ According to international convention basins with less than 1000 m³/capita are classed as water scarce

⁹ Para 5.28, 12th Five Year Plan, Planning Commission, Government of India.

¹⁰ The total amount assessed is comparable to the maintenance need estimated by the Finance Commission of Rs 2,064 million

on relatively rapid, implementable and cost-effective measures to improve service delivery and scheme performance.

9. In addition, if the paradigm shift proposed under the 12th FYP is to be achieved, there needs to be a radical change in the way irrigation schemes are managed, operated and maintained. This will require changed attitudes, knowledge and skills at all levels in Irrigation Departments. Senior and middle level management would benefit from exposure to modern practices and technologies used in other countries, and from a better understanding and application of service delivery and performance management. As proposed in the 12th FYP Irrigation Departments need to broaden their human resources to include disciplines in social mobilisation, irrigation and agricultural water management, agronomy, etc. In addition to this deeper consideration needs to be given to how schemes are operated and maintained, particularly in relation to the scheduling, control and measurement of irrigation water supplies. Changes need to be considered and made, such as, for example, introducing automation and telemetry to canal systems. Equally, at the on-farm level, water users need to be encouraged to adopt more modern technologies and practices.

10. The proposed Program has been designed to meet these needs by offering a package of support to central government and participating States which can support innovation and modernisation in the manner in which MMI schemes are managed, operated and maintained. With a 10-12 year time frame the Program is able to provide short and long term support, in the short term for upgrading of the physical facilities, in the longer term to support institutional change.

B. Impact, outcome and outputs

11. The Program's impact will be increased availability of water for agriculture and others uses in river basins and sub-basins. Its outcome will be increased agricultural productivity and water use efficiency. The outputs will be (i) Physical infrastructure of MMI schemes upgraded and modernized; (ii) MOM policies, processes and procedures modernized in State Irrigation Departments; (iii) PIM programme established and WUAs functioning; (iv) Support services providing improved services in MOM and PIM; (v) Increased adoption of modern technologies and irrigation management practices at on-farm level.

12. The initial sub-projects and participating States will be determined during the PPTA. Subsequent tranches will extend the number of sub-projects and the participating States.

C. Investment and financing plans

13. The envisaged costs and financing plans of the Program and the Project-1 are shown in Table 1, which will be further developed during the PPTA. ADB will finance part of the Program and the initial sub-projects from its Ordinary Capital Resources.

Table 1: Tentative financing plan

Source	MFF Program		Project-1	
	Amount (\$ million)	Share of Total (%)	Amount (\$ million)	Share of Total (%)
Asian Development Bank	350.0	70.0	100	70
Government	150.0	30.0	45	30
Total	500.0	100.0	145	100

MFF = Multitranches Financing Facility
Source: Asian Development Bank estimates

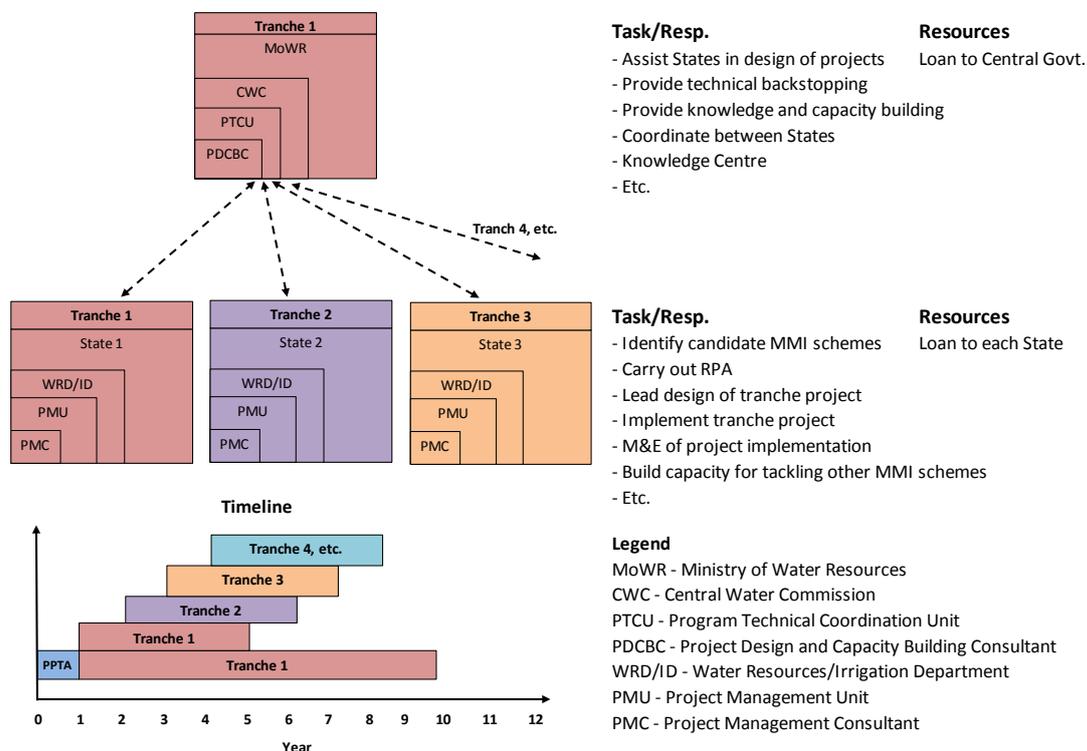
D. Indicative implementation arrangements

14. It is proposed that the Ministry of Water Resources will be the Program's executing agency (EA). A Program Technical Coordination Unit (PTCU) will be established in the EA within the CWC under the MoWR with sufficient administrative and financial powers (Figure 1). The PTCU will be supported by a Project Development and Capacity Building consultant to provide international technical expertise on modernisation of irrigation and drainage projects.

15. Each participating state will establish a Project Management Unit (PMU) within the WRD/ID to plan, design and manage implementation of the project(s) within the state. The PMU will be supported by a Project Management Consultant to assist with the planning, design and implementation.

16. A Program Steering Committee (PSC) chaired by Secretary (WR), MOWR and members from ministry of water resources and agriculture, NWM, CWC, CGWB, respective state governments etc. will be established to review Program progress at least every 6 months and to provide strategic direction and guidance on policy matters. Other important stakeholders will be non-governmental organisations (NGOs), especially those experienced in participatory irrigation management and formation, establishment and support to Water Users Associations (WUAs). Participation of the private sector will be sought, both in relation to possible engagement in the management of MMI schemes and in promoting water saving technologies.

Figure 1: Proposed implementation framework



II. TECHNICAL ASSISTANCE

17. The detail and extent of any TA will be assessed during the PPTA.

III. DUE DILIGENCE REQUIRED

18. The Program preparation will require the following due diligence assessments to be undertaken:

- (i) **Technical, economic and financial.** The initial sub-projects will be assessed in technical, economic and financial feasibility, including long-term sustainability with operation and maintenance cost recovery, and viability of any new technological options.
- (ii) **Governance.** Analysis will cover generic (financial management, anti-corruption, and procurement) and sector agendas (policy framework, investment plans, and institutional setup and capacities) and undertakings to meet MFF requirements.
- (iii) **Implementation arrangements.** Given past experience in the sector, strict attention will be given to readiness for implementation.
- (iv) **Poverty and Social.** Assessments will cover appropriate strategy to enhance poverty reduction and social development impacts, and a gender action plan to mainstream gender elements in line with the Gol and States' priorities and actions.
- (v) **Safeguards.** An environmental assessment and review framework will be prepared for each sub-project.

IV. PROCESSING PLAN

A. Risk categorization

19. The Program is financially small and is anticipated to have safeguard categorizations other than A. The government agency, CWC, has reasonable capacity as demonstrated by their implementation of World Bank-funded projects. However, the sub-projects seek to link the physical upgrading of systems closely with management and institutional reforms in order that improved levels of service can be delivered. Implementation may thus be expected to be more complex than straightforward extension, rehabilitation and modernization (ERM) projects; the Program therefore may be categorized as *complex*.

B. Resource requirements

20. Four ADB staff will be involved in project preparation for a total of 12 person-months (indicative). The proposed PPTA will require 24 person-months of international consultants and 51 person-months of national consultants (see Appendix 4).

C. Processing schedule

Table 2: Proposed processing schedule

Milestones	Expected Completion Date
Concept Paper Clearance	March 2014
PPTA Implementation	Jun 2014
Loan Fact-Finding Mission	Jan 2015
Management Review Meeting	Feb 2015
Loan Negotiations	Apr 2015
Board Consideration	Jun 2015
Loan Effectiveness	Sep 2015

PPTA = Project Preparatory Technical Assistance
Source: Asian Development Bank estimates

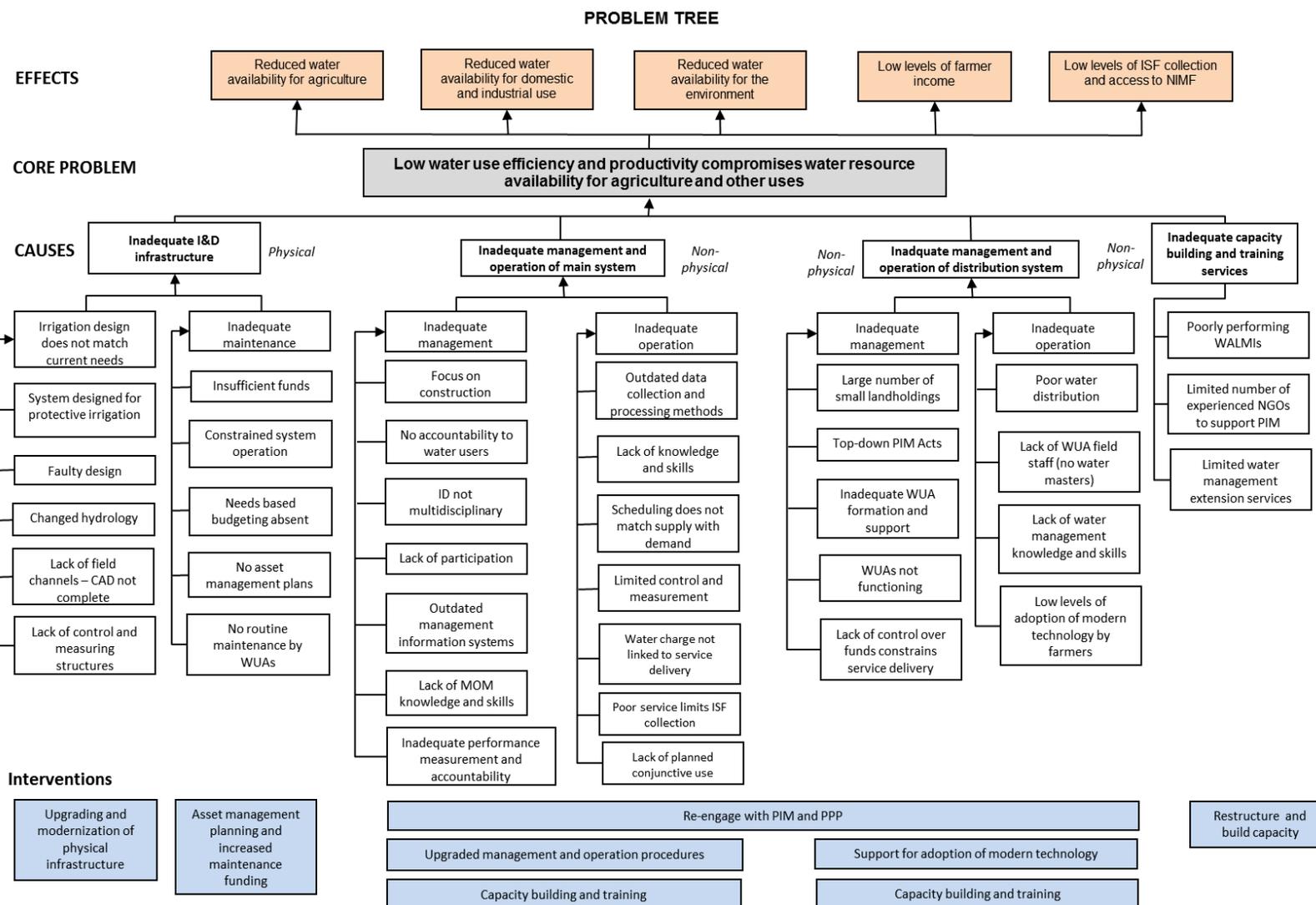
V. KEY ISSUES

21. The key issues include:

- (i) Interest by States in participating in the Program. The Program needs to be able to offer participating states additional opportunities to their normal programs. A key part of the incentives is seen as the Program offering guidance and advice to States based on international and national best practice, and the opportunity to develop and trial of innovative intervention programs relatively quickly.
- (ii) The need to integrate and coordinate physical works with management/institutional interventions. Generally management/institutional interventions take longer to implement and become effective, and are often more difficult to measure. However, the benefit of physical interventions is short-lived or limited if associated management or institutional interventions are not put in place (e.g. installation of control and measuring structures are of limited use if irrigation scheduling is not also strengthened). It will be a requirement in the submission of proposals that interventions are integrated and coordinated across the water supply pathway.
- (iii) The ability of the Program to get subprojects implemented in a relatively short time frame. The Program will be of interest to the States if it can offer them the opportunity to obtain funds relatively quickly for developing or trialing new approaches to improving MMI performance.
- (iv) Adequate staffing of the PTCU. The Program is designed to encourage innovation and application of modern approaches to improve the management, operation and maintenance of MMI schemes. Accordingly the PTCU needs to have staff who are forward looking, experienced and knowledgeable in modern approaches to irrigation management. In addition suitably knowledgeable and experienced international and national consultants will be required to advise the PTCU and States on modern approaches.

BASIC Project Information

(To be framed at PPTA stage)



DESIGN AND MONITORING FRAMEWORK FOR THE INVESTMENT PROGRAM

- Quantities to be decided at the time of PPTA preparation

Design Summary	Performance Targets and Indicators with Baselines	Data Sources and Reporting Mechanisms	Assumptions and Risks
Impact Increased availability of water for agriculture and others uses in river basins and sub-basins	Total water savings on MMI schemes in ## river basins reaches ## BCM by ##	MoWR, CWC and ID reports	Assumptions Stable political and economic environment Risks Irrigation water users see performance enhancement measures as a means to divert water to other uses/users and cease cooperation
Outcomes Increased agricultural productivity and water use efficiency	<ul style="list-style-type: none"> • WUE improved by at least 20% and total agricultural production increased by at least 10% on ## MMI schemes in ## States • Productivity of water on ##MMI schemes with a total CCA of ## ha in ## States increased by 15% • Performance of ## MMI schemes in ## States benchmarked against best practice models • ## MMI schemes in ## States considered as "best practice" models 	MoWR, CWC, PC and ID reports CWC evaluation studies	Assumptions High level support and leadership for reform and modernization Funds from NIMF offer sufficient incentive for States to want to improve service delivery and ISF collection rates Political support to proceed with reforms Sound fiscal conditions to sustain O&M
Outputs 1. Physical infrastructure of MMI schemes upgraded and modernized	<ul style="list-style-type: none"> • Condition and performance of ## MMI schemes in ## States assessed using Rapid Performance Assessment (RPA) procedures • ## MMI systems in ## States upgraded and capable of providing good levels of service to water users • ## MMI systems in ## States capable of delivering and measuring irrigation water supplies on volumetric basis 	RPA reports Upgrading completion report Upgrading completion report	Assumptions Improvement in a scheme's physical infrastructure will be integrated with improvements in its MOM processes and procedures Risks Excessive preparation time for preparing and approving proposals from States
2. MOM policies, processes and procedures modernized in	<ul style="list-style-type: none"> • MOM issues identified through RPA studies on ## schemes in ## States 	RPA reports CWC evaluation	Assumptions High level support and leadership within the ID for reform and modernization

Design Summary	Performance Targets and Indicators with Baselines	Data Sources and Reporting Mechanisms	Assumptions and Risks
State Irrigation Departments	<ul style="list-style-type: none"> • MOM policies, processes and procedures meeting stipulated levels for ## MMI schemes in ## States • Irrigation Water Management Offices (IWMOs) established in IDs in ## States • ## service delivery contracts agreed with ##% of WUAs on ## MMI schemes in ## States • Water Councils established on ## MMI schemes in ## States • ITES Unit established in ID in ## States • Asset management plans (AMPs) prepared and being implemented on ## MMI schemes in ## States • ## MMI schemes benchmarked in ## States and included in national MMI performance benchmarking programme 	<p>ID Annual Reports</p> <p>Service contracts</p> <p>ID Annual Reports</p> <p>ID Annual Reports</p> <p>Asset management plans ID Annual Reports</p> <p>ID Annual Reports CWC National MMI Benchmarking Annual Report</p>	
3. PIM programme established and WUAs functioning	<ul style="list-style-type: none"> • Model PIM Act reviewed and redrafted with user participation • Updated PIM Act enacted in ## States • ## WUAs on ## MMI schemes in ## States formed or re-engaged and providing good levels of service to water users • ## WUAs in ## States who have prepared and agreed their own Charter • ## WUAs in ## States who collect ISF and retain at least 50% • ## WUAs in ## States who employ field staff for O&M (Water Masters) 	<p>Draft PIM Act</p> <p>PIM Act</p> <p>ID Annual Reports</p> <p>ID Annual Reports</p> <p>ID Annual Reports</p> <p>ID Annual Reports</p>	<p>Assumptions</p> <p>High level support and leadership within ID for re-engaging with PIM Water users see benefits to participation in scheme management</p>
4. Support services providing improved services in MOM and PIM	<ul style="list-style-type: none"> • National PIM Training and Support Program established and meeting targets • ## WALMIs actively engaged in supporting PIM program 	<p>PIM T&SP Annual Reports</p> <p>WALMI Annual Reports WALMI Annual Reports</p> <p>ID Annual Reports</p>	<p>Assumptions</p> <p>WALMIs are restructured and able to benefit from Program initiatives</p> <p>Sufficient number of competent NGOs interested in engaging in</p>

Design Summary	Performance Targets and Indicators with Baselines	Data Sources and Reporting Mechanisms	Assumptions and Risks
	<ul style="list-style-type: none"> • ## WALMIs with improved programs for MOM and PIM • ## of State-based NGOs trained and able to support PIM and on-farm water management 		the irrigation sector
5. Increased adoption of modern technologies and irrigation management practices at on-farm level	<ul style="list-style-type: none"> • ## MMI schemes in ## States with increased (over baseline) areas under a designated set of modern irrigation practices (including micro-irrigation, SRI, etc.) 	ID Annual Reports Agricultural Department Annual Reports	Assumptions ID staff able to identify and record the area under each type of modern practice

Activities with Milestones	Inputs
<p>1. Program management and administration</p> <p>By Government:</p> <ul style="list-style-type: none"> • Establish PTCU and recruit project consultants • Initiate requests for support from State governments for support under NWUEISP • Review and approve States' outline and final proposals • Approval of package of sub-projects for inclusion in 2nd and 3rd tranches • Provide guidance and support on possible PPP initiatives • Establish National PIM Training and Support Programme <p>By PTCU with support from Consultants:</p> <ul style="list-style-type: none"> • Train State ID multi-disciplinary RPA team • Review States' outline proposals • Review States' detailed proposals • Prepare package of sub-projects for inclusion in 2nd and 3rd tranches • Provide capacity building and training for central government and State agencies • Review, make recommendations and assist in preparation of updated PIM Acts • Review individual WALMIs and make recommendations for upgrading • Assist in initiating and implementation of PPP proposals • Assist in the establishment of the National PIM Training and Support Programme • Establish procedures, prepare guidelines and carry out training in preparation of asset management plans (AMPs) • Establish procedures, prepare guidelines and carry out training in benchmarking of MMI schemes <p>By States:</p> <ul style="list-style-type: none"> • Identify possible pilot schemes for upgrading and improved MOM • Form multi-disciplinary RPA teams in ID • Carry out RPA of MMI schemes and submission of outline proposal to the Program • Detailed assessment of MMI schemes approved under outline proposal and submission of detailed proposal to Program for inclusion in 2nd and/or 3rd tranche • Continue RPAs of other MMI schemes <ul style="list-style-type: none"> • Engage in discussions, and support implementation of PPP for selected schemes <p>2. Physical infrastructure of MMI schemes upgraded and modernized</p> <ul style="list-style-type: none"> • Carry out RPA to establish baseline condition and performance of physical infrastructure • Use RPA to identify physical works required for improved scheme performance • Implement physical upgrading works, including selective CAD works where requested by WUAs/water users 	<p>International consultant support: 300 person months</p> <p>National consultant support: 800 man months</p> <p>ADB: \$350 million</p> <p>Government: \$150 million</p>

Activities with Milestones	Inputs
<ul style="list-style-type: none"> • Install additional measuring structures on schemes where water users agree to delivery of irrigation water based on volumetric measurement <p>3. MOM policies, processes and procedures modernized in State Irrigation Departments</p> <ul style="list-style-type: none"> • Form Irrigation Water Management Office (IWMO) in the ID and staff with multi-disciplinary team • Establish Data Monitoring and Processing Unit to support ITES • Train staff in service delivery and upgraded MOM procedures • Implement upgraded MOM procedures • Introduce incentive mechanisms to reward ID staff for improved performance of MMI schemes • Establish scheme level Water Councils with key stakeholders to discuss and agree performance targets and resolve MOM issues • Develop, discuss and agree general form of service agreement with water user representatives • Discuss and agree scheme specific service agreement with users • Revise legislation/issue GOs to enable WUAs to collect and retain at least 50% of the ISF • Introduce asset management survey and planning procedures for identification of replacement, repair and maintenance costs for individual MMI schemes. Set fee recovery and MOM funding to match asset management plans (AMPs) • Implement asset management plan • Carry out seasonal and annual scheme performance assessment together with water users <p>4. PIM programme established and WUAs functioning</p> <ul style="list-style-type: none"> • Review and update PIM Act with participation from water users and support from state and central government • IDs establish PIM Support Cells and staff with multi-disciplinary teams • PIM Support Cell re-engages with WUAs. • WUAs assisted in preparation of WUA-specific Charters • WUAs trained and assisted in setting and collecting ISF and MOM of the system • WUAs use ISF to employ field staff (water masters) to improve irrigation service delivery <p>5. Support services providing improved services in MOM and PIM</p> <ul style="list-style-type: none"> • Upgrade WALMIs with specialist multi-disciplinary teams • Train WALMI staff in PIM and MOM • Training of ID staff by WALMI • Training of WUAs by WALMI • Training of State-level NGOs in PIM and WUA formation and support <p>6. Increased adoption of modern technologies and irrigation management practices at on-farm level</p> <ul style="list-style-type: none"> • Review current practices in the field and prepare guidelines for improvement • Launch awareness campaigns to increase uptake of modern practices • Establish demonstration plots and outreach programs • Organise and run Farmer Field Schools • Engage private sector in promotion and uptake of modern practices 	

AMP = Asset Management Plan, BCM = Billion cubic metres, CAD = Command Area Development, CCA = Culturable Command Area, CWC = Central Water Commission, GO = Government Orders, ID = Irrigation Department, MMI = Major and medium irrigation, ITES = Information Technology Enabled Services, MOM = Management, operation and maintenance, MoWR = Ministry of Water Resources, NGO = Non-governmental organization, NIMF = National Irrigation Management Fund, O&M = Operation and maintenance, PIM = Participatory irrigation management, PPTA = Project Preparation Technical Assistance, RPA = Rapid Performance Assessment, WALMI = Water and Land Management Institute, WUA = Water Users' Association, WUE = Water use efficiency

Source: Asian Development Bank.

PROJECT PREPARATORY TECHNICAL ASSISTANCE

A. Justification

22. The project preparatory technical assistance (PPTA) is required to develop the initial sub-projects for the first tranche of the Program in accordance with the Government of India and the Asian Development Bank's standards and expectations. As to the specific investment, a multitranche financing facility (MFF) sub-project package needs to be prepared with feasibility and safeguards studies with due implementation readiness.

B. Major outputs and activities

23. The TA will prepare an MFF for the National Water Use Efficiency Improvement Support Program (the Program) that will lead to improvement of water use efficiency and productivity on MMI schemes. The TA will prepare the following outputs:

- (i) **Preparation of Sub-project Upgrading Plans for enhanced scheme performance and water use efficiency.** Supported by State Irrigation Department staff the TA will carry out rapid performance assessments of 4 MMI schemes (2 in each of 2 States) to prepare proposals and action plans for enhancing scheme performance and water use efficiency. The assessments will include the following key activities:
 - a. **MOM Capability Enhancement Action Plan.** The TA will assess the current MOM processes and procedures, including data collection and processing, and prepare an action plan for modernization and improvement.
 - b. **PIM Enhancement Action Plan.** The current status of PIM and WUA activity on the scheme will be assessed and an action plan prepared for strengthening and improvement.
 - c. **On-Farm Modernization and Performance Enhancement Plan.** The current level of technology at the on-farm and in-field level will be assessed and an action plan prepared for developing greater uptake of modern technologies.
 - d. **Support Capacity Enhancement Plan.** The level and quality of training and capacity support available for PIM, main and distribution system MOM and on-farm irrigation will be assessed and an action plan prepared for measures to strengthen this support capacity.
 - e. **Conjunctive Use Management Plan.** The extent of the conjunctive use of surface and groundwater by farmers and the capability of the Irrigation Department and WUAs to incorporate planning and scheduling for conjunctive use will be assessed and an action plan prepared for better conjunctive use.
- (ii) **Program Framework and Plan.** The TA will prepare the overall framework for the Program and its component parts.
- (iii) **Facility Administration Manual (FAM).** On the basis of the above a FAM will be prepared following the standard ADB format, along with relevant manuals and capacity development plan
- (iv) **Detailed Project Report (DPR) and Initial Procurement Packages.** DPRs will be prepared by the participating State governments, with assistance from the TA consultants.

24. The major outputs and activities are summarized in Table A4.1.

Table A.4.1: Summary of major outputs and activities

Major Activities		ECD	Major Outputs	ECD
(i)	Rapid Performance Assessment	To be decided (Tbd)	Sub-project Action Plans for enhanced scheme performance and water use efficiency	Tbd
(ii)	MOM Capability Enhancement Action Plan: a. Assessment of MOM processes and procedures b. Assessment of opportunities for ITES			
(iii)	PIM Enhancement Action Plan a. Assessment of current PIM and WUA performance b. Review of PIM legislation and regulations			
(iv)	On-Farm Modernization and Performance Enhancement Plan: a. Assessment of on-farm irrigation technology b. Assessment of on-farm performance			
(v)	Support Capacity Enhancement Plans a. Assessment of PIM support capacity b. Assessment of MOM support capacity c. Assessment of agricultural extension support capacity			
(vi)	Conjunctive Use Management Plan: a. Assessment of extent of conjunctive use b. Assessment of opportunities for conjunctive use			
(i)	Identify key components	Tbd	Program Framework and Plan	Tbd
(ii)	Formulate draft framework and plan			
(iii)	Discuss and agree draft framework and plan with MoWR and States			
(iv)	Finalize Program framework and plan			
(i)	Facility administration manual preparation	Tbd	Facility Administration Manual (FAM)	Tbd
(ii)	Financial management and other manuals			
(i)	Advice on processing detailed project reports	Tbd	DPRs and initial procurement packages	Tbd
(ii)	Advice on initial tender documents			

DPR = Detailed Project Reports, ECD = Expected Completion Date, ID = Irrigation Department, MOM = Management, operation and maintenance, PIM = Participatory Irrigation Management, PIM = Participatory Irrigation Management

Source: Asian Development Bank

C. Cost estimate and proposed financing arrangement

25. The TA is estimated to cost \$1.3 million, which will be financed on a grant basis by ADB's Technical Assistance Special Fund (TASF-Others). The government will provide counterpart support in the form of counterpart staff, provision of office space, communication facilities for consultants, and other in-kind contributions. The detailed cost estimate is presented in Table A4.2.

Table A4.2: TA cost estimate and financing plan

Item	Total Cost (\$'000)
ADB	
1. Consultants	
a. Remuneration and per diem	
i. International consultants (24 person-months)	632.6
ii. National consultants (51 person months)	225.3
b. International and local travel	82.8
c. Reports and communications	5.8
2. Workshops and training ^a	11.5
3. Vehicle ^s	22.0
4. Surveys	200.00
5. Miscellaneous administration and support costs	3.5
6. Contingencies	116.5
Total	1300.00

ADB = Asian Development Bank, Gol = Government of India

Note: The total cost of the technical assistance (TA) amounts to an equivalent of \$1.3 million, of which contributions from ADB are presented in the table above. The Gol and participating State governments will provide counterpart staff, office accommodation, support in the field, and data, the value of which is estimated to account for 20% of the total TA cost.

^a Workshops and training sessions required for central and State personnel on the TA approach, including training in rapid performance assessment procedures

^b Vehicle. One leased vehicle for general office use and four leased vehicles for fieldwork

Source: Asian Development Bank

D. Consulting services

26. The TA will be implemented over a period of 10 months tentatively starting in June 2014. TA activities are expected to be completed by April 2015. ADB will engage the TA consulting team (consisting of 24 person months of international experts and 51 person-months of national experts) using the quality- and cost—based selection (QCBS) method at a ratio of 90:10 based on a full technical proposal. The consulting team is expected to be mobilized by June 2014. All consultants will be engaged in accordance with ADB's *Guidelines on the Use of Consultants* (2010, as amended from time to time). The terms of reference (TOR) of the consulting services are summarized below.

Table A4.3: Summary of consulting services requirement

Positions	Person-Months required
International	
Team Leader/Irrigation Management Specialist	6
Irrigation Planning and Design Engineer	3
On-farm Water Management Specialist	2.5

Positions	Person-Months required
Agricultural Economist/M&E Specialist	1.5
Agriculture (irrigated) Specialist	1.5
ITES/RS Specialist	2.0
Hydrologist	2.5
Groundwater Specialist	2.5
Economist	2.5
National	
Deputy Team Leader/Institutional (PIM) Specialist	8
Irrigation Planning and Design Engineer	8.0
PIM Specialist	4.0
On-farm Water Management Specialist	4.0
Agricultural Economist/M&E Specialist	3.5
Agriculture (irrigated) Specialist	4.0
ITES/RS Specialist	4.0
Hydrologist	4.0
Groundwater Specialist	4.0
Environmental Specialist	2.5
Social and Gender specialist	2.5
Economist	2.5

ITES = Information Technology Enabled Services, M&E = Monitoring and evaluation, MOM = Management, operation and maintenance, PIM = Participatory irrigation management, RS = Remote sensing

Source: Asian Development Bank

27. The outline terms of reference for the project preparatory TA consultants are described in paras. 26 to 35.

28. The **Team Leader/Irrigation Management Specialist** (international, 6 person-months). The Team Leader will manage the implementation of the TA and work activities and be responsible for compiling the action plan reports for each of the sub-projects, and for drafting and finalizing the final report. He/she will also be responsible for the assessment of the MOM capabilities of the Irrigation Departments and prepare the related action plans.

29. The **Deputy Team Leader/Institutional (PIM) Specialist** (national, 8 person-months) will support the Team Leader in the management of TA activities and report writing. He/she will also be responsible for the participatory irrigation management (PIM) activities of the TA.

30. The **Irrigation Planning and Design Engineers** (international 3 person-months, national 8 person-months) will, together with the Irrigation Department staff, carry out rapid assessment of the condition and performance of the I&D infrastructure (assets) and prepare an estimate for upgrading and modernization. This will not comprise full rehabilitation of the system, rather targeted actions to improve the operability of the I&D system. As such it will focus on conveyance capacity (e.g. the need for desilting) and control and measurement infrastructure.

31. The **On-farm Water Management Specialists** (international 2.5 person-months, national 4.0 person-months) will be responsible for preparing the on-farm modernization and performance enhancement plans for each of the sub-projects. These will include measures for improving the level of technology used (drip, sprinkler, land leveling, use of soil moisture probes, etc.) opportunities for improving water distribution and use within the watercourse (night storage reservoirs, buried pipes, etc.) and irrigation application (System of rice intensification (SRI), Alternate Wetting and Drying (AWD), border strip irrigation, ridging, etc.).

32. The **Agricultural Economist/M&E Specialists** (international 2.5 person-months, national 3.5 person-months) will determine crop and farm budgets and assess the ability and willingness of water users to pay the irrigation service fee (ISF). The assessment will take account of the varying circumstances to be found within the farming community (different landholding sizes, socio-economic backgrounds, etc.). They will also prepare a monitoring and evaluation (M&E) plan for each sub-project Action Plan.

33. The **Agriculture (irrigated) Specialists** (international 2.5 person-months, national 4.0 person-months) will assess the current agricultural practices and prepare an action plan, to be incorporated as part of the On-farm Modernization and Performance Enhancement Action Plan. They will also be responsible for estimating the current irrigation water demand for the schemes.

34. The **ITES/RS Specialists** (international 2.5 person-months, national 4.0 person-months) will assess the current data collection, processing, analysis and reporting needs and practices on each scheme and will prepare an action plan for updating and modernization of these procedures using modern approaches (ITES, remote sensing, GIS, MIS, etc.). The action plan will be incorporated in the MOM Capability Enhancement Action Plan.

35. The **Hydrologists** (international 2.5 person-months, national 4.0 person-months) will assess the current hydrological situation of the scheme in comparison with the original design and the current demand.

36. The **Groundwater Specialists** (international 2.5 person-months, national 4.0 person-months) will assess the nature and extent of conjunctive use on each scheme and will prepare an action plan for incorporating conjunctive use into the management and operation of the scheme.

37. The **Environmental Specialist** (national 2.5 person-months) will be responsible for assessing any environmental impact of the proposed action plans for each scheme.

38. The **Social and Gender Specialist** (national 2.5 person-months) will be responsible for assessing any social and gender aspects of the proposed action plans for each scheme.

39. The **Economist** (international 2.5 person-months, national 2.5 person-months) will carry out economic and financial of the individual sub project, tranche-1 and the program.

E. Implementation Arrangements

40. The CWC, through the MoWR will be the executing agency for the TA, in association with the Irrigation Departments of the participating States. The CWC and participating State IDs will provide (i) counterpart staff to assist with data collection and fieldwork; (ii) office space and utilities for the consultants; and (iii) resources to prepare DPRs and tender documents, including detailed design.

41. The proposed TA processing and implementation schedule is listed in Table A4.4.

Table A4.4: Technical Assistance Processing and Implementation Schedule

Major Milestones	Expected Completion Date
Reconnaissance/PPTA Fact-Finding Mission	To be decided (Tbd)
Government confirmation of Mission aide memoire	Tbd
ADB concept paper clearance (including PPTA)	Tbd
PPTA implementation	Tbd

Major Milestones	Expected Completion Date
Main consulting team mobilization	Tbd
Inception review	Tbd
Mid-term review	Tbd
Submission of draft consultant's report	Tbd
Tripartite review of MFF design	Tbd
Detailed designs and readiness criteria for sub-projects completed	Tbd
Submission of final report on MFF and sub-project action plans	Tbd
PPTA physical completion	Tbd

Source: Asian Development Bank