



Combined Project Information Documents / Integrated Safeguards Datasheet (PID/ISDS)

Appraisal Stage | Date Prepared/Updated: 28-Jan-2019 | Report No: PIDISDSA24721



BASIC INFORMATION

A. Basic Project Data

Country India	Project ID P162679	Project Name West Bengal Major Irrigation and Flood Management Project	Parent Project ID (if any)
Region SOUTH ASIA	Estimated Appraisal Date 28-Feb-2019	Estimated Board Date 31-Jul-2019	Practice Area (Lead) Water
Financing Instrument Investment Project Financing	Borrower(s) Republic of India	Implementing Agency Irrigation and Waterways Department	

Proposed Development Objective(s)

The Project Development Objectives are to improve irrigation service delivery, strengthen flood risk management and improve climate change resilience in the Project area.

Improving irrigation services includes management reforms as pursued under Component A, and infrastructure modernization to reinforce the management improvements under Component B. Strengthening flood risk management is addressed under Component C. These improvements will help improve the resilience of the Project area to climate change.

Components

- Component A: Irrigation Management
- Component B: Modernization of Irrigation Infrastructure
- Component C: Flood Management
- Component D: Project Management

PROJECT FINANCING DATA (US\$, Millions)

SUMMARY

Total Project Cost	413.00
Total Financing	413.00
of which IBRD/IDA	145.00
Financing Gap	0.00



DETAILS

World Bank Group Financing

International Bank for Reconstruction and Development (IBRD)	145.00
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Non-World Bank Group Financing

Counterpart Funding	123.00
Borrower/Recipient	123.00
Other Sources	145.00
Asian Infrastructure Investment Bank	145.00

Environmental Assessment Category

B-Partial Assessment

Decision

The review did authorize the team to appraise and negotiate

B. Introduction and Context

Country Context

- India continues to be the world’s fastest growing major economy.** While growth dipped to 6.7 percent in FY17/18, it has accelerated in the last two quarters to reach 8.2 percent in Q1 FY18/2019. Going forward, growth is projected to reach 7.3 percent in FY18/19 and to firm up thereafter at around 7.5 percent, primarily on account of robust private and public consumption expenditure, a rise in exports of goods and services and a gradual increase in investments.
- Since the 2000s, India has made remarkable progress in reducing absolute poverty.** Between FY2011/12 and 2015, poverty declined from 21.6 to an estimated 13.4 percent at the international poverty line (2011 PPP US\$ 1.90 per person per day), continuing the earlier trend of robust reduction in poverty. Aided by robust economic growth, more than 90 million people escaped extreme poverty and improved their living standards during this period.
- These impressive achievements in poverty reduction notwithstanding, India’s agriculture has been on an unsustainable resource-intensive path.** According to the recently prepared Systematic Country Diagnostic (SCD)¹, India’s land would need to generate 4 times more gross domestic product (GDP) to achieve China’s GDP, and India’s irrigation water would need to produce 5 times more agricultural GDP to achieve China’s level of water productivity.² Inefficient resource use also causes

¹ World Bank Group (2018) India: Systematic Country Diagnostic: Realizing the promise of prosperity (Report No. 126284-IN)

² Irrigation uses 688 bm³ in India and agricultural GDP is 17 percent of an approximate \$2 trillion economy while in China irrigation uses 355 bm³ and agricultural GDP is about 9.7 percent of an approximate \$10 trillion economy



negative environmental impacts. India is also among the countries most vulnerable to the impacts of climate change, which are amplified by its dependence on climate-sensitive sectors for its livelihoods³. The Government estimates that, in the absence of adaptation or policy changes, farm incomes will decline by 12 percent in the coming years⁴.

4. **India will need to adopt a growth path that uses water more efficiently** and that increases productivity and generates jobs in rural areas. Incomes in rural areas need to be boosted through higher agriculture growth and generation of more jobs through rural enterprise.

Sectoral and Institutional Context

West Bengal

5. **West Bengal has the sixth largest State economy in India**, and produces over six percent of the country's GDP. In the period 2007-2012, the average gross State domestic product (GSDP) growth rate was 6.2 percent⁵, one of the lower rates in India. Almost 70 percent of the population is living in rural areas, and 22.5 and 14.7 percent of the rural and urban population live below the poverty threshold⁶. Agriculture contributes an estimated 20 percent to the GSDP and employs over 55 percent of the workforce. West Bengal is one of the most important food producing states in India, producing nearly 20 percent of the rice and 33 percent of the potato production. Economic growth, poverty reduction and employment creation depend to a large extent on agricultural growth.

6. **Average paddy yields in West Bengal are consistent with and higher than the national average** in Rabi (3.4 tons/ha) and Kharif season (2.7 tons/ha)⁷, respectively. At over 185 percent, West Bengal has one of the highest cropping intensities of the country, but much of this high intensive agriculture comes at the expense of inefficient and unproductive resource use, as irrigated paddy dominates the cropping pattern.

7. **West Bengal is relatively rich in water resources** and accounts for 7.5 percent of the country's water resources. The annual average rainfall is around 1,760mm, of which 76 percent is received in the monsoon months and the rest in the non-monsoon period. The net annual water resource generated from rainfall in West Bengal amounts to 51.0 billion cubic meter (BCM)⁸. The groundwater resources are 34.2 BCM.

8. **Despite abundance, use of water is low.** Over 20 percent of the rain infiltrates through the soil, and as much as 49 percent is returned to the atmosphere through evapo-transpiration⁹. The state has created little storage to carry abundant monsoon rainfall into the water-scarce post-monsoon season, and the potential to create major storage is limited. The state currently uses about 42 percent of the

³ World Bank (2012).

⁴ Climate, Climate Change, and Agriculture – Economic survey 2017-18. <http://mofapp.nic.in:8080/economicsurvey/pdf/>

⁵ <http://www.esopb.gov.in/Static/PDF/GSDP/Statewise-Data/StateWiseData.pdf>

⁶ Indiastat

⁷ Indiastat

⁸ West Bengal Pollution Control Board (WBPCB), 2009

⁹ West Bengal State Action Plan on Climate Change <http://www.moef.nic.in/downloads/public-information/West-Bengal-SAPCC.pdf>



total annual net replenishment of groundwater.

9. **West Bengal has 37,660 km² of flood-prone area** out of a total geographical area of 88,752 km². An analysis of the floods that occurred over the last 41 years shows that the State has not faced a severe flood in only five years. The total devastated area exceeded 20,000 km² in four years and the flood of medium magnitude (i.e. between 2,000 to 10,000 km²) occurred on 10 occasions. In view of its geographical location at the tail end of the Ganga Basin the problem of flood management and drainage in the State is acute.

Damodar Valley Command Area

10. **The Damodar Valley Command Area (DVCA) is located downstream of Durgapur on the Damodar river** in the districts of East and West Bardhaman, Howrah, Bankura and Hooghly. The scheme covers 393,964 ha and provides an important source of livelihoods for 2.68 million people. The canals are fed via headworks at Durgapur Barrage. Flow in the Damodar River to Durgapur is regulated by five upstream dams located in the neighboring state of Jharkhand. Irrigation water is supplied from these dams during three seasons: Kharif (25 July to 31 October), Rabi (25 December to 5 February), and Boro (25 January to 30 April).

11. **The DVCA is 60 years old, and in need of modernization.** Key challenges include degradation of infrastructure and inadequate irrigation management, including poor quality of service delivery, inefficient irrigation and absence of a monitoring system. As a result of the degradation of the system, surface water no longer reaches the middle and tail parts of the canal network. Out of the 41 blocks covered by the DVCA irrigation network, no irrigation water is received by 23 blocks in Rabi season, 19 blocks in the Boro season and three blocks even in the Kharif season. While the design discharge at the head of the LBMC and RBMC are 260 m³/s and 64 m³/s respectively, the maximum discharges recorded in 2017 were only 212 m³/s and 57 m³/s. Of the 1,700 canal regulatory structures, almost half are severely or moderately damaged. Tail end farmers are compelled to abstract groundwater, which increases the costs of cultivation and undermines the sustainability of the scheme.

12. **Groundwater has traditionally been drawn from shallow aquifers** (to about 20 m deep) with centrifugal pumps, but overuse of this source has obliged farmers to increase the number of deeper wells with submersible pumps. Between 2005 and 2017, the number of semi-critical blocks increased from five to 19 (out of a total of 41 blocks)¹⁰. Out of 40 monitoring wells (in 40 different blocks) in the DVCA, 23 wells showed depletion of more than 3m from 2001 to 2016.

13. **As the system continues to degrade and the effects of climate change increasingly affect system performance, surface water is progressively being confined to the top-end of the system, groundwater use in the tail end continues to increase,** groundwater levels continue to decline, and the sustainability of the scheme continues to erode.

14. **The Lower Damodar basin area is historically flood-prone.** Some 33.5 thousand hectares of the cropped area and 461,000 people are affected annually on average. The major causes of floods,

¹⁰ A semi-critical block is a block where the ground water table has on average been declining by over 0.20m per year over a five-year period.



waterlogging and drainage congestion in the Project area include inadequate utilization of flood storage potential in the five reservoirs in Jharkhand, river bed siltation, unauthorized construction of bunds across channels and rivers to augment the water availability during Boro ('Boro bunds') and the tidal effect at the outfall of the channels and rivers.

15. **The DVCA is facing financial viability challenges.** The Government of West Bengal (GOWB) recognizes that the Project beneficiaries are generally poor and sees irrigation as one of its key public investments to reduce poverty. The GOWB realizes that recovery of Operation and Maintenance (O&M) costs from farmers is important to promote an efficient use of natural and public resources but has adopted the policy that irrigation investment and O&M costs should be covered by the public budget, and that recovery of O&M costs from farmers is not a short-term priority.

16. **While the allocation of public funds for O&M has been relatively stable** over the past years, allocation and expenditures lack transparency and are not disclosed. In addition, they cannot be tracked on a scheme basis and do not allow for comparison and benchmarking across the State. Budgets continue to be allocated based on standard per hectare norms and previous years' allocations, and not on a rational assessment of maintenance needs and systematic asset management.

17. **Climate change is expected to amplify the challenges that the system is facing.** In response to increasing unpredictability of rainfall that is associated with climate change, farmers will rely more on groundwater in future, especially during the Kharif season. Rising temperatures will increase crop water requirements and will increase the premium on reliable supplies and the quality of service delivery. Higher climate variability and higher temperatures will increase the demand for groundwater and further jeopardize the sustainability of the system. More extreme weather events will increase flooding, and sea level rise will impede the timely drainage of these floods and will increase sedimentation. Intrusion of saline water will force farmers to increase water withdrawal to flush out the salinity, while making groundwater less suitable for irrigation. In the longer run, more extreme events and higher rates of upstream erosion and downstream sedimentation will also have an impact on the storage capacity of the upstream dams and will reduce their capacity to buffer these extreme events.

18. **The Durgapur barrage and the DVCA are managed by the Irrigation and Waterways Department (IWD) of the GOWB.** The operation, maintenance and management of water distribution are managed by engineers from block level to sub divisional and district levels. IWD supplies water up to the level of field outlets ("chaks"). After the field outlet, distribution, management and maintenance are done by the beneficiaries that are organized in Chak Committees. Distribution infrastructure is generally absent within chaks and water flows from plot-to-plot.

19. **An institutional analysis of IWD was conducted during Project preparation.** The analysis revealed the following institutional weaknesses in the management of the scheme:

- Water data monitoring is virtually absent. Those data that are being collected are based on hand-written records and visual inspection of gauges. No remote control or automation of hydraulic infrastructure is taking place.



- Gaps exist in the monitoring and management of groundwater. Specifically, while groundwater levels are being monitored by the Central Groundwater Board (CGWB), no monitoring of the magnitude of groundwater withdrawal is undertaken.
- Severe shortages in staffing is a regular feature in the DVCA. IWD is recruiting contractual staff on a seasonal basis to cover the shortfall.
- A Public Expenditure Review that was conducted during Project preparation concluded that O&M is severely underfunded. No systematic process is in place for the planning and prioritization of maintenance works or for the management of hydraulic assets.
- Existing arrangements for gauging user satisfaction with the quality of irrigation service delivery and for grievances redress are weak.
- Lack of transparency in the management of the system, in the allocation of water and in the implementation of maintenance works. IWD does not prepare an annual Citizen Report Card and does not have irrigation service delivery standards.
- Little stakeholder participation in the management of the system and the allocation of water. Water allocation is top-down and there is little opportunity for demand-based water delivery.

Theory of Change

20. **The Project will address the following challenges:**

- **Inadequate irrigation service delivery.** IWD is responsible for the management of large-scale irrigation systems in West Bengal. In the absence of data monitoring, it is difficult to evaluate the performance of IWD against benchmarks and service standards, or to get a sense of the efficiency and effectiveness of the use of its resources, including the reliability, accuracy and equity of water delivery, quality of services, compliance with agreed delivery schedules, etc. The Project will establish a modern MIS and provide incentives for improved management, including outsourcing of O&M to irrigation contractors on a performance basis.
- **Degraded and outmoded infrastructure.** The physical infrastructure is in poor condition due to deferred maintenance and needs modernization. Mere rehabilitation to the state in which the scheme was when it was conceived is inadequate as circumstances have changed dramatically: groundwater now irrigates a cumulative area of over 450,000 hectares (two-thirds of the total cumulative irrigated area during Kharif, Rabi and Boro seasons), and the system has de facto been converted into a conjunctive use system. In addition, the cropping intensity is now 183 percent, among the highest in India. During Project preparation, an assessment was conducted to identify the location and type of hydraulic infrastructure that will best support the Project's objective to improve the quality and transparency of service delivery. The Project will modernize irrigation infrastructure at all levels and will pilot pressurized water supply in selected chaks.
- **Inefficient use of public resources for O&M.** O&M budgets are allocated on the basis of standard per hectare norms and previous years' allocations, and not on a rational assessment of maintenance needs and systematic asset management. The Project will also introduce modern asset management that will allow for the systematic monitoring and rational assessment of maintenance needs and allocation of resources that is based on these needs.



- **Suboptimal flood risk management.** The downstream parts of the Project area lack the infrastructure to protect against recurrent flooding. The Project will invest in measures to reduce flooding, including selected desilting and repair of embankments.
- **Limited capacity to adapt to climate change.** Current water use is inefficient and is leading to unsustainable groundwater use, undermining the farmers’ capacity to adapt to climate change. The Project will improve efficient use of surface water and improve the long-term sustainability of groundwater use, thereby improving farmers’ capacity to respond to water variability.

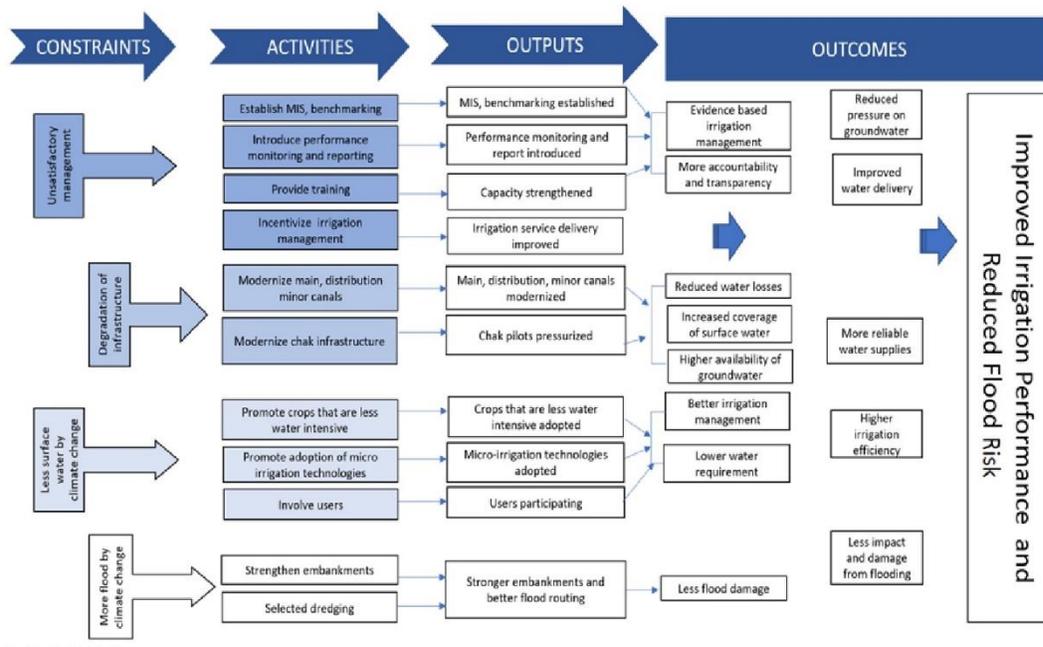


Fig. 1: Theory of Change

Relationship to CPF

21. **The proposed Project contributes to the recently endorsed Country Partnership Framework for India (CPF, 2018-22),** including support for more resource-efficient, inclusive and diversified growth in the rural sector. The Project aims to do so by promoting performance-based irrigation service delivery through irrigation contractors. A more client-oriented irrigation service delivery aims to strengthen the inclusiveness of irrigation.
22. **The proposed Project will also contribute to the following “How’s”** that the CPF identifies:
 - (i) Strengthening public sector institutions: the Project will strengthen public sector capacities and introduce and benchmark service delivery standards, client feedback, grievances redress and citizen report cards, and rational asset management.
 - (ii) Leveraging private finance: the Project will enable the government to access private finance in the medium-term by outsourcing O&M to irrigation contractors. Involving the private



- sector in public service delivery is expected to make irrigation a more attractive proposition for capital investments from the private sector.
- (iii) Lighthouse India: identifying cost-effective measures to improve irrigation performance and close the gap between irrigation potential created (IPC) and irrigation potential utilized (IPU) is of core interest to all Indian States. The proposed Project will reach out to the central Government and other Indian States to disseminate the results of the Project.
 - (iv) Cross-cutting: the Project aims to improve the sustainability of groundwater use and help the DVCA become more climate resilient and more responsive to floods and droughts.

C. Proposed Development Objective(s)

Development Objective(s) (From PAD)

The Project Development Objective is to improve irrigation service delivery, strengthen flood risk management and improve climate change resilience in the Project area.

Improving irrigation services includes management reforms as pursued under Component A, and infrastructure modernization to reinforce the management improvements under Component B. Strengthening flood risk management is addressed under Component C. These improvements together will help improve the resilience of the Project area to climate change.

Key Results

23. **The core outcomes of the Project** will be measured through the following indicators:

To improve irrigation service delivery

- #1 – Compliance with agreed water delivery schedule of the irrigation contractors' contracts
- #2 – Compliance with irrigation water supply from Main Canal to Distributory Canal

To strengthen flood risk management

- #3 – Rate of reduced flood depth at the monitoring points compared with averaged flood depth from 1999-2017

To improve climate change resilience

- #4 – Arrest in the rate of decline of groundwater levels in semi-critical blocks and no deterioration in safe blocks.

D. Project Description

24. **The Project aims to achieve the PDO through the following Components:** (i) *improved management of irrigation* to improve service delivery, and strengthen and reform institutions and improve M&E, (ii) strategic investments in the *modernization of irrigation infrastructure* to upgrade hydraulic assets at main, branch, distributory and minor level, and (iii) *strengthen flood risk management* that will invest in flood risk reduction in the downstream parts of the command area. Improving climate change resilience is integrated within each of these components. The Component



Project Management will finance Project implementation in accordance with the Project Implementation Manual.

Component A: Irrigation Management (US\$19.8 million, of which US\$9.7 million IBRD, US\$6.1 million AIIB and US\$4.0 million GOWB)

25. This component will improve the management of the DVC irrigation scheme. The component includes the following subcomponents: (i) establishment of MIS and performance monitoring, (ii) improving the quality of service delivery, (iii) aquifer management, and (iv) capacity strengthening. Intermediate indicators include three modules of MIS fully functional, grievances registered related to delivery of Project benefits that are resolved, asset management plan prepared, and levels of sustainable groundwater withdrawals defined by the groundwater study.

Component B: Modernization of Irrigation Infrastructure (US\$184.5 million, of which US\$61.6 million IBRD, US\$67.3 million AIIB and US\$55.6 million GOWB)

26. This component will invest in the modernization of irrigation infrastructure at main, branch, distributary and minor level. The component includes the following subcomponents: (i) Main and Branch Canal Modernization, and (ii) Distributary and Minor Canal Modernization. The intermediate indicator is the length of main canals rehabilitated. Intermediate indicators include the area provided with new/improved irrigation or drainage services, length of main canals rehabilitated, and the number of pressurized pilots that have been successfully established.

Component C: Flood Management (US\$193.2 million, of which US\$68.6 million IBRD, US\$66.4 million AIIB and US\$58.2 million GOWB)

27. This Component will invest in structural measures to reduce flooding in the Project area. Non-structural measures are covered under the Bank-funded National Hydrology Project (NHP), including monitoring, preparation of an Emergency Preparedness Plan, establishment of an Early Flood Warning System, hydrological studies and capacity strengthening. The intermediate indicator is the number of accurate flood forecasts issued during Kharif season as a percentage of total issued flood forecasts.

Component D: Project Management (US\$14.6 million, of which US\$5.1 million IBRD, US\$5.2 million AIIB and US\$4.3 million GOWB)

28. This component will strengthen IWD and the SPMU's capacity for Project management, monitoring and evaluation (M&E) including inter alia procurement and financial management) through the provision of goods, consultant services, training, and financing incremental operating costs. The intermediate indicator includes the number of Project monitoring reports submitted on time annually. This component will also launch a communications campaign to inform stakeholders about the details of the Project, including importance of efficient water use, and the benefits of pressurized micro-irrigation for groundwater.

E. Implementation

Institutional and Implementation Arrangements



29. **IWD is responsible for Project implementation.** It has established an SPMU headed by a Project Director (PD) in the rank of Chief Engineer, and that is supported by two additional PDs at the rank of Superintending Engineer, four deputy PDs at the rank of Executive Engineer, Accounts Officials and other support staff. IWD will be responsible for procurement of all works and non-consultancy services. The SPMU will be solely responsible for procurement, contract administration and payment for all consultancy services, irrespective of the value. All the implementing Departments will be represented in the SPMU by designated Nodal Officers. The PD, SPMU will exercise overall responsibility for all Project activities, including those of other Departments.

30. **Two District Project Management Units (DPMUs) have been established,** one in the district of Purba Bardhaman for implementation of the works of DPIUs of Purba Bardhaman and Bankura and another in the district of Howrah/Kolkata for implementation of the works of DPIUs of Hooghly and Howrah. These DPMUs will also comprise Heads of DPIUs of other concerned implementing Departments, e.g. Agriculture, Agri-Marketing, Food Processing and Horticulture Industries, Fisheries and WRID, to ensure inter-departmental coordination at the District Level.

31. **There are four dedicated District Project Implementation Units (DPIUs)** headed by Deputy PDs in the rank of Executive Engineer, located in the districts of Purba Bardhaman (including Paschim Bardhaman), Bankura, Hooghly and Howrah for execution of Project activities by contract administration and making payment for all works and non-consultancy services irrespective of the value and also all operating costs for running of their own offices.

32. **At State level, a Technical Steering Committee (TSC) headed by the Chief Secretary has been established** that consists of the Heads of all concerned Departments. The TSC will review broad progress in preparing and implementing the Project, coordinate between Departments and provide guidance on policy matters. The Additional Chief Secretary from IWD will function as Member-Secretary.

F. Project location and Salient physical characteristics relevant to the safeguard analysis (if known)

The Damodar Valley Command Area (DVCA) is located downstream of Durgapur on the Damodar river in the districts of East and West Bardhaman, Howrah, Bankura and Hooghly. The DVC Project area is located 2.5 kms away from the Ramnabagan Wild Life Sanctuary (about 14.3 ha area) that is located within the municipal limits of Bardhaman town. Howrah, Hooghly and East and West Bardhaman districts are known to be the habitat of the Fishing Cat (*Prionailurus viverrinus*) which is a Schedule I species and is listed as Vulnerable by the IUCN. The confluence areas of Mundeswari, Rupnarayan, Lower Damodar Channel, Hooghly rivers are known to be habitat of the Gangetic Dolphin (*Platanista gangetica*) which is a Schedule I species and is listed as Endangered by the IUCN.



G. Environmental and Social Safeguards Specialists on the Team

Parthapriya Ghosh, Social Specialist
Charu Jain, Environmental Specialist

SAFEGUARD POLICIES THAT MIGHT APPLY

Safeguard Policies	Triggered?	Explanation (Optional)
Environmental Assessment OP/BP 4.01	Yes	<p>The Project involves modernization of irrigation infrastructure, irrigation management, and structural measures for flood reduction. While these activities are expected to yield benefits in terms of surface and ground water conservation as well as flood mitigation, they could result in adverse environmental impacts if not properly designed, implemented and managed. An Environmental and Social Management Framework (ESMF), an Environmental and Social Impact Assessment (ESIA) and an Environmental and Social Management Plan (ESMP) have been prepared to meet safeguards requirements.</p> <p>The ESMF provides detailed procedures for undertaking the ESIA and for preparing the ESMP for the identified Project activities, describes the institutional arrangements and spells out the monitoring mechanisms. The ESMF is also intended to guide environmental assessments for future linked activities to be taken up by the IWD (that is, activities that were identified through the Feasibility Study but are not part of the current Project).</p> <p>The ESIA considers the potential negative and positive environmental impacts of the Project activities. The ESMP identifies the measures needed to prevent, minimize, mitigate, or compensate for adverse impacts and improve environmental performance.</p>
Performance Standards for Private Sector Activities OP/BP 4.03	No	
Natural Habitats OP/BP 4.04	Yes	Activities involving significant conversion or degradation of critical natural habitats will not be



		financed under the Project. Impact of the Project on natural habitats and on vulnerable species in the Project area including riverine stretches have been assessed in the ESIA, and the ESMP has, in consultation with relevant agencies and stakeholders, identified mitigation measures.
Forests OP/BP 4.36	No	The Project area does not involve any forest land.
Pest Management OP 4.09	Yes	The improvement in irrigation service delivery could be associated with increased pesticide use in the Project area. The Project will also encourage crop intensification and diversification through farmer training, exposure visits, crop demonstration, etc., which might lead to increased use of agro-chemicals. In view of this, an Integrated Pest and Nutrient Management Strategy and Plan has been prepared.
Physical Cultural Resources OP/BP 4.11	Yes	The Project activities are unlikely to impact any protected monuments, as the construction works will be located in the right-of-way of existing irrigation canals and associated structures, river channels, river banks and embankments. The ESIA has identified 31 sites of religious significance and 3 cremation grounds that will be partially affected. Mitigation measures have been proposed in the RAP. The ESMP also includes provisions for dealing with any 'Chance Finds' of archaeological, paleontological, historical significance.
Indigenous Peoples OP/BP 4.10	Yes	All five Project districts have a presence of tribes. Bankura has the highest percentage of tribal population (11 percent of the total population), followed by Bardhaman (7 percent) and Hooghly (4 percent). The tribal population in Howrah is less than one percent of the total population. The ESIA shows that less than 1 percent of the people affected by the Project belong to tribal groups. An Indigenous Peoples Development Plan (IPDP) has been prepared as part of the ESMP.
Involuntary Resettlement OP/BP 4.12	Yes	The ESIA shows that 2,637 private structures will be impacted due to Project intervention, especially during the rehabilitation of canals. Site-specific resettlement action plans (RAP) have been prepared that include mitigation measures for affected structures.
Safety of Dams OP/BP 4.37	Yes	The Project area is fed by waters from 5 large dams located in the State of Jharkhand (Tenughat, Tilayia, Konar, Panchet and Maithon). Konar, Panchet and



Maithon are included in the ongoing, Bank-financed Dam Rehabilitation and Improvement Project (DRIP). WBMIFMP will (i) establish a Dam Safety Review Panel to review the safety of the Durgapur Barrage and the five dams, (ii) prepare TOR and allocate a budget for an advanced flood forecasting system of the Damodar river, (iii) prepare TOR and allocate a budget for an Emergency Action Plan and Emergency Preparedness Plan of the five dams, (iv) prepare O&M manuals for each of the 5 dams, and (v) prepare a plan for the medium- and long-term safety of Tilayia dam.

Projects on International Waterways
OP/BP 7.50

Yes

The Damodar River drains into the river Hooghly, which is a tributary of the Ganga river, before flowing into the Bay of Bengal. The Ganga and the Hooghly and their tributaries are considered 'international waterways' for the purpose of this policy. Considering that the focus of the proposed Project is to modernize and upgrade management systems for improved irrigation and flood management, that the Damodar River flows entirely within India, and that India is the lowest downstream riparian of the Hooghly before it drains into the Bay of Bengal, an exception to the notification requirement under paragraph 7(c) of the policy has been approved.

Projects in Disputed Areas OP/BP 7.60

No

The Project area does not involve any disputed areas.

KEY SAFEGUARD POLICY ISSUES AND THEIR MANAGEMENT

A. Summary of Key Safeguard Issues

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

The scope of the physical works supported under the Project include modernization of irrigation infrastructure and structural measures for flood reduction. The potential environmental impacts of the Project activities include both construction-related impacts and activity-specific impacts.

The construction related impacts include: generation of air, water and noise pollution during construction; impacts associated with borrow pits and quarry sites such as loss of crop and crop area; impacts associated with disposal of construction debris (1.63 MCM); public and worker safety issues; issues related to infrastructure facilities at labor camps (ventilation, water, sanitation, fuel safety, etc.).



The specific impacts of the irrigation modernization works identified through the ESIA of the Project include positive impacts such as reduced conveyance losses of irrigation water, conservation and recharge of ground water and improved irrigation efficiency. The identified negative impacts include disposal of demolition waste, disposal of cleared vegetation and aquatic weeds, disruption to traffic, interruption in irrigation supply during construction phase, etc. The negative impacts of the flood mitigation works include impacts associated with temporary storage, carting and disposal of desilted material (11.75 MCM), temporary impacts on 112 ponds (dewatering, soil deposition, etc.) abutting the embankments due to embankment strengthening works, loss of trees (788 trees), disturbance to local fauna, deterioration of water quality, disruption of connectivity, etc.

Social Impacts:

Though no private land acquisition is envisaged under the Project, rehabilitation of embankments will lead to temporary relocation of 2637 squatters on these embankment. These non-titleholders include both residential and commercial squatters. The relocation will have adverse impact on the livelihood and the RAP has identified compensation and mitigation measures.

During the construction phase, influx of large numbers of migrant workers in the Project area will lead to (i) additional pressure on local resources and social infrastructures, thereby increasing the risk of social conflict; (ii) adverse impact on the socio-cultural fabric of the host community.

At the same time, the Project will benefit the community in general and farmers and fishers in particular. More area will have access to surface irrigation, hence dependency on ground water will reduce. There will be improvement in crop production and income of the farmers. However, inclusion and equity issues may remain a concern in accessing the benefits of agriculture, canal irrigation, etc.

2. Describe any potential indirect and/or long term impacts due to anticipated future activities in the project area: The indirect and/or long term impacts due to future activities in the Project area include: increase in the use of agro-chemicals (pesticides and fertilizers) due to agriculture intensification and diversification stemming from improved irrigation in the command area; restoration of groundwater use to sustainable levels as improved surface water availability will reduce extraction of groundwater for irrigation especially in the tail-end reaches of the canals.

3. Describe any project alternatives (if relevant) considered to help avoid or minimize adverse impacts. The Feasibility Study has analyzed various alternatives prior to selection of the activities to be supported under the Project. While no specific alternatives have been considered from the safeguards perspective, the ESMP provides advice on minor design adjustments and alternatives for specific activities in order to minimize adverse environmental impacts (for example, avoid felling of trees or impacts on physical cultural resources, promote use of fly-ash in construction, etc.). The squatters impacted by the Project will temporarily move out of the affected zone. Once the embankment is rehabilitated, the squatters are expected to come back.

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

An ESMF has been prepared for the management of the identified environmental and social impacts and includes: (i) detailed procedures for environmental and social screening and assessment of Project activities, (ii) guidance on avoidance and mitigation of environmental and social impacts including non-permissible activities, generic mitigation measures, construction related mitigation measures, sample ESMPs for Project activities, generic labor influx and construction workers' camp management plan, generic waste management plan, resettlement action plan, and tribal



development plan; (iii) monitoring and evaluation framework, (iv) consultation, information disclosure and grievance redress, (v) institutional arrangements and capacity building strategy, (vi) budget for ESMP implementation.

An ESIA and ESMP / RAP / IPDP for the Project have been prepared that provide an implementation plan for the required mitigation measures, a capacity building plan, as well as a monitoring plan and budget. The ESMP also describes the roles and responsibilities of the key institutions for its implementation.

The overall management of the Project including preparation and implementation of safeguard measures lies with IWD. The PD (Chief Engineer) at the SPMU will be responsible for ensuring policy and regulatory compliance including conformity to the requirements of the safeguard instruments. Additional PDs (Superintending Engineers) in the DPMUs will coordinate implementation of social and environmental safeguard measures of the Project. The Additional PDs will be responsible for liaising with other government departments and agencies, and, for periodic monitoring of safeguards implementation. The PD and Additional PDs will be supported by social and environmental specialists of the PMC. The Additional PDs will also be supported by the NGO hired for the implementation of the RAP. The Deputy PDs (Executive Engineers) in the DPIUs will ensure implementation of social and environmental safeguard measures as part of construction and operation management.

IWD is a first time client and has not so far implemented investment Projects supported by the World Bank or any other multilateral development bank. In order to strengthen capacity, IWD will be supported by a Project Management Consultant (PMC). The PMC will have one Senior Environmental Specialist and one Senior Social cum Gender Development Specialist at the SPMU level. The PMC will also appoint 2 Junior Environment Specialists and 2 Junior Social cum Gender Development Specialists at the DPMU level. The PMC will assist the SPMU in preparing contract package specific ESMPs and in monitoring implementation of the ESMPs. The PMC will work closely with the DPMUs, DPIUs, the relevant line departments and the Contractors.

The ESMF specifies the roles and responsibilities for its implementation at the State and district level Project Management Units. It has also identified capacity building needs on different aspects of its implementation and includes a capacity building strategy to address those needs. The ESMP also includes a capacity building plan that provides for training of the staff of IWD, PMC, DPMU and DPIU, line departments and the Contractors on ESMP implementation requirements.

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

The key stakeholders of the Project include farmers (including small/marginal farmers, women farmers), farmer organizations, Gram/Block/District Panchayats, IWD staff at State/district/block levels, staff of other relevant line departments, and NGOs. Stakeholder consultations were organized as part of the process of development of the ESMF, ESIA and ESMP. The consultation mechanisms included small group discussions during field visits as well as formal meetings. A total of 22 group discussions were held at the local level. Local communities are concerned about Project activities and infrastructure facilities to be provided under this Project. The community's focus was mainly concentrated on encroachment related issues, land acquisition, loss of agricultural land and agricultural land pollution due to stocking of construction material. The majority of the local people are expecting improvement of road infrastructure and construction of a bridge, along with flood management and irrigation modernization. The key environmental concerns expressed by the stakeholders include: identification of proper locations for temporary storage of construction and demolition waste as well as for desilted material; exploring options for reuse of desilted material; need for addressing inundation/water-logging of agriculture land; need for minimizing tree felling and for ensuring compensatory plantation; need for addressing ground water depletion; sanitation and waste management



facilities at construction camps; and compliance with regulatory requirements. Consultation meetings were also organized with local officials of departments that have specific interest / stake in the proposed Project to understand their views on the different aspects of the Project. The ESMP integrates appropriate measures to respond to the stakeholder concerns. The ESMF and ESIA also describe the stakeholder consultation process that needs to be undertaken during the detailed assessments of the Project activities. The key issues and suggestions from the consultations have been reflected in the ESMF, ESIA, ESMP and RAP.

The ESMF, ESIA, EMP, and RAP have been disclosed on the website of the IWD on November 30, 2018. Consultations with stakeholders on the draft documents were organized by IWD on November 16, 2018. The documents were disclosed on the Bank’s website on December 4, 2018.

B. Disclosure Requirements

Environmental Assessment/Audit/Management Plan/Other

Date of receipt by the Bank 24-Nov-2018	Date of submission for disclosure 04-Dec-2018	For category A projects, date of distributing the Executive Summary of the EA to the Executive Directors
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"In country" Disclosure

India
30-Nov-2018

Comments

Resettlement Action Plan/Framework/Policy Process

Date of receipt by the Bank 19-Nov-2018	Date of submission for disclosure 04-Dec-2018
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"In country" Disclosure

India
30-Nov-2018

Comments

Indigenous Peoples Development Plan/Framework

Date of receipt by the Bank 09-Sep-2018	Date of submission for disclosure 04-Dec-2018
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"In country" Disclosure

India
30-Nov-2018

Comments

Pest Management Plan

Was the document disclosed prior to appraisal?	Date of receipt by the Bank	Date of submission for disclosure
Yes	24-Nov-2018	04-Dec-2018

"In country" Disclosure

India
30-Nov-2018

Comments

If the project triggers the Pest Management and/or Physical Cultural Resources policies, the respective issues are to be addressed and disclosed as part of the Environmental Assessment/Audit/or EMP.

If in-country disclosure of any of the above documents is not expected, please explain why:

C. Compliance Monitoring Indicators at the Corporate Level (to be filled in when the ISDS is finalized by the project decision meeting)

OP/BP/GP 4.01 - Environment Assessment

Does the project require a stand-alone EA (including EMP) report?

Yes

If yes, then did the Regional Environment Unit or Practice Manager (PM) review and approve the EA report?

Yes

Are the cost and the accountabilities for the EMP incorporated in the credit/loan?

Yes

OP/BP 4.04 - Natural Habitats

Would the project result in any significant conversion or degradation of critical natural habitats?



No

If the project would result in significant conversion or degradation of other (non-critical) natural habitats, does the project include mitigation measures acceptable to the Bank?

Yes

OP 4.09 - Pest Management

Does the EA adequately address the pest management issues?

Yes

Is a separate PMP required?

Yes

If yes, has the PMP been reviewed and approved by a safeguards specialist or PM? Are PMP requirements included in project design? If yes, does the project team include a Pest Management Specialist?

Yes

OP/BP 4.11 - Physical Cultural Resources

Does the EA include adequate measures related to cultural property?

Yes

Does the credit/loan incorporate mechanisms to mitigate the potential adverse impacts on cultural property?

Yes

OP/BP 4.10 - Indigenous Peoples

Has a separate Indigenous Peoples Plan/Planning Framework (as appropriate) been prepared in consultation with affected Indigenous Peoples?

Yes

If yes, then did the Regional unit responsible for safeguards or Practice Manager review the plan?

Yes

If the whole project is designed to benefit IP, has the design been reviewed and approved by the Regional Social Development Unit or Practice Manager?

NA

OP/BP 4.12 - Involuntary Resettlement

Has a resettlement plan/abbreviated plan/policy framework/process framework (as appropriate) been prepared?

Yes

If yes, then did the Regional unit responsible for safeguards or Practice Manager review the plan?

Yes

OP/BP 4.37 - Safety of Dams

Have dam safety plans been prepared?



Yes

Have the TORs as well as composition for the independent Panel of Experts (POE) been reviewed and approved by the Bank?

Yes

Has an Emergency Preparedness Plan (EPP) been prepared and arrangements been made for public awareness and training?

Yes

OP 7.50 - Projects on International Waterways

Have the other riparians been notified of the project?

No

If the project falls under one of the exceptions to the notification requirement, has this been cleared with the Legal Department, and the memo to the RVP prepared and sent?

Yes

Has the RVP approved such an exception?

Yes

The World Bank Policy on Disclosure of Information

Have relevant safeguard policies documents been sent to the World Bank for disclosure?

No

Have relevant documents been disclosed in-country in a public place in a form and language that are understandable and accessible to project-affected groups and local NGOs?

No

All Safeguard Policies

Have satisfactory calendar, budget and clear institutional responsibilities been prepared for the implementation of measures related to safeguard policies?

Yes

Have costs related to safeguard policy measures been included in the project cost?

Yes

Does the Monitoring and Evaluation system of the project include the monitoring of safeguard impacts and measures related to safeguard policies?

Yes

Have satisfactory implementation arrangements been agreed with the borrower and the same been adequately reflected in the project legal documents?

Yes



CONTACT POINT

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APPROVAL

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