I. STRATEGIC CONTEXT

Country Context

1. **India's Gross Domestic Product (GDP) growth was already slowing when the COVID-19 outbreak unfolded.** Real GDP growth moderated from an average of 7.4 percent during FY15/16-FY18/19 to an estimated 4.0 percent in FY19/20.[1] The growth deceleration was mostly due to (i) shocks to the financial sector, and (ii) decline in private consumption growth.[2] Against this backdrop of pre-existing weaknesses, the outbreak of COVID-19 had a significant impact, with real GDP contracting by 7.3 percent in FY20/21.[3] On the fiscal side, the general government deficit widened significantly in FY20/21, owing to higher spending and low revenues.[4] With the easing of Covid-19 restrictions, GST collections for July, August and September 2021 have crossed INR 1 trillion mark. The robust Goods and Services Tax (GST) revenues are expected to continue as the economic recovery gathers momentum. Given the significant uncertainty pertaining to epidemiological developments, real GDP growth for FY21/22 is likely to be in the range of 7.5 to 12.5 percent[5]. The expected recovery will put India among the world's fastest-growing economies. India's GDP grew at 20.1 percent y-o-y during the April to June quarter of 2021.

2. **Although India has made remarkable progress in reducing absolute poverty in recent years, the COVID-19 outbreak has delayed the course of poverty reduction.**[6] Between 2011-12 and 2017, India's poverty rate is estimated to have declined from 22.5 percent[7] to values ranging from 8.1 to 11.3 percent.[8] However, recent projections of GDP per capita growth, taking into account the impact of the pandemic, suggest that poverty rates in 2020 have likely reverted to estimated levels in 2016.[9] Labor market indicators from high frequency surveys – including from the Centre for Monitoring Indian Economy (CMIE) – suggest that vulnerability has increased, particularly for urban households. Overall, the pandemic and its economic impacts are estimated to have raised urban poverty, creating a set of "new poor" that are relatively more likely to be engaged in the non-farm sector and to have received at least secondary education.

3. **Agricultural growth is important for reducing persistent rural poverty, but faces several challenges accentuated by climate change and COVID-19**. Agriculture accounts for 18.2 percent of Gross Value Added (GVA) and is the primary source of livelihood for 58 percent of rural households. Land degradation, soil erosion, water scarcity, climatic uncertainties and low productivity are key challenges facing the sector. Climate change is expected to further exacerbate these challenges – where an increase in average temperature can affect crop yields, changes in seasonal precipitation can shift planting seasons and trigger pest outbreaks, and more frequent extreme weather events (such as floods and droughts) can harm agriculture and livestock systems, and lead to food shortages. Further, in the shorter term, the livelihoods of vulnerable communities, including those living in resource-poor rainfed regions of India, are likely to be disproportionately affected by COVID-19 due to non-availability of migrant labor, disruptions to supply chains, depressed demand for certain commodities and reduced prices[10] non-availability of cash for investments by households, and human morbidity and mortality.

[1] National Accounts Data, National Statistical Office, Ministry of Statistics and Program Implementation (MOSPI).
[2] ibid.
[3] ibid.
[4] Union budget 2021, 2022, Ministry of Finance.
[5] World Bank Global Economic Prospects, July 2021.
[6] World Bank projections. The Government of India has deployed significant resources for social assistance, including towards urban poor households and migrants.
[7] Consumption Expenditure Survey 2011-12, National Sample Survey Office (NSSO), Government of India.
[8] World Bank estimates. Source: Poverty and Shared Prosperity Report, 2020.
[9] World Bank estimates. Source: Macro Poverty Outlook, 2020.
[10] Dev, SM. April 2020. Addressing COVID-19 impacts on agriculture, food security and livelihoods in India. IFPRI Blog (https://www.ifpri.org/blog/addressing-covid-19-impacts-agriculture-food-security-and-livelihoods-india).

4. **Rainfed[11] areas represent a significant share of the agricultural landscape and output but are prone to environmental and climatic challenges**. An estimated 96 million hectares (ha), representing 30 percent of the total geographical area in India, is experiencing land degradation. Further, the cost of land degradation is estimated at 2.5 percent of India's GDP (2014-15).[12] Climate change is one of the main drivers of land degradation in India, with erosion of topsoil reducing the land's carbon sink ability and water storage function. The majority of degraded lands (85 percent) are located in dry, rainfed land areas, and mainly in six states – Gujarat, Karnataka, Madhya Pradesh, Maharashtra, Odisha and Rajasthan, where agriculture is also highly vulnerable to climate change. Of the 140.13 million ha of net sown area in the country, about 51 percent (71.75 million ha) is rainfed and home to 86 percent of the country's poor. Rainfed areas are characterized by low and erratic rainfall, high temperature, soil nutrient deficiencies, excessive runoff and high drought incidence. These concerns are likely to intensify, as climate change projections point to fewer wet days, more intense extreme events and an increase in the number of very hot days. Since rainfed areas contribute significantly to agricultural output (producing 44 percent of country's food grains, 80 percent of the pulses, 73 percent of oilseeds and 66 percent of livestock), conservation and sustainability of these lands and their natural capital becomes essential.

5. **India is committed to achieving Land Degradation Neutrality and increasing farmer's incomes**. As a signatory to the United Nations Convention for Combating Desertification (UNCCD), the Government of India (GoI) has committed to restore 26 million ha of degraded land by 2030. The GoI has also focused on doubling farmers' income in seven years (from 2015–16 to 2022–23), marking a significant departure from past policies which emphasized production rather than marketability. The strategy for doubling farmer incomes recognizes that management of natural resources is a comprehensive and scientific approach to achieve sustainability and manage risk in agriculture.

6. **Integrated watershed[13] management provides a constructive framework to manage natural resources and build a resilient food system**. Global experience and good examples from India have demonstrated that effective watershed management can help to comprehensively address land degradation, land use, water conservation, agricultural performance, livelihood security and climate change in rainfed areas, while building a more resilient food system. A resilient food system requires substantial investments in restoration of ecosystems to support precision farming, based on efficient use of natural resources and inputs, including water, land, fertiilzers and pesticides. In addition, integrated watershed management provides opportunities to support rural livelihoods in the short, intermediate and longer-term as part of strategies to address impacts from COVID-19. Interventions addressing both COVID-19 and climate change are well-reflected in integrated watershed activities, such as improved targeting for COVID-19 recovery activities, working under continued COVID-19 restrictions, interventions on improving agro-climatic resilience, strategic climate analytics for priority watersheds, improved weather monitoring and early alerts.

Sectoral (or Multi-Sectoral) and Institutional Context

7. **Watershed management programs in India have evolved over time in terms of their approach, strategy and operational scale.** In the late 1970s, watershed management programs were mainly about top-down engineering-focused, soil and water conservation infrastructure development to protect large downstream water bodies (especially dams) from silting up. From the late 1980s, programs began focusing on soil and water issues and productivity in resource-poor, poverty-stricken upstream areas. From the late 1990s, a new approach based on participatory watershed planning, implementation and management was pioneered in several states including Odisha (supported by UK Government) and Karnataka (supported by UK Government, DANIDA, World Bank). In 2009, the Integrated

[11] Rainfed areas receive less than 750 mm of rainfall annually and have less than 30 percent of cropland under irrigation (from both surface and groundwater).

[12] Economics of Desertification, Land Degradation and Drought in India. TERI; 2018.

[13] Watershed is a natural hydrological entity governed by terrain topography, that covers a specific expanse of land surface from which the rainfall runoff flows to a defined drain, channel, stream or river at any point. Based on the size, the hydrological unit is termed as water resource region, basin, catchment, sub-catchment, watershed, sub-watershed and micro-watershed respectively. India is divided into six river resource regions, 37 basins, 117 catchments, 588 sub-catchments, 3,854 watersheds, 49,618 sub-watersheds and 321,324 micro-watersheds. Watersheds have a size range of 20,000–150,000 ha, sub-watersheds are 5,000–9,000 ha, and micro-watersheds are 500-1500 ha (Source: Micro Watershed Atlas of India 2015).

Watershed Management Programme (IWMP) was launched, which marked the consolidation of various watershed development schemes under an integrated program. In 2015-16, the IWMP became a component of the GoI's flagship program on extending irrigation coverage and improving water use efficiency – the Pradhan Mantri Krishi Sinchayee Yojana (PMKSY). Recently, watershed programs, such as the Karnataka Watershed Development Project (KWDP)-II (known locally as 'Sujala III') financed by the Bank, began emphasizing improved biophysical and socio-economic site data, more science-based watershed planning, and value-chain development through investments in farmer producer organizations (FPOs) and market linkages. The operational scale of watershed development also shifted over time from larger treatment areas to smaller micro-watersheds and then to a meso-scale focused on clusters of micro-watersheds covering contiguous areas

8. **A robust institutional architecture for watershed development exists in the country.** The Department of Land Resources (DoLR) of the Ministry of Rural Development (MoRD), GoI is the key national agency responsible for watershed development. The National Rainfed Areas Authority (NRAA) of the Ministry of Agriculture and Farmers' Welfare (MoAFW) provides technical and policy support to the DoLR on watershed development. State Level Nodal Agencies (SLNAs) or State Watershed Departments (SWDs), housed in various agencies,[14] are responsible for delivering national watershed programs, including watershed planning, resource mobilization, monitoring, capacity building and coordination through their district and block level structures. To facilitate meaningful engagement of the community in planning, implementation and monitoring of watershed development, community level institutions and local government bodies are supported. These include Watershed Development Committees (WDCs), farmer or water user groups, self-help groups (SHGs), and the Gram Panchayats (GPs).

9. **Watershed programs in India have been well-resourced**. The Watershed Development Component of the PMKSY[15] (WDC-PMKSY) is the key ongoing government program in the watershed development sector with an allocation of USD 314 million in 2019–20. Another relevant government program with a significant focus on soil and water conservation measures is the Mahatma Gandhi National Rural Employment Guarantee Act (MGNREGA), with a budget of USD 8.8 billion for 2019–20 and an estimated 40 percent or more allocated to soil and water conservation works. In the context of COVID-19, watershed management has the potential to provide rural employment to migrant workers in public works, livelihood protection for vulnerable households, productivity enhancement and value addition services to farmers. India's watershed programs are collectively one of the largest in the world, second only to China.

10. **GoI's key watershed program, the WDC-PMKSY, has made good progress, but the process has weaknesses that are reducing expected results.** Under the IWMP/WDC-PMKSY, 8,214 watershed development sub-projects (each covering about 5,000 ha) were approved, between 2009-10 and 2014-15 in 28 states, covering an area of about 39.07 million ha. Of these, 5,151 have been completed – treating about 24.72 million ha of rainfed and degraded land; creating 758,000 water harvesting structures; bringing 1.62 million ha of land under protective irrigation; improving 328,000 ha of wasteland; and benefitting 2.7 million farmers. Based on the total of 96 million ha of rainfed lands in India and the area treated to date with government watershed programs (20.5 million ha), 75.5 million ha remain to be treated. Even with complete implementation of the remaining sub-projects, about 57.0 million ha of rainfed areas and wastelands remain to be developed. While these programs have treated significant land areas to date with basic soil and water conservation, the broader results have been below expectation in terms of: incorporating hydrology, water management and climate resiliency into plans and investments; supporting farmers to transition to climate resilient farming practices, more value addition and market access for increased productivity and incomes; and strengthening rural livelihood development to improve overall equity and opportunities for women. Weak institutional capacity, poor inter-departmental coordination, policy gaps in addressing operation and maintenance, and adhoc

[14] Depending on the state, this could be the Department of Agriculture, Panchayat Raj Department, Forest Department, or in some cases a separate Watershed Development Department.

[15] The umbrella PMKSY scheme is an amalgamation of three ongoing national schemes: (i) Accelerated Irrigation Benefit Program of the Ministry of Water Resources (MoWR), River Development and Ganga Rejuvenation (RD&GR); (ii) the Integrated Watershed Management Programme (IWMP) of Department of Land Resources (DoLR) of the Ministry of Rural Development (MoRD); and (iii) the On-Farm Water Management of Department of Agriculture and Cooperation, Ministry of Agriculture and Farmers' Welfare (MoAFW).

community participation are key constraints contributing to the sub-optimal results.

11. **Rural women play a central role in managing land, water, biomass and agriculture, as well as addressing household requirements of food and income, and are consequently most affected by climate change and vulnerabilities associated with rainfed agriculture.**[16] Successive guidelines[17] as well as projects on watershed development have emphasized women's representation in watershed institutions and their participation in watershed planning and management. However, the implementation experience and outcomes for gender equity have shown significant variations. This is due to multiple reasons: such as inadequate project focus on women's engagement, their differential needs and priorities, as well as social and cultural constraints that limit women's voice. Typically, states include 33 percent reservation and representation criteria for women in watershed committees.[18] However, women's overall participation in watershed development as leaders of watershed committees, as participants in watershed planning and as direct beneficiaries of watershed investments has been mixed and limited. The persistent gender gaps pertain to: first, women's leadership in watershed development committees, water user groups and watershed development teams/associations;[19] second, women's structured participation in watershed infrastructure planning, prioritization, implementation and operation and maintenance (O&M) of watershed investments;[20] third, absence of gender-disaggregated data in baseline surveys, detailed project reports (DPRs) and monitoring and reporting systems;[21] and fourth, targeting of women farmers, women agriculture workers and women-headed households as direct beneficiaries of watershed interventions.

12. **Improving impacts of India's watershed development program will require a more science-based and data-driven approach, shorter sub-project cycles, stronger institutional capacities, and greater attention to farmers' needs.** Current watershed programs need to adopt a stronger science-based approach by: applying modern tools and comprehensive site data for more efficient and integrated planning among the line departments; reducing time for sub-project planning and execution; and shifting monitoring systems from tracking physical and financial progress to an approach that also measures broader results and impacts. The institutional architecture of the national watershed program reaches down to communities, however inadequate technical capacities must be improved for better scientific planning, addressing climate change and helping farmers achieve higher incomes. Weak community capacities and incentives for post-project sustainability also need to be strengthened. Programs need more emphasis on hydrology – especially water budgets and the demand side of groundwater management in watersheds, crop selection based on land suitability assessment, rational fertilizer use informed by analysis of soil nutrient status, and greater value addition and market access.

13. **States need support to implement new national watershed guidelines**. Drawing on guidance from the NRAA, the DoLR revised the Draft Guidelines for New Generation Watershed Development Projects 2020. The draft guidelines incorporate new approaches, many adopted from the KWDP-II. These approaches included: (i) the Land Resource Inventory (LRI) program that developed comprehensive databases at a micro-watershed and farm plot levels, covering biophysical and socio-economic data sets, particularly enhanced soil assessments; (ii) development of hydrological tools and models that could be integrated into LRI databases; (iii) creation of a functional web-based portal to promote easy access to data sets for multiple purposes in targeted watersheds and for external research; (iv) development of nine Decision Support System (DSS) tools to improve watershed planning, and targeting of soil and water conservation investments taking into account water budgets, farmer decision-making around crop selection, precision farming and fertilizers, among others; (v) building of a strong network of local and national technical partners to support scientific inputs in watershed management programs; and (vi) intensive third-party monitoring. While the new national watershed guidelines incorporate a majority of these innovate approaches and will underpin new government

[16] Gender Perspective in Water Management: The Involvement of Women in Participatory Water Institutions of Eastern India, Varsha Khandker; 2019.
[17] Integrated Watershed Management Guidelines, 2011; GoI.
[18] Watershed Development in India, World Bank; 2014.
[19] Women, Water and Leadership; Asian Development Bank (ADB) Briefs 2014.
[20] Impact Study of Karnataka Watershed Development Project II (Sujala III), TERI; 2019.
[21] Implementation Completion and Results Report, World Bank; 2017.

watershed programs, DoLR and other states (as does Karnataka to deepen its experience) need support to implement these new approaches effectively at scale, continue to develop innovative practices and tools, and share lessons learned with other states and regions.

14. **Key lessons from watershed management programs financed by the Bank, from within India and outside the country, have informed the design of the proposed Rejuvenating Watersheds for Agricultural Resilience through Innovative Development (REWARD) Program.** The KWDP (I and II) in India, and other cutting-edge operations in other Indian states, China, Ethiopia, Kenya and Latin America have generated valuable experiences and lessons learned that India decided to integrate into its national watershed program to improve broader results and impacts. Key lessons[22] emphasize the importance of**:** (i) using scientific data-driven analytics (such as LRI, hydrology, climate) and planning; (ii) focusing more on water management, including demand management; (iii) improving evidence-based and data-driven monitoring systems focused on results and impacts; (iv) building stronger technical and management capacities at national, state and local levels to apply new approaches and technologies; (v) developing O&M policies and financing mechanisms; (vi) providing performance incentives, including bio carbon funds, to incentivize local governance and maintenance of watersheds; (vii) introducing innovative participatory processes, including setting up special women forums to facilitate participation; and (viii) integrating value chain services to help farmers gain more income.

Relationship to the Country Partnership Strategy (CPS)/ Country Partnership Framework (CPF) and Rationale for Use of Instrument

15. The CPF FY 2018–FY 2022[23] for India identified three focal areas for Bank's financing: Focus area 1 – Promoting resource efficient growth; Focus area 2 – Enhancing competitiveness and enabling job creation; and Focus area 3 – Investing in human capital. The proposed operation will support the objective of promoting more resource-efficient, inclusive and diversified growth in the rural sector under Focus area 1 by contributing to increasing and diversifying income-generating opportunities, while improving efficiency in the use of water and land resources in agriculture. It will support climate resilience and improved natural resource management through investments in infrastructure, facilitating changes in agricultural practices, crop diversification and minimizing agriculture risks. The proposed Program will also contribute to Focus area 3 by building stronger technical and management capacities at different levels to improve the delivery of more science-based and data-driven watershed programs. The operation will also support knowledge exchanges across states as well as with other countries to transfer and scale up good practices. It will also contribute to improving disaster risk management through its contribution to mitigating drought risk in rainfed areas.

16. In addition to the above focus areas, the CPF also set out four operating modalities: (i) leveraging the private sector; (ii) strengthening public sector institutions; (iii) engaging a 'federal' India; and (iv) promoting a 'lighthouse' India that connects practical know-how for the benefit of India and the world. The proposed Program is closely aligned with all the four operating modalities. For example, it will support public private partnerships (PPPs), especially in value-chain development. The Program will strengthen public and community institutions involved in watershed development. The Program will also establish strategic partnerships with selected states which will receive financing under the Program and foster the development of scientific networks in these states. Finally, the Program will support Karnataka to become a 'lighthouse' state coordinating with the DoLR to disseminate knowledge and experience in watershed development from global projects as well as from the recently closed KWDP II to other states.

17. Drawing from recent Bank experiences in India with multi-state programs across different sectors the proposed financing instrument is a Program for Results (PforR) with a loan to India whose funds are allocated in part to the central DoLR and in part to the participating states. Direct Program Agreements will be entered into between the participating states and the Bank. A straight Investment Project Financing (IPF) model would not be suitable because it would not provide the incentives needed to stimulate action and foster institutional improvements, without which, longer-term

[22] Lessons in the watersheds sector are based on secondary literature reviews and technical consultations with civil society organizations, donor agencies (e.g. IFAD, KFW), technical resource agencies and experts.
[23] CPF: FY18-22; Report No. 126667-IN, July 25, 2018 discussed at the Board on September 20, 2018.

reform is not possible. The PforR option has a number of specific advantages over an IPF approach including: (i) moving away from a business-as-usual approach and bringing a stronger results-orientation in implementation and strengthening of DoLR and state capacities for results-focused implementation; (ii) building on existing program systems while also providing scope for improvements, such as with monitoring and evaluation (M&E) and fiduciary and safeguards systems; (iii) reducing procurement transactional costs during implementation; and (iv) building on exisiting knowledge sharing systems to promote more effective cross-learning across states for adopting innovations and best practices in the design and implementation of watershed programs by the states. The option of an IPF with performance-based conditions was dropped in view of the comparatively greater strength of the PforR instrument in building long term institutional capacity for delivering results.

18. A Development Policy Operation (that was also evaluated) would not be suitable, as the program already provides a policy and programmatic underpinning for revitalizing rainfed areas with reasonably well-defined objectives. Further, the DoLR and NRAA have already developed new national watershed guidelines. The government does not need to make urgent major policy changes, although opportunities for policy actions will likely emerge as lessons from REWARD.

II. PROGRAM DESCRIPTION

Government Program

19. **The Government's Watershed Development Component – Pradhan Mantri Krishi Sinchayee Yojana (WDC-PMKSY) is a key source of funds for watershed management.** The DoLR provides national guidelines and funds to states through national watershed schemes for execution at the sub-project level.[24] The long-standing funding pattern of 90:10 (center:state) changed to 90:10 in hilly & North Eastern States, 100% for UTs without legislature, 90.:10 for UTs with legislature and 60:40 for other States from 2015-16. The actual fund release from DoLR to the states has ranged from USD 214 million in 2016-17 to USD 256 million in 2018-19. In 2019-20, the actual fund release dipped to USD 139 million.

20. **DoLR aims to bring approximately 4.95 million ha of hitherto untreated land under watershed development.** The current WDC-PMKSY national watershed scheme got an extension till March 2022. A follow-on program from 2021-22 onwards (hereafter referred to as WDC-PMKSY 2.0) with a planned outlay of INR 81,340 million (USD 1.10 billion) received EFC approval in August 2021. Through the 2020-21 fiscal year in the current WDC-PMKSY and the follow-on program, the DoLR plans to undertake watershed management on 4.95 million ha during 2021-2026. The USD 1.10 billion allocation represents only DoLR's share. The cost-sharing with states is expected to continue at 60:40, inferring that the total cost of the new program will be USD 1.68 billion. This significant increase in the annual outlay over earlier programs is largely because national cost norms for watershed activities increased from INR 12,000 per ha (USD 162/ha) for less undulating 'plains areas', INR 15,000 per ha (USD 203/ha) for 'hilly and desert areas' to INR 22,000 (USD 297), INR 28,000 (USD 378) and upto INR 28,000 per ha (USD 378), respectively. The old cost norms that were set in the 2008 National Common Guidelines for Watershed Development Projects remain unchanged. Due to inflation, the old cost norms were generally viewed as inadequate to finance effective watershed management. The new cost norms will apply to all State/UTs taking up the new national watershed program. The two states participating in the REWARD Program are Karnataka and Odisha (hereinafter referred to as the 'REWARD Program' or the 'Program') and they have confirmed their financial contributions to the national program.

21. **New national watershed guidelines govern the WDC-PMKSY 2.0.** The new guiding watershed principles will address a number of key points including: land degradation neutrality[25] and nutritional security; welfare of the

[24] DoLR and SWDs use the term 'project' to refer to the watershed development activities covered by a single 'Detailed Project Report' and typically covering a sub-watershed or a micro-watershed. However, this document uses the term 'sub-project' to refer to the same, to avoid confusion with other national and state level projects.

[25] LDN is defined as Land Degradation Neutrality *or* "a state whereby the amount and quality of land resources, necessary to support ecosystem

watershed community and economic gains to the farmers; adaptation to climate change; biomass and livestock centric approach and emphasis on secondary agriculture; promoting land use and production systems in sync with climate and soil site-suitability of land resources; scientific planning based on technology inputs, spatial and non-spatial data, hydro-geologic and aquifer characteristics; institutional sustainability; and convergence of programs and resources. The thrust areas of the government program, specified in the new guidelines, are decentralization, flexibility, transparency, equity and community empowerment. In many ways, the new national guidelines mirror key elements and innovations from the successful KWDP-II.

PforR Scope

22. **The proposed PforR will support the next phase of the WDC-PMKSY program.** The next five-year WDC-PMKSY 2.0 program is implemented across all states and UTs and the REWARD Program is a sub-set of the same. The estimated total allocation to the REWARD Program for Karnataka, Odisha, and the DoLR is USD 243.25 million.[26] The proposed International Bank for Reconstruction and Development (IBRD) financing of the REWARD Program is USD 115 million– USD 60 million for Karnataka, USD 49 million for Odisha and USD 6 million for DoLR. In addition, the two states and the DoLR are commting an additional amount of USD 52.71 million, as per DEA norms for IBRD supported projects. At the central level, the REWARD Program scope covers management, monitoring, communication and knowledge sharing functions of the DoLR. At the state level, the REWARD Program will support implementation of key evidence-based watershed activities and value addition initiatives, and in so doing, aim to influence the WDC-PMKSY 2.0 in the two states.

23. **Each participating state meets specific qualifying and readiness criteria.** These criteria are: (i) extent of rainfed area in the state; (ii) socio-economic profile; (iii) financial readiness: the state leaders have agreed to provide counterpart financing of 30 percent of the cost of the Program to complement the financing provided by the GoI using the Bank's resources; (iv) financial performance: the state has demonstrated utilization of more than 75 percent of the funds released by the DoLR under the WDC-PMKSY in the past five years; (v) institutional readiness: the state has established institutional arrangements at the state and district levels for watershed development and initiated partnerships with technical institutions[27]; and (vi) demonstrated performance: the state has strong leadership in the State Watershed Department (SWD, also referred to as SLNA) and demonstrated capacity to plan and implement watersheds at scale with evidence of results.

24. **All participating states have been working with DoLR to implement watershed programs**. The participating states are Karnataka and Odisha.

25. **Karnataka** has a total geographical area of 19 million ha of which 12.9 million ha require watershed treatment. Under various schemes and projects to date[28], about 6.7 million ha is treated. Of the remaining area, 5.4 million ha is available for treatment. Starting in 2019-20, the state also allocated INR 1,000 million/year (USD 13.7 million/year) for the next five years to watershed development in drought prone areas, guided by successful approaches and innovations in KWDP-II. It was among the first states to constitute a separate Watershed Development Department in 2000. The technical design of the proposed REWARD Program draws heavily from the approaches and experiences of the KWDP-II, which closed December 31, 2019.

functions and services and enhance food security, remains stable or increases within specified temporal and spatial scales and ecosystems" (UN Convention to Combat Desertification).

[26] This includes: DoLR USD 5.41 million, Karnataka USD 148.65 million, Odisha USD 89.19 million. Please refer to Table 2 for details.

[27] SWDs have selected technical partners to provide site-specific land resource information, remote sensing data/applications, and hydrological data for taking up science-based watershed management in the states. *Karnataka*: National Bureau of Soil Survey and Land Use planning (NBSS&LUP) Bangalore; Indian Institute of Science (IISc) Bangalore; University of Agriculture Science (UAS) Bangalore; UAS Dharwad; UAS Raichur; University of Agricultural and Horticultural Sciences Shivamogga; and KSNDMC; *Odisha*: Odisha University of Agricultural Technology, Indian Institute of Technology-Bhubaneshwar, Indian Institute of Social and Water Conservation; Indian Institute of Water Management (IIWM), NBSS&LUP (Kolkata Centre) and Odisha State Remote Application Center (OSRAC).

[28] In addition to implementing WDC-PMKSY, Karnataka has implemented several externally aided projects with support from UK Government, DANIDA, Swiss Development Corporation (SDC) and the World Bank (KWDP-I and KWDP-II).

26. **Odisha** has a total geographical area of about 15.57 million ha divided into 20,079 micro-watersheds. Of these, 16,873 are treatable and 7,721 have been taken up so far under various schemes. A total of 9,152 micro-watersheds covering an area of about 4.7 million ha are yet to be treated. The WDC-PMKSY has been the main source of funding for watershed development in the state. The Odisha Mineral Bearing Area Development Corporation (OMBADC) set up by the Government of Odisha (GoO) in 2014 also provides funds to watershed development in the mining districts of the state. In 1977-78, the state created the Directorate of Soil Conservation, which is responsible for watershed development.

27. **In summary, the REWARD Program constitutes a significant part of the watershed development component (WDC) in the PMKSY scheme**. The two states and DoLR will have a total of USD 243.25 million based on a 60:40 cost-sharing, under the WDC-PMKSY 2.0 program. In addition, the two states will also put an additional amount equal to about USD 52.71 million, for REWARD. The financing to be provided by the IBRD will complement GoI's and state's resources and will support activities related to: strengthening the underlying institutional and policy environment, improving science-based watershed development, and demonstrate more efficient and effective planning and implementation of watershed sub-projects that contribute to livelihood enhancement.

28. **The allocation of the Bank's financing among participating states is equivalent to the financing amounts requested by the states based upon their cabinet clearances**. As the REWARD Program is demand-driven and performance oriented, it is important that the portion of Bank financing that is allocated to any state is contingent upon demand and demonstrate good performance. If a state is lagging in performance, the Department of Economic Affairs (DEA) and World Bank in consultation with DoLR could consider a full or partial reallocation of the state's portion of the Bank's financing to a well performing state(s) and possibly, subject to Bank's prior agreement in accordance with Bank policies and procedures, to a new participating state meeting the same eligibility criteria. Any existing participating state that seeks to benefit from an increased portion of the Bank's financing and any new participating state are required to submit a new request to the DEA as a prior condition for entry into the REWARD Program and subsequently fulfill the state readiness criteria, including a cabinet clearance. If these changes and adjustments become necessary, the World Bank will restructure the Program to reduce the state targets in any individual poorly performing states and the associated disbursement-linked indicator (DLI) allocation, and concurrently process higher targets and financing allocation for the better performing states or a new state. Additional financing may also be considered by the World Bank. At the time of appraisal of the proposed Program, the state of Rajasthan expressed an interest to participate in the REWARD program.

Key Results Areas

29. **The REWARD Program is divided into two Results Areas.** The Results Areas outline the broad interface between Bank contributions to the national watershed program at the central and state levels, and the key results that the REWARD Program will incentivize (Figure 1).

Figure 1: The REWARD program scope (state level)

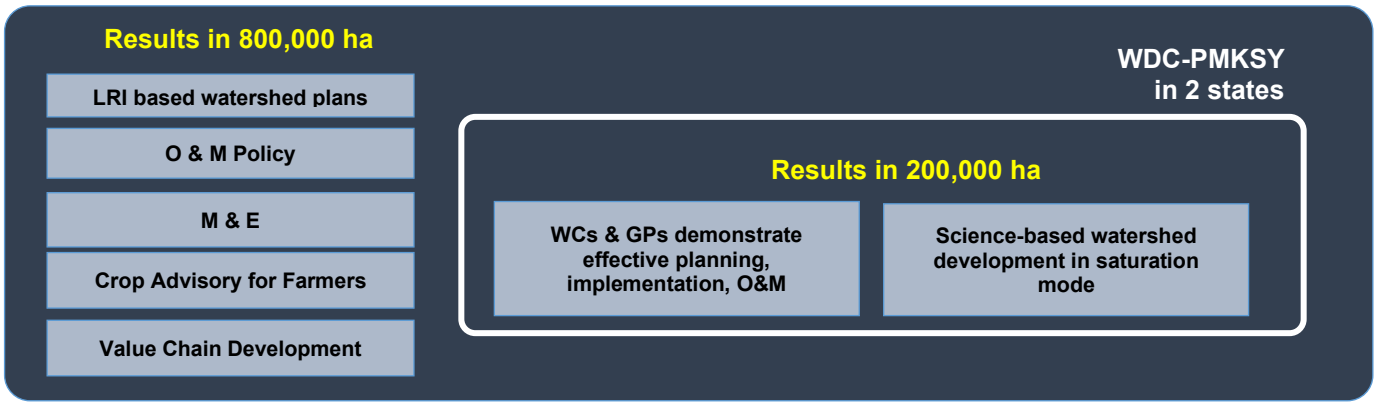


Table 1: Program Scope

	WDC-PMKSY 2.0 program	REWARD Program	
	Nation-wide program	**National level**	**State level**
Objective	To ensure sustainable improvement in productivity and livelihood/ income potential of land through development of rainfed and degraded areas including wastelands	Strengthen capacities of national and state institutions to adopt improved watershed management for increasing farmers' resilience and support value chains in selected watersheds of participating states	
Coverage	DoLR's national coordination role; Implementation by all states and UTs	DoLR's national coordination role	States of Karnataka and Odisha
Area (in hectares)	4.95 million ha to be treated during 2021-2026	Not applicable	0.8 million ha
Financing	USD 1.68 billion (central share of USD 1.10 billion, state share of USD 0.58 billion)	USD 17.4 million (of which IBRD provided USD 6.0 million)	Karnataka: USD 234.4 million (of which IBRD provided USD 60 million) Odisha: USD 159.2 million (of which IBRD provided USD 49 million)
Duration	2021-22 to 2025-26		
Activities	• Institutional arrangements at national, state, district, watershed sub-project (community) levels • Watershed development sub-projects (entry point activities, DPR preparation, watershed works, value chain interventions, livelihood activities for asset-less persons) • Technology inputs (use of Geographic Information Systems and remote sensing) • Capacity building • Monitoring, evaluation and learning	• Development of supportive policy on technical standards at national level • A national Centre of Excellence (CoE) on watershed management	• Strengthening community institutions in watershed management • Enhancing institutional capacity for watershed management • Science-based watershed development sub-projects (+LRI and hydrology-based DPR preparation, saturation mode of watershed works, value chain interventions, livelihood support for COVID-19 recovery) • Agro-advisories for farmers • Development of supportive policy at state level on O&M • Strengthening M&E

Results Area 1: Strengthened institutions and supportive policy for watershed development

30. Results Area 1 will focus on strengthening the institutional capacity and policy environment for science-based, participatory watershed development in the participating states. The key results under this Results Area and the supporting activities are detailed in the following paragraphs:

31. Strengthening community institutions and local government bodies engaged in watershed management by: (i) developing detailed guidelines for WCs and GPs for each phase of watershed development; (ii) developing and

delivering training modules on inclusive participation and governance systems for WCs, GPs[29] and other relevant user/common interest groups, with a special focus on the women representatives in these bodies; (iii) developing and rolling-out a performance assessment tool and incentive system for effective planning, implementation and sustainable watershed management[30] by WCs and GPs; and (iv) capturing data on performance of WCs and GPs. The Program will support the following activities on women's representation in decision-making roles and empowerment: systemic engagement of women as decision-makers in watershed committees, watershed development teams and water user groups and other common interest groups; integrating clearly defined roles for women in all four phases of watershed development; targeted leadership and technical training for women leaders on effective watershed management practices; consultations with women's groups as part of the baseline survey to be included in DPRs preparation/implementation and O&M phases; and (v) state-level MIS systems to adopt gender-disaggregated data collection in watershed planning.

32. Enhancing institutional capacity for watershed management, by: (i) developing a human resources policy for attracting and retaining an adequate number of professionals, including targeting women professionals, with necessary skill sets at various levels; (ii) placing critical human resources at the state, district, block/sub-block levels, especially in the areas of hydrology, agriculture, institution building, social inclusion and gender; (iii) designing and delivering core training modules on operationalizing women's consistent representation and decision-making in WCs, inclusion and social sustainability measures in watershed development at the state, district, block/sub-block levels; (iv) providing equipment, such as information technology (IT) and communication systems, and training to support planning and management; and (v) contributing to national and international knowledge events on watershed management.

33. Strengthening dissemination of experience and knowledge among states by: (i) establishing a national center of excellence[31] on science based watershed management in Karnataka, drawing on the expertise and experience of key technical partners; (ii) developing the curriculum framework, teaching–learning modules and materials on areas such as climate-resilient land management practices, climate smart agriculture, climate information services, climate-resilient irrigation or drainage services, community water management systems, and science based watershed management; (iii) rolling-out trainings for national and states functionaries; (iv) carrying out action research studies and demonstration pilots on thematic areas relevant to climate-resilient land and agriculture management practices and science based watershed management; (v) identifying technologies and tools for science based watershed management for customization, calibration and testing prior to dissemination for scaling up; and (vi) developing and managing a knowledge portal on climate-resilient and science based watershed management.

34. Supporting policy for watershed development, by developing: (i) data and lessons to support national technical standards on science-based watershed development; (ii) strong operation and maintenance policies for states for watershed management; and (iii) a pilot of science-based fertilizer demand and supply policies[32].

35. Strengthening monitoring and evaluation systems at national and state levels, by: (i) developing and deploying a GIS-enabled management information systems platform; and (ii) establishing a scientific assessment and evaluation system. Specifically the MIS platform will focus on tracking activities, outputs and outcomes; integrates tracking of

[29] The guidelines will include provisions for mitigating risk of elite capture and exclusion of vulnerable groups including women. These guidelines would be complementary to the new national watershed guidelines, providing more detailed local guidance to WCs and GPS on their roles and responsibilities with watershed development programs

[30] The Performance Assessment Tool will have indicators and a scoring system. The indicators could include: handing over of treated watersheds to WCs/GPs completed; percent of Watershed Development Fund mobilized by the WCs/GPs; asset register maintained by WCs/GPs; training of WC/GP members on O&M of watersheds completed; multi-year O&M plan developed by WCs/GPs.

[31] CoE will be established within the University of Agricultural Sciences in Karnataka in close collaboration with DoLR and NRAA. It is envisioned to potentially expand the CoE in the longer term into a broader coalition of national and international partners with GoI's strategic support and emphasis on a self-sustaining model.

[32] Proposed fertilizer pilots will focus on aligning soil fertility status, fertilizer demand and its supply through interventions including – awareness building of farmers on soil nutrient status; influencing fertilizer purchase decisions of farmers to align them to the soil fertility status to avoid inappropriate use and overuse of chemical fertilizers; and nudging farmers towards adoption of integrated soil fertility management.

process efficiency and quality (such as time taken for each phase in the watershed sub-project cycle); provides for real-time updating and analytics; and strengthens gender-disaggregated data systems to adequately capture the priorities of women. The scientific assessment and evaluation system will include an impact evaluation at the state level that encompasses the application of remote sensing and GIS technologies, process monitoring, and thematic studies for assessing change in specific parameters (such as groundwater level, sediment load, soil organic carbon) to evaluate the effectiveness of watershed investments.

Results Area 2: Science-based watershed development for climate resilience and enhanced livelihoods

36. Results Area 2 will concentrate on science-based watershed development and help demonstrate more efficient and effective planning and implementation of watershed sub-projects that contribute to climate resilience and livelihood enhancement. The emphasis on climate resilience is of critical importance in rainfed areas and the focus on livelihoods is necessary, especially in the context of COVID-19, as it will enable quicker local/community recovery and build longer-term resilience. The key results under this Results Area and the supporting activities are detailed in the following paragraphs:

37. Developing and implementing science-based watershed development plans[33], by: (i) developing partnerships between SWDs and scientific and technical institutions in key areas[34]; (ii) developing land resource inventories and hydrology databases; (iii) developing decision support system tools; (iv) developing digital libraries and portals; and (v) developing detailed reporting for select micro-watersheds[35].

38. Empowering farmers with science-based and just-in-time agro-advisories, through information and *communication technologies* channels in partnership with agriculture extension systems, tailored to meet the requirements of small, marginal and women farmers.

39. Enhancing livelihood and COVID-19 recovery by the poorest households and women, by: (i) establishing or strengthening FPOs in select watershed clusters, including FPOs led by women; (ii) providing working capital to FPOs; (iii) establishing partnerships to enhance local and distant market linkages with farmers and FPOs; (iv) developing basic agri-processing infrastructure in the FPOs to reduce losses; and (v) providing inputs to farmers and women agriculture workers linked to FPOs; all with an emphasis on climate mitigation and adaptation opportunities along the value chain. The Program's livelihood activities will aid in medium-term COVID-19 recovery and long-term rehabilitation of such vulnerable households by supporting: social mobilization and institution-building of the poor through formation or identification of existing SHGs and Common Interest Groups (CIGs); development and implementation of Livelihood Enhancement Plans (LEPs) of SHGs and CIGs;[36] (iii) sustenance support (such as kitchen gardens, multi-layer farming) to improve household food security; livestock and fisheries enhancement interventions; and (v) provision of wage employment for vulnerable households in watershed works. The SWDs may converge with the State Rural Livelihood

[33] States have received cabinet approvals for LRI data collection in a wider area of 1.5 million ha (Karnataka 1.0 million; Odisha 0.50 million ha) in support of long-term institutional capacity building and watershed planning preparing for the future. Farmer outreach will primarily be done in a subset (0.8 million ha) of this larger area for each state (Karnataka 0.5 million ha; Odisha 0.3 million ha) with a possibility of extension beyond these geographies. Activities (i) through (iv) will be implemented for 0.8 million ha area (going up to 1.5 million ha area). Activity (v) will restricted to 200,000 ha area in the states of Karnataka and Odisha.

[34] Participating states will establish and maintain partnerships throughout the project period through formal arrangements such as contracts and memoranda of understanding (MoUs) on the following, at a minimum: remote sensing, land resource inventory and hydrology. These partnerships will help the states to do LRI data collection in a wider area of 1.5 million ha (Karnataka 1.0 million; Odisha 0.5 million ha) in support of long-term institutional capacity building and data-oriented watershed planning for which state cabinet clearances are in place.

[35] The selection of model watersheds will be based on criteria including climate change vulnerability, drought incidence, extent of rainfed area, groundwater status, socio-economic status, value chain opportunities, capacity of district watershed teams, performance on ongoing watershed sub-projects, availability of LRI and hydrology data from earlier assessments (e.g., in Karnataka), and exclusion of forest areas, urban areas and command areas.

[36] Support will be in the form of grants to SHGs and CIGs. The SHGs will utilize this as a revolving fund for supporting individual or small group livelihood activities – that may include income generation activities, food security interventions such as food banks, drinking water supply augmentation, etc. The CIGs will utilize the grant as per the LEP for undertaking new or for up-scaling existing income generation activities. Skill development activities and emergency contingency fund will be supported as part of the LEP.

Missions (SRLMs), the Bank supported National Rural Livelihood Project, or similar programs for efficient and effective outreach to vulnerable households.

Climate adaptation and mitigation co-benefits

40. The stated objective of the REWARD Program and its design are focused on generating climate adaptation benefits, and to a limited extent, mitigation benefits. The Program objective focuses on improving farmers' resilience and emphasizes capacity building of institutions to implement improved watershed development. The Program design responds to local vulnerability by supporting and incentivizing implementation of science-based watershed development in the rainfed, degraded lands of Karnataka and Odisha. To enable this, the Program also supports and incentivizes capacity building of institutions, development of supportive policy and strengthening M&E. Science-based watershed development is a landscape approach that integrates sustainable management of natural resources with livelihood considerations.[37] The Program includes several elements of Climate Smart Agriculture such as soil management (soil moisture management, erosion control, integrated soil fertility management); water management (ridge area treatment, drainage line treatment, rain water harvesting, efficient irrigation); provision of weather-based and LRI-based agro-advisories to farmers; appropriate crop selection (including horticulture and agro-forestry); and value-chain interventions that can reduce post-harvest losses and enhance incomes through better access to markets.

Excluded activities and high value contracts

41. The REWARD Program will not finance any activities that would cause high or substantial Environmental and Social (E&S) risks and impacts, including: any land acquisition and/or involuntary resettlement; use of child and/or forced labor; destruction of any physical cultural resources; any work that would convert or encroach forest land, notified wetlands or any eco-sensitive areas; any work that would bring large scale submergence beyond the drainage line; any work that would convert common property resources including grazing lands; any work that would restrict minimum ecological flow of the rivers and rivulets; any activity that would use most toxic pesticides classified as 'Class I' (based on toxicity of the active ingredient) by the World Health Organization; and any work that would use or generate hazardous materials or chemicals beyond permissible levels specified in Schedule II of the Hazardous Waste Handling and Management Rules, 2016. The REWARD Program will also not procure any high value contracts[38] valued at or above Operational Procurement Review Committee (OPRC) thresholds (USD 115 million for works, USD 75 million for goods and non-consulting services and USD 30 million for consultant services). The Bank will provide implementation support to ensure that the REWARD Program remains in compliance with the agreed E&S requirements as well as the PforR policy.

Program Financing

42. The total REWARD Program financing will be USD 410.96 million – government (central and state shares) financing of USD 295.96 million[39], and IBRD financing of USD 115 million to be allocated to the DoLR (USD 6 million) and to the states of Karnataka (USD 60 million), Odisha (USD 49 million), subject to potential variations in allocated amounts based on performance during implementation.

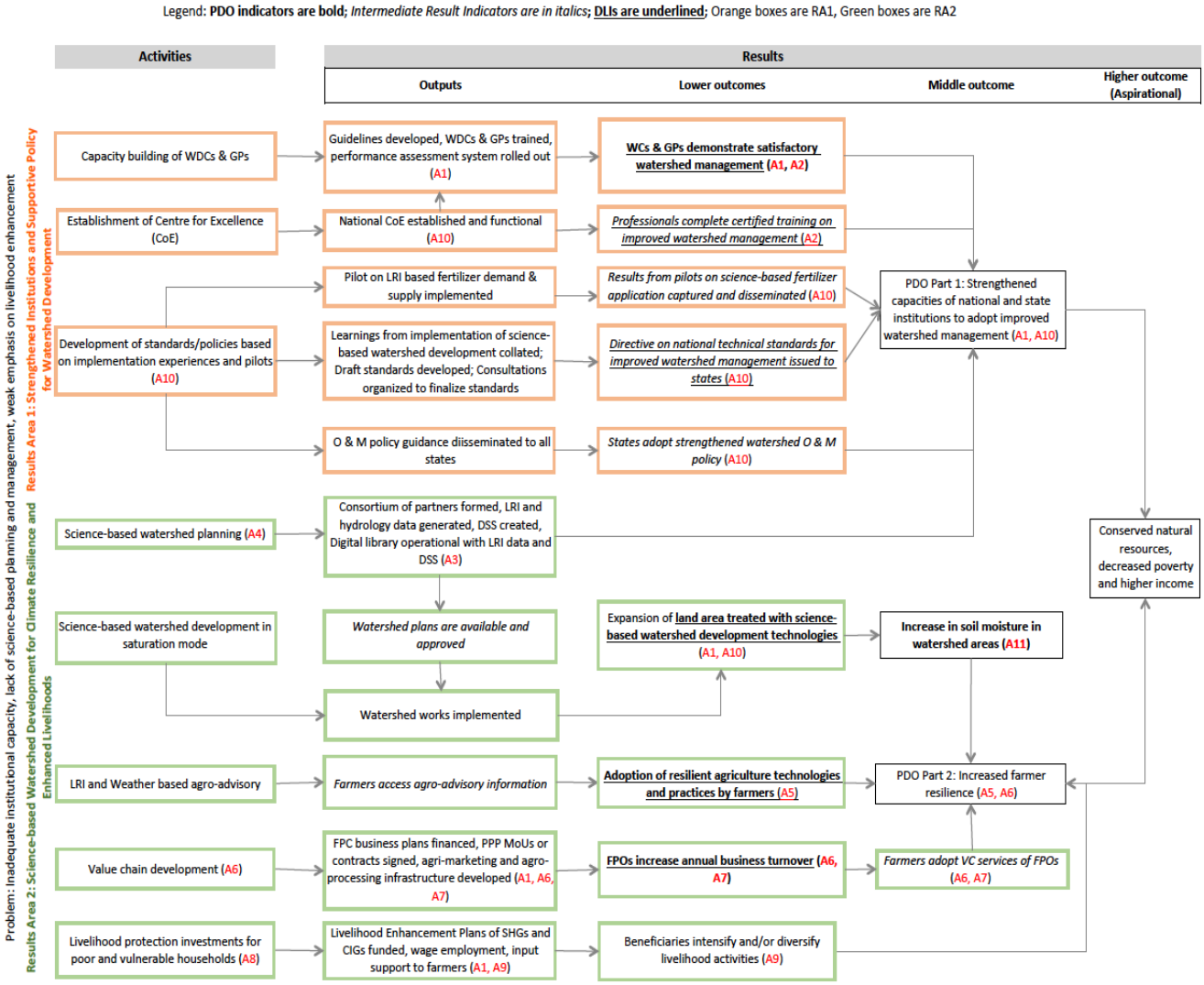
[37] Landscape management (*https://csa.guide/csa/systems-approaches#article-25*).

[38] Contracts with estimated values exceeding the monetary amounts, as may be amended from time to time, that require mandatory review by the Bank's OPRC.

[39] Includes government contributions of (i) USD 243.25 million WDC-PMKSY 2.0 budget (central and state shares combined) and (ii) USD 52.71 million borrower's contribution. Further estimated funding to be provided under WDC-PMKSY 2.0 to DoLR (USD 5.41 million), Karnataka (USD 148.65 million) and Odisha (USD 89.19 million) i.e., USD 243.25 million will be utilized for the implementation of watershed project activities as per the guidelines of WDC-PMKSY 2.0.

Theory of Change (ToC)

Figure 2: Theory of Change



Assumptions

A1 - Communities see value in forming and sustaining institutions
A2 - District/block/sub-block officials, extension agents and GPs are interested in science based watershed development
A3 - Good quality technical and scientific agencies are available and interested in partnerships and deliver on timely basis
A4 - SWDs actively collaborate with technical and scientific partners in a timely and sustained manner
A5 - Farmers see value in utilizing the information (LRI, weather advisory) for farming practices, fertilizer cost savings, etc., and have resources to adopt these
A6 - Farmers interested in undertaking collective activities on value chains
A7 - Private sector is interested to provide value chain support in rural rainfed areas
A8 - Poor and vulnerable households in the watershed areas are accurately identified
A9 - SHGs and CIGs see value in LEPs, develop and implement them in a timely manner
A10 - DoLR and SWDs provide sustained leadership to the project
A11 - Watershed treatment activities are effectively implemented

Program Development Objective (PDO) and PDO Level Results Indicators

REWARD Program Development Objective

43. Strengthen capacities of national and state institutions to adopt improved watershed management for increasing farmers' resilience and support value chains in selected watersheds of participating states.

PDO Indicators

a) Percentage of Watershed Committees (WC) and Gram Panchayats (GP) which demonstrate satisfactory watershed management as measured through a performance rating system
b) Land area treated with science-based watershed management technologies
c) Number of farmers who adopt resilient agriculture technologies and practices
d) Increase in climate-adjusted soil moisture in targeted watershed areas
e) Direct Program beneficiaries (number, disaggregated by gender and social group).

44. **The primary beneficiaries of the REWARD Program are communities in rainfed areas that rely on sustainable land and water resources for livelihoods and ecosystem services**. The sustainable development of watersheds based on better scientific inputs and technical capacities will lead to more effective conservation of soil, improved surface and groundwater availability and efficiency of use, and enhanced agricultural productivity and profitability, thereby generating sustainable improvement in incomes. In particular, it will have positive impacts on women, small and marginal farmers, and agricultural laborers. The efforts to ensure social inclusion in watershed planning and management will enhance the benefits that accrue to the most vulnerable.

Disbursement Linked Indicators and Verification Protocols

45. Disbursement of funds will be linked to DLIs across the two Results Areas. The DLIs have been finalized in consultation with the DoLR and the two participating SWDs considering the need to signal critical actions in the achievement of the PDO; the need for a financial incentive to achieve the intended results; practical considerations of verifying achievement; and states' capacity to achieve the results during the Program implementation period. The DLIs are listed below. The definitions of the DLIs, the year-wise results to be achieved, and the verification protocols are presented in Annex 2.

Results Area 1: Strengthened institutions and supportive policy for watershed development

- DLI #1 Percentage of Watershed Committees (WC) and Gram Panchayats (GP) which demonstrate satisfactory watershed management as measured through a performance rating system (USD 21.59 million)
- DLI #5 Number of professionals who complete certified training on improved watershed management provided by National Center of Excellence on Watershed Management (USD 10.0 million)
- DLI #6 National technical standards for improved watershed management updated by DoLR and directive issued to states (USD 5.98 million) (DLI for DoLR).

Results Area 2: Science-based watershed developent for climate resilience and enhanced livelihoods

- DLI #2 Land area treated with science-based watershed management technologies (USD 40.13 million)
- DLI #3 Number of farmers who adopt resilient agriculture technologies and practices (USD 16.16 million)

III. PROGRAM IMPLEMENTATION

- DLI #4 Number of FPOs with 25 percent increase in business turnover relative to baseline (USD 20.85 million).

Institutional and Implementation Arrangements

46. **The DoLR at the national level and the SWD at the state level will be the primary implementing agencies**. These institutions have been implementing watershed programs since the 1980s and the national and state leadership is very

experienced. The sector management is decentralized with roles and responsibilities clearly defined for institutions at district, block and GP levels. However, there are capacity and skill gaps and understaffing at the district and block levels. The GPs and WCs also are weak and need adequate capacity building and performance monitoring. The REWARD Program will follow the existing institutional structure and build capacities, as required, at different levels. The plan for addressing these weaknesses is detailed in the capacity building section.

Details of critical roles and responsibilities of the institutions implementing REWARD

47. **Department of Land Resources (DoLR), supported by National Rainfed Area Authority (NRAA)**: Establish a Program Management Unit (PMU) for the REWARD Program; mobilize financial resources for state Program implementation; ensure functioning of the Secretary level national level steering committee to improve convergence between agriculture, watershed, groundwater and other related departments; establish a national level technical committee (headed by the NRAA) to review the scientific protocols developed by states; strengthen the national web-based portal; support implementation in REWARD Program states through coordination, guidance and monitoring with national technical agencies; organize national/international knowledge exchange events; develop/refine national technical strandards for watershed development and advise states; distil lessons from the REWARD Program and mainstream these into the revised national guidelines.

48. **State Watershed Department/State Level Nodal Agency:** Strengthen the exisiting SLNAs to manage the REWARD Program; sign MoUs with qualified scientific and technical partners for LRI and hydrology data collection and application of DSS tools and hosting the data on a digital library; develop standard protocols for using digital data for watershed planning and train district and block level staff in its use; strengthen the existing MIS, M&E and grievance redress mechanism (GRM) systems and adopt the same for the Program; follow an institutional staffing plan for strengthening district and block offices and implement the same; strengthen policy and guidelines for maintenance and monitoring of treated watersheds; develop policy and guidelines for performance incentives for WCs/GPs; monitor Program performance; develop quarterly, half yearly, annual progress reports; support state/district training institutions in delivering required trainings; develop IEC content and tools for communications with WCs/GPs and farmers; and manage finance flows and ensure regular audits. Additional responsibilities for Karnataka as the 'lighthouse' state are to: establish a national CoE on watershed development; support officials and technical partners in other states on implementing LRI and DSS tools; work with the DoLR on national and international knowledge sharing.

49. **State and district training institutions**: Refine current training modules to incorporate science-based approaches; train Master Trainers, in collaboration with technical partners, and plan for training others; develop annual capacity building plans; deliver trainings; and assess training quality and knowledge transfer.

50. **District level offices**: Supervise and support the work of the program implementation agency; coordinate with the district level line department units for programmatic synergies; maintain district level MIS data; plan and implement training events for all key stakeholders; coordinate with the PMU.

51. **Program Implementation Agency** (PIA) (either a government unit or NGO): Develop DPRs for selected micro-/sub-watersheds using science-based site data, DSS tools, and with a saturation mode; educate communities on the science-based approach by forming user groups and watershed committees, and actively engage them in the sub-project cycle; maintain and update all records in the MIS system; support WC/GP in implementation and resolving of any critical issues; and coordinate with block offices and other stakeholders.

52. **Watershed Committee/Gram Panchayat**: Form user groups and watershed committees with representation from all stakeholders; actively participate in preparing DPR[40]s; implement plans in an effective manner; ensure effective O&M of treated watersheds; maintain all required records; and resolve all grievances.

[40] DPR is the Detailed Plan Report of a watershed sub-project. It is based on technical inputs and participatory community planning. It includes details on the watershed, user groups, problem typology, management plan with proposed interventions, institutional mechanisms, capacity building plan, expected outcomes, phasing and budgeting, etc., supported by relevant maps. The management plan includes Soil and Water Conservation Plan, Productivity Improvement Plan for major agriculture and horticulture crops, Crop Plans, etc.

53. **Multi-stakeholder platform**. The World Bank report on Watershed Development in India (2014) underlined the importance of linking soil and water conservation efforts with livelihoods for greater sustainability. Achieving this linkage requires coordinated efforts across key line departments, such as agriculture, horticulture, rural development and forests. As the REWARD Program aims to promote approaches based on better scientific planning, saturation in treatment coverage, and overlaying value chains, active collaboration between line departments and their own programs is essential.[41] The LRI data and DSS tools can also assist other line departments in planning interventions and targeting their resources in watersheds, hence providing them incentives to collaborate with SWDs. Similarly, while the private sector can bring in much needed technology advancements and market linkages that benefit target communities, they in turn benefit through enhanced business opportunities. To promote collective thinking and action on these fronts, the Program will promote a high-level Multi Stakeholder Platform (MSP). The MSP will identify and advocate appropriate inter-department policies and ensure private sector participation. This MSP approach provides strong incentives for cross collaborations. The MSP in Karnataka,[42] supported by the 2030 Water Resources Group (WRG),[43] created a new workstream to support the REWARD Program.

54. Karnataka, being the designated 'lighthouse' state, will also undertake activities related to: continuing development of improved science-based approaches and tools; sharing knowledge, protocols and processes with other states; and playing a key role, along with the DoLR, in organizing national and international knowledge exchange events. Karnataka will also establish a national CoE on watershed management in collaboration with nationally renowned technical organizations, to train professionals from across India and other regions on innovative approaches and technologies for improved watershed management.

A. Results Monitoring and Evaluation

55. **Strengthening existing national-level M&E systems that are limited in scope.** The DoLR currently relies on their existing online MIS for internal M&E services, with inputs from the states. The national MIS mainly tracks physical and financial progress at the state level. The existing national MIS needs to be strengthened to report on a wider range of indicators from the states, as part of building a more comprehensive M&E system. State M&E systems that are often more robust would also benefit from further improvements.

56. **Strengthening state and national M&E**. The Program accords high priority to M&E. A robust M&E Plan (see Annex 1) which focuses on five PDO indicators and eight Intermediate Results (IR) Indicators has been developed. At the state level, the SWDs with appropriately trained staff, will have the overall responsibility to coordinate, monitor and report on all the indicators at the prescribed frequency. The use of remote sensing (such as statellite and drone imagery) for tracking results (such as increase in soil moisture, change in vegetative cover, siting and number of soil and water conservation structures), is also envisaged. An impact evaluation with baseline, mid-term and end-term studies will be undertaken by hiring an impact evaluation agency in the states. The evaluation studies will adopt a comprehensive approach covering technical, economic and social parameters, and an appropriate set of indicators and instruments drawing from international best practices. Evaluation studies are envisaged to lead to the development of a standard methodology (sample size, critical indicators, measurement tools, basic analytics, report format) for impact evaluation of watersheds that can benefit programs nationally and even globally. Ongoing process monitoring will enable tracking of progress on the quality of community level processes. At the national level, the Program will support the development of a more comprehensive M&E system linked to the states to improve national reporting. World Bank's evaluation experts and economists from the Development Research Group (DECSI) will guide the impact evaluation in

[41] Key programs include PPP-Integrated Agriculture/Horticulture Development, MGNREGA and other regular programs.
[42] MSP in Karnataka has been formed on 28 March 2017, through a Government Order. The Steering Board is headed by the Chief Secretary. Other members are from water related departments, private sector, civil society, and academia. The current focus of the MSP is on issues related to agriculture water, urban water and industrial water. These themes are addressed by focused workstreams, comprising of members from public, private, civil society and academia.
[43] 2030 Water Resource Group's agenda in India aims to catalyze water security in the country's largest river basin, covering more than 10 million square kilometers and affecting more than 300 million people.

REWARD.

57. **Strengthening state and national MIS**. SWDs will develop and roll out an enhanced MIS to capture essential details of program management, field-level implementation details, Program results, fiduciary aspects, financial flows, grievances, post-implementation sustainability, among others, using a state-of-the-art IT platform for analytics and reports. A web-based architecture is proposed for the MIS, incorporating remote sensing and GIS-based monitoring, analytics and reporting. This would be done, however, with the overarching consideration of ensuring that the state MIS merges with the existing national MIS; such that, while the state MIS becomes broader in data coverage (i.e., goes beyond physical/financial performance), it does not supplant the structure of the national MIS which has a broader geographic coverage. The DoLR and states will agree on a set of core indicators to meet WDC-PMKSY 2.0 requirements.

58. **Oversight arrangements**. All participating departments will have M&E focal points and share their annual work plans and monthly progress reports pertaining to the achievement of relevant results indicators and DLIs with the SWDs. Independent verification agencies (IVAs), with support from the SWDs and DoLR, will verify the achievement of the DLIs, operating in accordance with agreed, pre-defined protocols. A national level steering committee will review the Program's progress every six months.

B. Disbursement Arrangements

59. To ensure consistency, accountability and transparency in disbursing funds against DLIs, the DoLR and the two states contracted qualified and capacitated Independent Verfication Agencies (IVAs), following their own procurements processes. The Terms of Reference (ToRs) for the IVAs were developed by the DoLR and the two states in consultation with the Bank. The IVAs shall verify all DLRs as per the detailed protocols provided on the ToRs.

60. DLI achievement reports will be prepared by the DoLR and SWDs, who will submit them to the IVAs for scrutiny, cross-checking and verification. Thereafter, the IVAs will submit verification reports to the DoLR and SWDs. Based on the verification reports from the IVAs, the DoLR and SWDs will periodically prepare and submit disbursement request applications to the Bank for results satisfactorily completed and verified by the IVAs. The actual disbursed amount will depend on the verified results. The DoLR and SWDs may apply for disbursements as soon as targets are met by providing the necessary documentation to the Bank. Once it is fully satisfied with the evidence of achievement of a DLR, the Bank will inform the DoLR and SWDs accordingly and confirm the availability of corresponding funds for a disbursement.

61. The timeframe for achieving each DLR considers the government's need for budget predictability and flow of funds. There is no restriction for early achievement of the DLRs; payment will be available for disbursement as and when targets are achieved and verified. Other DLIs will be evaluated when completed and verified as achieved.

62. Where targets for DLIs are not achieved in any particular year, the related disbursements will be rolled over into the next year. On the other hand, if achievements consistently outperform targets, the corresponding credit amount may be fully disbursed before the end of the operation. Prior results financing of DLIs (2 and 6) up to an aggregate amount of USD 13.21 million (USD 1.48 million for DoLR, USD 5.88 million to Odisha, and USD 5.85 million for Karnataka), will be possible for results achieved achieved prior to the loan signing date but on or after September 1, 2021.

63. The amount of World Bank financing under the Program will be equal to or less than the total underlying Program expenditures which is financed from government resources. Any unaccounted or unutilized funds disbursed by the World Bank at the close of the Program, will be refunded to the World Bank. This will be applied to DoLR and the two participating states in a disaggregated manner, that will ensure that the underlying expenditures for each of the implementing agencies are reconciled with the amount of the World Bank financing allocated therein.

C. Capacity Building

64. Strengthening capacity of national and state level watershed institutions is part of the PDO and is also linked to key Results Areas and one DLI. The Program will address capacity building through human resources assessment, planning, skills enhancement and trainings; systems development and deployment for improved planning and

monitoring; and performance incentives for WCs/GPs.

65. **Human resources, skills and training**: The Program will support the development of appropriate human resource policies for hiring, training and retention of skilled personnel (Results Area 1). Existing state- and district-level training institutions will be supported to refine training modules, develop annual training calendars and implement the same. Training modules will include science-based planning and monitoring, program management, community outreach and participatory approaches, communications and related activities (Results Area 1). The training modules will be developed with the assistance of technical agencies; master trainers will be trained, who in turn will train the district- and block-level officers. Standard operating procedures (SOPs) for various sub-project cycles will also be developed and made available to staff for use with the government program. At the national level, the Program will support hiring of qualified PMU team members to support the DoLR functions and strengthen the NRAA for its role as envisaged in the Program.

66. **Systems development and deployment**: The Program will promote collaboration with national- and state-level scientific and technical agencies for: gathering LRI, hydrology and other data; coding and uploading the data to the digital library; and applying required DSS tools to DPR planning and execution. Protocols, plans, field guides and MoUs developed by Karnataka under KWDP-II will be refined and adopted by other states (Results Area 2). Similarly, the Program will support the development of an improved MIS system for tracking the key sub-project cycle components, site-level sub-project management (such as procurement, quality of construction/works, time taken, cost) and the O&M of treated watersheds. The improved MIS system will use technologies such as GIS, remote sensing imagery from satellites and drones, and required algorithms for analytics and dashboard displays (Results Area 1).

67. **Managing environmental and social risks**: Capacity building on data-driven and science-based approaches for developing and implementing DPRs and monitoring, will help mitigate environmental risks related to hydrology, soil erosion, soil moisture and fertilizer use, among others. Also, capacity building related to the dissemination of LRI cards will help improve decision making by farmers on appropriate crop selection and agriculture practices. The Program will undertake appropriate trainings and capacity building measures on participatory watershed planning and implementation, adoption of gender and socially inclusive processes, governance and functioning of the WCs and GPs, grievance redressal and social accountability, design of SOPs for different sub-project cycles, social outreach and IEC activities to build awareness of target communities, and improving MIS systems to capture key data on social inclusion and sustainability issues. In addition, the Program will design and implement 'performance incentives/rewards' to the WCs/GPs to enhance active engagement, local innovations and accountability (see Annex 5).

68. **Fiduciary capacity**: The capacity for managing fiduciary and procurement issues will be strengthened through hiring and training required staff at the district and block levels, improving monitoring systems and capturing related data. The states will also adopt the Public Financial Management System (PFMS) and appropriate audit arrangements.

IV. ASSESSMENT SUMMARY

Technical (including Program economic evaluation)

Key Sector Weaknesses

69. **Based on the analysis, the following have been identified as key weaknesses in the sector:** (i) weak institutional capacity, especially at the decentralized levels of district, block and GP for scientific planning, effective implementation and O&M; (ii) inadequate science and hydrology applications in the development of watershed plans (currently, they are largely based on community knowledge and demand physical surveys and inadequate data sets); (iii) little attention to demand-side water use and management; (iv) small size of hydrologic investments in sub-watersheds; (v) monitoring largely limited to physical and financial progress with no scientific impact assessments; (vi) inadequate mechanisms and incentives to promote local governance, innovations and ownership, and community participation is addressed as a one-time activity; (vii) ineffective policies and approaches to support O&M of treated watersheds; (viii) poor linkages to value chains and markets for farmer-income improvements; and (ix) poor inter-departmental coordination for integrated planning and resource utilization. However, the draft revised national watershed guidelines developed by the DoLR, advocates strengthening these areas and will be a solid basis for Program implementation.

Strategic Relevance

70. **The Program is well designed to address the key challenges listed above and transition towards the next generation of reforms in the watershed sector**. The key strategic interventions in the Program are: (i) strengthening institutional capacity from DoLR to community institutions; (ii) adoption of scientific data (such as LRI, hydrology)-driven[44] approaches for planning, through partnerships with established scientific and technical organizations; (iii) strengthening community participation and local governance through capacity building, IEC, performance monitoring, social audits and performance incentives; (iv) enabling policies for improved O&M; (v) providing appropriate trainings and advisory services to farmers through ICT platforms and extension activities for climate resiliency[45]; (vi) linking with value chains[46]; (vii) piloting behavior change for rationalizing fertilizer use in sync with LRI data; (viii) improving the M&E system for tracking processes, outputs, results and impacts; (ix) establishing a national CoE for watershed management to train participating states and other states in science-based watershed development; and (x) use the lessons to develop national technical standards for adopting science-based approaches and disseminate the same to all states. From a sector point of view**,** strengthening the delivery processes will directly address the needs of the poor within the participating states and indirectly influence the lives of 86 percent of India's poor, who are living in rainfed watersheds. Thus, the Program supports the GoI's vision of developing and rolling out a new generation watershed program.

Technical Soundness

[44] The LRI approach pioneered by Government of Karnataka under KWDP-II has built a comprehensive database down to farmer plot level. It includes data and information on land (especially soils), water, climate and socioeconomics to support better decision-making. Data on these bio-physical, socio-economic and hydrological characteristics of smaller land parcels in a micro-watershed (500 ha) are systematically collected to make a LRI atlas for that micro-watershed. The LRI along with the hydrology database and DSS help to produce a watershed plan for a sub-watershed (5000 ha). LRI atlases also provide data for advisories to farmers on crop selection, crop water management and nutrient management. In addition, several government schemes (such as 30 identified schemes in Karnataka) are expected to benefit from the data sets and tools generated. The LRI system will be flexible to allow for states to better meet their own unique conditions and needs. Furthermore in REWARD the possibility of leveraging data available on India's National Water Resources Information System (WRIS) into the LRI system will be explored.

[45] Includes the adoption of LRI and weather-based agro-advisories disseminated among farmers through information and communication technology (ICT) channels and the agriculture extension system. REWARD will support multiple extension channels including trainings, exposure visits, field demonstrations, mobile solutions (interactive voice response (IVR), short messaging service (SMS), mobile apps), in partnership with both government and/or private sector service providers and tailored to meet the requirements of small, marginal and women farmers.

[46] Includes the use of energy-efficient equipment and renewable energy in agri-processing, and development of climate risk resilient infrastructure where feasible. Synergy with agriculture value chains initiatives by the Bank as well as by other development partners will be explored including, for example, the Bank supported Odisha Integrated Irrigation Project for Climate Resilient Agriculture and value chains under the Karnataka Water Multi Stakeholder Platform (MSP), managed by the 2030 Water Resources Group in Karnataka.

71. **The Program is technically sound.** The Program incorporates key best practices from national and international experiences, including lessons from World Bank supported projects (KWDP-1, KWDP-2) and addresses key sector concerns. On the institutional front, the Program is well designed to strengthen capacities of the DoLR, SWDs and also GPs and watershed committees through a mix of tools such as: partnerships with technical organizations, capacity building of all stakeholders, developing SOPs for key sub-project phases, instituting performance incentives for GPs and committees, and facilitating effective collaborations between related departments and programs. The Program strikes a careful balance between a 'top-down' approach of developing and adopting science-based tools and a 'bottom-up' approach through strengthened community participation. The Program Results Areas and DLIs fully reflect this balance. Concrete and measurable benefits to the communities are ensured through: treatment of 200,000 ha benefitting about 72,000 farmers; about 20 percent increase in soil moisture status; promoting adoption of climate resilient technologies by about 43,200 farmers; strengthening/establishing about 30 farmer producer collectives with forward and backward value chain linkages; and reach about 115,200 farmers with LRI and weather based agro-advisory services to help improve productivity. In total the Program aims to benefit about 308,000 individual beneficiaries through various planned interventions. Simultaneously, through state-specific innovative pilots (such as the behavior change pilot on fertilizer use) and strengthening O&M policies, the Program will help create new knowledge that could enrich sector practices. The Program design differentiates roles for the DoLR and the states based on their mandate, ability, sphere of control and accountability for results. The states, while delivering benefits to target communities, will generate data-driven evidence that can be used by the DoLR to support the operationalization of new generation watershed guidelines, and also mainstream successful innovations. Similarly, the 'lighthouse' state of Karnataka will establish a CoE in science-based watershed management in coordination with the DoLR and technical partners, to benefit other states and countries.

Stakeholder Incentives

72. **The Program has reasonably good built-in incentives for effective participation of key stakeholders**. The incentives for key stakeholders are: (i) communities benefitting from improved productivity and livelihood opportunities; (ii) WCs/GPs having incentives and building capacities to improve their performance, which can also function as a good political incentive; (iii) district and block offices benefitting from improved team capacity and IT enabled tools (which contribute to reduced work load); (iv) SWDs benefitting from technical agency support, improved coordination with other line departments, and lessons from innovative pilots, all leading to more effective program management and enhanced results/impacts; and (v) generation of lessons that would help the DoLR to effectively implement the new national watershed program and achieve targets.

Expenditure Framework

73. **Watershed activities have sustainable funds flow in the country in general and particularly for Karnataka, and Odisha.** Under the recently concluded WDC-PMKSY these two states accounted for nearly 15.5 percent[47] of all funds disbursed by the DoLR across the country indicating the ability of these states to not only take up works on a large scale, but also match the center's funds with their own share. State government funding for watershed activities in Karnataka, and Odisha put them on a sound footing in terms of finances demonstrating strong commitment. All two states have the capability to manage a large number of watershed projects and are exploring technological applications to improve cost effectiveness.

74. Funds flow from the DoLR to the respective state treasuries under the WDC-PMKSY against a specific budget head in each state.[48] Expenditure is tracked at the treasury level only under this budget line and no further sub-heads are recorded. The WDC-PMKSY guidelines specify broad budget components and indicate the percentage of expenditure that could be incurred against each component. This provides the basis for each state to allocate funds to each project and track expenditure through their respective financial systems and exercise budgetary controls. In addition, states draw funds from MNREGS to complement funds for taking up the watershed works component of the

[47] Of the INR 197,000 million that DoLR disbursed under IWMP/WDC-PMKSY, Karnataka accounted for 10 percent and Odisha for 5.5 percent.
[48] Karnataka (budget line 2402-00-102-0-30) and Odisha (budget line 2431-20002).

WDC-PMKSY.

75. The projected expenditure plan for DoLR and the two states has been assessed based on current expenditure patterns and the budget approved by the Ministry of Finance, GoI in the EFC meeting held on August 6, 2021 for the new generation WDC-PMKSY 2.0 program. Under the expected expenditure from the DoLR for the REWARD Program, only 0.5 percent of the national expected outlay is considered (budget head 2501 - 11&12 in the Demand for Grants made annually by the DoLR), which is used for project management and guidance activities – the envisaged role of DoLR in the REWARD Program. The share of IBRD loan in the total program budget of USD 410.96 million is 28 percent; with 34 percent, 26 percent and 31 percent respectively for DoLR, Karnataka, and Odisha.

Table 2: REWARD: Program Budget (USD million)

	A	B	C	D	E	F
	Projected government share (under WDC-PMKSY)	Additional government share (DEA requirement)	Total government share (A+B)	IBRD share	Total program budget (C+D)	IBRD percent contribution to total program budget
DoLR	5.41	6.00	11.41	6	17.41	34%
Karnataka	148.65	25.71	174.36	60	234.36	26%
Odisha	89.19	21.00	110.19	49	159.19	31%
TOTAL	243.25[49]	52.71	**295.96**	**115**	**410.96**	**28%**

Monitoring and Evaluation

76. **The current M&E systems which are predominantly MIS will need strengthening and reinforcement**. The Program will support transition to a state-of-the-art monitoring, evaluation, learning and knowledge sharing system in two ways. First, by strengthening MIS on watershed management through the development and deployment of a GIS-enabled MIS platform that: focuses on tracking activities, outputs and outcomes; integrates tracking of process efficiency and quality (such as time taken for each phase in the watershed sub-project cycle); and provides for real-time updating and analytics. Second, by establishing a scientific assessment and evaluation system including a rigorous impact evaluation at state level that includes the application of remote sensing and GIS technologies, process monitoring and thematic studies for assessing change in specific parameters (such as groundwater level, sediment load, soil organic carbon) to evaluate the effectiveness of watershed investments.

Economic Evaluation

77. **Watershed development is expected to contribute to improved agricultural performance in targeted watersheds.** The REWARD Program will bring more area under cultivation, improve cropping patterns, intensity and management of fallow and degraded areas due to increased access to more stable water supplies. As a result, there will be significant positive externalities resulting from Land Use and Land Cover (LULC) patterns as well as from improved crop production practices. Four different scenarios have been assumed to calculate Economic Internal Rate of Return (EIRR) over a 20-year period.

- The EIRR of the project over a 20-year period for the base case, excluding benefits from GHG emission reduction, is 35.0 percent with a Net Present Value (NPV) of USD 285.4 million at a discount rate of 12 percent.
- The EIRR from watershed development and improved agriculture activities is 27.5 percent, which is higher than previous watershed development projects in India, as a result of reduced planning and implementation periods of watersheds as a result of scientific planning.

[49] Estimated funding to be provided under WDC-PMKSY 2.0 to DoLR (USD 5.41 million), Karnataka (USD 148.65 million) and Odisha (USD 89.19 million) i.e., USD 243.25 million will be utilized for the implementation of watershed project activities as per the guidelines of WDC-PMKSY 2.0. Furthermore, WDC-PMKSY 2.0 budgets presented for the two states are estimates based on analysis of past expenditures. For DoLR it is calculated @0.5% of the central share of WDC-PMKSY 2.0 budget. There is a slight difference between the final budget (INR 81,340 million) and the initial budget (INR 80,000 million) that was communicated on the central share of WDC-PMKSY 2.0 budget, hence there is a small difference between the WDC-PMKSY 2.0 budget for DoLR (earlier estimate of USD 5.41 million versus current estimate of USD 5.5 million).

- The benefits from the dissemination of agro-advisory services to improve farmers decisions and resilience improves the base case EIRR (excluding benefits from GHG emissions) to 31.8 percent.[50]
- The benefits of the value chain activities increase the base case EIRR (excluding benefits from GHG emission) to 32.8 percent[51] and the benefits from vulnerability reduction activities (excluding benefits from GHG emission) further improve the EIRR to 35.0 percent.[52]
- The EIRR calculations also assume a five percent operations and maintenance costs and a 15 percent tax rate on project costs (to account for transfer payments) over the 20-year period for which the EIRR has been calculated. Placing a monetary value on the potential GHG mitigation benefits in terms of reductions in GHG emissions and increased carbon sequestration (estimated at 9.39 million tonnes CO_2eq over the project life of 20 years), the base case EIRR increases to 39.2 percent. This assumes a shadow price of carbon per tCO_2eq of USD 40 for 2021 and reaching USD 50 at the end of the 20-year period, as recommended by the World Bank. The analysis was also conducted for a high shadow price of carbon scenario as recommended by the World Bank, resulting in an EIRR of 43.0 percent. The GHG estimation does not include the effects of value chain activities and promotion of diversified livelihood activities among vulnerable communities. These activities being demand based are difficult to estimate ex-ante and hence have not been included in the GHG estimates.

78. A sensitivity analysis was conducted to assess the impact of changes in the main parameters affecting the economic outcome of the REWARD Program because of: (i) changes in costs; (ii) changes in the expected benefits from the promoted Program benefits; and (iii) delays in execution due to the risks identified in the Program's risk analysis. The results show that the REWARD Program remains economically viable for a moderate range of changes in Program costs and benefits. A reduction in Program benefits by 20 percent results in an EIRR of 31.1 percent for the base case. A 20 percent increase in Program costs combined with a 20 percent reduction in Program benefits, coupled with a two-year delay of benefits, reduces the EIRR to 16.9 percent for the base case.

Fiduciary

79. **As per Integrated Fiduciary Systems Assessment (IFSA), the REWARD Program's fiduciary systems, subject to implementation of proposed mitigation measures, will provide reasonable assurance that financing proceeds will be used for intended purposes,** with due attention to the principles of economy, efficiency, effectiveness, transparency and accountability. The IFSA followed the World Bank's Policy for PforR and the related directive, identified key fiduciary risks that may affect the REWARD Program's development outcomes and recommended systems improvement and capacity-strengthening/risk mitigation measures that will be implemented during the life of the REWARD Program. Based on the IFSA, fiduciary risk of the REWARD Program is assessed as **'Moderate'.**

80. **Financial management:** Financial management activities for the REWARD Program draw lessons from and are built upon existing arrangements for IWMP/WDC-PMKSY. Similar to PMKSY, the REWARD Program will be budgeted for as a separate line under the implementing departments/ministries and approved annually through the respective legislative processes. In Odisha, the budgets are drawn and transferred into the bank account(s) of SLNA and thereon into bank accounts at district/block and WC levels. In Karnataka, the financial management arrangements are in part, embedded within the state's public financial systems using computerized treasury systems (Khajane II) to meet funds for state/district and block levels. At the WC level, REWARD Program funds will be transferred into bank accounts. The key risk with the fund flow arrangements in Odisha and Karnataka, as identified during the assessment is that a

[50] The benefits from agro-advisory services, is based on the learnings from "Karnataka State Natural Disaster Monitoring Center (KSNDMC) – Varuna Mitra Impact Evaluation Report, 2018" that estimates the direct benefits of agro-advisory services are estimated to be INR 5,107 per acre or INR 18,005 per farmer.

[51] The Value Chain benefit estimates have been estimated using similar World Bank funded projects in India (JOHAR, TNRTP, BTDP, NRETP). The benefits have been estimated to be an annum additional income of 13,232 per household engaged in value chain activities or a B/C ratio of 0.95.

[52] The Vulnerability Reduction benefit estimates have been estimated using similar World Bank funded projects in India (BRLP, TNPVP, NRLP) for simple and enhanced credit-based livelihood activities. The benefits have been estimated to be an annum additional income of 15,465 per household or a B/C ratio of 0.99.

significant quantum of project funds remains outside the state consolidated fund in external bank accounts. This practice also does not lend itself to efficient cash management as unspent funds could be better utilized elsewhere. As mandated by the GoI, Odisha uses the PFMS[53] for fund management and expenditure processing using the Expenditure, Advance and Transfer (EAT) module. In Odisha and Karnataka, expenditures for IWMP/WDC-PMKSY are also uploaded for each district on the web-based MIS portal of the DoLR periodically and are based on Monthly Progress Reports (MPRs). Several challenges have also been identified with respect to the state's ability to compile Program expenditures and prepare consolidated annual Program financial statements. As a mitigation measure, it has been agreed that Odisha and Karnataka will: (i) open separate single state level bank accounts with linked zero-balance bank accounts at the state, district, block and WDC levels; (ii) mandate the use of the PFMS platform for the Program, using the EAT module for all Program related expenditures; (iii) generate Program related financial reports on PFMS and strengthen the process followed for uploading data on financial progress on the DoLR IWMP MIS.

81. For IWMP/WDC-PMKSY, annual external audits are conducted by private chartered accountancy firms engaged by SWDs/Department of Agriculture (DoA)/PRDDs. The audits are conducted as per agreed ToRs. The audit reports were submitted on a timely basis and limited to certification of the annual financial statements of the scheme. The ToR has been strengthened to ensure that the audit coverage extends to cover REWARD Program expend, is comprehensive and covers procurement aspects as well. The ToR of the Program auditor would have a scope to confirm that none of the contracts awarded under the REWARD Program Expenditure Framework are above the 'high value thresholds' limits defined for the Program and none are awarded to a firm/individual debarred by the World Bank.

82. **Procurement:** Under the REWARD Program, procurement will be performed by respective watershed committees at the community level; respective SLNAs of Karnataka, Odisha; and DoLR. While more than 70 percent of procurable expenditure is estimated to be incurred at the community level by watershed communities, the DoLR has the smallest share of procurable expenditure. Based on the activities identified in the Program scope, the main procurable items are: (i) community procurement of works and supplies towards micro-watershed sub-projects; (ii) consultancy services such as the engagement of technical partners, capacity building, M&E, IVA, communication, knowledge management; and (iii) goods (such as laboratory equipment) and IT systems (such as development of a decision support system). The Program is not expected to procure any high value contracts.[54] The Karnataka SLNA will follow the Karnataka Transparency in Public Procurement Act 1998 (Amendment 2019) & Rules 2000 and other associated notifications/circulars. The Odisha SLNA will follow Odisha Financial Rules 2000 and various other notifications issued from time to time. The DoLR will follow the General Financial Rules 2017 and associated procurement manuals (goods/works/services) of the GoI. As mandated under their respective regulatory frameworks, each implementing entity will follow their respective e-tendering[55] systems above thresholds defined in their regulations; and for the procurement of goods, the Government e-Marketplace (GeM) portal of the central government will be used by all implementing entities. Watershed sub-project activities are to be implemented by the watershed committees based in the respective local communities using community procurement procedures. Activities such as needs assessment, DPR preparation, cost estimation for watershed projects, are governed by the Common Guidelines for Watershed Development Projects dated 2008 (revised 2011) of the GoI and will continue to be governed by new guidelines issued from time to time. Manpower for such works is sourced from the local community and paid at the wage rates notified by the GoI; supplies are sourced from local market at rates no more than those specified under Schedule of Rates (SoR) published by the respective state governments. Based on a sample review, system performance is assessed on key performance parameters like procurement cycle time, use of open tendering, bidder participation, cost/time over-run and number of complaints received. Performance is found acceptable, with a scope for

[53] Public Financial Management System [PFMS] developed by the Planning Commission and the Office of the Controller of Accounts, Ministry of Finance, GoI the objective of establishing a financial management platform for all plan schemes, a database of all recipient agencies, integration with core banking solution of banks handling plan funds, integration with state treasuries and efficient and effective tracking of fund flow to the lowest level of implementation for plan scheme of the Government.

[54] means contracts with estimated values exceeding the monetary amounts, as may be amended from time to time, that require mandatory review by the Bank's OPRC.

[55] https://eproc.karnataka.gov.in/ (Karnataka), https://tendersodisha.gov.in (Odisha), and https://eprocure.gov.in/ (DoLR).

improvement. One of the key risks is the likelihood of non-compliance for community procurement procedures which are derived from various government notifications (such as manpower rates, schedule of rates for supplies). The need to consolidate and codify these procedures and build provisions for social audit and provisions on the application of the Bank's anti-corruption guidelines, into a community procurement guidance manual is a recommended Program Action Plan (PAP) item. Inadequate procurement planning and oversight is another risk identified at the SLNA and DoLR levels. Risk will be mitigated by a PAP action which will require public disclosure of the procurement plan and contact award information; and regular monitoring using key performance indicators.

83. **Governance and accountability systems.** Under the larger governance framework of India, all government departments and agencies are covered under the Right to Information (RTI) Act 2005. The Comptroller and Auditor General (CAG) of India also carries out compliance audits annually, and audit-related queries. Central/state vigilance units have jurisdiction and power to undertake an enquiry or cause an enquiry/investigation to be made on any information that a public servant has exercised or refrained from exercising his powers, for improper or corrupt purposes. The Program will be subject to 'Guidelines on Preventing and Combating Fraud and Corruption in Program-for-Results Financing' dated February 1, 2012 and revised on July 10, 2015. These guidelines shall apply to all activities within the REWARD Program scope. As there is no distinction between World Bank-financed activities and government-financed activities within the REWARD Program, these guidelines shall be applied in an unrestricted manner on all activities within the Program boundary. To ensure that procurement related complaints are treated in a timely and fair manner, each SLNA will set-up a dedicated complaint handling system, allowing complaints to be posted by interested parties. This system will also be available to receive and address complaints at the community level, as a recommended PAP item. Also, specific arrangements are defined in action items to ensure compliance on anti-corruption guidelines of the World Bank.

Environmental and Social

84. **Environmental and social systems assessment.** An environmental and social systems assessment (ESSA) for the REWARD Program has been completed in line with the World Bank Guidance for conducting ESSAs for PforR financing operations, and separate reports have been prepared for the two participating states along with a consolidated summary report. The ESSA assesses the gaps in the existing institutional, operational and regulatory systems and capacities to manage E&S risks and priorities and recommends measures for strengthening them. The ESSA process involved desk review of relevant E&S plans/frameworks, implementation documents and other technical studies/reports related to national and state-supported watershed programs, including the World Bank supported watershed projects in Karnataka. Field visits and face-to-face consultations were carried out in Karnataka. Following the pandemic, multiple rounds of virtual consultations were held with government counterparts, partners and watershed community representatives (further details are provided in Annex 5).

85. **Environment and social risks and impacts.** The overall E&S impacts of the REWARD Program are likely to be positive, owing to benefits such as increased groundwater level, improved soil condition and increase in crop productivity due to multi-cropping, increased rural incomes and reduced poverty. The REWARD Program will not finance any activities that would cause high or substantial E&S risks and impacts, and an exclusion list has been prepared that lists out such activities (see Annex 5). The REWARD Program's overall E&S risk rating is 'Moderate', given that most of the potential E&S effects of the Program are localized, reversible and predictable, and can be effectively mitigated and managed through strengthening of the existing E&S systems of the watershed implementing agencies.

86. Strengthening watershed committees, PRIs and other community institutions and building their capacities is expected to increase people's participation, equitable and inclusive benefit sharing, gender equality and citizen's engagement in the watershed sector in the participant states. In addition, the Program will also enhance local employment and livelihood opportunities for watershed populations. While land acquisition and involuntary resettlement interventions are excluded from support under the Program,[56] selected watershed interventions may need to be screened for any small scale, adverse social impacts. Large scale construction sites, labor camps and labor

[56] Including activities included in the Exclusion List.

influx are not anticipated. The key social risks/issues relate to weak community ownership and preparedness to participate in science-based watershed planning and DPR preparation, as well as inadequate inclusion of small and marginal farmers and landless/asset-less households in watershed committees and among direct Program beneficiaries (especially women, scheduled castes, scheduled tribes and other socially vulnerable groups). Marginalization of women in watershed committees, and infrastructure and livelihood planning, lack of mechanisms for management of E&S risk mitigation measures in watershed development activities also pose a risk.

87. The potential environmental risk emanates from the large and varied geographical scope of the Program area spreading across rainfed areas of Karnataka and Odisha, with high variations in climate conditions specially rainfall, physical characteristics including terrain and cropping pattern across these states. The Program includes several elements of Climate Smart Agriculture including soil management, water management, provision of agro-advisories to farmers, appropriate crop selection which are clearly spelt out in Results Area 2 that supports climate change adaptation through incentivizing the adoption of just-in-time agro-advisories based on LRI and weather-based information. Also, the risk of extension of watershed interventions to forest, wetland and other environmental sensitive areas without initial screening at the DPR preparation stage is worth mentioning. The REWARD Program will utilize LRI-based planning, with data available at land parcel level, that will screen out such risks at the DPR preparation stage itself and would further be screened at WCs/GPs during the DPR finalization stage. Other risks envisaged are: ignoring macro- and micro-level environmental issues (such as overall hydrology which includes water resource budget, conservation, flow) in the macro-watershed, change in groundwater table, change in water quality, water intensive crop selection and increase in pesticide use. However, these risks are designed to be mitigated through Results Areas 1 by strengthening M&E systems at national and state levels, and deployment of a GIS-enabled MIS platform that focuses on tracking activities, outputs and outcomes, and integrates tracking of process efficiency and quality. The Program will establish a scientific assessment and evaluation system, including an impact evaluation that encompasses the application of remote sensing and GIS technologies; process monitoring and thematic studies for assessing change in specific parameters (such as groundwater level, sediment load, soil organic carbon) and evaluate the effectiveness of watershed investments. During the course of the Program, value of ecosystem services (such as water budgeting) and their contribution to watershed development scoping will be explored. The landscape approach for integrating planned convergence of other programs of partner departments of agriculture, horticulture, forestry, MGNREGA with SWD's target to conserve soil moisture to improve outcomes on water yield, groundwater and sediments in the long run for environmental sustainability can also be observed.

88. **Assessment of borrower's capacity and systems.** For the REWARD Program, the most relevant ESSA core principles are those dealing with implementation and management of E&S screening and mitigation measures, including natural habitat and physical and cultural resources, public and workers' safety, and rights and interests of the indigenous people (or scheduled tribes).

89. The existing policy and institutional framework for watershed development provides for inclusion of women, small and marginal farmers, landless/asset-less households as well as scheduled caste and scheduled tribe populations as Program participants and beneficiaries. The WDC-PMKSY and IWMP guidelines promote participatory baseline survey, consultations with community groups and farmers during DPR preparation and inclusion of women, tribals and other vulnerable groups in watershed institutions. Even though these programs include equity and sustainability as guiding principles, these are not always supported by clear and consistent operational or institutional mechanisms. Among the states, the institutional arrangements, staffing and operational processes for managing E&S measures systematically across the watershed planning and implementation phases is weak and shows considerable variation. Staffing for E&S management at district, block and PIA levels is either absent or unclear. Clear operational guidance and mechanisms on E&S measures as well as the necessary technical and operational skills to manage E&S measures are not available. The current system lacks systematic screening for E&S risks for adverse effects on biodiversity, cultural resources, common property, trans-boundary impacts on downstream users and workers, as well as community health and safety issues. There is no inter-departmental co-ordination mechanism in dealing with forests, wetlands and other environmentally sensitive areas in the watershed plan. The multi-department coordination mechanisms show gaps and have weak convergence in Program implementation. Past reviews of the watershed program at the national level and

in the participating states has suggested weaknesses in mechanisms instituted to adequately address the concerns of the scheduled tribe population. The states also show gaps in systematic E&S monitoring and reporting, including gender inclusion and grievance redress aspects (details are provided in Annex 5).

90. **Recommended E&S measures.** The ESSA recommendations focus on clear mechanisms and institutional arrangements for implementation, management and reporting of E&S aspects, including: (i) preparation and adoption of the E&S aspects in the program manual for watershed sub-projects and FPO business plans, incorporating a mechanism for institutionalizing DPR specific Environment and Social Management Plans (ESMPs); (ii) E&S training and capacity program for frontline program staff, WDCs, FPOs, field non-governmental organizations (NGOs) and Panchayat Raj Institutions (PRIs); (iii) developing SOPs or operational guidelines on structured community participation through out the watershed planning; implementation; operation and maintenance; performance tracking of community participation in effective watershed management; Gram Sabha endorsement of watershed plans; Community Development Fund, governance and accountability systems for watershed communities; as well as targeting and inclusion criteria for women, scheduled tribes, scheduled castes, and other vulnerable populations in watershed committees, SHGs, CIGs and as Program beneficiaries; (iv) strengthening women's leadership in watershed committees and FPOs, as well as among direct participants and beneficiaries of livelihood interventions; (v) inclusion of gender and socially disaggregated data in the M&E system; (vi) strengthening the institutional mechanism for E&S aspects with clear roles and responsibilities at different administrative levels; (vii) setting up periodic monitoring of E&S parameters in sub-project areas, including social and gender disaggregated information on beneficiaries; (viii) mechanism for converging with other government agencies on tribal development, social welfare, rural development and Panchayati Raj and forest; and (ix) strengthening the grievance redressal mechanism (GRM) for registering, screening, redressing, monitoring and reporting of grievances;and integrating periodic grievance reporting with the MIS. In addition, the LRI/DSS platform should display land use and land ownership data, as well as environmentally sensitive areas on the LRI map to avoid issues. Crop and water use advisories by the government should include advisories on adverse impacts of overuse of insecticides, chemical fertilizers, water conservation and pesticide and fertilizer management plan to be prepared by the government. Opportunities for pilots will be explored to understand the cumulative aspects of valuation of ecosystem services and their contribution to watershed development through landscape approaches for integrated planning with other departments to conserve soil moisture, improve water yield, ground water, and reduce sediments in the long run towards environmental sustainability. While the key recommendations are included as PAP items, the remaining recommendations have been included in the the Program Manual.

91. **Stakeholder consultations and disclosure**. Stakeholder consultations were undertaken with both primary and secondary stakeholders in the two participating states. It included: (i) field visits to watersheds and consultations with primary stakeholders; (ii) face-to-face discussions with SLNAs/SWDs, other line departments, and technical partners; (iii) written comments from SLNAs based on the E&S checklist and virtual consultations with SWD officials; (iv) sharing of draft ESSA and feedback by SLNA/SWDs; and (v) multi-stakeholder consultations with primary and secondary stakeholders. Consultations and focus group discussions were also held with key program stakeholders, including farmers groups, women SHGs, watershed committees, PRI representatives, NGOs, technical support agencies (TSAs), and officials from SLNAs/PIAs and other line departments and agencies during the field visit in Karnataka. Key ESSA findings and recommendations were shared with these primary and institutional stakeholders of the REWARD Program, including with representatives from tribal and other backward areas from all the two states through a series of face-to-face and virtual consultations. The draft ESSA reports were also shared with respective SLNAs for their comments and suggestions. This was followed by two rounds of multi-stakeholder, virtual consultations covering a range of secondary and primary stakeholders (including civil society partners) to seek their feedback and suggestions on the draft ESSA reports. Discussions and feedback from these virtual consultations have helped in the finalization of the ESSA reports and recommendations. State-specific ESSA reports were disclosed by the participating states in April 2021 and DoLR has disclosed the consolidated ESSA Report in August 2021. All these reports have been disclosed on the Bank's website in August 2021.

92. **Grievance redress mechanism**. REWARD Program participating states leverage the existing country system to receive, resolve and manage grievances, mainly grievance redress portals, Chief Minister's (CMs) grievances cell and

other state-specific mechanisms. Grievances are generally received and tracked through online state portals such as http://www.espandana.karnataka.gov.in/cms/portal/login.jsf in Karnataka, and https://cmgcodisha.gov.in/ in Odisha. In addition, Karnataka and Odisha have a system of registering grievances at the watershed level or cluster of village level or block/district level or the SWD level, manually. At the national level the Centralized Public Grievance Redress and Monitoring System (CPGRAMS) is an online web-enabled system (https://pgportal.gov.in/) in association with Directorate of Public Grievances (DPG) and Department of Administrative Reforms and Public Grievances (DARPG) to register and track grievance. A key systems gap is the lack of systematic reporting and tracking of grievances received at the watershed level, cluster level (such as at RSK in Karnataka), at block level and at district level. The REWARD Program will support the strengthening of the GRM and its integration with M&E systems.

93. **Grievance redress service**. Communities and individuals who believe that they are adversely affected as a result of a Bank-supported PforR operation, as defined by the applicable policy and procedures, may submit complaints to the existing Program GRM or the the Bank's Grievance Redress Service (GRS). The GRS ensures that complaints received are promptly reviewed to address pertinent concerns. Affected communities and individuals may submit their complaints to the Bank's independent Inspection Panel which determines whether harm occurred, or could occur, as a result of the Bank's non-compliance with its policies and procedures. Complaints may be submitted at any time after concerns have been brought directly to the World Bank's attention, and the Bank management has been given the opportunity to respond. Information on how to submit complaints to the World Bank's GRS, is available at: http://www.worldbank.org/GRS. Information on how to submit complaints to the World Bank Inspection Panel, is available at: http://www.inspectionpanel.org.

Risk

94. **The REWARD Program's overall risk to achieving its development objective is 'Substantial', mainly due to two factors**. First, the Program introduces scientific approaches and new ways of working into the watershed development sector. However, these new elements have been employed successfully at a reasonably large scale in Karnataka (the 'lighthouse' state). The roll out of these proven practices at scale in Odisha is a high-risk and high-reward undertaking. Second, this is a multi-state Program involving the national government and two state governments. In states where the majority of the funds will be deployed, three tiers of the government need to work together to create an effective and sustainable watersheds program. Progress is expected to be slow and uneven in the beginning, but efforts are critical, and the Program can be the catalyst to set in motion a transformative change in India's watersheds program. The major risks and mitigation measures are outlined in the following paragraphs.

95. **Macroeconomic risks are assessed to be "moderate".** The COVID-19 crisis has resulted in a sharp growth slowdown in FY21 and significant fiscal stress at both central and state levels. Nonetheless the risks that fiscal resources may be reallocated away from the supported programs and that insufficient counterpart funding might be provided are small. First the amounts required for counterpart funding (USD 295.96 million over five years and multiple states) are small relative to overall budgetary resources. Second counterpart funding from the states will largely be provided via Centrally Sponsored Schemes that are highly subsidized by the central government and for which, therefore, strong commitment is likely to exist.

96. **Coordination and stakeholder risk.** A PforR instrument has not been tried out in the watershed sector in India. The complex relationships between the state, district/block and local governments in watershed programs can slow planning and implementation, especially if accountabilities are weak. The coordination risk has been mitigated by extensive Program preparation efforts, working closely with all relevant departments and agencies. A detailed Program Manual is being developed by the authorities at the central and state levels. A signal of increased stakeholder coordination is that the SWDs (Department of Agriculture in Karnataka and Odisha,) in the participating states are in the process of: (i) assessing the status and filling gaps in the human resource strength at the state, district and block levels, and (ii) finalizing MoUs with scientific and technical partners for their engagement in the REWARD Program. The DoLR has provided strong leadership during Program preparation, but to mitigate the potential risk of weak leadership in the future (as key staff may be transferred or retire from the central agency), the REWARD Program has included the following measures for mitigation: (i) a new PforR approach in which legal agreements will be signed by the national

government and each of the state governments separately, resulting in greater accountability from the states; (ii) fewer states are selected into the proposed Program; (iii) the national level component is a small loan with modest activities within the capabilities of the DoLR; (iv) MoUs with technical agencies is a prior action before negotiations; and (v) national level steering and technical committees will be in place for strategic and operational guidance. The Program design incorporates lessons learned from PforRs in India and around the world, including the importance of: (i) defining the boundaries of the World Bank-financed Program; (ii) understanding and following government systems, including budgeting, expenditure and fund flows from the central to local levels; and (iii) putting in place incentives for line ministries while ensuring that the World Bank-financed portion is large enough to have a leveraging effect. **The stakeholder risk is rated as 'Moderate'.**

97. **Risks related to institutional capacity for implementation and sustainability.** The science-based, livelihoods focused, and results-driven orientation of the Program was tested successfully in Karnataka. However, this is still unfamiliar to Odisha. SWDs have capacity constraints and inadequate incentives to change the way they operate. These include lack of hydrologists and agribusiness specialists among the frontline staff at the district and block levels, weak O&M of treated watersheds, etc. To mitigate such risks, during Program preparation, strong interest among the participating state agencies to embrace the new approach was confirmed. The participating states are high performers in the watersheds sector and have inter-departmental coordination and institutional partners to leverage skills and experience for strengthening state-level institutional capacities and systems. During implementation, the Program includes a considerable number of institutional capacity building measures such as: augmenting skill sets; training downstream staff on scientific approaches to watershed management; extensively using technical support partners who would build technical capacity; establishing a CoE to provide training support to all states on scientific approaches to watershed management; and providing incentives to GPs for post-Program sustainability. **The institutional capacity risk is rated as 'Substantial'.**

98. **Risk related to the technical design of the REWARD Program.** The risks associated with the technical design are three-fold: First, there will be a risk related to the effective collection, analysis and application of LRI data for science-based watershed planning. While Karnataka has demonstrated experience in this area, Odisha do not have such experience. However, these states will establish partnerships with technical and scientific agencies with experience in LRI. Also, Karnataka as a 'lighthouse' state is sharing its knowledge and experience on LRI with the other states. Low levels of staffing and inadequate technical skills at district and block levels also contribute to the risk and will be addressed by hiring appropriate specialists and providing skills training in the early stages of the Program. Second, risks stemming from weak capacities of GPs and the WCs will be addressed by leveraging experience of the Panchayati Raj and Rural Development Departments for ICT-based capacity building, performance monitoring and course correction, and incentivizing good performance. Third, the risk of difficulties in promoting community collectives for marketing and value chain linkages will be addressed by starting interventions early during Program implementation, beginning in selected high-potential areas, facilitating technical support for PPPs in value chain development by the MSP under WRG 2030, and leveraging the experience of the departments of agriculture and horticulture in this area. Finally, indicators have been carefully developed to measure results that are within the sphere of influence of the Program. The key features of the results measurement system are: having a flexible and scalable set of DLIs that can be adapted to implementation progress in the field; having a combination of process and outcome DLIs that can produce some initial disbursements in the early years to serve as a demonstration for the flow of funds using the PforR instrument; and detailing the verification protocol as a key part of the Program preparation process as well as focusing on both monitoring and reporting capacities. **The technical design risk is assessed as 'Substantial'.**

99. **Fiduciary risks.** Limited capacity in terms of quantum of funds and level of operations handled by the PIAs, inadequate staffing, scattered rules and regulations, and the decentralized nature of the REWARD Program with implementation at the GP level poses challenges regarding consistency in application, compliance, efficiency and transparency. Non-disclosure of procurement information, lack of procurement monitoring, absence of a community procurement manual and absence of a procurement related complaint handling system are identified as key fiduciary risks from a procurement perspective. Risk mitigation actions to address fiduciary risks have been included in the PAP. Delayed use of the PFMS/EAT may increase the fiduciary risks as the processes may be inefficient and may delay fund

flow and financial information. Fiduciary requirements have been outlined in the interim Program guidelines and will be detailed in the Program Manual of each participating state. **The residual fiduciary risks are rated as 'Moderate'.**

100. **Environmental and social risks.** The science-based planning approaches to be adopted by the Program reduce the risk of not capturing issues such as overall water budget in the macro-watershed, change in groundwater table, and change in water quality parameters with methods of soil, land and water conservation. Other risks related to over-use of chemical fertilizers and pesticides are expected to be mitigated through agro-advisories issued to farmers. The Program does not involve any activities that would result in land acquisition or any adverse impact on customary ownership/access to natural resources and cultural heritage of scheduled tribes and local communities. However, small scale, localized and reversible social risks/impacts related to informal settlers, community and workers' health and safety, and social conflicts, will need to be managed. The transition to a science-based approach may weaken the systems and mechanisms of community participation including risk of excluding scheduled caste and scheduled tribe communities, landless and wage dependent households, and women from program planning processes, inclusive benefit sharing, and grievance redress. Gaps in institutional responsibilities, operational guidelines and implementation capacity for screening, mitigating, monitoring and reporting of social risks adds to the risk profile. The systems risks associated with the Program include the lack of systematic E&S screening procedures which may lead to extension of interventions to environmentally sensitive areas and improper identification of physical cultural resources, inadequacy in training systems on E&S aspects to frontline workers, and lack of clarity on institutional responsibilities for implementing and monitoring E&S activities. The E&S risks have been identified in the ESSA and addressed through specific measures in the PAP and other recommendations. **The E&S risks are assessed to be 'Moderate'** as the impacts are expected to be localized, reversible and predictable, and can be effectively mitigated through the strengthening of the existing E&S management systems of the implementing agencies.

101. **Other risks.** A moderate risk is related to climate and weather variability (including changes in precipitation) that could have impacts on the natural resources and affect the achievement of results. Since climate change impacts are uncertain, this risk is outside the control of the Program. However, the Program will ensure that water balance estimation becomes an integral part of the micro-watershed and sub-watershed plans. Further, farmer training on climate-resilient farming and provision of weather based agro-advisories will contribute to building resilience..

ANNEX 1. RESULTS FRAMEWORK MATRIX

Results Framework
COUNTRY: India
Rejuvenating Watersheds for Agricultural Resilience through Innovative Development

Program Development Objective(s)

Strengthen capacities of national and state institutions to adopt improved watershed management for increasing farmers' resilience and support value chains in selected watersheds of participating states.

Program Development Objective Indicators by Objectives/Outcomes

Indicator Name	DLI	Baseline	End Target
Outcomes			
Percentage of WCs and GPs which demonstrate satisfactory watershed management as measured through a performance rating system. (Percentage)	DLI 1	0.00	30.00
Percentage of women headed WCs and GPs which demonstrate satisfactory watershed management as measured through a performance rating system. (Percentage)		0.00	30.00
Land area treated with science-based watershed management technologies. (Hectare(Ha))	DLI 2	0.00	200,000.00
Of which, area in Karnataka (Hectare(Ha))		0.00	100,000.00
Of which, area in Odisha (Hectare(Ha))		0.00	100,000.00
Number of farmers who adopt resilient agriculture technologies and practices. (Number)		0.00	43,200.00
Of which, female farmers. (Number)		0.00	12,960.00

Indicator Name	DLI	Baseline	End Target
Of which, SC and ST farmers. (Number)		0.00	8,640.00
Of which, farmers in Karnataka. (Number)		0.00	27,000.00
Of which, farmers in Odisha. (Number)		0.00	16,200.00
Increase in climate-adjusted soil moisture in targeted watershed areas. (Percentage)		0.00	20.00
Number of Farmer Producer Organizations (FPOs) with 25% increase in annual business turnover relative to baseline. (Number)	DLI 4	0.00	30.00
Of which, FPOs in Karnataka (Number)		0.00	15.00
Of which, FPOs in Odisha (Number)		0.00	15.00
Direct Program Beneficiaries. (Number)		0.00	308,000.00
Of which, female beneficiaries. (Number)		0.00	92,400.00
Of which, SC and ST beneficiaries. (Number)		0.00	61,600.00
Of which, beneficiaries in Karnataka. (Number)		0.00	190,000.00
Of which, beneficiaries in Odisha. (Number)		0.00	118,000.00

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Intermediate Results Indicator by Results Areas

Indicator Name	DLI	Baseline	End Target
Results area 1: Strengthened Institutions and Supportive Policy for Watershed Development			
Number of professionals who complete certified training on improved watershed management provided by the National Center for Excellence on Watershed Management. (Number)	DLI 5	0.00	1,125.00
National technical standards for improved watershed management updated by DoLR and directive issued to states. (Text)	DLI 6	Nil	Yes
Adoption of strengthened watershed O&M policy by number of states. (Number)		0.00	2.00
Results from pilots on science-based fertilizer application captured and disseminated. (Number)		0.00	2.00
Results area 2: Science-based Watershed Development for Climate Resilience and Enhanced Livelihoods			
Land area for which watershed plans are available and approved. (Hectare(Ha))		0.00	800,000.00
Of which, area in Karnataka. (Hectare(Ha))		0.00	500,000.00
Of Which, area in Odisha. (Hectare(Ha))		0.00	300,000.00
Farmers accessing agro-advisory information. (Number)		0.00	115,200.00
Of which, female farmers. (Number)		0.00	34,560.00
Of which, SC and ST farmers. (Number)		0.00	23,040.00
Of which, farmers in Karnataka. (Number)		0.00	72,000.00
Of which, farmers in Odisha. (Number)		0.00	43,200.00

Indicator Name	DLI	Baseline	End Target
Increase in farmers adopting value chain services of targeted Farmer Producer Organizations. (Percentage)		0.00	25.00
Of which, farmers in Karnataka. (Percentage)		0.00	25.00
Of which, farmers in Odisha (Percentage)		0.00	25.00

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Monitoring & Evaluation Plan: PDO Indicators					
Indicator Name	**Definition/Description**	**Frequency**	**Datasource**	**Methodology for Data Collection**	**Responsibility for Data Collection**
Percentage of WCs and GPs which demonstrate satisfactory watershed management as measured through a performance rating system.	This indicator measures the percentage of Watershed Committees and/or Gram Panchayats (WCs and/or GPs) in the REWARD Program's science-based micro-watersheds, covering 0.20 million hectares areas, that achieve a score above 50% (considered as satisfactory) on the 'Performance Assessment Tool' that is developed specifically for the purpose. The Performance Assessment Tool (PAT) will contain indicators covering each phase of the watershed sub-project (preparatory phase, execution phase, and O&M phase). All participating states shall develop an appropriate PAT with key performance indicators for all three stages and a rating system	Annual	MIS	Review of MIS data	SWDs

	and reflect the same in the Program Manual. The performance assessment ratings will be captured in the e state MIS systems. This indicator will capture information on women's participation and engagement in leadership positions in WCs. It will capture information separately on WCs and GPs led by women (as Chairpersons of WCs and as elected members of Gram Panchayat).				
Percentage of women headed WCs and GPs which demonstrate satisfactory watershed management as measured through a performance rating system.	This indicator measures the percentage of Watershed Committees and/or Gram Panchayats (WCs and/or GPs) in the REWARD Program's science-based micro-watersheds, covering 0.20 million hectares areas, that achieve a score above 50% (considered as satisfactory) on the 'Performance Assessment Tool' that is developed specifically for the purpose. The	Annual	MIS	Review of MIS data	SWDs

	Performance Assessment Tool (PAT) will contain indicators covering each phase of the watershed sub-project (preparatory phase, execution phase, and O&M phase). All participating states shall develop an appropriate PAT with key performance indicators for all three stages and a rating system and reflect the same in the Program Manual. The performance assessment ratings will be captured in the state MIS systems. This indicator will capture information on women's participation and engagement in leadership positions in WCs. It will capture information separately on WCs and GPs led by women (as Chairpersons of WCs and as elected members of Gram Panchayat).				
Land area treated with science-based watershed management technologies.	This indicator measures the area (in hectares) of watersheds where science-	Annual	MIS, Process Monitoring Agency	Review of MIS data; Sample survey of micro-watersheds	SWDs, Process Monitoring Agency

	based watershed development has been implemented in a saturation mode. To be considered as 'science-based watershed management', all of the following criteria are to be met: 1) DPRs have been prepared utilizing LRI outputs and approved by Gram Sabha; 2) Implementation of watershed development works has been undertaken in saturation mode. 'Saturation' refers to treatment of at least 70% of all parcel of land that has been recommended for treatment in DPR; and 3) Science-based watershed development will include measures related to restoration of degraded land and rainwater harvesting to address drought vulnerability.				
Of which, area in Karnataka		Annual	MIS, Process Monitoring Agency	Review of MIS data, Sample survey of micro-watersheds	SWDs and Process Monitoring Agency

Of which, area in Odisha		Annual	MIS, Process Monitoring Agency	Review of MIS data, Sample survey of micro-watersheds	SWDs, Process Monitoring Agency
Number of farmers who adopt resilient agriculture technologies and practices.	This indicator measures the number of farmers who adopt at least one technology/practice from a core set of resilient agriculture technologies and practices recommended through agro-advisory. The agro-advisory may be provided through multiple channels including: LRI cards, weather based agro-advisories over mobile, bulletins, communication from extension workers, farmer training programs, etc. The core set of resilient agriculture technologies and practices will be as defined by the Government of India / respective state governments and include measures but not be limited to crop diversification, water use efficiency, and other	Annual	MIS, Process Monitoring Agency	Review of MIS data, Field survey sample farmers	SWDs, Process Monitoring Agency

	package of appropriate practices that strengthen resilience to climate change impact for the given agro-climatic zone. An identified list of resilient technologies will be reflected in the Program Manual. Adoption of one or more technologies or practices will be considered as adequate for meeting this indicator. The indicator will separately track the number of farmers by their gender and by their social group (SC/ST). Women engaged in farming will be considered as 'female farmers' irrespective of whether or not they are the legal title holders to the land.				
Of which, female farmers.		Annual	MIS, Process Monitoring Agency	Review of MIS data, Field survey of sample farmers	SWDs, Process Monitoring Agency
Of which, SC and ST farmers.		Annual	MIS, Process Monitoring Agency	Review of MIS data, Field survey of sample farmers	SWDs, Process Monitoring Agency
Of which, farmers in Karnataka.		Annual	MIS, Process Monitoring	Review of MIS data, Field survey of sample	SWD, Process Monitoring Agency

			Agency	farmers	
Of which, farmers in Odisha.		Annual	MIS, Process Monitoring Agency	Review of MIS data, Field survey of sample farmers	SWDs, Process Monitoring Agency
Increase in climate-adjusted soil moisture in targeted watershed areas.	This indicator measures soil moisture improvement, correcting for short term weather effects in a sample of the science-based watersheds, as per established scientific processes.	Base-line, End-term	Impact evaluation study	Field study (using sensors and probes) and analysis of RS data of sample of treatment and control sites.	Impact evaluation agency
Number of Farmer Producer Organizations (FPOs) with 25% increase in annual business turnover relative to baseline.	This indicator measures the number of Farmer Producer Organizations (FPOs) supported under the REWARD Program, that achieve an annual sales turnover that is at least 25% higher than their baseline levels. The average sales turnover will be calculated based on annual sales reported by the FPOs in their annual audited financial statements during the reporting period. All states shall develop appropriate criteria to	Baseline, year 3, 4, 5	MIS, FPOs' annual audited account statements	Review of MIS data; Review of FPOs' accounts	SWDs

	shortlist FPOs eligible to be supported under this program and use the same to select target number of FPOs. The criterial for shortlisting FPOs shall be reflected in the Program Manual.				
Of which, FPOs in Karnataka					
Of which, FPOs in Odisha					
Direct Program Beneficiaries.	This indicator measures the number of individuals receiving outputs from the Program. Outputs include watershed structures and assets located on private land/ common lands, training programs, crop advisory services, value chain services, wage employment, financial support, etc. The indicator will separately track the number of beneficiaries by their gender and by their social group (SC/ST).	Annual	MIS	Review of MIS data	SWDs
Of which, female beneficiaries.		Annual	MIS	Review of MIS data	SWDs

Of which, SC and ST beneficiaries.		Annual	MIS	Review of MIS data	SWDs
Of which, beneficiaries in Karnataka.		Annual	MIS	Review of MIS data	SWDs
Of which, beneficiaries in Odisha.		Annual	MIS	Review of MIS data	SWDs

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Monitoring & Evaluation Plan: Intermediate Results Indicators					
Indicator Name	**Definition/Description**	**Frequency**	**Datasource**	**Methodology for Data Collection**	**Responsibility for Data Collection**
Number of professionals who complete certified training on improved watershed management provided by the National Center for Excellence on Watershed Management.	This indicator measures the number of professionals who complete certified training on improved watershed management provided by National Center for Excellence on Watershed Management (CoE). The indicator is considered as met if minimum targets for number of trainees who successfully complete the training and are certified are met. The certification will be based on successful completion of a learning assessment, designed and used by CoE. A robust definition and process for certification shall be finalized by GoK and reflected in the Program Manual.	Annual	MIS, CoE training reports	Review of MIS data; Review of CoE training reports	GOK, COE
National technical standards for improved watershed management updated by DoLR and directive issued to states.	This indicator checks if a government directive on national technical	One time	DoLR	Communication on government directives from DoLR to	DoLR

	standards, including specifications and procedures, for improved watershed development has been prepared in a participatory manner and formally disseminated to states by the DoLR.			states	
Adoption of strengthened watershed O&M policy by number of states.	This indicator measures the number of states that have formally issued a government directive on operation and maintenance of structures and assets of completed watershed projects that have been handed over to Gram Panchayats.	One-time	SWDs	Review of issued state government directives	SWDs
Results from pilots on science-based fertilizer application captured and disseminated.	This indicator checks that results note/s have been developed, capturing results and lessons from pilots and disseminated.	One time	SWD reports; Results note/s	Review of SWD reports and results note/s	SWDs
Land area for which watershed plans are available and approved.	This indicator measures the area in hectares for which watershed plans are available. The watershed plans are developed as per national/ state guidelines, issued from time to time.	Annual	MIS digital Portal	Review of MIS data and review of Digital Portal	SWDs

Of which, area in Karnataka.		Annual	MIS; Digital Portal	Review of MIS data and Digital Portal	SWDs
Of Which, area in Odisha.		Annual	MIS; Digital Portal	Review of MIS data and Digital Portal	SWDs
Farmers accessing agro-advisory information.	This indicator measures the number of farmers who received science / weather based agro-advisory information that will strengthen farmers' preparedness and resilience to climate change impacts, at least once in the Program duration through various channels such as LRI cards, mobile messaging, mobile apps, bulletins, communication from extension workers, training programs. All the states will develop a short list of approved resilient technologies and reflect the same in the Program Manual.	Annual	MIS, Process Monitoring Study	Review of MIS data, Field survey of sample farmers	SWDs, Process Monitoring Agency
Of which, female farmers.		Annual	MIS, Process Monitoring Study	Review of MIS data, Field survey of sample farmers	SWDs, Process Monitoring Agency
Of which, SC and ST farmers.		Annual	MIS, Process Monitoring	Review of MIS Data; Field survey of sample	SWDs, Process Monitoring Agency

			Study	farmers	
Of which, farmers in Karnataka.		Annual	MIS, Process Monitoring Study	Review of MIS data; Field survey of sample farmers	SWDs, Process Monitoring Agency
Of which, farmers in Odisha.		Annual	MIS, Process Monitoring Study	Review of MIS data; Field survey of sample farmers	SWDs, Process Monitoring Agency
Increase in farmers adopting value chain services of targeted Farmer Producer Organizations.	This indicator measures the increase in percentage of farmers (over baseline) using value chain services of FPOs supported under the Program.	Annual	MIS, FPO records	Review of MIS data, Review of FPO records	SWDs, FPOs
Of which, farmers in Karnataka.		Annual	MIS, FPO records	Review of MIS data, Review of FPO records	SWDs, FPOs
Of which, farmers in Odisha		Annual	MIS, FPO records	Review of MIS data, Review of FPO records	SWDs, FPOs

ANNEX 2. DISBURSEMENT LINKED INDICATORS, DISBURSEMENT ARRANGEMENTS AND VERIFICATION PROTOCOLS

Disbursement Linked Indicators Matrix

DLI 1	Percentage of WCs and GPs which demonstrate satisfactory watershed management as measured through a performance rating system.			
Type of DLI	**Scalability**	**Unit of Measure**	**Total Allocated Amount (USD)**	**As % of Total Financing Amount**
Intermediate Outcome	Yes	Text	21,593,400.00	19.00
Period	**Value**		**Allocated Amount (USD)**	**Formula**
Baseline	0.00			
Prior Results			0.00	
2022	0.00		0.00	None
2023	30% of WCs/GPs in the science-based MWS, that are in or have completed the Preparatory Phase, score more than 50% on the indicators pertaining to Preparatory Phase on the Performance Assessment Tool. A total of 227 WCs are estimated under the Program - 75 WCs in Karnataka, and152 WCs in Odisha.		7,197,800.00	Karnataka -USD 1,34,450 per WC (up to 23 WCs) Odisha – USD 89248 per WC (upto 46 WCs)
2024	30% of WCs/GPs in the science-based MWS, that are in or have completed the Preparatory Phase, score more than 50% on the indicators pertaining to Preparatory Phase on the Performance		7,197,800.00	Karnataka -USD 1,34,450 per WC (up to 23 WCs) Odisha – USD 89248 per WC (upto 46 WCs)

	Assessment Tool. A total of 227 WCs are estimated under the Program - 75 WCs in Karnataka, and152 WCs in Odisha.		
2025	0.00	0.00	None
2026	30% of the WCs/GPs in the science-based MWS, where watershed sub-projects are in O&M Phase, score more than 50% on the indicators pertaining to Consolidation and O&M Phase on the Performance Assessment Tool. A total of 227 WCs are estimated under the Program - 75 WCs in Karnataka, and 152 WCs in Odisha.	7,197,800.00	Karnataka -USD 1,34,450 per WC (up to 23 WCs) Odisha – USD 89248 per WC (upto 46 WCs)

DLI 2	Land area treated with science-based watershed management technologies			
Type of DLI	**Scalability**	**Unit of Measure**	**Total Allocated Amount (USD)**	**As % of Total Financing Amount**
Outcome	Yes	Text	40,127,300.00	35.00
Period	**Value**		**Allocated Amount (USD)**	**Formula**
Baseline	0.00			
Prior Results			0.00	
2022	Partnerships have been formally established between the SWD and technical partners for LRI, Hydrology and RS/GIS (through signed MoUs)		11,727,300.00	Prior Result. Karnataka USD 5,850,000; Odisha USD 5,877,300
2023	Detailed Project Reports developed for Micro Watersheds covering an area upto 100,000 ha in Karnataka, and 100,000 ha in Odisha		14,200,000.00	USD 71 per hectare.

2024	0.00	0.00	None
2025	Project Completion Reports prepared for Micro Watersheds covering an area of 50,000 ha in Karnataka and 50,000 ha in Odisha	7,100,000.00	USD 71 per hectare.
2026	Project Completion Reports prepared for Micro Watersheds covering an additional area of 50,000 ha in Karnataka and 50,000 ha in Odisha	7,100,000.00	USD 71 per hectare.

DLI 3	Number of farmers who adopt resilient agriculture technologies and practices			
Type of DLI	**Scalability**	**Unit of Measure**	**Total Allocated Amount (USD)**	**As % of Total Financing Amount**
Intermediate Outcome	Yes	Text	16,156,800.00	14.00
Period	**Value**		**Allocated Amount (USD)**	**Formula**
Baseline	0.00			
Prior Results			0.00	
2022	0.00		0.00	none
2023	0.00		0.00	none
2024	10,800 farmers (Karnataka 8100 farmers, and Odisha 2700 farmers.)		4,039,200.00	USD 374 per farmer
2025	16,200 additional farmers (in addition to preceding years) (Karnataka 9450 farmers, and Odisha 6750 farmers.)		6,058,800.00	USD 374 per farmer
2026	16,200 additional farmers (compared to		6,058,800.00	USD 374 per farmer

	preceding years) (Karnataka 9450 farmers, and Odisha 6750 farmers.)			
DLI 4	Number of Farmer Producer Organizations (FPOs) with 25% increase in annual business turnover relative to baseline.			
Type of DLI	**Scalability**	**Unit of Measure**	**Total Allocated Amount (USD)**	**As % of Total Financing Amount**
Intermediate Outcome	Yes	Text	20,850,000.00	18.00
Period	**Value**		**Allocated Amount (USD)**	**Formula**
Baseline	0.00			
Prior Results			0.00	
2022	0.00		0.00	none
2023	0.00		0.00	none
2024	11 FPOs (Karnataka 6; Odisha 5)		7,645,000.00	USD 695,000 per FPO
2025	11 additional FPOs (compared to preceding year) (Karnataka 6; Odisha 5)		7,645,000.00	USD 695,000 per FPO
2026	8 additional FPOs (compared to preceding years) (Karnataka 3; Odisha 5)		5,560,000.00	USD 695,000 per FPO
DLI 5	Number of professionals who complete certified training on improved watershed management provided by the National Center for Excellence on Watershed Management.			
Type of DLI	**Scalability**	**Unit of Measure**	**Total Allocated Amount (USD)**	**As % of Total Financing Amount**
Outcome	Yes	Text	10,000,000.00	9.00
Period	**Value**		**Allocated Amount (USD)**	**Formula**

Baseline	0.00		
Prior Results		0.00	
2022	0.00	0.00	none
2023	150 trainees complete certified training on improved watershed management	2,500,000.00	$16,666.667 per trained person
2024	325 additional trainees (compared to preceding years) complete certified training on improved watershed management	2,500,000.00	$7692.308 per trained person
2025	325 additional trainees (compared to preceding years) complete certified training on improved watershed management	2,500,000.00	$7692.308 per trained person
2026	325 additional trainees (compared to preceding years) complete certified training on improved watershed management	2,500,000.00	$7692.308 per trained person

DLI 6	National technical standards for improved watershed management updated by DoLR and directive issued to states.			
Type of DLI	**Scalability**	**Unit of Measure**	**Total Allocated Amount (USD)**	**As % of Total Financing Amount**
Process	No	Text	5,985,000.00	5.00
Period	**Value**		**Allocated Amount (USD)**	**Formula**
Baseline	0.00			
Prior Results			0.00	
2022	Program Management Unit (PMU) established.		1,485,000.00	Prior Result. Achieved/Not

			Achieved
2023	0.00	0.00	none
2024	Draft standards prepared based on implementation experience of participating states.	2,000,000.00	Achieved/Not Achieved
2025	Consultation meetings organized on draft standards.	2,000,000.00	Achieved/Not Achieved
2026	National technical standards for improved watershed management finalized and Government directive on national technical standards for improved watershed management formally disseminated to states.	500,000.00	Achieved/Not Achieved

Verification Protocol Table: Disbursement Linked Indicators	
DLI 1	Percentage of WCs and GPs which demonstrate satisfactory watershed management as measured through a performance rating system.
Description	This DLI is defined as the percentage of Watershed Committees and/or Gram Panchayats (WCs and/or GPs) in the REWARD Program's science-based micro-watersheds, covering 0.20 million hectares areas, that achieve score above 50% (considered as satisfactory) on the 'Performance Assessment Tool' (PAT) that is developed specifically for the purpose. The PAT will contain indicators covering each phase of the watershed sub-project (preparatory phase, execution phase and O&M phase). It is measured in Year 2, 3 and 5. The DLI comprises the following Disbursement Linked Results: • DLR 1.1: In Year 2, score on the indicators pertaining to Preparatory Phase in the Performance Assessment Tool is considered. The indicators will include improved representation of women in the WCs and greater weightage for women in leadership positions in the WCs. • DLR 1.2: In Year 3, score on the indicators pertaining to Execution Phase in the Performance Assessment Tool is considered. • DLR 1.3: In Year 5, score on the indicators pertaining to O&M Phase in the Performance Assessment Tool is considered. In each year, at least 30% of the WCs and/or GPs in the science-based MWS need to achieve score of more than 50% on the PAT. All participating states shall develop an appropriate PAT with key performance indicators for all three phases and reflect the same in the Program Manual. The performance assessment scores will be captured in the state MIS systems.
Data source/ Agency	MIS/SWDs
Verification Entity	IVA
Procedure	**Procedure for DLRs 1.1, 1.2 and 1.3**: i. The IVA will undertake desk verification of the MIS data to determine the number of WCs/GPs that scored more than 50% on the Performance Assessment Tool. ii. The IVA will conduct field verification in a representative sample of WCs/GPs. The field verification will involve checking records of WCs/ GPs for information on all the indicators pertaining to the phase being considered and confirming the scores reported in the MIS.
DLI 2	Land area treated with science-based watershed management technologies
Description	This DLI is defined as the area (in hectares) of watersheds where science-based watershed development has been

	implemented in a saturation mode. This is measured in Year 2, 4, 5. The DLI comprises 3 Disbursement Linked Results, including a Prior Result: • DLR 2.1 (Prior Result): Memoranda of Understanding (MoU) are signed with Technical Partners for LRI, Hydrology and RS/GIS. This is verified in year 1. • DLR 2.2: DPRs have been prepared utilizing LRI outputs with key environmental and social data/information, and are approved by Gram Sabha. This is measured in year 2. • DLR 2.3: Watershed works have been implemented in a saturation mode. This is measured in years 4 and 5.
Data source/ Agency	MIS/SWDs
Verification Entity	World Bank will carry out the due diligence for prior results; and IVA for all other results
Procedure	**Procedure for DLR 2.1 (Prior Result):** The Bank will carry out the due diligence of the MoU documents signed with Technical Partners for LRI, Hydrology and RS/GIS. The due diligence procedure will involve reviewing the hard copies or softcopies of the signed MoU documents. **Procedure for DLR 2.2**: The IVA will verify the DPRs through desk review, and check that the DPR is generated by utilizing the LRI outputs with key environmental and social data/information and is approved by the Gram Sabha. This will involve confirming that all of the following are part of the DPR: • Soil and water conservation plans and drainage line treatment plans covering each land management unit in the micro-watershed with supporting GIS maps. • Productivity improvement plans for major agriculture and horticulture crops with supporting GIS maps. • Nutrient management plan. • Record of community consultations. • Record of Gram Sabha approval. • Maps and data on environmentally sensitive areas, common properties including physical and cultural resources. **Procedure for DLR 2.3**: The verification by IVA will involve both desk review and field verification, as detailed below: Desk review: The IVA will undertake desk review of the Project Completion Reports (PCRs) of the micro-watershed sub-projects. The purpose of the review is to check if the watershed development works have been implemented in a 'saturation' mode. 'Saturation' refers to soil and water conservation and drainage line treatment of every parcel of land that has been recommended for soil and water conservation and drainage line treatment on the basis of LRI as specified in DPR. This will be verified through a comparison of the total number of parcels recommended for soil and water conservation and drainage line treatment in the micro-watershed and the number of treated parcels as reported in the PCRs. This criteria will be considered as met if at least 70% of the total parcels recommended for soil and water conservation and drainage line

	treatment are listed as treated in the PCRs. Field verification: The IVA will undertake field verification of a representative sample of soil and water conservation and drainage line works in a representative sample of the micro-watershed sub-projects. The purpose of the field verification is to check if the soil and water conservation and drainage line works have been implemented. Compliance with Environmental and Social guidance, including the Excluded Activities List, will also be verified. This will be verified through a comparison of the works as listed in the PCRs and the completed soil and water conservation and drainage line works noted during the field verification. This criteria will be considered as met if 90% of the sampled soil and water conservation and drainage line works are found to be completed during the field verification. Double counting of micro-watersheds for disbursements in years 4 and 5 will be avoided (that is, the micro-watersheds that have been verified as suitable for disbursements in a year will not be considered for verification in the subsequent years) .
DLI 3	Number of farmers who adopt resilient agriculture technologies and practices
Description	This DLI is defined as the number of farmers who adopt at least one technology/practice from a core set of resilient agriculture technologies and practices recommended through agro-advisory (delivered through LRI cards, weather based agro-advisories over mobile, bulletins, communication from extension workers, farmer training programs, etc.). The core set of resilient agriculture technologies and practices will be as defined by Government of India / respective state governments and include measures related to crop diversification, water use efficiency, and other package of appropriate practices that strengthen resilience to climate change impact for the given agro-climatic zone. Such a short list of approved resilient technologies will be reflected in the Program Manual. This DLI is measured in Year 3, 4 and 5.
Data source/ Agency	MIS/SWDs
Verification Entity	IVA
Procedure	The verification by IVA will involve both desk review and field verification, as detailed below: Desk review: The IVA will undertake desk review of the MIS data on farmer adoption. Field verification: The IVA will undertake field verification of a representative sample of farmers in the program areas and verify if the farmers have adopted at least one of the recommended technologies/practices. This criterion will be considered as met if 90% of the sampled farmers are found to have adopted the recommended technologies/practices. Double counting of farmers for disbursements will be avoided (that is, farmers verified as suitable for disbursement in a year will not be considered for verification in the subsequent years).

DLI 4	Number of Farmer Producer Organizations (FPOs) with 25% increase in annual business turnover relative to baseline.
Description	This DLI is defined as the number of Farmer Producer Organizations (FPOs) supported under the REWARD Program, that achieve an average annual sales turnover that is at least 25% higher than their baseline levels. The average sales turnover will be calculated based on the annual sales reported by the FPOs in their annual audited financial statements during the reporting period (the average of all years in the reporting period will be considered). This DLI is measured in Year 3, 4, 5. Each year a fresh set of FPOs will be considered for this DLI. The baseline will be the year preceding the FPOs entry into the Program (for existing FPOs) All states shall develop appropriate criteria to shortlist FPOs eligible to be supported under this program and use the same to select target number of FPOs. The criteria for shortlisting FPOs shall be reflected in the Program Manual.
Data source/ Agency	MIS/SWDs; Annual audited accounts
Verification Entity	IVA
Procedure	The verification by IVA will involve desk review of the MIS data and on-site (at FPO offices) review of the annual audited accounts statements of the FPOs.
DLI 5	Number of professionals who complete certified training on improved watershed management provided by the National Center for Excellence on Watershed Management.
Description	This DLI is defined as the number of trainees who complete certified training on improved watershed management provided by the National Centre of Excellence on Watershed Management (CoE). A robust definition and process for certification shall be finalized GoK and reflected in the Program Manual. This is measured in Years 2, 3, 4, 5.
Data source/ Agency	GoK
Verification Entity	IVA
Procedure	The IVA will verify that the targets of number of trainees for the year under assessment to receive a disbursement are met. The targets for number of trainees who successfully complete the training and are certified are: 150 trainees in year 2; 325 additional trainees in year 3; 325 additional trainees in year 4; 325 additional trainees in year 5. The IVA will verify that certification has been provided to trainees based on achievement at or above a minimum score on a end-of-training test. The IVA will verify test papers, trainee scores and training reports for the purpose. Double counting of certified trainees for disbursements will be avoided (that is, the trainees verified as suitable for disbursement in a year will not be considered for

	verification in the subsequent years)
DLI 6	National technical standards for improved watershed management updated by DoLR and directive issued to states.
Description	This indicator checks if a government directive on national technical standards on improved watershed management has been prepared in a participatory manner and formally disseminated to states by the DoLR. This is measured in Year 3, 4 and 5. The DLI comprises 4 Disbursement Linked Results, including a Prior Result: • DLR 6.1 (Prior Result): Program Management Unit (PMU) is established and functional. This is verified in year 1. • DLR 6.2: Draft standards are prepared based on implementation experience of participating states. This is measured in Year 3. • DLR 6.3: Consultation meetings are organized on draft standards. This is measured in Year 4. • DLR 6.4: National technical standards for improved watershed management are finalized. Government directive on national technical standards for improved watershed development are formally disseminated to states. This is measured in Year 5.
Data source/ Agency	DoLR
Verification Entity	World Bank will carry out the due diligence for prior results; and IVA for all other results
Procedure	**Procedure for DLR 6.1 (Prior Result):** The Bank will carry out the due diligence to ensure the completion of two activities (i) NPMU has been established through a government directive/order and (ii) NPMU is staffed with six officials: watershed management expert, hydrologist/water resource expert, institution and capacity building expert, monitoring and evaluation expert, financial management expert, and procurement expert. The due diligence procedure will involve reviewing the hardcopies or softcopies of the joining reports of appointed staff and any other directives through which government staff are assigned the above NPMU duties. **Procedure for DLR 6.2**: The IVA will verify that a draft document on national technical standards on improved watershed management is available on the DoLR's website. **Procedure for DLR 6.3**: The IVA will verify that a report of at least 3 consultation meetings on the draft document is available, and, that it includes details on the revisions suggested and action plan on finalization. **Procedure for DLR 6.4**: The IVA will verify that all of the following criteria are met: Official final version of the document on the 'national technical standards on improved watershed management' is available on the DoLR's website. Official government directive on 'national technical standards on improved watershed development' has been sent to states by DoLR and is also available on the website of the DoLR.

	Report of a national level dissemination workshop of the 'national technical standards on improved watershed management' is available and contains the list of participants with details of the states they represent.

ANNEX 3. (SUMMARY) TECHNICAL ASSESSMENT

This technical assessment was carried out as part of the preparation of the REWARD Program for Results (PforR) operation in India**.**

1.0 Program Description

The proposed USD 115 million International Bank for Reconstruction and Development (IBRD) allocation to the REWARD Program will support a subset of the new Watershed Development Component of the national Pradhan Mantri Krishi Sinchayee Yojana (WDC-PMKSY) program that has an outlay of USD 1.68 billion.[57] The duration of both operations is five years (2021-22 to 2025-26). While the GoI program is implemented across all states (except for the state of Goa), the REWARD Program will initially be supporting the national program in selected states as well as at the central level. The Program will use a PforR lending model to improve performance incentives.

The Program Development Objective (PDO) is '*to strengthen capacities of national and state institutions to adopt improved watershed management for increasing farmers' resilience and support value chains in selected watersheds of participating states'.* Two key result areas and related thematic activities have been designed to achieve the PDO (Table-3).

Table 3. Result Areas of the Program

Result Area	Thematic Activities
Strengthened institutions and supportive policy for watershed development	• Strengthen community institutions and local government bodies engaged in watershed management • Enhance government institutions capacity for watershed management • Establish and operationalize a national center of excellence for science-based watershed management • Support policy for watershed development • Strengthen monitoring and evaluation systems
Scientific watershed development and enhanced livelihoods	• Develop and implement science-based watershed development plans in select watersheds[58] • Empower farmers with science-based and just-in-time agro-advisories • Enhance livelihoods, including strengthened value chains and COVID-19 recovery

The Program supports the new WDC-PMKSY 2.0 scheme with the Department of Land Resources (DoLR) at the center and two states. The DoLR is the national focal point and implementing agency for the WDC-PMKSY scheme and will have key activities supported by the proposed REWARD Program. Two states – Karnataka, and Odisha – have been identified based on their willingness to implement a science-based watershed program, readiness to adopt results-based financing, and their positive track-record in implementing the current WDC-PMKSY.

The Program finances a subset of the GoI's expenditures on its watershed development program at the national and

[57] This represents the central share of INR 81,340 million (USD 1.10 billion), being central share. Each state will contribute the remaining counterpart share as per GoI norms (USD 0.58 billion) thus taking the total program budget to INR 124,048 miillion or USD 1.68 billion.

[58] Selected watersheds are expected to function as model waterhed sites for demonstration of good practices to aid future replication in other watersheds both in the participating states and other states with similar climate change vulnerabilities. The implementation of the model watershed will be on the basis of science-based watershed DPRs and will include interventions on: community engagement; engineering works including as relevant ridge area treatment, drainage line treatment, soil and moisture conservation, rainwater harvesting, etc.; agriculture and horticulture including on-farm soil moisture conservation and water harvesting practices; treatment of common lands including pasture development, afforestation (forestry and agroforestry plantations in non-forest areas), etc.; and livelihood support activities. These interventions are expected to improve climate resilience, provide water security especially in terms of 'green water', and restore ecosystem services through improved soil moisture, enhanced water storage based on hydrological conditions, more efficient irrigation, more appropriate crop selection and management, increased tree cover, etc. The creation and management of a local watershed development fund for sustainability of the created assets and preparation of project completion reports will be emphasized.

state levels. The Program Expenditure Framework (PEF) for the proposed PforR operation is USD 410.96 million. This includes USD 115 million from IBRD and national and state program financing estimated at USD 295.96 million.[59] The financing will support: (i) USD 6 million for DoLR expenditures on consultancies and/or goods for activities including capacity building, knowledge exchange, development of national standards around integrated watershed management; and (ii) USD 109 million for the entire WDC-PMKSY operation in all two participating states based on USD 60 million for Karnataka, USD 49 million for Odisha. State level expenditures will be for works, consultancies, and/or goods for activities including development of science-based watershed plans, development of databases, digital library and decision support systems, implementation of selected model watershed sub-projects, capacity building programs, as well as M&E activities. The Program is not expected to procure any high value contracts.[60]

2.0 Program Strategic Relevance and Technical Soundness

As can be seen from the two Result Areas (Table 3), the Program seeks to address key issues in the Indian watershed sector that are constraining achievement of targeted results and sustainability.

The Program clearly differentiates the role and results for DoLR and the two participating states. The Program at the state level will support the adoption and scaling up of several new approaches to implement community-led, science-based watershed sub-projects while the center, through the DoLR and the NRAA will distil lessons, refine national technical standards and institute a process to mainstream such approaches into national programs.

Karnataka acquired capacities for improved science-based planning through the Bank-supported KWDP-II, which closed on December 31, 2019. Karnataka will function as a 'lighthouse' state to share these experiences, protocols, processes, etc., with the other participating states. Karnataka will also establish a national CoE in watershed management, in collaboration with the University of Agriculture Sciences (UAS – Bangalore) and others for developing standard training programs and offering the same to other states/countries. Please refer to the main Technical Analysis report for details of science-based planning.

The Program seeks to multiply the economic benefits from watershed development sub-projects by overlaying a value chain approach to link 'farms to forks'. Producers will be organized into FPOs through PPPs under Integrated Agricultural Development/Integrated Horticulture Development[61] models. All two participating states have had successful experiences in promoting FPOs that can be expanded on and further improved upon in the proposed REWARD Program.

The Program will also support several state-specific innovative pilots on weather-based agro-advisories, soil fertility management based on site-specific data, carbon sequestration and prioritization of investments and valuation of eco-system benefits. These pilots will be carried out by the state departments and/or by the Center for Excellence. In addition, the Program aims to strengthen the policy environment through design and adoption of state specific human resource policy and O&M policy for treated watersheds. The Program will also promote appropriate performance incentives to the community institutions, such as GPs and WCs, to strengthen active community participation and ownership of assets that will lead to improved sustainability.

The Program design incorporates national and international best practices and benchmarks for effective watershed programs that were identified in a 2015 portfolio review by the World Bank.[62]

In summary, the REWARD Program is designed to address key issues in the watershed sector (encompassing water, agriculture, and climate change), adopt best national and international practices, and capacitate relevant institutions at all levels to adopt a bottom-up institutional and implementation process backed by robust scientific planning and M&E processes.

3.0 Institutional Arrangements

[59] PID - REWARD. 24 October 2019. Report No. PIDC27910.
[60] Means contracts with estimated values exceeding the monetary amounts, as may be amended from time to time, that require mandatory review by the Bank's OPRC.
[61] http://rkvy.nic.in/static/download/pdf/pppiad_guidliness.pdf.
[62] Isabel Filiberto, Grant Milne, Rita Cestti and Ademola Braimoh, 2015. Watershed Management Portfolio Review (1990–2015). World Bank.

3.1 Political Economy of the Watershed Sector

With the paradigm for supporting the poor shifting to wage employment generation programs (for example through MNREGA) or direct benefit transfers (subsides, entitlements, etc.), higher level political patronage for watershed development programs is not strong. However, the political economy is at play at lower levels, particularly at the GP level. In a typical micro-watershed project, the target GPs and Watershed Committees (WCs) can spend up to USD 148,500[63] for various small-scale watershed works, which is a substantial amount. The risk of elite capture exists if social inclusion principles are not followed at the village levels. Besides systematic procurement and vendor management guidelines that can reduce political patronage to some extent, the Program will further improve the situation through science-based watershed planning, better Standard Operating Procedures (SOPs), strengthened community engagement, performance monitoring, social audits, and performance incentives.

3.2 Analysis of Institutional Arrangements

The institutional framework for implementing the Program is currently defined by the national WDC-PMKSY guidelines (2011) and no major changes are anticipated in the draft Guidelines for New Generation Watershed Development Projects (2021). The prescribed guidelines are followed by the participating states in spirit, while the actual institutional arrangements differ from state to state, defined by local needs and historic evolution of its public sector institutions. Details are provided below.

a) ***National level arrangements.*** The DoLR, within the Ministry of Rural Development, is the national nodal agency for managing the government watershed program[64]. DoLR's main role is to develop national programs and guidelines to implement them, raise and manage finances (central share), monitor implementation, and promote knowledge sharing. DoLR is supported by the NRAA, an autonomous agency under the Ministry of Agriculture and Farmers Welfare. The NRAA's key support to DoLR is in developing/updating national watershed guidelines, strategic plans, technical manuals and standards, monitoring program impacts, conducting special studies, etc. NRAA has good technical capability and its continued collaboration with DoLR is important for the Program. The Program shall further strengthen DoLR's capacity through the establishment of a national PMU and NRAA's technical oversight capacity, which could lead to issuing of new national technical standards, based on the Program's experiences.

b) ***State level arrangements***. In the states the SWDs[65] are housed within the Agriculture Departments, are the key state level implementing organizations. These are alternatively known as State Level Nodal Agencies (SLNAs). The SWDs are responsible for overall program development, budget allocations, technical approvals, knowledge sharing, HR management, monitoring, and coordination with other departments and stakeholders. All the two states have well-established training institutions at state[66] and district levels[67] to train program officers as well as GP and WC members. These arrangements will be continued under the Program and strengthened through acquiring additional skills, collaboration with scientific and technical institutions, and improving training modules.

c) ***District and block level arrangements*.** At the district level, a District Office[68] is responsible for overseeing the implementation of watershed programs. The district office is responsible for technical guidance to Project Implementing Agencies (PIAs), review and approval of DPRs and annual action plans, organizing necessary capacity building, and financial management. The actual planning, DPR preparation and implementation is carried out by the PIAs located either at the block level or sub-block levels. About 50 percent staffing vacancies exist in the District and Block level units and their capacity is often not up to desired levels.[69] The Program will support the states to develop HR policies for attracting, training and retaining requisite human resources at these levels.

[63] As per new national guidelines the cost per hectare is about USD 297. An average microwatershed has an area of about 500 ha.Thus the average cost of treating a microwatershed is about USD 148,500.

[64] Guidelines for New Generation Watershed Development Projects. 2020. Government of India.

[65] These units are designated as State Level Nodal Agency (SLNA), as per GoI guidelines

[66] The state training institutions are Institute of Management and Advance Global Excellence (IMAGE) in Odisha, State Institute for Rural Development (SIRD) in Karnataka

[67] The district training centers are: District Agriculture Training Centers in Karnataka, KVKs and NGOs in Odisha.

[68] While the District offices and PIAs in Odisha are dedicated for watershed works, in Karnataka they are under the Agriculture department and are responsible for both agriculture and watershed works. In Karnataka and Odisha, they are called Watershed Cell cum Data Center (WCDC).

[69] Lobo C. An institutional study on watershed services: Improving operational effectiveness and impact of the IWMP.

d) ***Village level arrangements*.** The Gram Panchayats (GPs) and the Watershed Committees (WCs) are responsible for community mobilization, providing inputs to DPRs, implementing micro-watershed sub-projects, record keeping, and maintenance of the treated watersheds, with support from the PIAs. Capacities of the GPs are weak and they do not always have appropriate incentives for owning the sub-projects and maintaining them. The O&M policy guidelines are not detailed enough and there is inadequate support from the block/district levels during the maintenance phase. The Program will support the two states in strengthening capacity of GPs/WCs to undertake improved maintenance of soil and water conservation assets, establish better systems to monitor maintenance, monitor performance through performance monitoring tools and incentivize their performance.

3.3 Borrower Capacity

Based on discussions with the clients and sector experts, the Technical Assessment identified institutional weaknesses in the following thematic areas; improved science-based planning, human resource management, program management, community engagement, coordination between sector related line departments, private sector participation, M&E, O&M and knowledge sharing. The REWARD Program aims to address these weaknesses through various activities (Table 4).

Table 4. Institutional strengthening under the REWARD Program

Institution and Thematic Areas to be Strengthened	Institutional Strengthening Measures
DoLR, GoI and NRAA • National technical standards • Line department coordination • M&E • Knowledge sharing	• Hiring a well-qualified PMU. • Establish a national level steering committee for strategic guidance, inter-departmental coordination and synergy • Establish a national level technical committee to support states in reviewing the science-based approaches and systems. Use the experience to develop national technical standards and advise other states.
SWDs (SLNAs) • Science based planning • HR management • Line department coordination • Private sector participation • M&E • Innovations	• Hire technical experts for overall Program coordination, and monitoring • Partnership with scientific organizations[70] for LRI/hydrology data collection and analytics, developing training modules and training of trainers (ToTs) for using science-based planning. • Strengthen MIS systems • Converge with MSP for active private sector participation in key areas. • Develop a human resources policy for the Program • Coordination with other line departments
Districts and PIAs • Science based planning • Community engagement • Program management • M&E	• Hiring required skills and personnel • Capacity building for different activities for all stakeholders • Procure required IT equipment to use digital data for planning and monitoring • SOPs for different activities for GPs/WCs • Performance monitoring of GPs/WCs
Capacity building institutions • Training needs assessment • Training programs • Measuring impacts	• Identify critical training needs and refine/develop modules • Develop annual/mulit-year capacity building plans • Train master trainers and train others through them • Measure results of training and refine modules
GPs and WCs • Understanding and adopting science-based approaches • Sub-project management • O&M	• SOPs and training on sub-project planning and local governance • Training on maintenance of treated watersheds • Convergence with other programs/funds at GP level • Support to form/ strengthen FPOs and value chain linkages
Lighthouse state (Karnataka) • Knowledge sharing	• Establish a national center of excellence for science-based watershed management.

[70] Karnataka developed such partnerships under the KWDP-II project and shared their experience and relevant documents with Odisha.Both the states have now ideitnfied technical partners and ready to sign MoUs with them.

3.4. Incentives for Collaborations

While current incentives for cross-agency collaborations are weak, the Program offers multiple incentives for collaborations. First, leading scientific organizations will be engaged by WSDs through MoUs, to support science-based planning and training. While the sector will benefit from advancements in planning, the scientific organizations will also use the data for advancing their teaching and research. Second, collaboration between SWDs and the Agriculture and Horticulture Directorates has mutual benefits- the target communities under the Program benefit from access to these services and the Directorates benefit from access to vast scientific data and analytics. Third, the private sector can also benefit through enhanced business opportunities by bringing in much needed technology and market linkages that ultimately benefit the target communities. However, such collaborations and convergence will require new policy directions, guidelines and active engagement with multiple stakeholders. To advance collective thinking and action on these fronts, the Program will promote different approaches, that suit each state. In Karnataka, a new workstream within the existing MSP,[71] supported by 2030 WRG, is being created.

3.5 Accountability

The overall accountability framework for watershed management programs is reasonably sound at the higher national and state levels, but is weaker at district, block and GP levels. The Program will help participating states develop an appropriate human resource policy that would provide better clarity in job responsibility, performance, and compensation reviews for both staff and consultants[72]. While the DPR, containing a list of activities and beneficiaries is 'per se' approved in the 'Gram Sabha', there is no process of reporting back on progress and results to the Gram Sabha. These lacunae will be addressed through appropriate community awareness activities, adoption of a clearly defined saturation approach, developing SOPs for these processes, to ensure inclusion, equity and transparency, and adopting effective performance monitoring systems. While science-based planning will contribute to minimizing risks related to selecting sites for infrastructure, the performance monitoring and rewards will encourage GPs to maximize community participation. An appropriate form of social audits will also be adopted to improve GP/WC accountability.

3.6 Fraud, Corruption and GRMs

All two states have long-standing and well-developed arrangements for dealing with fraud and corruption. The Lokayukta (Ombudsman) institution in Karnataka, the state Vigilance Directorate in Odisha are responsible for addressing fraud and corruption in the respective states. These existing mechanisms will be used under the Program. However, the current GRMs are weak and will be strengthened under the Program.

3.7 Borrower Commitment

The DoLR and participating states have demonstrated a high level of commitment for implementing the proposed Program. The Bank team has had several rounds of discussions with the DoLR and the states. At the central level, discussions were held with the Secretary, the Joint Secretary and their teams at DoLR and NRAA. At the state level, discussions were held with chief secretaries, finance secretaries, agriculture secretaries, commissioners/directors of watershed departments, technical teams, district/block level officers and staff at training centers. The higher-level administrations have committed to adopt the PforR lending model, implement a more science-based and development-focused watershed management approach, adopt mechanisms to strengthen local governance, and are keen to demonstrate ultimate results linked to livelihoods and climate change resiliency. Both DoLR and the two states have agreed to provide the required financial outlays.

4.0 Assessment of the Expenditure Framework

4.1 Background

[71] The MSP in Karnataka was formed on 28th March 2017, through a Government Order. The steering Board is headed by the Chief Secretary. Other members are from water related departments, private sector, civil society, and academia. The current focus of the MSP is on issues related to Agriculture water, urban water and industrial water. These themes are addressed by focused Workstreams, again comprising of members from public, private, civil society and academia.

[72] This work will build on the human resource needs assessment and policy developed for DoLR in 2014 under the former Neeranchal national watershed project and other similar assessments in states.

The DoLR provides funds to states, on a matching basis (60:40)[73], and does not directly implement national watershed programs. Fund flow from Treasury to DoLR and subsequent release to states for watershed program delivery has been reliable and consistent over time. Fund releases are highly dependent on requests from the states and the submission of a utilization certificate for at least 60 percent of the funds received previously. Similarly, budgets earmarked for DoLR management costs have been adequate and consistent, however utilization has shown an inconsistent trend, due to administrative and procurement delays.

The current phase of WDC-PMKSY has been extended until March 2022. A new phase of the program WDC-PMKSY 2.0 with enhanced per hectare cost norms has been approved by the Ministry of Finance, GoI on August 6, 2021 with a total outlay of USD 1.10 billion and a cumulative target of 4.95 million ha of land to be treated during 2021–2026. Based on the levels of expenditure in the last 4 years, projections of expenditure at the DoLR and state level ha been made. Projections of expenditure under REWARD funds has been made keeping in mind the strained finances of governments of all two participating states due to the COVID-19 pandemic.

In addition, the participating states have also made budget allocations to watershed development activities, either as a stand-alone provision or as a fund that can be used in convergence mode, for the next few years. The GoK allocated of USD 13.5 million per year for a period of five years to carry out watershed activities in drought-prone districts of the state. The GoO has earmarked funding under the Odisha Mineral Bearing Areas Development Corporation (OMBADC). All the states also have a mechanism to use funds under the MNREGA for some watershed development activities.

4.2 Projected Expenditure and Share of Government and World Bank under REWARD

The projected expenditure plan under WDC-PMKSY for DoLR and the two states has been assessed conservatively based on recent expenditure patterns (2016–17 to 2019–20), the budget approved by the Ministry of Finance, GoI and financing constraints imposed by the prevailing COVID-19 pandemic.

Furthermore, strained finances of states due to the ongoing COVID-19 pandemic has been accounted for by keeping projections low in the first two years (2021-22 & 2022-23). In subsequent years, projections are increased to earlier levels with WDC-PMKSY. The proposed REWARD expenditure also accounts for technical partners (for LRI, hydrology and remote sensing) and to set up laboratories in the first two years of the Program.

While the Program covers the entire WDC-PMKSY umbrella in all the two states, only the DoLR management cost of 0.5 percent[74] of the total projected grant to the two states in each year has been considered as the DoLR program. The same is tracked under budget head 2501- 11&12 in the Demand for Grants made annually by DoLR.

Table 5: REWARD – Financing and World Bank share

Major Budget Heads	*WDC-PMKSY*	*REWARD Program*	*Total Budget*	*USD million/a*	*Percentage of Total Budget*
	INR million				
DoLR	**400**	**888**	**1,288**	**17.4**	**100%**
REWARD Program		888	**888**	**12.0**	**69%**
IBRD share @50%	0	444	**444**	**6.0**	34%
Government of Karnataka	**11,000**	**6,343**	**17,343**	**234.4**	**100%**
REWARD Program	0	6,343	**6,343**	**85.7**	**37%**
IBRD share @70%	0	4,440	**4,440**	**60.0**	26%
Government of Odisha	**6,600**	**5,180**	**11,780**	**159.2**	**100%**

[73] This matching proportion of 60:40 applies to the REWARD participating states (Karnataka and Odisha) and may be different for other states.
[74] Current budgets range from 1-2 per cent, however utilization is less than 60 percent. Under the new WDC-PMKSY 2.0 guidelines, with unit cost going up steeply, even at 1% more funds will be available to DoLR. Hence only 0.5 percent has been conservatively taken for estimating projected budget

REWARD Program	0	5,180	**5,180**	**70.0**	**44%**
IBRD share @70%	0	3,626	**3,626**	**49.0**	31%
Total	18,000	12,411	30,411	**411.0**	100
REWARD Program	0	12,414	**12,414**	**167.7**	41%
IBRD share @70%	0	8,510	**8,510**	**115.0**	28%

Note: a/ based on exchange rate of 74 INR per 1 USD

From the above table, the total IBRD share under the entire Program is approximately 28 percent. For each partner, the IBRD shares are approximately 34 percent for DoLR activities, 26 percent for Karnataka, 31 percent for Odisha.

5.0 Program Results Framework and M&E

5.1 Results framework

A comprehensive Results Framework was jointly developed by the Bank team, working closely with the DoLR and the two states. The RF includes a clearly defined PDO, key expected program-level results linked to the achievement of the PDO, and intermediate indicators for each of the expected results with corresponding baselines and targets. The PDO and expected results, as measured by these indicators, are achievable within the Program's expected implementation period. The expected outcomes are within the government's sphere of influence.

5.2 Monitoring and evaluation

All the states use the current DoLR online MIS for internal M&E services, that mainly tracks physical and financial progress (inputs and outputs). However, to support a new science-based and integrated watershed program, the states will establish an enhanced MIS to capture key information related to activities, expenditure, results, grievance management, performance of GPs/WCs, O&M and sustainability. The MIS will use a state-of-the-art IT, GIS, remote sensing platforms for data capture, analytics and reporting.

In addition, under the Program, impact evaluations will be undertaken at the state level by a high quality, third-party agency. The impact evaluation studies will adopt a comprehensive approach covering technical, economic and social parameters and an appropriate set of indicators and instruments. Evaluation studies are envisaged to lead to the development of a standard methodology (sample size, critical indicators, measurement tools, basic analytics, report format) for impact evaluation of watersheds that can benefit the broader national program.

6.0 Program Economic Evaluation

Background. A 20-year cash flow model is used to assess the ex-ante productivity, effectiveness, and efficiency of the Program's investments. The main economic benefits are expected from: (i) increased efficiencies in watershed planning and implementation leading to shorter planning and implementation time; (ii) increases in the area under production and crop productivity through improved soil and water conservation practices and adoption of recommended agricultural practices; (iii) diversification from food grains into climate-adaptive, pulses and oilseeds based on improved advisory; (iv) improved post-harvest management, value addition and marketing; and (v) vulnerability reduction initiatives for the landless and marginalized communities within the watershed development areas. It is expected that facilitating value chain links will lead to increased incomes of beneficiaries due to: (i) higher prices for the agricultural produce through better aggregation, better market information, and new market channels; (ii) potentially reduced input costs such as fertilizers resulting from more detailed soil nutrient information; and (iii) increased employment and value addition from post-harvest activities, including aggregation, cleaning, grading, sorting and processing. Benefits resulting from land use change will be captured through the estimation of GHG emissions (carbon sequestration).

Financial analysis. The financial analysis, which provides the basis for the economic analysis, has been carried out for two scenarios: with Program (WP), and without Program (WOP), reflecting existing technologies/practices. The focal points of the analysis are:

Results. The EIRR of the project over a 20-year period for the base case, excluding benefits from GHG emission reduction, is 35.0 percent with a Net Present Value (NPV) of USD 285.4 million at a discount rate of 12 percent. The EIRR from watershed development and improved agriculture activities is 27.5 percent, which is higher than previous watershed

development projects in India, as a result of reduced planning and implementation periods of watersheds as a result of scientific planning. The benefits from the dissemination of agro-advisory services to improve farmers decisions and resilience improves the base case EIRR (excluding benefits from GHG emissions) to 31.8 percent.[75] The benefits of the value chain activities increase the base case EIRR (excluding benefits from GHG emission) to 32.8 percent[76] and the benefits from vulnerability reduction activities (excluding benefits from GHG emission) further improve the EIRR to 35.0 percent.[77]

The EIRR calculations also assume a five percent operations and maintenance costs and a 15 percent tax rate on project costs (to account for transfer payments) over the 20-year period for which the EIRR has been calculated. Placing a monetary value on the potential GHG mitigation benefits in terms of reductions in GHG emissions and increased carbon sequestration (estimated at 9.39 million tonnes CO_2eq over the project life of 20 years), the base case EIRR increases to 39.2 percent. This assumes a shadow price of carbon per tCO^2eq of USD 40 for 2021 and reaching USD 50 at the end of the 20-year period, as recommended by the World Bank. The analysis was also conducted for a high shadow price of carbon scenario as recommended by the World Bank, resulting in an EIRR of 43.0 percent. The GHG estimation does not include the effects of value chain activities and promotion of diversified livelihood activities among vulnerable communities. These activities being demand based are difficult to estimate ex-ante and hence have not been included in the GHG estimates.

7.0 Technical Risks

Five key risks are associated with the technical design of the Program that could hinder the progress and achievement of goals. These are:

a) **Effective collection, analysis and application of LRI data for science-based watershed planning**. While Karnataka has demonstrated experience in this area through the recent Bank-supported Sujala III project, Odisha do not have such experience. To address this risk, both states have identified top-level technical and scientific partners with good experience in LRI data collection and application and have negotiated partnerships with them. In addition, Karnataka, as the designated 'lighthouse' state, is sharing its knowledge and experience in collecting, processing and applying LRI data for scientific planning with Odisha.

b) **Timely procurement of scientific equipment and deployment of manpower by partners.** The Program expects all partners to procure several scientific equipment, strengthen laboratories and deploy manpower within the first 3-6 months to be able to achieve the agreed targets in a time-bound manner. A key risk is delays by the partners in completing the procurement in a timely manner. To mitigate this risk, all state watershed departments are working with the partners to evolve common technical specifications across the board, helping them with preparing tender documents and where needed even calling the tender on behalf of the partners.

c) **Weak technical capacity at the district and block levels**. The institutional analysis showed significant capacity gaps at the district and block offices, both in terms of staff vacancies and skill sets. This issue will be addressed through hiring technical staff from the market with the relevant skills and training them in the early stages of the Program, either through the local state technical partners and/or the CoE being established in Karnataka.

d) **Inadequate capacities of GPs and the Watershed Committees.** GPs and WCs play a critical role in the implementation of watershed programs but have weak capacities. The Program aims to address this issue by adequate capacity building, using a performance monitoring system to track performance in critical phases and measures to incentivize performance.

e) **Promoting community collectives for marketing and establishing forward and backward linkages.** Effective value chains will be critical to improve the incomes of farmers in the Program. This issue will be addressed by converging with on-going state programs of departments of agriculture and horticulture to identify and strengthen value chains in target areas, from the beginning of the Program. In addition, in Karnataka, the Program will leverage the experience of the MSP Forum, being facilitated by 2030 WRG, in enabling private sector participation.

[75] The benefits from agro-advisory services, is based on the learnings from "KSNMDC – Varuna Mitra Impact Evaluation Report, 2018" that estimates the direct benefits of agro-advisory services to be INR 18,005 per farmer or INR 5,107 per farmer.

[76] The Value Chain benefit estimates have been estimated using similar World Bank funded projects in India (JOHAR, TNRTP, BTDP, NRETP). The benefits have been estimated to be an annum additional income of 13,232 per household engaged in value chain activities or a B/C ratio of 0.95.

[77] The Vulnerability Reduction benefit estimates have been estimated using similar World Bank funded projects in India (BRLP, TNPVP, NRLP) for simple and enhanced credit-based livelihood activities. The benefits have been estimated to be an annum additional income of 15,465 per household or a B/C ratio of 0.99.

ANNEX 4. (SUMMARY) FIDUCIARY SYSTEMS ASSESSMENT

Financial Management

1. As for IWMP/WDC-PMKSY, the REWARD Program will be embedded within the state's public financial management systems. The findings of the assessment across the public financial management cycle, as will be applicable for REWARD is summarized as follows:

Planning and budgeting

2. **Adequacy of budgets**: IWMP/WDC-PMKSY expenses have been budgeted for each year in Karnataka and Odisha at about INR 300–350 crores, inclusive of the state's share. The budget outlays for the scheme at DoLR were estimated at INR 2,000 crores.[78] and includes the grants to states. The budget outturn has significantly improved over the years, but there are substantial variances and large savings in budget allocations and significant adjustments through supplementary budgets. Notwithstanding the above, provision of funds for the projects has been adequate and while past performance may not necessarily be a predictor for future allocations, there is a reasonable expectation that the required resources will be appropriated in the financial years when required. Similar to PMKSY, separate budget lines for the REWARD Program have been created in the FY2021-22 annual budgets for Odisha, Karnataka and DoLR.

3. **Budget execution:** DoLR/GoI, Karnataka and Odisha follow a standard Chart of Accounts (CoA) that is consistent with the national framework. The CoA allows tracking of spending on administrative unit, economic, functional aspects but does not allow effective program-based budgeting to measure performance at the program level. Treasury computerization (Khajane/Karnataka, FMIS/Odisha and e-Lekha/GoI) of core budgeting, accounting and financial reporting has been operational for a decade or more. This has led to an improvement in overall control, reduced delay in submission of periodic reports to the departments and the Accountant General, availability of daily fund position and expenditure reports and introduction of passing of bills on first-in first-out principle.

4. IWMP/WDC-PMKSY fund flow processes follow various tracks in the States, as described in the detailed FSA report. The key risk with the fund flow arrangements in Odisha and Karnataka is that a significant proportion of project funds remain outside the state consolidated fund in external bank accounts [Odisha has approximately INR 98.7 crores unspent in bank accounts at state and district levels, including closing balances in WC bank accounts as on 02 March 2020). This practice also does not lend itself to efficient cash management as unspent funds could be better utilized elsewhere.

5. To address the risk identified with large unspent balances in bank accounts at dispersed locations outside the state consolidated fund, WMD will set up single state level zero based linked bank accounts at district, PIA and WDC levels and use the EAT module of PFMS for all REWARD Program operations.

6. **Accounting and financial reporting:** Under IFMIS/Khajane II/e-Lekha, accounting and financial reporting is fully automated and near real time. Monthly accounts and fiscal indicators are now available; a half-year review of state finances is published and available in public domain; year-end financial statements are now tabled in Legislature immediately in the next Assembly session and are more easily available to the public. A comprehensive web-based MIS[79] has been developed for PMKSY by DoLR, wherein physical and financial data is regularly uploaded by the states.

7. For Karnataka and Odisha, WMD, in consultation with the State Finance department [and Treasury directorate and PFMS SPMU] will use the PFMS platform for REWARD program. This means that REWARD, including new PMKSY phase will be registered as new schemes in PFMS. All implementing agencies, including WDCs will be registered in PFMS. DoLR will put in place a team to undertake a business process review of the uploading of financial progress reports on the IWMP/WDC-PMKSY MIS portal, including reconciliation processes undertaken at the state/DoLR levels, and suggesting revised processes to ensure the reliability and correctness of MIS data [proposed DLI].

[78] About 98-99 percent of the budget outlays at DoLR level represents grants in aid to the states.
[79] See link: http://iwmpmis.nic.in/.

8. **Internal controls:** Appropriate controls on transaction-level expenditure are documented in various manuals and handbooks, updated and supplemented through Government Orders as required by the state/GoI finance department(s) from time to time, and are also automated through the treasury system. For Odisha, IWMP/WDC-PMKSY [and REWARD] operates under Special Purpose Vehicle (Society model or SPV) which remains outside of the consolidated fund and therefore the standard state controls and checks do not typically apply. The oversight arrangements for district level operations are exercised by the District Administration and at the state level by the Agriculture department. For the REWARD Program, an Independent Verification Agency (IVA) will be engaged to monitor, evaluate and validate Program results through a credible verification process. Overall, there is adequate control over and stewardship of Program funds, with well-defined delegation of authority.

9. **Auditing:** For IWMP/WDC-PMKSY, annual external audits are conducted by private chartered accountant firm/s engaged by SWD/DoA. The audits are conducted as per the agreed ToRs. Audit arrangements as for IWMP/WDC-PMKSY will be extended to cover the REWARD Program. The Terms of Reference have been strengthened to ensure that the audit coverage is comprehensive and covers procurement aspects as well. WMD will establish an audit committee, comprising departmental senior staff to review the audit observations and ensure that the recommendations are implemented.

Procurement

10. Procurement under the Program would be performed by the respective watershed committees at the community level, respective SLNAs of Karnataka, Odisha, and DoLR. It is estimated that more than 70 percent procurable expenditure would be incurred at the community level by watershed communities. On the other hand, DoLR has the smallest share of procurable expenditure. Based on the activities identified in the Program scope, the main procurable items are (i) community procurement of works and supplies towards watershed development, (ii) consultancy services like engagement of technical partners, capacity building, M&E, communication, knowledge sharing etc. (iii) goods such as laboratory equipment and IT systems including development of DSS. **The Program is not expected to procure any high value contracts**[80] valued at or above Operational Procurement Review Committee (OPRC) thresholds (USD 115 million for works, USD 75 million for goods and non-consulting services, and USD 30 million for consultant services), which are based on a 'moderate' risk rating. High value contracts under the Program shall be monitored during the supervision missions to ensure that the Program is in conformity with the Bank's policy on high value contracts in PforR financing. This would also be regularly validated through internal/external audit of each implementing entity. Procurement under the Program will be governed by laws and rules applicable in the respective implementing entity.

11. **Karnataka** is one of few states in India which have an act in place to manage public procurement. The Karnataka Transparency in Public Procurements Act (KTPP), 1999[81] came into effect from 4th October 2000. Subsequently, rules and various circulars have been issued in conjunction to the Act. A compendium of these circulars was issued by State Finance Department. KTPP rules have detailed provisions on various types of procurement processes and procedures. It is mandatory to use e-procurement system above a threshold of INR 500,000. There is adequate procurement staffing at SLNA level to undertake the proposed procurements. SLNA has conducted five procurements of value above INR 500,000 during the past two years. It is observed that the open tendering method was used for all cases with an adequate bidder participation rate; and while no cases for cost over-run and no complaints were received, there is room for improving the procurement cycle time. The assessment concluded that the legal framework is adequate for the implementation of the Program. However, the assessment found that procurement planning is not practiced and there is no systematic disclosure of contract award information. **Public disclosure of procurement plan and contract award information is recommended as a risk mitigation measure**.

12. In **Odisha,** assessment has also drawn on recently concluded MAPS assessment wherein Odisha was one of the participating states. Odisha General Financial Rules, 1957 (OGFR third edition, 2000) prescribes procurement rules in Chapter 8: Stores and Chapter 9: Works. Delegation of Financial Powers Rules, 2013 has detailed thresholds which defines

[80] Contracts with estimated values exceeding the monetary amounts, as may be amended from time to time, that require mandatory review by the Bank's OPRC.
[81] http://www.finance.kar.nic.in/trans/Trans-Act.pdf.

various thresholds on which financial powers are delegated to departments of GoO. Multiple administrative instructions were issued from time to time to regulate / amend these governing documents including use of eProcurement platform. Procurement of Works is additionally governed by provisions of Odisha PWD Code. For Procurement of Goods, use of Government e-Marketplace (GeM) has been allowed vide a letter dated November 30, 2017 by the state finance department. The threshold and conditions under which each method is used is described in current procurement framework, which has adequate details for publicity and advertising. The framework stipulates that the evaluation is based on the pre-disclosed evaluation criterion. SLNA informed that during the past two years, only two contracts of value above INR 500,000 were signed by the SLNA. It is observed that open tendering method was used for for these cases with adequate procurement cycle time; and while no cases for cost over-run and no complaints were received, there is room for improving bidder participation and avoid time extensions. The assessment concluded that the legal framework is adequate, but the implementing agency does not have dedicated staff to manage procurement activities and provide necessary guidance on procurement matters related to watershed committees. The assessment also found that procurement planning is not practiced. **Hiring of a procurement specialist and public disclosure of the procurement plan and contract award information are recommended as risk mitigation measures**.

13. **DoLR,** being a central government department, follows the General Financial Rules (GFR), 2017. GFR 2017 prescribes procurement rules primarily under Chapter- 5: Works, Chapter-6: Procurement of Goods and Service; and Chapter-8: Contract Management. These rules are further supplemented through detailed manuals on Goods (dated April 05, 2017), Consultancy and other Services (dated April 18, 2017), and Works (dated July 03, 2019). It is also mandated to make use of e-publishing (Rule 159) and e-procurement system (Rule 160). For the procurement of goods, use of Government e-Marketplace is made mandatory. In the past two years, DoLR has not procured any contracts of value more than INR 500,000. The assessment concluded that the legal framework is adequate, but the implementing agency does not have dedicated staff to manage procurement activities. Program design requires DoLR to incur total procurable expenditure of about USD 6 million over a period of five years. The assessment also found that procurement planning is not practiced and there is no systematic disclosure of contract award information. Under the GoI's program expenditure framework, National Rainfed Area Authority (NRAA) is also identified as an implementing agency[82]. An assessment of NRAA reveals that it follows the same GoI public procurement framework. Its systems are adequate to meet the small value procurement needs envisaged under its scope in the REWARD Program. **Hiring of a procurement specialist and public disclosure of procurement information (procurement plan and contract awards) are recommended as mitigations measures for the DoLR.**

14. **Community driven procurement** procedures are followed for the works and supply of materials required in the development of watershed sub-projects. Activities such as needs assessment, DPR preparation, cost estimation for watershed projects, are governed by the Common Guidelines for Watershed Development Projects dated 2008 (revised 2011) of GoI. In the future, the same would be governed by the new WDC-PMKSY guidelines and/or any subsequent version. Manpower for such works is sourced from the local community and paid at the wage rates notified by the government and supplies are sourced from local market at rates no more than those defined under Schedule of Rates published by respective governments. These procedures are adequate and being used by the communities. An oversight on the community driven activities is maintained by respective watershed monitoring teams. It is found that there is no single document where all these procedures are specified, which is identified as a risk of non-compliance or inconsistent practices across communities. **Codification of community procurement procedures into a guidance manual at each state level, with a provision for annual social audit and provision for application of Bank's anti-corruption guidelines, and dissemination of these manuals are recommended as mitigation measures to ensure compliance on such procedures.**

Governance and accountability systems

15. Under the larger governance framework of India, all government departments and agencies are covered under the RTI Act 2005. The CAG also carries out compliance audits annually, and the audit-related queries. Prevention of Corruption Act 1988 is the governing law which defines legal framework to prevent corruption in the country. Central /State Vigilance units have jurisdiction and power to undertake an enquiry or cause an enquiry/investigation to be made on any information

[82] As an implementing agency, NRAA will be a knowledge partner in REWARD

that a public servant has exercised or refrained from exercising his powers, for improper or corrupt purposes. Government departments can also initiate disciplinary proceedings against a public servant on charges of misconduct, possessing disproportionate assets and violation under respective Civil Services (conduct) Rules.

16. In **Karnataka,** the Lokayukta[83] was established in 1984 through an Act to investigate and report on corruption in the GoK and to redress public grievances related to state government employees. The Chief Minister's Office of GoK has a special cell for grievance redressal. Review meetings are being convened by the Chief Minister's Office on a regular basis with the nodal officers of each department/district to expedite the action. In **Odisha**, Lokpal is appointed in accordance with the Lokayukta (Amendment) Act, 2016. The Vigilance Department headed by Director cum DG Police and the Lokayukta (Ombudsman) appointed under the Lokayukta Act, 2014 form a comprehensive framework for anti-corruption. The Chief Minister's Grievance Redress Cell has provision to receive, check status and seek further clarification (https://cmgcodisha.gov.in/index.php). At **DoLR**, other than CAG, three institutions maintain an oversight over public procurement operations of any department of the central government. These are the Central Vigilance Commission (CVC), Competition Commission of India (CCI), and Central Bureau of Investigation (CBI). While the CAG and CVC address probity issues, the CCI takes on anti-competitive elements. Apart from probity issue, CVC and CAG also release guidelines on public procurement, which are mostly advisory in nature, but not binding on the procuring entities. **For all SLNAs and DoLR, it is recommended to establish respective procurement related complaint handling mechanisms, with pre-defined roles, responsibilities and timelines, to deal with complaints arising from procurement falling within the Program Expenditure Framework. This system would also be available to receive complaints from the communities and conduct timely redressal.**

17. The World Bank 'Guidelines on Preventing and Combating Fraud and Corruption in Program for Results Financing' dated February 1, 2012 and revised on July 10, 2015, shall apply to all activities within the Program boundary. As there is no distinction between World Bank financed activities and Government financed activities within the Program boundary, these guidelines shall be applied in an unrestricted manner on all activities within the Program boundary. Requirements under these guidelines include but are not limited to: (i) borrower's obligation on informing the World Bank about all fraud-and corruption-related allegations and investigations, (ii) the World Bank's right to conduct administrative enquiries, and (iii) ineligibility of debarred firms for contract awards. It is clarified to implementing agencies that these guidelines shall be applicable on all activities within the Program boundary and not the parts of the government program that are outside these boundaries. **To operationalize implementation of the various areas covered in the ACGs, it has been agreed that the (i) Office of Ex-Officio Secretary, Department of Agriculture in Karnataka (ii) Office of Principal Secretary, Department of Agriculture, GoO, and (iii) Office of Joint Secretary, DoLR shall:**

- maintain and compile a six-monthly report on all fraud-and corruption-related allegations and investigations that are related to the Program and share it with the Bank in the prescribed format.
- share reports on six-monthly basis stating that none of the contract awards under the Program are made to any World Bank debarred firm.
- ensure each of the procurement entity shall:
    - ensure incorporation of the Bank's debarment list in the filter used by implementing entities when they conduct due diligence. This list may be found in the following website: *https://www.worldbank.org/en/projects-operations/procurement/debarred-firms*.
    - for every bidding opportunity under the Program, each participating bidder shall be required to submit (as part of their bid) a self-declaration that the firm is not subject to debarment or has not been sanctioned under the World Bank system of debarment and cross-debarment.

Additionally, it is recommended that all the implementing agencies add scope in Auditor's ToR to validate that under Program Expenditure Framework (i) none of the contracts are awarded to World Bank debarred firms and (ii) no high value contract (above OPRC threshold) is present.

The requirements above, operationalizing the implementation of the various areas covered in the ACGs, are included in the DoLR-REWARD Program Manual, the Karnataka Program Manual, and the Odisha Program Manual.

[83] Ombudsman institution.

ANNEX 5. (SUMMARY) ENVIRONMENTAL AND SOCIAL SYSTEMS ASSESSMENT

The ESSA was carried out in line with the World Bank policy and procedure for PforR financing for the REWARD Program. The ESSA assessed the adequacy of E&S systems including existing institutional, operational, and regulatory systems and capacities to manage E&S risks and priorities and recommends measures for strengthening them. The ESSA covered a comprehensive review of all relevant E&S plans/frameworks, implementation documents and other technical studies/reports related to national as well as state-supported watershed programs, including the World Bank supported watershed projects in Karnataka. This was complemented with consultations with key primary and secondary stakeholders including SLNAs/SWDs and the other line departments; field visits to watersheds in Karnataka with face-to-face interactions with community groups (including small and marginal farmers, women and women SHGs, landless households, user groups/common interest groups), and community institutions (such as watershed committees), PRIs, NGOs and government line departments and partner agencies. In addition, following the pandemic, multiple rounds of virtual consultations were held with government counterparts, partners and watershed community representatives in the participating states. The ESSA identified key gaps and opportunities for further strengthening the existing institutional, operational and regulatory systems and capacities pertaining to E&S issues in the REWARD Program. The draft ESSA report was presented to a wide range of stakeholders for their comments and suggestions through multi-stakeholder consultations in a virtual manner in August 2020 and in February 2021, and revised after incorporating comments and suggestions received from these multi-stakeholder consultation workshops.

Key Findings of the ESSA

Potential Benefits: The overall E&S impact of the watershed Program is likely to be positive, owing to benefits such as increased ground water level, improved soil moisture and increase in green coverage, crop productivity due to multi-cropping and increase in rural incomes subsequently reducing poverty. Strengthening capacities of project authorities and functionaries, and both public and private specialized institutions to implement more science-based watershed projects will be beneficial for overall hydrological services and also environmental sustainability. Establishing high-level coordinating bodies in the state government on the lines of Multi Stakeholder Platforms, supported by the 2030 Water Resources Group, for convergence of watershed issues will benefit the environment with convergence of state specific goals on forest cover, agriculture and horticulture development for developing rainfed districts. The science-based planning approaches of REWARD program will reduce the risk of not capturing issues such as overall water budget in the macro-watershed, change in ground water table, change in water quality parameters with methods of soil, land and water conservation. Other risks related to over-use of chemical fertilizers and pesticides are expected to be mitigated through agro-advisories issued to farmers. The key social benefit of the Program emerges from strengthening the watershed committees, PRIs and other community institutions, building their capacities and institutionalizing gender- and socially inclusive watershed development planning and implementation. These interventions are expected to increase people's participation, equitable and inclusive benefit sharing, gender equality and citizen's engagement in the watershed sector in the participant states. In addition, the program will also enhance local employment and livelihood opportunities for watershed populations including for marginal and small farmers, landless and wage laborers and lead to improvements in household incomes and general economic development in the program areas. These interventions will also improve the climate resilience of vulnerable communities in rainfed areas. Strengthening state and national institutions to coordinate and provide appropriate policy and program guidance and learnings from best practices will have long-term positive impact.

Environmental and Social Risks: Most of the E&S risks and impacts are mainly on account of gaps identified in existing implementation processes of the watershed program and these small scale, site specific, localized, predictable and reversible impacts are highly amenable to risk mitigation measures. The key social risk relates to weak community ownership and preparedness to participate in science-based watershed planning and DPR preparation, and inadequate inclusion of small and marginal farmers and landless/asset less households in watershed committees and among direct program beneficiaries, especially women, scheduled castes (SC), scheduled tribes (ST) and other socially vulnerable groups. Transition to a science-based approach may undermine the mechanisms and processes of community participation in watershed planning. LRI based approach could make the watershed planning process more 'top down' compared to the 'bottoms up' planning processes envisaged in IWMP and PMKSY-WDC. This increases the risk of exclusion of SC and ST communities, landless and wage dependent households, and women from program planning processes, inclusive benefit sharing, and grievance redressal. Gaps in institutional responsibilities, operational guidelines, and implementation capacity for screening, mitigating,

monitoring, and reporting of social risks adds to the risk profile. The environmental risks are largely related to extension of watershed interventions to forest, wetlands and other environmentally sensitive areas; risk of change in cropping patterns to more water-intensive high-value crops leading to excessive withdrawal of ground water, and increased use of fertilizer and pesticides; risk of increase in salinity and sodicity due to excessive irrigation in some areas; risk of restricting surface flow at plot level thereby impacting water bodies in the downstream and overall hydrology. There are no specific measures instituted for management of E&S activities in the process of Program implementation. The planned convergence of other programs of partner departments of agriculture, horticulture, forestry, and MNERGA to conserve soil moisture will contribute to effectively managing all such environmental risks. The REWARD Program's overall E&S risk rating is 'Moderate' and can be effectively mitigated within the existing E&S management systems.

Excluded Activities. The REWARD Program will not finance any activities that would cause high or substantial E&S risks and impacts including: (i) any land acquisition and/or involuntary resettlement; (ii) use of child labor; (iii) destruction of any physical cultural resources; (iv) any work that would convert or encroach forest land, notified wetland or any eco-sensitive area; (v) any work that would bring large scale submergence beyond drainage line; (vi) any work that would convert common property resources including grazing land; (vii any work that would restrict minimum ecological flow of the rivers and rivulets; (viii) any activity that would use most toxic pesticides classified as 'Class I' (based on toxicity of the active ingredient) by the World Health Organization; and (ix) any work that would use or generate hazardous material or chemicals beyond permissible levels specified in Schedule II of Hazardous Waste Handling and Management Rules, 2016.

Assessment of the Environmental System. While Karnataka has experience of watershed planning and implementing using comprehensive LRI-based approaches, Odisha is new to it and would require support during the transition phase. Under the REWARD Program, both states have identified technical and scientific partners to support them. In addition, Karnataka will act as a 'lighthouse' state by sharing its knowledge and experience with other states in collecting, processing and applying LRI-based watershed planning and implementation. The LRI-DSS based system uses land resource site-specific data (both physical and chemical properties) at the cadastral level along with hydrological data (on permeability, infiltration rate, run-off, erosion, soil moisture, soil storage, ground water storage, recharge, etc.) to develop models for estimating water fractions (ET, soil moisture, run-off, groundwater) in collaboration with a hydrology partner, leading to water balance. At present, water budget and hydrological outputs are calculated with mathematical models with limited ground measurements which are normalized according to soil management units. In this process, while there is a system in place to protect environmentally sensitive areas that are already captured but accumulated under one layer, it is not clearly visible and needs to be clearly displayed. Risk screening at present depends on knowledge of the community and the field level functionary. In the implementation chain there is no articulation of an individual or agency responsible for implementing and monitoring E&S activities. Also, lack of skill among frontline functionaries to demystify core technical details is built-in the LRI-DSS with E&S aspects. The system of crop advisories, including use of fertilizer and water that is generated through DSS and communicated regularly needs to be documented and used in monitoring of benefits. The hydrological data on groundwater storage, silt movement, surface water flow is collected periodically in model watersheds and benchmark sites for monitoring. The same database can be used for measuring mid-term and end-term impacts and will capture larger goals of protecting and conserving hydrologic services and/or managing negative downstream and groundwater impacts which otherwise remains unaddressed. Lastly, an effective institutional mechanism needs to be developed to help move towards environmental sustainability.

Assessment of the Social System. The existing legislative framework is adequate to ensure social sustainability and the interest of marginalized and vulnerable population including the scheduled castes and scheduled tribes. Primarily, the IWMP/WDC-PMKSY guideline with its replacement – the new generation watershed development guideline – provides the legal and regulatory framework to the Program and is adequate and quite comprehensive. It has core principles related to ensuring equitable benefits, addressing gender issues, building accountability, being inclusive, and setting up an effective M&E system. It clearly articulates the principles, processes, institutional responsibilities at different levels of program implementation right from national, state, district, block/PIA, GP and village levels for watershed planning and implementation. The process of watershed selection for treatment is based on a regional assessment of the environment especially soil health and water availability in the rainfed area. Geographically, these areas also house higher proportion of poor, and hence, addressing equity and inclusion is quite important and rightly being prioritized in the watershed guideline. The WDC-PMKSY guidelines promote detailed consultation with community groups including with scheduled castes, scheduled tribes and other marginalized groups on each land parcel to prepare the watershed plan. The process also includes

using PRA tools and mapping of participatory well-being ranking and social mapping to ensure inclusion of women, tribal, and other vulnerable groups. The watershed institutions also have participation from scheduled castes, scheduled tribes, women, and other marginalized groups, though this varies across states.

The REWARD Program does not intend to do any land acquisition or resettlement as the proposed civil works are going to be small, local structures such as check dams, anicuts, tanks, ponds and trenches. Further analysis of other watershed projects in India and in the participating states suggests that there is no land acquisition and hence risk relating to acquiring land and resettlement is minimal or non-existent. Also, as most of the watershed works involves the local community or local labor employed, any large-scale labor influx is not anticipated. Though there is a mandate for addressing marginalized groups including the tribal population, the assessment suggests no special measures being planned to focus on specific needs of tribal groups. There is also lack in inter-departmental coordination for any convergence with schemes focusing on tribal development. In addition, the MIS/M&E system lacks in collecting and reporting disaggregated data on gender and on specific community groups (such as scheduled castes, scheduled tribes) to track benefits and impacts.

Key Environmental and Social Gaps Identified: The key E&S gaps identified are: (i) the LRI based watershed planning being a top-down planning approach compared to the current 'bottoms up' approach, poses gaps in detailed process guidelines in giving adequate priority to community participation and is at risk of compromising the community consultative process for preparation of the DPR/watershed plan as inadequate inclusion of women and other vulnerable community groups such as SC, ST, and other marginalized groups in watershed institutions, watershed planning and implementation, and infrastructure and livelihood planning poses as key social risk; (ii) the current system lacks in systematic screening, impact mitigation, and monitoring and evaluation for E&S risks and issues including for any adverse effects on biodiversity and cultural resource; (iii) there is increased chance of interventions spreading into forest boundary and/or common property resources in the absence of a mechanism to check it; (iv) lack of an inter-departmental coordination mechanism in dealing with forests, wetlands and other environmentally-sensitive areas as part of watershed plan; (v) lack in addressing trans-boundary impact of existing structures, forests, upstream users and impact on downstream users; (vi) intensive agriculture with strict crop growing conditions, may lead to risk of overuse of chemical fertilizers and pesticides, thus polluting groundwater; (vii) in absence of proper guidance, improper management of civil activities may lead to worker safety issues; (viii) convergence of different schemes targeting tribal and vulnerable groups remains a challenge; (ix) methods and parameters of the M&E system is not spelt out properly for E&S risks and impacts such as monitoring gender-specific data as well as data on equitable benefit sharing to scheduled castes, scheduled tribes, landless and other socially disadvantaged groups; and (x) lack of systematic reporting and tracking of grievances received manually at different administrative level.

Recommendations and Actions:

A. For Participating States

The key recommendations for addressing E&S system gaps and enhancing E&S benefits includes:

1. Each participating state will need to prepare and adopt a process guideline for institutionalizing consultations, community participation, social inclusion, building community ownership, and accountability mechanism in line with the new watershed development guideline for different phases of watershed planning and implementation.
2. Early screening for identification of potential E&S risks during DPR preparation and FPO Business Plans for identification of potential environmental and social risks, including LRI and DSS platform, to show land use and environmental areas; and guidance on preparation of an environmental and social management plan (ESMP).
3. Inclusion of gender and socially disaggregated data in the M&E system along with periodic monitoring and reporting on E&S parameters.
4. Preparation and adoption of an E&S operations guidance note as part of the program manual for watershed sub-projects and FPO business plans, including, a mechanism for institutionalizing DPR specific ESMPs.
5. Providing E&S training and capacity program for frontline program staff, PIAs, WDCs, FPOs, field NGOs and PRIs.
6. Strengthening staffing and institutional mechanism for E&S aspects with clear roles and responsibilities at different administrative levels.
7. Mechanism for converging with other government agencies such as government agencies on Forest Department. Tribal Development, Social Welfare, Rural Development and Panchayati Raj, and Forest.
8. Crop advisories issued by the Government shall include advisories on adverse impacts of overuse of insecticides and

chemical fertilizers as per the pesticide and fertilizer management plan to be prepared by the Government.

9. Including women in leadership positions in watershed committees and FPOs, as well as among direct participants and as beneficiaries of livelihood interventions.

10. Addressing macro and micro-level environmental issues such as overall hydrology which includes water resource budget, conservation, flow, change in ground water table, change in water quality including salinity and sodicity in the macro watershed.

11. Existing GRM system to be further strengthened and streamlined for registering, screening and redressing, monitoring, reporting, and integrating them with the Program MIS.

12. Establishing a scientific assessment and evaluation system, including a rigorous impact evaluation that encompasses the application of remote sensing and GIS technologies; process monitoring, and thematic studies for assessing change in specific parameters (such as groundwater level, sediment load, soil organic carbon) to evaluate the effectiveness of watershed investments.

13. Adopting a system of valuation of ecosystem services like water budgeting and their contribution to watershed development scoping will be explored and landscape approach for integrating planned convergence of other programs (including with partner Departments of Agriculture, Horticulture, Forestry, and Rural Development) to conserve soil moisture to improve outcomes on water yield, ground water and sediments in the long run for environmental sustainability.

Input to Program Action Plan: While most of the recommendations will be incorporated in the program operations manual, a higher-level action is recommended as part of the PAP and includes point #1, #9 and #11 above.

While some of the recommendations have been already mainstreamed, the remaining have been proposed to be addressed by including them in the program manual. The recommendations that are mainstreamed includes (i) Restricting adverse impact of overuse of insecticides and chemical fertilizers as per the pesticide and fertilizer management has been mainstreamed is part of the Result Areas and also mentioned in disbursement-linked indicator through state-specific innovative pilots (e.g. the behavior change pilot on fertilizer use); (ii) Recommendation on establishing a scientific assessment and evaluation system, including a rigorous impact evaluation that encompasses the application of remote sensing and GIS technologies; process monitoring, and thematic studies for assessing change in specific parameters (such as groundwater level, sediment load, soil organic carbon) to evaluate the effectiveness of watershed investments; (iii) Addressing macro and micro-level environmental issues such as overall hydrology which includes water resource budget, conservation, flow, etc., in the macro watershed, change in ground water table, change in water quality is addressed through Result Area 1; (iv) Recommendations on early Screening have been mainstreamed and made part of PDO Indicators #2 DLR 2.1 and procedure for DLR 2.1 & 2.2. (*SLNAs*).

It is also proposed that REWARD program will explore opportunities to support the participating institutions in piloting tools to better understand the cumulative aspects of valuation of ecosystem services like water budgeting and their contribution to watershed development through landscape approach for integrating planned convergence of other programs (including with partner Departments of Agriculture, Horticulture, Forestry, and Rural Development) to conserve soil moisture to improve outcomes on water yield, ground water and sediments in the long run for environmental sustainability.

B. For Department of Land Resources (DoLR)

The REWARD program support to DoLR is mainly towards national capacity enhancement to support national program, promote learning from state level implementation. There are no direct Environment and Social Risks and Impacts arising out of DoLR interventions under REWARD. And hence, the assessment in the participating states also feeds into the recommendations for DoLR. The key recommendations for DoLR are as below.

1. The NPMU being established should also include nodal officials/experts responsible for coordinating, guiding, supervising, implementation of key Environmental and Social actions.
2. The national web portal proposed under the REWARD program shall also include socio-economic and environmental data (particularly sediments, water budget, forests, ground water, pesticides etc.).
3. The knowledge exchange events shall also include lessons and insights from implementation of environmental and social actions under the REWARD Implementation.

4. The national guideline mainstreaming the lessons learned from REWARD program shall also include guidance on implementing environment and social sustainability measures including:
   i. Learning from eco-system services pilots through a CoE.
   ii. Development of protocols and guidelines for standardizing identification of benchmark sites and model watersheds which will facilitate capturing key E&S data and positive externalities in larger context.
   iii. Guidance on Institutional arrangements and key implementation processes and procedures, E&S capacity enhancement across the implementation chain.
   iv. Guidance for community participation and consultation (including field surveys, PRA exercises), building community ownership, and accountability mechanism (including community validation and endorsement etc.).
   v. LRI atlas shall include information on land use and ownership to screen out forest, ecologically sensitive areas, and common property resources etc.
   vi. Guidance for screening of potential environmental and social risks and preparation of mitigation measures.
   vii. Capacity building on environmental and social risk management.

Human Resource/ Staffing: At DoLR and at the SLNAs/ SWDs existing PMU experts will be designated and have the responsibility to oversee the implementation of E&S activities including the monitoring, and reporting. Similarly, Officials at district, block and PIA level will also be co-designated for environmental and social safeguards and trained for providing implementation support, monitoring and reporting of implementation of E&S activities in the participating states.

Disclosure: State-specific ESSA reports were disclosed by the participating states in April 2021 and DoLR has disclosed the consolidated ESSA Report in August 2021. All these reports have been disclosed on the Bank's website in August 2021.

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ANNEX 6. PROGRAM ACTION PLAN

Action Description	Source	DLI#	Responsibility	Timing		Completion Measurement
For Karnataka, and Odisha, PFMS integration with IWMP/MIS portal will be completed for reporting of financial progress	Fiduciary Systems		DoLR	Other	Within 18 months after the Effective Date of the IBRD Loan Agreement	Bank review confirms completeness, reliability and timeliness of Program financial reports.
Use of PFMS systems mandated; and all program expenditures, including WDC-PMKSY [new phase, when it starts] entered in PFMS systems	Fiduciary Systems		SWDs of Karnataka and Odisha	Other	Within 6 months after the Effective Date of the IBRD Loan Agreement	Bank review confirms completeness, reliability and timeliness of Program financial reports.
Preparation of community procurement guidance manual (with provisions for annual social audit & provision for application of Bank's Anti-Corruption Guidelines), which ensures economy and efficiency; and its distribution to WCs.	Fiduciary Systems		SWDs of Karnataka and Odisha	Other	Within 6 months after the Effective Date of the IBRD Loan Agreement	Review of the manual by Bank to assess whether it effectively ensures economy and efficiency.
Planning, monitoring and disclosure of all procurements of value above INR 500,000- Preparation of procurement plans; Reporting on KPIs; Public Disclosure of procurement plans and key information on contract award	Fiduciary Systems		DoLR, SWDs of Karnataka and Odisha	Other	Within 2 months after the Effective Date of the IBRD Loan and on six monthly basis thereafter	After end of each six-month period- KPIs Reporting within 15 days; and Contract Award Disclosure within 30 days. Before commencement of next six-month period- Procurement Plan Publication before 15 days.
Establishment of a procurement-related complaint	Fiduciary Systems		DoLR, SWDs of Karnataka and Odisha	Other	Within 6 months after the	Establishment of webpage to receive complaints. Issuance & operationalization of guidelines

handling mechanism, with an interface to accept complaint; detailed provisions on complaint resolution including appeal mechanism; and disclosure of complaint related statistics.					Effective Date of the IBRD Loan Agreement	on complaint resolution, process of decision making, and disclosure of complaint related statistics.
Standard Operating Procedure to be prepared and adopted by participating states detailing mechanisms for community participation, social inclusion and building community ownership of watershed plans based on science-based data inputs.	Environmental and Social Systems		SWDs of Karnataka and Odisha	Other	Within 12 months after the Effective Date of the IBRD Loan Agreement	Process guideline prepared for participation/ community consultation covering women, tribal, and other marginalized groups during WS plan preparation and before Gram Sabha approval; and guidance/GO issued for adopting the same.
Adoption/ strengthening of capturing gender-disaggregated data for watershed planning and reporting towards enhancing women participation in local institutions.	Environmental and Social Systems		SWDs of Karnataka and Odisha	Other	Within 24 months after the Effective Date of the IBRD Loan Agreement	Gender disaggregated data collection at watershed level and state-level reporting on a) representation in WCs, b) investments in common assets and c) women-led WCs.
Existing grievance redress mechanism (GRM) to be strengthened and streamlined for registering, screening and redressing, monitoring and reporting by each participating state.	Environmental and Social Systems		SWDs of Karnataka and Odisha	Other	Within 12 months after the Effective Date of the IBRD Loan Agreement	Strengthened grievance redress mechanism (GRM) developed and implemented by participating states and periodic reports being generated.

ANNEX 7. CLIMATE CO-BENEFITS

The REWARD Program presents several opportunities to generate climate co-benefits[84] on both adaptation and mitigation. The Program would entail generation of co-benefits through incentivizing science-based watershed management including soil moisture conservation, water harvesting, weather-based agro-advisories, value chain development, etc.

The Table E below sets out the climate vulnerability context; specifies the Program's intent and statement of purpose for addressing climate vulnerability; and clarifies the link with the Program activities.

Table E: Climate Vulnerability Context, Program's Intent for Addressing Climate Vulnerability and Link to Activities

Climate Vulnerability Context[85]	Land degradation and unsustainable groundwater use are among the key issues confronting India. The country also has very high exposure to flooding as well as drought. Climate change is a major challenge, threatening to enhance risks already elevated by high levels of social vulnerability and climate variability. Projections point towards an increase in summer monsoon precipitation and the year-to-year variability of monsoon rainfall will contribute to a greater frequency of floods and drought and lower recharge rates of groundwater reservoirs. The general trend in precipitation seen in climate models involves fewer wet days, more intense extreme events, and an increase in the number of very hot days. Such changes in key climate variables (temperature, precipitation and humidity) may have significant long-term implications for the quality and quantity of water for agricultural use. With about 60 percent of the cultivated area in India being under rainfed agriculture, production is strongly influenced by climate variability and particularly the behavior of the south-west monsoon. The states participating in the REWARD Program – Karnataka, Odisha – are dependent to a significant extent on rainfed agriculture. More than 70 percent of the net sown area in Karnataka, 66 percent in Odisha is rainfed. Rainfed areas are characterized by low and erratic rainfall, high temperature, soil nutrient deficiencies, excessive runoff and high drought incidence. Karnataka: An overall reduced precipitation and continuous warming is a possible scenario the state may experience in decades to come. This is expected to cause changes in the cropping pattern and production and affect the availability of water.[86] Odisha: There is an increasing trend in the probability of severe and extreme droughts for Odisha toward the end of the 21st century. About 70 percent of the state's cultivated area is drought prone.[87] While almost 30 percent of the total geographical area in India (96 million ha) is experiencing land degradation, 85 percent of degraded land is in rainfed, dry land areas. While watershed development programs have treated significant land areas with basic soil and water conservation, there have been gaps in terms of: incorporating hydrology, water management,

[84] The climate co-benefit estimation in WB-financed projects is based on the Joint MDB methodology that has been developed by a group of multilateral development banks (MDBs), composed of the African Development Bank (AfDB), the Asian Development Bank (ADB), the Asian Infrastructure Investment Bank (AIIB), the European Bank for Reconstruction and Development (EBRD), the European Investment Bank (EIB), the Inter-American Development Bank Group (IDBG), the Islamic Development Bank (IsDB), the New Development Bank (NDB) and the World Bank Group (WBG). The report can be found at the following link: *https://thedocs.worldbank.org/en/doc/9234bfc633439d0172f6a6eb8df1b881-0020012021/original/2020-Joint-MDB-report-on-climate-finance-Report-final-web.pdf*

[85] Climate Change Knowledge Portal. Viewed at *https://climateknowledgeportal.worldbank.org/country/india* on 15 September 2020.

[86] Karnataka State Action Plan on Climate Change. 2013. Government of Karnataka.

[87] Osisha Climate Change Action Plan (2015-20). Government of Odisha.

	and climate resiliency into plans and investments; supporting farmers to transition to climate resilient farming practices; value addition and market access for increased productivity and incomes; and strengthening rural livelihood development to improve equity and opportunities for women.
Statement of purpose/intent	The Program Development Objective (PDO) is to strengthen capacities of national and state institutions to adopt improved watershed management for increasing farmers' resilience and support value chains in selected watersheds of participating states.
Link to Program activities	This section articulates the links between the vulnerability context and the Program Result Areas and Disbursement Linked Indicators (DLIs) – specifically in terms of the adaptation and mitigation co-benefits from the Program that respond to the vulnerability context. **Adaptation co-benefits**: The adaptation co-benefits in each of the results areas are listed below: *Results Area 1: Strengthened institutions and supportive policy for watershed development* Capacity building of community institutions and local government bodies engaged in watershed development through development of guidelines and procedures, training, performance grading and incentives, etc. Capacity building of government institutions in watershed development through placement of staff with expertise in hydrology, agriculture, etc., and their training. Establishment of a national CoE in science-based watershed management for providing capacity building support to the cadre of watershed professionals in all states – this will include training on climate-resilient land management practices, climate smart agriculture, climate-resilient technologies on the farm, climate information services, climate-resilient irrigation or drainage services, community water management systems, science-based watershed management, etc. Development of a supportive policy for watershed development including the development of national technical standards and protocols that will cover, inter alia, development of a land resource inventory, hydrology assessment, preparation of a science-based and participatory watershed development plan that integrates climate resilience, etc. Development of policies on operation and maintenance of watersheds for enhancing infrastructure resilience. Development of strong monitoring and evaluation systems that includes focus on measuring outcomes and thematic studies for assessing change in specific parameters (such as groundwater levels, sediment load, soil organic carbon) to evaluate the effectiveness of watershed investments. Pilot on science-based fertilizer demand and supply that involves aligning demand and supply of fertilizers through interventions such as building farmer awareness on soil nutrient status to improve productivity by addressing climate impact on soil quality. *Results Area 2: Science-based watershed development for climate resilience and enhanced livelihoods* Development of science-based watershed development plans based on Land Resource Inventory (LRI) and hydrology data and community participation. Implementation of science-based watershed development in select 'model' watersheds including interventions on community engagement; engineering works including as relevant ridge area treatment, drainage line treatment, soil and moisture conservation, rainwater harvesting, etc.; agriculture and horticulture including on-farm soil moisture conservation and water harvesting practices; treatment of common lands including pasture development, afforestation (forestry and agroforestry plantations in non-forest lands), etc.; and livelihood support activities. These interventions are expected to improve climate resilience, provide water security especially in terms of 'green water', and restore ecosystem services through improved soil moisture, enhanced water storage based on hydrological conditions, more efficient

	irrigation, more appropriate crop selection and management, increased tree cover, etc. Provision of agro-advisories to farmers based on LRI and weather data with timely information on land resources, soil status, weather events, etc., along with recommendations on crop selection and management practices. Value chain interventions focusing on production enhancement, post harvest management, infrastructure development, and forward and backward linkages of producers to markets. Incentivizing these interventions towards pandemic recovery and resilience. Livelihood enhancement support for the poorest households and women. **Mitigation co-benefits**: The mitigation co-benefits in each of the results areas are listed below: *Results Area 1: Strengthened institutions and supportive policy for watershed development* Pilots on science-based fertilizer demand and supply that involves aligning soil fertility status, demand and supply of fertilizers through interventions such as building farmer awareness on soil nutrient status, training of extension workers and fertilizer retailers, tracking data on fertilizer purchases made by farmers. This will contribute to reducing inappropriate use and overuse of chemical fertilizers, will nudge farmers towards adoption of integrated soil fertility management and lead to potential increase in soil carbon. During the course of the Program, value of ecosystem services (such as through water budgeting) and their contribution to watershed development, including scoping and measurement of soil organic carbon, will be explored. *Results Area 2: Science-based watershed development for climate resilience and enhanced livelihoods* Contribution to soil carbon sequestration through rehabilitation of degraded lands by implementation of science-based watershed development – specifically, integrated nutrient management, horticulture plantations, pastureland development, forestry and agroforestry plantations in non-forest lands, etc. The Economic and Financial Analysis undertaken during the Program preparation estimated that over a 20-year period it is expected that the Program supported activities will result in net GHG sequestration of 11.9 million tons CO2 eq. which is equivalent to a GHG sequestration of 0.59 million tons CO2 eq. per annum. The GHG estimation does not include the effects of value chain activities and promotion of diversified livelihood activities among vulnerable communities. Value chain investments that integrate climate mitigation and adaptation opportunities (such as use of renewable energy in agri-processing, energy efficient agriculture infrastructure, climate risk resilient infrastructure development). The DLIs which will track progress on addressing the climate vulnerability context and on achievement of the identified climate co-benefits are as follows: • Watershed Committees and Gram Panchayats demonstrate satisfactory watershed management as measured through a performance rating system. • Land area treated with science-based watershed management technologies. • Adoption of resilient agriculture technologies and practices by farmers. • Increase in climate-adjusted soil moisture in targeted watershed areas. • Farmer Producer Organizations with 25% increase in business turnover relative to baseline. • Number of professionals who complete certified training on improved watershed management provided by National Center for Excellence on Watershed Management. • National technical standards for improved watershed management updated by DoLR and directive issued to states.

ANNEX 8. IMPLEMENTATION SUPPORT PLAN

1. The Implementation Support Plan (ISP) outlines the approach the World Bank will take to support the DoLR and SWDs in the implementation of the REWARD Program, including reviewing implementation progress, reviewing achievement of Program results and DLIs, monitoring compliance with legal agreements, providing support on resolving emerging issues and in managing potential risks to achieving Program results. The main thrust of the Bank's implementation support will be concentrated on the overall implementation quality and on making the performance-based incentive system work to its fullest potential.

2. The Implementation Support Plan reflects learnings from other Bank supported multi-state projects in the country. A key feature of the Implementation Support Plan is that Bank support will be delivered through multiple channels: a multi-sector team that draws relevant expertise from other GPs; six-monthly implementation support missions; interim technical missions focused on critical Program areas; just-in-time remote support through online meetings; process monitoring and continued support through Resident Representatives based in the participating states. To enable these multiple mechanisms, the Bank will also explore the provision of Technical Assistance (TA) through channels such as the FAO/World Bank Cooperative Program as well as TA funds from the AGF GP's central pool and bilateral donor agencies.

3. In the initial years of Program implementation, the focus of the implementation support missions and the TA will be on ensuring critical human resource capacity in the implementing agencies; establishment and functioning of national and state level governance mechanisms; partnerships with scientific and technical agencies; implementation of PAP actions; establishment of MIS; establishment of impact evaluation and results verification systems; effective information flows between the national, state, district, block level implementing agencies; and mitigating any early risks that are identified. The team recognizes that the Program introduces a series of novel elements into the watershed development program (science-based planning, results-based financing, integrated approach and convergence, livelihoods enhancement) and so could present significant operational challenges. The emphasis of Bank support in the initial years, and especially in case of states that are new to science-based watershed development, will be on capacity building of the state implementing agencies, through the TA as well as through facilitating the lighthouse approach. As implementation progresses, World Bank support will focus on ensuring that the DoLR, SWDs, district and block/sub-block levels have adequate support for carrying out Program activities and will include monitoring compliance to legal agreements, monitoring progress in achieving PAP actions, tracking results indicators through the MIS, and managing any emerging risks. Major emphasis will be placed on ensuring that systems for impact evaluation and results verification are functioning effectively.

Task Team Skills Mix Requirements for Implementation Support (per year)

Skills Needed	Number of Staff Weeks	Number of Trips	Comments
TTL / Co-TTL / Program Management	10	4-5	Bank staff, country based, HQ based. Consultant 'Resident Representatives' in each state
Technical specialists (watershed development; LRI; hydrology; agriculture; agri-business; climate adaptation; institution development)	As required	As required	Bank staff and consultants; country based, international
Procurement Specialist	5	2-3	Bank staff and consultants; country based
Social Development Specialist	5	2-3	Bank staff and consultants; country based
Environmental Specialist	5	2-3	Bank staff and consultants; country based
Financial Management Specialist	5	2-3	Bank staff and consultants; country based
Monitoring & Evaluation Specialist	8	4-5	Bank staff and consultants; country based, international
ICT/Digital Specialist	3	2-3	bank staff and consultants; country based
Communications Specialist	3	2-3	Bank staff and consultants; country based
Resident Representatives (one per state)	24 per state	As required (for national review meetings)	Consultants: country based