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

### A. Basic Project Data

<table>
<thead>
<tr>
<th>Country</th>
<th>Project ID</th>
<th>Project Name</th>
<th>Parent Project ID (if any)</th>
</tr>
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<tbody>
<tr>
<td>India</td>
<td>P163533</td>
<td>Odisha Integrated Irrigation Project for Climate Resilient Agriculture</td>
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<table>
<thead>
<tr>
<th>Region</th>
<th>Estimated Appraisal Date</th>
<th>Estimated Board Date</th>
<th>Practice Area (Lead)</th>
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<td>01-Jul-2019</td>
<td>Agriculture</td>
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<table>
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<tr>
<th>Financing Instrument</th>
<th>Borrower(s)</th>
<th>Implementing Agency</th>
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<tr>
<td>Investment Project Financing</td>
<td>Republic of India</td>
<td>Odisha Community Tank Development and Management Society</td>
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**Proposed Development Objective(s)**

The Project Development Objective is to intensify and diversify agricultural production, and enhance climate resilience in selected districts of Odisha.

**Components**

- Climate-Smart Intensification and Diversification of Production
- Improving Access to Irrigation and Water Productivity
- Institutional Capacity Strengthening
- Project Management
- Contingent Emergency Response

## PROJECT FINANCING DATA (US$, Millions)

### SUMMARY

<table>
<thead>
<tr>
<th>Total Project Cost</th>
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<tbody>
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<td>Total Financing</td>
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<td>of which IBRD/IDA</td>
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A. Introduction and Context

Country Context

1. India continues to be the world’s fastest growing major economy. After growing at 7.2 percent in FY17/18, the economy expanded by 7.7 percent in the first half of the current fiscal year. This robust performance was underpinned by a revival in industrial activity, strong private consumption complemented by rising investment, and a rise in exports of goods and services. Meanwhile, the external headwinds that characterized the first half of the year have subsided. The dramatic decline in oil prices, since October 2018, has allowed the current account deficit to return to relatively benign levels. Likewise, the large portfolio capital outflows that materialized from April 2018 onwards (against the backdrop of current account imbalances and heightened perceptions of emerging markets risk) have eased and capital inflows have resumed (resulting in a stabilization of the exchange rate and bond yields). With the normalization of external circumstances, foreign reserves have remained at around US$396 billion, which represents a comfortable level (equivalent to about 9 months of imports). Going forward, growth is projected to reach 7.3 percent for the full current fiscal year and to firm-up thereafter, at around 7.5 percent, primarily on account of robust private consumption, a rise in exports of goods and services, and a gradual increase in investments. However, the current account deficit is projected to remain elevated in FY18/19.

2. Since the 2000s, India has made remarkable progress in reducing absolute poverty. Between FY2011/12 and 2015/16, poverty declined from 21.6 to an estimated 13.4 percent at the international poverty line (2011 PPP at 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. Despite this success, poverty remains widespread in India. In 2015, with the latest estimates, 176 million Indians were living in extreme poverty while 659 million, or half the population, were below the higher poverty line commonly used for lower middle-income countries (2011 purchasing power parity US$3.20 per person per day). Recent trends in the construction sector and rural wages, a major source of employment for poorer households, suggest that
the pace of poverty eradication may have moderated.

3. The economy has undergone a structural shift away from agriculture as the dominant sector, to services and industry, but agriculture continues to be essential for reducing poverty and boosting shared prosperity. The sector employs about 59 percent of the country’s total workforce, is a source of livelihood for 70 percent of India’s rural households and is the main source of economic linkages in rural areas. The Government of India’s (GoI) priority in agriculture is to accelerate sector growth to double farmers’ incomes in real terms by 2022.

B. Sectoral and Institutional Context

4. While Odisha has transitioned from a predominantly agro-based economy, agriculture remains a key sector, providing employment and livelihoods to more than 62 percent of the population, and contributing close to 20 percent to the State’s GDP. Like much of India, agricultural growth in Odisha has been low\(^1\), and inadequate to ensure food security\(^2\), effectively contribute to reducing malnutrition\(^3\), and reduce poverty, especially in rural areas\(^4\), where more than 80 percent of the state’s poor reside.

5. Key constraints to improved agricultural sector growth include:

- **Low productivity**: For example, an average farm in Odisha produces only 58 percent, 47 percent, 22 percent, and 5 percent, respectively, of the demonstrably achievable yields of paddy, pulses, sesame, and medium irrigation tank-based aquaculture;

- **Limited diversification**: Between 2014-2017, for example, the total area devoted to food grains in Odisha increased, while the area under spices, vegetables, fruits, and floriculture - a proxy for diversification - declined\(^5\);

- **Limited access to reliable irrigation**: Of the total cultivable area of 8.7 million hectares (ha), only 1.9 million is under irrigation, only 34 percent of the total irrigation potential of 5.5 million ha has been developed. Groundwater is potentially an important supplemental source of water, but there are weaknesses in the understanding of its sustainable use;

- **Inadequate management of water resources**: Weaknesses exist in the management of ground and surface water, which comes at a high cost in view of climate change. There is limited stakeholder involvement in decision making on water, inadequate support to associations of water users (Pani Panchayats - PP), and a zero-sum approach to irrigation rehabilitation even in cases where there is scope for win-win outcomes in terms of water availability in cascades;

- **Dysfunctional or non-existent value chains for important crops**: Supply chains for most crops are fragmented and uncoordinated, often involving multiple layers of intermediaries in some places, and no players in many other places. Additionally, there are no reliable market information systems to inform farmers’ decisions on production and marketing;

- **Weaknesses in institutional planning and coordination**: There is suboptimal coordination and convergence among Government of Odisha (GoO) departments with the joint responsibility of implementing programs in support of agricultural growth (i.e. Department of Agriculture and Farmer

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\(^1\) Averaging 2.8 percent per year between 2011-2017, but also characterized by negative growth every alternate year.

\(^2\) Based on the Food Security Outcome Index, out of Odisha’s 30 districts, only 1 is food secure, 5 are moderately secure, 6 moderately insecure, 13 severely insecure and 5 extremely insecure.

\(^3\) 34 percent and 20 percent of children <5 are stunted and wasted respectively, and 8 percent are severely malnourished.

\(^4\) About 36 percent of the rural population continue to subsist below the poverty line.

Empowerment - DAFE, Department of Water Resources - DoWR, Department of Animal Resources, Department of Cooperation - DoC, and the Department of Energy - DOE). This has often led to inefficient integration, implementation and delivery of services to farmers, thus undermining the impact of government interventions; and

- **Gender gaps:** Unequal access in favor of men to productive resources e.g. land, irrigated plots, aquaculture assets, and extension support, and limited voice as decision-makers in farmer support institutions e.g. PPs, among others, constrains women’s productivity and undermines their potential contribution to overall sector growth. In addition, typical interventions in support of agricultural intensification, diversification and enhanced climate resilience in Odisha, rarely take into account the specific needs of women farmers.

6. In addition, the sector is highly vulnerable to extreme weather events. Figure 1 for example, shows percent annual growth in rice production - the major crop - over five decades, and exemplifies the impacts of frequent extreme weather events - droughts, floods, and cyclones - on the sector.

**Figure 1: Percent annual growth in rice production, 1962-2014**

![Graph showing percent annual growth in rice production, 1962-2014](image)

C = cyclone, D = drought, F = floods, MS = moisture stress, SD = severe drought

7. Notable cyclones like *Phailin* are reported to have destroyed more than 0.5 million ha of crops, worth an estimated US$395 million, along with hundreds of thousands of livestock and other agricultural assets. The flood of 2008 is known to have resulted in a damage of US$161 million on the crop sector alone, while the drought of 2000, led to a crop loss of US$104 million and that of 2015 is believed to have depressed total production of major crops by more than 4.3 million tones.

8. Recent trends point to an increasing frequency and intensity of extreme weather events as well as more agricultural areas coming under their ambit. Since 2009 for example, the frequency of meteorological droughts in the State has increased from 1 in 5 years to 1 in 2 years, and about 70 percent

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of total cultivated area is prone to droughts today compared to 40 percent in 1970s\(^8\). In fact, based on historical data, the “normal” 120 days of monsoon rain has shrunk to 60 - 70 days, thus increasing the probability of agricultural droughts. As observed since 2013, floods are now devastating areas beyond the hitherto known 33,400 km\(^2\) of traditional flood zone. Climate projections indicate that by 2050, median temperatures in Odisha will breach the 2°C threshold (ranging from 2.9 to 4.5°C depending on location) and that drier areas will become drier, while wetter areas will become wetter. In the absence of appropriate action, these changes are expected to further amplify the extreme weather events and, thus, the impacts on agriculture. In drier areas for example, climate change will put a high premium on the improved management of water resources, increasing the need for surface and groundwater and the demand for providing more reliable irrigation services.

9. On the other hand, agriculture is a major source of Greenhouse Gas (GHG) emissions in Odisha, responsible for about 25 percent (i.e. 25 MtCO\(_2\)e) of overall state emissions - a level comparatively higher than the sector’s 18 percent share in total national GHG emissions. As part of its commitment to global efforts to limit the increase in average global temperatures to less than 2°C above pre-industrial levels, India, through its Nationally Determined Contributions (NDCs), has identified agriculture as one of the priority sectors for GHG emission reduction\(^9\). Odisha would be expected to contribute to this national pledge to the global community.

10. In this context then, Odisha faces a complex and interconnected constellation of challenges in agriculture: improving sector growth to ensure food security, better nutrition outcomes and double farmers’ income, managing its water resources in a more sustainable manner while avoiding climate change impacts and reducing sector GHG emissions - to lessen both the extent of climate change and future needs for adaptation.

11. The GoO has embraced these challenges and has variously articulated its vision and strategy to address them in the State Agricultural Policy (2013), State Water Policy (2007) and the State Action Plan on Climate Change (2018-2023). The GoO has identified closing the yield gaps for major crops, diversification towards high-value and more nutritious crops, supporting on-farm adoption of resilient production practices (both for adaptation and mitigation), expansion of irrigation coverage, improvement of irrigation efficiency, stakeholder participation and more sustainable management of ground- and surface water resources at cascade and catchment level, and improved produce marketing for priority action. Activities in several of these areas are already ongoing through state action (e.g. dissemination of resilient rice varieties, more efficient use of irrigation water, demand-side management of agricultural pumps and water management in rice to reduce emissions, policy reforms in marketing, support to production\(^10\) etc.) as well as through national “missions” (e.g. the National Mission for Sustainable Agriculture\(^11\), Pradhan Mantri Krishi Sinchayee Yojana - PMKSY\(^12\), National Mission on Agriculture Extension, National Millet Mission etc.)

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\(^8\) Odisha Climate Change Action Plan, 2018-2023. Forest and Environment Department, Government of Odisha.

\(^9\) India is the world’s third largest GHG emitter, and 18 percent - 481 MtCO\(_2\)e - of its total emissions come from agriculture.

\(^10\) For example through Krushak Assistance for Livelihood and Income Augmentation (KALIA), a Rs. 10,180 crore three-year (2020-21) scheme which will provide financial assistance to cultivators and landless agricultural laborers to agriculture production, life insurance and interest free loans.

\(^11\) Promotes adoption of suitable adaptation and mitigation measures in agriculture.

\(^12\) Seeks to expand cultivable area under assured irrigation, improve on-farm water use efficiency, enhance the adoption of precision-irrigation and other water saving technologies (more crop per drop), among others.
12. The proposed Odisha Integrated Irrigation Project for Climate Resilient Agriculture (OIIPCRA) contributes to these ongoing efforts. The proposal is to support: (i) improved crop productivity for food security and income growth; (ii) farmer adoption of resilient agricultural practices and technologies (both adaptation and mitigation); (iii) diversification\(^\text{13}\), especially during the *Rabi* (winter) season and for some areas under upland rice in *Kharif* (monsoon), for income growth, improved nutrition and adaptation to climate change; (iv) more efficient water use and better quality and reliability of irrigation service delivery; (v) a better framework for more efficient and sustainable management of surface - and groundwater resources, including a better knowledge of sustainable levels of groundwater use, a more systematic support to PPs and the piloting of Integrated Water Resources Management (IWRM); and (vi) improved produce marketing in 15 districts in Odisha. The districts are selected mainly because of high poverty levels, vulnerability to droughts and limited access to reliable irrigation services.

13. OIIPCRA builds on the progress achieved under an earlier Bank-financed “Odisha Community Tanks Management Project (OCTMP)” which sought to bridge the gap between the then existing irrigation potential and actual irrigation coverage of selected tanks. OIIPCRA however, further expands and deepens this earlier engagement to encompass improving the capacity of: (i) the state extension system, to provide quality advisory services on Climate-Smart Agriculture (CSA) to a larger number of farmers, including those outside the irrigation tanks command areas; (ii) the seed system, to sustainably deliver good quality, better yielding and resilient germplasm to farmers; (iii) the marketing system, to facilitate improved agricultural produce marketing; (iv) the DoWR to adopt a cascade approach to investments in tank irrigation systems, to introduce IWRM in a pilot catchment, to incentivize improved water management and technology adoption by promoting a cost-sharing approach, and to strengthen in a more systematic and comprehensive manner the capacities of PPs and assess the sustainability of groundwater use; (v) relevant institutions in the agriculture and water sector for better coordination and integrated planning. OIIPCRA also pursues reforms in the water sector with the goal of improving the quality and reliability of irrigation service delivery as well as promoting the efficient and sustainable use of water at cascade and catchment level.

C. Proposed Development Objective(s)

Development Objective(s) (From PAD)

The Project Development Objective is to intensify and diversify agricultural production, enhance climate resilience and improve water productivity in selected districts of Odisha.

Key Result

Expect key results include: (i) increase in productivity of selected agricultural commodities supported by the project; (ii) increases in share of non-paddy products in total production in project areas; (iii) increased farmer adoption of improved agricultural technology; (iv) increase in productivity of water use at tank level.

D. Project Description

Component 1: Climate-Smart Intensification and Diversification of Production (US$74.44 million)

14. The objective of this component is to intensify production, strengthen farmers’ capacity to adapt to climate

\(^{13}\) We define diversification as reducing the emphasis on food grains and increasing the share of high-value agriculture. This will be done taking into account the country policy intent to shift rice production to relatively more water-abundant states like Odisha.
change stresses affecting crop and aquaculture production, and diversify production, especially in *Rabi* in response to effective market demand. A key legacy of the green revolution in India has been the tendency to conflate intensification/resilience building with irrigation. Consequently, many programs in support of intensification/resilience building almost invariably focus on irrigated systems often at the expense of rainfed areas. OIIPCRA pursues a different approach, with support under this component proposed to target farmers both inside and outside the irrigation tanks command areas. In this case, the tank command areas will be the nuclei from which project support then expands into adjoining rainfed areas which will be delimited by relevant administrative boundaries (e.g. villages or blocks), depending on local context. Under this component, support will be organized around three subcomponents:

**Subcomponent 1.1: Support to Improved Productivity and Climate Resilience (US$32.23 million)**

15. Funding under this subcomponent will support farmer adoption of CSA technologies and practices to increase productivity, improve resilience to climate shocks and reduce GHG emissions, as a co-benefit. For the most part, a wide range of frontier CSA technologies and practices already exist within India’s agricultural innovation system (see compendium at [http://www.nicra-icar.in/nicrarevised/images/publications/Tbu_CSA_Book.pdf](http://www.nicra-icar.in/nicrarevised/images/publications/Tbu_CSA_Book.pdf)) and incentives for their adoption, especially inputs support through myriad government interventions, abound. However, among others, weaknesses in extension services provision\textsuperscript{14}, delivery mechanisms for inputs - especially high yielding resilient seed\textsuperscript{15}, and produce marketing, constrain widespread farmer adoption of these technologies. As a result, less than 40 percent of farmers in Odisha have access to information and training on frontier production technologies and practices\textsuperscript{16}, and indeed, fewer than 15 percent are believed to be growing improved crop varieties (including those that are climate resilient), especially those of non-paddy crops.

16. To increase farmers’ awareness, access to, and adoption of climate-smart technologies and practices, the project will support extension service provision through both the public and private sector. In terms of the public sector, the project will strengthen the capacity of existing GoO extension services through targeted training and retooling of frontline staff\textsuperscript{17} on CSA and market-oriented production, strengthening of the Farm Information and Advisory Centers (FIAC) for CSA, and provision of support for incremental logistical costs (e.g. for demonstrations, farmer field schools, expanded use of Information and Communications Technology - ICT in technology transfer\textsuperscript{18}) associated with promoting beneficiary adoption of CSA practices through the Agricultural Technology Management Agency (ATMA)\textsuperscript{19}.

17. The project will also support the evolution of a possible private sector solution to contribute - even if modestly- to addressing the chronic challenge of inadequate manpower that underlies the limited reach and coverage of the extension system by testing, and if successful, scaling up an extension service delivery mechanism designed as an adjunct service to the core business\textsuperscript{20} of a network of local private rural agriculture entrepreneurs (AEs) to be catalyzed, primed and rationalized\textsuperscript{21} by the project. In this respect, the project will support Technical Assistance (TA) and

\textsuperscript{14} Including inadequate manpower (one extension staff serves over 1,100 operational holdings), limited knowledge and skills, and overall system orientation towards input distribution rather than advisory services provision, etc.

\textsuperscript{15} Mainly due to limited availability of breeder seeds- especially for non-paddy crops- which affects the multiplication chain, lack of awareness on the farmer’s part of new seed varieties, and limited distribution networks, among others.

\textsuperscript{16} In 2013/14, the year for which data is available, only 448,000 out of the State’s 4.6 million farmers were reached by the extension system.

\textsuperscript{17} Including the Krushak Sathis, Village Agriculture Workers, Horticulture Extension Workers, and Agricultural Officers, etc.

\textsuperscript{18} Relying on the services of the agriculture technology media lab at the Odisha University of Agriculture Technology (OUAT).

\textsuperscript{19} Agency responsible for coordinating all ongoing extension efforts and setting out priorities for extension in each district.

\textsuperscript{20} Mainly input supply and output marketing. See Annex 2 for details.

\textsuperscript{21} Ensuring that adequate numbers of female AEs are selected to reduce the potential gender gap in access to extension - as evidence suggests that women farmers are more receptive to women extension agents.
operational costs related to the competitive selection of the AEs; their training, capacity building and accreditation/certification; a temporally time-bound stipend necessary to ensure their smooth transition into their roles; and some of their extension service delivery related activities. In complement, the project will strengthen the human and logistical capacity of Farm Science Centers, commonly known as Krishi Vigyan Kendras (KVKS) and ATMA at district levels to provide the necessary intellectual ballast to the AE network, support the AEs in effective provision of CSA advisory services, and ensuring the overall quality of their services.

18. Experience with analogous models in India and Bangladesh generally points to reasonable success rates but also highlights some potential drawbacks of such an approach to extension service delivery. These include misaligned incentives, which for example, could encourage dishonest AEs to misadvise farmers by overprescribing input use as a profit maximizing strategy and/or skew advisory service provision towards only those crops for which the AEs sell input, to the neglect of other enterprises. The project will support TA to assess the extent and impact of these distortions with the aim of promoting measures to align AE incentives with the effective delivery of extension services.

19. Beyond increasing the reach, coverage and footprint of advisory services to foster CSA adoption, this complementary AE system: (i) generally wouldn’t increase GoO’s long-term financial resource outlay for advisory service provision - especially important since the GoI has altered the funding pattern for extension services, reducing the central share from 90 percent to 10 percent; (ii) advances a key GoO policy objective of encouraging a pluralistic extension system; (iii) addresses the farmers’ main complaint about Odisha’s extension system, i.e. its predominant focus on centralized agendas, rather than catering to local needs; (iv) helps crowd-in private investment in the provision of advisory services, in the logic of Maximizing Finance for Development (MFD); and (v) contributes to the CPF’s jobs creation objective.

20. With respect to improving farmers’ access to high yielding resilient seed varieties, the project will support efforts to: (i) introduce and broaden farmers’ awareness of resilient varieties; (ii) better characterize relative demand to justify decisions regarding what varieties to multiply and market; (iii) accelerate seed multiplication and dissemination; and (iv) encourage the private sector to test the commercial market for preferred varieties by building supply chains linked to the AE network as well as to the Odisha State Seed Corporation (OSSC) seed dealer network.

21. Through partnerships with the International Rice Research Institute (IRRI) and the International Center for Agricultural Research in Dry Areas (ICARDA), the GoO is promoting farmers access to new resilient paddy and pulse varieties in parts of the State through the private sector. The proposal is to build on these partnerships by expanding both IRRI’s and ICARDA’s efforts to the project areas. In this case, the project will support IRRI and ICARDA - working with relevant national agencies - to: (i) create awareness of varieties through demonstrations; (ii) estimate seed demand for preferred varieties; (iii) multiply breeder seed and bulking it into foundation seed; (iv) build the technical capacity of AEs to engage in the commercial sale of seeds as a viable business line; (v) stimulate the commercial production and sale of certified seeds; (vi) certify seed through the Odisha State Seed and Organic Products Certification Agency (OSSOPCA); and (vii) promote community multiplication and distribution of resilient varieties for which there is limited private sector incentive to invest.

22. As variously documented, this approach, which focuses on demonstrating the risk reduction arising from the use of resilient seeds, coupled with ensuring availability of the seeds in local markets at commercial rates, is a much better

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22 See Annex 2 for details on the proposed training as well as the training agencies.
23 For example, organizing farmers for technology transfer purposes, technology sourcing and demonstration, etc.
24 Field research units of the national agricultural research system conceived to test new technologies in field conditions - before adoption by farmers - and to conduct farmer outreach through demonstrations and training.
25 Out of every 100 AEs created, 45-54 are typically still in business 5 years later.
26 In collaboration with OUAT for breeder seed production and OSSC for foundation seed production.
guarantor of sustained adoption than a supply driven push through subsidies - the hallmark of the OSSC seed delivery mechanism. The approach is also congruent with the GoO intention to increase private-sector participation in the seed sector, comports with the MFD approach to leverage the private sector to support sustainable growth and is expected to contribute to expanding the generally narrow market for seeds in Odisha (characterized by a small number of low volume transactions), rendering it attractive for private investment - in the medium to long term - including by IFC.

Subcomponent 1.2: Support to Aquaculture Production (US$5.54 million)

23. Project support under this subcomponent is opportunistic, taking advantage of the improved water situation as a result of irrigation modernization and management in the cascades, to support climate-resilient aquaculture in the rehabilitated tanks, as well as other tanks in the cascade. In line with GoO policy, most of the rehabilitated tanks suitable for aquaculture would be leased to women. Besides contributing to increased and diversified farmer incomes (a key adaptation strategy) and maximizing the utility and productivity of water stored in the tanks, support to aquaculture will improve nutrition outcomes for project beneficiaries. By targeting the landless and women, this subcomponent would also lead to greater social inclusion and more equitable distribution of project benefits.

24. Good aquaculture production hinges on high quality fish seed/fingerlings, feed, and good management practices. However, Odisha is generally deficient in high quality fish seed - a key input, with most estimates pointing to a chronic and mounting deficit over the last decade. Horizontal expansion of aquaculture as proposed under the project is expected to accentuate this deficit. The project will therefore support investments that not only ensure reliable access of participating farmers to good quality fingerlings, but also contribute to closing the overall supply gap in the state. Among others, this will include: (i) support to the Odisha Pisciculture Development Corporation (OPDC) to improve efficiency and realize its installed capacity for fingerling production, through rehabilitation of nursery and hatchery infrastructure as well as support for related fingerlings production costs and business planning; (ii) one-off capital investment (mainly infrastructure related), provided as a matching grant27, as well as technical assistance to organized groups28 (e.g. Self-Help Groups - SHGs, Primary Fishermen Cooperative Societies - PFCS) to set up fingerling production units to meet seed demand in their localities where it exists; and (iii) technical support to the AEs to establish fingerlings production business lines, where relevant. In tandem, based on diagnostics to be conducted in the first year of implementation, the project will support a spectrum of actions, expected to be mainly in the policy and regulatory realm, to reduce the distortionary effects of state involvement in the fingerlings/hatchery business with the view of promoting increased fingerlings supply through the private sector.

25. In addition, the project will provide limited input (seed and feed) support to landless farmers experimenting with improved aquaculture production for the first time following GoO norms to encourage income diversification for this vulnerable group. The project will also promote good aquaculture management practices through technology transfer via the Department of Fisheries (DoF) extension service and the AE network with a focus on climate-smart practices, e.g. short-term culture of alternate species, use of grow-out ponds, promotion of species that are adapted to shallow ponds, and use of re-circulatory water systems - where applicable and commercially viable. In this respect, the project will crowd-in the support of WorldFish to provide global knowledge and technical backstopping, as well as capacity strengthening of DoF staff and AEs for effective technology transfer29.

26. Fish volumes from the project areas are generally expected to be modest and ordinarily would be effectively handled by synchronising harvesting with demand, thus eliminating the need for investment in post-harvest management infrastructure, e.g., cold storage. However, due to climate change, unanticipated water shortages in tanks

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27 Following GoO norms with respect to share of beneficiary contribution, gender and vulnerable group targeting.
28 With preference to women’s groups.
29 WorldFish already has a memorandum of agreement with DoF to support the increased productivity of aquaculture in Odisha. OIIPCRA will cover only the incremental costs related to participation in project-specific activities.
have increasingly become common and often create the need to harvest fish across tanks in large quantities at short notice, sometimes leading to difficulties in marketing. As an adaptation measure, the project will, on a cost-sharing basis\textsuperscript{30}, support interested beneficiaries to purchase ice boxes, as well as train them to dry and prepare value added products, e.g. pickles and papad, in case of gluts.

**Subcomponent 1.3: Support to Diversification and Produce Marketing (US$36.67 million)**

27. The objective of this subcomponent is twofold: (i) support farmers to reduce the current emphasis on food grains (especially paddy and wheat) and increase the share of high-value and more nutritious products (e.g. fruits and vegetables) in their overall production structure; and (ii) improve produce marketing to reduce price risks associated with diversification, increase incomes, and ensure sustained farmer adoption of CSA practices. A successful shift in favor of more diversified production would also lead to improved nutrition outcomes for farmers and the broader community, reduce the water footprint of paddy, foster biodiversity, and strengthen resilience of the production systems to climate change.

28. Many efforts to support crop diversification in India have yielded mixed results. According to several practitioners, this is partly due to market distortions related to suboptimal price support policies, lack of government incentives (e.g. credit, extension services and subsidized inputs) that are typically available for the food grains segment, poor infrastructure, and constrained access to reliable remunerative markets. Indeed, for some of these reasons, recent Bank attempts to promote diversification under the OCTMP were not very successful - only leading to marginal diversification, not different than the level of diversification observed in non-project areas. Based on a growing body of evidence, we postulate that marketing arrangements, offering favorable and predictable returns for other crops, can sufficiently mitigate the risk associated with marketing and that improved marketing prospects, combined with improved access to necessary inputs should tilt farmers’ production decisions in favor of diversification.

29. A market assessment commissioned as part of preparation identified several high value crops\textsuperscript{31} for which sufficient demand exists to which farmers could profitably diversify and where women participation is sufficiently high. To improve marketing of these crops, the project will support marketing arrangements bringing together producers and commercial off-takers in mutually beneficial productive alliances underpinned by contractually binding agreements on the terms and conditions for the production and marketing of produce. Such marketing arrangements are effectively enabled by the draft Odisha Agricultural Produce and Livestock Contract Farming and Services Act, 2018 and the streamlined regulations and policy reforms in support of agribusiness as introduced through a recent International Finance Corporation (IFC) advisory program.

30. In this context, the project will fund TA to build capacity within the DAFE to promote productive alliance models and raising investment opportunities (that could be take advantage of IFC financing) for these and other competitive value chains that could emerge during implementation. The project will provide support for: (i) increasing farmer awareness of diversification opportunities; (ii) continuous identification of competitive value chains as well as potential off-takers leveraging the potential agribusiness investment leads identified through IFC’s Odisha Inclusive Partnership Program; (iii) organizing or strengthening already existing farmer groups for effective participation in productive alliances\textsuperscript{32}; (iv) farmer experimentation with new crops and training/demonstration of relevant production technologies; (v) training farmers on production and marketing skills (including on input sourcing, production, aggregation, and new technologies, among others); (vi) business plan development; (vii) fostering linkages with the

\begin{footnotes}
\item[30] Following GoO norms on eligibility and cost sharing ratios and provided through direct benefit transfer mechanisms.
\item[31] Including black gram, pigeon peas, marigold and a basket of vegetables.
\item[32] Converging with and leveraging SHGs organized under the Bank-financed National Rural Livelihood Project and FPOs.
\end{footnotes}
financial sector or other government programs for access to credit; (viii) financing - on a cost-sharing basis\textsuperscript{33} - of selected productive investments identified in the business plans; and (ix) leveraging private capital into competitive value chains e.g. through blended financing to maximize finance for development.

31. In complement, especially to support farmers who cannot integrate into viable productive alliances, the project will train and strengthen the capacity of the AEs to provide input and output marketing services (see Annex 2). This will include support for market intelligence, postharvest management and aggregation infrastructure, inter alia, on a cost-sharing basis\textsuperscript{34}. Through specialized TA, the project will also assist the Odisha State Agriculture Marketing Board (OSAMB) to develop a market intelligence system with sufficient coverage and outreach to provide up to date market/price information including demand position, current prices, likely price trends, market practices. The project will also support the OSAMB to assess medium- and long-term opportunities for given products and to build farmers’ capacity to use e-NAM, an online trading platform for agricultural commodities in India.

**Component 2: Improving Access to Irrigation and Water Productivity (US$137.42 million)**

32. Improving the reliability of irrigation and increasing water storage is critical to enhancing crop productivity, building resilience to climate change, and promoting diversification and access to markets. It is particularly important in the targeted project areas that are characterized by frequent droughts and highly variable rainfall. The need to bridge increasingly longer dry spells during Kharif and producing higher value and more diverse crops during Rabi when there is no margin for water supply errors, puts a high premium on better management of water storage facilities and the quality of irrigation services.

33. The reliability of irrigation services and a more productive use of water resources in the project areas is weighed down by: (i) the poor condition of hydraulic assets - mainly due to deferred maintenance; (ii) limited knowledge and skills in water management - often inadequate to provide supplemental irrigation during Kharif season, and to cover water-stress conditions during Rabi; and (iii) weak arrangements for operation and maintenance (O&M). Additionally, most of the tank irrigation systems have been developed for paddy cultivation. A more diversified cropping system that is more demanding in terms of water management, requires retro-fitting of the irrigation infrastructure to provide water in a more reliable manner.

34. Tank systems in Odisha are often part of a cascade of tanks that are hydrologically and hydraulically interconnected, with one tank depending on the return flows from another. Addressing water-related constraints and defective hydraulic assets at tank level will then lead to zero-sum results, whereby increases in water availability in some tanks come at the expense of losses of similar magnitude in other tanks. Improving water management therefore requires adopting a comprehensive cascade approach that identifies and prioritizes win-win investments based on their contribution to improving cascade-wide water availability throughout the year, and that leverages both surface and groundwater.

35. The project will improve the performance of irrigation throughout the year and across cascades of selected tank irrigation systems through institutional reforms and modernization of hydraulic assets and related capacity strengthening. The objective is to use water more efficiently, reduce water losses and save water during Kharif season, and transfer these savings to Rabi season to support crop diversification and aquaculture. The project will adopt a cascade approach that will consider the management of each tank not in isolation but as part of a larger cascade of reservoirs. Support under this component will go towards: (i) introducing water sector reforms, including piloting of IWRM at catchment level, support for the preparation of groundwater regulation, establishment of a PP support unit in

\textsuperscript{33} Financing will be provided as matching grants following already existing GoO norms (as detailed in the PIM) with respect to provision of different kinds of productive investments. Caps on indicative absolute amount of financing to a single group are provided in the PIM.

\textsuperscript{34} Details on eligibility and percentage of farmers’ matching funds are in the PIM.
DoWR, and piloting of Public-Private Partnerships (PPP) in irrigation management; and (ii) investments in selected cascades of irrigation tank systems.

**Subcomponent 2.1: Support to Water Sector Reforms (US$2.42 million)**

36. The project will support the following reforms:

- **Introduction of IWRM:** In one pilot catchment, Kharkhari Nala, located in the Rushikulya basin, the project will support the introduction of IWRM, including: (i) establishing a Catchment Council and a Catchment Agency; (ii) establishing a monitoring network to collect data on surface water, groundwater, soil moisture, actual and potential evapo-transpiration (AET and PET), cropping patterns and intensity, and agricultural and irrigation practices; (iii) conducting hydrological investigations and surveys, and (iv) preparing a catchment development and water management plan.

- **Groundwater regulatory reform:** Groundwater use for irrigation in command areas is prohibited in Odisha as per existing GoO Order. The GoO has expressed interest to lift this Order to allow the use of groundwater for irrigation but is concerned that, in the absence of adequate data on sustainable yield levels, such a move might lead to unsustainable exploitation of ground water. In this context, the project will finance a study to assess yield levels and quality of groundwater in Odisha and help the GoO design appropriate regulation to ensure sustainable use of groundwater for irrigation while safeguarding water and soil quality. This will include design of implementation and enforcement systems, institutional and organizational arrangements, budget and financing requirements, etc. The project will work closely with the Central Ground Water Board (CGWB) in designing the regulation.

- **Establishment of a PP Support Unit:** The Project will support the establishment and strengthening of a unit within the DoWR that will provide comprehensive and targeted support to PPs, including capacity strengthening and extension, support for the daily administration and management of the PP, and preparation of manuals and guidelines including those related to ensuring the inclusion of women in PP committees. The project will finance equipment, office furniture and technical assistance for the preparation of training material.

- **Public-Private Partnerships (PPP) in irrigation management:** The project will conduct a transaction advisory study into options for PPP in irrigation management to increase the efficiency of water use and improve the quality of irrigation service delivery in these tanks. If additional funds become available during implementation, the project will pilot the recommendations of the study in one medium tank irrigation system for possible scaling out to other similar tanks.

**Subcomponent 2.2: Support to Investments in Cascades (US$135.0 million)**

37. The project will invest in hydraulic infrastructure in selected cascades. All tanks located within the cascade will be eligible for investment and support, regardless of their size, institutional or management arrangement. A total of 162 “no regret” tanks have been identified that meet all criteria for selection and that are not located immediately upstream or downstream of other tanks and that would thus neither be impacted by, nor impact water availability in other tanks. Investments in these “no regret” tanks do not require an assessment to ascertain their hydrological impact on other tanks and will be taken up during the first year of project implementation. For the remaining 370 tanks, the project will (i) identify the cascades based on technical and social considerations, using the initially identified tanks as an entry point, (ii) engage with beneficiaries to identify the priority investments within the identified cascades, and (iii) conduct a rapid hydrological assessment to identify investments that contribute to optimizing water use across the cascade and throughout the year.

38. Investments to be defined through the rapid hydrological assessment may include strengthening of canal bunds, installation of field channels, improving the distribution network, modernizing hydraulic canal structures, installation of
sub-surface pressurized pipes, and Internet of Things (IOT) based monitoring system. The project will help farmers to access subsidies at central and state level for technology adoption (including micro-irrigation and solar panels).

39. The project will support the establishment of cascade-level water management organizations that will be responsible for water allocation and management between tanks at cascade level. PP will be established in each of the tanks within a given cascade, and these PPs will federate into Cascade PPs that will be responsible for water management and water allocation at cascade level. To that end, the project will provide office equipment and supplies, invest in water data measurement at cascade level, help Cascade PPs prepare cascade water management plans and strengthen capacities in modern irrigation technologies, improving irrigation efficiency and rational hydraulic asset management, through Farmers’ Field Schools and demonstrations, among others.

40. The project will adopt a competitive approach to investment fund allocation among cascades, as follows. Investments in improved water management at cascade level will be made after reaching an agreement with cascade beneficiaries about the soft improvements in the management of water at cascade level that the beneficiaries would like to accomplish, including e.g., establishment of a functioning PP or a Federation of PPs at cascade level, collection of PP membership fees for O&M, compliance with groundwater regulation, etc. Additional funds for investments will be made available to those cascades that meet these agreed requirements. The project will help beneficiaries to achieve the agreements. The Project Implementation Manual (PIM) will provide a detailed description of the process.

41. To improve the sustainability of irrigation systems, the project will: (i) strengthen capacities of stakeholders at tank and cascade level to identify, plan and manage maintenance works; (ii) support PPs and their federations to undertake agreed actions to become eligible for a second round of investments; and (iii) provide more systematic support to PPs and their federations through establishment of a PP support cell within DoWR. Operation and Maintenance (O&M) will continue to be undertaken exclusively by the beneficiaries out of their own PP membership contribution. Larger maintenance works on the main canal and tank infrastructure will continue to benefit from public support through DoWR.

Component 3: Institutional Capacity Strengthening (US$9.60 million)

42. Delivery of agricultural public services in Odisha is the shared responsibility of several line departments, each with their own mandate and, frequently, rigid organizational boundaries. Support to crop production is the mandate of DAFE; fisheries and livestock production, the mandate of the Fisheries and Animal Resources Development Department (FARD); minor and major irrigation, the mandate of DoWR; small irrigation systems (below 40ha), the responsibility of PR; the supply of energy for agricultural purposes, the mandate of the DoE; and produce marketing the mandate of DoC. Effective planning and coordination across these departments, especially for cross sector initiatives e.g. OIIPCRA, is key to overall state capability to deliver better agricultural services and the achievement of the GoO’s objectives in agriculture more generally.

43. An institutional assessment, conducted as part of project preparation, points to significant weaknesses in existing planning and coordination mechanisms across these line departments – mainly the result of lack of a strong supra authority to foster coordination and convergent planning and implementation of otherwise cross-sectoral activities across several departments. The assessment also highlighted the limited institutional capacity to deliver complex intersectoral programs; and to plan, innovate and modernize for the future (e.g. in response to climate change) - with most of the institutional focus being accorded to price support programs rather than to long-term sector growth. In addition, the assessment also shows the coordination and monitoring challenges at the district level, where most

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35 The objective was to map and assess the capacity of institutions relevant to delivering on the PDO and identify alternative institutional approaches that would better deliver the project outcomes.

36 Mainly because all government programs across multiple sectors are managed by a single often understaffed office of the DC.
of the implementation takes place, and how these undermine the progress and effectiveness of program implementation. In fact, these institutional weaknesses are often negatively implicated in the suboptimal performance of most GoO agriculture/water resource development programs.

44. The objective of this component is to improve overall capacity of the GoO for interdepartmental planning, coordination and implementation of cross-sectoral programs in the agriculture and water resource sectors. In this respect, the project will finance TA to build a secretariat within the office of the Agriculture Production Commissioner\(^{37}\) (APC) for the purposes of improving planning and convergence, coordination, oversight, monitoring, analytics, policy formulation, and partnerships building. Besides ensuring better OIIPCRA outcomes, a strengthened office of the APC would help guide the state’s long and short-term vision for water and agriculture development, build the state’s capability to deliver programs, and help forge strategic long-term partnerships for improved performance of relevant sectors.

45. At the district level, the project will finance the establishment, staffing and operation of a Monitoring Cell within the office of the DC to be charged with monitoring all activities in the agriculture, fisheries, and water sectors, including those funded by OIIPCRA. In addition, based on capacity assessments to be conducted during implementation, the project will design and finance training for relevant departmental staff, including that related to strategic leadership, project management, and any technical aspects across departments.

**Component 4: Project Management (US$12.83 million)**

46. This component will finance activities related to state and district-level project coordination and management, including developing annual work plans and budgets, financial management (FM) and procurement, human resource management, safeguards compliance monitoring, development and implementation of a Management Information System (MIS), monitoring and evaluation (M&E) and impact evaluation (IE) studies, a communication strategy and citizen engagement as well as a Grievance Redress Mechanism (GRM).

**Component 5: Contingent Emergency Response (US$0 million)**

This zero-cost, contingent emergency response component (CERC) will finance eligible expenditures in case of natural or man-made crises, disasters, severe economic shocks, or other crises and emergencies in Odisha. Implementation of this component will follow a detailed Contingent Emergency Response Implementation Plan (CERIP) satisfactory to the World Bank that will be prepared for each eligible crisis.

**E. Implementation**

**Institutional and Implementation Arrangements**

47. The project will be jointly implemented by the DoWR, DAFE, and DoF, with each entity taking the technical lead on project activities for which they have the institutional mandate and working through their respective implementation structures at the state, district and community levels in line with the policy of decentralized implementation of GoO programs. In this case, DAFE will take the lead on activities related to project subcomponent 1.1 and 1.3 (working collaboratively with OSAMB on produce developing market intelligence systems and use of e-NAM in subcomponent 1.3); DoF will be the lead agency on activities in support of aquaculture production as proposed in subcomponent 1.2; while activities on improving access to irrigation and water productivity as defined under Component 2 will be led by the DoWR, working together with PR on Gram Panchayat tanks. Component 3 activities will be led by the office of the APC in collaboration with DAFE, DoWR, and the Department of Corporation. Overall project management and leadership will be the responsibility of the DoWR.

\(^{37}\) Organizationally responsible for overseeing DoWR, DAFE, DoC, DoF, FARD, and DoE.
48. There will be a State Project Unit (SPU) established within the Odisha Community Tanks Development and Management Society (OCTDMS) in DoWR for day-to-day management and coordination of project activities, including preparation of annual work plans and budgets (AWPBs), project procurement, ensuring compliance of implementation with safeguards policies, monitoring and reporting progress, etc. The SPU will be headed by a Project Director (PD) and will be staffed with experts in procurement, FM, environment and social safeguards, M&E as well as other technical skills e.g. agribusiness, fisheries, etc., that are needed for effective project implementation. There will be Project Cells (PCs), one each, in the Directorate of Agriculture and Food Production, Directorate of Horticulture and Directorate of Fisheries at the state-level to be charged with annual work planning and budgeting for their respective activities and interfacing with the SPU, and district officials to offer technical support and guidance in implementation of project elements in their respective components. At the district level, there will be a District Project Management Team (DPMT), comprising of the Executive Engineer - Minor Irrigation (MI), Project Director ATMA, Deputy Director - Horticulture, Deputy Fisheries Officer, and the Executive Engineer - PR. The DPMT will be chaired by the DC and will oversee the day-to-day operations of the project in each district. A Monitoring Cell established in the office of the DC will be responsible for regular tracking of project activities at the district level. The office of the APC will ensure inter-departmental coordination and integration of workplans and budgets, and effective monitoring of project progress and outcomes.

49. A Project Steering Committee (PSC) comprising the Principal Secretaries of Department of Finance, DoWR, DAFE, DoF, PR, and OSAMB, and chaired by Chief Secretary, will be established to provide overall strategic and policy guidance during project implementation and to approve annual workplans and budgets. The PSC will meet at least twice a year to review overall implementation progress.

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

Odisha is located on the east coast of India. The state has 480 km of coast line along the Bay of the Bengal, and a forest coverage of 32 percent. Project interventions will focus on the Rushikulya, Budhabalanga, and Baitarani river basins as well as Tel sub-basin. Among other activities, the project has identified, for rehabilitation, 538 minor irrigation tanks spread over 101 blocks in 15 districts. Some of the tanks dependent on small and large dams for water. The project will improve irrigation infrastructure and strengthen irrigation management with the view to enhance water productivity and foster resilience to climate change in project in the tank command area as well as adjoining rainfed areas. Project investments will be on existing farmlands, and there is no expected conversion of environmentally sensitive areas or forest lands for this purpose. A detailed analysis of safeguard issues and impacts associated with the project has been carried out as part of an Environment Management Framework (EMF) and Social Management Framework (SMF). The assessments reveal no large-scale, significant and/or irreversible impacts due to the proposed project interventions. Some natural habitats identified in the vicinity of project areas include Simlipal forest, Rushikulya turtle nesting sites and Chilika lagoon. However, investments will be limited to the rehabilitation of tank systems and will not impact these areas. The current use of pesticides and fertilizers in Odisha is low, and this is expected to increase with investments in enhancing crop productivity.
This will be managed through training and capacity building on Integrated Pest and Nutrition Management (IPNM).

G. Environmental and Social Safeguards Specialists on the Team

Suryanarayana Satish, Social Specialist
Sharlene Jehanbux Chichgar, Environmental Specialist

SAFEGUARD POLICIES THAT MIGHT APPLY

<table>
<thead>
<tr>
<th>Safeguard Policies</th>
<th>Triggered?</th>
<th>Explanation (Optional)</th>
</tr>
</thead>
</table>
| Environmental Assessment OP/BP 4.01 | Yes        | The project has been categorized as category B. There are no large-scale, significant and/or irreversible impacts envisaged due to the proposed project interventions. The project will not fund new dam and/or irrigation construction. The physical investments under the project would include rehabilitation of existing tanks and irrigation systems where improper construction could result in some adverse impacts. However, these will be temporary and localized. The project will also support aquaculture and agriculture production and will support productive investments for example in post-harvest management. The impacts of these investments are expected to be localized and can be managed through proper mitigation measures and good engineering practices. The investments in agricultural intensification could trigger the increased use of pesticides and fertilizers. Other risks include possible impacts on water quality, silt management, aquatic weeds, and waste management. Positive project impacts include improved safety of irrigation assets, improved water storage capacity, sustainable management of aquaculture and introduction of IPNM approaches. Based on the safeguards assessment, an EMF has been prepared to address the requirements of a
category B project and to manage risks and maximize environmental opportunities. It also provides guidance on screening the sub-projects, includes a negative list of activities that the project would not finance, and a monitoring and capacity building plan for all implementing entities for environment health and safety management. The EMF comprises of mitigation actions and stand-alone environmental management plans to address dam safety, pest management, cultural property, natural habitat and impacts arising from civil works. To ensure effective implementation, the project has dedicated Environment Specialists in the SPU. The framework and plans have been prepared involving all the relevant stakeholders.

<table>
<thead>
<tr>
<th>Performance Standards for Private Sector Activities OP/BP 4.03</th>
<th>No</th>
<th>No impact is expected due to project interventions.</th>
</tr>
</thead>
<tbody>
<tr>
<td><strong>Natural Habitats OP/BP 4.04</strong></td>
<td>Yes</td>
<td>There are a number of natural habitats located in close proximity to identified project areas. There will be no negative impacts on critical natural habitats, as all interventions will be limited to rehabilitation of existing tanks, and not the larger catchments. The EMF contains a screening mechanism to help identify and avoid impacts on sensitive environmental habitats and important ecosystems while planning investments. As details of the exact sites of the proposed investments are not yet finalized, the EMF includes all adequate measures for any negative and indirect impacts on natural habitats that may arise. These include use of pesticides and fertilizers and waste management.</td>
</tr>
<tr>
<td><strong>Forests OP/BP 4.36</strong></td>
<td>No</td>
<td>No activities will be supported in forest areas, nor will the project support activities which will impact forest areas.</td>
</tr>
<tr>
<td><strong>Pest Management OP 4.09</strong></td>
<td>Yes</td>
<td>The project will not directly finance pesticides, but project support for intensification and diversification might induce increased pesticide use by farmers. The project will support and strengthen the use of IPNM for pest management. In addition, the EMF has a detailed location-specific IPNM plan for the project. This is expected to reduce the reliance on chemical pesticides and includes measures for labor health and safety during pesticide application and use, and guidance on training and demonstrations that will be provided, to ensure that there is no significant</td>
</tr>
<tr>
<td>Topic</td>
<td>Policy</td>
<td>Note</td>
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<tr>
<td>Physical Cultural Resources OP/BP 4.11</td>
<td>Yes</td>
<td>Odisha has a number of protected and unprotected physical and cultural properties, both natural and built. The project mainly finances the rehabilitation of the existing irrigation infrastructure and other productive infrastructure (to be determined through business planning) and will not involve expansion to new areas. However, if screening determines that some tanks or other proposed productive infrastructure are located in proximity of locally important physical cultural resources, a Physical and Cultural Properties (PCR) plan will be prepared using the guidance and mitigation provided in the EMF, and chance find procedures to guide any civil works within the area.</td>
</tr>
<tr>
<td>Indigenous Peoples OP/BP 4.10</td>
<td>Yes</td>
<td>About 22.5 percent of Odisha’s total population is considered tribal and indeed, the state has distinct tribal areas enshrined under the 5th Schedule of the Indian Constitution. Project interventions per se are not expected to adversely impact the tribal people. Even then however, ensuring inclusion and equity are of priority concern and to this end, this policy is triggered. At this stage, specific sub-project locations and investment plans are not sufficiently known, and therefore, a Tribal Peoples Planning Framework (TPPF) has been prepared, following a social assessment and is part of the SMF. The TPPF will be adopted (as appropriate) during implementation and sub-project specific Tribal Development Plans will be developed as and when sub-project locations are finalized.</td>
</tr>
<tr>
<td>Involuntary Resettlement OP/BP 4.12</td>
<td>No</td>
<td>The project does not anticipate any form of land acquisition or involuntary resettlement as it would cover only the existing tanks with a focus on repair and rehabilitation only. Any productive infrastructure will also be supported only in cases where no land acquisition or involuntary resettlement would take place.</td>
</tr>
<tr>
<td>Safety of Dams OP/BP 4.37</td>
<td>Yes</td>
<td>This project will not finance construction of any new dams or reservoirs. However, the policy is triggered since some of the irrigation schemes to be supported by the project, rely on the performance of three large dams - Bahiya, Jaunria and Kalimati - the safe and reliable operation of which, is critical for</td>
</tr>
</tbody>
</table>
ensuring resilience and sustainability of the irrigation schemes. These three have also been previously assessed by the Dam Safety Panel of the GoO’s Dam Safety Organization and reviewed by the Bank.

In line with the requirements of OP4.37, a Dam Safety Management Plan has been prepared as part of the EMF, outlining: (i) ToR for dam safety panel of experts; (ii) designation of a project specific Dam Safety Panel; (iii) procedures, monitoring, reporting and institutional arrangements for undertaking full investigations and assessing large dams under the project (within the first year); and (iii) the budget for financing of remedial measures where needed. The relevant dam safety recommendations will be shared with SPU and the Bank to meet the requirements of the policy.

| Projects on International Waterways OP/BP 7.50 | No | Project activities are not located on any international waterway. |
| Projects in Disputed Areas OP/BP 7.60 | No | Project areas do not fall in 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:

   There is no large scale, significant and/or irreversible impacts envisaged due to the proposed project interventions. The physical investments under the project would include rehabilitation of existing hydraulic infrastructure including strengthening of canal bunds, modernizing canal structures, installation of field channels, where improper construction could result in adverse impacts. In general, these impacts are related to excavation, waste disposal, management of silt, loss of top soil and vegetation, dust, noise, and occupational and community health and safety. These impacts are localized and can be managed through proper mitigation measures and good engineering practices.

   The project will not fund new dam and/or irrigation constructions. Proposed investments in intensification and diversification of production could potentially increase the use of pesticide and fertilizer but the impacts of these will be mitigated through training and capacity building on integrated pest and nutrient management. Positive impacts include improving the safety of irrigation assets, decrease in water loss in the tank systems, and increased access to reliable irrigation during both Kharif and Rabi seasons.

   An Environmental Management Framework (EMF) has been prepared to meet the requirements of a category B project, to manage risks and maximize environmental opportunities. An Integrated Pest and Nutrition Management
Plan (IPNMP), EMP for civil works and dam safety management plan arrangements are an integral part of the EMF.

2. Describe any potential indirect and/or long term impacts due to anticipated future activities in the project area:
There are no long term impacts due to project interventions. The design of the project aims to improve small water storage capacity and its efficiency along with enhanced agriculture productivity and diversification, and will also introduce sustainable aquaculture and pest management practices.

3. Describe any project alternatives (if relevant) considered to help avoid or minimize adverse impacts.
For the tank rehabilitation, technical designs will be optimized to avoid or minimize impacts on any sensitive environmental components. This will be considered during the screening and planning phase of each sub-project.

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 Environmental Management Framework (EMF) has been prepared under the project, in accordance with OP 4.01 Category B project requirements. The EMF ensures appropriate assessment of potential adverse risks and impacts and outlines actions to be followed by the borrower in mitigating these impacts associated with the project. These include:
(i) negative list of activities which the project will not finance; (ii) screening mechanism to avoid impacts on sensitive environmental receptors, natural habitats and PCRs; (iii) strengthening capacity for overall environment and worker health and safety provisions; (iv) an EMP to mitigate impacts arising from all civil works; (v) dam safety management plan which includes constitution of state dam safety panel, and agreed arrangements for assessment of large dams under the project, including budget; and (vi) IPNMP and (vii) EMP for aquaculture.

The EMF also outlines appropriate institutional arrangements and coordination needed for environmental management. The environmental specialist in the SPU is expected to monitor overall implementation of the EMF and will be supported by an M&E agency to manage and report on progress of all activities pertaining to the EMF. Nodal officers in the Department of Minor Irrigation, Fisheries, and Agriculture will be identified to coordinate training and capacity building activities and monitor implementation of mitigation measures. The EMF includes detailed budget provisions for mitigation measures and capacity building, monitoring and reporting requirements at all levels of project implementation.

5. Identify the key stakeholders and describe the mechanisms for consultation and disclosure on safeguard policies, with an emphasis on potentially affected people.
The draft EMF has been consulted upon at district and state level during development of the instrument, and prior to its disclosure with relevant stakeholders and government institutions. Stakeholder consultations and focus group discussions were held with community-based organizations such as PPs, FPOs, women’s groups, fisherfolk in eleven sites across seven project districts.

Consultations were also held with key GoO institutions, including Department of Minor Irrigation, Department of Agriculture, Department of Horticulture, Department of Forests, State Dam Safety Organization (SDSO), and Chilika Development Authority (CDA). The executive summary of the document was translated in local language and made public at the local level. The draft EMF was disclosed in country on Dept. of Water Resources website and a stakeholder workshop will be planned at the state level, based on the disclosed EMF.
### B. Disclosure Requirements

**Environmental Assessment/Audit/Management Plan/Other**

<table>
<thead>
<tr>
<th>Date of receipt by the Bank</th>
<th>Date of submission for disclosure</th>
</tr>
</thead>
</table>

For category A projects, date of distributing the Executive Summary of the EA to the Executive Directors

"In country" Disclosure

<table>
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<tr>
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**Indigenous Peoples Development Plan/Framework**

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<tr>
<th>Date of receipt by the Bank</th>
<th>Date of submission for disclosure</th>
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"In country" Disclosure

**Pest Management Plan**

Was the document disclosed prior to appraisal?

<table>
<thead>
<tr>
<th>Yes</th>
<th>Date of receipt by the Bank</th>
<th>Date of submission for disclosure</th>
</tr>
</thead>
</table>

"In country" Disclosure

India 18-Mar-2019

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?
NA

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?
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?

**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?
NA

**The World Bank Policy on Disclosure of Information**

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

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

**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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Sr Agricultural Spec.

Abel Lufafa  
Sr Agricultural Spec.

IJsbrand Harko de Jong  
Lead Water Resource Management Specialist

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Project Director (OIIPCRA) cum Additional Secretary to Govt,  
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**FOR MORE INFORMATION CONTACT**

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**APPROVAL**

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|----------------------|--------------------------------------------------|

**Approved By**

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<td>Role</td>
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<tr>
<td>Practice Manager/Manager</td>
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