Ex-Ante Evaluation (for Japanese ODA Loan)

South Asia Division 1, South Asia Department

Japan International Cooperation Agency

１．Name of the Project

（１）Country：India

（２） Project: The Project for Climate Change Response and Ecosystem Services Enhancement in Rajasthan

（３） Project Site/ Target Area：State of Rajasthan（Population: about 68.5 million, Census 2011）

Loan Agreement: February 20, 2024

２．Background and Necessity of the Project

（１）Current State and Issues of the Biodiversity Conservation and Forest Sector and Priority in India

India's ecosystems are rich in diversity due to their geographical characteristics. These diverse ecosystems perform a wide range of functions as “ecosystem services” for local residents, such as water source cultivation, sediment runoff control, soil conservation, flood control, and provision of forest resources to secure their lives and livelihoods. On the other hand, excessive consumption of forest products such as firewood and charcoal wood in the past has led to deforestation and degradation, with forest cover falling to about 19% in 1987 (Forest Survey of India, 1987 (hereinafter referred to as “FSI”)). The Indian government set the goal of restoring forest cover to 33% in the National Forest Policy formulated in 1988, and as a result of its efforts in forest conservation and the establishment of national parks and wildlife sanctuaries, forest cover has recovered to approximately 22% by 2021 (FSI, 2021). However, deforestation and forest degradation pressures continue to exist against the background of rapid population growth and urbanization. In addition, approximately 85% of India's land area is considered highly vulnerable to natural disasters (Government of India announcement on Nationally Determined Contributions (NDC) under the Paris Agreement, 2015), and there are concerns that changes in rainfall due to climate change will further intensify the severity of weather-related disasters.

The state of Rajasthan in northwestern India has the largest area in India (340,000 km^2) and is divided into western desert areas including the Thar Desert and eastern non-desert areas based on geographical conditions such as annual rainfall and temperature variations. Annual rainfall in the desert areas averages 100 mm/year and 650 mm/year in the non-desert areas (2021, Government of

Rajasthan), which is significantly lower than the national average (1,177 mm/year, 2021, India Meteorological Department). Desert areas are particularly harsh environments for the growth and habitat of plants and animals, with a low forested area of approximately 5% and severe wind erosion of the soil. The forested land area in the non-desert zone is about 11%, but the challenge is the increasing pressure on natural resources due to overconsumption of forest products by the growing population and excessive grazing by the increasing livestock population (2021, Government of Rajasthan). Regarding biodiversity, desert areas have plants and animals unique to the region due to seasonal temperature differences and low rainfall, while non-desert areas have a greater annual rainfall than desert areas, resulting in a variety of plant species. However, some of this rich biodiversity is in danger of extinction.

These challenges are also made more serious by climate change. For example, the inability of ecosystems such as forests to adapt to changes in rainfall patterns is slowing the growth of forests and other ecosystems and reducing their function and productivity (Government of Rajasthan, 2021). Furthermore, this situation can be viewed as a socio-economic impact on the poor and women, given that the state's poverty rate (about 30%) is the 8th highest in India (NITI Aayog, 2015) and that many of the poor, including the Scheduled Tribes, and women in proactive roles such as fetching water and collecting non-wood forest products, live mainly in rural areas (State Forest Department, 2021) and are dependent on natural resources including forests for their livelihood. In light of this situation, the state takes ecosystem services seriously, emphasizing the maintenance and improvement of ecosystem functions and climate change countermeasures (adaptation and mitigation) that take advantage of these functions. The state also actively encourages the participation of women in agriculture and forestry.

The “Rajasthan Forest Policy 2023” sets the state's own goal of increasing forest cover to at least 20%, and states that it is necessary to prevent desertification through planting trees and restore the functioning of ecosystem services by strengthening biodiversity conservation. The “Rajasthan Climate Change Action Plan 2022” also states that community-based biodiversity conservation is important to reduce vulnerability and impacts of climate change. In addition, the government of Rajasthan has established the “Rajasthan Women's Policy” in 2021 to promote gender equality, and since 1991, Japan has provided assistance to the state through joint forest management for afforestation and the establishment of wildlife sanctuaries. Although these support efforts have

been successful, there is still a need to expand the area and further improve the quality of the forests in light of the above issues, as well as to take into account climate change.

The Project for Climate Change Response and Ecosystem Services Enhancement in Rajasthan (hereinafter referred to as the “Project”) will implement a new research-based effective forest conservation approach in line with the above-mentioned policies, while incorporating the experience and methodology of the previous ODA Loans to the forest sector in the state (hereinafter referred to as the “preceding projects”), and to promote climate change response (adaptation and mitigation), including strengthening the organizational structure of the State Forest Department, and to enhance ecosystem services through biodiversity conservation and restoration activities and livelihood improvement. It is positioned as an important project in India’s biodiversity conservation and forestry sector and in the State of Rajasthan.

（２）Japan’s and JICA’s Policy Cooperation and Operations in the Biodiversity Conservation and Forest Sector (especially in relation to key foreign policies such as the Free and Open Indo-Pacific Partnership (FOIP))

At COP26 held in November 2021, Japan participated in the Glasgow Leaders Declaration on Forest and Land Use, which calls for halting forest loss and land degradation by 2030 and strengthening efforts to conserve forests and promote their restoration. In addition, at the 15th Conference of the Parties to the United Nations Convention on Biological Diversity held in December 2022, Japan and other countries adopted the Kunming-Montreal Biodiversity Framework, a new global biodiversity goal (Post-2020 Biodiversity Framework). The Project also aligns with “Addressing Challenges in an Indo-Pacific Way,” one of the pillars of the new plan for a “Free and Open Indo-Pacific” from a climate and environmental perspective. In addition, Country Assistance Policy for India (March 2016), formulated by the Government of Japan, positions “supporting sustainable and inclusive growth” as one of its priority areas and clearly states that Japan will work on the provision of assistance to increase the incomes of the poor and promote support for the biodiversity including forestry and the forest sector, and the disaster managementsector to tackle environment and climate change issues. The JICA Country Analysis Paper for India (March 2018) also analyzes the need for measures to promote appropriate use of natural resources for inclusive growth in rural areas, leading to appropriate conservation and use of forest resources.

The JICA Global Agenda for Natural Environment Conservation states that the goal is to conserve the natural environment and pursue the sustainable use of natural resources in line with the international environmental frameworks for socio-economic development, and to enable future generations to enjoy various services from the natural environment. In JICA Global Agenda for Climate Change, JICA states that the natural environment, including forests, plays a major role in carbon sequestration, and the Project is in line with these policies and analyses. As of October 2023, 31 ODA loans totaling 313.9 billion yen have been approved for the biodiversity conservation and forest sectors in India, including 5 ODA loans totaling 44.9 billion yen to the state of Rajasthan.

（３）Other Donors' Activities

The World Bank and the United States Agency for International Development (USAID) are supporting forest management and ecosystem restoration through improving the livelihoods of people living near forests in some states, and the Global Environment Facility (GEF) is supporting the improvement of ecosystem services and the conservation of terrestrial and marine biodiversity in Rajasthan and other states. The French Development Agency (AFD) is providing loan support for forest management and biodiversity conservation projects in the eastern region of Rajasthan (EUR 139 million loan from 2023 to 2031).

３．Project Description

（１）Project Description

① Project Objective

The Project aims to respond to climate change and enhance ecosystem services through afforestation, forest conservation, biodiversity conservation and eco-restoration, livelihood improvement activities and institutional strengthening, thereby contributing to sustainable socio-economic development in Rajasthan.

② Project Components

The following activities will be implemented in desert and non-desert areas based on the topographic characteristics of each area. It has been agreed that the activities carried out in the preceding projects will not be carried out in the same areas in the Project.

1） Afforestation and forest conservation (planting trees along canals, reforestation of aging forests, afforestation on farmland (agroforestry), fixing

sand dunes, raising seedlings, water source cultivation etc.) (domestic competitive bidding, etc.)

2） Biodiversity conservation and restoration activities (protection of endangered species (plants), biological habitat improvement, eco-tourism, etc.) (domestic competitive bidding, etc.)

3）Livelihood improvement activities (support for activities by local resident organizations, etc.) (domestic competitive bidding, etc.)

4） Strengthening the organizational structure of the Rajasthan Forest Department (DX promotion such as GIS improvement, training and research activities for capacity building of forest officers, Forest Department staff and local residents, etc.) (domestic competitive bidding, etc.).

5）Consulting services (implementation supervision, DX promotion support, etc.) (short list method)

③ Project Beneficiaries (Target Groups)

Direct beneficiaries:（Population employed in afforestation, water and soil conservation, etc. and population targeted for livelihood enhancement activities, etc.）: 120,000 people

（2）Estimated Project Cost

31,051 million yen（including Japanese ODA loan 26,133 million yen）

（3）Schedule (Cooperation Period)

February/2024-March/2034 （122 months）.

Completion of all activities (March 2034) is considered completion of the Project.

（4）Project Implementation Structure

1）Borrower: President of India

2）Guarantor: N/A

3） Executing Agency: Rajasthan Forest Department, Government of Rajasthan（hereinafter referred to as “RFD”）

4）Operation and maintenance system:

RFD is responsible for the implementation of the Project as the executing agency, but to improve the efficiency of the Project implementation and the flexibility and transparency of budget management, a Project Management Unit (hereinafter referred to as “PMU”) will be established under RFD to implement the Project. In addition, operational management units will be established in the regional forest departments (Circle Office), Divisional Forest Offices, and Range Offices as subordinate organizations of the PMU

to conduct field activities respectively. Activities in each target village will be implemented jointly by the Village Forest Protection and Management Committee (VFPMC), the Eco Development Committee (EDC), and Self Help Groups (SHG) that consist mainly of women, with support from the Range Office.

（５）Collaboration and Sharing of Roles with Other Donors

１） Japan's Activities: None

２） Other Donor's Activities: There are ongoing projects that AFD is supporting, but there is no overlap in the Project sites.

（６）Environmental and Social Considerations

① Category: FI

② Reason for Categorization:

The Project cannot identify subprojects before JICA's loan approval under the “Japan International Cooperation Agency (JICA) Guidelines for Environmental and Social Considerations” (issued in January 2022), and such subprojects are expected to have environmental impacts.

③ Other/Monitoring:

Under the Project, Rajasthan Forest Department, with the assistance of the Japanese ODA Loan consultant hired under the ODA loan project, will classify subprojects into categories based on India's domestic legal system and JICA Guidelines for Environmental and Social Considerations, and the necessary measures will be taken for the relevant category. Subprojects will not include Category A projects.

（７）Cross-Sectoral Issues:

① Climate change related projects

The Project will contribute to climate change adaptation by improving ecosystem services and sand dune stabilization through afforestation and other activities, thereby reducing the negative impacts of climate change. In addition, the afforestation activities are expected to absorb approximately 76,000 tons of CO2 per year, contributing to climate change mitigation.

② Poverty measures and considerations

In the Project, the main target group will be the Scheduled Tribes with high poverty rate and high dependence on forest resources, and efforts will be made to improve their livelihoods through activities such as income generation activities. In carrying out these activities, it has been confirmed that there is no negative impact on the livelihood and culture of the

Scheduled Tribes in the previous project and the Scheduled Tribes in the target area of the Project. Prior to the implementation of the Project, guidelines describing the activities will be prepared together with the local residents, and the activities will be carried out based on these guidelines.

③Measures against HIV/AIDS and other infectious diseases

None

④Participatory development

In the Project, local residents will form VFPMCs, develop a project plan (micro-plan) for village-level activities and implement the plan. In addition, activities to improve household income, such as vocational training for VFPMC, EDC and SHGs, will be carried out with the participation of the residents.

⑤Consideration for persons with disabilities, etc.

Besides including individuals with disabilities in the afforestation and water and soil conservation activities, facilities will be constructed with universal design and barrier-free accessibility in mind when supporting infrastructure development.

（８）Gender Category: ■GI (S）Gender Informed (Significant)

＜Details of Activities/ Reason for Categorization＞

Through the survey and discussions with the executing agency, gender issues were identified such as women's participation in the decision-making process in resident organizations, and their lack of training opportunities and participation in activities compared to men. The Project will develop a gender action plan to ensure women's participation in the capacity building training and livelihood enhancement support; the percentage of women in the VFPMC and the percentage of women's training and labor participation are set as indicators.For these reasons, the Project is classified as a “gender activity integration project”.

（９）Other Important Issues

The state is engaged in forestry research related to arid and semi-arid tropical forests and is also collaborating with overseas forestry research institutions. In the Project, it was agreed with the executing agency to promote collaboration between Japanese and Indian research institutions. In the DX area, in addition to the improvement of the GIS system, mapping and monitoring with UAVs (drones) and forest management systems are being considered, as well as the digitization of micro-plans and the creation of new

mobile applications for the collection of data necessary for the preparation of operational plans.

4 . Targeted Outcomes

（１）Quantitative Effects

Outcomes (Operation and Effect Indicators)

Indicator	Baseline【Actual value in 2023】	Target（2036）【２ years after project completion】
Afforestation area in the Project（ha）	-	43,436
Increase in carbon sequestration by the Project (CO2t)	-	(Note 1）
Survival Percentage of Agroforestry Plantation (%)	67	80
Ecologically or Biologically Significant Area(ha)	-	PMR（Note 2）: 4,500 Oran（Note 3）: 10,060
The ratio of Soil Moisture in Forest of project area (%)	（Note 1）	10% increase
Number of VFPMC/EDC/SHGs mobilized under the Project (Note 4)	-	2,100
Training Programs for forest officials/resident organizations (Note 4)	-	3,728
Employment (Man/day)	-	15 million
Ratio of Female Residents Participating in the Project (%)	-	33
Annual profit earned per income generation activity under the Project per VFPMC/EDC/SHG (%)	-	（Note 1）

(Note 1)　The baseline and target are based on the results of a baseline survey conducted at the start of the Project.

(Note 2)　PMR（Plant Micro Reserve）:Areas for the protection of endangered species.

(Note 3) Oran: Sacred Groves that are the object of worship for local residents.
(Note 4) “Forest officials/resident organizations” indicates VFPMC、EDC、SHG

（２）Qualitative Effects: Climate change adaptation and mitigation, improvement of ecosystem services, improvement and development of breeding and nursery methods through forest research, social participation of poor and vulnerable groups, and women's participation status in the Project's activities.

（３） Internal Rates of Return:

Based on the following assumptions, the economic internal rate of return (EIRR) for the Project is 19.4%. The Project is not intended to generate business income, and the financial internal rate of return (FIRR) is not calculated.

【EIRR】

Cost: Project costs, operation and maintenance costs (all excluding taxes)
Benefit: CO2 reduction, income from forest products, income from special forest products, income from livelihood improvement activities, mitigation of conflicts with wildlife, income from ecotourism activities
Project Life: 50 years

５. External Factors and Risk Control

（１） Preconditions: None

（２） External Factors: The security in the Project area shall not deteriorate significantly.

６. Lessons Learned from Past Projects

In the preceding “Rajasthan Forestry and Biodiversity Project” (evaluated in FY2012), the breakdown of the number of employees and the calculation method were unknown, so the exact effectiveness of the Project could not be verified. It is pointed out that, in order to ensure proper verification, calculated values and operational and effectiveness indicators should be clearly stated from the time of the appraisal, including the source and calculation methods. In addition, the past ODA loans to India, “Gujarat Forestry Development Project Phase 2” and “Uttar Pradesh Participatory Forest Management and Poverty Alleviation Project” (both evaluated in FY2019) taught us that it is important to consult and involve

specialized departments other than the Forest Department at the Project planning stage to ensure the sustainability of livelihood activities for local people.

For the Project, the source and calculation methods of the number of employees and other figures have already been confirmed at the time of the appraisal to ensure appropriate evaluation of the Project after its completion. Also, consultations will be held with specialized departments for livelihood improvement activities at the Project planning stage to establish a structure that ensures sustainability. On the other hand, the “Rajasthan Forestry and Biodiversity Project” (evaluated in FY2012), one of the preceding projects, was highly evaluated to have impact on the improvement of the natural environment, etc. Therefore, the technical methods for forest and biodiversity conservation in the preceding projects will be continuously utilized.

7 . Evaluation Results

The Project is consistent with the development issues and policies of the Government of India and the State Government of Rajasthan, as well as the cooperation policy and analysis of Japan and JICA, and will contribute to poverty eradication, gender equality, climate change countermeasures, and the protection, restoration, and sustainable use of ecosystems through the promotion of forest conservation, biodiversity conservation, livelihood improvement activities, etc. Since the Project is also expected to contribute to Goals 1 (End poverty), 5 (Gender equality), 13 (Combat climate change), and 15 (Ecosystem restoration) of the SDGs, there is a strong need to support the implementation of the Project.

8 . Plan for Future Evaluation

（１） Indicators to be Uses

As described in Section 4.

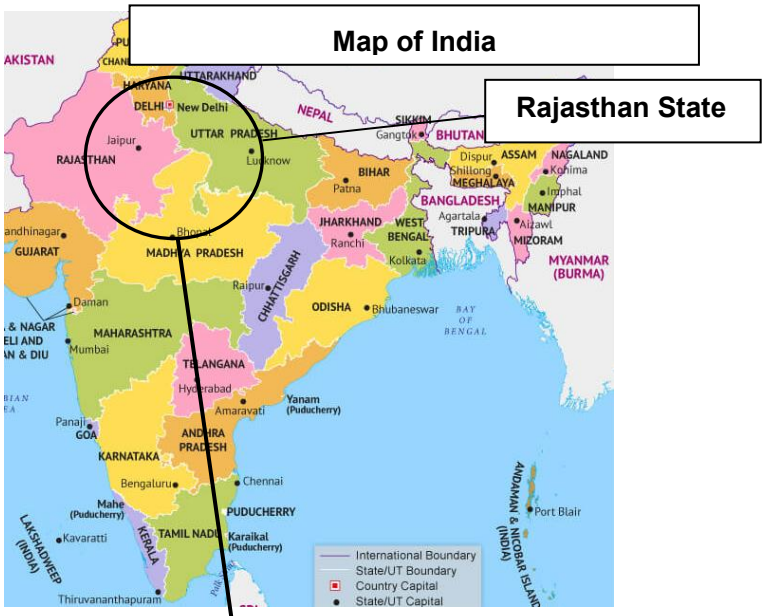
（２） Future Evaluation Schedule

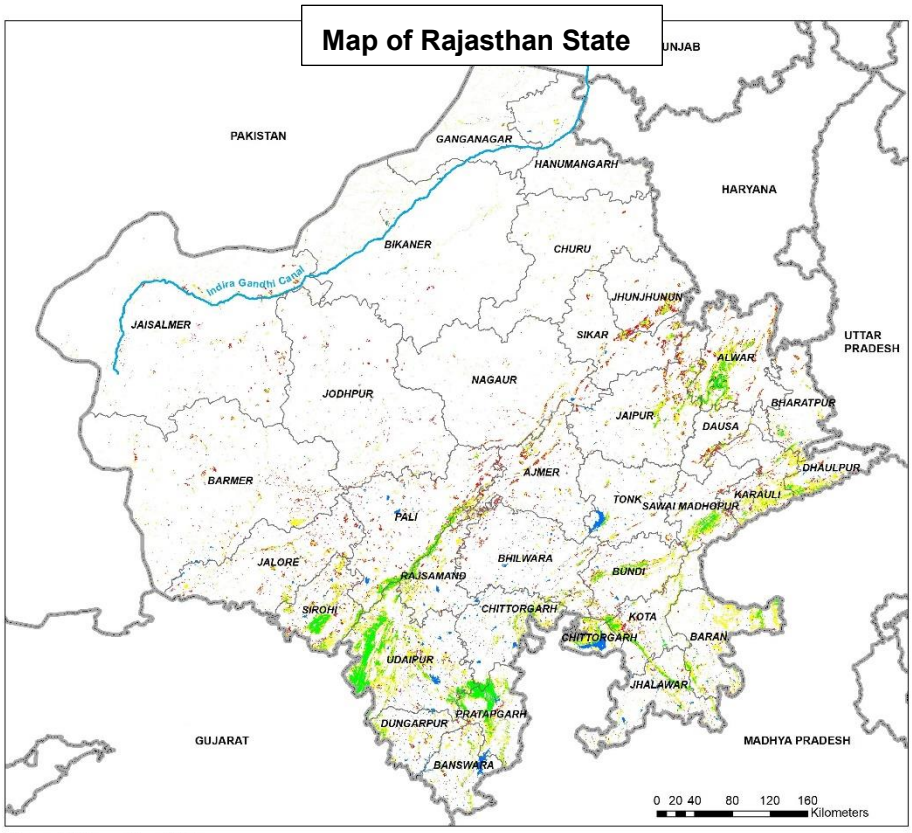
Ex-post evaluation: 2 years after the Project completion

END

Appendix: Map of the Project for Climate Change Response and Ecosystem Services Enhancement in Rajasthan

Map: The Project for Climate Change Response and Ecosystem Services Enhancement in Rajasthan





Source: JICA Survey Team (2023)

Source（top）Maps of India（https://www.mapsofindia.com/）
（bottom）Preparatory survey