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# West Bengal Accelerated Development of Minor Irrigation Project Implementation Support and Review Mission Aide Memoire

**The World Bank**

January 8-12 &
February 15-18, 2018

www.wbadmip.org

**West Bengal Accelerated Development of Minor Irrigation Project**

**Implementation Support and Review Mission**
**January 8-12 and February 15-18, 2018**

**Aide Memoire**

# Introduction

1. A World Bank team[1] visited West Bengal from January 8-12 and February 15-18 for an Implementation Support and Review Mission for the West Bengal Accelerated Development of Minor Irrigation Project (WBADMIP). The objectives of the mission were to: (i) review overall progress and assess future projections until the remaining project period; (ii) review project status, including fiduciary and safeguard arrangements. This *aide memoire* summarizes the mission's main finding.

2. The team held multiple discussions with the State and District Project Management Unit (PMUs) and the mission was concluded with a joint meeting with the District Project Management Units (DPMUs) and Support Organization (SO) staff. Some well performing Water User Associations (WUAs) were invited to share their success stories and while next day DPMUs shared their highlights through stall and presentations. The project review and field findings were discussed with the Project Director, Mr. Prabhat Kumar Mishra and the Principal Secretary. The team visited schemes under construction as well as sites proposed for new schemes. The site visits comprised interactions with members of the WUAs, site specialists and DPMU for technical reviews of field conditions. The team sincerely thanks project management staff for arranging these discussions both at the head office and during field visits.

# Key Project Data

**Table 1. Project Data and Performance Ratings**

| **Project Data** | | **Project Performance Ratings** | | |
|---|---|---|---|---|
| Board Approval | October 4, 2011 | | **Last** | **Now** |
| Effectiveness Date | March 19, 2012 | Development Objectives | MS | MS |
| Closing Date | December 20, 2019 | Implementation Progress | MS | MS |
| Loan Amount<br>Credit amount | USD 30.0 million<br>SDR 78.2 million (equivalent to USD 110.66 million) | Problem Flag | 1 | |
| Total amount | USD 140.66 million | Procurement | MS | MS |
| Disbursed Amount | USD 83.63 million | Finance management | MS | MU |
| Project Age | 5.8 years | Monitoring | MS | MS |
| **% Disbursed** | 59% | | | |

Note: MU = Moderately Unsatisfactory, MS = Moderately Satisfactory

[1] The Mission comprised Mmes./Messrs. Anju Gaur (Sr. Water Resources Specialist & Task Team Leader), Raj Ganguly (Sr. Agri-business Specialist, TTL), Manvinder Mamak (Sr. Financial Management Specialist), Satyanarayan Panda (Procurement Specialist), Parthapriya Ghosh (Sr. Social Development Specialist), Tapas Paul (Lead Environmental Specialist), Mahesh Patel (Construction quality expert); Kirti Da Gandhi (Irrigation design expert); Hitesh Thakur (M&E Specialist); Shouvik Mitra and Vinay Tuli, and KAS Mani (GW Expert).

## Overview of Project progress

3. The project development objective (PDO) is to enhance agricultural production of small and marginal farmers in the project area. This is being achieved through accelerated development of irrigation services to small and marginal farmers, strengthening community-based irrigation management, operation and maintenance, and support to agricultural development, including provision of agricultural services for encouraging crop diversification, use of improved technologies as well as creating income-generating opportunities. Originally, the project targeted providing irrigation through 4,660 schemes for 166,000 farmers over 139,000 ha.

4. In Feb 2016, with the first restructuring, a total of USD 95 million was cancelled from the IBRD loan, mainly due to project savings and currency gains. The revised project budget is ~USD 140 million (IBRD and IDA) and USD 50 million of Government of West Bengal (GoWB). In November 2017, the project was extended for almost two years until December 20, 2019 and project indicators re-aligned with revised budget and duration. The new target is to irrigate 75,000 ha and serve 100,000 farmers.

5. Over time, the project has evolved to target the intended beneficiaries and provide them with appropriate solutions. Now the project is setting up lighthouse examples in watershed planning for irrigation development, using online GIS based tools in planning irrigation schemes. Surface based schemes particularly small reservoir/ponds (Water Detention Structures, WDS) and check dams have been introduced at a large scale in western districts which are focus districts under the project. Recently, the guidelines for both check dams and WDS have been finalized. Over the years, the project enabled upgrading state level design standards and specifications of such schemes to national standards, rendering them cost effective while ensuring social and technical viability. Simultaneously, the project has demonstrated how Water User Associations (WUAs) can capitalize investment through convergence with other departments and other entities.

6. Till date, the project has handed over 925 schemes to WUAs which has potential to harness 64 MCM, serve 27,000 ha and benefit more than 97,000 users. Improved access to water has helped farmers cope with droughts and grow 2-3 crops in a year. As a result, cropping intensity has increased from 92% to 175% and productivity has increased by more than 55% for Paddy and 150% non-paddy crops, in almost 90% additional irrigated area. Owing to a combination of increased cropped area, productivity, and diversification to cash crops, the value of produce has more than doubled (from INR 56,550 per ha to INR 1, 26,700 per ha). Demo plots for fisheries have reached landless farmers and have shown the potential to increase gross income ten times (from INR 35,000 per ha to INR 3, 50,000 per ha).

7. The Mission observed growing enthusiasm within WUAs to operate and maintain schemes. Some have matured to a state where they are self-initiating knowledge and information sessions, interactions with service providers, integrating and implementing water and farm level solutions and building linkages with agribusinesses. The Mission was pleased to note that innovations introduced under the project are being scaled not only within the project but also in other state-run schemes.

8. The project has maintained momentum with current disbursement at USD 83.63 million (59%) and commitments of around USD 100 USD million. The cumulative expenditure and commitments would account for 76% of the total project cost. It is estimated that ~INR 314 crore (USD 49 million) is yet to be committed, of which around INR 218 crore or USD 34 million is for irrigation schemes under component B. Out of USD 50 million original state share, now the matching state share will be USD 28 million. It means the project will have additional balance of around USD 22 million (INR 142 crore) to commit or utilize after the project closing date.

**Table 2. Project budget and commitments (rough estimates)**

| | Items | Bank share | Bank+ GoWB | Project Total |
|---|---|---|---|---|
| | | **USD** | **USD** | **INR crores** |
| **1** | Project budget | 140* | 168** | 1075 |
| **2** | Expenditure | 84 | 100 | 641 |
| **3** | Commitment | 105 | 124 | 762 |
| **4** | To be Committed for Admin and ASS | 10 | 10 | 64 |
| **5** | Irrigation schemes (1-3-4) | 25 | 34 | 218 |
| **6** | Balance funds available with GoWB** | | 22 | 142 |

*****Bank share updated with respect to XDR/dollar exchange rate
**State share updated with respect to bank revised funding
(Original amount =USD 50; - Corresponding 16% share = 28; Balance = 22).

9. The project is currently working on nearly around 1302 schemes including 925 schemes handed over to WUA and 377 under construction. For Batch 5 schemes, more than 500 schemes are already identified and tenders have been processed for almost 300 schemes already. Two working seasons and six months remain for completing this last batch of schemes. The first working season starts in March necessitating field level readiness for successful mobilization and construction. Solar based schemes will progress only after estimated costs are updated. In August 2017, it was noticed that the estimates as per schedule or rates were twice the cost per unit as compared with other States (Reference Box 1). For check dams and WDS, soil testing and preparation of design needs be carried out on war footing to meet expected timelines.

10. Given the project progress, solutions discussed and agreed way forward, the Mission assessed that the project would be able achieve its PDO by the revised closing date 2019. Based on this assessment, the ratings for project development objective and the implementation progress are being maintained at "Moderately Satisfactory". However, delays have been experienced in submission of IUFRs and audit reports which in turn has affected the ability to draw down on the Loan/Credit on a timely basis. Therefore, Financial Management rating is being downgraded to "Moderately Unsatisfactory".

11. While various processes are being strengthened, the mission would like to reiterate the attention to following pending actions: (i) commit 90% of schemes by July 2018; ii) strengthen Quality Assurance/Quality Control (QA/QC) arrangements; (iii) Finalize Strengthening of DPMU team including the staff for agriculture, social and environmental screening; (iv) Strengthen M&E; and v) conduct impact assessment.

## Innovations, leveraging and building entrepreneurs

12. The project has introduced many innovations and improvements in irrigation and agriculture practices, contributing to its success and effectiveness. The following activities are being scaled:

### Helping farmers leverage skills, finances and knowledge:

(i) **WUAs along with SHGs are performing well:** The Project has successfully demonstrated that convergence with the State Rural Livelihood Missions (Anandadhara) can be highly effective. It was noted that WUAs formed with women who are a part of operational Self Help Groups[2] (SHGs) perform better. However, this is subject to the field level staff assistance from both programs. The project should endeavor to foster such integration wherever possible. They have gone beyond water

[2] SHGs of women and their federated structures at village level (village organizations) are being supported in the State (implemented by State Rural Livelihood Mission under Department of Rural Development), under another World Bank Project called National Rural Livelihood Project (NRLP). The Project actively pursued linkages and close working with NRLP.

distribution and are capitalizing agriculture / fisheries based entrepreneurial activities including cashew nurseries, fish hatcheries etc.

(ii) **Leveraging other agriculture companies and organizations:** In the recent past, the project developed many linkages with various agricultural research organizations and agribusiness for building capacity of WUA members and transferring modern technology to the project landscape. The Project has also partnered with various Krishi Vigyan Kendras (KVKs) and some corporates who contribute through regular trainings and handholding support for the capacity enhancement. As a result, the DPMUs have been exposed to modern farming techniques, efficient crop production and plant protection.

(iii) **Transforming farmers into Agripreneurs**: Farmers with small and marginal holdings have been introduced to modern agricultural and water management practices including soil-less 'tray plugs' and vegetable nurseries in plastic tunnels enabling availability of healthy saplings within the village from an area as small as 6 $m^2$. Farmers supply these to nearby villages and earn ~INR25,000 annually. Some WUAs are using and renting out paddy transplanters, reapers, direct seeders etc. and resorting to resource conservation practices. These activities are helping increase corpus funds of WUAs.

**Innovations:**

(iv) **Introduction of solar-based pumping systems**: Solar systems have facilitated farmers in remote areas who have been deprived of agri-based development in the absence of irrigation and energy. This has also contributed to reducing operating costs by a third when compared with the diesel pumps. Triggering the use of solar instead of diesel pumps, will help reduce the carbon foot print of agriculture, as well.

(v) **Community based planning and implementation:** The project is demonstrating watershed based irrigation planning in drought prone areas with water shortages in consultation with communities. Such holistic planning for irrigation and agriculture is demonstrative of "how WUAs are learning and expanding their role to provide other services including water management practices and agricultural support services".

**Technology:**

(vi) **Advanced watershed planning and Design:** The project has introduced digital technologies including GIS and remote sensing, geo-resistivity, digital borehole logging etc. for planning, design, implementation and impact monitoring. These are being used for identifying appropriate sites based on prevailing geologic characteristics and other hydrological predictions for surface structures, improved design capabilities suitable to such factors. These are cost effective and environmentally sustainable methods that save time and reduce incidence of defunct schemes. The success rate of tubewell commissioning has improved drastically due to interventions. Similarly, check dam designs have improved with a 30-40% cost reduction, while maintaining technical viability of structures. These are setting the stage for online decision-making platforms.

(vii) **Technical Support to state flagship program and other departments**: These tools and techniques are being appreciated across State Departments who are seeking to improve their understanding of how best to use them in their own programs. The revised focus of the Project and the State's water harvesting program – Jal Tirtha were introduced around same time. The project has supported, locating sites for water harvesting structures under Jal Tirtha. Similarly, the Watershed Department and NGOs find such tools useful in designing practices.

# Implementation Status by Component

## I. Component A: Strengthening Community based Institutions

13. The component aims at mobilizing and strengthening community institutions of farmers in the command area where irrigation investments under the project have been made. It places equal importance to continued, community based operation and maintenance of the scheme as well as judicious management of water resources.

14. Initially the project had four support organizations (NGOs) for overall institutional strengthening across the state. As the project is increasing focus in western districts, four additional NGOs have been engaged to provide integrated services including for agriculture. In addition, the Vivekananda Institute of Biotechnology, Nimpith has been providing support to the project in strengthening bio villages and Good Agricultural Practices (GAP). These NGOs were engaged with the understanding that they already have a presence in the area and it would help to expedite planning. However, the Mission observed that in certain instances (as observed in Jhargram) they have been unable to deliver as expected due to lack of exposure on irrigation structures. The project needs to manage these contracts and take appropriate actions to suitably.

15. Technical support from the project on crop planning with respect to water availability and operation and maintenance needs to be strengthened for them to be effective. Standardization of practices in all districts is also crucial. Therefore, this component is rated as "*Moderately satisfactory*".

16. **Progress:** **Operational WUAs**: A total of 1,898 WUAs representing more than 97,244 beneficiaries have been formed that are participating in planning, supervision and Management, Operation and Maintenance (MOM) of schemes. Among various beneficiaries, women account for 13%, tribal for 12% and small and marginal farmers account for >75%. A total of 925 schemes (handed over till Dec 2017) have been operational with about 70% of WUAs performing satisfactorily or better. Western districts predominantly with surface structures need to work more on strengthening the WUAs. Better performing WUAs are managing their activities with regular meetings, good record keeping and appropriate corpus fund and arrangements for O&M. Some WUAs have added infrastructure/ machinery through their own funds and have self-initiated water management practices. Almost 30% WUAs are now charging on an hourly basis. Some WUAs have converged with banks/corporations for leveraging finance while some are charging fees to beneficiaries for various resources provided under the project such as seeds, greenhouse and implements etc.

| |
|---|
| ***Action: A*** WUAs need to be to further engaged at various stages through: i) Introducing WUA rating system in all the districts and institutionalize through regular MIS reporting; ii) increased supervision by WUA during construction and filling up QA/QC cards; iii) enable networking through meets at district level, sharing telephone directory etc. |
| B. In order to institutionalize WUA, the anchor organization need to be identified which could continue in long term for the WRIDD. |

## II. Component B: Irrigation System Development

17. The component is for developing new minor surface and ground water irrigation schemes mainly in rainfed areas with the objective of improving water availability of water for agriculture and fisheries. These schemes include surface flow irrigation systems (river lifts, check dams and water detention structures), and ground water irrigation schemes (light duty tube wells, and pump dug wells). They have a potential of irrigating 5 ha to 40 ha each. The size of WUAs therefore range from approximately 40 to 200 farmers. The scheme implementation cycle under the project includes pre-planning, scheme development management

plan including detailed design, procurement, implementation and hand over to WUAs for sustainable operation and maintenance.

18. The component accounts for 78% of project cost. The project is now working with almost 1302 schemes with 925 completed schemes and 377 schemes under construction accounting for a total cost of over US$ 98 million. The project has an ambitious target for schemes in Batch 5, where around USD 34 million (INR 218 crore) is yet to be committed. Over 500 schemes have been identified, tenders for 140 schemes are already processed and more than 200 scheme have been recently cleared. Although project is targeting to commit the remaining amount by July 2018, no commitment should be permitted beyond Dec 2018. Based on progress, the rating of this **component is maintained as *Moderately Satisfactory*.**

19. The Mission appreciates overall improvement in designing and implementing path-breaking reforms in an otherwise conventional system of planning, design and implementation for minor irrigation in the state. These include redefining the scope of project target area based on the spatial pattern of rainfed land, watershed based approach instead of scattered implementation, updated scheme designs and introduction of solar based energization. The project focus has shifted from the southern to western part of the state for scheme construction while water management interventions are being introduced in already developed southern districts. These reforms have led to effective participation of communities during planning and implementation of schemes and thereby improving ongoing success. As groundwater development has picked up through private tubewells, the project is focusing more on development of surface storage structures in drought prone Western districts. Impressive progress has been made through enhanced institutional capacity to absorb innovations, and to translate this into participatory irrigation services to small and marginal farmers.

20. Recently project has finalized the guideline for check dams, WDS and PDW following detailed discussion during mission while for tubewell, they were already finalized three years ago. Now DPMU and SPMU need to ensure to follow these guidelines. Major revisions in the design include:

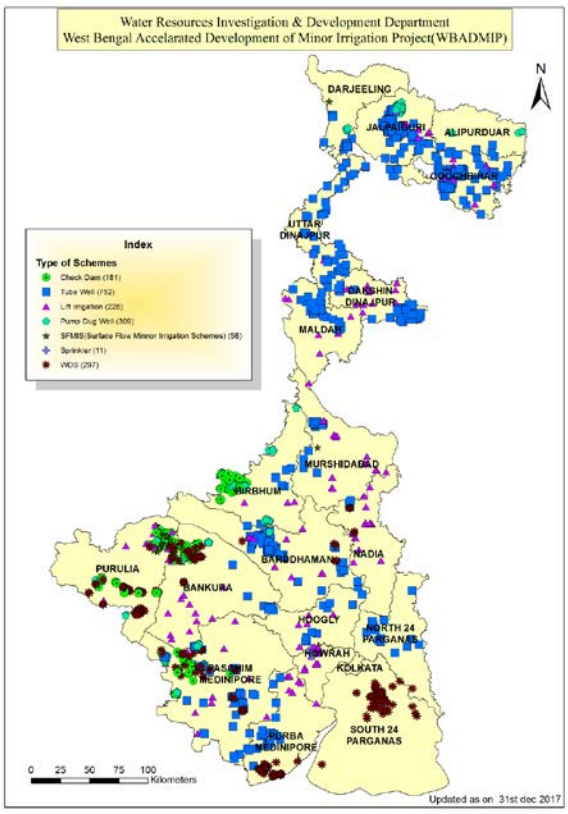


**Figure 1: Type of schemes implemented under the project**

**i)** **Tubewell:** Cost reduced by 30% with the incorporation of rotary drilling, PVC pipe instead of MSW pipe, kiosk instead of pump room, elimination of distribution chamber and tripod to minimize water, energy and land and use of digital logging to design optimally.

**ii)** **Check dam designs:** Cost reduced by more than 50%. The design is now based on online GIS tools for hydrology, 3-D software for structural design based on field survey and soil tests which resulted in optimum design of hydraulic structures and elimination of protection works Overall the it helped to improve the sustainability of structure in cost effective manner.

**iii)** **WDS:** Earth work rates reduced by one third (from manual to mechanical). Compaction improved, unnecessary pitching and turfing minimized.

21. **New areas proposed under the project:** The Project wishes to focus on new areas in Kalimpong and Sunerbans. While the Project has proposed large area, the Mission advises a cluster based approach. The Mission noted the following opportunities in Kalimpong:

**Figure 2: Storage structures**

- **i)** Irrigation structures: Tapping perennial streams using gravity systems; Rain water harvesting using geo-thermal plastic lined small 'happas'; GENAP style or similar tanks; micro-irrigation for open fields (rain gun/sprinklers) and indoors (drip, diffusers, foggers, fertigation) etc.
- **ii)** Agricultural Support Services: Rejuvenating old orange orchards with better management practices; nursery development for improved quality planting material (orange/large cardamom/vegetables/flowers), Promotion of indoor cultivation (poly houses/poly tunnels/ shade nets), provision of quality seeds/planting material/small implements, Cold water fish in small happas; Vermicomposting/composting, Support for technical know-how and market linkages.

22. **Project needs to accelerate preparation:** Overall the total commitment stands at USD 98 million (

# List of Tables and Annexures

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|---|---|
| **Tables** | **Table 3-6** |
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| B2 | SWID Observation to Hydrological analysis |
| B3 | Approach for BC ratio estimates |
| C | Agricultural Support services |
| 3 | Field Visit report |
| 4 | Presentation made during wrap up |

24. **Table 3**), the project still has an additional USD 34 million (INR 218 crore) for finalizing and tendering schemes. It is advised that new schemes are WDS based as other schemes require more than two seasons to complete while project will be left with only one working season during 2019.

| |
|---|
| **Action:** Therefore, PMUs need to be ensure that proposed schemes should be possible to deliver by Dec 2019. All procurements should be finalized no later than September 2018. |
| Purulia PDMU need to prioritize the proposals for schemes in women based WUA villages which have been pending for more than three years and the project is loosing its image those communities. |

25. **Scheme Clearance system:** Prior to Batch 5, the clearance system included following steps: i) Scheme information was shared during identification stage wherein project would share salient feature and locations; ii) Procurement plan prior to tendering. However, during Batch 5, the project tendered for the schemes without informing the World Bank at all. The project applied for clearance only when they were about to award the contract. In absence of standards guidelines for proposed scheme, each DPMU planned and designed as per their convenience. Because they were all done in hurry, the technical oversight by SPMU was minimal. As a result, there was wide variation in the proposed activities and their cost estimates. Some DPMUs had highly inflated the cost or they had proposed additional items which were not technically justified. When these proposals were submitted to the World Bank for PP clearance through STEP for the first time, following issues were observed with various plans: i) sites not complying project guidelines (some were proposed to replace diesel operating system in already irrigated area, lift irrigation along large river in flood zone or river with low capacity etc); ii) unusually high cost estimates (3 times of other districts); iii) high variation in schemes cost with additional items proposed within districts and among districts. Overall no standard practice was followed in all the schemes. As a result, following actions were taken for questionable schemes:

(i) Purulia: It was noted that large number of pump dug well schemes were proposed to be lined with cement concrete and the cost of each item was highly inflated or were proposed with unnecessary items. The Pump dugwell with sprinkler and solar system was costing around Rs 14 lakh each. When it was brought to the notice of PD, he proposed to cancel the tenders and continue with 5 packages to test the market.

(ii) Similarly, for WDS around 100 schemes were proposed wherein the wide variation in cost estimates were noted ranging from 50 per cum to 250 cum. After detailed technical assessment, SPMU withdrew almost 20 schemes and rest of the schemes were cleared with some adjustments.

(iii) Bankura: During field visit, we observed that PDW was proposed in plot 121 at and the spout for RLI (already commissioned was there). Therefore, we always request to map existing schemes.

(iv) Kochbehar: Majority of schemes are lift irrigation schemes. The withdrawal proposed through schemes and monthly river flow were not balanced. Issues noted were following: i) large number of schemes while river flow is very low. The stream had very flow even during January; ii) some are proposed next to the scheme whereas WRIDD has already commissioned shallow tubewell but electrification has been pending for years. Overall Northern Bengal receives rainfall for almost 10 months. The investment proposed is not clearly justified and this area primarily needs support in agricultural practices and water management..

(v) Hawrah: The farmers who were interested in agriculture already has their own arrangements for irrigation. Some patches are single cropped but not due to poor accessibility to water but because the farmers have now diverted to other jobs and are not finding farming as the remunerative option. It means ASS based activities should be rather more focused there so that farmers could find agriculture as more remunerative crop.

(vi) Check dams are under revision based on guidelines issued recently. For instance, during the field visit, it was noticed that a check dam in Bhepua (west Midnapur) was not needed as the culvert just downstream of the proposed site was serving the purpose. Similarly, for other upstream dams, it was noted that by moving a structure 10 m upstream, storage capacity would increase multifold. The Mission appreciates the Project Director's cooperation in taking appropriate action. Some developed districts continue to propose structures in multiple cropped area and basically to replace diesel operated systems. It has been advised in past that the aim of the project

26. In Northern district it was noted that some schemes were not in operation because the farmers were not interested in farming. The agriculture team may work with those areas to show them the opportunities through farming as they have demonstrated highly remunerative practices in some districts. Such kind of selection should be avoided in future.

**Action:** The project is urged to share procurement plan with check list of schemes with the Bank prior to initiating the tenders.

27. **SW-GW use:** A WUA in West Midnapore (Garra village) illustrated how to use a combination of check dam and borewells to ensure water availability throughout the year. Another WUA constructed a borewell with INR 40,000 earned through fisheries from its check dam.

**Action:** The Project is advised to encourage such interventions.

28. **Finalize completion/handover of schemes in previous batches:** The Mission was surprised to note that over 400 schemes are yet to be completed including certain schemes from Batches 2 and 3. Nearly 200 schemes from Batch 3 and 90% of Batch 4 are pending completion. The reason for delays are lack of energization 18 schemes are yet to be energized (majority are in Purulia), delay in communities taking charge of schemes, and schemes not performing to the satisfaction of WUA. Social issues have been noted more in districts where the social specialist was absent or performance of support organization was poor.

29. **SPMU needs to review and guide during planning as wells post implementation monitoring:** During recent review, World bank team noted that SPMU was issuing instructions but did not always ensure during admin approval (through sample check or other means) whether DPMUs were really following those instructions or not. Particularly in the districts where new Executive engineers had joined were not aware of such instructions. As a result, mission noticed that each DPMU was having their own practice of preparing DPR and even package of each scheme varied across and within the districts. Now SPMU has issued guidelines for some schemes and has started reviewing closely and working with DPMUs to improve the planning and design of schemes. Now MIS based Scheme development plan have been introduced. The Mission advises SPMU to use same technologies used in planning for monitoring the change in schemes with pre and post imageries. Similarly, the impact on the command area could be shown using google earth imageries (of time scale) or other remote sensing sources such as NDVI pattern.

30. **Solar based pumping systems:** The Project has piloted nearly 60 solar based pumping installations with promising results. It has reduced operating costs tremendously for WUAs. The Project should however assess the impact in a more organized manner. Simultaneously the Project has proposed to upscale and introduce solar and hybrid tube wells and have identified almost 300 schemes. As of now around 50 schemes are under implementation with solar systems and/or hybrid system. The tendering process for solar systems has been put on hold due to high costs as defined in the schedule of rates when compared with those in other states and MNRE benchmark estimates for the specifications required (Box 1). Because of high estimated costs, the rate received against bidding is also on higher side. To mitigate this issue, Bank team proposed multiple options, including revising the SOR and adopting a framework approach (Box 2 in procurement section).

**Box 1: Solar Estimates**

Both the states (Rajasthan and West Bengal) have assumed radiation of 5.0 KWH/sq.m/day for output estimates. The rates of 3HP and 5 HP AC submersible pump are given below. These rates include:

i) Solar Module, Module Mounting Structure, Motor Pump set, Electronics and Protections, Junction Boxes, ON/OFF switch and other accessories.
ii) Fencing around solar panels & structure and domestic lighting.
iii) Insurance and Warranty for 5 years
iv) Training and after sales service

| S. No | Name | 3 HP system | 5 HP systems |
|---|---|---|---|
| **MNRE Benchmark rates** | | | |
| | Solar Wp | 3000 | 4800 |
| 1 | MNRE (March 2017) | INR 300,000 | INR 4,25,000 |
| **Government of Rajasthan (December 2017)** | | | |
| | Solar Wp | 3000 | 4800 |
| 1 | M/S Lubi Electronics | INR 2,59,883 | 349276 |
| 2 | M/S Topsun Energy Ltd | INR 2,79,976 | |
| 3 | M/S Alpex Exports Pvt Ltd | INR 2,95,400 | |
| **Government of West Bengal** | | | |
| | Solar Panel Wp | 3600 | 6000 |
| 1 | Existing rates | Varied among districts but almost similar to proposed rate | |
| 2 | Proposed rates for SOR revision (first vesion) | INR 5,46,211 | INR 8,14,706 |
| Additional items in West Bengal include CMC instead of AMC and additional solar panels. | | | |

31. The mission appreciates the Principal Secretary WRIDD for initiating revisions to SOR. The comparison with MNRE and World bank aided project, Rajasthan Agricultural Competitiveness Project rates are shown in Box 1. In Rajasthan, the framework agreement has been signed recently while MNRE rates were advised in March 2017. The solar radiation assumed in the Rajasthan tender is similar to actual radiation in West Bengal (5 Kw Hr/day). The project is procuring for individual schemes while Rajasthan bulk ordered through a framework agreement. In West Bengal, bidders responsible for the installation of solar system are civil works contractors and Solar PV companies are unable to bid directly.

32. While the Mission agrees that integrated systems with civil works eliminate the accountability of two contractors and risks posed by lack of synchronization, the risk associated with this are higher cost of system and operation and maintenance in absence of direct association of professional solar schemes. In past cases, it was experienced that when the solar schemes were implemented through civil contractors, the installation and commissioned works were not always at the desired level of quality.

**Action:** To ensure the State is able to leverage competitive advantage through a wider mix of players and ensure broader participation in the tender process, the Mission advises structuring a framework agreement.

33. **Implementation and Supervision:** The mission would like to reiterate the need for strengthening supervision and quality control systems. Display boards / paintings of schemes with specifications, accompanied by contractor details at construction sites for schemes under implementation, paintings for completed schemes should be ensured.

**Action:** The Mission advises that WUAs are made an integral part of supervision. They should be trained and relevant information sheets circulated, in addition to QA/QC trainings for project contracted engineers.

34. **Third party QA/QC w**as in place till December 2017 for 30% of the sites in five districts where surface schemes are predominant. They had visited 115 sites and noticed 23 sites with major issues. Major issues noted were: i) technical team member was never provided from contractor side to supervise; ii) Bids with no provision for compaction of embankment; iii) Design of check dams. Other specific observations were:

- Fabrication of Gates for DPMU, Birbhum
- Installation of pumps and pumping tests following connection with grid power (CDs of DPMU Bankura, Paschim Medinipur and Parsura RLI of Bardhhaman, in particular)
- Repair works of outflanked schemes of Birbhum and Paschim Medinapur. In particular, delays in repairing scour holes in the Jorkenudi Check Dam Scheme of Paschim Midnapore might cause the right-side wing wall to collapse.

**Action:** The Mission advises that the contractors be alerted and necessary action taken immediately.

**Box 1: Solar Estimates**

Both the states (Rajasthan and West Bengal) have assumed radiation of 5.0 KWH/sq.m/day for output estimates. The rates of 3HP and 5 HP AC submersible pump are given below. These rates include:

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viii) Training and after sales service

| S. No | Name | 3 HP system | 5 HP systems |
|---|---|---|---|
| **MNRE Benchmark rates** | | | |
| | Solar Wp | 3000 | 4800 |
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| **Government of Rajasthan (December 2017)** | | | |
| | Solar Wp | 3000 | 4800 |
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| 2 | M/S Topsun Energy Ltd | INR 2,79,976 | |
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| 2 | Proposed rates for SOR revision (first vesion) | INR 5,46,211 | INR 8,14,706 |
| Additional items in West Bengal include CMC instead of AMC and additional solar panels. | | | |

35. **Institutionalize Quality Assurance and Quality Control:** The Mission was informed that an SE at SPMU has been assigned for QA/QC. The project is planning to engage local universities for 3rd party QC in Purulia and West Midnapore while for the other 3 districts in the Western region, arrangements for QA/QC are yet to be defined.

**Action:** The Mission would like to reiterate that it is critical to institutionalize quality control cell coordinated by SPMU and engineers in the field inducted. The mission strongly advises that the field supervision team be equipped with quality control tools and systems (eg. mobile material testing laboratory for testing quality of construction and raw materials used), this is conducted regularly and ok cards are updated in the field with WUAs. In order to ensure QA/QC, bid document should also make it mandatory to have core samples, photos, videos at various stages of construction and final capacity of structures based on post survey.

36. **Hydrological monitoring with applications for water management:** The design team has always experienced challenges in estimating peak flood in the absence of flow data and therefore use a large safety factor. Finally, after four years in the project, automated water level monitoring in almost 20 check dams and 100 tubewells has been initiated by SWID. SWID has made this information available online and both SPMU and SWID can now verify design floods for designing check dams. The intensity for flood level needs to every 15 min in order to capture the peak flows. SWID needs to ensure the quality of automated observations and setup against some benchmarks as otherwise data will have no meaning (see Annexure XX). Both ADMI and SWID needs to work on getting quality data.

- Sixty-Four (64) River Gauges in Purulia, Bankura, West Medinipur & Birbhum dist. with community based monitoring system, have been completed and manually gauge data collection has been started.
- Installation of 3 nos. gauges with telemetry system & GSM facility at 3 nos. river sites in Jalpaiguri Dist. has been completed and on-line data transmission started.
- DWLRs have been installed in 20 Check Dam sites in West Medinipur, Bankura, Purulia & Birbhum Dist. Further Protection works for DWLR in 18 Check Dam sites out of 24 completed in Purulia, Bankura & Birbhum Dist.
- 10 Ultrasonic Flow Meters for Tube Wells under different DPMUs have been completed and distributed.
- Under Internet of things (IoT) pilot by the World Bank, five tubwells in Huggli and West Midnapore have been equipped with the automated control and monitoring of water level and flow.

37. It was observed that WUAs are yet to be involved in this and need to learn how to put this information to good use. SWID needs to share this information (translated to their application such level into storage capacity of dam) on real time basis with the communities through SMS. This will help in reducing theft and damage issues, and enable community involvement in water budget based crop planning (with assistance from SOs).

38. **Real time controller cum monitoring system:** The Mission noted that analog meters in tubewells are not functioning. Mobile based controllers that would help operators manage water supply and protect the motor from damage arising due to voltage fluctuations could be considered. These real time controller cum monitoring systems also monitor power usage and enable the operator/ farmer to switch pumps on / off from their home avoid resource wastage. Such system is already operational in some of ADMI project schemes in Hugghli and West Midnapore.

**Action:** The mission recommends installing a real time controller cum monitoring system at site with GSM/GPRS based transmission, with a centralized real time data acquisition system at DWRID to capture data from all the schemes. This should be integrated with all monitoring systems introduced under the project or state and operated centrally.

**Performance Monitoring and impact of schemes:**

39. **Development of Irrigation schemes lead to accelerated crop production in rainfed areas:** The project has implemented schemes in drought prone areas saving Kharif crops failure in drought years and to grow two-three crops in year. As result, the project has contributed to production increase in all seasons, and cash crops during Rabi season or pre-Kharif season leading to overall increase in cropping intensity from 92% to 175%. The proportion of vegetable area has increased from 10% to 28% while value of produce has increased from INR 56,550 per ha to INR 1, 26,700 per Ha (based on index price of year of 2015). This can be attributed to increased paddy production, over 50% additional cropped area during Rabi and Pre-Kharif, and growth of high value crops.

**Action:** It is critical to observe the performance of schemes. In particular, the SPMU should: i) compile the energy meter reading for LI and tubewells so that their actual usage is monitored ii) have pre and post imageries from google earth or remote sensing to monitor the surface storage/ponded area in surface structures.

40. The Mission advises that monitoring start soon after commissioning of a scheme to ensure that the structure has been commissioned as per design and the final payment should be linked with the performance of scheme measured through: i) Storage developed in surface structures pre and post survey ii) pumping tests of tubewells iii) gauges in surface schemes, water meters in pumping system and energy meters in electrified or solar are installed which are to be monitored on regular basis. Simultaneously during each season, the change in cropping pattern, and crop production should be monitored while for certain schemes the economic returns should be monitored.

**Action: BC ratio in SDMP need to be reflected correctly:** It was noted that BC ratio was not being estimated for net incremental benefit. These estimates need to be improved and the threshold for each structure in each district needs to be agreed upon based on the sample design of structures (see Annexure B3 for details)

## III. Component C. Agricultural Support Services

41. This component provides support to WUAs and their beneficiary farmer members receiving irrigation services from the project. The component supports these farmers in transiting from rainfed farming systems to irrigated farming systems while improving the economic water productivity for the farmers. The project intends to support WUA members and beyond in the targeted villages.

42. Adoption of advanced agriculture, horticulture, fishery activities among WUA farmers particularly towards introduction of high value crops, new varieties, machinery, efficient input use and indoor cultivation etc. has been significant in the recent past, resulting in increased cropping intensity, higher production and higher income. The project established 12,134 agriculture technology demonstrations covering 3,903 Ha cumulatively. Additionally, 12,207 horticulture (covering 1,416Ha) and 787 fisheries demonstrations were established. These demonstrations focused primarily on improving productivity, efficient water management practices, improving nutrient status in the soil, Integrated Pest Management

(IPM), reducing drudgery through mechanization, handholding the WUA members to access new markets and building their capacity in good agriculture practices. Increasing marketable surplus thus increasing profitability per unit area, remained another salient objective of this strategy.

43. Based on the results so far, Component implementation is maintained at "***Satisfactory*".** Promising progress has been noted in introducing advanced horticulture, agriculture and fishery practices since the last supervision mission.

**Action:** Performance across districts and WUAs is varied. The mission recommends systematic advancement of the ASS approach across all districts and WUAs, following principles and approaches in Annexure C.

44. **Bio Village program:** This was implemented in 1 village each in each of the 6 agro-climatic zones in the state in technical and implementation partnership with the Vivekananda Institute in Nimpeeth. Based on the initial success in 6 villages of the first batch, the program has now been extended to 40 more villages in 8 clusters. GAP practices introduced under the program have been adopted in 372 ha by almost 1000 farmers.

## IV. Component D. Project Management

### a. Project Management

45. **Leadership at both SPMU and DPMU levels:** The dedicated support and vision of the Project Director in taking this project to the next level is highly commendable. Also, the special attention and support of Principle Secretary, WRIDD is highly appreciated. While the project has dynamic leaders, a dedicated Additional Project Director (APD) would help in expediting various processes in SDMU.

46. The support for institutional strengthening and engineering supervision in focus districts at DPMUs have been strengthened and staff empowered. Sub-division offices headed by **Assistant Engineers have been decentralized to focus in their sub-divisions.** However, dedicated EEs have been long awaited.

47. While the project has tried to organize Government staff and engage additional contract engineers, the status of multi-disciplinary staff both at State as well as district levels has been challenging. Four districts including focus ones don't have an IDS adversely impacting WUA mobilization. It was noted that 30% districts do not have agriculture, horticulture and/or fisheries specialists.

48. **SPMU:** The SPMU team consists of engineering staff from DWRID and the multi-disciplinary team. Earlier this multi-disciplinary team was engaged through a consultancy (EGIS). Following the completion of term of EGIS, key staff were retained through direct hiring. Some have left and new hiring has been in process since the project extension was granted in November 2017. While the project is working on strengthening the teams at both SPMU and DPMU levels, the project should ensure to have proper arrangements for increment of existing staff and as well as ensure insurance as applicable.

49. **DPMUs multi-disciplinary staff:** At the DPMUs, the project has multi-disciplinary teams through a combination of staff employed directly or through a recruiting firm. There has been large turnover in the project for contract staff (gap of 100) which are being filled now.

50. The Mission recommends that staff in DPMUs may be reorganized and layers for clearances minimized. As the project now has centralized MIS, different levels may be informed and alerted as needed. Similarly, the multi-disciplinary field staff need to understand the full process and be willing to fill in when

needed. Currently DPMU contract staff is responsible for only coordination while they could also contribute in field work similar to NGO experts. Both NGO experts and DPMUs experts should be assigned villages and held accountable for end to end solutions instead of divided responsibilities.

51. Similarly, the work load of environmental screening needs to be streamlined with an increased role of DPMU. The SPMU specialist has been overburdened with doing this across the State and the position has recently seen a change in staff further impacting environmental clearances. During the last mission, it was agreed that a Graduate in relevant Branches of Engineering (Civil/Chemical/Agricultural Engineering) could be considered acceptable (with 3 years minimum relevant work experience) to undertake all responsibilities of environmental screening and site supervision during implementation of 100% of the sub projects. This would necessitate a substantial shift in responsibilities of DPMUs.

52. Initially the project had four NGOs as Support Organizations (SO) for mobilizing WUAs. Due to the increased focus in western districts, the project has engaged 5 additional service providers (SP) and proposed for more very recently. However, their performance has been mixed. In some districts proper plans are not forthcoming and processes have been delayed substantially because some Service providers don't have experience in water / agriculture based schemes. Earlier missions had proposed an anchor NGO to train and standardize training modules. The SPMU needs to manage these contracts closely and take actions prompt as project does not have liberty of time.

53. It is very encouraging to note that PS WRIDD is keen to upscale WUA based approach in the entire state. The project need to look for an anchor organization and introduce standard training courses. Further WRIDD may open a WUA cell to facilitate this exercise and also monitor the performance of WUA on regular basis as practiced in other states.

54. **Site Office and transport facilities at DPMU:** Mobility of the multi-disciplinary team has improved, however, with the increase in the number of schemes it needs further bolstering and protocol to visit sites of handed over sites drafted and followed. It was noted that the DPMU had stopped visiting WUA for earlier batches. To minimize the mobility issue, project has proposed following: allocate sub-division offices with the sites; explore the probability of providing allowance for use of motorbikes and provide extra vehicles.

55. **Continue orientation and capacity building to staff:** It is important that project staff are clear on project implementation processes, principles and implementation guidelines. All levels of staff including engineers, SO and CRPs require regular training.

56. **Collaboration with Research and academic Institute:** The Mission would like to reiterate collaborations with institutions. The project is generating a wealth of information and innovations. Impact and learning can be analyzed through collaboration with research and academia. Students may be invited to do projects at various levels.

| |
|---|
| **Action:** Strengthen multi-disciplinary team and dedicated APD as soon as possible. |

### b. MIS and monitoring Framework:

57. The Project has a robust GIS based system and planning tools. In particular, the project has developed a GIS and remote sensing based planning and monitoring tool which has completely revolutionized how the department selects, structures and implements schemes. The project has set up an excellent example not only for the department but also for other projects. Their skills, ingenuity and hard-work have been highly appreciated at various events. The system is however is largely utilized by SPMU staff, and there remains

a lag in how quickly DPMU staff are able to adopt it for their own needs, adversely impacting frequent data updation and quality. In the absence of a non-functional MIS, quality control during implementation and performance reporting has always been challenging.

**Action:** The MIS update needs to be made mandatory, linked with fund releases and the SPMU should monitor data quality input so that the team could be more efficient in planning and monitoring.

58. **Impact Assessment:** There are several successful stories and unintended benefits emerged in various districts, and it would be beneficial to carry out an assessment of project benefits in handed over schemes.

**Action:** The SPMU should prepare terms of reference and hire a consultancy to have impact analysis as soon as possible.

59. **MIS:** Based on last mission review and suggestions, the project has opted restructured application (New MIS development with relational database approach) with the support of State e-Governance Mission Team (SeMT) under the guidance of department of information technology and information. The newly developed system is more robust in nature having core features like online SDMP / MWS approval mechanism, user hierarchy level approvals, proper data flow & approval mechanism, and inbuilt financial management system. As the STEP has been introduced as official tool for procurement planning, the newly developed application has features to link STEP reference number to keep track on procurement and physical progress. The MIS is still missing project level indicator dashboard and some enhancement in terms of DPMU level dashboards still under development. This is critical item to ensure active participation of DPMUs. The MIS also need to be updated with online WUA monitoring system updated recently.

60. **Project website and Intranet are developed*:*** To ensure continuous interface and smooth information flow between SPMU and the DPMUs, a project intranet with access rights to SPMU, DPMU and SO level staff has been developed. The project should provide DPMUs a space for hosting their own websites. The work flow, approval mechanism and data frequency has to be incorporated within the intranet. Lack of procedures results in lack of data integrity and work flow tracking. MIS website is yet to be integrated with the intranet and some public information is either within the MIS or missing completely.

61. **Storage and back up are being arranged:** The MIS team has hosted the application on secured cloud based server. The Mission is pleased with the SPMUs decision to upgrade the new secured integrated MIS website by June 2018.

## V. Financial Management

62. **Disbursement Profile:** Against the revised allocation of USD 30 million [post cancellation of USD 95 million] under IBRD 8090-IN, the disbursement as of 15-Jan-2018 stands unchanged at USD 1.225 million [4%] and reflects (a) front end fee of USD 0.313 million; and (b) documented reported project expenditures up to 31-Mar-2016 amounting to USD 0.912 million. The disbursement as of date against the signed amount of SDR 78.2 million for IDA-5014-IN stands at SDR 58.204 million [equivalent of USD 82.411 million at 74%] and (a) reflects the expenditures related to reinstatement of PPF and reported project expenditures up to 30-Jun-2017 amounting to USD 73.088 million; and (b) unadjusted advance of USD 8.752 million. The project has provisionally reported expend of ₹60 crores [Bank share approx. ₹50 crores] during the two quarters ended 30-Sep-2017 and 31-Dec-2017; this will liquidate the advance by approx. USD 8 million when processed. At current exchange rates, the project will need expend of approx. ₹433 crores in the remaining project life to fully utilize the Loan/Credit.

**Table 4. Financial summary [as on 15-Jan-2018]**

| | IDA 5014 | | IBRD 8090 |
|---|---|---|---|
| | **SDR** | **USD** | **USD** |
| **Signed Amount** | **78,200,000** | **125,000,000** | **125,000,000** |
| | | | |
| **Cancelled** | | | **95,000,000** |
| | | | |
| **Disbursed** | **58,204,377** | **96,347,272** | **1,224,958** |
| - Expend documented | 51,889,814 | 73,088,413 | 912,458 |
| - Front End Fee | | | 312,500 |
| - PPF Reinstated | 370,531 | 569,950 | |
| - Designated Account Advance | 5,944,033 | 8,752,498 | |
| - Exchange Losses | | 13,936,410 | |
| Percent disbursed | 74% | | 4% |
| | | | |
| **Available** | **19,995,623** | **28,652.728** | **28,775,042** |

63. **Budget and Fund Flows:** Against the project revised budget allocation of ₹280 crores for FY17-18 [under revision to ₹200 crores], ₹95.9 crores have been placed at the disposal of DDOs through an allotment process using the e-bantan system. Financial reports generated from the State systems [IFMIS] reflects expenditure of ₹66.525 crores as of 29-Dec-2017.

64. **Project Expenditures:** The project has reported a total expenditure of ₹66.525 crores during FY17-18 (and cumulative project expenditure of ₹614.157 crores). A summary of expenditures is as per Table 3 below.

65. **Delays in submission of IUFRs:** The project has not yet submitted IUFRs for the quarters ended 30-Sep-2017 [due on 15-Nov-2017]. The delay in preparation of the quarterly IUFRs is attributed to inability to access the IFMIS reports and the ensuing delays in the reconciliation of the expend reported for the project. In discussions with the Project Director and the project staff, it was explained that (a) IFMIS reports can be generated only by authorized officials; and (b) the IFMIS reports provide summary expend for the state and not district level expend as required to complete IUFR 1B. In an effort to improve disbursement performance, it was agreed that the project will henceforth approach the Project Director's office to access the state level monthly summary expend reports and submit a simplified version of IUFR 1A to CAAA on a monthly basis for disbursement. The complete set of IUFRs with IA and IB forms will be prepared with district level financial progress on a quarterly basis and submitted to the World Bank for management information.

66. **Amendment to Disbursement Arrangements:** During the Tri-partite portfolio review held in Lucknow during December 7-8, 2017, the issue of persistent delays in processing of disbursements at CAA&A level was brought up by the project. These delays are largely the result of the change in GoI [DEA] policy on advances in Bank financed operations which requires that 80% of the earlier advance be liquidated before new disbursement can be processed. This new policy when applied, renders the forecast based variable ceiling of the advance ineffective. In consultation with the project, it is proposed to change to a fixed ceiling of USD 10 million for the Designated Advance. The Bank has issued revised disbursement letter reflecting the revised disbursement arrangements.

67. **PWD Component:** With the amendment to the legal agreements undertaken in Nov-2017, PWD has been included as an implementing agency for carrying out the construction of an administrative building under the project. For the purpose, DWRID will use e-bantan to allocate project funds through the state budget, as required for the construction. This will ensure that the expend incurred by PWD against the allocation will be captured in IFMIS and reported in the project IUFRs. Further discussions with PWD officials on the proposed timelines for construction indicate that it will be difficult to complete the

construction in the remaining 18 months of the project, The Bank team confirmed to DWRID and GoWB that expend incurred after close of the project will need to be met from State's own funds. Therefore, the timelines for construction will need to be carefully considered by DWRID.

68. **Implementation of small works by WUAs:** With the watershed approach the project wishes to construct Happas through WUAs. To handle the fairly large number of [small] schemes such as Happa, it is proposed to pilot alternate approaches that will allow the scheme works and related activities to be implemented by WUAs themselves. Acknowledging however, that WUAs are fledging new institutions and have no prior management and book keeping experience, it is proposed that direct bank transfers will be made by DWRID to bank accounts individual beneficiaries against muster roll records and no project funds for the purpose will be transferred to WUAs.

69. **Overdue Audit Report for FY2016-17**: The audit report for FY2016-17 was due for submission to the World Bank on 31-Dec-2017. The Bank team was informed that the audit process has commenced.

70. While the FM arrangements essentially remain mainstreamed into the state's own accounting and financial reporting systems, persistent delays in submission of IUFRs affect the project's ability to draw down on the Loan/Credit on a timely basis. Based on this assessment, the financial management performance is being downgraded to Moderately Unsatisfactory (MS).

## VI. Procurement

71. The estimated total cost of planned civil works was INR 558 Crores and that for goods and consultancy services was INR 45 and 66 crores respectively. Total procurement planned were INR 669 crores. In Batch 5, 125 packages at an estimated cost of INR 76 crore have been approved, 10 packages of INR 5.7 crore are under review and 309 packages with estimated cost of INR 115 crore are under preparation (Table 5 and 6).

72. For procurement planning, the project has been using newly introduced Systematic Tracking of Exchanges in Procurement (STEP) system. However, PD expressed that the system is slow and his engineers are spending considerable time in feeding the activities into STEP. He advised to be excused as project is close to completion and time is critical while STEP is undergoing improvement cycle based on the feedback of various issues by the users. The procurement specialist noted the concern and apprised the PD that feedback is being taken seriously and updates are being made to STEP to make it more user friendly and the process is being streamlined to make the system faster. Further if required, the project team will be given a refresher course on any enhancements in STEP. In order to minimize the cancellation of packages at this advance level, it was agreed in December 2017 that the technical details of schemes will be shared during identification and selection stages. The procurement package should be prepared only after the technical clearance by the World Bank.

73. Contract management specially the way the project schemes are executed is a real challenge and needs to be better organized. The mission reiterated the need for the project team at the SPMU to review some contracts from each district on monthly/ quarterly basis with suggested remedies to DPMUs and record exceptions in the monthly reports to the Bank. Bank team has already conducted ex-post reviews of all contracts finalized between 1st July 2016 and 30th June 2017. The PPR report will be shared with the project for their review and follow up action.

74. Though some procurement progress is made, many schemes still need to be planned and included in the procurement plan with follow-up action for early award of contracts. Therefore, the procurement rating is retained as ***Moderately Satisfactory***.

**Box 2: Framework Agreement**

Framework Agreement (FA) is an alternate procurement arrangement to NCB and shopping when multiple IAs are requiring the same item regularly over a period of time. As per the request of the project, in WBADMIP; FA was introduced during restructuring. However, the project could not finalize any Framework Agreement for any item till date. There are some distinct advantages of FA like economy, time saving in placing order, good competition and supply performance etc.

Off late it was noted that many schemes, proposed by the project has solar pump as a component. Further compared with MNRE rate for solar pump of similar capacity, the estimated cost of solar pumps in project is on higher side. Because of high estimated cost, the rate received against bidding is also on higher side. To mitigate this issue, project can explore the option of finalizing framework agreement for different categories of solar pumps at SPMU level and as & when the pumps are required DPMUs can place order on framework holding firm to get the supply. The installation and commissioning can be done by solar pump supplier. Because of bulk procurement, the project can have value for money and get good after sales service.

## VII. Social and Environmental Management

### a. Social Safeguards

75. **Farmer Participation:** So far 4,263 schemes have been identified and 2,977 applications received from communities. 1,491 WUAs have been formed of which 918 have been registered. The total membership of WUA is now over 100,000. The total number of water users are now over 60,000 of which 13% are women. The Mission was pleased to note that the project has documented success stories of support services. These stories should be translated into Bangla and widely disseminated.

76. **Land Donation:** The Mission was informed that 3,994 farmers have donated land. Nearly 1,281 land donors gave unconditional land whereas others received facility from WUAs towards land donation. The compensation / assistance towards land donation includes reduced water charges; employed as pump operator; and agriculture demonstration plot. On an average 0.11 ha of land is donated by land owners. The mission was informed that in western districts where interventions are largely water retention structures, land is not donated or pledged to WUA. The land owners only provide right to easement for water use. This might lead to conflicts in the future. The mission observed that those who gave land for poly houses / greenhouses get only 15% of the revenue. It is suggested that WUAs should take that land on lease and lease amount should be shared by the beneficiaries from Greenhouses.

77. **Citizen Engagement:** To strengthen implementation of sub-projects apart from SOs, the project has identified small and marginal farmers who have successfully implemented irrigation services in their own villages as Community Service Providers (CSPs). 143 Community Service Providers have been appointed in 16 districts.

78. **Gender based actions include:** Introduction of all women WUAs to construct, operate and maintain irrigation schemes; inclusion as member in WUA by making spouse an eligible member, women as committee members in WUA, and as lead farmers for ASS demonstrations. The total number of women beneficiaries are a little over 13.74% of the total beneficiaries. Currently there are 13364 women water users as against 97263 male water users. Approximately 28% of executive members in WUA are women. In tribal villages, there are 1928 women WUA members out of a total 9000 members which is approximately 20.51% of total membership. Tribal beneficiary's percentage- 11% and Women beneficiary's percentage 13.74 %.

79. The project is also supporting 5613 woman-headed households, which is just 6.34% of the total households covered as beneficiaries in the command area. 4950 women participated in various ASS activities that included 2192 in agriculture demonstration; 1507 in horticulture demonstrations and 1171 in fisheries demonstrations.

80. **Tribal Beneficiaries:** 249 schemes have been implemented in 218 tribal villages across 218 blocks. So far 10,750 tribal households have benefited from the project. There are 9400 tribal members in WUAs of which 28% are office bearers of WUA. There are 249 WUAs with over 50% tribal members. There are 788 tribal members in FIG. The Project has spent 11% of its total cost on tribal beneficiaries.

### b. Environment Safeguards

76. **Overall**, the environmental management systems and arrangements in the project continue to be "Moderately Satisfactory". The project continues to do environment screening for various batches, however this needs to be done in a timely manner. Now SDMP preparation including screening is being done online.

77. The project focus has been on surface schemes or pump dug wells in western districts where disposal of earthwork has been a major issue. This needs to be closely monitored and ensured that it does not implicate existing or proposed structure.

78. Recently some cases for clearance of WDS in forest vicinity were received. The mission indicated if following condition is met, the storage structure may be considered:

a) The schemes are in downstream of forest catchment.
b) The submergence will not impact the forest.
c) There will not be any concrete or permanent nature of work.

79. The project has been doing water quality and water flow monitoring on an ad-hoc basis. The mission urged SWID/SPMU to prepare a plan for such monitoring. Under National Hydrology Project, it is observed that SWID has been planning real time monitoring in various districts both for water level and water quality. SWID however needs to focus on project areas to understand the impact on groundwater as well as in streams.

## VIII. Governance and Accountability

81. The project has a website (http://www.wbadmip.org/) and a toll-free number (with a dedicated officer) for grievance redressal. Each DPMU also has system for registering grievances, and the contact information for grievances have been widely disseminated. DPMUs are maintaining records of all grievances including written complaints. Grievances at DPMU level are resolved within a month or escalated to APD level at SPMU. The aggrieved person has the option of approaching the judiciary if grievance remains un-resolved at SPMU level. To-date the project has received 29 grievances of which 19 have been resolved. This year 1 complaint was received in various districts while 8 are pending for previous

years. Majority are related to breakage in pump/motor and accordingly warranty and maintenance clauses may be looked into. The grievance system seems to be recording repeated complaints for some while those are just reminders in reference to their original complaints.

82. Discussions with the community and project staff revealed that grievances related to land donation or entitlements do not come to SPMU as they generally resolved at the WUA level in consultation with SO representative and concerned IDS and Executive Engineer.

83. The mission recommends preparation of a Governance and Accountability Action Plan at DPMU and SPMU levels, to be updated annually. These plans should be prepared in participation with project staff and shared once finalized. A grievance redressal framework starting from WUA extending up to SPMU should be established. The mission recommends the project adopt a zero tolerance to financial misappropriation at all levels.

# List of Tables and Annexures

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| B2 | SWID Observation to Hydrological analysis |
| B3 | Approach for BC ratio estimates |
| C | Agricultural Support services |
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| 4 | Presentation made during wrap up |

**Table 3.1 Status of scheme implementation**

| Description | No of schemes approved | Completed | Total cost (Rs. Crores) |
|---|---|---|---|
| Batch 1 | 364 | 341 | 107.59 |
| Batch 2 | 413 | 333 | 267.33 |
| Batch 3 | 423 | 236 | 216.84 |
| Batch 4 | 143 | 15 | 35.61 |
| Batch 5 | 555 | 0 | 143.6 |
| Total Number of schemes | 1898 | 925 | 771.27 |
| Schemes completed & handed over to WUA | 736 | 951 | 417.05 |
| Number of schemes dropped* | 143 | 402 | 114.26 |
| Not functional | 25 | 26 | 7.9 |
| Number of schemes operational | 711 | 925 | 409.15 |
| Percent of schemes with WUAs performing satisfactorily as per last WUA grading | **69.23%** | | |
| Remaining Number of schemes | 947 | 354.22 | |
| Schemes under preplanning stage | 1079 | 278.73 | |
| Schemes for Administrative approval | 1079 | 278.73 | |
| **Status of procurement** | | | |
| Bids under preparation | 419 | 142.92 | |
| Tenders floated | 395 | 140.39 | |
| Contract awarded and work order issued | 1333 | 591.13 | |
| Schemes with work in progress | 377 | 190.55 | |
| Civil Work Completed and awaiting energization | 17 | 15.78 | |
| Bid not Matured (out of total 1898 Administrative approval given) | 33 | 8.1 | |
| **Projections by March 2018** | | | |
| Schemes handed over for over 6 months | 807 | 340.82 | |
| Schemes handed over by Dec 2018 | 146 | 85.63 | |
| Schemes remaining (Work in Progress – Schemes Handed over by Dec 2018) | 231 | 104.92 | |
| Expected to be completed by Dec 2018 | 596 | 171.57 | |
| June 2019 | 1000 | 287.87 | |

**Table 3.2 Plan for QA/QC of schemes**

| S. No. | Type of Structures | Projected number of schemes | No. of Schemes covered under QA&QC upto Dec 2017 |
|---|---|---|---|
| 1 | Lift Irrigation | 246 | 12* |
| 2 | WDS(CD) | 221 | 67 |
| 3 | WDS(Khal) | 164 | 17 |
| 4 | WDS(Pond) | 328 | 21 |
| | Total | 959 | 117 |

**Table 5:. Project expenditure by Project Components**

| Project Components/Sub Components | | FY2011-12 | FY2012-13 | FY2013-14 | FY2014-15 | FY2015-16 | FY2015-16 | FY2017-18 | |
|---|---|---|---|---|---|---|---|---|---|
| | | 21-Dec-2011 to 31-Mar-2012 | 01-Apr-2012 to 31-Mar-2013 | 01-Apr-2013 to 31-Mar-2014 | 01-Apr-2014 to 31-Mar-2015 | 01-Apr-2015 to 31-Mar-2016 | 01-Apr-2016 to 31-Mar-2017 | 01-Apr-2016 to 29-Dec-2017 | Cumulative to Date |
| | | | | | | | | | |
| A. | Strengthening of Community based Institutions | | 10,618,588 | 35,089,813 | 33,384,658 | 35,880,585 | 53,459,149 | 29,891,920 | 198,324,713 |
| B. | Irrigation System Development & Improvement | | 1,637,505 | 299,797,056 | 838,013,395 | 1,563,541,614 | 1,660,618,646 | 468,677,940 | 4,832,286,156 |
| C(I). | Agriculture Development | | - | 1,447,362 | 17,801,800 | 39,330,675 | 39,623,317 | 9,503,360 | 107,706,514 |
| C(II). | Horticulture Development | | - | 1,192,379 | 3,461,947 | 23,710,666 | 44,947,603 | 16,055,890 | 89,368,485 |
| C(III). | Fisheries Development | | - | 119,778 | 3,259,388 | 9,060,208 | 35,849,030 | 21,988,680 | 70,287,084 |
| D(I). | Project Management - SPMU | 14,308,037 | 18,384,243 | 60,578,289 | 113,674,933 | 135,400,028 | 97,480,679 | | |
| D(II). | Project Management - DPMU | 9,022,946 | 18,399,818 | 27,481,438 | 66,880,803 | 126,402,881 | 150,133,542 | | |
| GRAND TOTAL | | 23,330,983 | 49,040,154 | 425,706,115 | 1,076,476,924 | 1,933,326,657 | 2,082,111,966 | 665,250,450 | 6,141,568,316 |

**All figures are in Indian Rupees**

**Table 6: Procurement Summary**

| S. No. | Component | Total Contract Packages | | Contracts Awarded | | Contracts to be Awarded | |
|---|---|---|---|---|---|---|---|
| | | No. of packages | Scope | No. of Packages | Scope | No. of Packages | Scope |
| 1 | Works | 2000 | 178 | 800 | 100 | 1200 | 78 |
| 2 | Goods | 610 | 11 | 361 | 7 | 249 | 4 |
| 3 | Services | 54 | 17 | 41 | 11 | 13 | 5 |
| | Total | 2664 | 206 | 1202 | 119 | 1462 | 87 |

**Table 7: Category wise budget**

| | Commitment | | Expenditure | |
|---|---|---|---|---|
| **Items** | INR (Crore) | USD (m) | INR (Crore) | USD (m) |
| **Works** | 670 | 100 | 482.4 | 72 |
| **Goods** | 46.9 | 7 | 36.18 | 5.4 |
| **Services** | 84 | 12 | 61.9 | 9.25 |
| **Total** | 800.9 | 119 | 580.48 | 86.65 |

**Table 4: Status of staff in SPMU and DPMU**

| PROJECT MANAGEMENT | Actual | Target |
|---|---|---|
| Number of DPMUs established (nos.) | 18 | 18 |
| Number of site offices established | 3 | 10 |
| Total Number of Staff SPMU | 48 | 43 |
| - SPMU Govt staff* | 10 | 10 |
| Contractual Staff | 35 | 38 |
| Number of contracted staff at DPMU | 213 | 338 |
| Number of Govt staff at DPMU | 70 | 62 |
| Support Organization staff | 155 | 156 |
| Service Provider | 52 | 52 |
| Total Staff | 552 | 675 |
| Number of workshops organized | 115 | 72 |
| Number of project staff trained in project activities | 990 | 500 |

# Annexure 1: Result framework

| No. | Indicator | Unit | Baseline | Previous | Current | End Target |
|---|---|---|---|---|---|---|
| **PDO Indicators** | | | | | | |
| 1. | Relative change in value of outputs measured as ratio between post to pre-project values | % | 0 | | | |
| 2 | Water users provided with new/improved irrigation and drainage services | Nos | 0 | 62,061 | 97,244 | 1,00,000 |
| 3. | Water users provided with irrigation and drainage services - female | Nos. | 0 | 8,286 | 13,364 | 12000 |
| 4. | Operational water user associations created and/or strengthened * | Nos. | 0 | 1,351 | 1,898 | 2300 |
| 5. | Increase in production of major outputs: (Rice, Oil Seed, Vegetable) (Metric tons/year, Custom Supplement) | MT/Year | | | | |
| (i) | - Rice | | 0 | 25000 | 29600 | 95000 |
| (ii) | - Oilseeds | | 0 | 7500 | 8325 | 8800 |
| (iii) | - Pulses | | 0 | 2200 | 2460 | 2500 |
| 6. | Water users provided with new/improved irrigation and drainage services: Small and Marginal Farmers | % | 0 | 80 | 80 | 80 |
| 7. | Water users provided with new/improved irrigation and drainage services: Tribal farmers | % | 0 | 11 | 13 | 13 |
| 8. | Water user association that are generating at least 80% of resources required to manage, operate and maintain the developed schemes | % | 0 | 62 | 64 | 70 |
| **Intermediate Results Indicators** | | | | | | |
| 9. | Area provided with new/improved irrigation or drainage services (Hectare(Ha), Corporate) | Ha | 0 | 42,000 | 50,000 | 75,000 |
| 10. | Area provided with improved irrigation or drainage services (Hectare(Ha), Corporate Breakdown) | Ha | 0 | 42000 | 50000 | 75,000 |
| 11. | Increase in water harnessed with new/improved irrigation services | (Cubic Meterm3) | 0 | 17,00,00,000 | 66,00,00,000 | 2,50,00,00,000 |
| 12. | Area diversified to less water intensive cash crops | % | 5 | 20 | 28 | 20 |
| 13. | Change in cropping intensity in areas provided with new/improved irrigation services | % | 122 | 160 | 199 | 170 |

# Annexure 2

## Status of actions agreed during mission (February 2018)

**(Green indicates good progress, yellow indicates some progress, white needs attention)**

| S. No | Action | By Whom | By When/ revised | Status (Feb 2018) | Revised/ follow on Action |
|---|---|---|---|---|---|
| **Key Actions** | | | | | |
| 1. | Strengthen SPMU with continued contract staff, additional staff and coordinator. | SPMU | Jan 2016/ Immediately | Multidisciplinary staff strengthening in progress. Dedicated APD needed urgently. | |
| 2. | Standardize protocols and procedures | DPMU/ SPMU | Ongoing | Recently finalized guideline for check dam, WDS and PDW schemes. For RLI and tubewell, finalized earlier. | Finalize e tools for various structures |
| 3. | Institutionalize QA/QC cells in the department. | SPMU | Immediately | Internal arrangements are in place outsourcing to universities yet to be finalized. | WRIDD may create a cell for overall QA/QC and strengthen insitu testing facilities. |
| 4. | Engage HR recruiting agency for DPMU staff | SPMU | November 2016 | SPMU is hiring directly and all desired positions are expected to be in place by February 2018. | |
| 5. | Restructure MIS and M&E | SPMU/ DPMU | Ongoing | MIS is functional but yet to serve DPMUs with the required dashboard and tracking of progress. | |
| 6. | Finalize Restructuring proposal | SPMU | Oct-16/Nov 2017 | Completed Project extended till 20th December 2019. | |

| S. No | Action | By Whom | By When/ revised | Status (Feb 2018) | Revised/ follow on Action |
|---|---|---|---|---|---|
| **Component wise Actions** | | | | | |
| **Component 1: Strengthening Community based Institutions** | | | | | |
| 1.1 | Strengthen crop planning, command area based on water accounting and water availability in the schemes | DPMU/SO/SP | Ongoing | | Strengthen through networking among WUAs |
| 1.2 | Standardize WUA<br>- WUAM membership<br>- Water charges<br>- Benefit Sharing | SPMU | | Preparation of WUA protocol is under process.<br>For other in practice and approval for greenhouse is awaited. | |
| | - QA/QC by WUAs. | | | QAQC OK card developed but yet to be put in to the practice. | |
| 1.3 | Support to Women based WUA in Purulia | DPMU | 15-Jun-17 | Provide support for construction of scheme | The next proposed plan should consist of these schemes. |
| 1.4 | Networking of WUA | DPMU | New activity | Directory of WUA contact and share on web and printed version, Organize meetings at DPMU levels. | |
| 1.5 | Institutionalize a WUA cell in the WRIDD | WRIDD | | New Activity | Establish a WUA cell in WRIDD<br>Identify an institute/organization to continue training developed by the project. |
| **Component 2: Scheme Implementation** | | | | | |
| 2.1 | | DPMU | | | |

| S. No | Action | By Whom | By When/ revised | Status (Feb 2018) | Revised/ follow on Action |
|---|---|---|---|---|---|
| | Update specifications for surface schemes and make them cost effective. | | Sep 30, 2013/Feb 2018 | Completed, For tubewell and LI already developed. For WDS, check dam and PDW introduced recently and are under testing. | Mandatory items for contract management need to be included in bid. |
| 2.2 | Quality control cell in SPMU and system at DPMU | DPMU<br>WUA | Jun-14/ March 18 | Delayed, Supervision needs to be improved. Quality has been poor in some schemes. | Mobile based and quality control needs to be put in place; Mobile quality control lab needs to be introduced and ok cards need to put in practice. |
| 2.3 | Set up protocol for response to third Party QA/QC | SPMU<br>DPMU | | Dropped. Internal independent QAQC team in SPMU supported by dedicated QAQC engineer in DPMU is planned and expected to be functional by February 2018. | The issues are yet to be resolved in several schemes. |
| 2.4 | Performance Monitoring of schemes | DPMU | Ongoing | Delayed. Despite several reminders, correct report with Actual area irrigated, storage capacity and water availability are yet to be put in practice. Introduce RS based for water bodies assessment, | Ensure Pumping test of GW submitted to database and also with SWID. |
| **Component 3: Agricultural Support Services** | | | | | |
| 3.1 | ASS Plan for Kharif 2017-18 | | Ongoing | | |
| 3.2 | Ensure the continuity of PPP | SPMU | Jan 2016/ immediately | Dropped. Now the involvement of Retired Krishi Sahayak and Retired Agriculture Extension officers in the districts is planned. Fisheries ground level staff and expert from SO yet to be finalized. | Expedite the process. |
| **Component 4: Project Management** | | | | | |

| S. No | Action | By Whom | By When/ revised | Status (Feb 2018) | Revised/ follow on Action |
|---|---|---|---|---|---|
| 4.1 | Dedicated Govt team at DPMU | SPMU | Immediately | Engineering teams are strengthened but multi-disciplinary teams are expected to be staffed by March 2018. | |
| 4.2 | Engage NGOs for additional areas | SPMU | Mar-17 | Done, Total 14 No of new contracts signed with seven new NGOs as service provider agency and functional. | Manage the contract for proper outcome |
| 4.3 | Engage Solar firm for training and guidance | SPMU | Dec-16 | IIT Professor is selected to support the Solar initiatives in the Project. | For supervision, the field staff need to be trained. |
| 4.4 | Quality control cell | SPMU | Immediately | SE has been assigned, however the field testing system yet to be strengthened. | |
| 4.5 | Upgrade surface water monitoring system at lift and surface irrigation schemes | SPMU /SWID | Ongoing | Started. Bring all the stations data by various districts and agencies on same platform. | Integrate data with CWC e-SWIS and make it useful for community. |
| 4.6 | Upgrade groundwater monitoring system | SPMU /SWID | Ongoing | A total of 200 stations with real time monitoring are under progress. | Start analyzing, ensure quality and publish reports. |
| 4.7 | Upgrade database management system in SWID: Prepare monitoring plan | SPMU /SWID | Oct, 2013/ Jun-17 | Some GW based modelling software and GIS softwares have been procured. | Collaborate with research and academia to make use of softwares procured. |

| S. No | Action | By Whom | By When/ revised | Status (Feb 2018) | Revised/ follow on Action |
|---|---|---|---|---|---|
| 4.8 | Prepare a draft plan for comprehensive monitoring of water availability and water quality with estimates. | SWID /SPMU | Oct 31, 2013 | Delayed. Please refer examples of Hydrology project states such as Andhra Pradesh, Gujarat who prepare monthly reports. | |
| 4.9 | Update spatial database of old schemes with their status | SWID /SPMU | June 2014 | Not started | |
| 4.10 | Organize and monitor all GW information generated in the project: geo-resistivity, Digital logging; & pumping test | SWID/SPMU | Immediately | Integration of data using GRASP and other software is in progress. Digital logger commissioned. Geo resistivity are being done. | |
| 4.11 | Enhance web-based MIS for project immediately. | SPMU | Ongoing | Online SDMP preparation is introduced. DPMU dashboard and WUA rating criteria to updated. | Till then, excel based sheet may be used to update the data in DPMUs. |
| 4.12 | Update baseline data for both MIS and GIS platform with the details up to beneficiary/field level. | DPMU<br>SPMU | Ongoing | GIS information is improved but physical data are yet to be populated for old schemes. For new schemes online SDMP is taking care of it. | |
| 4.13 | Engage consultancy for impact analysis | SPMU | June 2018 | | |
| 4.14 | Strengthen M&E at all levels upto WUA | SPMU /DPMU | Mar 2016 | Monitoring and coordination at SPMU has improved however the information from field yet to be streamlined. | M&E. Farmer/WUA cards are prepared. Dashboard for reporting at web yet to be streamlined. |

| S. No | Action | By Whom | By When/ revised | Status (Feb 2018) | Revised/ follow on Action |
|---|---|---|---|---|---|
| **5. Financial Management** | | | | | |
| 5.1 | Forecast of expenditures for next two quarters in IUFR 1B to be sent to World Bank. | SPMU | Ongoing (prior to each semester) | Submitted with delay. Yet to streamline for timely submission. | |
| 5.2 | Audit report for FY 16-17 | SPMU | Every year | Delayed. | |
| **6. Procurement** | | | | | |
| 6.1 | Framework agreement for Solar system | SPMU | New activity | | |
| **7. Social Development** | | | | | |
| 7.1 | Issue Guidelines to SOs on addressing the issues related to Lands, Impacts and Tribal Development. | SPMU /SO | Ongoing | Ongoing activity. Keep updating the SOs as there is large turn over. | Continued. |
| 7.2 | Update information on actual land donation in all the batches prior to Admin approval | DPMU /SPMU | Ongoing | In case of easement arrangement, the charges need to be agreed with the owners. | Ensure silt disposal appropriately |
| **8. Environment** | | | | | |
| 8.1 | Organize and complete training for DPMU staff and SO staff on environmental due diligence. | SPMU | Ongoing | Conducted and continued. | Field staff need to verify water availability and water quality. |

| S. No | Action | By Whom | By When/ revised | Status (Feb 2018) | Revised/ follow on Action |
|---|---|---|---|---|---|
| 8.2 | Silt disposal | DPMUs | Ongoing | Identify the sites for silt disposal during DPR/SDMP and specify the location in the bid documents. Ensure disposal of silt at all the sites. Planned to have GPS based photos before/after included in new SDMP as Silt Disposal Plan. | Strengthen monitoring and no charges should be paid to the contractor for organizing the land. |
| **9. Governance** | | | | | |
| 9.1 | Establish a grievance cell | SPMU | Ongoing | Partially done. Toll free and MIS in place. Out of 22 only 3 have been resolved. The response time needs to be improved. | Yet to put in full practice by sharing number with WUAs/community and dedicated person to it. Strengthened but still needs proactive disclosure. On web most of the Project information are shared. |
| 9.2 | Provision of display boards and project information system | SPMU /DPMU | Ongoing | In practice. During construction also boards with toll free number to be made mandatory. | During construction and post construction, display boards are needed and mechanism for sharing scheme details with villagers needs to be practiced. |