

**TERMS OF REFERENCE
FOR
MINOR LIFT IRRIGATION PLANNING
AND
IMPLEMENTATION (TRANCHE-1)**

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PROJECT BACKGROUND

1 The Odisha state government (OSG) has received for a multi-tranche financing facility (MFF) loan from the Asian Development Bank (ADB) for the implementation of the Orissa Integrated Irrigated Agriculture and Water Management Investment Program (OIIAWMIP). It intends to apply part of the proceeds of this loan to payments for consultancy services for Minor Lift Irrigation Planning and Implementation (MLIPI). The executing agency for the project is the Department of Water Resources (DOWR), OSG.

2 The objective of the OIIAWMIP is to enhance rural economic growth and reduce poverty in the four northern river basins (Brahmani, Baitarani, Burhabalanga, and Subarnarekha river basins) and a part of Mahanadi Delta areas, while institutionalizing effective mechanisms to put into operation PIM-based agriculture growth. This is achieved through its two components:

- A. Productive and sustainable irrigated agriculture management systems
- B. Institutional strengthening and project management

3 Component A will produce (i) sub-project implementation plans (SIPs) with feasibility and safeguard assessments specifying output targets and program delivery schedules for all sub-components, prepared with Pani Panchayats (PPs or water user associations); (ii) PPs preparing the PP-level micro plans for irrigated agriculture development and achieving the set institutional development targets (e.g., membership enrollment, functional committees, registration, cash contribution for minor works); (iii) irrigation and associated infrastructure with expanded field channels and conjunctive use with groundwater in tail ends, delivered through improved quality control systems; (iv) enhanced agriculture production and incomes delivered through set programs in SIPs where PPs are developed as cohesive platforms to extend linkages with input delivery, technical support, and product marketing; (v) enhanced incomes of the vulnerable groups through set programs in SIPs organized through PPs; and (vi) efficient and sustainable O&M systems established at the levels of individual PPs, their higher tier committees, and the scheme wide levels, with clear O&M plans. This component covers 6 major (131,600ha), 9 medium (62,400ha), and 1,400 minor lift irrigation (MLI: 30,000ha) schemes of the concerned river (sub-) basins.

4 Component B will culminate in (i) improved capacities and operational effectiveness of institutions to support sound irrigation service delivery and support services (with clear operational guidelines, and encompassing DOWR [including its new PIM/CAD directorate, quality control cell, and autonomous training institute], other line agencies, local government institutions, PPs, supporting NGOs and private agents); and (ii) progressive development of IWRM institutions, capacities, and instruments with a consultative approach, including the activation of the State Water Resources Board (a sector apex body), establishment of a state water tariff commission and a pilot river basin organization, and integrated and participatory basin development and management plans for the concerned river basins. These will be achieved through the agreed institutional reform actions and capacity development support through consultants with training.

5 The loan will comprise four (or more) tranches launched on the basis of the progress of preparing and implementing subprojects, each carrying its own terms and conditions. Of the possible total loan amount of about \$190 million, its first tranche is expected to cover the period of the first four years (August 2009 – July 2013) of the 8-year implementation period, for about \$39 million, including the financing of ISPM & MLIP Consultancy Service for this particular period. The financing for the

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subsequent period, including the remainder of the ISPM consultancy contract, is to be covered by the subsequent tranches.

LIFT IRRIGATION SCHEME DEVELOPMENT UNDER THE PROJECT

A. Objective and Outputs

6 The impact (goal) of the Project is “*enhanced economic growth and reduced poverty*” and the outcome (objective) is enhanced productivity and sustainability of irrigated agriculture. The LIP development component of the Project will support this objective by achieving the following outputs:

- Output 1 : PPs formed on lift irrigation schemes representative of all land owners within the LIP command area, inclusive of women / vulnerable groups, with genuine commitment to the development of higher value cropping, for O&M of the scheme with member water charges set sufficient to cover both power charges and system maintenance, and to act in the interest of all its members.
- Output 2 : infrastructure upgraded including adequate/ dedicated power supply, pumping arrangement and PVC pipe distribution system with outlets that cover the whole command area in equitable manner, and with farmer constructed earthen channels leading to individual plots.
- Output 3 : adoption by PP and farmers of higher value agriculture, which excludes rabi rice cropping.
- Output 4 : equitable distribution of water with minimal water losses to farmers, with agreement on operation plans for both Kharif and Rabi, and implementation and funding of maintenance works.

7 The major risks and challenges faced by the Project in developing minor lift irrigation include:

- Securing adequate and reliable power for the pump.
- LIP ayacut delineation, ayacutdar listing and representative PP reformation/ formation
- PPs dominated by a few individuals (even non-members) who have become the custodians of the scheme, and who may resist opening the PP to broader participation, including to tenants.
- Willingness of farmers to engage positively and change to higher value cropping which excludes rice in rabi.
- Provision of infrastructure and (PVC) pipe distribution system that lends itself to equitable operation with minimal water losses.
- Water, land and / soil constraints

8 These risks and challenges will be mitigated by adoption of a scheme development process requiring active participation and contribution from the PP, and by strict adherence to (i) elimination criteria to screen out schemes at an early stage unlikely to be successful; and (ii) screening criteria to ensure only feasible schemes are included.

B. Scheme Development Phases

9 A 12-month cycle for revival of defunct and improvisation of schemes with PP / farmer involvement in planning & implementation is proposed. The scheme development phases and activities / milestones are tabulated at Table-II-1. The Consultancy will complete implementation of 450 MLI schemes in the districts of Jajpur, Bhadrak, Balasore and Mayurbhanj. Out of this, the preparation of 200 schemes proposed under Jajpur district for which Final Appraisal Reports have already been completed, will be facilitated by the Consultants. The balance 250 schemes will be completed in all respect by the Consultants during their engagement period of 1 (one) year.

10 Features of the process include:

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- List of LIPs to be undertaken under this scheme are obtained from OLIC. The schemes are checked against for standardized selection Criteria. PPs of selected LIPs are mobilized for the norms and provisions of this scheme. Mobilized PPs have to resolve and sign a Funding Application to PMU agreeing to conditions of the scheme. After that PMU shall prepare appraisal reports.
- An up-front cash contribution to the capital cost by the PP prior to signing of the scheme's Development Agreement (PP Development Agreement). This will involve placing funds in an interest bearing Pani Panchayat account of Rs 200/ha command ; a total of Rs 4,000 for a typical 20 ha command¹.
- Ensuring a reliable energy supply is a high priority for most LIPs, most of which will require one or more of the following: new, dedicated LT line not more than 0.2km in length with poles, transformer and power meter. The PP and the Project will contribute to this cost, which will typically be in the range Rs 200,000 to Rs 300,000. The PP's share will be 2% and will be deposited with the electrical Distribution company at the time of signing a Power Agreement. The Project and/or Distribution company will pay the balance. The PP deposit will be retained by the Distribution Company for 3 years and then released following satisfactory payment of power bills.
- The PP will make a labour (or cash) contribution equivalent to typically 20%² of the schemes development cost by implementing the civil works, including pipe excavation and back filling, and simple structures. The PP will levy a water charge on its members to cover scheme O&M and eventual scheme replacement costs.
- PP / farmer active involvement in scheme preparation and development, including preparation and submission of statements prior to consideration of the scheme by the PMU, walkover of pipe layout before design, and implementing civil works under a community / direct appointment contract with the PMU.

Table II-1: For improvement of functional schemes fast tracking may be possible.

Scheme Development Phase		Activity / Milestone		Remarks
Nr	Description	Nr	Description	
I	Preparation Phase (2 months)	1	Reconnaissance Report: field visit and check of elimination criteria. If these appear to be satisfied farmers invited to submit a Funding Application.	2 page reconnaissance report prepared by MLIPC with assistance by / guidance from PMU staff (refer elimination criteria)
		2	Farmers prepare a Funding Application comprising the following statements signed by PPs / farmer representatives: (i) list of major demands and request for funding; (ii) sketch of requested distribution pipe layout and approximate length; (iii) list of all landowners in command area and tenure arrangements; (iv) simple O&M and cropping plan which does not include rabi paddy rice; (v) outline of	For schemes recommended for screening (feasibility) the PP / farmers will be required to submit the Funding Application before proceeding to next step. Funding Application to be attached to OLIC reconnaissance report and forwarded to PMU (lift
		3	Work Plan: Reconnaissance Reports & Funding Applications Reviewed by PMU, and schemes selected for appraisal.	PMU will select likely schemes located and clump them together for efficiency of implementation.

¹ The upfront cash contribution shall be reviewed annually by the PMU, and should be about 10% of the pump and associated pumping infrastructure cost.

² The labour contribution will depend on the works required, with a greater percentage contribution for schemes where the focus is on the distribution system, and a smaller percentage contribution where the focus is on pumping plant and power.

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Scheme Development Phase		Activity / Milestone		Remarks
Nr	Descriptio	Nr	Description	
		4	Draft Appraisal Report earlier used to be prepared using prescribed format: screening criteria to be met. Field visit made by PMU lift cell to check validity of PP / farmer statements and to finalise report.	Draft Appraisal Report earlier used to be prepared by OLIC and finalised PMU lift irrigation cell. Presently Final Appraisal Report is prepared directly by the <u>Consultant using a checklist</u>
		5	Final Appraisal Report. Field visit made by PMU lift cell to check validity of PP / farmer statements and to finalise report. The Go – No Go decision will be made by the PMU.	Appraisal Report finalised by PMU lift irrigation cell, and to include Go – No Go decision based on number of points
		6	PP formed / reformed, and up-front contribution deposited into PP Bank Account.	Up-front contribution to be reviewed annually by the PMU.
		7	Signing of Agreements: (i) Power Agreement between electricity distribution company and PP for commitments for supply of power and payment of charges. PP to make deposit to Distribution Company. (ii) PP Development Agreement signed between PP and OLIC, and countersigned by PMU (lift cell). This Agreement will be effective only if the PP has deposited it up-front contribution into its bank account.	Unless both agreements are in place, development shall not proceed to Phase II: Construction.
II	Construction Phase (6 months)	5A	Pump testing to confirm sustainable discharge and pump required.	TW scheme only
		5 (or 5B)	Detailed design including (i) walkover with PP of pipe distribution system, and confirmation of command area; (ii) quantities and cost estimate.	OLIC will complete the detailed design which will be submitted to the PMU for approval / comment.
		6	Construction Agreement between Dam Safety Division (MP) and PP for construction works, endorsed PMU.	Agreement will only become valid after endorsement by the PMU.
		7A	Excavation, connection and backfilling of PVC pipe distribution system.	These activities run concurrently
		7B	Installation / rehabilitation of pumping system, including pump, control panel, foundation, etc	
		7C	Power line installation and re-connection to grid, complete with transformer and meter.	
		8	Earthen channel distribution system	By farmers / PP
		9	Commissioning	Adjustment of control valves, command area of each outlet delineated, etc
III	PP Farmer Support (4 months). Note: these activities may overlap with Phase II: Constructio	1	Training needs assessment	These activities may run concurrently, each with at least two visits.
		2	O&M Training	
		3	PP strengthening & monitoring	
		4	Records & Book keeping. Also independent financial audit.	
		5	Agricultural extension: crop management, water management and crop diversification.	

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C. Development Criteria

1. Selection Criteria

11 All schemes that are accepted into the project LIP development pipeline will satisfy the following elimination criteria assessed by a reconnaissance visit. The elimination criteria comprise:

- Not a new scheme, but either a defunct or partially operating scheme.
- Water to be available with no significant adverse effect on other users, and of acceptable quality: salinity less than 1.5dS/m and sodium hazard SAR < 10.
- Soils: suited to irrigated agriculture with stone content in root zone not exceeding 15%.
- Land form: slopes not more than 5% and no significant earthmoving volume required.
- Command area between 10ha and 40ha.
- Social : land tenure not obviously skewed (see below); no widespread tenant farming; no sharecroppers.
- Submission of a Funding Application by the PP complete with required statements, indicating PP / farmer interest and commitment.
- Power available for scheme : project will assist in securing a dedicated power line providing the length required is not more than 1 km.

2. Appraisal Report

12 The Appraisal Report will comprise the following main sections: (i) Salient Features; (ii) Natural Resources; (iii) Subproject Description & Infrastructure; (iv) Social & Agricultural Assessment; (v) PP Assessment; (iv) Proposed Sub-project; (iv) Costs; (v) Go-No Go Decision & Implementation.

13 The Final Appraisal Report will be prepared by MLIPconsultants and submitted to the PMU. The PMU lift irrigation cell will complete the report³ with outline design and check that the screening criteria are met in addition to the elimination criteria:

- **Social and PP:** (i) no ongoing problems/ disputes between PP and electricity distribution company; (ii) no severe internal disputes including beneficiary farmer dissatisfaction with PP office bearers; (iii) no external disputes with surrounding communities concerning land and water rights; (iv) relatively equal land distribution : the largest 20% of landowners shall not own more than 70% of the command area land ; and
- **Technical:** cost estimate includes for (i) PVC distribution systems to provide equitable coverage to whole command area, with all farmers getting equitable access to pumped water ; (ii) schemes with hume concrete pipe distributions systems: these cannot be easily repaired and project will replace with new PVC delivery and distribution pipe systems. Also, for river lift schemes, bank to be stable and not prone to erosion, or flooding and sand casting.
- **Economic:** cost per ha (excluding cost of levelling fields) not be more than (i) US\$450/ha for operable schemes to be improved; and (ii) US\$900/ha for defunct schemes to be revived. Full economic analysis required if this cost is exceeded. EIRR where calculated not to be less than 12%. Above cost ceiling is applied on average of all schemes and may be reviewed by PMU.
- **Environmental:** (i) sustainable use of water possible; (ii) measures to prevent build up of soil salinity; (iii) no significant re-settlement impacts.

14 The Go-No Go decision for the LIP will assist to identify schemes most likely to be successful to be included in the Project pipeline of schemes to be developed. For transparent decision making the decision matrix outlined in Table II-2 will be used.

³ Given the large number (1,400) of Appraisal Reports to be prepared, it is suggested that report preparation could be speeded up by data first be entered into an *excel* spreadsheet which, using macros, will then generate the bulk of the report in *word*.

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Table II-2: Go-No Go Decision Matrix

Nr	Criteria	Max Nr of Points	Remarks
1	Social	20	High score for schemes with equitable land owning and farmers keen for scheme development and likely to cooperate in scheme O&M
2	PP	10	Max score for existing PP which is representative of farmers. Where no PP has been formed half score. Where PP has been formed but is dominated by a few individuals no score.
	Agriculture	20	High score for schemes already cultivating high value crops (eg vegetables). No points for padi-padi; or padi-gram cropping pattern.
3	Power supply and infrastructure	20	High score for scheme where power and infrastructure solution is relatively straight forward.
4	Economic	20	Max score if unit development cost within limits specified. Half max score if this is not the case. Scheme rejected if EIRR is less than 12%.
5	Environmental	10	Max score if no adverse environmental impact. Otherwise scheme is rejected.
	Total	100	

15 The LIPs will be ranked according to their total score as follows:

- Excellent: 81 to 100
- Average: 51 to 80
- Poor: 0 to 50

16 LIPs scoring less than 51 points will not be included in the Project. Notwithstanding the total score, the LIP will be rejected if elimination criteria apply.

3. PP Formation / Reformation

17 A significant number of PPs on schemes included in the Project for development will need to be reformed to be properly representative of all beneficiaries, including minority groups and women.

4. Legal Agreements

a. PP Development Agreement

18 A PP Agreement under the 2002 PP Act transfers ownership of the (infrastructure) assets and O&M responsibilities to the PP⁴. The PP Agreement requires the PP to enter into a power agreement with the Distribution Company and levy water charges on its members for O&M, while OLIC undertakes to provide training in pump operation and maintenance. For many of the LIPs included in the Project there may already be a valid PP Agreement in place signed between the PP and OLIC. Whether or not a PP agreement is in place, it will be augmented for Project purposes by a PP Development Agreement.

19 The Development Agreement will be signed between the PP on the one hand and OLIC and the PMU (lift cell) on the other. The Agreement will become effective when: (i) a Power Agreement is in place; and (ii) the PP has made its upfront deposit into its bank account.

20 In addition to the normal clauses in a PP Agreement, under the PP Development Agreement the Project (PMU and OLIC), will undertake:

- To proceed to detailed design of the scheme with intention to proceed to full implementation.

⁴ PPs committee members are elected every 3-years. The implication is that PP agreement are only valid for 3-years.

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- To meet construction costs excluding the PP contribution (see below).
- To provide support for scheme construction and O&M.
- To support the PP in its activities including book keeping and dispute resolution.

21 The PP meanwhile will undertake to reach General Body agreement to:

- Member and O&M tariffs (water charges).
- Scheme operation including rotation of pumped supplies in both Kharif and Rabi.
- Scheme maintenance procedures particularly of M&E equipment, and appointment of a pump operator / scheme manager.
- Records / accounts to be kept.
- The PP Cost Contribution in which farmer beneficiaries will provide (i) labour for pipeline excavation, connection & backfilling; (ii) to construct (unlined) field channels from pipe outlets; and (iii) to level fields ready for irrigation.
- Arrangements for security of electricity transmission line and equipment.

b. Power Agreement

22 Except for schemes where power supply is satisfactory and metered, the Project will support steps to provide a dedicated line, transformer and meter to each of the LIPs. To this end discussions will be held with the concerned electricity Distribution company culminating with a Power Agreement wherein the Company agrees to install the required power improvements, with the PP undertaking to make full and timely payment of power charges as well as taking steps to ensure safety (from theft) of the installed power infrastructure and equipment. The Project will bear a proportion of the cost for power, and the PP will be required to make a security deposit to Distribution Company. The Power Agreement will be between the PP and the Distribution Company⁵.

D. Implementation Plan

23 The 1,400 lift irrigation schemes will be rehabilitated and improved under the Project in four overlapping tranches over an 8-year period as shown in Table II-3. From the reconnaissance visit to final post-construction support visit, Project staff will be involved with each scheme for about 18-months. Assuming a gradual increase in the number of schemes initiated from 100 in years 1 and 2, to 250 from years 4 to 8, then at peak the Project will be working with 500 schemes. Consultant will assist PMU in developing a typical schedule for scheme development.

Table II-3: **Lift Scheme Implementation Plan**

Project Year	Number of Lift Schemes Initiated	Number of Lift Schemes Active ⁶	Number of SIOs	Implemented During Tranche	Remarks
I	100	100	1	1	Already completed
II	100	200	1-2		
III	200	300	2-3	1	To be completed by the present consultant
IV	250	450	3-4		
V	250	500	3-4	3	
VI	250	500	3-4		
VII	250	500	2-3	4	
VIII		250	1		
Total	1,400				

⁵ A variation of this is for the Project to secure power equipment from elsewhere, particularly where there is a clear cost advantage in doing so.

⁶ The implementation period for rehabilitation of a lift irrigation scheme is 2 years. Consequently during each year the number of lift irrigation scheme active under the project are those continuing from the previous year and those included in that year.

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E. Broad Division of Responsibilities

24 The broad allocation of responsibilities for LIP development between OLIC, PMU and the PPs / farmers is given in Table II-4. The PMU is supported in its activities by consultants and NGO staff, as well as a senior engineer seconded to the PMU lift irrigation cell from OLIC.

Table II-4: PMU – OLIC – PP Responsibilities for LIP Development assisted by Consultant

Scheme Development Phase		Activity / Milestone		Institution with Prime Responsibility
Nr	Description	Nr	Description	
I	Preparation Phase (2 months)	1	Reconnaissance Report	MLIPC (support from PMU staff)
		2	Funding Application	PP / farmers (support from MLIPC)
		3	Work Plan/ schedule	PMU
		4	Draft Appraisal Report	MLIPC
		5	Final Appraisal Report including Go – No Go decision	PMU Lift Cell
		6	PP formed / reformed	PP, OLIC & PMU
		7A	Power Agreement	PP & Distribution Company
		7B	Development Agreement	PP, OLIC & PMU
II	Construction (6 months)	5	Detailed design including walkover & pump testing of TW (if applicable)	MLIPC (PMU to check & approve)
		6	Construction Agreement	PP & Dam Safety Division (MP)
		7	Implementation of Power supply & construction of pumping arrangement & pipe distribution system	Distribution Company, PP & MLIPC (PMU to monitor)
		8	Earthen channel distribution system	PP / farmers (PMU to monitor)
		9	Commissioning	PP & MLIPC (PMU to monitor)
III	PP / Farmer Support (4 months).	1	Training needs assessment	PP& PMU
		2	O&M Training	PP& MLIPC / PMU
		3	PP strengthening & monitoring	PP & MLIPC / PMU
		4	Records & Book keeping	PP& MLIPC / PMU
		5	Agricultural extension	PP& PMU

F. Location and Selection of LIPs

25 The LIPs that will be considered in the Project are located in the four northern river basins of the State, Brahmani, Baitrani, Budhabalanga and Subarnarekha. These cover 11 districts in which there are about 8,593 defunct and 4,741 operable LIPs. Of these about 30% 3,020 have been handed over to PPs. The average design command area of these schemes was about 22 ha.

26 For efficiency of implementation lift irrigation schemes initiated each year will be clustered into the minimal practical number of blocks and districts. As a general guideline, schemes initiated each year should be located in 4-8 blocks / district and in 2-3 districts. The aim will be not to work in more than about five districts in any one year. It is further suggested that Tranche-I schemes may be selected from within Dhenkanal and Jajpur districts and extended to the districts of Bhadrak, Balasore and Mayurbhanj.

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G. Institutional Arrangements

5. General

27 To support MLIP planning, implementation, supervision and monitoring of rehabilitation and improvement of minor lift irrigation schemes, a Lift Irrigation Cell (LIC) has been constituted in the Program Management Unit (PMU) in the CAD/PIM Directorate of the DOWR. The LIC will work under the overall supervision of the Project Director of PMU through the guidance of international consultant team for institutional strengthening and project management (ISPM) as well as implementation support by MLIPIIC.

28 The LIC will comprise: (i) a Planning Group (an engineer, a monitoring and evaluation expert, and three mobile teams each comprising an **agriculture** and irrigation specialist); and (ii) Development Groups (PIM specialist, agriculture extension specialist, irrigation engineer/ works inspector and NGO support staff). The proposed staffing is given in Table II-5.

Table II-5: Lift Irrigation Cell Staff Composition

Number	Staff Position	Transfer / Recruitment
Planning (Preparation) Group		
1 Nr	Lift Irrigation Engineer	Transfer (from OLIC)
3 Nr (depending upon no of SIO offices)	SIO Manager (Sub-project Implementation Office Manager)	Engaged directly by PMU or by consulting firm after approval by PMU during project
1 Nr	MLIPI Team Coordinator	Recruit (Proposed consulting services)
1 Nr	Monitoring and Evaluation Specialist	
Up to 3 Teams each of 2 persons (6 Nr max)	Mobile teams consisting of one Agriculture Specialist and one Minor Lift Irrigation Specialist to assist OLIC undertake feasibility assessments of proposed lift irrigation schemes, from initial reconnaissance to final	
Development Group: Consultants		
Nr of Development Group Consultants will vary from 1 to 3 (4)	PIM Training Coordinator – 2 nos.	Recruit (Proposed consulting services)
	Agriculture Extension Expert	
	Irrigation Engineer / Works Inspector	
Development Group: NGO Support		
5 to 25 Nr	Community Organiser (One CO per 10 LIPs)	NGO/Consulting services recruit

29 The Planning group will be physically located in Bhubaneswar in the PMU, while the Development Groups, both consultants and NGO staff, will be based in SIO offices / OLIC offices⁷ in those districts where LIPs are being developed. Staff will be periodically moved as scheme district concentrations change.

30 The number of SIO offices will increase from one to three or four, with each office handling about 150 LIPs at a time. This will vary depending upon operational districts which will be decided by PMU.

⁷ For improved team work it is essential that the SIO offices are located in the same building / adjacent to the OLIC offices (SIO office/ logistic/ infrastructure maintained by PMU).

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31 The number of NGO support staff to each SIO will be such that: (i) each Community Organiser works with about 10 PPs or about 200 ha; These NGO staff will support all stages of project development, planning, implementation, focusing on PP strengthening, O&M and agriculture and water management development activities (except in reconnaissance go-no-go stage).

6. Preparation Phase Activities

32 Preparatory activities, including reconnaissance (selection/ elimination), funding applications, appraisal and signing of agreements, will be supported by the PMU Lift Irrigation Cell mobile teams.

33 Each mobile team consists of an agriculture specialist and an MLI specialist. It is expected that a single field appraisal will be completed in 1-day. Allowing one day for travel, each team will undertake appraisal of five scheme per week. In preparing each scheme several scheme-visits (3-4) would be required, so in one year (say 50 weeks), one team could complete preparatory activities for 60-70 -schemes. The number of mobile teams would therefore vary from one to three (or four).

7. Construction and PP / Farmer Support Phase Activities

34 Field SIO based consultancy and NGO staff will primarily become involved in the Phase II: Construction, and Phase III: PP & Farmer Support, phases working together with OLIC staff in offices located in / near to the OLIC district based division offices.

35 Responsibilities of these staff include:

- Supporting & checking detailed designs before submission to PMU for approval.
- Support and checking quantity of construction.
- PP Strengthening activities including book keeping, dispute resolution, management of PP affairs.
- Development of operation & maintenance plans with broad based PP/farmer agreement.
- Agricultural and water management extension.

H. Procurement Arrangements for Goods

36 Central procurement of (i) mechanical and electrical (M&E) equipment including pumps, transformers and electric cable, and of (ii) PVC pipes will be carried out annually by the PMU using procurement procedures acceptable to the ADB and GoO. Procurement notices will be advertised on the internet (DOWR – OLIC website).

37 The warranty period for equipment and materials is to be at least 1 year, with free pump service within the warranty period. Quality of M&E equipment including PVC pipes to be assured by export promotion and marketing (EPM) certification, or other acceptable certification.

38 An alternative to central procurement is for the PPs to procure the necessary equipment. This would require considerable support to each PP prior to procurement, but advantages are considerable including:

- PP with greater capacity and sense of responsibility for scheme infrastructure.
- Equipment procured would meet PP requirements.
- Local facilities for equipment repair and maintenance would be stimulated.

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39 It is suggested that alternative procurement arrangements be piloted under the Project for Tranche-II schemes.

I. Deliverables

40 The deliverables to be prepared under the Project for each LIP and broad delineation of responsibility is outline in Table II-6.

Table II-6: Deliverable for LIPs

Nr	Report	Responsibility	Assisted by
Phase I: Preparatory			
1	Reconnaissance Report with Farmer Application (Funding Application)	MLIPC	PMU Lift Cell Mobile Teams
2	Work Plan (Annual – draft and final)	PMU – Lift Cell	MLIPC
3	Draft Appraisal Reports	--	--
4	Final Appraisal Reports	PMU – Lift Cell	PMU Lift Cell, Mobile Teams of MLIPC
5	Power Agreement	PP & Distribution Company	MLIPC & PMU Lift Cell, Mobile Teams
6	PP Development Agreement	PP & PMU & OLIC	MLIPC & PMU Lift Cell Mobile Teams
7	Procurement of Goods	PMU	MLIPC
Phase II: Construction			
1	Design Documents (drawings & cost estimates)	MLIPC	SIO & PMU Lift Cell Engineer
2	Construction Agreement	PP & Dam Safety Division (MP)	SIO & PMU Lift Cell Engineer
Phase III: PP & Farmer Support			
1	Scheme specific operation & maintenance plans	PP & SIO staff	PMU Lift Cell, MLIPC
2	Various reports concerning PP strengthening & agricultural extension (selected schemes)	PP & SIO staff	PMU Lift Cell, MLIPC
3	M&E report (selected schemes)	PP & SIO staff	PMU Lift Cell, MLIPC

41 In addition, monitoring including for environmental impact, will be carried out and a report would be prepared for clusters of LIPs developed under the Project. This will ensure that appropriate mitigation measures are incorporated in the lift irrigation scheme design.

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III. SCOPE OF MINOR LIFT CONSULTANCY SERVICES

A. Scope and Duration of Services

42 The consultancy services are required to assist the PMU and OLIC develop implementation of minor lift irrigation over a One year period in accordance with the process, criteria and arrangements detailed above. The consultancy services will in particular strengthen reporting and M&E, preparatory activities with focus on PP development and selection of schemes meeting project criteria, quality construction and effective post construction support. Over one-year contract period it is expected that all activities will be completed in 450 schemes including 200 schemes for which the Final Appraisal Reports are already completed.

B. Consultancy and NGO Staff Terms of Reference

43 Indicative staffing inputs are given in Table III-7 below. Actual staffing numbers and inputs will be revised at inception stage, as agreed with the PMU.

44 The consulting firm is expected to engage NGO services for community organisation and agricultural/ water management activities in minor lift schemes.

Table III-7: Consultancy and NGO Staff Inputs

S.Nr	Staff Position	Nr of Staff	Input (sm)
Planning (Preparation) Group			
1	MLIPI Team Coordinator	1	1 x 12
2	Monitoring and Evaluation Specialist	1	1 x 12
3	Agriculture Specialist (Mobile Team)	3	3 x 12
4	Minor Lift Irrigation Specialist (Mobile Team)	3	3 x 12
Development Group: Consultants			
1	PIM Training Coordinator	2	2 x 12
2	Agricultural Extension Expert	1	1 x 12
3	Works Inspector	1	1 x 12
Development Group:			
1	Community Organisers	25	25 x 9

SIO managers will be deployed for **less months**. SIO Managers shall be engaged directly by PMU or by consulting firm after approval by PMU during project implementation

1.Planning (Preparation) Group Staff

a. MLIPI Team Coordinator

Tasks

- Prepare Inception Report including methodology and detailed work plan for the Consultants Team that conforms to the program implementation work plan prepared under the CTA
- Prepare quarterly progress reports
- Prepare the final report synthesizing lessons learnt.
- Prepare economic guideline/ appraisal reports to be used in assessment of economic feasibility of minor lift irrigation.
- Take lead in ensuring all reporting required for development of minor lift irrigation is of a satisfactory standard.

Terms of reference

- Plan, guide, coordinate and support activities of Consultants Team providing overall guidance and direction and ensure that the Consultants Team works in harmony with PMU and OLIC
- Assist the Program Director and coordinate regular reporting of MLI activities.
- Assist the Program Director in planning and coordinating Consultants Team inputs
- Promote the incorporation and adaptation of systems established for the MLI rehabilitation under the CTA
- Support the SIO in implementation of agricultural development plan for the lift irrigation schemes
- Assist Information Management Cell of PMU in implementing the monitoring system and MIS for lift irrigation schemes
- Review monitoring and progress reports received from SIOs and make recommendations to SIO for follow up action
- Prepare program monitoring and progress reports for the lift irrigation schemes
- Any other responsibility assigned by the Director PMU

Qualification

Post graduation in agriculture engineering, agriculture, civil engineering or allied subject

Experience

At least 10 years experience in planning and managing similar projects

Knowledge of relevant computer software

b. Monitoring and Evaluation Specialist

Tasks

- Prepare and implement Baseline and monitoring system for lift irrigation schemes
- Assist other SIO staff in preparing monitoring and progress reports for lift irrigation schemes
- Assist Information Management Cell of PMU in implementing the monitoring system and MIS for lift irrigation schemes
- Train the Community Organizer in participatory monitoring and self assessment
- Any other responsibility assigned by the Director PMU

Qualification

Post graduation in Social sciences/ concerned discipline

Experience

At least 08 years experience in monitoring & evaluation in participatory irrigation management / irrigation/ agriculture/ livelihood projects

Knowledge of relevant computer software is necessary

c. Agriculture Specialist (Mobile Team)

Tasks

- Assess the potential for agricultural development and increasing agricultural productivity in short listed lift irrigation schemes
- Prepare the agricultural development plan for the short listed lift irrigation scheme

Terms of reference

Qualifications and Experience: Post-graduate education in agriculture. Preferably 3 years of relevant experience as an extension worker. (OR a relevant Bachelor's Degree with preferably 5 years experience OR Agriculture Diploma plus 7 years of extension field experience).

Specific Field Experience: Preferably 3 years field experience (for Master's Degree holders OR 5 years for Bachelor's and 7 for Diploma holders) in (i) irrigated agriculture (extension) in related to the adoption of agricultural technology. and (ii) training and working with farmers in developing and implementing cropping and irrigation schedules. Plus experience in training of farmers and other trainers. Preference will be given to those who have expertise in (i) working with farmers in irrigated rabi (diversified cropping), (ii) Conducting Farmers Field Schools (FFS), and (iii) PIM and working with PPs.

Knowledge of relevant computer software is desirable

d. **Minor Lift Irrigation Specialist (Mobile Team)**

Tasks

- Assess the technical potential for rehabilitation / improvement of short listed lift irrigation schemes
- Finalize the technical rehabilitation / improvement plan for the short listed lift irrigation scheme
- Provide on the job training on the operation and maintenance of LIPs to the PPs

Qualifications and Experience: Preferably Bachelor's Degree in Civil/Irrigation/ Agricultural Engineering and preferably 5 years of job-related field experience. Diploma holders with preferably 7 years experience are also eligible to apply. Experience should be related to lift irrigation, command area development (CAD) work (working with Farmers) and Irrigation O&M and water management with PPs.

Knowledge of relevant computer software desirable

2. **Development Group - Consultants**

a. **PIM Training Coordinator**

Tasks

- Supervising, monitoring and reviewing the work of SIO staff
- Prepare annual plans and budgets for Pani Panchayat training and capacity development for the lift irrigation schemes
- Supervise and monitor implementation of institutional strengthening and capacity development plan for lift irrigation scheme Pani Panchayats
- Prepare monitoring and progress reports on lift irrigation schemes Pani Panchayat institutional strengthening and capacity development
- Support Institutional / Capacity Development Expert of PMU in assisting Information Management Cell of PMU in preparing and implementing monitoring system for training and capacity development of SIO staff
- Support Institutional / Capacity Development Expert of PMU in assisting Information Management Cell of PMU in implementing the monitoring system and MIS for institutional strengthening and capacity development of lift irrigation scheme Pani Panchayats
- Create and maintain a database of capacity development resources available at the district level including list of training agencies, consultants, resource persons and emerging capacity development approaches and methodologies

Terms of reference

- Train and coordinate the Community Organizer in PIM and planning exercises
- Any other responsibility assigned by the Director PMU

Qualification & Experience

MA in Social Sciences / MSW / Post-graduate qualifications in Agriculture/Horticulture or Graduate in Civil/Agriculture Engineering with experience in PIM and/or community mobilization would be considered. Candidates should have minimum 3 years of practical (field) experience in supervising Community Organizers. Candidates with Bachelor's Degree plus 5 years experience or holding a diploma with 7 years of field experience may also be considered. Experience in participatory irrigation management / capacity development in irrigation/ livelihood projects is desirable.

Knowledge of relevant computer software

b. Agriculture Extension Expert

Tasks

- Support preparation and implementation of agriculture extension and agri-business development plan for lift irrigation schemes
- Support preparation and implementation of training plan for agriculture extension and agri-business development for lift irrigation schemes
- Coordinate with district Agriculture / Animal Husbandry / Horticulture / Fishery / etc. departments and other district level agriculture development agencies in supporting implementation of agriculture extension and agri-business development activities in lift irrigation schemes
- Assist Monitoring & Evaluation Officer of SIO in implementing the monitoring system and MIS for agriculture extension and agri-business development for lift irrigation schemes
- Prepare monitoring and progress reports on agriculture extension and agri-business development activities in lift irrigation schemes
- Train the Community Organizer in agriculture planning and extension
- Any other responsibility assigned by the Director PMU

Qualifications and Experience: Post-graduate education in agriculture. Preferably 2 years of relevant experience as an extension expert or a relevant Bachelor's Degree with 5 years experience or Agriculture Diploma with 7 years of experience in relevant field. Preference will be given to those who have expertise in (i) working with farmers in irrigated rabi (diversified cropping), (ii) Conducting Farmers Field Schools (FFS), and (iii) PIM and working with PPs.

Knowledge of relevant computer software

c. Works Inspector

Tasks

- Assist Pani Panchayats in implementing the civil works, CAD work from the participatory design stage through construction to O&M of CAD work
- Provide consulting services / train concerned persons in Pani Panchayats in water course and field channel construction and other on-farm developments
- Assist Pani Panchayats in construction supervision / monitoring of lift irrigation scheme rehabilitation works
- Train the Community Organizer in CAD works
- Any other responsibility assigned by the Director PMU

Terms of reference

Qualifications and Experience: Preferably Bachelor's Degree in Civil/Irrigation/ Agricultural Engineering and preferably 5 years of job-related field experience. Diploma holders with 7 years experience are also eligible to apply. Experience should be related to lift irrigation, command area development (CAD) and on farm development work (working with Farmers) and Irrigation O&M and water management with PPs.

Knowledge of relevant computer software

Development Group: Community Organiser

Tasks

- The key role of the CO is to facilitate and mobilize farmers and PPs in tasks listed under the TOR of MLIPC
- Educate farmers and Pani Panchayats in individual and group behavior, attitudes, need for changing attitudes, identify conflicts and develop proper conflict management practices
- Educate Pani Panchayat representatives on their rights and responsibilities, participatory decision-making and leadership qualities
- Educate farmers and Pani Panchayats in participatory monitoring and self assessment
- work with people to develop and internalize methods to maintain transparency;
- Arrange for external assistance/expertise when she/he doesn't possess skills.
- Any other responsibility assigned by the Director PMU

Qualification

Graduation in social sciences relevant subject (MSW preferable)

Experience

At least 2 years experience in community mobilization

C. Reports and Documents

45 The Consultants will assist in the preparation of reports required for planning and implementation of lift irrigation schemes as detailed above in Table II-6. In addition the consultants will prepare the following reports:

- Inception Report
- Quarterly Progress Reports
- Final Report
- Economic guideline to assess economic feasibility of minor lift irrigation and scheme selection

46 All reports except the progress reports will be prepared in draft and final shape.

Terms of Reference (Attachment 1)

OIIAWMIP - PROGRAM DESCRIPTION

A. Impact and Outcome

47 The impact of the OIIAWMIP will be enhanced rural economic growth and reduced poverty in the selected river basins/geographical areas, and institutionalization of effective mechanisms to put into operation PIM-based agriculture growth.⁸ The outcome will be enhanced productivity and sustainability of irrigated agriculture in the selected existing schemes in the river basins, and improved performance of irrigation service delivery and water resources management.⁹

B. Outputs

48 The outputs of OIIAWMIP are (i) productive and sustainable irrigated agriculture management systems, and (ii) strengthened capacities of the institutions in delivering services and sustaining irrigation schemes with WUAs.

Part A: Productive and Sustainable Irrigated Agriculture Management Systems

49 This component will establish productive and sustainable irrigation systems through WUA strengthening, renovation of irrigation and associated infrastructure, agriculture and livelihood support services, and O&M support. It covers 6 major and 6 medium existing irrigation schemes (having a designed net irrigated area [NIA] of about 185,000 ha, including 6,000ha of extension in a major scheme), and up to about 1,400 existing minor lift irrigation schemes (having NIA of about 30,000 ha) in the OIIAWMIP area. The component will also include (i) other major and medium schemes in the same geographical area which are functional but requires WUA strengthening and minor refinement of the existing infrastructure, and (ii) minor creek irrigation schemes to be undertaken as a pilot. The following subcomponents are provided, and aligned with the step-by-step implementation procedure. In principle, substantial WUA institutional strengthening and participatory planning will be pursued upfront with performance targets, after achievement of which infrastructure¹⁰ and other services are provided.

i. Participatory Planning and WUA Strengthening

50 **Participatory Scheme Planning.** Following the selection criteria and the planning documents prepared for the tranche-1 schemes, the OIIAWMIP will support participatory feasibility studies and preparation of subproject implementation plans (SIPs) for the concerned major, medium, and minor lift schemes in close consultation with the concerned WUAs. The SIP will stipulate specific programs and output targets for WUA strengthening, irrigation and associated infrastructure, agricultural development and livelihood enhancement for the poor, and system O&M plans including a strategy for efficient water

⁸ This will be measured through reduced poverty incidence, incremental incomes and social indicators of farmers and vulnerable people, and application/replication of the said institutional mechanisms across the state.

⁹ Productivity will be measured through increased irrigated area (from 170,000ha [including partially irrigated area] to 221,000ha for monsoon and from 77,000ha to 155,000ha for dry season), crop production (focusing on crop intensification [monsoon] and diversification into high value crops [dry season]), efficiency in water use (production value per unit of water, etc.), and employment created including allied activities. Sustainability will be measured in individual schemes (at both scheme and individual WUA levels) achieving targets for water distribution, tariff collection and O&M fund allocation, and DOWR and associated agencies delivering the set institutional functions.

¹⁰ Excluding main and key distributary facilities that will be implemented in parallel to WUA strengthening, to ensure the timely delivery of water when branch and minor canal systems (for WUA management) are renovated.

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use. All schemes will be fully appraised by the State, the Government, and ADB and included in the periodic financing request of the subsequent tranche before starting their implementation, except for minor lift schemes for the first tranche, where initial schemes will be identified, appraised, and implemented following a process-type approach to demonstrate the effectiveness.

51 **WUA-level Micro-Planning.** For major and medium schemes, the planning process has two tiers: scheme-level framework planning (completed prior to PRF), and WUA-level micro-planning. The former will provide a overall framework for the scheme at large to initiate the implementation of the main infrastructure facilities. Upon approval of the PRF, WUA micro-planning will be initiated with the concerned WUA, the WUA support team (including NGO staff and locally identified and trained facilitators in WUA strengthening, agriculture, and water management), and DOWR field engineers. The process will prepare WUA level implementation plans (WUAIP), comprising the plans for minor infrastructure improvement, CAD, agriculture, livelihood, and O&M. The O&M plan will specify the seasonal water allocation/entitlement of the WUA, to be monitored by the WUA with a measuring device provided at their water intake.

52 **WUA Strengthening and Empowerment.** The Project will strengthen WUAs through WUA support teams to manage planning, construction, and post-construction activities as equal partner to DOWR. WUAs will play effective organizational, operational, resource mobilization, and networking functions as stable platform to promote irrigated agriculture development, including the formation of linkages to input delivery and output marketing. Specific targets would be set out and achieved including membership enrollment; election and formation of executive committees and subcommittees, and implementing routine O&M on their own (building on the grant in aid provided by the DOWR) and other collective actions. Upon achievement of the targets, an implementation agreement will be signed by WUA and DOWR to start the implementation of the defined WUAIP activities. For major and medium schemes, higher tier committees (project and distributary committees) will also be established during this process.

ii. Irrigation Infrastructure including Command Area Development

53 **Irrigation and Associated Infrastructure.** The OIIAWMIP will provide renovation and extension of necessary infrastructure, including reservoir facilities (minor repair), head and cross regulators, canal systems, canal crossing bridges, inspection roads, cross drainages, and minor drainage works to address immediate local drainage problems,¹¹ along with minor lift irrigation infrastructure. As to major and medium schemes, main and upper distributary facilities are implemented following the scheme-level planning and approval of PRF, whereas lower distributary and minor systems will follow the achievement of WUA strengthening targets. Necessary equipment, facilities, and communication systems will also be provided to support sound O&M. Construction quality monitoring will involve the concerned WUAs and their higher committees, along with third party quality monitoring and inspection system. WUAs will also be involved in the implementation of the minor canal works within their own constituencies.

54 **CAD and Conjunctive Use.** The OIIAWMIP will place significant emphasis on installing field channel systems as essential conditions to attain high water user efficiency, and crop intensification and diversification. Specific plans will be laid out at the WUAIP. The CAD investment will be primarily implemented through extending centrally-assisted programs with state own counterpart contribution, whereas provision under OIIAWMIP will also be provided to implement CAD for subprojects where central program support is not readily available. The concerned WUAs will implement the minor CAD facilities.

¹¹ A study will be included to assess the long-term sustainability of addressing the chronic drainage problems in the low-lying areas of irrigation schemes in the Brahmani river basin following up on the drainage master plan, along with pilot works within the irrigation command areas.

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With the utilization of CAD field channel systems, the OIIAWMIP will also promote conjunctive use of groundwater for rabi cropping, by providing groundwater survey, monitoring and information campaigns for private investments, and provision of pilot wells targeted to marginal farmer groups in the tail end areas.

55 For WUA-level infrastructure works of major and medium schemes, WUA will collect and deposit 5% of the cost of WUA-level infrastructure in a joint account with DOWR, which will be utilized for their future maintenance works within the WUA. As to CAD and minor lift schemes, WUAs will contribute 10% and 20% of the cost of the infrastructure, respectively. With an agreement that WUAs will meet all major and minor repairs and replacement of assts, minor lift WUAs will also deposit the specified amount of reserve fund in their accounts to meet this end.

iii. Agriculture and Allied Sector Support, and Livelihood Enhancement

56 **WUA Agriculture and Horticulture Development.** The OIIAWMIP will provide support to this end to supplement the existing Government and the State programs in the sector, upon signing of the implementation agreement by the WUA. WUA capacity will be developed as a platform to plan, coordinate, and arrange for the program implementation. Specific programs will be prepared in conformity with the district and block level agriculture extension plans (pursued under the Agriculture Technology Management Agencies [ATMA] where available) and stipulated in the WUAIPs. At this stage, key opportunities and constraints from input supply, production systems, and output marketing will be identified, and necessary programs to overcome the constraints will be defined. The agriculture and horticulture subcomponent will cover (i) production systems including farmer field schools for crop intensification and diversification, soil nutrient management, seed multiplication, and integrated pest management, and (ii) organizational linkage of WUAs with input suppliers and marketing chains with market intelligence including catalogues for existing organizations and programs. New technologies and approaches, e.g., system of rice intensification (SRI), participatory variety selection (PVS), and farmer producer companies will also be introduced and expanded upon effective demonstration. Participatory technology development of other innovative technologies (e.g., aerobic rice, integrated nutrient management, rice-fish integrated farming) will also be implemented in partnership with local research agencies.

57 These services will be delivered through existing state projects (sought through the district level coordination committees) or OIIAWMIP funding in case of the former's unavailability, by the resource persons of the line departments or other agents (including private experts and NGOs) arranged through the OIIAWMIP. WUAs will sustain activities through assigning and training in-house extension workers who will form regular links with the existing institutions within the subproject areas. Demonstration works will be undertaken with a focus on the land plots of marginal farmers. WUAs will recover the cost of input materials from the service recipients as revolving fund to continue the activities.

58 **WUA Livelihood Enhancement Support.** The OIIAWMIP will also support the formation of linkages between the vulnerable groups within the WUA area and the existing programs for poverty reduction, such as forming self help groups and facilitating delivery of credit and training for income generation activities. While primary efforts will be made to deliver the above agriculture and horticulture support services to these vulnerable groups, provisions targeted for these groups are also included in the OIIAWMIP, such as backyard planting of vegetables, development of fodder along the water channels and support for livestock development; production of inputs such as organic fertilizers through composting and through other means, processing of production where feasible, group cultivation through leasing in of land, fisheries in public water bodies (reservoirs, ponds, and drainage channels), and community-based participatory watershed management identified by the WUAs. A separate program for WUA capacity

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development and service delivery is also prepared for potential funding by Japan Fund for Poverty Reduction (JFPR), with a provisional amount of \$2.0 million.

iv. Sustainable O&M System

59 **Minor Facilities.** The OIIAWMIP will institutionalize sustainable O&M for the concerned irrigation schemes with the involvement of WUAs. At present, the facilities are classified into those managed jointly by DOWR and WUAs (WUA project committees at main canal level, and distributary committee at secondary/ distributary canal level), and minor facilities of which O&M is transferred to WUAs. As to the latter, the OIIAWMIP will establish WUA capacities to manage sustainable O&M. This will be attained through formation of water management and works subcommittees and preparation of O&M plans during the WUAIP stage, and training and engaging them in implementing minor canal and related works while monitoring contractor's works during the implementation stage. Upon completion of the civil works, on-the-job training will be provided to (i) prepare and implement operational plans; and (ii) undertake inspections through a joint walk-through to identify and plan maintenance works. For major and medium schemes, WUAs are facilitated to implement the maintenance plan with the grant-in-aid (Rs100/ha at present) by the DOWR. In the event of insufficiency of the grant-in-aid, WUAs will seek additional fund to DOWR through distributary and project committees, and/or mobilize necessary funding from among its members. As to the minor lift schemes where the power and responsibility of O&M and financing has been transferred to WUAs, the concerned WUA will generate the necessary fund from its members to implement the O&M plan.

60 **Main and Secondary Facilities.** At the individual scheme and distributary levels (of major and medium schemes), the OIIAWMIP will establish participatory joint management systems between DOWR and the counterpart WUA committees, and pursue further O&M transfer during the latter part of the implementation period. Under joint management, DOWR and the WUA higher-tier committees will prepare and implement system operational plans on a seasonal basis. Regarding maintenance, they will also identify maintenance requirements through joint walk-throughs and performance measurements (e.g., actual canal flow against the design figure) of the facilities and demands submitted from lower-tier committees and WUAs, and jointly decide on and implement the scheme-wide maintenance plan allocating necessary funding from DOWR. Guidelines for O&M performance monitoring and planning, to be developed as state-wide MIS, will be prepared to guide and support the process.

Part B: Institutional Strengthening and Project Management

61 This component comprises (i) institutional strengthening for PIM and IWRM; and (ii) project management for OIIAWMIP. Necessary hardware and software (civil works for office refurbishment and extension, vehicles and equipment, consultants, and incremental operational costs) will be provided to support these ends.

i. Institutional Strengthening

62 **PIM.** This subcomponent will establish self-sustaining mechanism to deliver accountable irrigation services while developing the capacities of the concerned institutions. Specific works will include (i) capacity strengthening and operationalizing the functions of PIM/CAD directorate; (ii) establishing updated O&M guidelines and MIS for irrigation scheme performance monitoring and O&M planning; (iii) operationalizing third party testing and internal technical auditing system through externally hired experts; (iv) developing training programs and delivering training for the OIIAWMIP and other staff of DOWR and line departments, service providers (NGOs and local experts), and WUAs, including exposure visits; (v) information, education, and communication campaigns for PIM; (vi) advisory support to implement the

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institutional actions in the roadmap; and (vii) support studies to pursue change management process of DOWR, and facilitate the definitions and implementation of specific actions in the management of human and financial resources, and business processes. The specific training subjects include skills for participatory planning, WUA development, design and construction management, quality control, PIM including O&M, resettlement, environmental management, and support services. WALMI will also be strengthened with remodeling, including (i) assignment of its qualified director from the market, (ii) upgrading of training programs, (iii) developing knowledge base on the best practices and lessons on PIM and IWRM; and (iv) twinning with a reputed international institute.

63 Within the above framework, WALMI will be strengthened to provide necessary technical and institutional backup and training support. Subject to the implementation of reform actions for higher autonomy and staff quality,¹² it will be entrusted to research and establish most up-to-date information, knowledge, and technology base in terms of hardware and software to support most efficient water use, best practices and lessons for PIM and IWRM, and monitoring and evaluation of scheme and WUA performance. Along with enhancing the knowledge and technology base, WALMI will upgrade its training modules and its capacity with the consultants, and provide training with a focus on the concerned project staff and trainers.¹³

64 **IWRM.** In accordance with the roadmap, this subcomponent will provide support for (i) studies to assess appropriate IWRM functions and institutional arrangements for setting up an authority or commission for water tariff fixation and other regulatory functions including water allocation and entitlement, and environmental management; (ii) studies for appropriate legislation of the above IWRM organizational setup and functions, and of groundwater management; (iii) preparation of multi-sectoral river basin plans with establishment of participatory river basin organizations; (iv) strengthening of hydrological database and decision support systems for the concerned river basins; and (v) staff training on IWRM, basin planning and associated analytical methodologies including hydraulic modeling, including foreign and local training. The OIIAWMIP will also provide support for establishing and operationalizing advisory council of proceeding with the above IWRM institutional development process.

ii. Project Management

65 This subcomponent will operate OIIAWMIP project management systems through multi-disciplinary project management unit (PMU) and subproject implementation offices (SIOs), with the State and outsourced experts, technical assistance (TA) consultants, and NGOs. The OIIAWMIP will operationalize participatory decision making system with WUAs and their higher tier committees at distributary and project levels. The latter are trained to jointly make individual decisions on the subproject planning, implementation, and O&M at the scheme, distributary, and WUA levels, based on which specific works will be implemented by the responsible organizations, with monitoring the WUAs. This will be supported by the project-specific MIS and quality control system that ensures due recording and reporting at SIO on institutional, physical, financial and other progress against the specified targets and schedules specified in SIP and WUAIPs; and regular PMU-SIO review meetings. Along with these, this subcomponent will also support the consulting services for preparing and appraising the further schemes for inclusion in the subsequent tranches, along with the implementation performance review.

¹²

¹³ To sustain research and training programs by the strengthened WALMI after Program completion, the Program would provide a corpus fund in its latter tranche by establishing an arrangement acceptable to ADB.

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OIIAWMIP - IMPLEMENTATION FRAMEWORK

66 Unless modified and amended in loan or project agreements under the Facility, the Investment Program will be implemented as follows.

A. Implementation Arrangements

Organizational Setup and Functions

67 The Orissa Department of Water Resources (DOWR) will be the Executing Agency (EA) for the Investment Program and responsible for overall strategic guidance, supervision and quality assurance of works while ensuring compliance with loan and Periodic Financing Request (PFR) provisions and due diligence.

68 A state-level Project Steering Committee (PSC) will provide policy guidance, inter-ministerial coordination, and will take decisions on matters related to the Investment Program. The PSC will be chaired by the Agriculture Production Commissioner and the members will include secretaries, directors, and/or representatives of all relevant departments and agencies of the State.¹⁴ Under the PSC, a project coordination working group (PCWG) chaired by Principal Secretary of DOWR will be established to provide regular coordination with the nodal officers assigned by the concerned departments and agencies.

69 A Project Management Unit (PMU) has been established in DOWR under the Command Area Development/Participatory Irrigation Management (CAD/PIM) Directorate, with the assignment of a full-time Project Director at the rank of chief engineer who is to report to Principal Secretary through the CAD/PIM Directorate. The PMU will have multi-disciplinary structure comprising staff from DOWR, staff on deputation from Command Area Development Authority (CADA), Orissa Lift Irrigation Corporation (OLIC), and from line departments or recruited from the market. Assistance is also provided by a multidisciplinary team of consultants for institutional strengthening and project management (ISPM) for capacity development, quality control, and project management. The organizational charts are shown as Figure 1 in the end of this Attachment.

70 The PMU will be responsible for the identification, formulation, implementation, and operation and maintenance (O&M) of all subprojects including conformance with the State, national and ADB social and environmental safeguards policies. The specific tasks are primarily undertaken through the existing, enhanced, or new functional establishments with the support the PMU and the ISPM consultants. Senior staffs are assigned in the concerned establishments and/or PMU for the purpose of the Investment Program, including project planning and formulation, design, social mobilization, implementation, lift irrigation, O&M, quality control, training, monitoring and evaluation, agriculture and allied sectors, environment, resettlement and rehabilitation, and vulnerable groups including indigenous people.¹⁵ The PMU will have a dedicated account officer to look after the project account and processing claims.

71 To meet its mandate of managing, guiding, and coordinating for the implementation of the Investment Program, the PMU will: (i) coordinate with other agencies concerned, (ii) prepare an overall implementation plan and annual project budget; (iii) guide the feasibility studies and endorse subproject appraisal reports including the safeguards documents, (iv) monitor and guide the activities of the Subproject Implementation Offices (SIOs) on subproject planning, implementation and O&M, (v) manage and guide safeguards action plans and implementation; (vi) establish and maintain a management

¹⁴ The Project Steering Committee includes representation from the following: Departments of Water Resources, Agriculture, Fisheries, Child and Women's Affairs, Scheduled Caste and Scheduled Tribe, Forestry, and Industries. Also represented are the Departments of Planning, Finance, Rural Development, Panchayat Raj, and Revenue, and State Pollution Control Board.

¹⁵ Senior staffs are assigned in PMU from the market for capacity development, on-farm water management, command area development, environment management, agriculture, and vulnerable people. A dedicated senior staff is assigned in Resettlement and Rehabilitation wing of DOWR to manage involuntary resettlement issues.

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information system (MIS), (vii) monitor overall project progress and evaluate project benefits and social and environmental impacts, (viii) arrange for necessary staff training programs; (ix) manage procurement, consulting and NGO services, and loan disbursement; (x) maintain financial accounts; and (xi) prepare periodic implementation progress reports. The Project Director will be responsible for overall management of the Investment Program and coordination with and reporting to Government and ADB.

72 For major and medium schemes, under the PMU, six SIOs will be established for the six major subprojects and six SIOs will be established for the nine medium subprojects, building on the existing establishments at the field level. The SIOs will be comprised of technical, CAD, and water user association (WUA) support cells, constituted by staff from DOWR, CADA, one staff engaged from the market for WUA strengthening and managing PIM process, and two NGO staff in charge of WUA and of agriculture. The WUA support cell will also have a number of support service teams mobilized through an NGO comprising three persons with technical orientation in community mobilization, on-farm water management cum extension, and work inspection who work closely with the assigned WUA and its DOWR counterpart staff.¹⁶ For each scheme there will be a subproject manager who is a superintending engineer or an executive engineer (for some medium schemes). The head of the WUA cell will be a deputy subproject manager. A dedicated unit will also be set up for involuntary resettlement as applicable.

73 In SIOs, the subproject manager will manage its technical cell and monitor and guide CAD and WUA cells for effective integration of the subproject activities. Under the support and guidance of PMU and ISPM consultants provided through regular PMU-SIO meetings, the SIOs will (i) coordinate with the field staff of the concerned line departments; (ii) prepare an annual work plan for approval by PMU; (iii) implement the work plan; and (iv) establishing reporting systems to provide information on physical and institutional progress and impacts. For the purpose of interdepartmental coordination of each subproject, a district coordination committee headed by district collector with the participation of all line departments will be set up and meet regularly, in which the representatives of the WUAs will participate. The SIOs will closely work with WUAs and establish participatory decision making system through regular meetings at minor, distributary, and subproject levels. Within this framework, the specific tasks of the SIOs will include: (i) provide inputs to subproject planning and design process; (ii) undertake WUA strengthening and micro-planning including CAD; (iii) implement safeguards actions following the relevant plans;¹⁷ (iv) execute civil works; (v) coordinate for and/or implement support services for agriculture and livelihoods; (vi) manage subproject O&M in collaboration with WUAs while ensuring the capacities and resources for the latter; (vii) arrange training programs for the staff including NGOs, and WUAs.

74 For minor lift schemes, the PMU will have a lift irrigation cell comprising a deputed senior engineer from OLIC, an economist, and three mobile teams comprising an engineer and an agriculture specialist. PMU will be assigned for central procurement and subproject planning including feasibility studies. Under the PMU, two SIOs will be established to implement up to 300 ongoing schemes at a time in the project geographical areas, comprising WUA specialist (designated as subproject manager), agriculture engineer, work inspector, monitoring and evaluation officer, and a deputed engineer from OLIC. The PMU and SIO staff for minor lift schemes are primarily engaged through a local firm as minor lift irrigation implementation consultants, who will also be associated with local NGOs to mobilize field level community organizers cum coordinator to support institutional building and program delivery of up to 15 WUAs for a two-year implementation period. The functions of SIOs remain the same as major and medium scheme SIOs, except that minor works (mostly carried out by WUAs) are managed through concerned SIO Managers, with quality control by the SIO work inspectors.

75 In support of the implementation of the Investment Program, the Water and Land Management Institute (WALMI) will provide necessary backup and training support, along with other organizations engaged for training purposes. Following the actions for stronger stakeholder representation and

¹⁶ Existing non-technical staff of the field establishments will also be converted to facility operators, maintenance workers, and WUA facilitators and placed under the designated WUAs. Each WUA will also nominate and assign a facilitator to support the day-to-day facilitation process within WUAs.

¹⁷ Deputy subproject manager will be assigned as chief officer for environmental management, resettlement, and vulnerable peoples to undertake the required tasks through the designated SIO staff.

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autonomy, WALMI will establish highest and up-to-date information, knowledge, and technology base, in the appropriate technologies for irrigation O&M most suitable for Orissa and India, best practices and lessons for participatory irrigation management (PIM) and integrated water resources management (IWRM), and monitoring and evaluation on these subjects. On the basis of its knowledge and technology base, WALMI will upgrade its training modules and provide training with a focus on the concerned project staff including private providers and NGOs, and trainers of WUA training.

Implementation Procedures

76 Individual subprojects are selected in accordance with the set criteria, and will be implemented through the following procedures.

- (i) **Feasibility Studies:** For each proposed major and medium scheme, PMU will form (a) a planning team comprising staff from DOWR project planning cell, and concerned DOWR divisions and line departments at the field level will be formed, and (b) a stakeholder group comprising WUA representatives (or local farmer representatives in the absence of WUAs) from upper, middle, and tail reaches of the distribution system. With the support of the ISPM consultants, the team will undertake a feasibility study including subproject implementation plan¹⁸ and safeguards assessments. Upon concurrence with stakeholder group, subproject detailed project report is prepared and submitted to the State and the Government, whereas appraisal report is submitted to ADB, for approval.¹⁹
- (ii) **WUA Micro Planning:** Upon approval of the subproject, the subproject SIO will be set up, and work with the individual WUAs to jointly prepare WUA micro plans, which comprises WUA organizational development plan, infrastructure (including CAD and conjunctive use with groundwater) and O&M plan including seasonal water entitlements for the WUA, agriculture and allied sector development plan, and vulnerable groups livelihoods development plan, setting out specific output targets, programs and their delivery schedules.²⁰ The micro plan will be endorsed by WUA general assembly.
- (iii) **WUA Strengthening:** In parallel to the micro planning process, the SIO and its support team mobilized through the NGO will undertake institutional building of the WUAs, including membership enrollment, holding of election, establishment of committees and sub-committees, adoption of by-laws and facility operational rules, substantial fulfillment of required water rate submission (near 100%), book and account keeping with annual financial audit, and operationalization of the functions. After achieving the set institutional development targets (including membership enrollment, establishment and regular meetings of committees and subcommittees, and beneficiary contribution for the minor facility works including CAD) and WUA endorsement of the micro plan, an implementation agreement will be signed between the WUA and the SIO.
- (iv) **Detailed Design (applicable for major & Medium Irrigation Projects) :** Detailed design will be undertaken by the DOWR design cell upon approval of the subproject (and in parallel to WUA strengthening process) for the main and up to upper or large distributary canals (that need to be implemented early to ensure timely delivery of project benefits), and by the SIOs upon signing of the implementation agreement with the WUAs for the rest of the structures. Design process will involve the concerned WUAs and their higher tier committees, whose endorsement will be sought prior to design finalization. Where applicable, land acquisition and resettlement plan will be finalized at this stage, and will be implemented with the engagement of an implementation NGO.
- (v) **Tendering and Implementation of Civil Works (applicable for major & Medium Irrigation Projects):** Upon approval of the detailed design and full completion of the land acquisition and resettlement

¹⁸ Including a strategy for efficient water use through field channels and reduction of high water consuming cropping such as resolution to restrict such crops with special levies, penalties for violation of water distribution rules, etc.

¹⁹ For minor lift irrigation schemes, proposals submitted from the concerned WUA through OLIC will be screened by PMU lift irrigation cell, which will also prepare feasibility studies in consultation with the WUAs.

²⁰ As a matter of principle, SIO will pursue mobilizing existing State programs for the delivery of services.

Terms of Reference (Attachment 2)

process where applicable, the tendering process of the civil works will commence. For main and distributary facilities requiring early work completion for timely delivery of subproject benefits across the subproject areas, the tender process will be initiated in parallel to WUA strengthening process, whereas branch and lower level facilities will be implemented upon signing of the implementation agreements with the concerned WUAs. WUAs will be engaged for minor civil works up to Rs.350,000/-, whereas they will be engaged as construction quality monitor for works undertaken by contractors, with training.²¹

- (vi) Agriculture, Allied Sector, and Livelihood Enhancement Support (applicable for major & Medium Irrigation Projects): The SIOs will arrange for the delivery of the concerned programs following the schedules stipulated in the WUA micro plans, in coordination with the local line department representatives, private providers including NGOs, to be facilitated by SIO subject matter officers through NGO support team members.²² The SIOs will ensure regular organization of district coordination committee meetings to support this end, and pursue that WUAs establish (a) sustaining linkages with existing organizations for input delivery, production systems support, and output marketing; and (b) in house capacities to disseminate information and technology while driving the process of agriculture development as a cohesive platform. The SIOs will also ensure that programs for livelihood enhancement are delivered through the WUAs, and targeted to the most vulnerable group in the concerned subproject area.
- (vii) Subproject O&M (applicable for major & Medium Irrigation Projects): During the process of subproject implementation, the SIO will put into operation the practice of annual and regular O&M planning and joint decision making with the concerned WUAs, including (a) technical requirements and planned actions for O&M, and (b) financial information on fund allocation and proposed expenditures for works and salaries, along with the water tariff submitted from the WUAs. The WUAs will also be provided with flow measurement opportunities against their water allocation in the canal operational plans. The WUAs will further be motivated to undertake the regular maintenance works for the higher tier structures managed by DOWR in collaboration with WUA higher tier committees.
- (viii) The SIO through DOWR field engineer (competent authority) buttressed by the NGO support team will ensure that at least one full year's on-the-job training is provided to the WUAs for those facilities for which they will be given O&M responsibility, in terms of (a) regular inspection through joint walkthroughs and flow measurement; (b) preparation of annual O&M plan; and (c) its implementation. To support this end, the SIO will pursue that (a) the WUA will utilize grant-in-aid for the purpose of identified works; (b) the SIO will provide additional fund to implement the works that cannot be met by the grant-in-aid amount through the allocated fund as available; and (c) the WUA will seek additional funding from its members and/or seek funding from the existing programs of the panchayat institutions. (applicable for major & Medium Irrigation Projects)

²¹ WUAs and farmers are expected to provide beneficiary contribution to the minor canal and lift irrigation works. The contribution will be provided in proportion to the progress of the project-assisted physical works, including the placement of field channels beyond the command area development (CAD) channel outlets, which are the sole responsibility of farmers.

²² The activities will be initiated upon signing of the implementation agreement, although primarily provided upon operation of the improved canals.

Terms of Reference (Attachment 2)

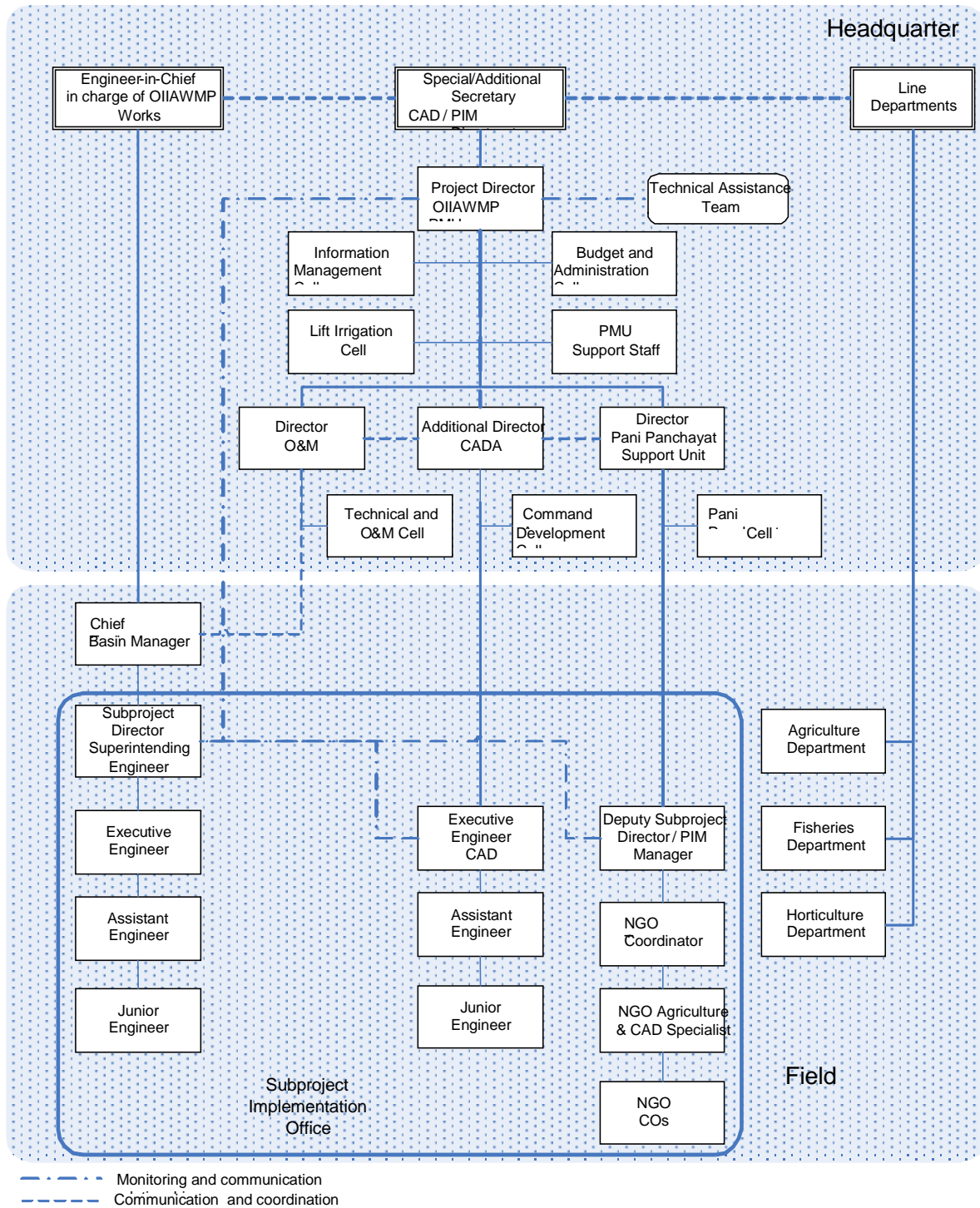
Governance

77 The EA will put into operation the specific governance risk mitigation measures, which are identified as below during the implementation of the Investment Program:

- (i) The EA will make joint decision making systems operational with their counterpart WUAs and their higher-tier committees regarding all planning and implementation matters as well as subproject O&M, through regular WUA-SIO meetings on progress review, annual and periodic work plans and schedules. The WUAs will also be assigned and trained to undertake monitoring of civil works contracted by the SIO.
- (ii) The EA will post the physical and financial details and project progress in the department website, along with the tenders and contracts awarded. For individual subproject, the SIOs will post the abstract of all contracts executed, including the quantity of works and their associated costs.
- (iii) The EA will operationalize the grievance reporting mechanisms to the EA's chief vigilance officer, district public information officers and vigilance officers, and elected state and local government representatives. To this end, the PMU and SIOs will organize awareness campaigns to WUAs and other stakeholders.
- (iv) The EA, through its internal audit wing, will undertake annual financial audit for all SIOs and associated offices, which will include investigation of all financial records and transactions.
- (v) The EA will strengthen its construction supervision, recording, and reporting system with the use of video and photo recording, establish a quality control cell, and operationalize internal third party technical audit mechanism with the engagement of independent third party experts. Accordingly, all supply and work contracts will include provisions for third party inspection for quality control. External monitoring, supervision, and technical audit consultants will also be mobilized under the ISPM consultant team.
- (vi) All contracts financed by ADB for the project will include provisions stipulating ADB's right to audit and examine the records and accounts of the contractor.

Terms of Reference (Attachment 2)

FIGURE 1. ORGANIZATIONAL STRUCTURE OF PMU AND SIO



Terms of Reference (Attachment 2)

FIGURE 2. SUBPROJECT IMPLEMENTATION PROCEDURE AND ARRANGEMENTS

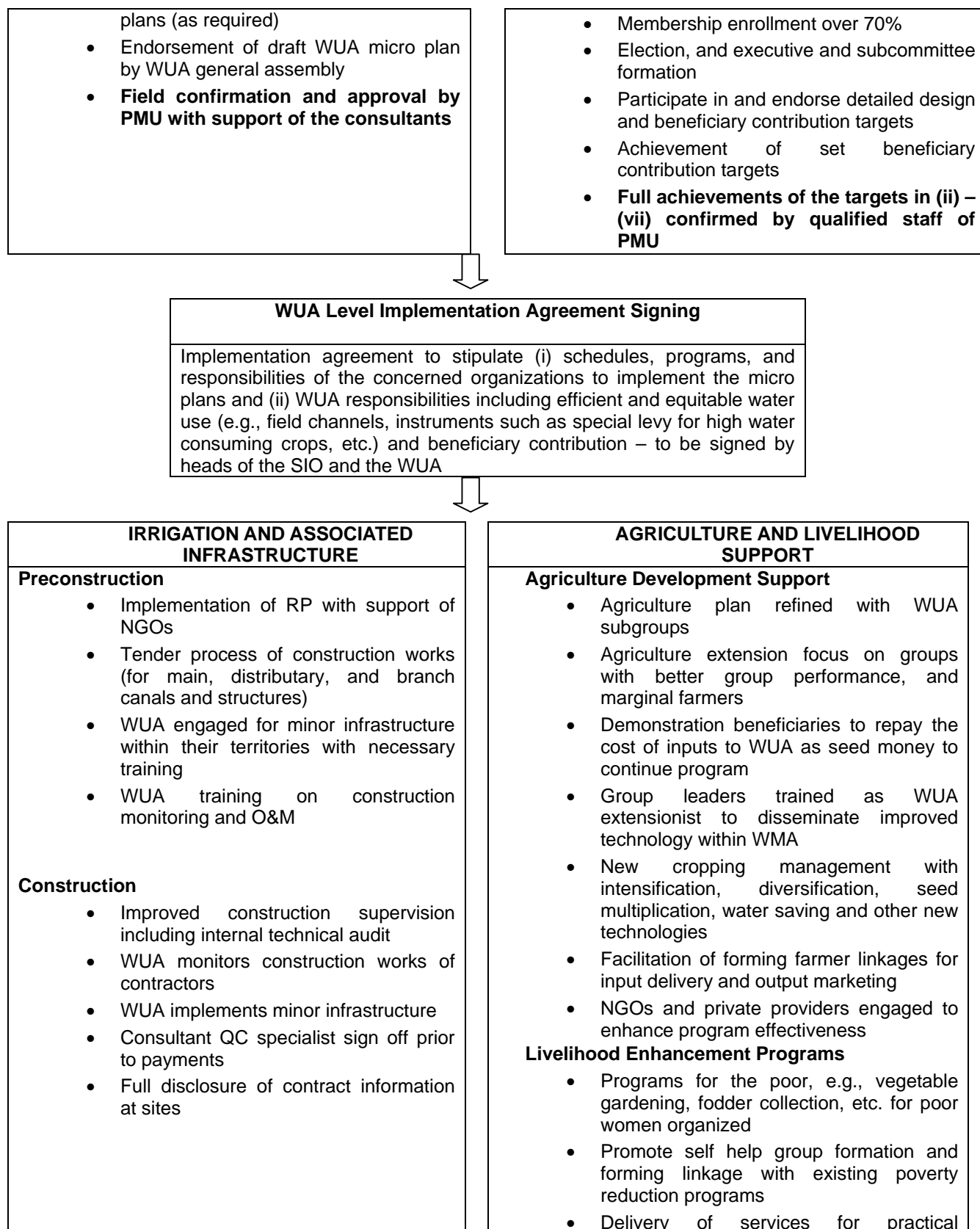
Feasibility Studies and Subproject Implementation Plan Preparation	
<ul style="list-style-type: none"> • Confirmation of Candidate Subproject Selection • Existing major, medium, or MLI scheme in the set geographical area requiring renovation • Technical feasibility with insignificant risks • Reliable water availability, insignificant negative impacts on downstream users and ecosystems • EIRR greater than 12%, robustness against risks • Marginal and small farmers constituting more than 50% beneficiary households and land areas • No major environmental issues • No major social and land-related issues • Beneficiaries support overall subproject concept, and agree on contribution for 5% of minor works, 10% of CAD and 20% of MLI works 	<ul style="list-style-type: none"> • Feasibility Studies and Subproject Implementation Plan • Field confirmation of the issues on the left • Initial formulation of ad hoc WUA (and its higher tier committees) • Data collection on physical, socioeconomic, and institutional setting • Problem assessment on agriculture, infrastructure, and irrigation/water management • Inventory of existing and planned programs • Participatory rapid rural appraisal at village, WUA and higher tier levels • Identification of priority investment requirements focusing on water and associated interventions • Feasibility studies (FS) of identified interventions • Formulation of subproject implementation plan (SIP) specifying input and output targets • Associated safeguard and other assessments • Presentation of FS and SIP and endorsement by WUA

(See footnote 1 for main facilities requiring early implementation)

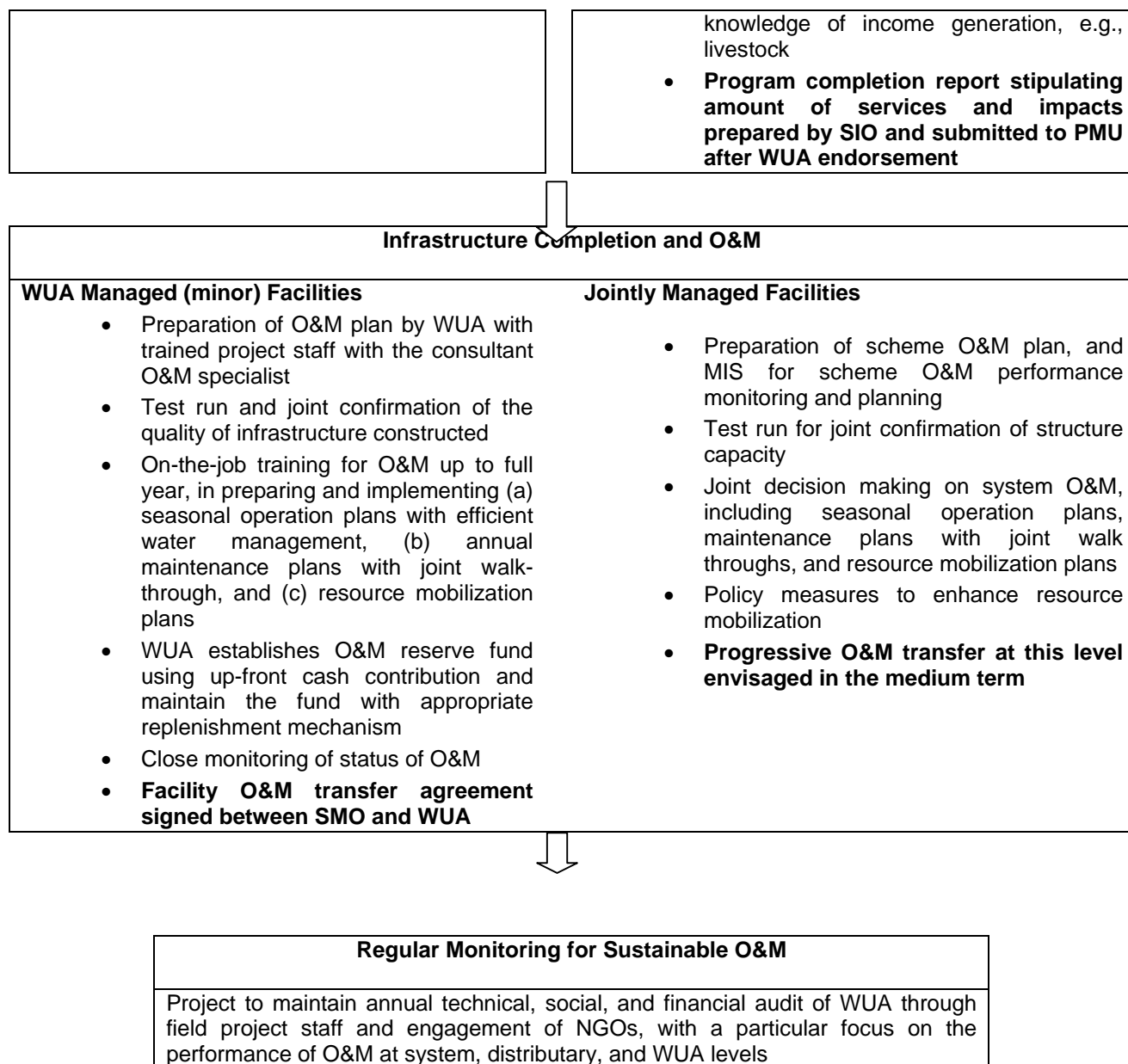
WUA Micro-Plan (Major and Medium Schemes) ²³	WUA Beneficiary Mobilization
<p>WUA Micro Plan Preparation</p> <ul style="list-style-type: none"> • WUA institutional development plan prepared, with full land and household records • Infrastructure development plan (including CAD layouts and conjunctive use promotion), including beneficiary contribution targets of WUAs • Agriculture and livelihood enhancement plan, prepared with synergy for other ongoing programs • Environmental and social safeguards 	<p>During Micro Plan Preparation</p> <ul style="list-style-type: none"> • WUA working group established to work with SIP team for micro plan preparation • Information campaign on Project and its requirements • Endorsement of draft micro plan by general assembly <p>After Micro Plan Approval</p> <ul style="list-style-type: none"> • Start implementing WUA institutional development plan with facilitation of NGOs

²³ Implementation will be based on the canal units constituting individual WUAs. Facilities encompassing more than one WUA (e.g., branch canals) will be implemented on the basis of the progress of the institutional development of the concerned WUAs. For main and key distributaries requiring early works for timely availability of water across the subprojects, however, detailed design and procurement of civil work may be initiated upon completion of the FS and SIP preparation and endorsement of the concerned WUA project-level committee.

Terms of Reference (Attachment 2)



Terms of Reference (Attachment 2)



CAD = command area development, EIRR = economic internal rate of return, FS = feasibility studies, IEE = initial environmental examination, MLI = minor lift irrigation, NGO = nongovernment organization, O&M = operation and maintenance, PMU = project management unit, RP = resettlement plan, QC = quality control, SIP = subproject implementation plan, SIO = subproject implementation office, WUA = water user association.

OIIAWIP - INDICATIVE LIST OF SUBPROJECTS

Nr	Scheme Name	Basin	NIA (ha)	Notes
Major Schemes				
1	Talandanda	Mahanadi Delta	32,680	Tranche-1
2	Mahanadi Chitropala Island Irrigation (MCII)	Mahanadi Delta	13,260	Tranche-1 (pre-construction. Extension for 6,000ha)
3	Machagaon	Mahanadi Delta	34,870	Tranche-2
4	Pattamundai	Mahanadi Delta	23,030	Tranche-2
5	HLC Range I	Brahmani	14,700	Tranche-3
6	Jajpur Canal	Brahmani	13,100	Tranche-2
	Sub-total		131,640	
Medium Schemes				
1	Gohira	Brahmani	8,100	Tranche-1
2	Remal	Baitarani	4,300	Tranche-1
3	Sunei	Budharabalanga	10,000	Tranche-1
4	Kansbahal	Brahmani	4,610	Tranche-2
5	Ramial	Brahmani	9,600	Tranche-2
6	Kanjhari	Baitarani	9,300	Tranche-2
7	Bankabal	Subernerekha	6,840	Tranche-3
8	Khackai	Subernerekha	8,460	Tranche-3
9	Nesa	Subernerekha	1,200	Tranche-3
	Sub-total		62,410	
Minor Lift Schemes				
	1,400 schemes	4 basins	30,000	(for Tranche – I, III & IV)
Scheme Refinement & WUA Strengthening				
1	Sapua Badjor	Brahmani	2,469	Tranche-3
2	Jambhira	Budharabalanga	3,550	Tranche-3
3	Haldia	Budharabalanga	2,270	Tranche-3
	Sub-total		8,289	
Creek Irrigation				
1	Bada Mahara	Baitarani	420	Tranche-3
2	Pada Mahara	Baitarani	403	Tranche-3
3	Samudrapasa	Baitarani	486	Tranche-3
4	Natiajore	Baitarani	1,560	Tranche-3
	Sub-total		2,869	

Section 5. ToR Attachment
Implementation Schedule of Minor Lift Irrigation Schemes

Tranche 1	Sl. No	Implementation Steps	Tranche 1												Months		
			Year - 3 & 4														
			1	2	3	4	5	6	7	8	9	10	11	12			
Tranche 1 - 450 Minor Lift Irrigation Schemes	1	Reconnaissance Report & Go-No-Go Decision	■														2
	2	Funding Application (from shortlisted LIPs after Go-No-Go)	■														2
	3	Work Plan		■													2
	4	Final Appraisal Report with detailed design including Participatory walkthrough				■											3
	5	PP formed / reformed				■											3
	6	Power Agreement					■										3
	7	Development Agreement						■									1
	8	Pump testing of TW (if applicable)							■								2
	9	Construction Agreement								■							2
	10	Implementation of Power supply & construction of pumping arrangement & pipe distribution system									■						4
	11	Earthen channel distribution system									■						4
	12	Commissioning												■			2
	13	Training needs assessment				■											2
	14	O&M Training												■			3
	15	PP strengthening & monitoring				■											9
	16	Records & Book keeping				■											9
	17	Agricultural extension							■								6