Ex-Post Project Evaluation 2019:
Package III-5 (India)

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JAPAN INTERNATIONAL COOPERATION AGENCY

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India

FY2019 Ex-Post Evaluation of Japanese ODA Loan

"Tripura Forest Environmental Improvement and Poverty Alleviation Project"

External Evaluator: Sawa Hasegawa, OPMAC Corporation

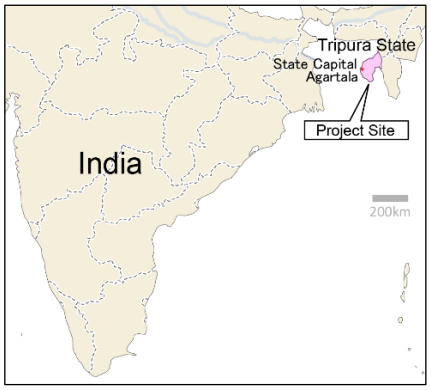
0. Summary

The objective of this project was to rehabilitate the forests in Tripura, a state in northeastern India, and to raise the income of the local residents by extending assistance to participatory afforestation and to those engaged in slash-and-burn shifting cultivation (hereinafter referred to as "shifting cultivation"), as well as to preserve the biodiversity of the region, thereby contributing to regional environmental improvement and poverty alleviation.

The project was highly relevant to the development plan and development needs of India at the times of appraisal and ex-post evaluation, as well as to Japan's ODA policy at the time of appraisal, so its relevance is high. While the project cost was within the plan, the project period exceeded the plan. Outputs were produced almost as planned and the efficiency was fair. Through afforestation, community development and livelihood improvement activities, support for the shift of livelihoods to shifting cultivators, biodiversity conservation activities, etc. were conducted through the project. It was confirmed that there were effects such as forest restoration, water and soil conservation and biodiversity improvement in the target area as well as creation of employment, diversification of the means of livelihood and increase in the income of local residents. In addition, it was confirmed that improvements in forest restoration, water and soil conservation, and biodiversity had contributed to the improvement of the natural environment of the region and that the increase in the income of the local residents had contributed to improvement in the social and economic capacities of women as well as to poverty reduction in the region. Therefore, the effectiveness and impact of the project are high. After the completion of the project, the operation and maintenance system was taken over by the implementation system of the ongoing "Project for Sustainable Catchment Forest Management in Tripura" which is a successor to the project. The Project Management Unit (PMU) established in the project continues to exist and the management system of the PMU is in place. No major problems have been observed in the institutional/organizational, technical, financial aspects and current status of the operation and maintenance system. Therefore, the sustainability of the project effects is high.

In light of the above, the project is evaluated as highly satisfactory.

1. Project Description



Project site

Tree-planting site in the project target area

1.1 Background

Tripura is one of the seven states in northeastern India and borders Bangladesh on three sides: north, west and south. It is a mountainous and hilly state with rich forest resources, more than 70% of its area of 10,491 km^2 being covered with forests.

In Tripura, about 80% of the state's population were living in rural areas, and in particular, the majority of scheduled tribes (indigenous people), which account for about 30% of the state's population, relied heavily on forests. The poverty rate among the residents in the mountainous and hilly areas of the state was as high as about 40%. Excessive extraction of forest resources by these poor people and shifting cultivation have severely devastated forests, and between 1999 and 2003, the canopy rate in about 430 km^2 of dense forest decreased by an average of about 20%. As a result, soil runoff and the deterioration of water retention capacity have also been serious problems. Under these circumstances, the state sought to promote participatory and sustainable forest management and biodiversity conservation as part of its forestry sector reforms and anti-poverty measures.

1.2 Project Outline

The objective of the project was to rehabilitate the forests in Tripura and raise the income of local residents by extending assistance to participatory afforestation and to those engaged in shifting cultivation, as well as to preserve the biodiversity of the region, thereby contributing to regional environmental improvement and poverty alleviation.

<ODA Loan Project>

Loan Approved Amount / Disbursed Amount	7,725 million yen / 5,458 million yen
Exchange of Notes Date / Loan Agreement Signing Date	March 2007 / March 2007
Terms and Conditions	Interest Rate 0.75% Repayment Period 40 years (Grace Period) (10 years) Conditions for Procurement General Untied
Borrower / Executing Agency	The President of India / Tripura Forest Department (TFD), Government of Tripura
Project Completion	March 2017
Target Area	1) Gomati District (Amarpur, Karbook, Udaipur) 2) Khowai District (Teliamura, Khowai) 3) Part of North Tripura District (Dharmanagar, Panisagar, Kanchanpur) 4) Sepahijala District (Sonamura, Bishalgarh) 5) South Tripura District (Belonia, Sabroom) 6) Unakoti District (Kailashahar, Kumarghat) 7) West Tripura District (Sadar, Mandai) 7 Districts (16 Sub-divisions) in total
Main Contractor(s) (Over 1 billion yen)	None
Main Consultant(s) (Over 100 million yen)	NR Management Consultants India Pvt. Ltd. / Nippon Koei Co., Ltd.
Related Studies (Feasibility Studies, etc.)	"Special Assistance for Project Formation (SAPROF) for Tripura Forest Environmental Improvement and Poverty Alleviation Project (TFIPAP)"
Related Projects	[ODA Loan project] "Project for Sustainable Catchment Forest Management in Tripura (SCATFORM)" (October 2018)

2. Outline of the Evaluation Study

2.1 External Evaluator

Sawa Hasegawa, OPMAC Corporation

2.2 Duration of Evaluation Study

This ex-post evaluation study was conducted with the following schedule.

Duration of the Study: September, 2019 – February, 2021

Duration of the Field Study: January 13, 2020 – January 30, 2020

3. Results of the Evaluation (Overall Rating: A[1])

3.1 Relevance (Rating: ③[2])

3.1.1 Consistency with the Development Plan of India

India's national development plan at the time of appraisal, the *Tenth Five Year Plan* (2002-2007), set the target of achieving forest cover of 25%, with an emphasis on the rehabilitation of degraded forests, sustainable forest management through the promotion of Joint Forest Management (JFM), and support for forest dependents to obtain alternative income sources.

The national development plan at the time of the ex-post evaluation, the *INDIA Three Year Action Agenda*[3] (2017/182019/20[4]), placed environmental and forest protection as a priority item for sustainability. In particular, the following were indicated as policies for forest protection: 1) Development of forest management and database using the Global Positioning System (GPS) and various types of software to measure the effects of the various afforestation programs implemented so far, and the capacity strengthening of those using such software; 2) Formulation of a unified policy to control the invasion of invasive alien species that cause damage to crops and ecosystems; and 3) Especially in the northeastern part of India, change of the subsidy policy for oil palm cultivation, which is a single cultivation, in order to prevent deforestation and the loss of species, from the perspective of biodiversity protection.

As mentioned above, forest protection and ecosystem/biodiversity conservation were important issues in India's development policies at the times of appraisal and ex-post evaluation. Furthermore, the forest protection policy of the Government of India at the time of ex-post evaluation emphasized the development of GPS forest management and database, the strengthening of regulations from the viewpoint of ecosystem protection, and the decrease of monoculture from the viewpoint of biodiversity protection. This was consistent with the GPS forest management and biodiversity protection activities implemented by this project. Thus, the project is considered to be consistent with the development policy of the Indian government.

3.1.2 Consistency with the Development Needs of India

India was once covered by abundant forests, with about 40% of its land area covered by forests at the beginning of the 20th century, but in 2003, the forest cover rate[5] was 23.7%, lower than the world average of 29.6%. Many people, including the poor, depend on forests for livestock feed, fuel, income, etc., and the burden on forests has increased due to population growth. As a

[1] A: Highly satisfactory, B: Satisfactory, C: Partially satisfactory, D: Unsatisfactory
[2] ③: High, ②: Fair, ①: Low
[3] The formulation of the conventional five-year plan for national development by the Government of India was completed with the *Twelfth Five Year Plan* (20122017). The three-year action agenda has been developed from 2017.
[4] In the Indian fiscal year, 2017/18 is from April 2017 to March 2018. The same applies to the following fiscal years.
[5] The share of forests (land with an area of 1 ha or more that can be measured by satellite and with a canopy rate (percentage of tree leaf cover on a given plot of land surface) of 10% or more) and trees (land less than 1 ha in size that cannot be measured by satellite and with a canopy rate of 10% or more) in the target area. The canopy rate less than 10% is called scrub and 10% or more is called forest.

result, the deterioration of forests and the decline in the function of forests to conserve water and soil have become more serious. The decline in the groundwater level has led to shortages of agricultural and drinking water. The lives of the poor, who are mainly dependent on agriculture, have been put under pressure. In order to secure income, forests have been deforested while dependence on forests has been increasing, which has created a vicious circle. In addition, since the rate of open forest[6] in India was as high as 42.4% in 2003 and its function as a forest was generally low, the improvement of forest quality (decrease in the rate of open forest) has been an important issue together with the expansion of forest area.

On the other hand, in terms of the state of the forest environment at the time of the ex-post evaluation, according to the *India State of Forest Report* prepared every two years by the Forest Survey of India under the Ministry of Environment, Forest and Climate Change, the forest cover rate of India was 21.7% in 2017, slightly worse than the 23.7% in 2003. In addition, the open forest rate in 2017 was 42.8%, almost the same as the 42.4% in 2003. Therefore, the expansion of forest area and improvement of forest quality continue to be important issues in India.

Forest degradation was progressing in Tripura as a result of the expansion of traditional shifting cultivation due to population growth, as well as an increasing load on forests due to the increased demand for livestock feed, fuel, etc. collected from forests. In 1989 and 2003, the forest area of Tripura State decreased by 508 km^2 of dense forest, but increased by 337 km^2 of open forest, indicating further forest degradation.

Table 1 shows the forest cover rate and the dense and open forest rates in Tripura in 2007 when the project started and in 2017 when the project was completed. Compared with 2007, the forest degradation had significantly improved in 2017 due to an increase in the dense forest rate and a decrease in the open forest rate, but the overall forest cover rate had decreased, and the decrease in forest area remained an issue.

Table 1: Forest Cover Rate and Forest Canopy Rate in Tripura in 2007 and 2017

Forest cover rate	2007	2017	Forest canopy rate	2007	2017
Forest	77.0%	73.7%	Dense forest rate	60.5%	76.2%
Scrub	0.7%	0.3%	Open forest rate	39.5%	23.8%
Non-forest	22.3%	26.0%	Total	100.0%	100.0%
Total	100.0%	100.0%			

Source: *India State of Forest Report 2009* (Data measured in 2007), *India State of Forest Report 2019* (Data measured in 2017)

According to TFD, the main causes of the decrease in forest cover rate in the state are: 1) Implementation of shifting cultivation (called "Jhum"); 2) Implementation of deforestation and cultivation by owners of land where the forest rights are recognized under the *Scheduled Tribes*

[6] A canopy rate of less than 40% of the forest is called open forest and of 40% or more is called dense forest. The open forest rate is the percentage of open forest in the forest.

and Other Traditional Forest Dwellers (Recognition of Forest Rights) Act (hereinafter referred to as "RoFR") formulated in 2006 (the land given to the forest rights holders with a maximum of 4 ha per person, hereinafter referred to as "Patta Land"); 3) Indiscriminate and unscientific harvesting of forest resources; 4) Expansion of road and rail networks due to development, and 5) Expansion of urban areas due to population increase, etc.

Tripura is the first state in India to apply the RoFR, and the area of Patta Land covers 18% of the total area of the state. Although the owners of Patta Land are responsible for maintaining the sustainable use of their land, biodiversity conservation and ecosystem balance, this is not the case in practice and there is much degraded Patta Land in the state. Since data on the number of cases and areas of shifting cultivation implemented in the state has not been compiled, increase or decrease in the implementation of shifting cultivation is not clear. However, although TFD is able to regulate deforestation and shifting cultivation on state lands, the implementation of shifting cultivation remains a challenge in Tripura because it is difficult for TFD to enforce the regulations in Patta Land owned by RoFR holders. In addition, Dhalai District, which is outside the target area of the project, has the largest area of Patta Land in the state, and it is estimated that shifting cultivation is implemented more there than in other districts. This is considered to be one of the causes of the decrease in forest cover of the entire state. The area and number of owners of Patta Land by district are shown below.

Table 2: Area and Number of Owners of Patta Land by District in the 8 Districts in Tripura

District	Area of Patta Land (ha)	Rate of area (%)	Number of owners of Patta Land (households)
Gomati	31,294.02	17	25,152
Khowai	26,380.16	14	16,247
North Tripura	30,610.14	16	15,402
Sepahijala	8,586.73	5	8,027
South Tripura	22,553.70	12	20,289
Unakoti	9,582.99	5	6,428
West Tripura	8,053.86	4	5,150
Dhalai (outside the target area)	49,167.42	26	34,208
Total	**186,229.02**	**100**	**130,903**

Source: Questionnaire response by TFD

In terms of the poverty situation at the time of appraisal, as shown in Table 3, the poverty rate in Tripura was 34.4%, which was higher than the overall 26.1% in India. On the other hand, the poverty rate of Tripura in 2013 was 14.1%, which had greatly improved compared to the time of appraisal.

Table 3: Population and Poverty Rate in Tripura and India

	2006			2011	2013
	Population (million people)	Poverty rate	Rate of scheduled tribes	Population (million people)	Poverty rate
Tripura	3.2	34.4%	31.1%	3.7	14.1%
India	1,020	26.1%	8.2%	1,210	21.9%

Source: Documents provided by JICA (Data as of 2006), *Census 2011* (Data as of 2011), *Annual Report 2013*, Reserve Bank of India (Data as of 2013)

As seen above, the poverty rate in Tripura has improved. However, according to interviews with TFD and the residents in the project target area, the residents in mountainous and hilly areas, especially those who live on sloping land that is unsuitable for farming, and the residents in the wildlife sanctuary, are largely unable to cultivate and still live mainly dependent on forest resources. The opportunities for cash income are still limited and thus, there remains the need for poverty reduction.

3.1.3 Consistency with Japan's ODA Policy

Japan's *Country Assistance Program for India* (formulated in May 2006) at the time of appraisal placed "Improvement of poverty and environmental problems through health and sanitation issues, local development, water supply and sewerage support, afforestation support, etc." as one of its three priority areas. In addition, "Efforts based on disaster prevention support" as measures for poverty issues and "Support for the forest sector" as measures for environmental issues were specifically placed in the priority area. Also, JICA's *Overseas Economic Cooperation Operation Implementation Policy* (2005) placed "Support for poverty reduction" and "Support for global environmental issues and peace-building" as overall priority areas, and "Regional development that benefits the poor" and "Response to environmental issues" as priority areas for India.

This project has been highly relevant to India's development plan and development needs, as well as Japan's ODA policy. Therefore, its relevance is high.

3.2 Efficiency (Rating: ②)

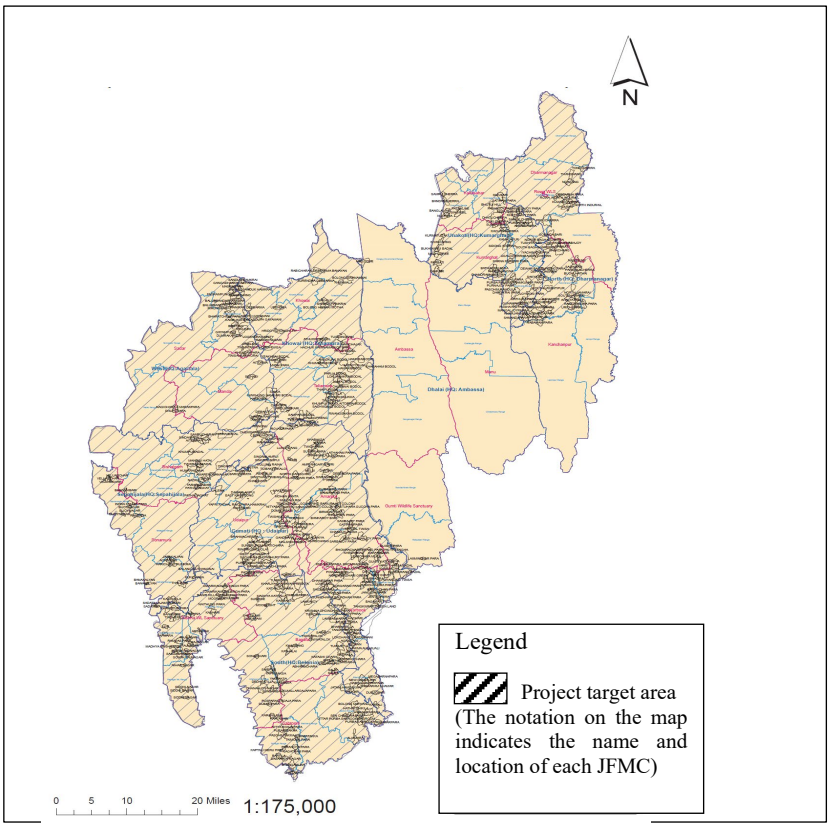
3.2.1 Project Outputs[7]

The project implemented a variety of activities consisting of five components, including participatory afforestation through JFM, support for shifting cultivators, biodiversity conservation activities, and so on. The main outputs of the project were as follows.

[7] For details, see "Comparison of the Original and Actual Scope of the Project" on the last page of the report.

In the project target area, 463 Joint Forest Management Committees (JFMC) were newly established.[8] In addition, about 3 to 4 Self Help Groups (SHG) were established per JFMC, for a total of 1,549 SHGs. Each SHG has around 10 members. JFMCs and SHGs established by the project were all registered under the *Societies Registration Act* enacted in 1860.

Of the established JFMCs, those established in the wildlife sanctuary area are called the Eco Development Committees (EDC) and have the same function as a JFMC. However, EDC members cultivate land outside the protected area, as residents within the protected area are prohibited from cultivation as well as deforestation activities within the area. In addition, the new Regrouped Villages (RGV) were established at a place in the state with relatively good road access for households engaged in shifting cultivation in the forested hinterland of the project target area. One JFMC was established for each RGV.



Source: Provided by TFD

Figure 1: Project Target Area in Tripura State

Table 4 shows the number of JFMCs/EDCs/RGVs and SHGs established, member households, and the breakdown by ethnic origin of the member households for each district. 94% of the member households are from scheduled tribes (ST), and the majority of forest dwellers are from ST.

[8] This includes 30 JFMCs established as EDCs and 16 JFMCs established in RGVs described below.

Table 4: Number of JFMCs/EDCs/RGVs and SHGs established by the Project and Member Households including the Breakdown of Ethnic Origin by District

District	Number of JFMCs	Number of EDCs	Number of RGVs	Number of JFMCs/ EDCs/ RGVs	Number of SHGs	Number of member households	ST	SC	RM	OBC	UR
Gomati	131	14	5	150	499	10,911	10,546	55	237	44	29
Khowai	49	0	7	56	198	5,204	5,164	17	0	15	8
North Tripura	38	1	2	41	127	2,365	2,216	10	20	81	38
Sepahijala	33	0	0	33	105	3,359	2,882	154	269	49	5
South Tripura	70	15	2	87	315	6,918	6,296	183	54	143	242
Unakoti	66	0	0	66	206	4,303	3,818	132	8	323	22
West Tripura	30	0	0	30	99	2,534	2,492	11	0	3	28
Total	**417**	**30**	**16**	**463**	**1,549**	**35,594**	**33,414**	**562**	**588**	**658**	**372**

Source: Documents provided by TFD
Note: ST: Scheduled Tribe, SC: Scheduled Caste, RM: Religious Minorities, OBC: Other Backward Classes, UR: Unreserved Category

(1) Forest Rehabilitation and Development

Afforestation consists of the three types of Artificial Regeneration (AR), Aided Natural Regeneration (ANR) and Conversion of Monoculture.[9] The area of afforestation of each type depended on each JFMC in accordance with the intentions of its members when they prepared the micro plan.[10] The planned and actual values of planted area by type, and the species of plants, number of plants planted, planted area and planting costs by type are as follows.

Table 5: Planned and Actual Planted Area by Type

Type	Planned area (ha)	Actual area (ha)
AR	15,500	15,667
ANR	35,280	37,377
Conversion of Monoculture	220	176
Total	**51,000**	**53,220**

Source: Documents provided by TFD

[9] AR is the planting of tree seedlings or seeds after a timber harvest to facilitate artificial tree growth. ANR is a method for enhancing the establishment of secondary forests in degraded grasslands by pruning sprouts, removing high stumps and vines and conducting complementary planting. Conversion of Monoculture is a conversion from single tree species to mixed planting.
[10] Action plans for forest management and regional development, etc., created with the participation of members.

Table 6: Species of Plants, Number of Plants Planted, Planted Area and Planting Costs by Type

Type	Species of plants		Number of plants planted	Planted area (ha)	Planting costs (rupees/ha)
AR	Mixed	Arjun, Bahera, Haritaki, Yangchak, Kathal, Amla, Tetul	7,562,066	6,806.54	24,394
	Bamboo	Muli, Kanak kaich, Bari, Barak, Mritinga, Rupai, Dolu, Kata bans, Makal, Lathi bans	5,537,875	8,860.60	7,381
		Sub-total	**13,099,941**	**15,667.14**	**14,772**
ANR	Mixed	Arjun, Bahera, Haritaki, Yangchak, Kathal, Amla, Tetul, Gandhaki, Broom grass, Bara, Elachi, etc.	26,465,898	23,821.69	6,315
	Bamboo	Muli, Bari, Barak, Mritinga, Rupai, Makal, Lathi Bans	2,710,988	13,554.94	6,477
		Sub-total	**29,176,886**	**37,376.63**	**6,374**
Conversion of Monoculture	Mixed	Bamboo and brush such as Bahera, Amla, Haritaki, etc.	110,000	176	16,371
		Sub-total	**110,000**	**176**	**16,371**
		Total	**42,386,827**	**53,219.77**	

Source: Questionnaire response by TFD

While it was planned that farm forestry[11] for 897 ha would be implemented in addition to afforestation, this was changed to introduce agroforestry in order to regenerate the degraded Patta Land that spreads throughout the state and to plant food and cash crops for the effective use of forest resources. The implementation of agroforestry was scaled up to 8,297 ha by using approximately 170 million rupees of funds under the *Mahatma Gandhi National Rural Employment Guarantee Act* (MGNREGA). Table 7 shows the results according to the species of main and inter crops, planted area and the planting costs of agroforestry by model type.

Table 7: Species, Planted Area and Planting Cost of Agroforestry by Model Type

Model Type	Species of main crops	Species of inter crops	Planted area (ha)	Planting costs (rupees/ha)
Model 1	Bamboo, Jackfruit	Maize, Pineapple	192.23	49,000
Model 2	Gamar, Lemon	Pigeon pea, Ginger	530.83	52,000
Model 3	Areca nut, Bamboo	Sesame, Maize, Black pepper	1,378.49	50,000
Model 4	Acacia, Litchi, Lemon	Maize, Turmeric	760.95	49,000
Model 5	Teak, Jackfruit	Maize, Ginger	424.51	51,000
Model 6	Mango, Bamboo	Maize, Pineapple	3,654.84	51,000
Model 7	Agar, Areca nut	Turmeric, Black pepper	234.11	53,000
Model 8	Banana, Acacia	Turmeric	1,209.81	52,000
Model 9	Orange, Acacia	Papaya, Turmeric	68.92	52,000
		Total Planting Area	**8,454.69**	

Source: Questionnaire response by TFD

[11] Afforestation on private land that is not suitable for agriculture.

In addition, as enrichment plantations for non-timber resources, 1,140 ha of broom grass, gandhaki, cardamom, black pepper, etc. were planted.

Bamboo planted by JFMC

Broom grass (material for brooms)

(2) JFM Community Development

The regional development and livelihood improvement activities included the construction of 399 Vocational Training Centers (VTC), 58 Multi-Utility Centers (MUC), 6 Common Community Facility Centers (CCFC), and 53 Mini-CCFCs (smaller than CCFC, but with no difference in use) as small-scale infrastructure development. These facilities are used for conducting various types of vocational training and general training, such as management training for JFMC/EDC/RGV members and training for Income Generation Activities (IGA) by SHGs. They are also used as offices for holding the meetings of each group and storing account books and documents.

In addition, a total of 2,513 check dams were constructed in the project target area, creating a total of 1,452.03 ha of water sources. Freshwater fish farming became possible at these water sources, and have been carried out as one of the IGAs by SHGs. In addition to the project funds, approximately 27.5 million rupees from MGNREGA was used for the construction of the check dams.

Check dam constructed

Cultured fishes in check dam

The project provided activity funds to each JFMC/EDC/RGV, broadly divided into two categories: one being funds for the implementation of the micro plan prepared and the other subleases from JFMCs to SHGs for IGAs (hereinafter referred to as "revolving funds"). Each JFMC, EDC, and RGV received a rolling 150,000 rupees, for a total of 69.45 million rupees from the project, of which 67.02 million rupees were used as small loans for IGAs by SHGs (The unused portion remains in JFMC's account). Of the 1,549 SHGs established, 1,313 received loans from JFMCs. The number of IGAs undertaken and loans borrowed, and the total amount of loans, as well as the estimated rate of return and income per capita on some of IGAs are as shown in Tables 8 and 9. Of the SHGs that received loans, 494 had repaid JFMC by the time the business was completed and received a second loan, 88 received a third loan, and 11 had received a fourth loan by the project completion.[12]

Table 8: Number of IGAs Conducted, Loans Borrowed and Total Amount of Loans

	IGAs	Number of SHGs conducted	Number of loans provided from JFMCs	Total amount of loans (rupees)
1	Pig farming	1,166	1,262	45,881,888
2	Aquaculture (Freshwater fish)	736	550	17,211,945
3	Nursery plantation	96	8	270,000
4	Incense stick making	80	4	148,500
5	Poultry farming	49	29	810,125
6	Broom making	48	14	522,000
7	Mushroom growing	32	1	15,500
8	Cultivation	31	4	115,000
9	Non-Timber Forest Products (NTFP)	26	7	106,000
10	Goat farming	25	10	290,500
11	Dairy	24	14	725,000
12	Bamboo sale	13	0	0
13	Beekeeping	11	2	47,000
14	Handloom	10	2	80,000
15	Handicraft	5	0	0
16	Candle making	4	1	30,000
17	Band party	3	3	80,000
18	Vermicomposting	1	0	0
19	Tailoring	1	0	0
20	Others	34	14	690,000
	Total	**2,395**	**1,925**	**67,023,458**

Source: Documents provided by TFD

[12] JFMCs offered SHGs loans at interest rates ranging from 2% to 6% per annum. Other terms and conditions are as follows.

1) SHGs have to be formed with members within JFMCs.
2) SHGs must have a valid bank account with regular savings by its members.
3) SHG members have to get basic training on IGAs.
4) SHGs need to have a standardized business plan.
5) SHGs need to repay earlier loans for higher loans.
6) The repayment period of loans varies as per the business plans of IGAs.

Table 9: Estimated Rate of Return and Income per Capita per Month on the Main IGAs

IGAs	Rate of return/ Income per capita per month
Pig farming	160%
Aquaculture (Freshwater fish)	170%
Nursery plantation	40%
Mushroom growing	320%
Incense stick making	4,0005,000 rupees/person/month
Handloom	5,0006,000 rupees/person/month
Terracotta	3,5004,000 rupees/person/month
Bamboo handicrafts	3,000 rupees/ person/month
Broom making	4,5005,000 rupees/person/month
Broom grass harvesting	3,0004,000 rupees/person/month
NTFP	1,500 rupees/person/month

Source: Documents provided by TFD

In addition to the funds from JFMCs through the project, small loans to SHGs were financed by about 2.31 billion rupees from the Government of Tripura.

(3) Rehabilitation for RGVs of Shifting Cultivators

16 RGVs were established and shifting cultivators settled there. One JFMC was established for each RGV, and 65 SHGs were established in total. In the target area of RGVs, afforestation and agroforestry were carried out in 4,012 ha, and 46 out of the 65 SHGs borrowed from JFMC for their IGAs, including for aquaculture, pig farming, poultry farming, the production of brooms and incense sticks, etc. In addition, 14 VTCs, 2 MUCs, 15 barns, 2,043 kitchens, 47 wells, 30 health camps, 2 schools, and 133 check dams were constructed as infrastructure development.

(4) Biodiversity Conservation

30 EDCs and 97 SHGs were established and 135 check dams were constructed for a total area of 4,408.63 ha in the Sepahijara, Trishna and Rowa Wildlife Sanctuaries in the state. In the same way as for JFMCs, activities such as afforestation, water and soil conservation, and IGAs by SHGs were conducted for EDCs.

The Butterfly Park located in the Trishana Wildlife Sanctuary

It was planned that the development of ecotourism would be carried out in the three Wildlife Sanctuaries above, but this was changed to only the Trishna Wildlife Sanctuary as it was found that targeting the three sanctuaries would significantly exceed the budget. Five ecotourism developments were conducted in the Sanctuary, including the Butterfly Park, the Bison Safari, the Chilapathar Eden of Bison, the Dwarikamurasing Para Bio-

Conservation Park and Panchakarma Therapy and Research. Biodiversity surveys (research and inventory) were also conducted, identifying 34 biodiversity-rich areas and 106 species of butterflies in the Trishna Wildlife Sanctuary.

Panels exhibited in the Butterfly Park


Enclosed butterflies raised in the Butterfly Park

(5) Supporting Activities

As the project implementation system, a Project Management Unit (PMU) was established at the central level, independent of TFD. The PMU was registered as an autonomous society with its own operating rules, including financial, accounting, personnel, management norms, etc., and it was planned that it would function as an organization dedicated to the implementation of the project. In addition, the Non-Timber Forest Products (NTFP) Centre of Excellence (NCE) was established at the central level, the Divisional Management Units at the forest division and wildlife sanctuary level, and the Range Management Units (RMU) at the forest range level.

Meanwhile, the administrative boundary of Tripura State was changed from four districts to eight districts in January 2012 during project implementation, and the forest administrative boundary was changed in October 2014 accordingly. After the change was carried out, instead of the Divisional Management Units, State, District, Sub-division, Wildlife Sanctuary, Range and Beat, District Management Units (DMU) and Sub-divisional Management Units (SDMU) were established for forest administration in Tripura. Districts and Sub-divisions correspond to the administrative boundary of Tripura, but other areas are separated from the boundary.

Furthermore, 35 Community Organizers (6 of which are female) and 23 Livelihood Coordinators (4 of which are female) were assigned as field workers at the range level, and one Field Facilitator was placed in each JFMC/EDC/RGV. These field workers served as liaison and instructors for the JFMCs/EDCs/RGVs in charge and provided vocational training and management training for their members. In order to provide more training for the members of JFMCs/EDCs/RGVs, the field workers were trained through TOT (Training of Trainers), and the number of training participants was changed from 46,300 at the time of the plan to 90,147. The final number of participants in the training was as follows.

Table 10: Planned and Actual Number of Participants of Training conducted by the Project

Training participants	Planned number of participants	Actual number of participants
TFD	-	4,340
JFMCs/EDCs/RGVs members	-	15,072
SHG members	-	57,970
Others	-	22,091
Total	**90,147**	**99,473**

Source: Questionnaire response by TFD

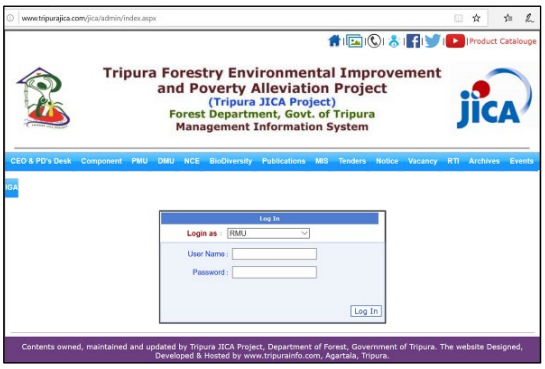
NCE has the functions of research and production, value added creation and marketing, and production training and extension for bamboo and NTFP, etc. As part of the marketing activities for bamboo and NTFP, the timing of the harvesting of bamboo and broom grass, etc. was set, together with the prices of various types of bamboo and the harvest cost of bamboo and broom grass. A profit sharing system between JFMCs and their members was established. In addition, approximately 800 craftsmen were trained through the handicraft training conducted through this project, and a store called "Crafts & More" was opened in NCE for the purpose of selling the handicrafts produced by these craftsmen.

Crafts & More (A shop in the center of town)


Handicrafts sold in Crafts & More

A Geographic Information System (GIS) laboratory was established in the PMU office, a GIS database and web-enabled Management Information System (MIS) were developed, and technical guidance for GIS software operation was provided. Furthermore, a project website "Tripura JICA Project" [13] was established and updated periodically during project implementation. In addition, various pamphlets and booklets were prepared as publicity materials for the project, and street plays and participatory workshops were held for participation in the JFMC activities and to raise the awareness of the target residents regarding forest protection and biodiversity conservation.

[13] http://tripurajica.com/



Access site to the database on the website of Tripura JICA Project

GIS laboratory in the PMU office
(The maps on the wall are made using GIS data)

In addition, two kinds of impact surveys were conducted by external organizations to monitor and evaluate the project.[14]

From the above, it can be seen that some of the outputs were changed from the plan, but also that all of these changes were made with consultation and agreement between JICA and PMU, and that the project outputs were produced as planned after the changes.

3.2.2 Project Inputs

3.2.2.1 Project Cost

While the original project cost was 9,216 million yen (of which the amount covered by ODA Loan was 7,725 million yen), the actual cost was 5,771 million yen (of which the amount covered by yen loan was 5,458 million yen), which was within the plan (63% of the planned amount). The amounts of the foreign and local currency breakdowns, price escalation, physical contingency, and interest during construction are unknown. Furthermore, some activities such as agroforestry and IGAs by SHGs were implemented using funds from other schemes and it was difficult to accurately calculate the Indian share of this project; therefore the amount covered by the loan for each item is also unknown (the actual amount covered by the ODA Loan above is the total disbursed amount). Therefore, evaluation will be made based only on the cost borne by the Japanese side.

[14] *Social Impact Assessment of Income Generating Activities Initiative of TFIPAP: A Pilot Study*, Department of Sociology, Tripura University, December 2013, *Third Party Assessment of Assets created under Tripura JICA Project*, Mott MacDonald, July 2014.

Table 11: Original and Actual Project Cost

Unit: Million yen (Original cost and Actual cost equivalent to yen)

Items	Original cost						Actual cost	
	Foreign currency portion		Local currency portion		Total		Million rupees	Yen equivalent Note
	Total	JICA	Total	JICA	Total	JICA		
Forest Rehabilitation and Development	0	0	2,520	2,520	2,520	2,520	1,006.45	1,913
JFM Community Development	0	0	2,064	2,064	2,064	2,064	1,059.12	2,013
Rehabilitation for RGVs of Shifting Cultivators	0	0	730	730	730	730	280.78	534
Biodiversity Conservation	0	0	167	167	167	167	66.37	126
Supporting Activities	101	101	702	702	803	803	366.42	697
Price Escalation	6	6	379	379	385	385	0	0
Physical Contingency	5	5	329	329	334	334	0	0
Consulting Services	195	195	239	239	434	434	62.41	119
Administration	0	0	892	0	892	0	194.23	369
Tax and Duties	22	0	577	0	599	0		
Interest during Construction	288	288	0	0	288	288	0	0
Total	**617**	**595**	**8,599**	**7,130**	**9,216**	**7,725**	**3,035.78**	**5,771**

Source: Documents provided by JICA (Original cost), Questionnaire response by TFD (Actual cost)
Note: The original cost is converted at 1 rupee = 2.52 yen (As of September 2006) and the actual cost is converted using the average exchange rate (1 rupee =1.90 yen) from 2007 to 2017 by International Financial Statistics, IMF

While most of the project cost was denominated in local currency, the average annual exchange rate in 2007 at the start of the project was 1 rupee = 2.85 yen, while the average annual exchange rate in 2017 at the completion of the project was 1 rupee = 1.72 yen, the exchange rate of the rupee against the yen having fallen by 60% over 10 years. As a result, while the output was produced almost as planned, the actual project cost in yen amounted to 63% of the original amount. For reference, the actual amount of the project cost in rupees was 83% of the original amount.

3.2.2.2 Project Period

While the original project period was from March 2007 to March 2015 (97 months), the actual period was from March 2007 to March 2017 (121 months), which exceeded the plan (125% of the planned period). In the first few years after the project started, budget disbursement did not take place in a timely manner, and the assignment of the personnel of PMU was delayed due to the public recruitment of personnel to establish PMU as an autonomous society. The numbers of personnel was not allocated as planned, which resulted in the project activities not proceeding as planned for the first couple of years. However, most of the activities were completed by the original scheduled period of March 2015.

However, as RoFR formulated in 2006 came into effect in 2008, more than 25% of forest land ownership was transferred from TFD to local residents, resulting in a shortage of afforested target areas and the need to take measures against this. As a result of the adjustment,

although agroforestry activity was introduced in collaboration with MGNREGA, the change was approved in January 2012 and related activities started in 2012. More than 50% of the budget for this activity was from MGNREGA's budget and it was necessary to change the schedule for the Forest Rehabilitation and Development component according to the situation of the budget expenditure of MGNREGA. In addition, for some JFMCs and SHGs established in the latter half of the project period, an additional project period was needed to strengthen their capacity to ensure organizational sustainability. As a result, the project period was extended by two years from the original plan.

3.2.3 Results of Calculations for Internal Rates of Return (Reference only)

Table 12 shows the Financial Internal Rate of Return (FIRR) and the Economic Internal Rate of Return (EIRR) calculated at the time of appraisal and the ex-post evaluation of the project. Neither of the internal rates of return at the time of the ex-post evaluation are necessarily accurate because most of the benefit-cost data is not available and calculations were made using the forecast data at the time of appraisal. The large increases in both internal rates of return at the time of the ex-post evaluation can be attributed to the outputs increased by utilizing the funds from other schemes, while the project cost (amount borne by the Japanese side) was lower than planned.

Table 12: Internal Rates of Return of the Project

IRR	At the time of appraisal	At the time of ex-post evaluation	Cost	Benefit	Project life
FIRR	16.8%	20.0%	Project cost (excluding price escalation and interest during construction), Administration cost	Increase in forest products, IGAs	50 years
EIRR	18.7%	24.9%	Project cost (excluding price escalation and interest during construction), Administration cost	Increase in forest products, IGAs, Soil erosion prevention	50 years

Source: Documents provided by JICA (At the time of appraisal), Calculated by external evaluator (At the time of ex-post evaluation)

Although the project cost was within the plan, the project period exceeded the plan. Therefore, the efficiency of the project is fair.

3.3 Effectiveness and Impact[15] (Rating: ③)

3.3.1 Effectiveness

3.3.1.1 Quantitative Effects (Operation and Effect Indicators)

In this project, ten indicators were set as Operational and Effect Indicators. No baseline values were set for each indicator. The achievement of each indicator is judged based on whether or

[15] Sub-rating for Effectiveness is to be put with consideration of Impacts.

not the actual value after two years from the completion of the project (2019) has reached the target value. However, the successor project, SCATFORM, is being implemented in the same target area as this project, and the data for 2019 includes the actual value of SCATFORM. In addition, the actual value of each indicator limited to this project after project completion was not collected by TFD. Therefore, in this ex-post evaluation, the achievement is judged based on the actual value as of the completion of the project (2017). The results of each indicator are as follows.

Table 13: Operation and Effect Indicators (Afforestation area, Quantity of planting)

	Indicator	Baseline	Target	Actual	
		2007	2017	2017	2019
			2 Years After Completion	Completion Year	2 Years After Completion
1	Afforestation area	-	59,297 ha	61,675 ha	NA
2	Quantity of planting	-	110,200,000	119,248,402	NA

Source: Documents provided by JICA (Target value), Questionnaire response by TFD (Actual value)

The target value of "Afforestation area" at the time of appraisal was 55,100 ha (51,000 ha planted by JFMCs + 4,100 ha planted by RGVs), but this was changed as the area of agroforestry plantations increased (51,000 ha + 8,927 ha for agroforestry). As seen above, both indicators achieved their target values.

Table 14: Operation and Effect Indicators (Survival rate)

	Indicator	Baseline	Target	Actual	
		2007	2017	2017	2019
			2 Years After Completion	Completion Year	2 Years After Completion
3	Survival rate	-	1st year after planting: 90% 3rd year after planting: 70% 5th year after planting: 50%	1st year after planting: 90% 2nd year after planting: 80% 3rd year after planting: 70%	NA

Source: Documents provided by JICA (Target value), Questionnaire response by TFD (Actual value)

Accurate data for this indicator was not collected and the actual value above is the one estimated by TFD.

Table 15: Operation and Effect Indicators
(Number of JFMCs established, Number of SHGs established)

	Indicator	Baseline	Target	Actual	
		2007	2017	2017	2019
			2 Years After Completion	Completion Year	2 Years After Completion
4	Number of JFMCs established (including EDCs and RGVs)	-	410 (456)	417 (463)	NA
5	Number of SHGs established	-	1,400	1,549	NA

Source: Documents provided by JICA (Target value), Questionnaire response by TFD (Actual value)

The target value of the "Number of JFMCs established" at the time of appraisal was 400, but the number of JFMCs was changed from 400 to 410 as the number of establishing EDCs was changed from 40 to 30. As seen above, both indicators achieved their target values.

Table 16: Operation and Effect Indicators (Rate of forest cover)

	Indicator	Baseline	Target	Actual	
		2007	2017	2017	2019
			2 Years After Completion	Completion Year	2 Years After Completion
6	Rate of forest cover	-	Scrub [Note 1] >> Open forest [Note 2] Open forest >> Dense forest [Note 3]	Decrease in the area of scrub and open forest, Increase in the area of dense forest	NA

Source: Documents provided by JICA (Target value), Questionnaire response by TFD (Actual value)
Note 1: Canopy rate 010%, Note 2: Canopy rate 1040%, Note 3: Canopy rate more than 40%

The target value of this indicator was not set at the time of appraisal from the point of view of how much the increase would be from scrub to open forest and from open forest to dense forest. Therefore, the target value is not clear. When the intention of the target value was confirmed with TFD at the time of the ex-post evaluation, it was recognized as being "decrease in the area of scrub and open forest as well as increase in the area of dense forest." As the basis for the actual value of this indicator, according to the *India State of Forest Report*, the area of scrub, open forest and dense forest in the project target areas (7 out of the 8 districts, excluding Dhalai District) of Tripura in 2007 and 2017 is shown in Table 17. The area of scrub and open forest is decreasing, and the area of middle dense forest and very dense forest is increasing. Therefore, this indicator is judged to have achieved the target value.

Table 17: Forest Area by Forest Canopy Rate in the Project Target Area in 2007 and 2017

Forest canopy rate	Area in 2007 (km^2)	Area in 2017 (km^2)	Difference (km^2)
Scrub Note 1	64	27	-37
Open Forest Note 2	2,521	1,434	-1,087
Middle Dense Forest Note 3	3,441	3,770	+329
Very Dense Forest Note 4	108	538	+430

Source: *India State of Forest Report 2009* (Data measured in 2007), *India State of Forest Report 2019* (Data measured in 2017)
Note 1: Canopy rate 010%, Note 2: Canopy rate 1040%,
Note 3: Canopy rate 4070%, Note 4: Canopy rate more than 70%

Table 18: Operation and Effect Indicators
(Production of forest products, Increase in income per beneficiary household)

	Indicator	Baseline	Target	Actual	
		2007	2017	2017	2019
			2 Years After Completion	Completion Year	2 Years After Completion
7	Production of forest products	-	627,000,000 rupees/year	NA	NA
8	Increase in income per beneficiary household	-	10%	10%	NA

Source: Documents provided by JICA (Target value)

The data for "Production of forest products" was not collected and not available. The actual value of "Increase in income per beneficiary household" was 61% according to the TFD questionnaire responses as the result of the impact survey conducted by an external organization. However, the details of the survey methods, such as the number of samples and the sampling method of the impact survey, could not be confirmed, so taking into account the result of another impact survey of this project, which was conducted in the preparatory survey for the successor project, SCATFORM,[16] the actual value has been judged to be 10%. This indicator achieved the target value.

Table 19: Operation and Effect Indicators (Job creation, Training lecture attendees)

	Indicator	Baseline	Target	Actual	
		2007	2017	2017	2019
			2 Years After Completion	Completion Year	2 Years After Completion
9	Job creation	-	38,900,000 person days	38,920,000 person days	NA
10	Training lecture attendees	-	90,147 persons	99,473 persons	NA

Source: Documents provided by JICA (Target value), Questionnaire response by TFD (Actual value)

[16] *Preparatory Study on Project for Sustainable Forest and Catchment Management in Tripura State: Final Report*, JICA, Kokusai Kogyo Co., Ltd., Ides Inc., and IC Net Ltd., August 2018

The target value of "Training lecture attendees" at the time of appraisal was 46,300, but this was changed to 90,147 as the number of trainees increased. As seen above, both indicators achieved their target values.

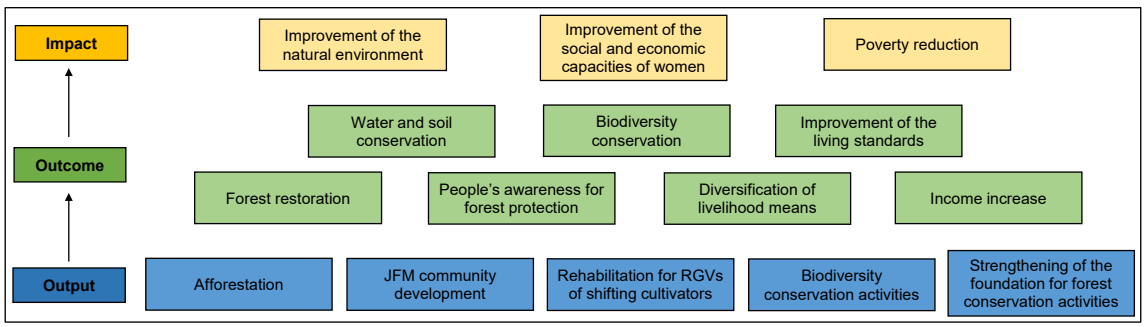
As mentioned above, it was difficult to judge the achievement level of two of the ten indicators set as Operation and Effect Indicators, as accurate data could not be obtained for "Survival rate" and the data was not available for "Production of forest products". However, the remaining eight indicators achieved their target values.

3.3.1.2 Qualitative Effects (Other Effects)

The following were assumed as the qualitative effects of this project.

- Improvement of the natural environment (Forest restoration, Water and soil conservation, Biodiversity conservation)
- Improvement of the living standards of residents (Diversification of livelihood means and Improvement of living conditions)
- Improvement of the social and economic capacities of women

Based on the path from output to outcome and impact of the project, these qualitative effects can be categorized as shown in Figure 2; The outcome-level effects are 1) Forest restoration, 2) People's awareness of forest protection, 3) Water and soil conservation, 4) Biodiversity conservation, and 5) Improvement of the living standards of residents (Diversification of livelihood means and Income increase). The impact-level effects are 1) Improvement of the natural environment, 2) Improvement of the social and economic capacities of women, and 3) Poverty reduction. Therefore, the status of the qualitative effects related to effectiveness and impact was confirmed by the above classification in this ex-post evaluation.



Source: Made by external evaluator

Figure 2: Composition of Output, Outcome and Impact of the Project

A questionnaire survey with TFD as well as interview surveys for 2 to 4 groups of JFMCs, EDCs, and RGVs selected from the 7 target districts were conducted in order to confirm the

qualitative effects. A total of 17 groups were selected, and the members of each group and the SHG members who belong to each group were interviewed.[17] The breakdown of JFMCs, EDCs and RGVs visited in each district and sub-division is shown in Table 20.

Table 20: Number of JFMCs, EDCs and RGVs Interviewed at the Ex-post Evaluation

District	Sub-division	Number of JFMCs/EDCs/RGVs Interviewed
Gomati	Udaipur	2 JFMCs
	Karbok	1 RGV
Khowai	Teliamura	1 JFMC, 1 RGV
North Tripura	Dharmanagar	2 JFMCs
Sepahijala	Bishalgarh	1 JFMC
	Sonamura	2 JFMCs
South Tripura	Trishna Wildlife Sanctuary	1 EDC
Unakoti	Kumarghat	2 JFMCs
West Tripura	Mandai	2 JFMCs
	Sadar	2 JFMCs
	Total	**14 JFMCs, 1 EDC, 2 RGVs**

Source: Results of interview with JFMCs/EDCs/RGVs

Responses regarding qualitative effects related to effectiveness were obtained from each JFMC/EDC/RGV interviewed by asking how much had been changed by the implementation of this project with answers on a scale of five: "Improved a lot," "Improved," "Improved to some extent," "Same" and "Worsened." The results of the five-scale evaluation were as follows.

Table 21: Five-scale Evaluation of the Project Effects by JFMCs/EDCs/RGVs

Item	Improved a lot	Improved	Improved to some extent	Same	Worsened
1) Forest restoration	5	11	1	0	0
2) People's awareness of forest protection	4	13	0	0	0
3) Water and soil conservation	11	5	1	0	0
4) Biodiversity conservation	7	4	6	0	0
5) Improvement of living standards of residents (Diversification of livelihood means and Income increase)	2	12	3	0	0

Source: Results of interview with JFMCs/EDCs/RGVs (Effective number of responses: 17)

As seen above, responses for all of the items were as improved, and there were no responses saying "Same" or "Worsened." The details of the changes observed are as follows.

[17] The 17 groups were selected from groups located in places that could be visited during the survey period in each district, were groups actively engaged in activities and not introduced by TFD. The interviewees were not limited to the executives of each group and the members were invited to participate freely in the interview survey. As a result, almost 50 or more members participated in each group and there was no bias in age or sex among the interviewees. During the interview, not only executives but also a wide range of participants of both age and gender spoke.

Table 22: Any Changes Observed

Item	Any changes observed
1) Forest restoration	➢ The forest area has increased, the number of plant species in the forest has increased, and the shade due to the increased number of plants has increased.
2) People's awareness of forest protection	➢ According to JFMCs, deforestation in the target area is managed by JFMCs, and only permitted bamboo is harvested. ➢ According to EDCs, logging in the wildlife sanctuary was originally prohibited, but no logging by EDC members has taken place. ➢ According to RGVs, there has been no shifting cultivation by RGV members since the project was implemented. ➢ Nearly all JFMCs/EDCs/RGVs interviewed indicated that the implementation of the project has strengthened community ties and fostered a sense that the forests and natural resources around the community are their property and should be protected by the community. In addition, there was the opinion that this project had also strengthened the connection between communities and TFD.
3) Water and soil conservation	➢ The construction of the check dams has created reservoirs in hilly areas, increased the amount of water available, and made water available throughout the year. In addition, the installation of wells and water tanks has made safe drinking water available. ➢ The amount of water in the soil has increased, the cultivation of vegetables has improved. Irrigation has also improved, enabling a second crop of rice, which was the first crop in the past.
4) Biodiversity conservation	➢ The number of sightings of wild animals (monkeys, deer, wild boars, foxes, wild cats, hares, porcupines, Indian bison, snakes, etc.) and birds has increased, and crop damage by wild animals has also increased. ➢ According to the Wildlife Census, there was an increase in the number of major wildlife species in Tripura. The results from the Wildlife Census in 2002 and 2014 showed that the number of leopards had increased from a small number to 29, the number of barnacles had increased from 598 to 690, the number of elephants had increased from 31 to 40, the number of clouded leopards had increased from 12 to 31, and the number of binturongs had increased from a small number to 28.
5) Improvement of the living standards of residents (Diversification of livelihood means and Income increase)	➢ Many forest dwellers who are members of JFMCs/EDCs/RGVs had no access to cash income other than from the sales of forest resources, small amounts of crops, and day labor on government-implemented projects, and their income was very limited, to around 3,000 rupees per month. However, income was dramatically increased through wages for afforestation and small-scale infrastructure development activities under this project. ➢ IGAs by SHGs have made new cash income from aquaculture, pig farming, poultry farming, etc. possible. ➢ The income from the sales of bamboo, broom grass, incense material planting and agroforestry has increased. In addition, through this project, a purchase system for bamboo and broom grass was established, and broom grass can now be sold at 45 to 60 rupees per kg, up from 30 rupees or less per kg, when sales were made at the price quoted by the vendors.

Source: Results of interview with JFMCs/EDCs/RGVs, Questionnaire response by TFD

Furthermore, according to the results of the social impact survey conducted by Tripura University,[18] the following positive changes were observed in social awareness and behavior as well as in the access to amenities for target residents before and after the implementation of the project.

[18] See Note 14. The sample was conducted with 45 SHGs and 134 SHG members in Gomati, Khowai and West Tripura Districts. The sampling method is unknown because it is not described in the survey report.

Table 23: Changes among the Target Residents Before and After the Project

Item	Rate of residents who answered 'Yes'	
	Before	After
Yardstick for social awareness and behavior		
Confidence in facing problems	25%	85%
Confidence in facing financial crises	25%	77%
Helping neighbors	63%	72%
Taking decisions	49%	68%
Access to amenities		
Medical	37%	86%
Sanitation	46%	76%
Water supply	9%	37%
Sending children to schools	56%	77%
Adequate market	22%	73%
Transport	73%	76%

Source: Questionnaire response by TFD

As mentioned above, certain effects were confirmed in the qualitative effects related to effectiveness: 1) Forest restoration; 2) People's awareness of forest protection; 3) Water and soil conservation; 4) Biodiversity conservation; and 5) Improvement of the living standards of residents (Diversification of livelihood means and Income increase).

3.3.2 Impact

3.3.2.1 Intended Impacts

As referred to in "3.1.2 Consistency with Development Needs" of the Relevance, according to the *India State of Forest Report*, the dense forest rate in the total forest area of Tripura increased from 60.5% in 2007 to 76.2% in 2017, while the open forest rate reduced from 39.5% to 23.8%. This indicates that the increase in the area of dense forest promoted forest regeneration and improved forest degradation in the state. Furthermore, the poverty rate of Tripura decreased from 34.4% in 2006 to 14.1% in 2013, which indicates that the poverty situation in the state has improved.

In addition, regarding the qualitative effects related to impact: 1) Improvement of the natural environment; 2) Improvement of the social and economic capacities of women; and 3) Poverty reduction, change for each JFMC/EDC/RGV interviewed was examined on the five-scale evaluation in the same way as for the qualitative effects related to effectiveness. The results of the five-scale evaluation were as follows.

Table 24: Five-scale Evaluation of the Project Effects by JFMCs/EDCs/RGVs

Item	Improved a lot	Improved	Improved to some extent	Same	Worsened
1) Improvement of the natural environment	8	7	2	0	0
2) Improvement of the social and economic capacities of women	2	11	4	0	0
3) Poverty reduction	3	10	4	0	0

Source: Results of interview with JFMCs/EDCs/RGVs (Effective number of responses: 17)

As seen above, all of the items were judged to have been improved, and no responses said "Same" or "Worsened." As for the details of the changes observed, in terms of 1) Improvement of the natural environment, environmental improvement with the increase of forest area and water content in the soil was mentioned.

In terms of 2) Improvement of the social and economic capacities of women and 3) Poverty reduction, the members of SHGs are mostly women, and very few had personal accounts in financial institutions prior to the implementation of the project. The SHG accounts were opened by the project and small-scale loans for IGAs were provided by JFMCs. Furthermore, due to difficulties in borrowing from financial institutions, borrowing used to take place from individual lenders at high interest rates, such as 10% per month, when necessary. However, formal loans from financial institutions have been approved as SHGs, and 258 SHGs have actually borrowed funds, amounting to 320 loans with 19.5 million rupees. In addition, according to the results of the social impact survey conducted by Tripura University, 6% of SHGs have started new profit-making businesses such as sundries stores, dried fish sales, lemon cultivation, etc. using funds obtained from IGAs.

As mentioned above, certain effects were also confirmed in the qualitative effects related to impact: 1) Improvement of the natural environment; 2) Improvement of the social and economic capacities of women; and 3) Poverty reduction.

3.3.2.2 Other Positive and Negative Impacts

(1) Impacts on the Natural Environment

The impact on the natural environment is described in "3.3.2.1 Intended Impacts" above. There were no reports of undesirable effects of the project on the natural environment.

(2) Resettlement and Land Acquisition

The resettlement of residents and land acquisition by this project were not planned and did not occur.

This project has mostly achieved its objectives. Therefore, the effectiveness and impacts of the project are high.

3.4 Sustainability (Rating: ③)

3.4.1 Institutional / Organizational Aspects of Operation and Maintenance

The executing agency of this project is TFD, and the operation and maintenance system of TFD at the time of ex-post evaluation had been taken over by the implementation system in the ongoing SCATFORM, which is the successor to this project. PMU continues to exist at the state level, and under PMU, there is a management system consisting of District Offices, Sub-division Offices, Wildlife Sanctuary Offices, Range Offices and Beat Offices.[19]

The following tables show the number of offices, officers and staff of TFD at each administrative level in the project target area, and the roles and responsibilities, supervisors in charge and reporting systems at each forest administrative level. According to TFD, there is no shortage of personnel in the current system, and there is no problem with the roles and responsibilities or with the reporting systems.

Table 25: Number of Offices, Officers and Staff of TFD in the Project Target Area

Administrative level	Number of offices	Number of officers	Number of staff
State (PMU)	1	16	58
District	7	7	35
Sub-division	16	16	111
Wildlife Sanctuary	3	3	20
Range	59	59	295
Beat	283	280 Note 1	566
Total	**369**	**381**	**1,085**

Source: Questionnaire response by TFD
Note 1: For some beats, two beats are taken by a single office manager.
Note 2: The total number of staff of TFD, including those outside the project area, was 2,331 as of November 2019.

Table 26: Roles and Responsibilities, Supervisors in charge and Reporting Systems at Each Forest Administrative Level

Administrative level	Roles and responsibilities	Supervisors in charge	Reporting system
State/PMU	Giving directions and supervising the entire state	Principal Chief Conservator of Forest (PCCF) Chief Wildlife Warden (CWLW) Additional PCCF Chief Conservator of Forest (CCF)	Submission of monthly reports from district offices
District	Supervising sub-division offices within the jurisdiction	District Forest Officers (DFO)	Submission of monthly reports from sub-division offices and wildlife sanctuaries within the jurisdiction
Sub-division	Supervising range offices within the jurisdiction	Sub-division Forest Officers (SDFO)	Submission of monthly reports from range offices within the jurisdiction

[19] In April 2018, after the completion of this project and just before the start of SCATFORM in October 2018, a change of government took place in Tripura. As a result, the staff of TFD recruited by state government and JFMC leaders resigned and PMU was temporarily closed. However, each post was reassigned to the same personnel as before, or replaced by new personnel.

Administrative level	Roles and responsibilities	Supervisors in charge	Reporting system
Wildlife Sanctuary	Supervising EDCs in the sanctuary	Wildlife Wardens (WLW)	Submission of monthly reports from range offices within the jurisdiction
Range	Supervising beat offices within the jurisdiction	Range Officers	Daily base reports from beat offices within the jurisdiction
Beat	Supervising JFMCs in the jurisdiction (beat officers serve on JFMC boards in the jurisdiction)	Beat Officers	Participation in JFMC regular meetings within the jurisdiction, Daily base reports from Field Facilitators

Source: Questionnaire response by TFD

NCE established under this project also continues to exist and function as a research center for forest protection and biodiversity conservation, operating the "Crafts & More" stores that sell handicrafts, with eight stores in Tripura at the time of ex-post evaluation, and procuring the raw materials for brooms, etc. After the completion of the project, NCE was approved as an independent body under the *Societies Registration Act* with six dedicated staff members as well as its own budget allocated by the state. SCATFORM also provides financial assistance to NCE for its operations. However, the financial assistance is provided only for the first five years of the 10-year project period, and the remaining five years will be managed with NCE's own budget. NCE is developing measures to strengthen its self-supporting profitability under the guidance of the project management consultants responsible for SCATFORM's consulting services.

As mentioned above, while the staff at each administrative level of TFD is responsible for management works in the area of which they are in charge, field workers such as Community Organizers, Livelihood Coordinators and Field Facilitators continue to communicate and provide guidance to JFMCs/EDCs/RGVs at the field level. These field workers are also employed in SCATFORM and continue to carry out their activities.

All of the 463 JFMCs/EDCs/RGVs established in this project were still in existence at the time of ex-post evaluation, and they are engaged in JFM in their target area under the same system as during the project implementation. Some JFMCs/EDCs/RGVs continue to be supported in SCATFORM. Among IGAs by SHGs, aquaculture, pig farming, poultry farming, the production of brooms and incense sticks, etc. are ongoing to a certain extent even after the completion of the project, but the production and sales of handweaving, weaving and handicrafts have been suspended after project completion due to lack of market access. However, only 15 of the 1,549 SHGs were engaged in the production and sales of handweaving, weaving, and handicrafts, which is considerably less than the number of groups engaged in pig farming (1,116 groups) and aquaculture (736 groups), and thus it can be said that the proportion of discontinued activities among the total activities is small.

3.4.2 Technical Aspects of Operation and Maintenance

The consulting services implemented in this project provided technical support for PMU and NCE, support for procurement operations for PMU, support for fund management, annual plan development, report preparation, etc. for PMU, and assistance in reviewing and developing the JFMC management manual, etc. Management training was also provided for officers and staff at each level of TFD. According to TFD, the training manuals developed by the project were still being used at the time of the ex-post evaluation, and there were no particular technical problems. Refresher training is required for officers and staff appointed to TFD after the completion of the project, and the training for these officers and staff is planned to be conducted in SCATFORM.

GIS and MIS introduced in this project are also used in SCATFORM and it is planned that they will be integrated with the database in the office of TFD (separate from the PMU office). The location information for each JFMC/EDC/RGV and the facilities and check dams constructed by the project is recorded, and it is possible for the persons involved in the project to access the database in which the information is input through the website "Tripura JICA Project" (only registered members can access the database). At the facilities and check dams, staff at the Beat offices regularly take pictures and upload them to the database so that the current conditions of the facilities can be known.

In addition, NCE is in the process of developing a plan to strengthen the sales of handicrafts and NTFP in order to strengthen the operation of Crafts & More through the consulting services of SCATFORM. As part of the marketing strengthening measures, PMU plans to grow organic lemons in agroforestry and introduce bamboo cups procured from JFMCs to use as cups for in-house beverage sales for the railway that recently opened in Tripura. Negotiations are taking place with those concerned at the railway company.

At JFMC/EDC/RGV level, the JFMC management manual prepared by this project is used, and IGAs by SHGs are continuing. SHG members received technical training for conducting their IGAs such as in aquaculture, pig farming, and handicraft production, but at the time of the ex-post evaluation there are new, technical, needs for the continuance of their activities. These included, for example, how to deal with livestock diseases in pig farming, and how to create new markets in the production and sales of handicrafts. PMU recognizes these needs and plans to strengthen the marketing for handicrafts as part of NCE's efforts to strengthen the sales of Crafts & More.

3.4.3 Financial Aspects of Operation and Maintenance

The annual operating budget (Amount of budget and amount of execution) of TFD from 2017/18 to 2019/20 is shown in the table below. The budget for the operation and maintenance

of TFD at the time of ex-post evaluation is sufficient, as is the number of staff, partly because of funding from SCATFORM.

Table 27: Annual Amounts of Budget and Expenditure of TFD

Unit: Rupees

Item	2017/18	2018/19	2019/20
Total budget of TFD	1,165,952,300	1,073,956,000	1,397,977,000
Total spending of TFD	1,033,722,100	946,187,600	784,099,500
Budget for operation and maintenance	20,000,000	106,405,000	500,000,000
Total spending for operation and maintenance	10,901,400	12,903,400	5,967,000 Note

Source: Questionnaire response by TFD
Note: Amount expended by September 2019

During the implementation of the project, PMU utilized funds from other schemes such as the North East Rural Livelihoods Project (NERLP) by the Ministry of Development of North Eastern Region and the Tripura Rural Livelihoods Mission (TRLM) by the Tripura Rural Development Department in addition to the fund of MGNREGA to implement project activities such as small-scale infrastructure development, livelihood improvement support, agroforestry, etc. Even after the completion of the project, PMU continues to work with other schemes, and the funds from other schemes are being used for the maintenance of this project.

At the JFMC/EDC/RGV level, no special funds are required to maintain and manage forests, so there no particular opinion that funds for activities were insufficient was given at the interviews with JFMCs/EDCs/RGVs. As mentioned above, among IGAs by SHGs, while aquaculture, pig farming, poultry farming, the production of brooms and incense sticks, etc. have been stable sources of income for members, even after the completion of the project, the production of handweaving, weaving and handicrafts has been suspended. As mentioned above, NCE plans to create and strengthen the market for these handicrafts as part of its efforts to strengthen the sales of Crafts & More.

3.4.4 Status of Operation and Maintenance

As mentioned above, under the ongoing SCATFORM, the operation and maintenance of the project is being managed mainly by PMU. At the field level, the field workers continue to be in charge of communication and guidance to JFMCs, EDCs, and RGVs, and there are no particular problems regarding the status of operation and maintenance.

No major problems have been observed in the institutional / organizational, technical, financial aspects and current status of the operation and maintenance system. Therefore, the sustainability of the project effects is high.

4. Conclusion, Lessons Learned and Recommendations

4.1 Conclusion

The objective of this project was to rehabilitate the forests in Tripura, a state in northeastern India, and raise the income of the local residents by extending assistance to participatory afforestation and to those engaged in shifting cultivation, as well as to preserve the biodiversity of the region, thereby contributing to regional environmental improvement and poverty alleviation.

The project was highly relevant to the development plan and development needs of India at the times of appraisal and ex-post evaluation, as well as to Japan's ODA policy at the time of appraisal, so its relevance is high. While the project cost was within the plan, the project period exceeded the plan. Outputs were produced almost as planned and the efficiency was fair. Through afforestation, community development and livelihood improvement activities, support for the shift of livelihoods to shifting cultivators, biodiversity conservation activities, etc. were conducted through the project. It was confirmed that there were effects such as forest restoration, water and soil conservation and biodiversity improvement in the target area as well as creation of employment, diversification of the means of livelihood and increase in the income of local residents. In addition, it was confirmed that improvements in forest restoration, water and soil conservation, and biodiversity had contributed to the improvement of the natural environment of the region and that the increase in the income of the local residents had contributed to improvement in the social and economic capacities of women as well as to poverty reduction in the region. Therefore, the effectiveness and impact of the project are high. After the completion of the project, the operation and maintenance system was taken over by the implementation system of the ongoing SCATFORM which is a successor to the project. The PMU established in the project continues to exist and the management system of the PMU is in place. No major problems have been observed in the institutional/organizational, technical, financial aspects and current status of the operation and maintenance system. Therefore, the sustainability of the project effects is high.

In light of the above, the project is evaluated as highly satisfactory.

4.2 Recommendations

4.2.1 Recommendations to the Executing Agency

Among IGAs conducted by SHGs to support the livelihood improvement aspect of this project, while activities such as aquaculture, pig farming, poultry farming, production of brooms and incense sticks, etc. have been conducted more or less continuously, even after the completion of the project, providing a stable source of income for the target residents, the production and sales of handweaving, weaving and handicrafts were suspended after the completion of the project due to lack of market access. As a measure to address this issue, NCE, which became an

independent organization after the completion of the project, is operating “Crafts & More” stores that sell handicrafts, etc. and is planning to strengthen the operation and sales of these stores as well as to create and strengthen the market for these handicrafts.

Therefore, it is recommended that TFD consider the following: 1) Conduct detailed market research on NTFP including handicrafts using the consulting services of SCATFORM and prepare a business plan; 2) Based on the prepared business plan, instruct the Livelihood Coordinators to support each SHG for the preparation of individual business plans so that they can apply for a loan to a financial institution; and 3) Utilize funds from other schemes in cooperation with other departments such as the Rural Development Department, Agriculture Department and Commerce Department, in the same way as in this project, in order to strengthen marketing and sales through the creation and expansion of the market for handicrafts, as well as for the enhancement of the quality of products, and the development of new products.

4.2.2 Recommendations to JICA

None

4.3 Lessons Learned

(1) Contribution to poverty reduction through active collaboration with other departments and the strategic use of funds from other schemes by the executing agency

The project contributed to raising the income of beneficiaries by focusing on livelihood improvement support including IGAs by SHGs and contributed to reducing poverty in the region to a greater extent than other similar projects. While support for improving livelihoods is not a direct task of the Forest Department, TFD/PMU recognized the importance of improving livelihoods, actively collaborated with other departments such as the Rural Development Department, Agriculture Department and Commerce Department, and strategically used funds for supporting rural development and livelihood improvement of other schemes such as MGNREGA, NERLP and TRLM in order to carry out its project activities, thus contributing to the realization of the effects.

In this regard, in order to ensure that the initiative by the executing agency to obtain funds from other schemes is exerted in other loan aid projects as well, when JICA forms a similar project in the future, if it recognizes the funding programs of governments, international organizations, donors, NGOs, etc. that can be utilized in the target country/region, examines the linkage with these funding programs at the time of the formulation of the plan, and encourages the executing agency to plan to provide co-financing in the implementation of specific project activities, this will lead to smooth coordination during the implementation of the project.

(2) Necessity to inform the executing agency that data for the Operation and Effect Indicators are the basis of monitoring and evaluation tools

While some of the outputs were changed in this project, the changes were made through an appropriate process based on discussion and agreement between JICA and PMU. However, while the target values for "Afforestation area," "Number of JFMCs established" and "Training lecture attendees" in the Operation and Effect Indicators should have been adjusted according to these changes, the official procedure for changing the target values was not carried out. Furthermore, although the impact surveys were conducted by external organizations for monitoring and evaluation of the project, the exact data on "Survival rate," "Production of forest products" and "Increase in income per beneficiary household" was not collected or was not reliable even if it was collected.

Meanwhile, TFD pointed out the need to set indicators and benchmarks for project monitoring in the ex-post evaluation. TFD did not fully understand that the data of the Operation and Effect Indicators formed the basis for the monitoring and evaluation of the project, and this resulted in insufficient management of target values and collection of exact data. Therefore, JICA needs to inform the executing agency that the Operation and Effect Indicators set at the time of planning are important tools for monitoring and evaluation and that data should be regularly collected in project monitoring to evaluate the effectiveness and impact of the project based on the results of the data collected. Furthermore, it is desirable that the services provided by the project management consultants are specified in the TOR in order that they should provide guidance to the executing agency and external organizations on how to conduct the impact survey and how to collect the data on Indicators, which is conducted by external organizations entrusted to the work by the executing agency.

Comparison of the Original and Actual Scope of the Project

Item	Plan	Actual
1. Project Outputs	(1) Forest Rehabilitation and Development AR ..... 15,500 ha ANR..... 35,280 ha Conversion of monoculture .220 ha Total ..... 51,000 ha Agroforestry ..... 8,297 ha (2) JFM Community Development Establishment of JFMCs ..... 410 Establishment of SHGs ..... 1,400 Construction of check dams . 2,419 (3) Rehabilitation for RGVs of Shifting Cultivators Establishment of RGVs ..... 16 (4) Biodiversity Conservation Establishment of EDC..... 30 Ecotourism development..... 5 (5) Supporting Activities Training provision . 90,147 persons (6) Consulting Services International ..... 63M/M Local..... 128M/M	(1) Forest Rehabilitation and Development AR..... 15,667 ha ANR ..... 37,377 ha Conversion of monoculture . 176 ha Total..... 53,220 ha Agroforestry ..... 8,455 ha (2) JFM Community Development Establishment of JFMCs ..... 417 Establishment of SHGs..... 1,549 Construction of check dams . 2,513 (3) Rehabilitation for RGVs of Shifting Cultivators Establishment of RGVs ..... 16 (4) Biodiversity Conservation Establishment of EDC ..... 30 Ecotourism development ..... 5 (5) Supporting Activities Training provision . 99,473 persons (6) Consulting Services International..... 63M/M Local 128M/M
2. Project Period	March 2007 – March 2015 (97 months)	March 2007 – March 2017 (121 months)
3. Project Cost		
Amount Paid in Foreign Currency	617 million yen	NA
Amount Paid in Local Currency	8,599 million yen (3,657 million rupee)	(3,035 million rupee)
Total	9,216 million yen	5,771 million yen
ODA Loan Portion	7,725 million yen	NA
Exchange Rate	1 rupee = 2.52 yen (As of September 2006)	1 rupee = 1.90 yen (Average between January 2007 and December 2017)
4. Final Disbursement	July 2017	

India

FY2019 Ex-Post Evaluation of Japanese ODA Loan

"Gujarat Forestry Development Project (II)"

External Evaluator: Tomoo Mochida, OPMAC Corporation

0. Summary

The objective of the project was to regenerate forests and raise the living standards of local people by conducting community-based afforestation and activities to improve livelihoods in the state of Gujarat in western India, thereby contributing to improvement of the local environment and to poverty reduction. At the time of the appraisal as well as at the time of the ex-post evaluation, the policy of the Indian government set forth rehabilitation and reforestation of forests, sustainable forest management and improvement of living standards of local people through participation in forest management. This project was also consistent with the aid policies of Japan. Therefore, its relevance is high. While the project cost was lower than planned, the project period was as planned. The project largely achieved its outputs as originally planned (the plantation areas were increased). Therefore, the efficiency of the project is high. Regarding the effectiveness and impacts, effects were confirmed on such aspects as the restoration of forests, soil and moisture conservation and the improvement of forest biodiversity conservation, which contributed to a betterment of the natural environment. On the other hand, limited effects were observed on increases in the income of local people. However, the income from forestry produce is considered to be supplementary to agricultural income. As it has been evaluated that the effects of employment generation and improvement of incomes through the self-reliant activities of the People's Organizations (hereinafter referred to as "PO") are yet to realize, contributions to poverty reduction through these activities are limited. However, improvement in the ability of women in the social and economic fields have been observed. Thus, the effectiveness and impacts of the project are high. The operation and maintenance after completion of the project has been carried out as part of their regular works by Gujarat Forest Department (hereinafter referred to as "GFD"). In terms of the operation and maintenance system of GFD, its technical and financial aspects as well as the status of the operation and maintenance conditions, no serious issue adversely affecting the project effects has been found. However, continual improvement in information management by making use of management information systems (hereinafter referred to as "MIS") needs to be done. Among the PO supported under the project, some were found to be less active after the project completion. Furthermore, there are cases where the Income Generating Activities (hereinafter referred to as "IGA") of Self-Help Groups (hereinafter referred to as "SHG") which had been assisted by the livelihood enhancement activities were suspended. Therefore, sustainability of the project effects is fair.

In light of the above, this project is evaluated to be highly satisfactory.

1. Project Description

Project Location

At the loading site of dried grasses by PO

1.1 Background

As most of the State of Gujarat falls in an arid region, it is difficult for forests to grow. In addition, because of population increase, demands for animal feeds, fuels and so forth taken from forests have been growing, which poses a high load on forests. As a result, the deterioration of forests has continued. In 1995, forest cover in the State was 6%, a figure that was well short of the national average of about 20%. With a view to increasing forest areas and restoring the production capacity of forests, GFD carried out plantations in areas of about 260,000 ha through the Gujarat Afforestation and Development Project (Loan Agreement in 1996, completed in 2003, hereinafter referred to as "Phase 1"). According to satellite data from 2006, the forest cover of Gujarat had increased up to 7.46%, but the ratio was still far behind the national average of 21.02% in India.

In the eastern hilly areas of Gujarat State where forest areas are widely spread, scheduled tribes (indigenous tribes) rely heavily on the forests. Deterioration of forests has continued due to over-grazing and over-exploitation of forest resources. Phase 1 covered all the areas in the State. However, this project targets eastern hilly areas where the poverty ratio and the ratio of scheduled tribes are high, aiming further to increase forest areas and improve forest quality.

1.2 Project Outline

The project aims to regenerate forests and raise the living standards of local people by conducting community-based afforestation and activities to improve livelihoods in the State of Gujarat in western India, thereby contributing to improvement of the local environment and to poverty reduction.

<ODA Loan Project>

Loan Approved Amount / Disbursed Amount	17,521 million yen / 14,931 million yen
Exchange of Notes Date / Loan Agreement Signing Date	March 2007 / March 2007
Terms and Conditions	Interest Rate 0.75% Repayment Period 40 years (Grace Period) (10 years) Conditions for Procurement General Untied
Borrower / Executing Agency	The President of India / GFD, Government of Gujarat
Project Completion	March 2017
Target Area	State of Gujarat
Main Contractor(s) (Over 1 billion yen)	None
Main Consultant(s) (Over 100 million yen)	Deutsche Gesellschaft Fuer Technische Zusammenarbeit - International Services (GTZ-IS) (Germany)
Related Studies (Feasibility Studies, etc.)	(1) Feasibility Study (Forest and Environment Department of Gujarat, 2005) (2) Special Assistance for Project Formulation for Gujarat Forestry Development Project Phase II India (JICA, 2006)
Related Projects	[ODA Loan Project] - Gujarat Afforestation and Development Project (1996) - Project for Ecosystem Restoration in Gujarat (2020)

2. Outline of the Evaluation Study

2.1 External Evaluator

Tomoo Mochida, OPMAC Corporation

2.2 Duration of Evaluation Study

This ex-post evaluation study was conducted with the following schedule.

Duration of the Study: September 2019 – February 2021

Duration of the Field Study: January 13, 2020 – January 31, 2020

2.3 Constraints during the Evaluation Study

The areas for the site survey at the time of the ex-post evaluation were selected with the support of GFD from the areas where PO were organized and are still in operation and/or the areas where PO assisted by the state government are still in operation. The site survey was conducted through interviews.[1] Accordingly, the sampling was not performed through a random process and the

[1] The site survey by the local consultant was carried out from the end of February to the beginning of March 2020 in the four districts (i.e., Narmada, Kevadiya, Bharuch and Tapi. A district is an administrative area that corresponds to a

samples were small in size. Although the results of the site survey have some limitation in terms of representativeness and accuracy, analysis was made by making use of documents provided by JICA and GFD. Furthermore, it must be pointed out that as COVID-19 spread widely across the globe, the second field survey, initially scheduled for April 2020, had to be cancelled. Instead, the survey was carried out by mobilizing the local consultant through remote devices. Subsequently, the data collection activities were limited to some extent.

3. Results of the Evaluation (Overall Rating: A[2])

3.1 Relevance (Rating: ③[3])

3.1.1 Consistency with the Development Plan of India

At the time of the appraisal, the Government of India was aiming for the goal of 33% forest and tree cover by the end of the *Eleventh Five Year Plan* (April 2007 - March 2012). In addition to the rehabilitation of degraded forests, the *Tenth Five Year Plan* (April 2002 - March 2007) placed emphasis on sustainable forest management through the promotion of Joint Forest Management (hereinafter referred to as "JFM"[4]) as well as support for forest dependents to obtain alternative income sources. In the *Tenth Five Year Plan* (April 2002 - March 2007) of the State of Gujarat, the promotion of planting was planned, particularly the strengthening of local people's participation in the protection and regeneration of degraded forests. This policy direction was expected to be succeeded by the subsequent five-year plan.

The national development plan at the time of the ex-post evaluation, the *INDIA Three Year Action Agenda*[5] (2017/18 - 2019/20[6]), referred to 33% forest and tree cover and pointed out the importance of building incentives into long-term investments in community-managed forests such as JFM-type forests. GFD set the objectives to increase forest cover, increase the trees outside forest areas, increase mangrove cover, effectively manage sanctuaries and national parks for conserving wildlife and biodiversity, elicit the active participation of government and non-government institutions and the people at large in conserving forest and wildlife, carry out IGA to meet the needs of the local community, provide raw materials to forest based industries and

prefecture in Japan.). In these four districts, interview surveys were conducted with 12 Joint Forest Management Committees (hereinafter referred to as "JFMC"), 4 Social Forestry Development Committees (hereinafter referred to as "SFDC") and 2 Eco Development Committees (hereinafter referred to as "EDC"), 1 SHG and 12 staff members at local offices of GFD. The interview survey results were reviewed by comparing them with the results of the pre-test interview survey with 6 JFMC, 3 SFDC, 1 EDC and 1 SHG by the Japanese evaluator in Sabarkantha, Aravalli, Panchmahal and Vadodara.

[2] A: Highly satisfactory, B: Satisfactory, C: Partially satisfactory, D: Unsatisfactory

[3] ③: High, ②: Fair, ①: Low

[4] JFM is a participatory mechanism for local people, aiming to restore forests and improve livelihoods of the poor in such a way that forest departments in the respective states and the local people collaborate with each other for plantations and forest protection.

[5] The formulation of the conventional five-year plans for national development by the Government of India came to an end with the Twelfth Five Year Plan (2012 - 2017). A new framework has been developed since 2017: the 15-year vision (Fiscal Year 2017 - Fiscal Year 2031), the 7-year strategy (Fiscal Year 2017 - Fiscal Year 2023) and the 3-year action agenda (Fiscal Year 2017 - Fiscal Year 2019).

[6] In the Indian fiscal year, 2017/18 is from April 2017 to March 2018. The same applies to the following fiscal years.

promote environmental conservation and awareness. As part of its strategies, GFD plans to build JFMC, EDC, SHG and so forth to create synergy between resource conservation and the socio-economic uplift of forest dependent communities.

As described above, the development policies of the Government of India and the State Government of Gujarat prescribe the restoration of the forests, sustainable forest management, and improvement of the living conditions of local people through engagement in forest management. Thus, the plantation with people's participation, livelihood improvement activities and so forth carried out under the project are considered to have been consistent with these development policies at the time of the appraisal as well as at the time of the ex-post evaluation.

3.1.2 Consistency with the Development Needs of India

At the time of the appraisal, since most of the State of Gujarat is in an arid region, it was found that it was difficult for forests to grow. In addition, because of population increase, demands for animal feeds, fuels and so forth taken from forests were growing and posing high loads on the forests. As a result, the deterioration of forests progressed.

Forest cover[7] in the State of Gujarat increased from 7.46% in 2011 to 7.52% in 2017, and then slightly to 7.57% in 2019. According to the *India State Forest Report 2019*, which is prepared every other year by the Forest Survey of India under the Ministry of Environment, Forest and Climate Change, the main reasons for the increase in forest cover in the State were plantation and conservation activities. However, the ratio in 2019 is still low compared to the national average of 21.67%. In the light of this, development needs are still high.

Table 1: Changes in Forest Cover Rate and Tree Cover Rate in India and the State of Gujarat

Year Published	2011	2017	2019
Satellite Data	2008/2009	2015/2016	2017/2018
Forest and Tree Cover in India	23.81%	24.39%	24.56%
Out of which: Forest cover	21.05%	21.54%	21.67%
Out of which: Tree cover	2.76%	2.85%	2.89%
Forest and Tree Cover in State of Gujarat	11.46%	11.61%	11.09%
Out of which: Forest cover	7.46%	7.52%	7.57%
Out of which: Tree cover	4.00%	4.09%	3.52% Note

Source: Forest Survey of India, *India State of Forest Report.*
Note: According to GFD, a decrease in the tree cover was resulted due to changes in the method of measurements.

3.1.3 Consistency with Japan's ODA Policy

JICA's Overseas Economic Cooperation Operation Implementation Policy (2005) at the time of the appraisal placed "Support for poverty reduction" and "Support for global environmental

[7] In order to examine the appropriate level of forest cover in Gujarat, efforts were made to obtain the target rate and year of forest cover at the state level. However, the data was not made available during the study period at the time of the ex-post evaluation.

issues and peace-building" as overall priority areas, and "Regional development that benefits the poor" and "Response to environmental issues" as priority areas for India. Japan's Country Assistance Policy for India in the fiscal year 2006 placed the forest sector as a major sector for assistance to India. "While it is planned to expand forest areas and reduce the ratio of open forests (increase of quality and quantity), areas where poverty is a critical issue will be targeted. In addition, it is necessary to adapt the use of JFM. Taking into account the socio-economic conditions of the targeted areas, coordination and collaboration with village councils and other departments of the governments will be promoted while the use of Non-Governmental Organizations (hereinafter referred to as "NGO") / Community Based Organizations will be accelerated."

As described above, the project has been highly relevant to India's development policy and development needs, as well as to Japan's ODA policy. Therefore, its relevance is high.

3.2 Efficiency (Rating: ③)

3.2.1 Project Outputs[8]

Various activities were carried out under this project in the four components of plantations (departmental forest development management, JFM forest development and management, social forestry development and management), wildlife conservation and development, community / tribal development and supporting activities for forest conservation activities. The major outputs of the project are described as follows:

(1) Plantations

The plantation areas are recorded in terms of the three sub-components: departmental forest development management, JFM forest development and management, and social forestry development and management, respectively. Although some changes were observed, the actual outputs were largely the same as the planned outputs or more than those initially planned. As for the changes, the plantation areas under JFM forest development and management increased by 30% mainly through the use of the Saving Utilization Plan.[9] In particular, it is considered that the issuance of the Authorization Letter (Adhikar Patra[10]) to the respective JFMC also contributed to expedition of the activities under JFM forest development and management.

[8] For details, see "Comparison of the Original and Actual Scope of the Project" on the last page of the report.

[9] In order to utilize the amount of savings (i.e., 17,950 million Rupee) generated through appreciation of the Japanese Yen against the Indian Rupee, the project activities were continued by extending the project period for 2 years (from 2014/15 to 2016/17). This plan is called the "Savings Utilization Plan."

[10] For example, an authorization letter addressed to the Forest Development Committee / Village Development Committee issued by a forest division of GFD says: "it is allotted to the committee for regeneration of the forest through the support of the Forest Department."

Table 2: Plantations under Departmental Forest Development and Management

Unit: ha

Model	Plan	Actual	Difference
Forest Development in Degraded Forest Lands	5,000	5,443	+443
Gap Planting (Open Forest)	10,000	11,000	+1,000
Forest Improvement (Dense Forest)	10,250	11,250	+1,000
Grasslands Development	5,750	5,750	0
Mangrove Plantation	15,000	15,126	+126
Total	46,000	48,569	+2,569

Source: Documents provided by JICA and GFD

Note: Other than the items described in the table above, GFD reported that the actual areas of the grass seed plots were 24 ha against a planned area of 26 ha. If these areas are counted together, the actual areas were 48,593 ha as against the planned area of 46,026 ha. In addition, the actual area of the soil and moisture conservation works was 33,207 ha.

Table 3: Plantations under JFM Forest Development and Management

Unit: ha

Model	Plan	Actual	Difference
Forest Development in Degraded Forest Lands	13,370	20,567	+7,197
Gap Planting in Open Forest	43,230	51,706	+8,476
Forest Improvement in Dense Forest	29,620	39,757	+10,137
Grasslands Development	1,180	1,180	0
Total	87,400	113,210	+25,810

Source: Documents provided by JICA and GFD

Note: The total area includes the planted areas of 25,800 ha under the Saving Utilization Plan. It is also reported that the actual area of the soil and moisture conservation works is 113,559 ha.

Table 4: Plantations under Social Forestry Development and Management

Unit: ha

Model	Plan	Actual	Difference
Village Multipurpose Plantation	6,520	5,092	-1,428
Village Fruit Orchard Plantation	4,120	3,399	-721
Plantation on Public Land	2,580	2,162	-418
Total	13,220	10,653	-2,567

Source: Both plan and actual are from documents provided by GFD

Note: According to the documents provided by JICA, the plantation areas under Social Forestry Development and Management totalled 13,190 ha consisting of 10,610 ha for "development and management of village lands" and 2,580 ha for "plantation on land managed under the tax office." On the other hand, according to the documents provided by GFD, the classification was into "Village Multipurpose Plantation," "Village Fruit Orchard Plantation," and "Plantation on Public Land." Because no large differences between the plan and actual were observed, the documents prepared by GFD were referred to for reporting the plan and actual areas.

The actual plantation area under Social Forestry Development and Management was 10, 653 ha, lower than the area originally planned of 13,220ha. However, the achievement level is more than 80% of that planned. There are a number of reasons behind the decrease in the plantation area of about 2,500ha. These include constraint in village land management and limited supervision of such land,[11] the small size of the forest lands with the relatively limited fund

[11] Social Forestry Development and Management is undertaken in village land other than government forest land. According to GFD, the priority of forest-related activities tends to be lower than that of agriculture-related activities

available for investment, a weak sense of unity within SFDC[12] and so on. It was observed during the site visit at the ex-post evaluation that Social Forestry Development and Management were being implemented in the village land (an area ranging from 4 ha to 5 ha at the site the evaluator visited). When the Social Forestry Development and Management were implemented, the existence of the village land was confirmed and the views of local people over the use of the village land were taken into account. It is assumed that consequently the actual area decreased from the planned area.

The sum of the actual plantation areas under all the above three sub-components was 172,432 ha against planned areas of 146,620ha, which represents an increase of a little less than 18%. The increased area of plantations under Departmental Forest Development and Management balanced out the decreased area under Social Forestry Development and Management. The implementation of the Saving Utilization Plan contributed to the expansion of the plantation area under JFM Forest Development and Management. As a result, if the plantation area under Departmental Forest Development and Management is compared with the plantation area under Forest Development and Management with people's participation (either through JFMC or SFDC), the ratio of the plantation area under Forest Development and Management with people's participation increased from 69% at the time of the planning to 72%.

(2) Wildlife Conservation and Development

Protected area management, conservation and development of biodiversity hotspots, eco-tourism development and eco-development were undertaken largely as planned under this component.

(3) Community / Tribal Development

A number of activities were implemented under this component such as capacity building for PO, IGA, entry point activities, formulation of micro-plans, preparation of manuals, livelihood enhancement activities and so forth. The actual number of PO trained for capacity building was 1,639 JFMC (out of which 1,289 JFMC were newly formed) against the planned number 1,100 JFMC, 822 SFDC against the planned number of 800 SFDC and 230 EDC against the planned number of 210 EDC. Implementation of the Saving Utilization Plan also contributed to an increase in the number of JFMC trained. PO were provided with various training opportunities. The following table describes examples of the major training courses and the number of PO that participated in such courses.

during the busy farming season. The progress of plantation activities was thus affected. In addition, GFD pointed out that unlike JFMC, forest management by SFDC was a new trial for GFD, which had been adapted under the project.

[12] Based on documents provided by JICA and others.

Table 5: Implementation of Training for PO

Unit: Number of PO

Types of Training	JFMC	SFDC	EDC
Formulation of micro plans	1,329	788	206
Registration as an authorized society	658	39	121
Fund raising	367	31	68

Source: Documents provided by JICA

For IGA, livelihood enhancement teams were organized by NGO and research institutions in order to provide training services in business development and marketing. However, several issues and concerns were raised. These included the fact that services provided by NGOs varied; some NGOs had only limited knowledge and skills for business development; the engagement of GFD staff in the livelihood enhancement activities was beyond its jurisdiction.[13] SHG were formulated to assist undertaking of IGA by the poor in local areas and the people dependent on the forests. Under the project, financial support was extended to SHG. However, reports were made about the low repayment rate of loans extended to SHG (documents provided by JICA).[14]

(4) Supporting Activities

Under this component, preparatory works (institutional arrangements in GFD, the selection of the project sites, the preparation of manuals, etc.), strengthening of the project implementation mechanism, forest surveys and research, communication and orientation, preparation of the monitoring and evaluation (hereinafter referred to as "M & E") manual, implementation of training for M & E, implementation of M & E, development of MIS, phase-out activities and so on were carried out. The development of MIS progressed in connection with M & E. However, it was difficult to grasp the updated information on the project by using the MIS and GFD reported that the MIS had not been sufficiently utilized. GFD pointed out several reasons behind the underutilization of the MIS such as a delay in the introduction of MIS during the project period, a shortage of budget and insufficient training given to staff members.

(5) Consulting Services

The consultant responsible for the project management was employed to manage and assist in implementation of the overall project as well as to extend field-level assistance. As shown below, the number of man-months for the site managers had increased compared with those at the time of the appraisal. Presumably, this is the result of the emphasis being placed on field-level assistance. Furthermore, it can be pointed out that the actual number of man-months (4.5 man-months) for MIS/data management expert assigned as a local consultant decreased from the planned number (15 man-months) at the time of the appraisal.

[13] Based on the interviews at GFD

[14] GFD explained that the low repayment rate would be linked to operations of IGA.

Table 6: Man-Month Allocation of Consulting Services

Unit: Man-Months

Expert	Plan (a)	Actual (b)	Difference (b)-(a)
International Consultants	85	75.5	-9.5
Local Consultants	417 Note 1	78.9	-338.1
Site Managers	-	436.4	+436.4
Supporting Staff Note 2	292	356.2	+64.2

Source: Documents provided by JICA
Note 1: According to the plan at the time of the appraisal, the number of man-months for Site Management Experts was 330 man-months out of 417 man-months allocated to the local consultants. It is considered that the planned number of man-months for the Site Management Experts correspond to the actual number of man-months for the Site Managers.
Note 2: The term "Office Staff" in the actual record is used for "Supporting Staff" in the plan.

3.2.2 Project Inputs

3.2.2.1 Project Cost

The original project cost was 20,923 million yen (of which the foreign currency portion was 1,108 million yen and the local currency portion was 19,815 million yen), out of which the ODA loan was 17,521 million yen (of which the foreign currency portion was 1,074 million yen and the local currency portion was 16,447 million yen). On the other hand, the actual cost was 16,860 million yen (of which the foreign currency portion was 674 million yen and the local currency portion was 16,186 million yen), out of which the ODA loan was 14,931 million yen. Both the project cost and the ODA loan were within the plan (the actual amount of the project cost was 81% of the planned amount and the actual amount of the ODA loan was 85% of the planned amount).

Table 7: Plan and Actual of Project Cost Breakdowns

Unit: Million Yen (Planned and Actual Amounts converted in Yen)

Item	Planned Amount						Actual Amount					
	Foreign Currency Portion		Local Currency Portion		Total		Foreign Currency Portion		Local Currency Portion		Total	
	Total	ODA Loan	Total	ODA Loan	Total	ODA Loan	Total	ODA Loan	Total	ODA Loan	Total	ODA Loan
Plantations	0	0	10,788	10,788	10,788	10,788	0	0	13,997	13,997	13,997	13,997
Wildlife Conservation and Development	0	0	211	211	211	211	0	0				
Community / Tribal Development	0	0	1,748	1,748	1,748	1,748	0	0				
Supporting Activities	0	0	1,670	1,670	1,670	1,670	0	0				
Price escalation	0	0	893	893	893	893	0	0	0	0	0	0
Physical Contingencies	0	0	766	766	766	766	0	0	0	0	0	0
Consulting Services	306	306	371	371	677	677	251	251	142	142	393	393

Item	Planned Amount						Actual Amount					
	Foreign Currency Portion		Local Currency Portion		Total		Foreign Currency Portion		Local Currency Portion		Total	
	Total	ODA Loan	Total	ODA Loan	Total	ODA Loan	Total	ODA Loan	Total	ODA Loan	Total	ODA Loan
Administration Costs	0	0	2,010	0	2,010	0	0	0	1,354	0	1,354	0
Taxes	34		1,358	0	1,392	0	0	0		0		0
Interest during construction	768	768	0	0	768	768	539	539	0	0	539	539
Total	1,108	1,074	19,815	16,447	20,923	17,521	791	791	15,494	14,140	16,285	14,931

Source: Documents provided by JICA

Note 1: The exchange rate applied at the time of the appraisal: 2.52 yen per Rupee (as of September 2006). The exchange rate applied at the time of the ex-post evaluation: 1.80 yen per Rupee (the weighted average exchange rate from 2007 to 2016 by International Financial Statistics, IMF).

Note 2: Due to rounding (rounding down the amount after the decimal point), the costs of each item do not necessarily add up.

3.2.2.2 Project Period

While the planned period of the project was set from March 2007 to March 2015 (97 months), the project period was actually from March 2007 to March 2017 (121 months), exceeding the planned period by 125%. The major factor behind this difference is found in the fact that the Saving Utilization Plan was put in place where the project period was prolonged by two years although at the same time, the plantation areas were expanded. Preparation of the Saving Utilization Plan was started by the State Government of Gujarat from 2012 and review meetings were held with the Government of India for approval, followed by reviews with JICA India Office. JICA conveyed its "no objection" to the Saving Utilization Plan in December 2013 (to the amount of 1,795 million Rupee). While informing GFD of its no objection, JICA confirmed that the Saving Utilization Plan was in line with the agreement at the time of the appraisal, and that the period of implementation of the Saving Utilization Plan was to be from FY 2013/14 to FY 2016/17. All the project components of the Saving Utilization Plan were agreed to except the Departmental Forest Development and Management component. As a result, the plantation area under JFM Forest Development and Management was increased from 87,400 ha to 113,200 ha and the number of JFMC subject to support under the project was increased from 1,350 JFMC to 1,450 JFMC. Taking the above points into consideration and referring to the agreement on the Saving Utilization Plan between the governments in India and JICA together with its consistency with the project objective, it is evaluated that the actual project period was within the planned period because the project was completed within the (revised) planned period, assuming that the revised project period were deemed to have been treated as the planned period.

3.2.3 Results of Calculations for Internal Rates of Return (Reference only)

The Economic Internal Rates of Return (hereinafter referred to as "EIRR") of the project were calculated at the time of the appraisal and at the time of the ex-post evaluation, respectively, as

shown in Table 8. Because most of the actual data relating to costs and benefits from the project was not available at the time of the ex-post evaluation, the EIRR was calculated using the data expected at the time of the appraisal and referring to the ratio of the actual plantation area against the planned plantation area. It can be noted that the reason behind the improvement of the EIRR is that the project cost (ODA portion) decreased from the planned cost and the actual plantation area increased compared with the planned area.

Table 8: EIRR of the Project

Indicator	At the time of the Appraisal	At the time of the Ex-post Evaluation	Costs	Benefits	Project Life
EIRR	15.3%	18.3%	Project Costs (excluding price escalation and interest during construction), operation and maintenance costs, replacement costs	Benefits accrued as forest benefits, IGA and soil erosion protection	50 years

Source: Documents at the time of the appraisal, which was provided by JICA and calculation results by the evaluator at the time of the ex-post evaluation

As seen above, both the project cost and the project period were within the plan. Therefore, the efficiency of the project is high.

3.3 Effectiveness and Impacts[15] (Rating: ③)

3.3.1 Effectiveness

In evaluating the effectiveness, the extent of forest restoration was analysed from the point of view of plantation area and survival rates, etc. and the status of livelihood improvement examined by a review of the institutionalization of JFMC, SHG and so on, based on the fact that forest development management, wildlife conservation and development, community / tribal development and supporting activities were undertaken in the project. Thereafter, the status of the forest restoration, soil and moisture conservation, biodiversity conservation and increases in income will be reviewed.

3.3.1.1 Quantitative Effects (Operation and Effect Indicators)

Operation and effect indicators agreed at the time of the appraisal are shown in the table below. As for the operation indicators, the plantation under Social Forestry Development and Management of SFDC was not achieved. However, the total plantation area, including the plantation areas under Departmental Forest Development and Management and JFM Forest Development Management, exceeded the planned area. Out of this, the plantation area under JFM Forest Development Management increased by about 30% compared with the planned area, through implementation of the Saving Utilization Plan. Furthermore, the actual number

[15] Sub-rating for Effectiveness is to be put with consideration of Impacts.

of JFMC, SFDC and EDC subject to assistance was more than the number originally planned. As for SHG, it was reported that a total of 3,484 SHG was formed in the JFMC area, out of which 2,740 SHG were women's groups (documents provided by JICA). Therefore, if the number of SHG formed in SFDC and EDC areas were counted, the number of SHG formed and/or assisted would probably be more. It is also evaluated that the survival rates of planted trees also exceeded the planned rates.

Table 9: Operation Indicators

Indicators	Target (Year 2015)	Actual (Year 2016/17)	Achievement
(a) Afforestation Area (ha)	146,630	172,456	Achieved
(b) Quantity of Planting (million)	152	185.98	Achieved
(c) No. of JFMC formed Note	1,100	1,639	Achieved
(d) No. of SFDC formed Note	800	822	Achieved
(e) No. of EDC formed Note	210	230	Achieved
(f) No. of SHG formed Note	1,500	A total of 3,484 SHG was formed in JFMC area	Achieved
(g) Survival Rate (%)	Afforestation 1st year: 80-90% Afforestation 2nd year: 60-70% Afforestation 3rd year: 50-60% Afforestation 4th year: 50-55% Afforestation 5th year: 40-50%	Average survival rates Afforestation 1st year: 92% Afforestation 2nd year: 73% Afforestation 3rd year:66% Afforestation 4th year: 62% Afforestation 5th year:57%	Achieved

Source: Documents provided by JICA
Note: The indicators for the number of PO are titled as "the number formed." However, they are not necessarily newly formed PO but the number indicates the number of PO that received assistance under the project. [16]

Due to the unavailability of the target values, the achievement level is unknown for the following indicators. Those are namely: the rate of forest cover, the increase in the volume and/or monetary value of forest produce, and the increase in the percentage of the annual income per household among the beneficiary forest owners.[17] It was reported by the executing agency that there was not much difference in the rate of forest cover before and after the project, but that a sense of belonging among PO members had contributed to the protection of the forest resources.[18] The generation of employment was not achieved, but the number of trainees was achieved.

[16] At the start of the project, 350 JFMC and 90 EDC existed in the project area. Therefore, the number of newly formed JFMC was 1,289. The target number of EDC was 210, out of which the number of newly formed EDC was 120 while the existing number of EDC at that time was 90.
[17] The translation for the indicator "the increase in the production of the forest produce" has been revised from "the increase in the production of forest produce" (as written in the Ex-ante Evaluation) to "the increase in the volume and/or monetary value of forest produce," in order to further clarify the meaning of the indicator. Likewise, the translation for the indicator "the increase in income per beneficiary household" has been revised from "the increase in income per beneficiary household" (as written in the Ex-ante Evaluation) to "the increase in the percentage of the annual income per household among the beneficiary forest owners."
[18] WAPCOS Limited, *"Socio-economic Impact Survey of JFMCs/EDCs/SFDCs/IGA-Gs/SHGs, ex ante, mid-term and ex post Project – Consolidated Final Report"*.

Table 10: Effect Indicators

Indicators	Target (Year 2015)	Actual (Year 2016/17)	Achievement
(h) Rate of Forest Cover (%)	Scrub (<forest & tree cover:10%) to be Open Forest (forest & tree cover: 10 to 40%) Open Forest (10 to 40%) to be Dense Forest (40% or more)	Forest coverage due to intervention of the POs (Baseline => Endline) JFMC: 49%⇒79% SFDC: 39%⇒46% EDC: 62%⇒76%	Unknown Note 1
(i) Increase in the volume (m3) and/or monetary value (Rupee) of forest produce)	2017/18: 132 Million Rupee 2021/22: 1,213 Million Rupee 2025/26: 2,461 Million Rupee	There is no significant difference between the pre and post project period in terms of the amount of produce (m3) of non-timber forest produce (NTFP) extracted from the forest. The monetary value of extraction of NTFP in the project villages by households in forest areas improved from Rupee 3,504 in the pre project period to Rupee 4,140 in the post project period in the case of JFMC	Unknown
(j) Increase in the percentage of the annual income per household among the beneficiary forest owners	7.5% / Household	Average annual income of PO households from forest related produce in the case of JFMC Baseline: Rupee 11,856 End line: Rupee 13,212	Unknown Note 2
(k) Job creation (Man-days)	43 million	32.1 million	Not achieved
(l) Number of trainees (persons)	223,250	360,858	Achieved

Source: Documents provided by JICA

Note 1: The actual rate of forest cover compares the results of the baseline and end-line surveys on the "forest cover due to intervention of the PO." Because it is not possible to compare the results with the target, the level of the achievement is not known. According to *The Status of Forest Report,* the rate of the total forest cover in the 14 districts out of the 18 districts, excluding 4 districts where it is difficult to confirm the rates due to bifurcation, etc., decreased from 10.38% in 2017 to 10.31% in 2019 (a comparison between the rates in the 2017 report based on the data in 2015 and in the 2019 report based on the data in 2017). As changes in the rates of the forest cover are affected by various factors such as changes in the areas of dense and open forest areas, regional development and so on, it is difficult to examine the extent of the direct impacts of the project on the changes.

Note 2: The baseline value for "the increase in the percentage of the annual income per household among the beneficiary forest owners" was to be set after conducting a baseline study. Documents provided by JICA describe "average annual income of PO households from forest related produce" instead of "the increase in the percentage of the annual income per household among the beneficiary forest owners." However, it is not clearly stated whether an increase in the annual income is based on a nominal basis or on a real basis. The details are shown in Table 11

With regard to the indicator relevant to the "percentage increase in the annual income per household regarding forest owners who benefited," documents provided by JICA describe the "average annual income of PO households from forest related produce" by which the data collected at the time of the baseline and end-line surveys can be compared by type of PO. Although all the types of PO exhibit an increasing trend, it was not possible to evaluate the extent to which the target was achieved.

Table 11: Average annual income of households from forest-related produce

PO	Baseline survey (a)	End-line survey (b)	Rate of increase (a)/(b)*100 (%)-100%	Annual average of increase rate (%) Note
JFMC	11,856	13,212	11.4%	1.8%
SFDC	8,988	10,740	19.5%	3.0%
EDC	18,112	21,240	17.3%	2.7%

Source: Documents provided by JICA
Note: Although it is not described in the report, the "unit" is assumed to be Rupee in nominal terms. The annual averages were calculated, assuming that the baseline survey was conducted in 2011 and the end-line survey was carried out in 2017, based on the description in the afore-mentioned report by WAPCOS Limited concerning the project. For reference, the annual average of increases in the Consumer Price Index (CPI) from 2011 to 2017 was 7.0%.

The following table compares the per capita income between the project area and the State of Gujarat. The per capita income in the project area was lower than that in the state, but the rate of increase was higher. However, as indicated in the corresponding amounts in Table 11, the ratio of the average annual income from forest-related produce against the total of households was quite marginal. At the time of the site visit, it was pointed out that the income from forest-related products was secondary to the income from agriculture-related activities. On the other hand, it was reported that PO members had become able to collect and sell forest-related produce without any fear. It is considered that one of the factors behind this change was the issue of Authorization Letters that authorized PO to make use of forest-related produce on the condition that they would protect and preserve the forest areas concerned. Interviews with JFMC and others at the time of the site survey also revealed that the income from forest-related produce was secondary to household income, and did not account for a large share of the total income.

Table 12: Comparison of Per Capita Annual Income

Unit: Rupee/year

Area	Baseline survey (a)	End-line survey (b)	Rate of increase ((a)/(b)*100 (%)-100%)	Annual average of increase rate (%)
Project area	60,610	111,462	83.9%	10.7%
State of Gujarat	78,802	138,023	75.2%	9.8%

Source: Documents by JICA

3.3.1.2 Qualitative Impacts (Other Impacts)

The following aspects are evaluated in terms of the qualitative impacts of the project: improvement of the natural environment (restoration of forests, soil and moisture conservation, and biodiversity conservation), increases in local people's income and enhancement of the social and economic capacity of women.

(1) Restoration of Forests and Soil and Moisture Conservation

PO answers to questions on the status of forest restoration during the site survey are summarized in the table below. Many PO answered "improved a lot" or "improved" regarding the status of forest restoration. They pointed out that trees presently grew on previously barren land, that forest restoration progressed and that the access to fodder collected for animals got easier as JFMC members were engaged in forest protection activities under the agreement concluded between JFMC and GFD, and as the relationship with GFD improved.

Table 13: PO Perspectives on Forest Restoration after the Project

Unit: Number of PO

Scale	JFMC		SFDC		EDC		Total	
	Number of Responses	Ratio	Number of Responses	Ratio	Number of Responses	Ratio	Number of Responses	Ratio
Improved a lot	5	45%	3	75%	0	0%	8	47%
Improved	4	36%	0	0%	1	50%	5	29%
Improved to some extent	2	18%	1	25%	0	0%	3	18%
Same as before	0	0%	0	0%	0	0%	0	0%
Worsened	0	0%	0	0%	0	0%	0	0%
NA	0	0%	0	0%	1	50%	1	6%
Total	11	100%	4	100%	2	100%	17	100%

Source: Results of the site survey at the time of the ex-post evaluation
Note: The number does not necessarily add up due to rounding.

Responses from JFMC regarding changes in soil and moisture conservation in the forests are described in the table below. While some responded with "same as before," the total number of answers with "improved" or "improved to some extent" accounted for more than half of the responses. A number of reasons were given such as retaining of rainwater in ravines for a longer period, improvement of watershed protection, and the securing of long-term availability of water.

Table 14: JFMC Perspectives on Changes in Soil and Moisture Conservation after the Project

Unit: Number of JFMC

Scale	JFMC	
	Number of Responses	Ratio
Improved a lot	0	0%
Improved	3	27%
Improved to some extent	4	36%
Same as before	4	36%
Worsened	0	0%
NA	0	0%
Total	11	100%

Source: Results of the site survey at the time of the ex-post evaluation
Note: The number does not necessarily add up due to rounding.

(2) Biodiversity Conservation

As for biodiversity conservation, local people were asked to comment on changes in varieties of trees, birds and animals in the forest areas. As shown in the table below, the number of JFMC responding with "increased" or "increased to some extent" made up more than half. Animals include peacocks, leopards, rabbits, wild bores and sloth bears. During the site survey, local people also pointed out increases in various trees and wild animals.

Table 15: PO Perspective on Biodiversity Conservation in the Forest Areas
(Changes in Species of Trees, Birds and Animals)

Unit: Number of PO

Scale	JFMC		SFDC		EDC		Total	
	Number of Responses	Ratio	Number of Responses	Ratio	Number of Responses	Ratio	Number of Responses	Ratio
Increased a lot	0	0%	2	50%	0	0%	2	12%
Increased	3	27%	2	50%	1	50%	6	35%
Increased to some extent	6	55%	0	0%	0	0%	6	35%
Same as before	0	0%	0	0%	1	50%	1	6%
Decreased	0	0%	0	0%	0	0%	0	0%
NA	2	18%	0	0%	0	0%	2	12%
Total	11	100%	4	100%	2	100%	17	100%

Source: Results of the site survey at the time of the ex-post evaluation

With regard to biodiversity conservation, increases in the number of the key wildlife species in the national parks and sanctuaries were reported (documents provided by JICA). Furthermore, it was learned during the site visit that technical support had been received from GFD in selecting tree species. GFD staff members also explained that not as in the past, they were presently selecting tree species from the viewpoint of biodiversity conservation.

(3) Increases in Local People's Income

Perspectives on increases in local people's income revealed during the site survey are summarized in Table 16 where PO responses of "increased" or "increased to some extent" constituted the majority. At the PO visited, it was learned that since forest-related activities were secondary to agriculture-related activities, forest-related income had increased to only a limited extent.[19] However, local people considered that a significant increase in milk production could be partly explained by an improvement in the availability of fodder, although various factors had direct as well as indirect impacts on this outcome. Further comments were received such as: an increase in the underground water table that led to an increase in agricultural production; increased availability of fuelwood and fodder so that the local people did not have to purchase them any longer; an increase in income due to regular cash income

[19] At SFDC visited, it was learned that Eucalyptus they had planted was to be harvested, but that it would take a few more years before harvest was possible.

generating from daily husbandry; and an increase in income due to agriculture-related activities while the availability of grasses and fuelwoods improved. Meanwhile, during the site survey, several PO explained that their financial capacity was limited. Although many PO were assisted under the project, it was not possible to conclude that such support had resulted in the realization of self-reliant activities of PO and improvement of income through the diversification of livelihoods by SHG.

Table 16: PO Perspectives on Increases in Local People's Income

Unit: Number of PO

Scale	JFMC		SFDC		EDC		Total	
	Number of Responses	Ratio	Number of Responses	Ratio	Number of Responses	Ratio	Number of Responses	Ratio
Increased a lot	1	9%	0	0%	1	50%	2	12%
Increased	5	45%	2	50%	0	0%	7	41%
Increased to some extent	5	45%	2	50%	0	0%	7	41%
Same as before	0	0%	0	0%	0	0%	0	0%
Decreased	0	0%	0	0%	0	0%	0	0%
NA	0	0%	0	0%	1	50%	1	6%
Total	11	100%	4	100%	2	100%	17	100%

Source: Results of the site survey at the time of the ex-post evaluation
Note: The number does not necessarily add up due to rounding.

As more direct impacts, it can be also pointed out that the local people were able to earn income through work at nurseries, by serving as tourist guides and so forth (documents provided by JICA).

3.3.2 Impacts

3.3.2.1 Realization of Impacts

In order to examine the extent to which impacts were realized, the following aspects were examined: (1) improvement of the natural environment; (2) enhancement of the social and economic capacity of women; and (3) poverty alleviation (improvement of economic aspects).

(1) Improvement of the Natural Environment

At the time of the site survey, questions were raised over how local people had perceived improvement of the natural environment. As shown in Table 17, "improved" and "improved to some extent" accounts for more than half of the responses from PO. PO interviewed during the site visit pointed out improvement of tree cover, increase in the underground water level and changes in habitat for more diversified tree and wildlife species

Table 17: PO Perspectives on Improvement of the Natural Environment

Unit: Number of PO

Scale	JFMC		SFDC		EDC		Total	
	Number of Responses	Ratio	Number of Responses	Ratio	Number of Responses	Ratio	Number of Responses	Ratio
Improved a lot	0	0%	0	0%	1	50%	1	6%
Improved	4	36%	1	25%	0	0%	5	29%
Improved to some extent	3	27%	1	25%	0	0%	4	24%
Same as before	0	0%	1	25%	0	0%	1	6%
Worsened	0	0%	0	0%	0	0%	0	0%
NA	4	36%	1	25%	1	50%	6	35%
Total	11	100%	4	100%	2	100%	17	100%

Source: Results of the site survey at the time of the ex-post evaluation
Note: The number does not necessarily add up due to rounding.

Furthermore, increases in the number of the key wildlife species in the national parks and sanctuaries, increased fish caught in mangrove forest areas and so forth were reported (documents provided by JICA).

(2) Enhancement of the Social and Economic Capacity of Women

At the time of the site survey, PO were asked to comment on their perception of how far and to what extent women participated in the community activities. As shown in Table 18, "participated" and "participated to some extent" constituted more than half of the responses from PO.

Table 18: PO Perception of the Extent to which Women participated in Community Activities

Unit：Number of PO

Scale	JFMC		SFDC		EDC		Total	
	Number of Responses	Ratio	Number of Responses	Ratio	Number of Responses	Ratio	Number of Responses	Ratio
Participated more	1	9%	0	0%	1	50%	2	12%
Participated	4	36%	1	25%	0	0%	5	29%
Participated to some extent	4	36%	2	50%	0	0%	6	35%
Same as before	0	0%	1	25%	0	0%	1	6%
Participated less	0	0%	0	0%	0	0%	0	0%
NA	2	18%	0	0%	1	50%	3	18%
Total	11	100%	4	100%	2	100%	17	100%

Source: Results of the site survey at the time of the ex-post evaluation
Note: The number does not necessarily add up due to rounding.

PO visited during the site visit outlined a number of points: women had become confident because the appointment of women as board members of PO was made mandatory; women had improved their communication capacity; other family members supported women (i.e., there was the understanding of other members of women's participation in community activities); PO were formed; and women had opportunities to learn about the improvement of the social

status of women, etc., by visiting other areas and observing the activities of other PO as part of their training.

Meanwhile, one PO commented that they had not noticed large differences despite the fact that women were able to improve their social status through dealing with banks, holding meetings and implementing dairy businesses. In respect of the enhancement of women's social and economic status, it was also documented that the project had positive impacts on the thinking process of women[20] and that women had become more confident on different issues relating to forest protection and their families (documents provided by JICA).

(3) Poverty Alleviation

① Quantitative effects

On the aspect of the poverty alleviation, a comparison of the results of the baseline survey and the end-line surveys exhibits an improvement tendency as described in the table below.

Table 19: Comparison of Baseline and End-line Survey Results
(Average Below Poverty Line ratio Note)

PO	Baseline Survey (a)	End-line Survey (b)	(b)- (a)
JFMC	50%	49%	-1%
SDFC	60%	56%	-4%
EDC	56%	54%	-2%

Source: Documents provided by JICA
Note: The poverty ratio means the average below poverty line ratios in GFDP intervention villages.

② Qualitative effects

At the time of the site survey, PO were asked whether or not the project activities had helped economic improvement for people in the communities. As summarized in Table 20, "improved" or "improved to some extent" accounted for more than half of the responses. However, some PO responded with "same as before" and many PO did not respond to this question.

[20] For example, as members of SHG, women were given training for capacity building in the field of SHG management, etc., which ultimately empowered them and increased their confidence.

Table 20: PO Perception of Poverty Alleviation (Improvement of Economic Aspect)

Unit: Number of PO

Scale	JFMC		SFDC		EDC		Total	
	Number of Responses	Ratio	Number of Responses	Ratio	Number of Responses	Ratio	Number of Responses	Ratio
Improved a lot	0	0%	0	0%	0	0%	0	0%
Improved	2	18%	2	50%	0	0%	4	24%
Improved to some extent	4	36%	1	25%	0	0%	5	29%
Same as before	2	18%	1	25%	0	0%	3	18%
Worsened	0	0%	0	0%	0	0%	0	0%
NA	3	27%	0	0%	2	100%	5	29%
Total	11	100%	4	100%	2	100%	17	100%

Source: Results of the site survey at the time of the ex-post evaluation
Note: The number does not necessarily add up due to rounding.

At the PO visited, it was learned that differences due to the project from the viewpoint of effects on the improvement of poverty status and conditions were not observed to any great extent although there were employment opportunities. During the interview, SFDC explained that benefits had yet to be actualized because trees planted on community (village) land was yet to be harvested. Furthermore, another PO commented that the poverty issue had not been specifically addressed.

3.3.2.2 Other Positive and Negative Impacts

(1) Impact on the Natural Environment

In accordance with the Japan Bank for International Cooperation Guidelines for Confirmation of Environmental and Social Considerations (April 2002) this project is classified into Category B because it is considered that the project has not had a significant adverse impact on the environment due to the features of the sector, the project characteristics and the locational characteristics. Based on the Notification of January 1994 by the Ministry of Environment and Forests in India, it was found not necessary to implement an Environment Impact Assessment (EIA). Accordingly, an EIA was not conducted. No negative impact was reported based on the monitoring results.

(2) Resettlement and Land Acquisition

The resettlement of local people and land acquisition did not take place.

As described above, although it is evaluated that improvement of people's income through PO self-reliant activities was yet to be realized, effects through the implementation of the project are more or less observed as planned. Therefore, the effectiveness and impacts of the project are high.

3.4 Sustainability (Rating: ②)

3.4.1 Institutional / Organizational Aspects of Operation and Maintenance

The Executing Agency is GFD. GFD established a Project Management Unit (hereinafter referred to as "PMU") headed by an Additional Principal Chief Conservator of Forests (hereinafter referred to as "APCCP") within GFD, and posted new personnel for implementation of the project. For the operation and maintenance of the project, the State Government of Gujarat scaled down and maintained PMU headed by APCCP.[21]

The operation and maintenance at field level is carried out at field offices. According to the documents provided by JICA and interviews conducted with staff members at the field offices of GFD, various activities were being carried out including plantations, forest protection, the prevention of illegal cutting and illegal entries into forest areas, regular visits to, and assistance for, JFMC. PO such as JFMC also explained that PO were engaged in forest protection in small groups, and they were managing to limit free grazing and to protect from forest fires. M & E is carried out as part of the state-wide M & E activities by GFD. However, MIS was not effectively utilized, and policy formulation and budget allocation were not carried out by making use of the information concerned.

As for PO supported under the project, GFD set up criteria and classified them into the following three categories: "(A) very active," "(B) active," "(C) not so active / inactive." As of 2017, 80% of JFMC and EDC fell into categories (A) and (B), but just slightly more than 50% of SFDC fell into the categories of (A) and (B).

Table 21: Classification of Status of PO as of 2017

PO	Very Active(A)		Active(B)		Not so Active/ Inactive (C)		Total	
	No of PO	%	No. of PO	%	No. of PO	%	No. of PO	%
JFMC	612	37.3%	768	46.9%	259	15.8%	1,639	100.0%
SFDC	84	10.2%	360	43.8%	378	46.0%	822	100.0%
EDC	79	34.3%	112	48.7%	39	17.0%	230	100.0%

Source: Documents provided by GFD

Furthermore, during the site visit/survey, the ex-post evaluation team visited SHG as well as JFMC, SDFC and EDC. However, the number of active SHG was limited. According to documents provided by JICA, the number of very successful SHG cases was limited. Problems were observed in promoting the restoration of forests through community-based plantation by

[21] At the time of the ex-post evaluation conducted in January 2020, three years had passed since the completion of the project. At that time, PMU consisted of two persons including APCCF. The number of positions in GFD was 8.451, while the actual number of personnel working at the department was 5,918, accounting about 70% of the number of positions (as of March 31, 2019). It is noted, however, that there were positions, for example for drivers, for which new hires were suspended under the policies set forth by the state government. Other than these positions, staff members are employed on a contract basis as in the practice observed under the project. If these points are taken into account, the rate of the positions filled increases.

building capacity for PO and improving living conditions of the local people in a self-sustainable manner.

3.4.2 Technical Aspects of Operation and Maintenance

During the project implementation period, various training was given to PO and GFD who were engaged in the project. Due to capacity building of PO awareness, knowledge sharing, and exposure visits, PO members were better equipped than in the period prior to project implementation (documents provided by JICA). Staff members of GFD visit PO on a regular basis to support them in terms of activities such as forest protection, record keeping and the maintenance of records, and the convening of meetings. Training for capacity buildings was extended not only to PO and GFD staff members but also to resource organizations such as livelihood enhancement teams. However, GFD pointed out that the number of NGO that could support SHG in developing high value-added produce was limited.

At the preparation phase of the project, 19 standard management manuals / guidelines / handbooks were prepared, which laid the basis of project implementation. They had been effectively utilized after completion of the project. Some of these manuals were also delivered to the villages visited during the site visit, but according to GFD staff, PO members needed to be guided by GFD staff for their utilization because they had difficulties in reading and understanding such manuals.

3.4.3 Financial Aspects of Operation and Maintenance

The following table shows the yearly change of the budgets and expenditure of GFD. It is noted that GFD maintained an annual increase of 7% in terms of the expenditure. The estimated budgets relating to JICA project showed a declining tendency.

Table 22: Budgets and Expenditures of GFD

Unit: 10 million Rupee

Item/Fiscal Year	2016/17	2017/18	2018/19
Budget Estimate	1,268.3	1,195.2	1,260.3
Revised Budget	1,099.0	1,174.0	1,257.9
Expenditure	1,069.7	1,152.0	1,237.4
Budget Estimate relating to JICA project [Note]	45.2	15.3	11.8

Source: Documents provided by GFD

Note: Although it is not necessarily clear from documents provided by GFD, it is considered that the amount indicates that budget estimates were allocated specifically for the operation and maintenance of the project.

The State of Gujarat launched the “Participatory Forest Management Scheme under Gujarat Forest Development Programme” in the fiscal year 2016/17, appropriating 90 million Rupee. According to GFD, this scheme was intended to fill the vacuum of the period of no external assistance that PO would face after completion of the project until such time that PO could take

off. In the current budget, about 100 million Rupee was allocated to extend 2.5 million Rupee/PO to selected JFMC and EDC. [22] The number of PO that had been supported in and after the fiscal year 2016/2017 is shown in the table below. These PO are not necessarily confined to the PO which were assisted under the project. Although a limited number of PO was supported under the scheme, this is considered an important initiative taken by the state government to ensure sustainability.

Table 23: The Number of PO supported by the State Government of Gujarat

Unit: Number of PO

PO	FY 2016/17	FY 2017/18	FY 2018/19	FY 2019/20
JFMC	31	31	34	39
EDC	5	4	5	5
Others	0	0	1	0
Total	36	35	40	44

Source: Documents provided by GFD

3.4.4 Status of Operation and Maintenance

As described above, the operation and maintenance of plantation areas and structures for soil and moisture conservation continued, mainly carried out by the field offices of GFD and PO. Soil and moisture conservation structures for drainage line treatment are constructed before the preparation period prior to plantation activities. Various types of structures exist such as check dams and contour line. No specific problems have been observed in the operation and maintenance.[23]

As described above, some minor problems were observed in terms of the institutional / organizational aspect concerning information management making use of MIS, and sustainable activities of PO and SHG. Therefore, sustainability of the project effects is fair.

4. Conclusion, Lessons Learned and Recommendations

4.1 Conclusion

The objective of the project was to regenerate forests and raise the living standards of local people by conducting community-based afforestation and activities to improve livelihoods in the state of Gujarat in western India, thereby contributing to improvement of the local environment and to poverty reduction. At the time of the appraisal as well as at the time of the ex-post

[22] The breakdown of the support in the amount of 2.5 million Rupee is as follows: 1.5 million Rupee for soil and moisture conservation activities (drainage line treatment) through GFD, 0.5 million Rupee for IGA, and 0.5 million Rupee for training support (local people, who are familiar with the local practice and languages, are employed as trainers through GFD/NGO).

[23] The impact assessment study conducted in 2015 evaluated the soil and moisture conservation structure in terms of "conditions" and "effects" on a one to five scale based on a relatively wide range of the sample surveys for the structure. According to the assessment study, structures were evaluated as "Good (3 out of 5)" or as "Very Good (4 out of 5)." (BASIX Consulting And Technology Services, et al. "*Impact Assessment Study of JICA Assisted Forestry Project in the State of Gujarat State Report 2016.*")

evaluation, the policy of the Indian government set forth rehabilitation and reforestation of forests, sustainable forest management and improvement of living standards of local people through participation in forest management. This project was also consistent with the aid policies of Japan. Therefore, its relevance is high. While the project cost was lower than planned, the project period was as planned. The project largely achieved its outputs as originally planned (the plantation areas were increased). Therefore, the efficiency of the project is high. Regarding the effectiveness and impacts, effects were confirmed on such aspects as the restoration of forests, soil and moisture conservation and the improvement of forest biodiversity conservation, which contributed to a betterment of the natural environment. On the other hand, limited effects were observed on increases in the income of local people. However, the income from forestry produce is considered to be supplementary to agricultural income. As it has been evaluated that the effects of employment generation and improvement of incomes through the self-reliant activities of the PO are yet to realize, contributions to poverty reduction through these activities are limited. However, improvement in the ability of women in the social and economic fields have been observed. Thus, the effectiveness and impacts of the project are high. The operation and maintenance after completion of the project has been carried out as part of their regular works by GFD. In terms of the operation and maintenance system of GFD, its technical and financial aspects as well as the status of the operation and maintenance conditions, no serious issue adversely affecting the project effects has been found. However, continual improvement in information management by making use of management information systems needs to be done. Among the PO supported under the project, some were found to be less active after the project completion. Furthermore, there are cases where the IGA of SHG which had been assisted by the livelihood enhancement activities were suspended. Therefore, sustainability of the project effects is fair.

In light of the above, this project is evaluated to be highly satisfactory.

4.1 Recommendations

4.1.1 Recommendations to the Executing Agency

MIS was introduced late in the project period without sufficient budget being allocated and staff being sufficiently trained. Linkages of data and information from the ground level to offices at various levels of GFD were not established. Therefore, it is not possible to capture current conditions of the project by the use of the MIS. GFD has been preparing to implement a new ODA loan project titled “Project for Ecosystem Restoration in Gujarat” (the loan agreement was signed in March 2020), under which MIS is also expected to be utilized. It is recommended that GFD make effective use of the MIS developed under the soon-to-be- implemented “Project for Ecosystem Restoration in Gujarat”.

4.1.2 Recommendations to JICA

None

4.2 Lessons Learned

GFD and Livelihood Enhancement Activities

Although many SHG were formed during the project period, it was found that only a limited number of SHG actively ran their operations after the project completion. During the project period, livelihood enhancement activities were extended through NGO and others, which were selected and employed by GFD. As the project area stretches over an extensive area, many NGO were mobilized to support PO. However, the capacity of NGO varied and the assistance to increase added values through support for the product development was not sufficient. On the other hand, support for livelihood enhancement was beyond the jurisdiction of GFD. GFD staff were engaged in support for livelihood enhancement even though the number of staff members at GFD did not meet the number of positions. As GFD staff were not adequately equipped with the technical know-how to support IGA of SHG, their involvement in the IGA posed a certain level of constraints to GFD staff involved in forest development activities. Therefore, at the time of project formulation, JICA and the executing agency should review the appropriateness of assigning tasks, especially when such tasks as livelihood enhancement activities are different from the specialized tasks originally assigned to the executing agency. Although the implementing structure may become complicated, the appropriateness of implementing such tasks in collaboration with other agencies (for instance, the agency responsible for rural development) should be examined. In such cases, it will be important to set up a functional steering committee at the state and/or district level to coordinate activities among departments at different agencies.

Quality Assurance of Forest Development under Joint Forest Management and Promotion of Local People's Participation in Forest Development Activities

Forest development with the participation of local people has been implemented under JFM, aiming at the recovery of the forests and improvement of the living conditions of the poor through collaborations between GFD and local people by carrying out plantations and forest management. However, the quality assurance of forest development and the promotion of the participation of local people do not necessarily conform. If local people find that benefits from forest development activities are relatively lower than expected, then the effectiveness of forest development through the participation of local people will be limited. For instance, during busy farming seasons, the priority of forest activities is less than that of agricultural activities which affects the participation of local people in plantation activities. Based on the experiences gained from the project, GFD plans to ensure the quality of the forest development under the Project for Ecosystem Restoration in Gujarat by increasing the engagement and control of GFD during the

initial stage of plantations (i.e., planting activities). At the time of project formulation, JICA and the executing agency should clarify the extent and timing of the involvement of the executing agency and local people, respectively, in order to achieve the objective of the project through JFM.

Comparison of the Original and Actual Scope of the Project

Item	Plan	Actual
1. Project Outputs (Major Outputs)	(1) Plantations Total Area: 146,620ha (2) Wildlife Conservation and Development Protected area management, conservation and development of biodiversity hotspots, etc. (3) Community / Tribal Development The number of PO to be assisted: 1,100 JFMC 800 SFDC 210 EDC (4) Supporting Activities Preparatory works, phase-out activities, etc. (5) Consulting Services International Consultants: 85 man-months Local Consultants: 417 man-months[Note1] Supporting Staff: 292 man-months	(1) Plantation Total Area: 172,432ha (2) Wildlife Conservation and Development Protected area management, conservation and development of biodiversity hotspots, etc. (3) Community / Tribal Development The number of PO to be assisted: 1,639 JFMC 822 SFDC 230 EDC (4) Supporting Activities Preparatory works, phase-out activities, etc. (5) Consulting Services International Consultants: 75.5 man-months Local Consultants: 78.9 man-months Site Managers: 436.4 man-months Supporting Staff: 356.2 man-months
2. Project Period	March 2007 – March 2015 (97 months)	March 2007 – March 2017 (121 months)
3. Project Cost Among Paid in Foreign Currency	1,108 million yen	791 million yen
Amount Paid in Local Currency	19,815 million yen	15,494 million yen
Total	20,923 million yen	16,285 million yen
ODA Loan Portion	17,521 million yen	14,931 million yen
Exchange Rate	1 Rupee = 2.52 yen (As of September 2006)	1 Rupee = 1.81 yen (Weighted average between 2007 and 2016)
4. Final Disbursement	July 2017	

Note 1 : According to the plan at the time of the appraisal, the number of man-months for Site Management Experts was 330 man-months out of 417 man-months allocated to the local consultants. It was considered that the planned number of man-months for the Site Management Experts correspond to the actual number of man-months for the Site Managers.

India

FY2019 Ex-Post Evaluation of Japanese ODA Loan

"Uttar Pradesh Participatory Forest Management and Poverty Alleviation Project"

External Evaluator: Keishi Miyazaki, OPMAC Corporation

0. Summary

The objective of the project was to restore degraded forests, to augment forest resources and to improve the livelihoods of, and empower, local people dependent on forests by promoting sustainable forest management, including the Joint Forest Management (JFM) plantation and community/tribal development, in the state of Uttar Pradesh in north India, thereby promoting regional environmental improvement and poverty alleviation. The relevance of the objective is high, as it was consistent with India's development policy and development needs, as well as with Japan's ODA policy at the time of appraisal and ex-post evaluation. Although the project cost was within the plan, the project period exceeded the plan, and therefore the efficiency is fair. The reason for extension of the project period was the additional activities regarding capacity strengthening of the executing agency and village organizations from the viewpoints of expansion of project effects and enhancement of sustainability. All but two of the 10 operation and effect indicators achieved or almost achieved their target values. Through the sustainable forest management, regional development/livelihood improvement activities, supporting activities, etc. implemented by this project, forest restoration in the target area, biodiversity conservation awareness among residents, and an increase in the wildlife population were recognized. Therefore, it was confirmed that the project had a certain effect on water and soil conservation and biodiversity conservation. In addition, improvements in the living environment and diversification of the means of livelihood led to increases in the income of local residents. Furthermore, this project has made a certain contribution to the improvement of women's social and economic capacities in the target villages by improving literacy rate and self-confidence of women and increasing their opportunities to participate in financial activities and decision making as well as poverty reduction by increasing their income. However, there were factors affecting poverty reduction other than this project, such as poverty alleviation measures by the Government of India. No negative impact on the natural environment was observed, and resettlement of residents and land acquisition did not occur through the project. Therefore, the effectiveness and impacts are high. After the completion of the project, the operation and maintenance system was taken over by the executing agency, the Uttar Pradesh Environment, Forest and Climate Change Department (EFCCD), and village organizations established in this project, such as the Joint Forest Management Committees (JFMCs), Eco-Development Committees (EDCs) and Self Help Groups (SHGs). EFCCD faces issues such as labor and budget shortages. Village organizations also have some issues with the organizational, technical, and financial aspects of each organization. Therefore, the sustainability is evaluated to be fair.

In light of the above, the project is evaluated to be satisfactory.

1. Project Description

Project Location

Afforestation by JFM

1.1 Background

The state of Uttar Pradesh, the most populous and fifth largest province, is located in the northern part of India. In 2003, the forest and tree coverage in the state of Uttar Pradesh was 9.0%, which was much lower than the national average of 23.7%, while the ratio of open forests in the total forest area was much higher, at 57.5% (compared to the national average of 42.4%). Farm land was found mainly in the central part of the state and occupied 87.4% of the total state area. In the northern and southern parts of the state, where the density of forests was high, scheduled castes and scheduled tribes (indigenous tribes), who had a high incidence of poverty, relied on forests for their livelihood. Their overgrazing and excessive harvesting of forest resources had been partly responsible for causing degradation of the forests. The state of Uttar Pradesh, with the country's largest population living in poverty, had been striving to implement poverty alleviation projects with the Department of Rural Development playing a key role. However, since most of these projects were concentrated in the central region, support had not reached the surrounding forest areas distributed along the state border.

1.2 Project Outline

The objective of the project was to restore degraded forests, to augment forest resources and to improve the livelihoods of, and empower, local people who are dependent on forests by promoting sustainable forest management including JFM plantation and community/tribal development, in the state of Uttar Pradesh in north India, thereby promoting regional environmental improvement and poverty alleviation.

Loan Approved Amount/ Disbursed Amount	13,345 million yen / 7,404 million yen
Exchange of Notes Date/ Loan Agreement Signing Date	March 10, 2008 / March 10, 2008
Terms and Condition	Interest Rate 0.01% Repayment Period 40 years (Grace Period) 10 years) Conditions for Procurement General Untied
Borrower/ Executing Agencies	The President of India / Environment, Forest and Climate Change Department (EFCCD), Uttar Pradesh State
Project Completion	December 2017
Target Area	15 forest divisions and 5 wildlife divisions in the northern and southern parts of Uttar Pradesh State.
Main Contractor	None
Consultants (Over 100 million yen)	• Jai Prakesh Associates (JPS Associates Pvt. Ltd.) (India) / NR Management Consultants India Pvt. Ltd. (India) / Nippon Koei India Pvt. Ltd. (India) / Nippon Koei Co., Ltd. (Japan) / Natural Resources International Ltd. (UK) • Louis Berger Group, Inc. (USA)
Related Studies (Feasibility Studies, etc.)	Special Assistance for Project Formation (SAPROF) for Uttar Pradesh Natural Resource Management and Poverty Alleviation Project (NRMPAP) in India (October 2007)
Related Projects	None

2. Outline of the Evaluation Study

2.1 External Evaluators

Keishi Miyazaki (OPMAC Corporation)

2.2 Duration of Evaluation Study

This ex-post evaluation study was conducted with the following schedule.

Duration of the Study: November 2019 – February 2021

Duration of the Field Study: January 6 – January 24, 2020

2.3 Constraints during the Evaluation Study

Due to the global COVID-19 pandemic, the 2nd field study, planned for April 2020, was canceled. As an alternative, the external evaluator conducted a field survey in Uttar Pradesh State remotely, with the support of a local consultant. There was therefore a limitation in the collection of some of the data and information.

3. Results of the Evaluation (Overall Rating: B[1])

3.1 Relevance (Rating: ③[2])

3.1.1 Consistency with the Development Plan of India

At the time of appraisal, the Government of India had set the goal of 33% forest and tree coverage in the entire country by the end of *the 11th Five-Year Plan* (April 2007-March 2012). In addition to the restoration of degraded forests, emphasis was placed on sustainable forest management by promoting Joint Forest Management (JFM) and support for the acquisition of alternative income means for forest dependents. The platform of the Manmohan Singh administration (2004-2014), which was launched in May 2004, also stated that it would focus on investing in afforestation projects that would create jobs.

At the time of ex-post evaluation, *the Three-Year Action Agenda*[3] (2017/18 - 2019/20[4]), India's national development plan, places environment and forest protection as a priority item, with the target of achieving the national forest and tree coverage of 33% and with an emphasis on improving the effectiveness of afforestation programs. The upcoming *7-Year Strategy* and *15-Year Vision*[5] will also set the protection of forests, wildlife and biodiversity as priority goals.

As mentioned above, forest protection and ecosystem/biodiversity conservation have been important issues in India's development policies at the times of appraisal and ex-post evaluation, and JFM's role in promoting sustainable forest management were emphasized. Thus, the project is considered to be consistent with the development plan of the Government of India.

3.1.2 Consistency with the Development Needs of India

Regarding the forest sector in Uttar Pradesh at the time of appraisal, as mentioned in "1.1 Background," the forest and tree coverage in 2003 was 9.0%, which was significantly lower than the national average 23.7%. Farm land, distributed mainly in the central part of the state, occupied 87.4% of the total state area. In the northern and southern parts of the state where the density of forests was high, scheduled castes and scheduled tribes (indigenous tribes), who had a high incidence of poverty, relied on forests, and their overgrazing and excessive harvesting of forest resources had been partly responsible for causing degradation of the forests.

At the time of ex-post evaluation, according to the *India State of Forest Report*, which is prepared every two years by the Forest Survey of India under the Ministry of Environment, Forest and Climate Change, the national forest and tree coverage was 24.56% in 2017, which

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[1] A: Highly satisfactory, B: Satisfactory, C: Partially satisfactory, D: Unsatisfactory.
[2] ③: High, ②: Fair, ①: Low
[3] The Government of India decided to terminate the existing National Development Five-Year Plan with the 12th Five-Year Plan (April 2012-March 2017), and instead set up a new framework of 15-Year Vision (2017/18-2031/32), 7-Year Strategy (2017/18-2023/24) and 3-Year Action Agenda (2017/18-2019/20) starting in 2017.
[4] In the Indian fiscal year, 2017/18 is from April 2017 to March 2018.
[5] According to information provided on the website of the National Institution for Transforming India Commission (former Planning Commission), the 15-Year Vision and the 7-Year Strategy were in draft stage at the time of ex-post evaluation.

was an improvement over the rate in 2003. However, the open forest rate in the total forest areas was 42.8% in 2017, which was almost the same as in 2003. Expanding and improving forest area continues to be an important issue in India. Comparing the rates of dense and open forests in the forest area of Uttar Pradesh in 2007 (before the start of the project) and 2017 (when the project was completed), it can be seen that the dense forest rate increased in 2017 while the open forest rate declined. This has led to some improvement in forest degradation, and the state-wide forest and tree coverage slightly improved from 9.01% in 2007 to 9.15% in 2017 (Table 1). On the other hand, this remains at a low level when compared to the national forest and tree coverage, and the expansion and conservation of forest area remains an important issue in the state.

Table 1: Forest Coverage and Forest Canopy Rate in Uttar Pradesh State

Item		2007		2017	
		India	UP (Note1)	India	UP
Forest coverage (%)	Forest	21.02	5.95	21.67	6.15
	Non-forest	77.72	93.73	76.92	93.61
	Scrub	1.26	0.31	1.41	0.24
	Tree (Note 2)	2.28	3.06	2.89	3.0
	Total	100.00	100.00	100.00	100.00
	Forest and Tree	23.30	9.01	24.56	9.15
Forest canopy rate (%)	Dense forest	12.23	11.34	13.94	17.67
	Moderately dense forest	45.53	31.82	43.31	27.56
	Open forest	42.24	56.84	42.75	54.77
	Total	100.00	100.00	100.00	100.00

Source: India State of Forest Report 2009 (data measured in 2007), India State of Forest Report 2019 (data measured in 2017)
Note 1: UP: Uttar Pradesh State.
Note 2: It is defined as a forest area of less than 1 ha with a tree coverage of more than 10%. Statistically, it is treated separately from the forest coverage.

As mentioned above, at the time of appraisal and ex-post evaluation, the forest and tree coverage of Uttar Pradesh remained low compared to India as a whole, and the need for expansion and conservation of forest area in the state continued to be recognized.

3.1.3 Consistency with Japan's ODA Policy

Japan's *Country Assistance Program for India* (formulated in May 2006) at the time of appraisal placed "improvement of poverty and environmental problems through health and sanitation issues, local development, water supply and sewerage support, afforestation support, etc." as one of its three priority areas. In addition, JICA's *Overseas Economic Cooperation Operation* (2005) positioned "regional development that benefits the poor" and "response to environmental issues" as priority areas for India. Furthermore, JICA's *Country Assistance Strategy for India* (FY2006) positioned the forest sector as a major sector for assistance to India.

As stated above, this project was highly relevant to India's development plan and development needs, as well as to Japan's ODA policy. Therefore, its relevance is high.

3.2 Efficiency (Rating: ②)

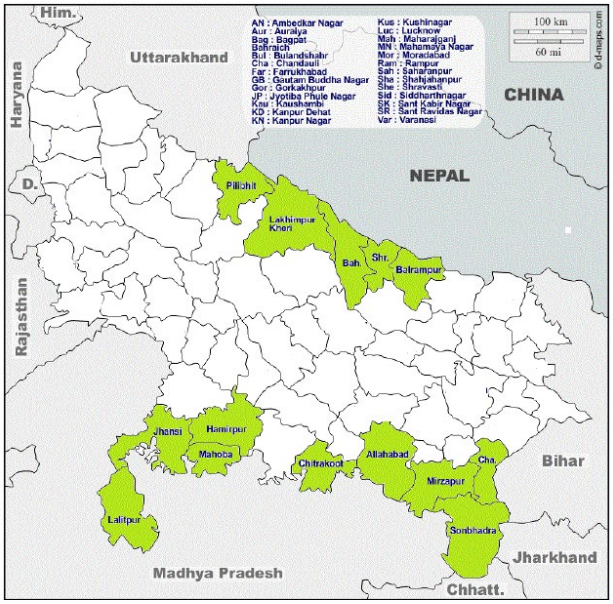
3.2.1 Project Output[6]

This project consisted of three main components: (i) Forest conservation and management (forest area development and management by EFCCD and JFM, wildlife conservation and management), (ii) Community development and livelihood improvement, and (iii) Supporting activities, targeting 15 forest divisions and five wildlife divisions (total 80,500 ha) in the northern and southern parts of Uttar Pradesh State. Overall, the actual outputs were produced mostly as planned. The major actual outputs are shown below (for details, please refer to "Comparison of the Original and Actual Scope of the Project").

(1) Forest Conservation and Management

a) Department Forest Area Development and Management

The actual amount of afforestation under the direct management of EFCCD was 20,200 ha, which was as planned (Table 2). In addition, the installation of forest boundary pillars to demarcate forest land, the creation and maintenance of firebreaks to prevent forest fires, the purchase of fire extinguishing equipment, the implementation of channel countermeasure work, the improvement of existing permanent nurseries for seedling development and sapling production, the creation of cloned tree nurseries, the creation of the Non-wood Forest Products Research Center, etc. were carried out mostly as planned.



Source: Project Completion Report (PCR).

Figure 1: Project Target Area

[6] The project outputs are the inputs (project plan) to be realized by the project which were mentioned in the project appraisal documents. For details, please refer to "Comparison of the Original and Actual Scope of the Project".

Table 2: Afforestation by EFCCD

Type	Afforestation Area (ha)		
	Plan	Actual	Difference
Open, barren forest area	8,900	9,300	400
Moderately dense forest area	7,000	7,100	100
Very dense forest area	4,300	3,800	-500
Total	20,200	20,200	0

Source: Documents provided by JICA and the response to the questionnaire by EFCCD.

b) JFM Forest Area Development and Management

The actual amount of afforestation by JFM was 60,495 ha, which was as planned. As other outputs, a firebreak for a forest fire prevention measure was created and maintained, channel countermeasures were carried out, and a JFM small-scale joint nursery was created. Regarding the creation and maintenance of firebreaks and the creation of JFM small-scale joint nursery fields, the actual results fell below those planned.

Table 3: Afforestation by JFM

Type	Afforestation Area (ha)		
	Plan	Actual	Difference
Open, barren forest area	19,200	2,231.	-16,969
Moderately dense forest area	32,100	30,824	-1,276
Very dense forest area	9,000	27,440	18,440
Total	60,300	60,495	195

Source: Documents provided by JICA and the response to the questionnaire by EFCCD.

c) Wildlife Conservation and Management

For the development of wildlife forest areas, national parks and wildlife sanctuaries were established; earth retaining works were conducted; and check dams, boundary pillars, watchtowers, check posts, drinking fountains, etc. were constructed. In addition, 140 Eco-Development Committees (EDCs) were established, ecotourism was developed, a community-managed wildlife sanctuary was established, and community fuelwood and forage production forests (village common forests) were created. Regarding the creation of community fuelwood and forage production forests, the actual area was only 350 ha compared to the planned 700 ha because of the lack of land. The outputs of wildlife conservation and management were almost as planned.

Afforestation by JFM in Forest Conservation and Management Component (Examples)

Afforestation area managed by JFMC of Phkhradh village, Mirzapur district

Afforestation area managed by JFMC of Siddhi village, Mirzapur district

Community forest area managed by EDC of Badholi village, Mirzapur district

(2) Community Development and Livelihood Improvement

This component supported 940 village animators (villagers who act as extension workers of partner NGOs) and organized 800 Joint Forest Management Committees (JFMCs) and 140 EDCs through partner NGOs employed in this project. In addition, the formation of 2,680 Self-Help groups (SHGs) and support for the formation of 20 SHG alliances were implemented. Based on the micro-plan created in each village targeted by this project, entry point activities (EPAs), such as school renovations, small-scale infrastructure development including community centers, farm roads and water supply, and the provision of health services and small loans were carried out (Table 4). In addition, the various activities shown in Table 5 were implemented as income- generating activities (IGAs) by micro-enterprise companies and SHGs in the target villages. The outputs of these regional development and livelihood improvement activities were mostly as planned.

Table 4: EPAs

Type	No. of Activities
Installation of water supply facilities	140
Extension of school buildings Construction of JFMC/EDC office buildings	110
Purchase of tent houses	100
Improvement of link roads	90
Construction of monuments (Chabutara) (Note1)	80
Installation of solar lamps	70
Medical health care camps	60
Others (Note 2)	200
Total	850

Source: Response to questionnaire by EFCCD
Note 1: Chabutara (meaning "pigeon tower" in Gujarati) is a tower with an octagonal or pentagonal shape at the top where pigeons can be fed or find space to build nests. These are usually installed at the entrance of a village and have a monumental meaning. The pedestal part of the tower has a space for sitting, which serves as a gathering place for villagers and a playground for children.
Note 2: For example, irrigation pumps and smokeless furnaces.

Table 5: IGAs by SHGs

Type	SHG
(1) Forest-based business	
Non-Timber Forest Product (NTFP)	96
Leaf plates & bowl production	81
Incense stick production	27
Lac production	15
Others	30
(2) Natural resource-based business	
Goatery	643
Vegetable production	387
Poultry	299
Agriculture	212
Others (Note 3)	
(3) Non-natural resource-based business	574
Trading	94
Brick making	78
Grain trading	60
Tent house rental	54
Others (Note 4)	30
total	2,680

Source: Response to the questionnaire by EFCCD
Note 3: For example, dairy cow breeding and the production of spices such as turmeric.
Note 4: For example, sales of accessories and sewing.

Small-Scale Infrastructures in Target Villages by developed by EPAs (the Examples)

Community Center
(Also used as EDC Office)
Gurwal village, Mirzapur district

Water facility
Pukhradh village, Mirzapur district

Stage around the Hindu place of worship (meeting space)
Siddhi village, Mirzapur district

(3) Supporting activities

In order to strengthen the project implementation structure, 20 local management offices, 101 site management offices, official residences for site staff, etc. were constructed, communication and surveying equipment was maintained, vehicles were procured, and manuals, guidelines, etc. were created. In addition, training was conducted for the competence development of EFCCD staff, NGO staff and members of village organizations (JFMCs, EDCs, SHGs). For the purpose of project monitoring and evaluation, regular monitoring/ evaluation (monthly, quarterly, yearly), baseline surveys, mid-term/final impact assessment were also implemented, and Geographic Information System (GIS) and Management Information System (MIS) were installed as part of

the project's activities. Publications such as newsletters and pamphlets were used to disseminate information and raise the awareness of environmental conservation among residents inside and outside the project area. In particular, as part of environmental education, a school tree planting program, the Children Forest Program[7] (CFP), was implemented for 1,000 schools in the state. CFP include various awareness-raising activities, such as tree planting on school grounds and in surrounding communities, painting contests, speech contests, nature tours in natural parks, workshops and seminars for teachers, and preparation of environmental education materials (environmental calendars, posters, etc.).

GIS Equipment installed in this Project

Furthermore, research studies for forest development and management, biodiversity and management, and research[8] related to CDM[9] afforestation were also conducted through the commissioning of research institutes in India. As mentioned above, the outputs related to the supporting activities were almost as planned.

In this project, consultants were hired to support the project management of the executing agency. The consultants provided technical assistance for procurement operations, fund management, annual planning, report preparation, review and formulation of the JFMC operation manual, etc., for the Project Management Unit (PMU). These operations were carried out as planned, and the total amount of operations was within the plan.

3.2.2 Project Inputs

3.2.2.1 Project Cost

The actual project cost was 9,169 million yen compared to the planned project cost of 16,394 million yen, which was within the plan (56% of the planned amount) (Table 6).

While most of the project cost was in local currency, the rupee exchange rate against the yen fell by 63.5% in the 10 years from 2007 to 2017. As a result, while the outputs were produced almost as planned, the actual project cost in yen amounted to 56% of the original amount. For reference, when comparing the project costs in rupees, the planned project cost was 5,754

[7] A program in which children take action in promoting the greening of the earth while cultivating 'a love for nature' and 'an affection for greenery' through the practical activities of planting and growing seedlings on and near school grounds.

[8] In order to implement CDM-sinks (CDM afforestation) introduced as one of the Kyoto Protocol, a research organization in India was entrusted to conduct a survey for the purpose of finding the areas conforming to the CDM standards within the target area of this project, prepare materials necessary for registration, and implement registration work.

[9] CDM: Clean Development Mechanism. One of the Flexibility Mechanisms stipulated under the Kyoto Protocol, which aims for developing and advanced countries to jointly implement greenhouse gas reduction projects in developing countries. The scheme allows a country to receive emission reduction credits based on the reduction amount, which can be counted towards meeting Kyoto targets.

million rupees, while the actual project cost was 5,066 million rupees, which is 88% of the planned amount.

Table 6: Planned and Actual Project Cost

Item	Plan			Actual		
	Foreign currency (Mill. yen)	Local currency (Mill. yen)	Total (Mill. yen)	Foreign currency (Mill. yen)	Local currency (Mill. yen)	Total (Mill. yen)
Forest conservation and management	0	7,042	7,042	0	4,533	4,533
Community development and livelihood improvement	0	2,105	2,105	0	1,567	1,567
Supporting activities	0	1,897	1,897	0	1,060	1,060
Price escalation	0	1,010	1,010	0	0	0
Physical contingency	0	603	603	0	0	0
Consulting services	324	364	688	311	371	682
General administration	0	1,958	1,958	0	868	868
Tax and duties	152	447	599	0	160	160
Commitment charge	137	0	137	95	0	95
Interest during construction (IDC)	359	0	359	204	0	204
Total	972	15,426	16,398	610	8,559	9,169

Source: Documents provided by JICA and the response to the questionnaire by EFCCD.
Note: The exchange rate at the time of appraisal was 1 rupee =2.85 yen (As of October 2007), and 1 rupee=1.81 yen at the time of evaluation (2008-2017 average)

3.2.2.2 Project Period

The planned project period was 97 months (March 2008-March 2016), while the actual project period was 118 months (March 2008-December 2017) (Table 7).

Table 7: Planned and Actual Project Period

Activity	Plan	Actual
Signing of Loan Agreement	March 10, 2008	March 10, 2008
Consulting Service (incl. Selection of Consultant)	Mar. 2008 – Oct. 2011 (28 months)	(i) Aug. 2009 – Sep. 2013 (48 Months) (ii) May 2014 – May 2016 (24 Months)
Forest Conservation and Management	Apr. 2009 – Mar. 2016 (84 months)	Apr. 2009 – Dec. 2017 (105 months)
Community Development and Livelihood Improvement	Apr. 2009 – Mar. 2016 (84 months)	Apr. 2009 – Dec. 2017 (105 months)
Supporting Activities	Mar. 2008 – Mar. 2016 (96 months)	Mar. 2008 – Dec. 2017 (117 months)
Project Completion	March 2016 (Original) December 2017 (Revised)	December 2017

Source: Documents provided by JICA and the response to the questionnaire by EFCCD.
Note: (i) a joint venture headed by Nippon Koei, (ii) Louis Berger.

The reasons for the 21-month extension of the project period were as follows: (i) the target area of CFP was expanded, and an additional activity period was needed, (ii) 20 partner NGOs were re-selected due to the delay in the project and based on the mid-term evaluation, (iii) it

took time to formulate a village common forest with the involvement of village organizations because this activity was a first time in Uttar Pradesh state, (iv) it took time to disseminate livelihood improvement activities by SHGs, and (v) time was needed because the executing agency was unfamiliar with the method of project implementation in collaboration with NGOs. In order to cope with the above issues, after the contract with the consultant was completed in August 2013 as originally planned, another consultant was employed additionally after 2014 and took over the works by the first consultant (e.g., technical assistance for PMU in procurement, financial management, establishment of annual implementation plans, and preparation of reports, etc.). Considering these reasons, EFCCD formally requested JICA to extend the project period by 21 months until December 2017. Based on this request, JICA agreed to extend the project period in February 2015.

Among these reasons, the CFP was initially targeted at 650 schools in the six major cities in the state, but it was expanded to 1,000 schools in 13 districts with the hope of spreading the beneficial effect to a wider area. It was a response to cope with the increase in the project outputs. As for the other reasons, the implementation schedule of each activity was extended from the viewpoints of expansion of project effects and enhancement of sustainability. However, this did not cause any change in the project scope (i.e. increase or decrease in project outputs). Meanwhile, it is assumed that this extension was a response that led to the high achievement of effects and impacts of the project, which will be described later.

Considering this, although a formal agreement between the executing agency and JICA was made on the amendment of the project implementation period, it is appropriate to consider the project period at the time of appraisal (March 2008 to March 2016) as the planned value and compare it with the actual project period. Therefore, it is judged that the actual project period was delayed by 21 months against the planned project period, and exceeded the plan (122% against the plan).

3.2.3 Results of Calculations for Internal Rates of Return (Reference only)

(1) Financial Internal Rate of Return (FIRR)

The Financial Internal Rate of Return (FIRR) of the project was not calculated at the time of appraisal.

(2) Economic Internal Rate of Return (EIRR)

The Economic Internal Rate of Return (EIRR) of the project calculated at the time of appraisal was 13.79%. The preconditions of the EIRR calculations are referred to in Table 8. The result of EIRR recalculation at the time of ex-post evaluation was 10.20%, which is slightly lower than the EIRR at the time of appraisal. The main reason for this is that the benefits of forest products/firewood material were lower than assumed at the time of appraisal.

Table 8: Economic Internal Rate of Return (EIRR) of the Project at the Time of Appraisal

Item	Contents
Economic Internal Rate of Return (EIRR)	13.79%
Cost	Project cost (excluding tax and duties), Operation and maintenance cost
Benefit	Increase in fuel-wood and forest products, prevention of soil erosion, etc.
Project life	50 years

Source: Documents provided by JICA.

In light of the above, although the project cost was within the plan, the project period exceeded the plan. Therefore, the efficiency of the project is fair.

3.3 Effectiveness and Impacts[10] (Rating: ③)

3.3.1 Effectiveness

3.3.1.1 Quantitative Effects (Operation and Effect Indicators)

In this project, 11 indicators were set as operational and effect indicators. No baseline values were set for each indicator. Generally, the achievement of each indicator is judged based on whether the actual value has achieved the target value two years after the completion of the project (2019). However, after the completion of this project, EFCCD of the State of Uttar Pradesh has not collected the actual values of each indicator exclusive to the project, and therefore most of the actual values have been judged based on the actual values at the time of project completion in 2017. The results of each indicator are as follows (Table 9).

Table 9: Operation and Effect Indicators

Indicators	Baseline	Target	Actual		
	2008	2018 2 years after completion	2017 Completion year	2018 1 year after completion	2019 2 years after completion
Afforestation area (ha)	—	80,500	80,695	80,695	80,695
Quantity of planting (trees)	—	28,230,000	36,330,000	36,330,000	36,330,000
Survival rate (%) (Note1)	—	1st year: 76 3rd year: 64 5th year: 55	Southwestern region: 47 Northern region: 42 Southern region: 70	N.A.	N.A.
Number of JFMCs formed	—	800	800	800	800
Number of EDCs formed	—	140	140	140	140
Number of SHGs formed	—	2,680	2,680	2,680	2,680

[10] Sub-rating for Effectiveness is to be put with consideration of Impacts.

Indicators	Baseline	Target	Actual		
	2008	2018 2 years after completion	2017 Completion year	2018 1 year after completion	2019 2 years after completion
Forest coverage (%)	—	Scrub (0-10%) =>Open forest (10-40%) Open forest (10-40%) =>dense forest (40% or higher)	See Table 11	N.A.	N.A.
Production of forest product (rupees/year)	—	337,000,000	140,068,949	N.A.	N.A.
Annual income increase percentage per household (%)	—	7.9	JFMC: 14.5 EDC: 28.8	N.A.	N.A.
Employees (man-day)	—	19,900,000	15,900,000	N.A.	N.A.
Trainees (people)	—	30,774	31,009	N.A.	N.A.

Source: Documents provided by JICA and the response to the questionnaire by EFCCD.
Note 1: Planted trees managed by JFM.
Note 2: The survival rate is the result of a sample survey conducted in March 2015 by a third-party evaluation.
Note 3: All actual values of 2017, with the exception of the survival rate, are based on the end-term impact assessment report.

The actual value of the afforestation area is 80,695 ha, which has achieved the target value. The actual quantity planted was 36,330,000, sufficiently achieving the target value (achievement rate: 128%). However, according to the executing agency, although seedlings were distributed to the target villages free of charge after the completion of the project, it was difficult to secure a budget (worker employment costs) for planting them. Therefore, at the time of ex-post evaluation, afforestation has not progressed much in the areas targeted in the project.

Regarding the survival rate of planted trees managed by JFM, the actual data for each region were as follows: 47% in the southwest region (Bundelkhand Region; 85% of the 5th year target), 42% in the northern region (Vindhyan Region; 76% of the 5th year target), and 70% in the southern region (Terai Region; 127% of the 5th year target). However, the above data is the result of an analysis of a third-party evaluation in March 2015 during the implementation of this project, and the sample is the average of the trees planted between 2011/12 and 2014/15, so these actual values cannot simply be compared with the target values. Due to this, it is difficult to accurately determine the degree of target achievement regarding the survival rate of planted trees.

The number of Joint Forest Management Committees (JFMCs), the number of joint Eco-Development Committee (EDCs), and the number of Self-Help groups (SHGs) have each achieved the target values (achievement rate: 100%). According to the executing agency, new JFMCs, EDCs, or SHGs have not been established in the project area since the completion of this project.

The definition of the target value for forest coverage is unclear, but the comparison of 2011 and 2016 in the project area in Table 10 shows that the proportion of scrub decreased from

33.91% to 19.02% and the proportion of open forest decreased from 46.55% to 29.02%, while the proportion of medium dense forest increased from 14.08% to 29.56% and the proportion of high dense forest increased from 1.35% to 8.31%. Due to this indicator, it can be said that the forest coverage in the project target area has been improved. In addition, a comparison of the 2011 and 2017 data from the India State of Forest Report shows that the areas of open and medium dense forest have decreased, and the area of dense forest has increased in the five northern districts (Pilibhit, Kheri, Bahraich, Shravasti, and Balrampur) out of the 14 target districts (Table 11). From these facts, it is recognized that the improvement of forest coverage has been remarkable in the northern part of the target area of this project. In addition, although it is not possible to make a clear judgment as to the degree of achievement of the forest coverage target, it can be said that this project has improved forest coverage in the project area to a certain extent.

Table 10: Forest Coverage

Category	2011		2016		Difference (ha)	Growth Rate (%)
	Area (ha)	Percentage (%)	Area (ha)	Percentage (%)		
High dense (>80%)	148	0.15	2,353	2.33	2,205	1,490
High dense (70-80%)	1,216	1.20	6,050	5.98	4,834	398
Medium dense (50-70%)	8,193	8.10	14,220	14.06	6,027	74
Medium dense (40-50%)	6,051	5.98	15,677	15.50	9,626	159
Open Forest (20-40%)	23,803	23.53	19,234	19.01	-4,569	-19
Open Forest (10-20%)	23,284	23.02	20,761	20.52	-2,523	-11
Scrub (<10%)	34,308	33.91	19,243	19.02	-15,065	-44
Agriculture	3,588	3.55	3,303	3.27	-285	-8
River/Water body	568	0.56	318	0.31	-250	-44
Total	101,159	100.00	101,159	100.00		

Source: Documents provided by JICA and the response to the questionnaire by EFCCD.

Table 11: Forest Coverage in the Five Northern Districts in the Project Target Area

Unit: %

District	Dense forest		Moderately dense forest		Open forest	
	2009	2017	2009	2017	2009	2017
Pilibhit	48.71	68.46	22.64	12.50	28.65	19.04
Kheri	30.75	63.19	36.47	12.40	32.78	24.41
Bahraich	34.20	43.72	37.15	28.42	28.66	27.87
Shravasti		53.33		29.82		16.84
Balrampur	42.53	53.24	35.54	29.39	21.93	17.37
Entire Uttar Pradesh State	11.34	17.83	31.82	27.72	56.84	54.45

Source: India State of Forest Report 2009, India State of Forest Report 2019

The actual production value of forest products was 140,068,949 rupees per year, which was below the target value (achievement rate: 41.6%). This project did not involve large-scale harvesting forest products. However, forest products such as bamboo, tendu (leaves used for

cigarette wrapping paper), and mafua (seed oil is used as a raw material for medical and daily necessities) are harvested and processed for use. The sales revenue of forest products is returned to JFMC and EDC through a benefit sharing[11] scheme.

The rate of increase in income per beneficiary household was 14.5% in the JFMC target area and 28.8% in the EDC target area, which sufficiently achieves the target values (achievement rate: 184% and 365%). The actual number of people who were employed was 15,900,000 man-days, almost reaching the target value (achievement rate 80%). The actual number of trainees was 31,009, achieving the target value (achievement rate: 100%). However, the training for JFMC, EDC, and SHG conducted during the project has not been continued by the executing agency since the project completion.

3.3.1.2 Qualitative Effects (Other Effects)

In this ex-post evaluation, the qualitative effects related to effectiveness were classified into "water and soil conservation," "biodiversity conservation," and "increased income of residents."[12] In order to confirm these qualitative effects, six[13] (four forest divisions, two wildlife divisions) out of the 20 divisions (15 forest divisions, five wildlife divisions) targeted for the project were selected. Three villages were chosen from each forest division, and interviews were conducted with representatives or the group leaders of JFMCs, EDCs, and SHGs of each village, based on a semi-structured questionnaire. The interviewed village organizations were 12 JFMCs, six EDCs, and 18 SHGs. The results of the end-term impact assessment of this project were also included in the analysis.

(1) Water and Soil Conservation

In interviews with 12 JFMC groups (four forest divisions), 100% of the respondents recognized that there had been some improvement in forest regeneration (Figure 2). Regarding water and soil conservation, 100% of the respondents recognized some improvement (Figure

[11] When forest products are sold through a forestry association (an organization of EFDDC), JFMCs, EDCs, and other groups receive a predetermined percentage of profit after deducting the costs borne by the EFCCD.

[12] The appraisal report of this project stated "improvement of natural environment (forest restoration, water and soil conservation, biodiversity conservation), improvement of the livelihood of residents (diversification of livelihood means, improvement of the living environment), improvement of women's social and economic capacities" as the qualitative effects related to effectiveness and impact. However, the logic behind how outcomes and impacts were determined from the four main outputs of this project (sustainable forest management, wildlife conservation management, supporting activities, regional development/livelihood improvement activities) needed to be reconfirmed. As a result, in this ex-post evaluation, "water and soil conservation," "biodiversity conservation," and "increased income of residents" were reorganized as qualitative effects related to effectiveness, and "improvement of natural environment," "improvement of women's social and economic capability/status," and "poverty reduction" were reorganized as qualitative effects related to impacts, and these qualitative effects regarding effectiveness and impacts were used for analysis.

[13] 1) North Kheri Forest Division (Lakhimpur Kheri Province) (north), 2) South Kheri Forest Division (Lakhimpur Kheri Province) (north), 3) Dudwa Wildlife Sanctuary (Lakhimpur Kheri Province) (north), 4) Hamirpur Forest Division (Hamirpur Province) (southwest), 5) Mirzapur Forest Division (Mirzapur Province) (southeast), 6) Kaimoor Wildlife Sanctuary (Mirzapur Province) (southeast).

3). Specifically, (i) expansion of forest area, (ii) increase in plant types, (iii) increase in wildlife habitat, (iv) increase in green areas in villages, (v) increase in groundwater level, (vi) reduction in soil erosion, etc. were recognized. According to the Range Forest Officer of the Mirzapur Forest Division, the groundwater level of wells has risen in the area. An increase in precipitation was also mentioned in many cases as a specific example, but since various conditions affect changes in weather, the direct relationship with this project is unclear.

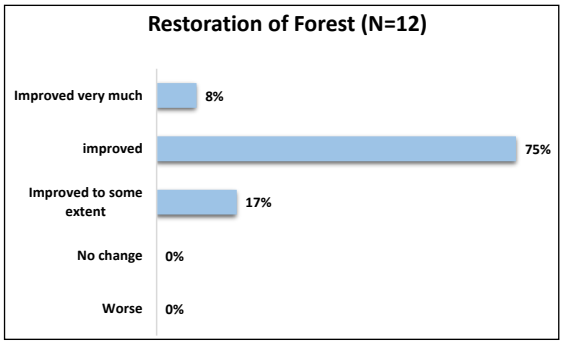


Figure 2: Restoration of Forest

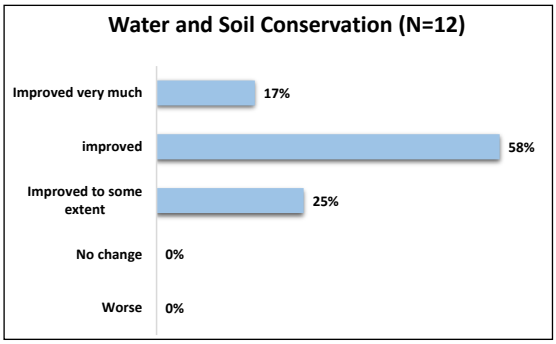


Figure 3: Water and Soil Conservation

(2) Biodiversity Conservation

Improved awareness of biodiversity conservation among residents

In interviews with 12 JFMC groups (four forest divisions) and six EDC groups (two wildlife divisions), 100% of the respondents recognized some improvement in their awareness on biodiversity conservation (Figure. 4). The improved awareness has resulted in positive changes in the behaviors of the villagers, such as (i) reduction of illegal logging by villagers, (ii) changes in the method of collecting firewood for fuel (e.g., they used to break the branches of young trees, but now they pick up dead trees for use), and (iii) when problems arise in the habitat of wildlife, EDC now reports them to EFCCD. The Forest Conservator of the Mirzapur Forest District also acknowledged that villagers' awareness of nature conservation has changed since the implementation of this project. According to the results of a sample survey conducted by a third party during the project, the available amounts of firewood for fuel and feed for livestock had increased by 20% and 60%, respectively, after the implementation of the project in all the target areas. This is also considered to be one of the factors that influenced the change in the method of collecting firewood mentioned above.

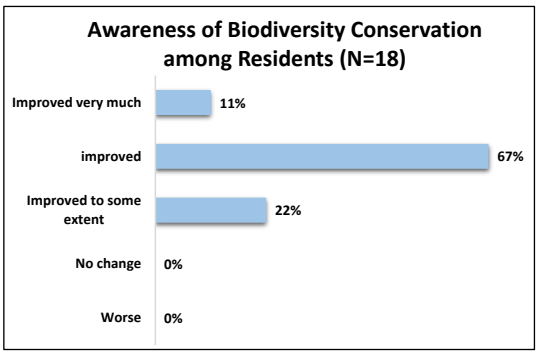


Figure 4: Awareness of Biodiversity Conservation among Residents

Changes in the wildlife population in wildlife forests

In addition, according to the end-term impact assessment conducted at the timing of project completion, the survey results targeting 438 households in the villages where EDCs were established showed an increase in the number of wild animals at the time of project completion (end-term) compared to the beginning of the project (baseline). More than 90% of the respondents in the survey said that the populations of nilgai, bears, deer, foxes, jackals, leopards and wild boars had increased. Meanwhile, as a result of the increase in wildlife, increased damage to crops, especially by nilgais and wild boars, has also been reported. According to a survey by EFCCD, the number of tigers across the state increased from 117 in 2014 to 173 in 2018.

(3) Increased Income of Residents

As the improvement of living environments, including infrastructure and SHGs livelihood improvement activities through EPAs, are closely related to the income improvement of residents, it was included in the analysis.

Improvement in living environment

In this project, based on the micro-plans of the target villages, the following EPAs were conducted: construction of schools, roads, water supply (hand pumps for wells), and solar lamps; purchase of tents; and implementation of health check-ups. In interviews with 12 JFMCs, five EDCs, and 18 SHGs in four forest divisions and two wildlife divisions, 92% (33 groups) of respondents recognized some improvement in their living environment (Figure. 5). For example, in villages that introduced solar lamps, the following improvements were noted: small-scale meetings can be held at night, children can study at night, and security at night has improved. In villages where a community center (also used as JFMC and EDC offices) has been constructed or tents have been purchased, villagers are able to hold various events such as village meetings and weddings (a free wedding facility is especially beneficial for the poor). In villages where farm roads were constructed, the convenience of transportation has improved. The villages where wells were installed now have safer drinking water than they used to have from the river, and the risk of water-borne diseases has been reduced. The villages where toilets were constructed saw improvements in hygiene.

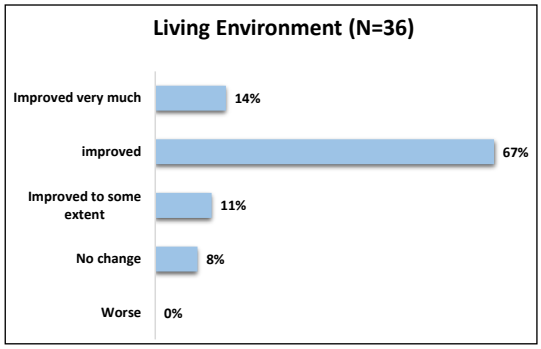


Figure 5: Improvement in Living Environment

Diversification of livelihoods

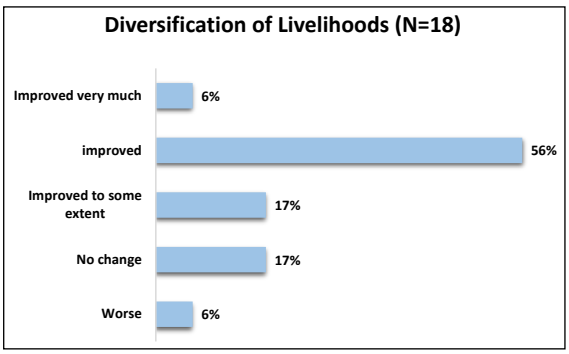


Figure 6: Diversification of Livelihood

According to the end-term impact assessment of this project, at the start of the project, there were only a limited number of households in the target villages that earned a monthly income on a regular basis as government or office workers, and most households were engaged in agriculture or in manual labor. Specifically, 79.9% of the villages targeted by JFMC and 82.9% of the villages targeted by EDC were mainly engaged in agriculture, and the figures for those mainly employed in manual labor were 36.6% in the villages targeted by JFMC and 34.6% in the villages targeted by EDC. Through this project, 2,680 SHGs were established, the capacities of members were strengthened, and 54 types of livelihood improvement activities, such as the processing of forest products, poultry farming, goat breeding, vegetable/flower cultivation, brick manufacturing, and retailing, were supported. As a result, SHG members have gained new means of livelihood in addition to traditional agriculture. At the start of the project, the target households were engaged in one or two jobs, but when the project was completed, the number had increased to three or more. In addition, JFMC and EDC earned 7.3 million rupees during the project implementation period by selling forest products obtained from common forests based on benefit sharing. Access to banks has also increased. The number of migrant workers has dropped sharply since the project was implemented due to the livelihood improvement activities and improved access to SHG loans. As a result, the proportion of households dependent on manual labor decreased from 80-86% (before implementation) to 35-37%.

In addition, in an interview conducted in this ex-post evaluation with 18 SHGs at four forest divisions and two wildlife divisions, 78% (14 groups) of the respondents recognized some improvement in the diversification of livelihood (Figure. 6). There was one SHG (Murtiha Indira Nagar village in the North Keri Forest District) that answered that the diversification of livelihoods had worsened. The reason for this was that they had introduced livestock during the project, but the livestock died due to illness and livestock activities could no longer be carried out.

Increased income of residents

According to the end-term impact assessment of the project, the monthly income per capita of households participating in JFM activities increased by 14.5% from 608.6 rupees (at the start

of the project) to 1,141.4 rupees (at the completion of the project). In addition, the monthly income per capita of households participating in EDC activities increased by 28.8% from 492.7 rupees (at the start of the project) to 1,346.6 rupees (at the completion of the project). Due to the increase in average income, purchasing power has improved, leading to a significant increase in household expenditure per household.

In an interview conducted in the ex-post evaluation with 18 SHGs at four forest divisions and two wildlife divisions, 78% (14 groups) of the respondents recognized some improvement in their income (Figure. 7). This is largely due to the diversification of livelihoods through SHG activities and the generation of new income through these activities. three SHGs (17% of the respondents) answered that there was no change, and one SHG cited the failure of goat breeding due to illness as for the reason, the one SHG (Murtiha Indira Nagar village in the North Kheri Forest District) that answered that their income had worsened, the failure of livestock activities (livestock death due to illness) and the increased burden of microcredit repayments associated with this failure.

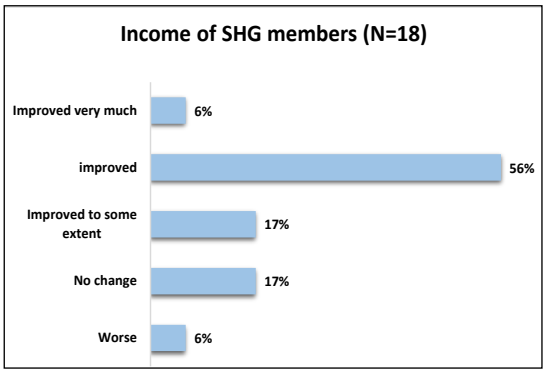


Figure 7: Improvement of SHG members' Income

In addition to the qualitative effects of "water and soil conservation," "biodiversity conservation of" and "increased income of residents" mentioned above, the following qualitative effects were also observed.

Promotion of CDM afforestation

In this project, as one of the supporting activities, research related to CDM afforestation was conducted through consignment to a research institute in India. As a result, 10 small-scale CDM plantation projects targeting 10 forest divisions in Uttar Pradesh were registered by EFCCD, and three of them (Allahabad Forest Division, Obra Forest Division, Jhansi Forest Division) were approved. However, at the time of ex-post evaluation, the projects were not yet in operation.

Changes in environmental awareness of schools and local residents through CFP

In this project, as part of environmental education, a school tree planting program, the Children Forest Program (CPF), was implemented in 1,000 schools in 13 districts in Uttar Pradesh. There was an increase in awareness of environmental conservation among students,

their families, teachers, and local residents who participated in the program. For example, at a school in Varanasi, students continue to plant trees in the schoolyard and take care of trees planted in neighboring areas, while teachers also continue to provide environmental education even after the project completion. Local residents were also influenced by the activities of the students, and showed a change in their environmental awareness. For example, they started to use bicycles more often instead of cars and made efforts to save electricity at home.

Students taking care of schoolyard garden, Jai Maa Kalawati Middle/High School (Varanasi)

3.3.2 Impacts

3.3.2.1 Intended Impacts

(1) Improvement of the Natural Environment

In interviews with 12 JFMCs and six EDCs in four forest divisions and two wildlife divisions, 100% of the respondents recognized some improvement of the natural environment (Figure. 8). Specifically, the cleanliness and hygiene of the villages improved, the quality of air improved, and the number of trees around the villages increased. As mentioned in "3.3.1.2 Qualitative Effects (Other Effects)", certain effects related to "water and soil conservation" and "biodiversity conservation" were confirmed, and therefore it can be concluded that this project has had a certain contribution to the improvement of the natural environment.

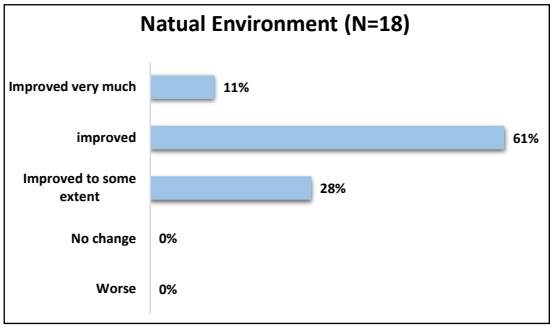


Figure 8: Improvement of Natural Environment

(2) Improvement of the social and economic capacity/status of women

Of the 2,680 SHGs organized in this project, 60% are female-dominated groups. According to the end-term impact assessment of the project, compared to the start of the project, the literacy rate of men increased by 11% and that of women increased by 9% in the villages targeted by JFMC. In the villages targeted by EDC, male literacy rate increased by 6% and that of female increased by 7%. After the project was implemented, the Women Empowerment

Index[14] improved in the targeted villages of JFM activities. Specifically, the quality of life for women improved through the skill acquisition and competence development necessary for various production activities through SHG activities. There were also increases in household income, and savings and consumption, as well as an increase in women's independence and their role and status in the household. According to the end-term impact assessment of the project, it can be concluded that with the success of the project, women have gained financial opportunities and expanded their ability to act in groups, significantly reducing problems such as domestic violence and an underrepresentation of women in mainstream decision-making.

Interviews with 12 JFMCs, six EDCs, and 18 SHGs in four forest divisions and two wildlife divisions conducted in this ex-post evaluation showed that 89% (32 groups) of the respondents recognized some improvement in the social and economic capacities and status of women. (Figure. 9). Specifically, the women were more self-confident and motivated to learn and have more opportunities to participate in economic activities and decision-making. For example, one woman who joined the SHG had never been to a bank before, but after opening an account for the first time and learning to manage funds in a bank account, she now uses the bank on a daily basis. In addition, the women in the villages were mostly low caste, illiterate, and did not have the habit of expressing their opinions in public. However, through participating in JFMCs, EDCs, and SHGs, they were assigned important roles, and thus became more self-confident and able to speak openly in village meetings and to government officials. Furthermore, as women gained means to earn income and economic power through SHGs, they gained a voice in the household and their participation in decision-making increased. In contrast, two JFMCs and one SHG (8% of the respondents) saw no change, and one SHG (Murtiha Indira Nagar village in the North Kheri Forest District) answered that the situation had worsened. Shared factors among these groups include low participation of women in SHGs and issues in sustainability of the organization after project completion.

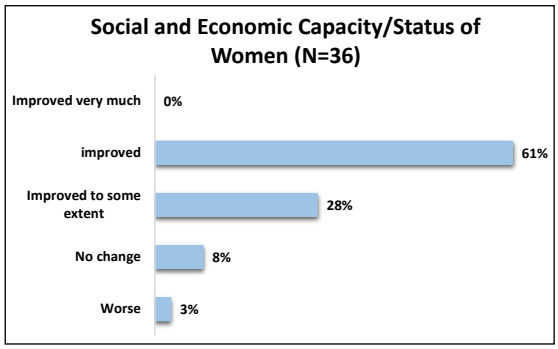


Figure 9: Improvement of Social and Economic Capacity/Status of Women

[14] The Women Empowerment Index is a measure of inequality in male and female opportunities in a country, combining inequality in three areas: 1) Political participation and decision-making, 2) Economic participation and decision-making, and 3) Power over economic resources.

(3) Poverty reduction

As referred to in "3.3.1.2 Qualitative Effects (Other Effects)", this project has had a certain positive effect on improving the income of residents in the targeted area. According to the end-term impact assessment of the project, at the start of the project, about 12.3% of households had problems with food shortages and difficulties in preparing and providing meals for their families for two to four days a year. At the time of project completion, the proportion of such households decreased to 8.4%.

In the interviews conducted in this ex-post evaluation with 12 JFMCs, six EDCs, and 18 SHGs in four forest divisions and two wildlife divisions, 89% (32 groups) of the respondents recognized some improvement in the poverty situation (Figure. 10). Specific examples included increased income, increased employment opportunities, expansion of village electrification, improved school access for children, and changes in awareness of education. In addition to this project, various government poverty assistance measures: such as those based on the Mahatma Gandhi National Rural Employment Guarantee Act[15] (MGNREGA): were undertaken in the targeted areas of the project, and these measures have also contributed to poverty alleviation to a certain degree. Meanwhile, two JFMCs and two SHGs (11% of the respondents) found no change, and three of these groups are the same groups that indicated "no change" or "worsened" regarding the improvement of the social and economic capacity/status of women. No specific reasons were given.

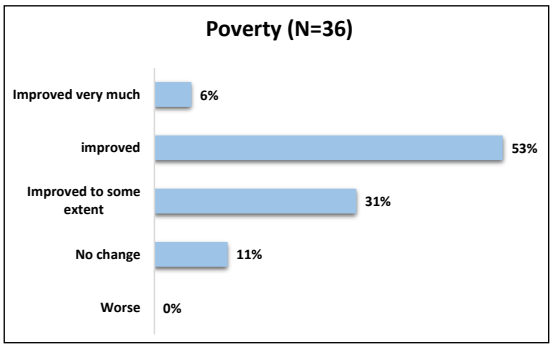


Figure 10: Poverty Reduction

Interviews with Village Organizations

JFMC
Pukhradh village, Mirzapur district

EDC
Badholi village, Mirzapur district

SHG
Siddhi village, Mirzapur district

[15] A poverty alleviation act that guarantees 100 days of employment (unskilled and manual labour) for every rural household. The core business is infrastructure development such as irrigation facilities and road maintenance.

3.3.2.2 Other Positive and Negative Impacts

(1) Impacts on the natural environment

In the *Japan Bank for International Cooperation Guidelines for Confirmation of Environmental and Social Consideration* (2002), this project was judged to have no significant environmental impact in light of sectoral, project or regional characteristics, and thus falls under category B. Preparation of an Environmental Impact Assessment (EIA) report and the acquisition of environmental clearance related to the project were not obligatory under the domestic law of India. This project focuses on afforestation and regional development/livelihood improvement activities, and although it included the construction of office facilities for the executing agency and the construction of small-scale infrastructure such as farm roads, it did not involve the construction of large-scale infrastructure that would place a heavy burden on the environment. According to EFCCD, it did not observe any negative impacts on the natural environment through this project. Therefore, no negative impact on the natural environment due to the project was observed.

(2) Resettlement and land acquisition

This project was carried out in a national forest, and therefore the resettlement of residents and land acquisition were not expected at the time of appraisal. In the ex-post evaluation, it was confirmed that the resettlement of residents and land acquisition by this project did not occur.

Summarizing the above, it is concluded that the operation and effect indicators have been achieved or mostly achieved, except for two out of the ten indicators (survival rate and production of forest products). Qualitative effects such as water and soil conservation, biodiversity conservation, improvement of residents' income, promotion of CDM tree planting projects, and improvement of environmental awareness among schools and local residents through CFP were also recognized. In addition, this project has made a certain contribution to the improvement of women's social and economic capacity/status in the target villages, such as improvements in the literacy rate and self-confidence of women, and increased opportunities for women to participate in financial activities and decision-making. Furthermore, it was confirmed that this project contributed to the reduction of poverty of residents by creating jobs, diversifying livelihoods, and increasing income. However, it can be said the external factors such as the poverty alleviation measures of the Indian government also contributed to poverty reduction. No negative impact on the natural environment was observed, and resettlement of residents and land acquisition did not occur through this project.

As mentioned above, this project has mostly achieved its objectives. Therefore, effectiveness and impacts of the project are high.

3.4 Sustainability (Rating: ②)

3.4.1 Institutional/Organizational Aspects of Operation and Maintenance

[EFCCD]

The operation and maintenance agency of this project is the Environment, Forest and Climate Change Department (EFCCD), Uttar Pradesh State. Forest conservation and management, wildlife conservation and management, supervision, and support of village organizations such as JFMC and EDC in 15 forest divisions and five wildlife divisions targeted by this project are led by the staff in charge at each level, based on the jurisdiction of each forest administration level (Table 12).

Table 12: Roles and Responsibilities at Each Forest Administrative Level

Administrative Level	Roles and responsibilities	Supervisors in charge
State	Giving directions and supervising the entire state	Principal Chief Conservator of Forest (PCCF) and Head of Department Additional Principal Chief Conservator of Forest (APCCF)
Zone	Supervision of circle and region	Chief Conservator of Forest
Circle / Region	Supervision of multiple forests and wildlife divisions	Conservator of Forest
Division	Overall management of each forest and wildlife division	Divisional Forest Officer
Range	Management of forest and wildlife division at the range level of responsibility Supervision and support of JFMC, EDC	Range Forest Officer
Beat	Management of forest and wildlife division at the beat level of responsibility Supervision and support of JFMC, EDC	Forester, Forest Guard (cum Secretary of JFMC、EDC)

Source: Documents provided by EFCCD
Note 1: Division is an administrative unit that may or may not cover an area that spans multiple districts.
Note 2: Range is a unit of area into which each forest division and wildlife division is divided.
Note 3: Beat is an area that covers multiple villages within a range.
Note 4: Uttar Pradesh has 9 zones, 14 circles, 4 regions, and 77 divisions.

A Divisional Forest Officer is assigned to each forest division and wildlife division in the state, under which a Range Forest Officer is positioned to manage each range (a unit of forest area divided into several sections). In addition, a Forester and a Forest Guard are assigned each beat (a group of multiple villages). It is the Foresters who support resident organizations such as JFMC and EDC, and they also serve as the secretaries (steering committee members) of JFMC and EDC in the villages under their jurisdiction.

According to EFCCD, staff in the department are on average in their 50s, half of the posts of the Divisional Forest Officer remain vacant, and there is a constant shortage of management staff. In addition, although efforts are being made to hire Range Forest Officers, a lack of candidates and budgetary constraints are the main concerns. Furthermore, the number of Foresters is also insufficient.

[Village Organization]

The main role of JFMC is to work with EFCCD to protect forests from illegal logging and wildfires, to plant trees and to manage non-timber forest products such as livestock feed and fruits. In addition, it supervises and supports the organizational and financial management of SHGs and also provides small loans to SHGs. A JFMC Steering Committee consists of about 10 to 15 members, including the chairman, vice chairman, and secretary, who are elected by residents. Women are required to participate in the steering committee. The secretary is also a Forester of EFCCD, which has jurisdiction over the target villages. The functions, authority, scope of work, operation methods, etc. of JFMC are stipulated in the JFM guidelines.

The main role of EDC is to manage national parks and wildlife sanctuaries, and conserve biodiversity in cooperation with EFCCD. In addition, it supervises and supports the organizational and financial management of SHGs and also provides small loans to SHGs. The EDC organization, like JFMC, operates under a steering committee elected by residents based on the EDC guidelines.

SHG are resident groups consisting of about 10 to 20 members that carry out various livelihood improvement activities.

Regarding the interviews with 12 JFMCs, six EDCs, and 18 SHGs conducted in this ex-post evaluation, although a simple comparison cannot be made due to the different number of samples, when comparing self-evaluation results regarding the institutional and organizational aspects of operation and maintenance, 50% of JFMCs and EDCs responded that they were good, while only about 20% of SHGs responded positively (Table 13). JFMCs, which responded to the interview, have continued its activities, such as the patrols of forest divisions and common forests, and repairs of damaged boundary pillars and stone walls. EDC activities such as patrols of national parks and wildlife sanctuaries are also ongoing. Regarding SHGs, some groups are continuing their activities at the time of ex-post evaluation, while others have not been active since the project completion. A common feature among the JFMCs, EDCs, and SHGs is that many groups have not held regular meetings (annual assemblies, monthly meetings, etc.) with official records, which were required by the institution since the project completion; however, some groups have informal meetings between members. After project completion, some found issues in organizational management and accounting without the involvement of the Forester, who supported the organizational and financial management as a secretary. According to EFCCD, the 800 JFMCs and 140 EDCs established in this project remain active at the time of ex-post

Table 13: Self-Evaluation on Institutional / Organizational Aspects of Operation and Maintenance by Village Organizations

	Good	Limited	Bad
JFMC (N=12)	58%	25%	17%
EDC (N=6)	50%	50%	0%
SHG (N=18)	22%	56%	22%

Note: "Good" includes "Very good," and "Bad" includes "Very bad."

evaluation. On the other hand, although most of the 2,680 SHGs are still active, some SHGs have suspended livelihood improvement activities.

From the above, some issues can be observed in the institutional/organizational aspects of the operation and maintenance system.

3.4.2 Technical Aspects of Operation and Maintenance

[EFCCD]

EFCCD has experience in forest resource development, social forestry projects, joint forest management projects, etc. with the support of this project and the World Bank. In addition to their original role of protecting and managing forests and wildlife, it has many other achievements in joint forest management. EFCCD has a Forest Training Institute in Kanpur, where it provides education and training on the basics and expertise of forest conservation management including joint forest management and wildlife conservation management for foresters and forest guards. According to EFCCD, Range Forest Officers visit villages on a regular basis, attend JFMC and EDC annual assemblies, provide technical assistance, and coordinate the equitable distribution of benefits from forest product sales (benefit sharing) among members.

[Village Organization]

After the completion of the project, JFMC's daily work mainly consists of patrolling the forest areas under joint forest management and common forests of the villages and repairing damaged boundary pillars and stone walls. However, due to the budgetary constraints of EFCCD, no new trees have been planted. These current activities do not require advanced technology. After the project completion, EDC's daily work mainly includes patrolling the wildlife conservation forest areas, watch towers, check posts, drinking fountains, and guiding ecotourism. These activities also do not require advanced technology.

Regarding the interviews with 12 JFMCs, six EDCs, and 18 SHGs conducted in this ex-post evaluation, although a simple comparison cannot be made due to the different number of samples, when comparing self-evaluation results regarding the technical aspects of operation and maintenance, 50% of JFMC and EDC answered that they were good, while only 30% of SHG answered positively (Table 14). What is common to both JFMC and EDC is that it is difficult for the members to keep records of regular meetings and to manage accounts without the help of a secretary (who also

Table 14: Self-Evaluation on Technical Aspects of Operation and Maintenance by Village Organizations

	Good	Limited	Bad
JFMC (N=12)	50%	17%	33%
EDC (N=6)	50%	33%	17%
SHG (N=18)	33%	50%	17%

Note: “Good” includes “Very good,” and “Bad” includes “Very bad.”

serves as a Forester). In addition, JFCMs and EDCs are supposed to provide technical support to SHGs for operation and accounting management, but as there are few personnel who have such ability in JFMCs and EDCs, sufficient support to the SHGs in terms of organizational management has not been provided since the project completion. Meanwhile, some SHGs are highly motivated and have steadily continued and expanded their livelihood improvement activities even after the project completion. Among the SHGs interviewed, one group marketed themselves and started producing flowers to sell in front of a temple gate. On the other hand, some groups have stopped the livestock activities that they started at the beginning of the project due to the death of livestock from disease. However, among the SHGs interviewed, including those that have suspended activities, many voiced their willingness to expand their existing livelihood improvement activities and to take on new activities, and thus there is a strong need to conduct training for that purpose.

As seen above, some issues can be observed in the technical aspects of the operation and maintenance system.

3.4.3 Financial Aspects of Operation and Maintenance

[EFCCD]

The budget and execution amounts of EFCCD for the past three years are unknown due to difficulties in obtaining the information from the EFCCD. At the time of ex-post evaluation, the budget allocation from the state government to support new tree planting and community organization activities was limited. However, in addition to the budget allocation from the state, the EFCCD also has its own financial resources such as forest products and seedling sales, fines, and sales from ecotourism. These financial resources are also used as part of the funds for operation and maintenance activities.

Table 15: EFCCD's Own Financial Resource

Unit: 1,000 rupees

Item	2014/15	2015/16	2016/17
Revenue	4129,225	6293,995	2592,616
Expenditure	3252,200	3607,600	7312,700

Source: Documents provided by EFCCD

[Village Organization]

JFMC's financial resources include profits from the sale of forest products and fines for illegal forest activities, and there is no financial support such as subsidies from EFCCD, with the exception of wages for planting trees. Activities are usually volunteer- based. As an incentive, the use of forest products and non-forest products (fruit trees, feed for livestock, and dead trees for fuel) obtained from forests and the common forests of villages is permitted.

EDC's financial resources partially come from wildlife sanctuary admission fees and ecotourism guide fees, but there is no financial support such as subsidies from EFCCD. Most activities are usually volunteer-based. The financial resources of SHG are the income from sales of the products from livelihood improvement activities.

Regarding the interviews with 12 JFMCs, six EDCs, and 18 SHGs conducted in this ex-post evaluation, although a simple comparison cannot be made due to the different number of samples, when comparing self-evaluation results regarding the financial aspects of operation and maintenance, 80% of EDCs answered that they were good, while only 30-40% of JFMCs and SHGs answered positively (Table 16). Many of the EDCs interviewed have pooled the collected loans from SHGs, and because loan management has been relatively good, 80% of the groups consider their financial capacity as good. As for JFMCs, activity funds were provided from the project budget and wages for tree planting activities were paid during the project implementation. However, since the project completion, activity costs have not been subsidized by EFCCD. The types and quantities of forest and non-forest products that can be harvested vary from region to region, and the revenue that can be obtained from benefit sharing is also limited. In the SHGs, there is a system where members make monthly reserves and use these funds to fund livelihood improvement activities and make small loans to members, but six SHGs interviewed in the Mirzapur district had stopped monthly reserves after the project completion. On the other hand, some SHGs which continue their activities are making stable profits by selling products. Some SHGs continue to repay small loans from JFMCs and EDCs.

Table 16: Self-Evaluation on Financial Aspects of Operation and Maintenance by Village Organizations

	Good	Limited	Bad
JFMC (N=12)	33%	58%	8%
EDC (N=6)	83%	0%	17%
SHG (N=18)	39%	50%	11%

Note: "Good" includes "Very good," and "Bad" includes "Very bad."

As seen above, some issues can be observed in the financial aspects of the operation and maintenance system.

3.4.4 Status of Operation and Maintenance

No major problems were observed in the operation and maintenance of the facilities such as forest divisions, wildlife divisions, the office buildings of executing agencies, communication/ surveying instruments, vehicles, and other facilities developed in this project.

Based on the above, some minor problems have been observed in terms of the institutional/organizational aspect, technical aspect, and financial aspect. Therefore, sustainability of the project effects is fair.

4. Conclusion, Lessons Learned and Recommendations

4.1 Conclusion

The objective of the project was to restore degraded forests, to augment forest resources and to improve the livelihoods of, and empower, local people dependent on forests by promoting sustainable forest management, including the Joint Forest Management (JFM) plantation and community/tribal development, in the state of Uttar Pradesh in north India, thereby promoting regional environmental improvement and poverty alleviation. The relevance of the objective is high, as it was consistent with India's development policy and development needs, as well as with Japan's ODA policy at the time of appraisal and ex-post evaluation. Although the project cost was within the plan, the project period exceeded the plan, and therefore the efficiency is fair. The reason for extension of the project period was the additional activities regarding capacity strengthening of the executing agency and village organizations from the viewpoints of expansion of project effects and enhancement of sustainability. All but two of the 10 operation and effect indicators achieved or almost achieved their target values. Through the sustainable forest management, regional development/livelihood improvement activities, supporting activities, etc. implemented by this project, forest restoration in the target area, biodiversity conservation awareness among residents, and an increase in the wildlife population were recognized. Therefore, it was confirmed that the project had a certain effect on water and soil conservation and biodiversity conservation. In addition, improvements in the living environment and diversification of the means of livelihood led to increases in the income of local residents. Furthermore, this project has made a certain contribution to the improvement of women's social and economic capacities in the target villages by improving literacy rate and self-confidence of women and increasing their opportunities to participate in financial activities and decision making as well as poverty reduction by increasing their income. However, there were factors affecting poverty reduction other than this project, such as poverty alleviation measures by the Government of India. No negative impact on the natural environment was observed, and resettlement of residents and land acquisition did not occur through the project. Therefore, the effectiveness and impacts are high. After the completion of the project, the operation and maintenance system was taken over by the executing agency, the Uttar Pradesh Environment, Forest and Climate Change Department (EFCCD), and village organizations established in this project, such as the Joint Forest Management Committees (JFMCs), Eco-Development Committees (EDCs) and Self Help Groups (SHGs). EFCCD faces issues such as labor and budget shortages. Village organizations also have some issues with the organizational, technical, and financial aspects of each organization. Therefore, the sustainability is evaluated to be fair.

In light of the above, the project is evaluated to be satisfactory.

4.2 Recommendations

4.2.1 Recommendations to the Executing Agency

(1) Sharing Project Information and Knowledge within EFCCD

In this project, Foresters of EFCCD also serve as secretaries of JFMCs and EDCs to support organizational and accounting management as executive members of the Steering Committee, while also playing a key role in strengthening the capacity and promoting the activities of each organization, such as communication and coordination between EFCCD and JFMCs/EDCs. However, since the completion of this project, the involvement of Foresters in JFMCs and EDCs has declined, which has had a negative impact on the activities of JFMCs and EDCs. This is due to the constant shortage of personnel and the budgetary constraints of EFCCD, which makes it difficult to allocate sufficient personnel to support JFMCs and EDCs. In addition, Foresters rotate every few years, making it difficult to build close relationships with each village in a short period of time. The role of Foresters in the operation and management of JFMCs and EDCs is important for the effective continuation of community-based forest management, and the active involvement of EFCCD is required to continue.

It is also important that JFMCs and EDCs, which are in the position to supervise and support SHGs, play a role in continuing the activities of SHGs under their umbrella. The livelihood improvement activities of SHGs in villages where the organization is properly managed in accordance with JFMC and EDC rules tend to be relatively successful. This suggests that JFMC/EDC's support for SHGs is more likely to reach in villages where the level of ownership of JFMC and EDC executive members is high and the organization is operated in a participatory manner.

For these reasons, it is recommended that EFCCD shares information such as the purpose, content and approach of the project, with its staff, so that they can reaffirm and deepen their understanding of the importance of the role of Foresters in JFMCs and EDCs. Furthermore, it is also recommended that education and support for JFMCs and ECDs be continued, so that JFMCs and EDCs can deepen understanding of JFMC and EDC rules and manage the organization in accordance with those rules.

(2) Support to Ensure the Sustainability of SHGs by Utilizing Existing Government Poverty Alleviation Support Schemes

In this project, 2,680 SHGs were organized, their capacities were strengthened, and various livelihood improvement activities were carried out in the target villages. As a result, diversification of livelihoods and improvement of incomes were observed, and certain contributions were also made to improving women's social and economic capacities and to reducing poverty. It was expected that the technical support for SHGs from partner NGOs hired in the project would end when the project was completed, and that after project completion,

EFCCD would play a central role in continuing support for SHGs. However, due to personnel and budget constraints, EFCCD has no choice but to concentrate on its original duties of sustainable forest management and wildlife conservation management. In addition, it lacks the technical know-how needed to support the livelihood improvement activities of SHGs, and therefore it has not been able to provide sufficient technical support since the project completion. However, the members of SHGs, including those that are currently inactive, are highly motivated to learn new skills and knowledge related to livelihood improvement activities (product development, production methods, sales and marketing methods, etc.) and organizational management, including accounting management, and there is a great demand for support for these activities.

Therefore, it is recommended that EFCCD utilize existing government support schemes (e.g., the National Rural Livelihood Mission[16]) aimed at supporting and improving the capacity of SHGs, as well as cooperating and coordinating with related ministries and agencies so that SHGs can continue and further develop livelihood improvement activities.

4.2.2 Recommendations to JICA

None

4.3 Lessons Learned

(1) Creating a Mechanism to Ensure the Continuation of Self-Help Group (SHG) Activities after Project Completion

As the original duty of EFCCD was sustainable forest management, it does not have the sufficient technical know-how to support the livelihood improvement activities of SHGs, and due to personnel and budgetary constraints, it has not been able to provide support to SHGs since the project completion. In order for SHGs to continue their activities after project completion and to sustain the effects and impacts of the project, JICA should have fully discussed and coordinated with EFCCD, state government agencies, and NGOs during the implementation of the project on the support mechanism for the SHGs after the completion of the project, including the utilization of existing government support schemes as mentioned in the above “4.2.1 Recommendations to the Executing Agency” (2).

(2) Internalization of Monitoring and Evaluation Activities of the Target Project

This project conducted regular monitoring/evaluation (monthly, quarterly, and yearly), baseline surveys, mid-term/final project impact assessments, etc. as part of the project components. These

[16] NRLM (National Rural Livelihood Mission): A poverty alleviation program implemented by the Ministry of Rural Development of the Government of India, that promotes self-employment and income-generating activities through organizing SHGs, training and capacity building, the provision of subsidized loans, and technical assistance.

results were very helpful in conducting this ex-post evaluation. In order to understand not only the effectiveness and impacts on the natural environment, such as “water and soil conversation”, “biodiversity conservation”, and “improvement of the natural environment”, but also the effectiveness and impacts on the socio-economic aspects, such as “increased income”, “improvement of women's social and economic capacity/status”, and “poverty reduction”, it is important to conduct the end-term impact assessment based on the baseline survey and to analyze the effectiveness and impacts of the project comprehensively. In this project, such monitoring and evaluation activities were internalized as part of the project scope, and such project design should be recognized as good practice and used as a reference for other similar projects.

End

Comparison of the Original and Actual Scope of the Project

Item	Plan	Actual
1. Project Outputs (1) Forest Conservation and Management		
a) Department Forest Area Development and Management	• Total intervention area for forest development (20,200 ha) • Fixing forest boundary pillars (1,120 km) • Fire line establishment (2,225 km), Fire fighting equipment (93 sets) • Drainage line treatment (16,500 ha) • Renovation of permanent nursery (118 units), Establishment of clonal nursery (2 units) • Establishment of NWFP Research Centre (2 units)	• As planned • As planned • As planned • 17,515 ha • As planned • As planned
b) JFM Forest Area Development and Management	• Total intervention area for forest development (60,300 ha) • Fire line establishment (6,635 km) • Drainage line treatment (28,600 ha) • JFM nursery establishment (289 units)	• 60,495ha (mostly as planned) • 4,524 km • 9,833 ha • 118 units
c) Wildlife Conservation and Management	• Soil and water conservation work for wildlife divisions ➢ National park (1 location) ➢ Wildlife sanctuary (6 locations) ➢ Check dams (8 units) ➢ Gully plugs (132 units) ➢ Fixing forest boundary pillars (325 km) ➢ Check posts, watch towers, and watering place • EDC activities • Ecotourism (4 sites) • Community reserve establishment (2 locations) • Fuel wood/fodder community plantation (700 ha)	 ➢ As planned ➢ As planned ➢ 13 units ➢ 114 units ➢ 197 km ➢ As planned • As planned • As planned • As planned • 268 ha
(2) Community Development and Livelihood Security Enhancement a) Procurement of external organizations	• 20 NGOs and supporting organizations • 96 partner NGOs	• As planned • 56 partner NGOs
b) Community organizing	• Establishment of JFMC (140 groups) • Establishment of EDC (800 groups) • Support for 940 village animators	• All as planned
c) Micro planning	• 940	• As planned
d) SHG organizing	• Establishment of SHG (2,680 groups) • Support for establishment of 20 SHG consortia	• All as planned
e) Income-generating activities (IGAs)	• 50 activities • Support for 940 micro businesses and SHGs in the target village	• 54 activities (mostly as planned) • As planned

Item	Plan	Actual
f) Entry point activities (EPAs)	• Small infrastructure development such as renovation of school building, construction of community hall, link road, water supply, etc. • Provision of health services, micro credit, etc.	• All as planned
(3) Supporting Activities a) Preparation works	• Creation of autonomous PMU, 20 Division Management Units (DMUs) and 101 Field Management Units (FMUs) • Soil survey (30,500 ha) • Village selection • Preparation of guidelines, manuals, and handbooks.	• 106 FMUs (mostly as planned) • As planned • As planned • As planned
b) Strengthening of project implementation bodies	• Training of staff members of PMU/DMUs/ FMUs • Improvement of infrastructure: PMU/ DMU/FMU office building, DMU/FMU staff quarters, Forest Training Institute (FTI) building • Augmentation of office facilities including communication equipment and planimeter • Procurement of vehicles	• As planned • As planned except construction of PMU office and FIT • As planned • As planned
c) Capacity building of NGOs/JFMCs/EDCs/ SHGs	• Training for members of partner NGOs, JFMCs/EDCs/SHGs	• As planned
d) Monitoring and Evaluation	• Project monitoring: periodic monitoring and evaluation (monthly, quarterly, annually) • Baseline survey, mid-term evaluation, end-term impact assessment • Establishment of GIS and Management Information System (MIS)	• All as planned
e) Communication and publication	• Publications (newsletter, leaflets, annual report, etc.) • Public relations and public awareness regarding environmental conservation inside and outside the project target area using publications. • Implementation of Children's forest program (CFP) for 650 schools in six major cities (e.g., Noida, Agra, Lucknow) as part of environmental education and school tree planting (CFP is implemented in collaboration with Japanese NGOs in some areas.)	• All as planned • CFP for 1,000 schools in 13 districts
f) Phase-Out/Phase-In works	• Issuance of project completion certificate • Preparation of Phase-Out/Phase-In plan of JFMCs, EDCs and SHGs • Integration of PMU, DMUs and Forest Development Agencies (FDAs)	• All as planned

Item	Plan	Actual
g) Survey and research	• Survey and research for forest development and management • Research on biodiversity conservation • Research on A/R-CDM	• All as planned
(4) Consulting Services	• Technical assistance for PMU • Assistance for PMU in tender • Assistance for PMU in financial management, establishment of annual implementation plan, and preparation of reports • Assistance for PMU in review and preparation of JFMC operation manual (Work volume) • International consultants: 100 M/M • Local consultants: 162 M/M • Supporting staff: 642 M/M	• All as planned (Work volume) • International consultants: 92 M/M • Local consultants: 254 M/M • Supporting staff: 535 M/M
2. Project Period	March 2008 – March 2016 (97 months)	March 2008 – December 2017 (118 months)
3. Project Cost Amount Paid in Foreign Currency	972 million yen	610 million yen
Amount Paid in Local Currency	15,426 million yen (5,413 million rupees)	8,559 million yen (4,729 million rupees)
Total	16,398 million yen	9,169 million yen
ODA Loan Portion	13,345 million yen	7,404 million yen
Exchange Rate	1 rupee = 2.85 yen (As of October 2007)	1rupee = 1.81 yen (Average between 2008 and 2017)
4. Final Disbursement	December 2017	