



Project Information Document (PID)

Concept Stage | Date Prepared/Updated: 13-Mar-2025 | Report No: PIDDC01275



BASIC INFORMATION

A. Basic Project Data

Project Beneficiary(ies)	Operation ID	Operation Name	
India	P510429	Maharashtra Project on Climate Resilient Agriculture Phase - II	
Region	Estimated Appraisal Date	Estimated Approval Date	Practice Area (Lead)
SOUTH ASIA	09-Apr-2025	09-Jul-2025	Agriculture and Food
Financing Instrument	Borrower(s)	Implementing Agency	
Investment Project Financing (IPF)	Department of Economic Affairs	Department of Agriculture	

Proposed Development Objective(s)

To strengthen agriculture production ecosystem while focusing on technology driven adaptation of climate change impacts, improving soil carbon stock, water use efficiency and reducing relative GHG emissions to sustain a level of profitable productivity.

PROJECT FINANCING DATA (US\$, Millions)

Maximizing Finance for Development

Is this an MFD-Enabling Project (MFD-EP)?	No
Is this project Private Capital Enabling (PCE)?	No

SUMMARY

Total Operation Cost	700.00
Total Financing	700.00
of which IBRD/IDA	490.00
Financing Gap	0.00

DETAILS

World Bank Group Financing

International Bank for Reconstruction and Development (IBRD)	490.00
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Non-World Bank Group Financing



Counterpart Funding	210.00
Borrower/Recipient	210.00

Environmental and Social Risk Classification

Moderate

Concept Review Decision

The review did authorize the preparation to continue

B. Introduction and Context

1. India is highly vulnerable to climate change. Agriculture, which is a source of livelihood for around 50% of the population, is coming under increasing stress from the frequent and intensive extreme climate events. Given that climate variables will increase rainfall variability and droughts in the coming years, the government is seeking to effect a shift from a resource-intensive, low-efficiency, and low-value agricultural production system to one that is more climate resilient, resource-efficient, sustainable, and higher-valued.

Sectoral and Institutional Context

2. **Maharashtra's agriculture sector contributes 12 percent of State GDP (FY23), with a further 7 percent from the food processing industry.** Around 50 percent of the state's population is dependent on agriculture and largely constitutes small and marginal farmers who have 15.28 million operational holdings of an average size of 1.34 ha. Growth in the agriculture sector has fluctuated between 3.5 percent and 4.4 percent during 2004-2021, reflecting high spatial and temporal variation in rainfall and predominance of rainfed agriculture across the state. One-third area of the State falls within a rain-shadow region. The data¹ between 2014-15 and 2021-22 show that while the production of cereals, pulses, and oilseeds has increased, productivity levels for most crops are still significantly below the national average.

3. **Agriculture in the state faces significant risks from climate change.** Around 77 per cent of the state's cropped area is highly vulnerable to the impacts of climate change. According to the Maharashtra State Adaptation Action Plan on Climate Change (MSAAPCC, 2023), a hotter climate and more erratic rainfall will impact agriculture with lower yields and higher vulnerability to pest and fungal attacks. This will exacerbate existing challenges, including increased frequency of extreme climate events such as droughts, hailstorms, and floods. Simultaneously, some drought-prone areas face unexpected floods due to high rainfall. These unpredictable weather shifts affect small and marginal farmers disproportionately, leading to increased risks and farm distress, and high rates of farmer suicide².

4. **In response to climate vulnerabilities, the state government implemented the World Bank-supported Project on Climate Resilient Agriculture (PoCRA) from 2018-24.** The aim of PoCRA was to develop a drought-proofing and climate-resilient strategy for the agriculture sector to address the likely impacts of climate variabilities and climate change, and roll-out innovative approaches to Climate Resilient Agriculture (CRA) in approximately 10 percent of the cropped area of the state. These included: (i) comprehensive data-driven microplanning exercises led by the community to develop village

¹ Economic Survey of Maharashtra 2021-22, 2022-23.

² Data.gov.in: around 5318 farmers suicide were recorded in 2021 with Maharashtra data at 2640



plans including measures for optimal utilization of natural resources, appropriate cropping patterns, adoption of latest technologies, and improved access to markets; and (ii) Establishing a cutting-edge digital agriculture platform for the delivery of services, including the efficient transfer of funds directly to farmers through Direct Beneficiary Transfers (DBTs).

5. **PoCRA approaches have generated substantial demand among farmers, benefiting the state and serving as a “lighthouse” for resilient agriculture.** The outcomes of PoCRA have been impressive, benefiting 1.3 million farmland owners, with increased and more stable crop yields, improved water productivity, and increased incomes for male and female beneficiaries. PoCRA has received high visibility both within India and internationally and has been influential at the state and national level to shape agriculture policy. The state-of-art digital platform has informed the establishment of the national Agristack, which is being rolled out nationally to underpin India’s digital agriculture expansion. While PoCRA approaches have been successful, the Government of Maharashtra wishes to build upon these to fully realize its vision for the sector.

6. **GoM has set ambitious agriculture sector targets in its *Vision 2030* document.** While the approaches under PoCRA have proven successful in increasing climate resilience in the project areas and have become a cornerstone of the state’s agriculture policy, the ambition of the GoM is to further accelerate agricultural growth. The targets include achieving an average agriculture sector growth rate of 5 percent with yield improvements while reducing 20 percent in cultivation costs and promoting water conservation for soil health, risk mitigation, and integrated farming systems. It also aims at stimulating post-harvest technologies for value addition, group farming promotion, infrastructure development for storage and processing, and access to the market. Unlocking the potential of Vision 2030 will require scaling up of successful approaches, pushing innovation to address both long-standing and emerging issues in the sector, utilizing technology and science to reach and resolve smallholder farmer challenges, and strengthening the institutional and policy framework to sustain resilient growth.

Relationship to CPF

7. **The proposed project aligns with India’s climate commitments, and with the India Country Partnership Framework (FY2018-22; extended up to December 2025) that focuses on resource-efficient inclusive and diversified rural sector (Objective 1.1).** The project will draw on the catalytic approaches outlined in the CPF: (i) by engaging research institutes of global repute in designing, implementing, and monitoring its interventions, the project will leverage the strength of public-private partnership; (ii) by investing in capacity building, the project will strengthen the public sector institutions to replicate the learnings across the state, and (iii) by generating and documenting novel operational knowledge and implementation experience on productivity enhancement while reducing greenhouse emissions for smallholder agriculture, the project will support the Lighthouse India initiative.

8. **The proposed project also aligns with the COP 21, Paris Agreement towards enhancing adaptive capacity, strengthening resilience, and reducing vulnerability to climate change.** The project aims to significantly strengthen the State’s adaptation efforts while contributing to its Vision 2030, with science-based support for mainstreaming adaptation as a mainstay of development in the state. It recognizes that climate adaptation is a global challenge, and measures must be undertaken to align at the cluster level in the state.

C. Proposed Development Objective(s)

9. The Project Development Objective is to improve resilience and profitability of small farmers by promoting resource-use efficiency and emission-competitive production systems with data-driven decision tools.



Key Results (From PCN)

10. **Key PDO Indicators.** The PDO will be measured using the following indicators:
- KPI#1 -Net methane and other GHG emissions reductions per year (Tons of CO₂ equivalent)
 - KPI#2 - Farmers adopting improved agricultural technology and practices (of which # female)
 - KPI#3 - Area provided with improved services to enhance resilience to climate risks
 - KPI#4 – Increase in farm income (by gender)
 - KPI#5 – Number of farmers registered in digital farmer registries.
11. **The primary project beneficiaries are farmers having landholdings up to 5 hectares. The project will implement in 21 identified districts³ of the state based on the vulnerability index.** Smallholder farmers stand to benefit from knowledge and technology to enhance climate resilience on their farms and contribute to resource-efficient productive agriculture aimed at generating climate co-benefits. The project will also strengthen effectiveness of local institutions and agencies at the state, district, and sub-district level to deliver technical services through partnership protocols for mainstreaming climate resilience in agriculture. The project will cover about 2.3 million farmers.

D. Concept Description

12. Aligned to the GoM Vision 2030 and Maharashtra State Adaptation Action Plan on Climate Change MSAAPCC, PoCRA-II aims to support the GoM's priority to transform agriculture into a productive system for smallholder farmers through science- and data-based interventions for improving efficiency of natural resources and external inputs. The project would both build upon the successful proof of concept demonstrated by PoCRA and scale up the outcomes by expanding coverage to nearly 20 percent of the state. Building on PoCRA's achievements—particularly its cutting-edge digital agriculture platform and robust implementation framework—PoCRA-II aims to leverage these foundations to provide customized on-farm technical services. These services, tested and improved by a consortium of experts, are intended to reduce input costs to boost farmers' income, and integrate climate resilience into routine agricultural practices. PoCRA-II will follow precision farming with special emphasis on cost of cultivation so that farmers' witness increased profitability.
13. **The project will be delivered through the four pillars.**
14. **Pillar 1 - Resource Efficient Productivity Enhancement:** The focus of the project will be on achieving higher resource-use efficiencies by adopting management practices based on a systems approach to attain optimum productivity in each of the agro-climatic zones. Under this pillar, the project will focus on *Enhancing soil and land efficiencies* by investing in land preparation, laser land leveling, soil fertility management and enabling digital soil mapping for soil health; *Improving fertilizer/nutrient efficiency* by investing in digital data mapping and enabling investment in development of data informed nutrient management plans; and *Promoting irrigation efficiency* by supporting adoption of package of practices to reduce evaporation and improve transpiration and expanding area under controlled irrigation.
15. **Pillar 2 - Promoting Precision Agriculture for Emissions Management:** Promoting precision agriculture will focus on reducing greenhouse gas emissions, sequestering carbon, cutting methane emissions, and maintaining economically

³ The districts are: Akola, Amravati, Bhandara, Bid, Buldana, Chandrapur, Chatrapati Sambhajinagar, Dharashiv, Gadchiroli, Gondiya, Hingoli, Jalgaon, Jalna, Latur, Nagpur, Nanded, Nashik, Parbhani, Wardha, Washim, Yavatmal. Project villages are in the process of being identified and listed.



viable crop yields. Considering the varying carbon and water footprints of different crops and crop rotations, the project will introduce crop-specific moisture conservation techniques, develop agroforestry modules, and implement new methods to enhance soil organic carbon. The project will *provide Enhanced Crop Advisories* designed in partnership with leading research institutes that will include crop-water requirements, climate resilient seeds, protected cultivation, and regenerative agriculture. The project will *Prioritize De-methanation of paddy* by investments in Direct Seeded rice technology. The project will focus on reduced energy consumption by deploying precision farming methods and *harnessing solar power in agriculture* for irrigation solutions, farm operations and post-harvest processing.

16. **Pillar 3- Improving and Building Income Resilience:** The project will invest in *Farmer Producer Groups* as a vehicle of transformation, including women-led and women-owned FPGs, and will equip farmers with the knowledge and resources needed to transition from highly intensive input usage to low-risk optimal inputs; it will *strengthen the agribusiness value chains* through demand driven approach and strengthening the market services such as food safety, traceability and though investment in *agribusiness growth centers* for post-harvesting. Key *Digital Agriculture* interventions proposed include standardizing and enhancing the applications built during PoCRA, and addition of new applications such as Interactive Digital Soil Mapping Platform, Precision Agriculture Tools, Climate-Smart Advisory Services, Emission Management Systems, Integrated Farm Management Systems, and Market Linkage Platforms.

17. **Pillar 4 - Lighthouse Approach for Strengthening Institutions:** PoCRA's robust institutional framework for implementation will be broadened and deepened to achieve a higher level of resilience under PoCRA-II. The project will *create a 'consortia' of subject-specific scientific/technical expertise* who will provide inputs to assist implementation on a) improving soil use efficiency related to soil quality, soil nutrient availability and nutrient uptake potential as effective reference points for improvement of crop productivity in varying soil types; b) determining WUE and Nutrient Use Efficiency in agricultural production systems as the boundary conditions of Soil Use Efficiency; c) choice of efficient irrigation methods and irrigation scheduling related to improved productivity with reduced integrated GHG emissions, and d) develop resilience protocols towards adaptive arrangement of emerging environmental impacts to support adoption of improved production systems.

Legal Operational Policies

Policies	Triggered?
Projects on International Waterways OP 7.50	No
Projects in Disputed Area OP 7.60	No

Summary of Screening of Environmental and Social Risks and Impacts

18. The environment risk is considered to be 'Moderate'. The adverse environmental risks and impacts are related to production and post-harvest interventions. The productivity enhancement related activities may trigger excess use of water, chemicals (pesticides), use of hybrid crop varieties etc. leading to soil, water and food contamination, occupational health risks, loss of traditional varieties etc. Farm mechanization would result in emissions and solar equipment may pose challenges at final disposal stage. The processing activities may involve adverse effects related to excess use of resources like energy and water, release of wastes, food safety concerns, occupational and health risks, impacts due to minor



civil/upgradation works. Most of these environmental risks and impacts are temporary, site specific and largely reversible in nature and can be managed and mitigated through appropriate mitigation measures.

19. The social risk is considered Moderate. The project is not likely to involve any land acquisition and physical or economic displacement. Land acquisition and physical or economic displacement is not anticipated. Small scale, community/farm level construction will be involved in civil works for micro-irrigation systems, protective agriculture, aggregation centers, soil and water conservation work, landscape restoration, repair/rehabilitation of facilities of Farmers' Producer Companies. These works will be undertaken largely on community or government owned lands and may involve donation of private land. Given the small scale of construction works, majority of the civil works will be carried out by local/community workers with low requirement of external workers and labor campsites. Project areas include the officially notified Schedule V Areas, with significant population of indigenous peoples (scheduled tribes), as well as the traditionally marginalized scheduled caste (SC) households. Some of the project areas are officially notified as affected by Left Wing Extremism (LWE). The key priorities of the project relate to i) engaging with the beneficiary communities in the tribal areas and complying with provisions of Schedule V areas; b) inclusion of particularly vulnerable tribal groups (PVTGs), landless and marginal farmers/labor, persons with disability and other vulnerable groups; c) security in LWE areas; and d) improving citizen access to grievance redressal mechanisms. The sexual exploitation and abuse/sexual harassment (SEA/SH) risk is assessed 'moderate'. Impacts of project activities are anticipated to be temporary, site-specific, reversible and manageable through appropriate risk management mechanisms. Project will be undertaking environment and social assessment based on which practical risk management plans will be prepared such as Environment and Social Management Framework, Environment and Social Management Plan, stakeholder engagement plan, tribal development framework, amongst others.

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