



# Project Information Document/ Integrated Safeguards Data Sheet (PID/ISDS)

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Concept Stage | Date Prepared/Updated: 03-Oct-2018 | Report No: PIDISDSC23298

**BASIC INFORMATION****A. Basic Project Data**

Country India	Project ID P163533	Parent Project ID (if any)	Project Name Odisha Integrated Irrigation Project for Climate Resilient Agriculture (P163533)
Region SOUTH ASIA	Estimated Appraisal Date Nov 13, 2018	Estimated Board Date Jan 28, 2019	Practice Area (Lead) Agriculture
Financing Instrument Investment Project Financing	Borrower(s) Republic of India	Implementing Agency Odisha Community Tank Development and Management Society	

**Proposed Development Objective(s)**

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

**PROJECT FINANCING DATA (US\$, Millions)****SUMMARY**

<b>Total Project Cost</b>	235.74
<b>Total Financing</b>	235.74
<b>of which IBRD/IDA</b>	164.00
<b>Financing Gap</b>	0.00

**DETAILS****World Bank Group Financing**

International Bank for Reconstruction and Development (IBRD)	164.00
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**Non-World Bank Group Financing**

Counterpart Funding	71.74
Borrower	71.74



Environmental Assessment Category

B - Partial Assessment

Concept Review Decision

Track II-The review did authorize the preparation to continue

Other Decision (as needed)

## B. Introduction and Context

### Country Context

1. Over the past ten years, India has seen strong economic growth - exceeding 7 percent per annum - driven primarily by robust private consumption, a resilient services sector, and a revival in some industrial activities. The reduced momentum in investment and exports notwithstanding, annual growth rates are still projected to average 7.5 percent per annum in coming years because of the diversity in the country's drivers of growth and the vast scope for improvement in many areas.
2. Alongside this growth, India has achieved significant progress in reducing extreme poverty - from 46 percent in 1993 to 21 percent in 2011 (using the international poverty line of \$1.90 per person per day in 2011 purchasing power parity). World Bank estimates point to continued reduction in poverty in more recent years, indicating that the country is on track to eliminating extreme poverty by 2030. Urban growth and rising labor earnings due to movement of labor from agriculture to non-farm work, an unprecedented rise in wages for unskilled labor, and demographic changes (e.g. a declining dependency ratio), underlie the rapid poverty decline.
3. Over the past three decades, the economy has undergone a structural shift from agriculture as the dominant sector, to services and industry. Even then, agriculture continues to be essential for achieving India's development goals, as 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. In 2017, the sector contributed about 17 percent to the national Gross Domestic Product (GDP). While its contribution to the economy is likely to keep declining, agriculture will continue being the single largest contributor to employment and income of the rural population in the foreseeable future.
4. Because of a complex web of policies and institutions that limit the performance of agricultural markets, diminishing returns to technologies that once sparked the green revolution, and suboptimal diversification among others, the agriculture sector continues to perform below its potential. Long-term agricultural growth has averaged about 3 percent per year<sup>1</sup> and generally lags the growth rate for the larger economy. Sector growth is subject to large annual shocks, which as projected, are expected to be exacerbated by climate change. In addition, India's agriculture has, for long, been based on an unsustainable resource-intensive model, predominantly characterized by inefficient use of water and land resources, and as an imperative, will have to shift to higher levels of resource use efficiency, given the country's low per capita natural resource endowments<sup>2</sup> and the projected impacts of climate change.

<sup>1</sup> With decelerating productivity growth of food grains.

<sup>2</sup> With annual per capita water availability of only about 1,000 m<sup>3</sup>, India is one of the most water-stressed countries in the world.



5. Moving away from its long-running policy focus on raising agricultural output and improving food security, the Government of India has now prioritized the doubling of farmers’ incomes by 2022 and through a number of interventions e.g. the *Pradhan Mantri Krishi Sinchayee Yojana* (PMKSY) is also committed to accord high priority to improving water use efficiency - more crop per drop - in a focused manner<sup>3</sup>.

Sectoral and Institutional Context

6. Odisha ranks among the fastest growing economies in India, consistently growing at rates higher than the national average. Mirroring the national level, Odisha’s economic growth has been mainly driven by services (43.5 percent of GDP) and industry (36.6 percent of GDP). Between 2012 and 2017, per capita incomes in the State increased by 30 percent (from Rs. 47,632 to Rs. 61,678) and poverty reduced at an annual rate of 3.5 percent. Despite this good progress, Odisha’s per capita income still stands at only 75 percent of the national average.

7. While Odisha’s economy has transformed from a predominantly agro-based economy, agriculture remains a key sector, providing employment and livelihoods to more than 62 percent of the State’s workforce, and contributing close to 20 percent to its GDP. Indeed, a strong correlation exists between agriculture sector performance and overall state GDP, pointing to strong linkages between agriculture and other sectors.

8. Like much of India, Odisha’s agriculture sector performance, relative to potential, is low. The officially reported compound annual average growth rate of 2.8 percent for the sector for the period 2011-17, is below the national average, and masks the highly volatile sector performance, which in reality is characterized by significant negative growth every alternative year. Consequently, because of low sector performance, Odisha ranks at the bottom in terms of annual farmer income (i.e. Rs. 16,884 per family), only outperforming West Bengal, where the average farmer income stands at Rs. 11,748 per annum.<sup>4</sup>

9. Among others, key constraints to the improved performance of Odisha’s agriculture sector include: (i) low productivity; (ii) limited diversification; (iii) high exposure and vulnerability to extreme weather events; (iv) access to reliable irrigation; and (v) dysfunctional or non-existing value chains for important crops. First off, average yields for major crops in Odisha still lag both those in neighboring states with comparable factor endowments and the national averages (Table 1), and are far below their potential<sup>5</sup>.

**Table 1. Average Yields, 2016-2017**

Crop	-----Crop Yields (ton/ha)-----					India
	Odisha	Andra Pradesh	Madhya Pradesh	Telangana	West Bengal	
Paddy	1.49	3.47	1.75	2.91	2.89	2.40
Pulses	0.55	0.30	0.94	0.77	0.97	0.79
Wheat	1.33	na	2.98	1.40	2.68	3.20
Potato	12.00	14.92	20.07	25.96	26.16	21.51

10. According to the findings of a State-level NITI Aayog Task Force on Agriculture<sup>6</sup>, these low farm-level yields are largely due to limited adoption of productivity enhancing technologies (including the use of improved germplasm), a

<sup>3</sup> PMKSY seeks to achieve convergence of investments in irrigation at the field level, expand cultivable area under assured irrigation, improve on-farm water use efficiency, enhance adoption of precision-irrigation and other water saving technologies (more crop per drop), etc.

<sup>4</sup> National Sample Survey Organization, 2013. Situation Assessment Survey of Agricultural Households, All India Debt and Investment & Land and Livestock Holdings in India (January – December 2013)

<sup>5</sup> World Bank. 2014. Republic of India: Accelerating Agricultural Productivity Growth. Washington, DC.

<sup>6</sup> Government of Odisha, 2016. Rejuvenation of Agriculture: Recommendations of State NITI Aayog Task Force.

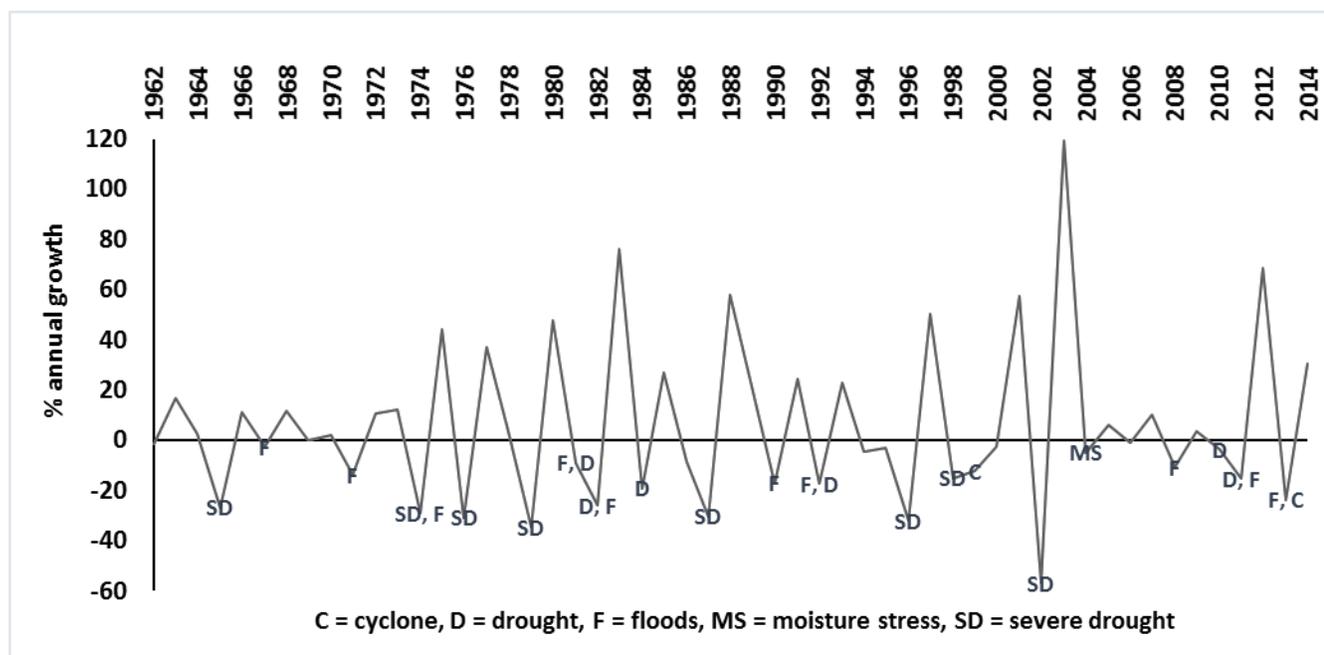


degrading natural resource base, inadequate and mostly unreliable irrigation<sup>7,8</sup>, and weaknesses in the extension system.

11. Due to several factors<sup>9</sup>, Odisha’s progress with respect to diversification – an important vehicle for agricultural growth - has been mixed at best, even against a backdrop of real shifts in consumer demand towards more diversified food baskets. While the net area devoted to rice showed some reduction between 2006 and 2015, the latest year for which comprehensive data sets exist, the total area devoted to food grains has been increasing. In fact, according to the Odisha Economic Survey of 2017-18 example, the areas under spices, vegetables, fruits, and floriculture - a proxy for diversification - declined by 20 percent, 6 percent, 9 percent and 12 percent, respectively, between 2014 and 2017<sup>10</sup>.

12. In addition, extreme weather events, largely droughts, and to a lesser extent, floods and cyclones, also continue to undermine Odisha’s agriculture performance and have been the principal driver of the volatility in sector growth. Figure 1 for example, shows percent annual growth in rice production-the major crop - over five decades, and attests to the vulnerability of the State’s agriculture to the debilitating impacts of extreme weather events, which seem to occur with almost predictable periodicity.

Figure 1: Percent annual growth in rice production, 1962-2014<sup>11</sup>



13. While Odisha has a long history with the menace of drought – going all the way to the drought of 1866<sup>12</sup> - recent trends point to an increasing frequency<sup>13</sup> as well as more agricultural areas coming under the ambit of droughts. As pointed out in the Odisha Climate Change Action Plan, this trend will be further amplified in the future due to climate

<sup>7</sup> About 2/3 of the State’s gross cropped area is rain-fed and depends on monsoon – a vast reliance on nature in an environment with highly skewed annual rainfall availability.

<sup>8</sup> Of the total cultivable area of 8.7 million ha in the State, irrigation potential has been developed for 2.96 million ha in *Kharif* and 1.48 million ha in *Rabi* season.

<sup>9</sup> A comprehensive understanding of which will be developed during preparation.

<sup>10</sup> Government of Odisha, 2018: Odisha Economic Survey of 2017-18.

<sup>11</sup> Data source: Government of Odisha, Status of Agriculture in Odisha, 2014-2015.

<sup>12</sup> Reputed to have caused the death of one third of Odisha’s population due to famine.

<sup>13</sup> From 1 in 5 years to 1 in 2 years since 2009.



change<sup>14</sup>. With 2/3 of its gross cropped area under rainfed production and an insignificant use of groundwater, the State has few and inadequate instruments to mitigate against climate change-induced weather vagaries.

14. Moreover, even when Odisha has relatively more water resources than many States in India, Irrigation development is low and below the national average. Of the total cultivated area of 8.7 million ha, only 1.9 million ha (21 percent) is under irrigation. Only 34 percent of the total irrigation potential of 5.5 million ha has been developed and groundwater use is negligible. With limited irrigation development and seasonally skewed rainfall, Odisha is not making the most out of every drop of water. In fact, estimates indicate that about 40-50 percent of available rainfall is lost as non-beneficial evapotranspiration, a loss higher than the neighboring states. In addition, many of the irrigation systems have become victim to a vicious cycle of the build-neglect-rebuild. Operation and Maintenance (O&M) is not conducted systematically as a result of insufficient funds, the quality of irrigation services degrades and further undermines farmers' willingness and capacity to pay for services. Arrangements for irrigation management have not been adapted to the requirements of recent developments, including the use of groundwater, adoption of more individual irrigation technologies, and the need to adopt a cascade perspective on irrigation management.

15. Furthermore, remunerative and reliable markets in Odisha, a precondition for sustained agricultural growth are limited, mainly due to poorly functioning value chains. For example, supply chains for otherwise high-value commodities (e.g. spices, vegetables) are fragmented and uncoordinated, often involving multiple layers of intermediaries in some places, and completely no players in many other places.

16. The Government of Odisha (GoO) has identified increasing production and productivity, reducing the vulnerability of agriculture to climate change, diversification towards high-value crops, rainwater harvesting and improving efficiency of water use, improved produce marketing, and addressing absentee landlordism inter alia, as important issues to be addressed to improve the performance of the agricultural sector and raise farmer incomes. The proposed project contributes to these efforts. The proposal is to support higher agriculture growth, more efficient water use, better quality and reliability of irrigation service delivery, and strengthen the resilience to climate change of production systems in six districts (see Table 2) in Odisha.

17. Characterized by highly skewed and variable rainfall patterns<sup>15</sup>, a lack of perennial rivers, these districts depend on a cycle of dry seasons alternating with increasingly uneven and erratic monsoons for water. On average, they suffer from marginal drought one in three to five years, moderate drought in six to eight years, and severe drought one in thirty years. Among other reasons, the undulating physiography and the predominantly small-sized land holdings limit the technically and economically efficient development of centralized major and medium irrigation systems (reservoirs and canals) to serve these areas and, they therefore, generally have comparatively lower irrigation coverage than other parts of the State (Table 2).

**Table 2. Irrigation potential created as a ratio of cultivated land**

Project District	Ratio of irrigation potential created to total cultivated area	
	<i>Kharif</i>	<i>Rabi</i>
Ganjam	0.74	0.29
Kandhamal	0.30	0.38
Kalahandi	0.55	0.70
Nuapada	0.42	0.58
Mayurbhanji	0.55	1.15
Keonjhar	0.37	0.51

<sup>14</sup> Climate projections indicate that drier areas will become drier and flood prone areas will be subject to more flooding. Other problems such as pest and disease outbreaks are also likely to increase due to climate change.

<sup>15</sup> When it rains, eighty six percent of the rains fall in the monsoon period (June-October), while the remaining 14 percent occurs during the other 7 months of the year, from November to May.



State average

0.62

0.72

18. The districts therefore, have historically relied on water, stored in cascades of impoundments (tanks) for agricultural production and as a buffer against droughts. The tanks support livelihoods of over 300,000 households, most of whom are in the poorest quintile. Besides sustaining agricultural livelihoods, the network of tanks in these areas also serves other important purposes such as controlling and reducing the impacts of floods - when they occur-and recharging the groundwater table. Investing in these districts will also help meet a key policy objective of the GoO to more evenly spread the benefits of irrigation - currently confined to a few districts in the form of major and medium irrigation projects<sup>16</sup>.

19. Specifically, the project will support sustainable and resilient intensification, judicious diversification<sup>17</sup> to high-value commodities (especially during the *Rabi* season and for some areas under upland rice in *Kharif*), improved produce marketing and also incentivize and improve the quality of irrigation service delivery and the reliability of water supply to ensure a more efficient, productive and equitable distribution of water to beneficiary farmers throughout the year that is more responsive to the more demanding higher value crops. The project builds on the successes of an earlier Bank-financed Odisha Community Tanks Management Project in bridging the gap between the then existing irrigation potential and actual irrigation coverage of selected tanks and expands the engagement further into institutional reforms and capacity strengthening for improved system performance, diversification and marketing of farmer produce.

#### Relationship to CPF

20. The India CPF (2018-2022) argues that for the country to maintain its trajectory of high growth and poverty reduction, it must: (i) embrace much more efficient use of the country's resources, particularly water and land and address the impacts of climate change; (ii) foster inclusiveness both for poverty reduction and as a key condition for sustaining high rates of economic growth; and (iii) strengthen the agility, performance and responsiveness of public sector institutions. One of the three CPF focus areas (Focus Area 1) proposed for Bank engagement is "resource efficient growth" where one of the Objectives is promotion of a more resource-efficient, inclusive and diversified growth in the rural sector. The proposed project dovetails and is consistent with Bank support (to include inter alia, support to sustainable productivity gains, CSA practices, diversification, investments in irrigation and drainage for improved water use efficiency, value chains etc.) that is envisaged under this Objective.

#### C. Proposed Development Objective(s)

21. The Project Development Objective is to intensify and diversify agricultural production, enhance climate resilience and improve water productivity in selected cascades of Odisha. Project beneficiaries include small and marginal farmers, Water Users' Associations (Pani Panchayats), farmer producer organizations, and other agro-entrepreneurs. Targeted investments will be undertaken to address any gender gaps as well as benefit other vulnerable groups.

#### Key Results (From PCN)

22. The project is expected to lead to increased average yields, increases in the range, volume and value of marketed agricultural output, more productive and efficient use of scarce water resources, a more reliable supply and a better quality of irrigation service delivery, and improvements in farmers' capacity to adapt to climate change. Proposed key outcome level performance indicators include the following: (i) increase in productivity of selected agricultural

<sup>16</sup> Government of Odisha, 2013. State Agriculture Policy, Department of Agriculture, Bhubaneswar.

<sup>17</sup> Diversification in this context is defined as reducing the emphasis on food grains and increasing the share of high-value agriculture. This would be done taking cognizance of the overall country policy intent to shift rice production towards relatively more water abundant states like Odisha.



commodities supported by the project (t/ha); (ii) farmers adopting improved agricultural technology (number); (iii) share of non-rice products in total production in project areas(percent); (iv) water users provided with new/improved irrigation and drainage services (number); (v) acreage under crops that are less water demanding (ha); (vi) productivity of water use (kg/m<sup>3</sup>), and (vii) number of direct project beneficiaries (disaggregated by gender).

#### D. Concept Description

23. Agricultural production system improvements (e.g. improving productivity, system resilience to climate change and resource use efficiency) and market development are known to reinforce each other and are therefore better pursued and accomplished together. The proposed project primarily seeks to improve and diversify farmer yields and production, improve water productivity and efficiency, build resilience to climate change risks, and improve market access for farmers who can generate a marketable surplus in selected districts in Odisha. Producing higher value and more diverse crops puts a high premium on the quality and reliability of irrigation service delivery, as they leave no room for water supply errors and the higher use of farm inputs significantly increases the stakes. Higher value horticulture crops generally use less water as compared to wheat, paddy, sugarcane and cotton. The conceptual framework underlying the proposed design therefore links efforts to promote adoption of CSA practices<sup>18</sup>, diversification and productivity increases, with improvements in incentives for technology adoption, quality of water service delivery and water resource management. The project will comprise three components as described below:

##### **Component 1: Climate-Smart Intensification and Diversification of Agriculture**

24. The objective of this component is to increase agricultural productivity, strengthen the capacity of organized farmer groups to cope or adapt to climate change stresses affecting crop production, and diversify production in *Rabi* in response to effective demand as expressed by pre-identified commercial off-takers or gleaned from other reliable market signals. Support under this component is proposed to be organized around two mutually inclusive, overlapping and reinforcing subcomponents.

##### **Subcomponent 1.1: Support to Improved Productivity and Resilience**

25. This subcomponent aims at supporting and incentivizing farmer adoption of technologies and practices that demonstrably deliver the triple-wins of increased productivity, improved resilience to climate shocks and reduced GHG emissions, as a co-benefit. The exact nature of technology support will be: (i) a function of the specificities of production environments and unique climate vulnerabilities<sup>19</sup> in individual cascade; (ii) scaled to farmer capacities and endowments and (iii) based on the principles of response to market demand, good choice of improved germplasm, adequate plant nutrition, and effective pest and disease management.

26. In this respect, project support is envisaged to go towards organizing farmers for technology transfer purposes (e.g. through farmer field schools), technology sourcing and demonstration, farmer training, improving availability and access to productivity enhancing and resilient germplasm by strengthening key segments in the State's seed production and distribution system, and strengthening advisory service provision, currently plagued by weaknesses in the extension system - such as inadequate manpower and limited knowledge and skills.

##### **Subcomponent 1.2: Support to Diversification and Produce Marketing**

27. The objective of this subcomponent is twofold: (i) support farmers to reduce the current emphasis on food grains

<sup>18</sup> In this context, CSA practices are defined as practices that sustainably increase productivity and farmers' income and build resilience to climate change, while reducing GHG emissions where possible and appropriate

<sup>19</sup> To be mapped for the target districts following approaches developed through a World Bank Non- Lending Technical Assistance to Support Implementation of Odisha State Climate Change Action Plan.



(especially rice and wheat) while increasing the share of high-value agriculture (e.g. fruits, spices and vegetables) in their overall production structure; and (ii) improve produce marketing to increase incomes and reduce price risks associated with diversification. A successful shift in favor of more diversified production would not only generate faster productivity and superior incomes for targeted farmers, but will also result into improved nutrition security, help reduce the water footprint of paddy, foster biodiversity, and strengthen resilience of the production systems to climate change.

28. Project support to diversification and improved marketing is proposed to follow productive alliance approaches, which bring together organized farmers, produce buyers, technical service providers and leverage private sector financing to address market imperfections and build competitive value chains for select commodities. In this respect, the project could provide funding for several activities, including but not limited to: (i) awareness creation of diversification among farmers; (ii) identification of competitive value chains; (iii) farmer experimentation with new crops and training/demonstration of relevant production technology; (iv) strengthening of farmers for collective action (including in production, aggregation, technology transfer, among others); (v) business plan development; and (vi) selected productive investments - as would be identified in the business plans. Project support to crop diversification will be based on agronomic/agro-ecological suitability, comparative advantage of specific cascades, and local, national or international market opportunities. To further diversify farmer income streams (a key adaptation strategy) and maximize the utility and productivity of water stored in the tanks, during preparation, the project will explore the feasibility of using the tanks for seasonal aquaculture.

## **Component 2: Improving Access to Irrigation and Water Productivity**

29. Access to reliable irrigation is generally critical to enhancing crop productivity, building resilience to climate change, promoting diversification and access to markets. It is doubly important in the targeted project areas that are characterized by frequent droughts and highly variable rainfall availability. Bridging increasingly longer dry spells during *Kharif* and producing more demanding higher value and more diverse crops during *Rabi* when the stakes are higher and when there is no margin for water supply errors, puts a high premium on the quality of irrigation services.

30. Among others, 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 O&M. Additionally, most of the tank irrigation systems have been developed for rice cultivation and need to be adapted for a more diversified and more demanding cropping system.

31. The proposed project aims to improve the performance of irrigation throughout the year and across cascades of selected tank irrigation systems through modernization of hydraulic assets, institutional reforms, and 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. Capacities for irrigation management (including the introduction of asset management) will be strengthened to provide higher quality services. In addition, the project will promote sustainable groundwater use to supplement scanty rainfall and mitigate increasing rainfall variability. Key outcome indicators include the productivity of water use ( $\$/m^3$ ) and the number of water users provided with new/improved irrigation and drainage services (number).

### **Subcomponent 2.1: Irrigation Modernization**

32. The project will invest in the modernization of hydraulic assets. To that end, a comprehensive water assessment will be conducted in the Project cascades to identify opportunities for reducing water losses and for transferring the savings to *Rabi* season. For each of these opportunities, the implications on downstream water use will be identified through preparation of a pre- and post-project cascade-wide water balance. Investments include strengthening of canal bunds, modernizing hydraulic canal structures, installation of field channels and sub-surface pressurized pipes, and developing



groundwater extraction. The project will also help farmers access subsidies at central and state level for the promotion of pressurized irrigation at *chak* level. In line with GoO's intention, where feasible, the project will finance investments through DBOTs on a Hybrid Annuity Basis.

### **Subcomponent 2.2: Irrigation Management**

33. Crop diversification and intensification require a higher quality of irrigation service delivery to meet the requirements of more demanding crops. Traditional arrangements for irrigation management often lack the capacities and incentives to deliver these improved services. The project will pursue institutional reforms and pilot the use of private (publicly funded) operators that will be incentivized to deliver high performing irrigation and O&M services through DBOT contracts on a Hybrid Annuity basis – in conformity with GoO's intentions.

34. The Project will promote conjunctive management and sustainable use of both ground- and surface water resources by improving groundwater monitoring linking these with irrigation scheduling decisions. The Project will also establish a surface and groundwater monitoring and benchmarking system and will (i) link these data to decision making on irrigation scheduling, and (ii) significantly improve citizen engagement in the management of irrigation systems.

35. The project will strengthen capacities of farmers and *Pani Panchayats* through Farmers' Field Schools and demonstrations, among others in modern irrigation technologies, improving irrigation efficiency and rational hydraulic asset management. The project will also introduce the allocation of investment resources on the basis of scheme performance (including abidance by agreed water allocation, meeting efficiency targets and cost recovery). Capacities will also be strengthened to improve the management and maintenance of hydraulic assets.

### **Component 3: Project Management**

36. This component will strengthen capacities for project management, monitoring and evaluation (M&E) (including, inter alia, the areas of procurement and financial management) through the provision of goods, consultant services, training, and financing of incremental operating costs. This component will also develop a comprehensive management information and data collection and reporting system on key performance outputs and impact indicators through baseline surveys, participatory assessments, mid-term reviews and final evaluations. Staffing of the PMU will include a number of technical, financial management, M&E and safeguards (social and environmental) experts. Detailed implementation arrangements will be spelled out in the Project Operational Manual. (POM). Regular training of PMU staff will be organized to strengthen their capacities to implement the project.

## **SAFEGUARDS**

### **A. Project location and salient physical characteristics relevant to the safeguard analysis (if known)**

Odisha is located on the east coast of India along the Bay of the Bengal. The state has coastal line of about 450 km, and a geographical area of 155,707 sq. km which accounts for 4.87% of the total area of India. The state of Odisha can be divided into five agro-ecological zones: (1) The coastal plains, (2) The middle mountainous range – part of Eastern Ghats mountain range, (3) The rolling uplands, (4) river valleys, and (5) subdued plateaus. While the state has a wide network of river basins and sub-basins, it is mainly associated with 3 major river basins; Brahamani, Mahanadi and Vansadhara. Despite such diverse natural resource base, it's agriculture sector has been performing well below its potential. Among key constraints to the improved performance of Odisha's agriculture sector include: (i) low productivity; (ii) limited diversification; (iii) high exposure and vulnerability to extreme weather events; and (iv) dysfunctional or non-existing value chains for important crops.



To address these concerns, the project will invest on repair and rehabilitation of about 600 tanks spread across the state to revive small holder farming. The interventions will include: improving the efficiency of water assets, modernizing the irrigation systems, enhancing agriculture productivity, promoting adaptive agriculture practices, enhancing fishery production, and promotion of climate friendly agri-business practices.

**B. Borrower’s Institutional Capacity for Safeguard Policies**

Government of Odisha has recently completed a project of this nature, reflecting that the implementation capacity has already been established to address environment and social safeguard implications. The PMU is already in place, and the consultancy services for conducting ESMF, IPNM and TDP are already in place. Safeguard compliance tools needed are already available with the Government of Odisha to be used during the proposed project.

**C. Environmental and Social Safeguards Specialists on the Team**

- Gopaldaswamy Srihari, Social Specialist
- Anupam Joshi, Environmental Specialist
- Sharlene Jehanbux Chichgar, Environmental Specialist

**D. Policies that might apply**

Safeguard Policies	Triggered?	Explanation (Optional)
Environmental Assessment OP/BP 4.01	Yes	The physical investments under the project would include rehabilitation of existing water assets such as strengthening of canal bunds, modernizing hydraulic canal structures, installation of field channels, etc. where improper construction could result in adverse impacts. The investments under the climate resilient agriculture practices could result in positive impacts on the environment with effective planning and implementation. The project has been categorized as category B. There is no large scale, significant and/or irreversible impacts envisaged due to the proposed project interventions. An Environmental and Social Assessment (ESA) will be undertaken to identify environment and social issues of significance. Based on ESA, an Environmental and Social and Management Framework (ESMF) will be prepared to address the requirements of a category B project, to manage risks and maximize environmental and social opportunities. Both the ESA and ESMF will take into account experiences and lessons from the previous project.



Performance Standards for Private Sector Activities OP/BP 4.03	No	No impact is expected due to project interventions.
Natural Habitats OP/BP 4.04	Yes	The rehabilitation and modernization of the tank system is likely to improve the water storage capacity and wetlands in the upper catchment. As the rehabilitation of tanks may impact natural resources including wetlands (if any). The ESA that will help ascertain such impacts, and will develop a screening mechanisms that will help identify and avoid impacts on sensitive environmental habitats and important ecosystems. As details of the exact sites of the proposed investments are yet to be finalized, the ESMF would include all adequate measures for any negative effects on natural habitats.
Forests OP/BP 4.36	No	No activities impacting on forests will be undertaken
Pest Management OP 4.09	Yes	The project will not directly finance pesticides, but improved irrigation efficiency and subsequent increase in crop productivity and diversification may induce pesticide use. The project will strictly use IPNM (Integrated Pest and Nutrition Management) approach. In addition, the ESMF will have a detailed local specific IPNM strategy for the project. This will reduce the reliance on chemical pesticides, include all measure for labour health and safety for pesticide application and usage, and guidance on training and demonstrations, that will be provided so that there is no significant adverse impact on the environment and public health.
Physical Cultural Resources OP/BP 4.11	No	No impact is expected due to project interventions.
Indigenous Peoples OP/BP 4.10	Yes	The state has a sizeable tribal population - 22.5% of the total population. In fact, Odisha is unique in having distinct tribal areas enshrined under the 5th Schedule of the Indian Constitution. At this stage, investment plans and locations are not known, and therefore, a Tribal Peoples Planning Framework (TPPF) will be prepared. Subsequently, sub-project specific Tribal Development Plans will be developed as and when sub-project locations are finalized.
Involuntary Resettlement OP/BP 4.12	No	The project does not anticipate any form of land acquisition or involuntary resettlement impacts as it would cover the existing tank with a focus on repair and rehabilitation only.
Safety of Dams OP/BP 4.37	Yes	No new dam construction will be supported under the project. The project will rehabilitate and modernize the existing rainwater harvesting structures (known as



Tanks and each having more than 40 Ha of command areas). Some of them would be having earthen embankments above 10 meters high, hence the project is triggered.

This policy was triggered during the previous project, and a Dam Safety panel was put in place. The same Dam Safety panel will continue for this project under the technical guidance from the Chief Engineer, Central Designs Organization. The project will seek better coordination with the Dam Safety panel and support safety enhancement of the tank system as part of the tank rehabilitation.

Projects on International Waterways OP/BP 7.50	No	There is no evidence that the project would impact on any international water ways
Projects in Disputed Areas OP/BP 7.60	No	Project areas do not fall in any disputed areas.

**E. Safeguard Preparation Plan**

Tentative target date for preparing the Appraisal Stage PID/ISDS

Mar 31, 2019

Time frame for launching and completing the safeguard-related studies that may be needed. The specific studies and their timing should be specified in the Appraisal Stage PID/ISDS

The Borrower has already engaged consultants who shall commence preparation of the safeguards instruments soon. They shall undertake ESA to prepare Environment and Social Management Framework (ESMF), Tribal Peoples Planning Framework (TPPF), Integrated Pest Management Plan (IPMP) / Integrated Nutrient Management Plan (IPNM). These instruments are expected to be ready by March 31, 2019, or before appraisal and will be publically disclosed.

The ESMF will provide essential baseline data, confirm policies that are triggered, assess likely impacts of the project interventions. The ESMF will also propose mitigation measures for any adverse impacts that may be envisaged through the design and construction phases of various interventions. Recommendations for strengthening institutional capacity, and estimate the budget required for the implementation will also be included. Assessments will be participatory with extensive consultations with all the stakeholders.

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**APPROVAL**

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