

India

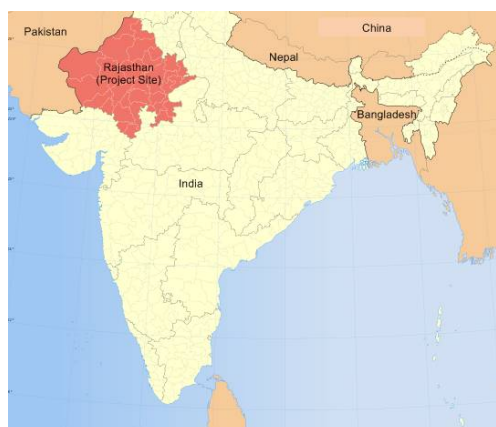
Ex-Post Evaluation of Japanese ODA Loan
“Rajasthan Forestry and Biodiversity Project”

External Evaluator: Misa Oishi,
Kaihatsu Management Consulting, Inc.

0. Summary

The Project was designed to improve the natural environment as well as socio-economic conditions of the target regions in the state of Rajasthan, India, through afforestation and biodiversity conservation with the active participation of communities. Both at the time of project appraisal and at the time of ex-post evaluation, the national government as well as the state government have adopted robust forest policies aiming at one third of geographical area to be under forest cover, and therefore the Project is in line with the development policies. Also, the underprivileged who highly depend on the forest resources are concentrated in the project areas; thus the need for afforestation and biodiversity conservation with participation of communities including the poor households are high. Together with the consistency on the assistance policy to India by Japanese sides, the relevance of the Project is high. Under the Project, the expected effects and positive impacts such as the improvement of the natural environment, soil conservation, mitigation of forest resource exploitation, improvement of livelihoods, etc., were produced and therefore the effectiveness of the Project is also high. On the other hand, as for the efficiency, although the Project was implemented within the planned project cost, the project period was extended beyond the planned project period; thus the efficiency is concluded as fair. As for sustainability, the Forest Department, the state government of Rajasthan, has the appropriate organizational structure, technology and financial sources for operation and maintenance (O&M), and in fact, the actual O&M conditions are observed to be good; thus the sustainability of the project effect is high. In light of the above, this project is evaluated to be highly satisfactory.

1. Project Description



Project Location



Afforestation activities by villagers (2005)

1.1 Background

The forest cover of Rajasthan was only 4.62% of the state’s geographical area at the time of project

appraisal, which is much lower than the national average of 20.64%¹. The causes for deforestation differ from region to region in a large country like India, but generally speaking, it is because forests have been diverted to agricultural lands in order to feed rapidly growing populations, and also it is because trees have been felled for commercial use and forest areas have been over-grazed as well. In addition, it is widely recognized that deforestation is one of the major threats to biodiversity. The Project was implemented in total 18 districts, 16 districts in the Aravalli Hills area and two districts in the Indira Gandhi Nahar Project (IGNP) area². Aravalli Hills area is covered by a range of mountains in western India running approximately 800 km in a north eastern direction across several states, and deforestation and loss of biodiversity are considered as serious environmental issues in the area. On the other hand, rapid desertification in the IGNP area threatened livelihoods by exerting negative effects on agricultural lands in the area.

The standard of living of people in Rajasthan is quite low, and approximately 40% of state residents live under the poverty line at the time of project appraisal. Also it is known that most people in this category belong to either the scheduled castes (SCs) or the scheduled tribes (STs), and live concentrated in the Aravalli Hills area. In the area, the poor households highly depend on the forest resources to sustain their livelihoods, and loss of forest resources threatens their very livelihoods. Under such circumstances, afforestation and biodiversity conservation with participation of communities including the poor households are urgently needed.

1.2 Project Outline

The objective of this project is to prevent desertification and restore ecological status of Aravalli Hills, protect infrastructure like canals and roads, improve biodiversity, augment the availability of forest products like fuel woods and fodder, generate employment opportunities by participatory afforestation and soil/ moisture conservation activities³ in the target 18 districts, 16 districts in the Aravalli Hills area and two districts in IGNP area, thereby contributing to improve the socio-economic conditions in the region.

Loan Approved Amount/ Disbursed Amount	9,054 million yen / 8,625 million yen
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¹ The data source is *State forestry Report 2003* published by Forestry Survey of India, a research institute affiliated to Ministry of Environment and Forest.

² They are Ajimer, Alwar, Banswara, Bhilwara, Bundi, Chittorgarh, Dausa, Dungaarpur, Jaipur, Pali, Rajsamand, Sawai Madhopur, Sikar, Sirohi, Tonk and Udaipur in Aravalli Hills area, and Bikaner and Jaisalmer in IGNP area. Also, see Figure 1.

³ Under the Project, check dams and anicuts were constructed. A check dam is an obstruction which is usually built in concrete across a water channel or stream at intervals to restore some water and silt. An anicut is also a dam-like structure or mole, which is built across a water stream to restore water and silt. An important function of the anicuts constructed under the Project is to provide watering holes to animals. Usually, both check dams and anicuts increase the moisture retaining capacity of the soil around them, and therefore they are considered to be effective soil and moisture conservation measures.

Exchange of Notes Date/ Loan Agreement Signing Date	March 2003 / March 2003
Terms and Conditions	Interest Rate: 0.75% Repayment Period: 40 years (Grace Period: 10 years) Conditions for Procurement: General Untied
Borrower / Executing Agency(ies)	President of India/ Forest Department, the State Government of Rajasthan
Final Disbursement Date	August 2010
Main Contractor (Over 1 billion yen)	None
Main Consultant (Over 100 million yen)	None
Feasibility Studies, etc.	Feasibility Study in 1997 and Feasibility Study in 2001, Forest Department, the State Government of Rajasthan
Related Projects (if any)	<ul style="list-style-type: none"> • Afforestation and Pasture development Project along Indira Gandhi Canal Area (ODA Loan, 1991) • Afforestation Project in Aravalli Hills (ODA Loan, 1992) • Rajasthan Forestry Development Project (ODA Loan, 1995)

evaluation study. These three districts were selected by considering accessibility and also by aiming to see as many areas with different climate and vegetation and with different kinds of project activities as possible. In addition, the results of both the baseline survey and the post-project survey⁵ were referred to examine the effects of the Project. Sample districts and villages of all these surveys, i.e., the beneficiary survey, the baseline survey and the post-project survey, were not selected randomly but selected to examine whether the Project produced the expected effects and also to highlight the mechanism to produce such effects. Therefore, the sample districts and villages do not represent the entire villages of 18 districts with the project activities, and accordingly, the survey results do not necessarily represent the Project as a whole.

3. Results of the Evaluation (Overall Rating: A⁶)

3.1 Relevance (Rating: ③⁷)

3.1.1 Relevance with the Development Plan of India

At the time of project appraisal, sustainable development embracing both environmental conservation and socio-economic development is considered as one of the prime national objectives in the Tenth Five Year Plan 2002 - 2007. In line with this primacy, the government aims to expand forest coverage from 19% in 2007 to 33% in 2012 through afforestation of 7.5 million ha for five years (1.5 million ha per year). Also, at the time of ex-post evaluation, the Eleventh Five Year Plan 2007 – 2011 which carries “Inclusive Growth” as a main theme places a priority on securing environmental sustainability as it is equally important as economic growth, poverty alleviation, education, health, etc. As to the forestry sector, a target to increase the forest cover in the country to 33 percent of the land area as mandated in National Forest Policy (NFP) 1988 is set in the Plan. Also, in case of Rajasthan, Rajasthan State Forest Policy 2010 was legislated based on NFP 1988, and the state policy specified 12 principal objectives such as “Protecting, conserving and developing natural forests of Rajasthan with active participation of local community for ecological security of human society.”

As for biodiversity, National Wildlife Action Plan was first enacted in 1983. In addition, through setting Wildlife Conservation Strategy in 2002, the government has given priorities to wildlife protection and forest conservation, and started the comprehensive programs in this regard. Later, National Wildlife Action Plan enacted in 1983 was amended to New National Wildlife Action Plan

activities were selected based on the discussion with the executing agency.

⁵ The baseline survey was conducted in July 2005 while the post-project survey was conducted in February 2010 in order to examine the project effects by comparing the situations before and after the Project. Both surveys were conducted in the same four villages in each Chitorgarh district, Sawai Madhopur district, Banswara district, Dungarpur district, Udaipur district and Bikaner district, in total 24 villages. The surveys cover a broad range of topics such as land use pattern, agricultural production and cropping pattern, energy consumption, household economy, employment opportunities, etc. Sample villages were selected by considering climate, geological features, vegetation and the project activities based on the discussion with the executing agency.

⁶ A: Highly satisfactory, B: Satisfactory, C: Partially satisfactory, D: Unsatisfactory

⁷ ③: High, ②: Fair, ①: Low

2002 - 2016 in 2002, and both at the time of project appraisal and at the time of ex-post evaluation, the national government as well as the state government adopt biodiversity conservation strategy based on the plan. Likewise, the project purpose is in line with forest and biodiversity policies of India.

3.1.2 Relevance with the Development Needs of India

At the time of project appraisal, the forest cover of Rajasthan was only 4.62% of the state's geographical area which is much lower than the national average of 20.64%. Also it was known that the living standard of people in Rajasthan was quite low, and approximately 40% of state residents live under the poverty line. Most of people in this category belong to either SCs or STs, and live concentrated in the Aravalli Hills area. It is said that the poor households in the area repeatedly resort to tree-felling and over-grazing due to the insufficient cash income and it leads to deforestation.

Even at the time of ex-post evaluation, the forest cover of Rajasthan is only slightly increased to 4.70%, which is still much less than the national average of 21.05%⁸, and fell far short of robust recovery.

In the target 18 districts of the Project, SCs and STs⁹ who live under the poverty line are known to highly depend on the forest resources and produces, and diminution of such resources and produces threatens their livelihoods. Under such circumstances, afforestation and biodiversity conservation with their active participation as well as the sustainable use of such resources and produces are urgently needed. Thus, both at the time of project appraisal and at the time of ex-post evaluation, the necessity to uplift people's livelihood through afforestation and biodiversity conservation with their participation was indeed high.

3.1.3 Relevance with Japan's ODA Policy

At the time of project appraisal, in JICA's Overseas Economic Cooperation Policy of 2002, the emphasis was put on the assistance to alleviate poverty, promote environmental protection, etc. Among them, poverty alleviation was considered as a highly prioritised theme. In addition, Country Assistance Program for India 2006 of Ministry of Foreign Affairs states "Improvement of Poverty and Environmental Issues" as one of the three priority areas of Japan's ODA to India. As to assistance for the forestry sector in particular, with keeping in mind the fact that many of the poor and socially vulnerable are dependent on the forestry sector and therefore the deterioration of forests might have a big impact on their livelihoods, Japan will provide assistance to the forestry sector through a comprehensive approach combining the promotion of community-participation tree planting, assurance of alternative sources of income for residents living in the vicinity, etc. Thus, the Project

⁸ The data source is *State forestry Report 2011* published by Forestry Survey of India.

⁹ While the Aravalli Hills area is known as tribal belt because of the concentration of STs, in Jaipur area and IGNP area, many others who belong to Other Backward Classes (OBCs) in addition to SCs live under the poverty line, too.

which aims to improve the socio-economic situations in the region by conserving forest resources and biodiversity through participatory afforestation and biodiversity activities is consistent with Japan’s ODA Policy.

This project has been highly relevant with India’s development plan, the state’s development needs, as well as Japan’s ODA policy, and therefore its relevance is high.

3.2 Effectiveness¹⁰ (Rating: ③)

3.2.1 Quantitative Effects (Operation and Effect Indicators)

3.2.1.1 Operation Indicators¹¹

Five operation indicators were set in the Project, and overall achievement levels of each indicator are satisfactory as seen in Table 1.

Table1 : Operation indicators

Indicators	Planned	Actual
(i) Increase of supplying capacity of seedlings by the Project ¹² (millions per year)	1.8	4.0
(ii) No. of produced seedlings ¹³ (millions)	74.30	84.14
(iii) Afforestation area (ha)	123,967	Fully achieved
(iv) Afforestation living (plant survival) rate (%)		
Aravalli Hills area	45	More than 80% (for every plantation model ⁽¹⁾)
IGNP area	70	
(v) Activities by local resident organization ⁽²⁾ (No. of organizations established by the Project)	997	1,012

(Source) JICA’s Project Appraisal Document, Project Completion Report

- (1) Refer Table 2 and Table 3 for afforestation activities and plantation models.
- (2) A local resident organization is known as Village Forest Protection and Management Committee (VFPMC) in Rajasthan. VFPMCs are established in villages where afforestation activities are implemented, and at least one member from every household in each village will be a member of VFPMCs.

Both for (i) increase of supplying capacity of seedlings by the Project and (ii) number of produced seedlings, the actual number exceeds that planned. Under the Project, 18 hi-tech nurseries which can

¹⁰ Sub-rating for Effectiveness is to be put with consideration of Impact
¹¹ Both afforestation area and afforestation living (plant survival) rate can be considered as effect indicators, but in this section, both are treated as operation indicators as intended at the time of project appraisal.
¹² The Project aimed to increase the capacity to supply seedlings by constructing 18 new nurseries and rehabilitating 30 existing nurseries. This indicator measures the supply capacity in terms of millions of seedlings per year that was actually increased through the aforementioned interventions.
¹³ This indicator measures the produced seedlings at all the nurseries of FD during the Project, including the nurseries constructed and rehabilitated by the Project.

produce seedlings throughout the year were newly introduced. Also, 38 existing nurseries were renovated while its target was only 30. In addition to the fact that capacity of hi-tech nurseries was more than expected, and more existing nurseries were renovated than planned, the weather conditions which were favourable with enough rainfall contributed to the overachievement of these two operation indicators.

As for (iii) afforestation area, the planned 123,967ha in total were planted both in the Aravalli Hill area and IGNP area¹⁴.

Regarding (iv) afforestation living (plant survival) rate, in both Aravalli Hill area and in IGNP area, plantation model-wise figures of 2009 were calculated by the commissioned studies as seen in Table 2 and Table 3¹⁵. The rates at the time of ex-post evaluation can be considered as the same without any setbacks in growing status after 2009.

Table 2: Plant Survival Rate in Aravalli Hills Area

(Unit: %)

Plantation Model	Survival Rate
Reforestation of Barren Hills	88
Rehabilitation of Degraded Forest (I)	84
Rehabilitation of Degraded Forest (II)	80
Fuel wood plantation on Panchayat land	86

(Source) LNC, Multi-Disciplinary Consultancy Organization, Raipur

Table3: Plant Survival Rate in IGNP Area

(Unit: %)

Plantation Model	Survival Rate
Canal Side Plantation	90
Sand Dune Stabilization	84
Block Plantation	91
Pasture Development	80
Plantation along Water Courses	90

(Source) VIKSAT, Vikram Sarabhai Centre for Development Interaction, Ahmedabad

Also, (v) activities by local resident organizations, which are measured by the number of established Village Forest Protection and Management Committees (VFPMCs), shows that the actual number

¹⁴ Under the farm forestry activities of the Project, 20 million seedlings were sold to private farmers and those farmers were supposed to plant them on their lands. However, information on the actual areas planted by them was not collected by the executing agency and therefore not included in the afforestation area of 123,967 ha.

¹⁵ The afforestation living (plant survival) rate of trees planted under the farm forestry activities were unknown since such information was not collected by the executing agency.

slightly exceeds that planned. The reason why 15 more VPFMCs were established was that those villages who perceive the benefits of the project activities implemented in the neighbouring villages voluntarily requested the executing agency to implement the project activities in their villages, too. By responding to those requests, the actual number exceeds that planned.

3.2.1.1 Effect Indicators

In addition to the five operation indicators mentioned above, one effect indicator, namely, labour employed, was set in the Project at the time of project appraisal. While the planned figure was 39 million man-days, the actual at the time of project completion was 30 million man-days, which are 9 million man-days shorter. Labour employed by SCs/STs was shown in Table 4.

Table 4: Labour Employed by SCs/STs

(Unit: man-days)

		FY2003	FY2004	FY2005	FY2006	FY2007	Total	(%)
Scheduled Castes (SCs)	Male	365,790	767,941	885,302	649,246	361,871	3,030,150	-
	Female	413,598	899,507	992,701	831,522	376,307	3,513,635	-
	Sub-total	779,388	1,667,448	1,878,003	1,480,768	738,178	6,543,785	22
Scheduled Tribes (STs)	Male	1,106,389	2,165,344	2,227,080	1,901,986	1,032,898	8,433,697	-
	Female	815,737	1,597,519	1,790,775	1,467,798	769,630	6,441,459	-
	Sub-total	1,922,126	3,762,863	4,017,855	3,369,784	1,802,528	14,875,156	49
Others	Male	591,913	1,167,188	1,297,771	1,004,552	577,619	4,639,043	-
	Female	502,941	1,087,624	1,260,597	836,185	479,240	4,166,587	-
	Sub-total	1,094,854	2,254,812	2,558,368	1,840,737	1,056,859	8,805,630	29
Total	Male	2,064,092	4,100,473	4,410,153	3,555,784	1,972,388	16,102,890	53
	Female	1,732,276	3,584,650	4,044,073	3,135,505	1,625,177	14,121,681	47
	Sub-total	3,796,368	7,685,123	8,454,226	6,691,289	3,597,565	30,224,571	-

(Source) Forestry Department, the State Government of Rajasthan

According to the executing agency, the necessary inputs for afforestation activities are, roughly speaking, 20% of capital and equipment and 80% of labour, while the same for moisture conservation activities is 40% of capital and equipment and 60% of labour. Based on this rough approximation on inputs, labour requirement for major project activities is able to be estimated, and indeed the necessary labour is mobilized to produce the planned outputs. According to the executing agency, the fact that the actual man-days of labour employed was less than the planned although the planned outputs of major activities were produced may suggest that the planned figure was overestimated at the time of project appraisal. In addition, VPFMCs appropriately carry out *social fencing*, i.e., mutual surveillance among local people to close an area from access from animals and humans to protect its resources, and therefore less Forest Guards and Cattle Guards were required, and this could be another reason. The explanation by the executing agency is considered reasonable; thus it is considered to be highly likely that the planned figure was not achieved due to the overestimation at the time of project appraisal.

3.2.2 Qualitative Effects

At the time of project appraisal, seven qualitative effects, i.e., (i) improvement of natural environment (expansion of forest areas and improvement of biodiversity conservation), (ii) soil conservation, (iii) prevention of soil erosion, (iv) improvement of livelihoods, (v) job creation, (vi) mitigation of forest resource exploitation and (v) raising people's awareness/ ownership, were expected.

The qualitative effects were examined based on the beneficiary survey conducted under this ex-post evaluation, and also by referring to both the baseline survey and the post-project survey, as seen below.

(i) Improvement of natural environment (expansion of forest areas and improvement of biodiversity conservation)

Under the Project, 123,967ha have been afforested and forest areas were indeed expanded. As to improvement of biodiversity, according to the post-project survey, the beneficiary's survey, and the interview to the officers of FD, the villagers and officers confirmed that they saw more rare animals, e.g. Chinkara¹⁶, in forest areas and the protected areas after the Project.

(ii) Soil conservation

(iii) Prevention of soil erosion

In the baseline survey and the post-project survey, organic carbon contents of soils and soil pH were measured and the results imply that the soil conditions were improved as seen in Table 5 and Table 6¹⁷. As for soil erosion, no investigation was carried out; however the positive effects are expected by considering the fact that one of the most effective measures for erosion control is expansion and restoration of plant cover.

¹⁶ Chinkara, commonly known as the Indian gazelle, is an endangered species of gazelle, normally found in India, Pakistan and part of Iran.

¹⁷ Since soil with valuable microbiota requires organic carbons which are mainly supplied through remains of animals and plants, the improvement of organic carbon contents implies improvement of soil conditions. As to soil pH, Table 6 shows the alkalified soil was neutralized. Alkali soil, which is widely observed in the semi-arid areas, has a poor soil structure and a low infiltration capacity, and it is known that plant cultivation is difficult in such alkalized soil. Thus, neutralization of alkalized soil indicates the improvement of soil conditions.

Table 5: Organic Carbon Contents of Soils

(Unit: %)

District	Baseline Survey (2005)	Post-Project Survey (2010)
Chitorgarh	0.18	0.32
Sawai Madhopur	0.13	0.16
Banswara	0.24	0.32
Dungarpur	0.17	0.21
Udaipur	0.26	0.32
Bikaner	0.12	0.18

(Source) Post-Project Baseline Survey (Impact Assessment) under Rajasthan Forestry and Biodiversity Project (2010)

Table 6: Soil pH

District	Baseline Survey (2005)	Post-Project Survey (2010)
Chitorgarh	7.20	7.01
Sawai Madhopur	7.90	7.40
Banswara	7.10	7.02
Dungarpur	7.04	7.02
Udaipur	7.15	7.02
Bikaner	8.50	7.80

(Source) Post-Project Baseline Survey (Impact Assessment) under Rajasthan Forestry and Biodiversity Project (2010)

Also, the beneficiary survey of the ex-post evaluation studied the project benefits perceived by villagers. According to the survey, 10 out of 10 persons in Dagra village of Sikar district, eight out of 10 persons in Jabar village in Jaipur district and one out of 10 persons in Barwara village in Jaipur district perceived prevention of soil erosion as one of the project benefits.

(iv) Improvement of livelihoods

(v) Job creation

(vi) Mitigation of forest resource exploitation

The baseline survey and the post-project survey studied the changes in household cash income as seen in Table 7 and Table 8. Although the figures in both tables were not adjusted for inflation, and therefore it cannot be concluded the income level was improved in real terms, the non-cash economic benefits such as minor forest produces (MFPs) have not been negligible. Substantiating this point, villagers confirmed that their livelihood is positively affected by the Project during the interviews and focus group discussions (FGD) of the beneficiary survey. As seen in Table 9, it became clear that both agricultural-related activities and dairy-related activities have been intensified. In addition, with the tangible benefits perceived by villagers such as MFPs, VFPMCs formed by the villagers function well, and therefore forest resource exploitation was expected to be mitigated.

Table 7: Average Annual Income of Households Below the Poverty Line
(Unit: Rs.)

District	Baseline Survey (2005)	Post-Project Survey (2010)
Chitorgarh	10,780	15,450
Sawai Madhopur	12,942	15,651
Banswara	13,062	19,448
Dungarpur	9,575	10,365
Udaipur	9,870	10,550
Bikaner	15,688	17,841

(Source) Post-Project Baseline Survey (Impact Assessment) under Rajasthan Forestry and Biodiversity Project (2010)

(Note) Since State-wise Consumer Price Index (Rural) has been estimated only since 2011, and therefore there is no appropriate deflator which could represent for the entire project period, the above figures are not the inflation-adjusted real values but the nominal ones.

Table 8: Average Annual Income of Households Above the Poverty Line
(Unit: Rs.)

District	Baseline Survey (2005)	Post-Project Survey (2010)
Chitorgarh	29,750	38,650
Sawai Madhopur	54,790	57,251
Banswara	19,489	25,986
Dungarpur	24,600	26,500
Udaipur	26,500	28,700
Bikaner	48,286	50,657

(Source) Post-Project Baseline Survey (Impact Assessment) under Rajasthan Forestry and Biodiversity Project (2010)

(Note) Since State-wise Consumer Price Index (Rural) has been estimated only since 2011, and therefore there is no appropriate deflator which could represent for the entire project period, the above figures are not the inflation-adjusted real values but the nominal ones.

Table 9: Changes in Agricultural and Dairy Productions

District	Chitorgarh		Sawai Madhopur		Banswara		Dungarpur		Udaipur		Bikaner	
	(a)	(b)	(a)	(b)	(a)	(b)	(a)	(b)	(a)	(b)	(a)	(b)
Average Crop Production (100kg/ha)												
Wheat	20.7	22.9	29	31	26.3	28.7	16.5	21.3	19.5	21.5	12.3	21.1
Pulse	-	-	-	-	-	-	-	-	-	-	4.2	4.6
Gram	10.5	11.3	9	12	13.3	14.6	9.1	11.5	7.5	7.9	6.8	9.2
Mustard	12.9	14.2	10	12	-	-	5.1	7.5	6.5	7.6	-	-
Maize	21.5	23.2	7	8	15.0	15.9	13.1	13.5	16.5	17.8	-	-
Millet (Bajra)	-	-	14	15	-	-	9.5	10.1	-	-	4.5	6.8
Millet (Jowar)	-	-	11	13	-	-	11.7	12.3	6.3	7.2	2.0	4.5
Average Milk Production (l/day)	2.35	3.27	3.2	4.5	-	-	2.75	3.45	2.5	3.5	2.9	4.6
Cow	-	-	-	-	2.65	2.85	-	-	-	-	-	-
Baffalo	-	-	-	-	3.50	4.65	-	-	-	-	-	-
Goat	-	-	-	-	0.85	1.20	-	-	-	-	-	-

(Source) Post-Project Baseline Survey (Impact Assessment) under Rajasthan Forestry and Biodiversity Project (2010)

(Note) (a) indicates results of the baseline survey, while (b) indicates those of the post-project survey.

In addition, the beneficiary survey and the interviews with the executing agency revealed that the following benefits were widely perceived.

- (a) **Benefits from MFP:** In the afforested areas, production of MFP such as firewood and fodder is increased. Sharing mechanisms including rules and regulations were autonomously decided by each VFPMC. For example, in Jabar village of Jaipur, one head load (approximately 25kg) of MFP per household was allowed to be collected during the two-month rainy season. No fees or charges are required to collect one head load of MFP in this village while each household has to pay 50 Rs. of annual VFPMC membership fee. During the FGD in this village, one participant said that he used to buy fodder in the local market, but now he has a share of MFP; thus need not to buy them. Also, the increased dairy production shown in Table 9 implies the benefits of increased fodder availability.
- (b) **Sales of Major Forest Products (Timber):** By the time of ex-post evaluation, sales of bamboo trees, which require five years to grow to a sufficient height, have started. Sales profits after deducing expenses are to be shared equally between FD and a relevant VFPMC.
- (c) **Employment Opportunities for Afforestation Activities and O&M Activities:** Employment opportunities for afforestation activities and biodiversity conservation activities during the Project and for related O&M activities after the Project were indeed increased.
- (d) **Income Generating Activities (IGAs) by Self-Help Groups (SHGs):** In the localities where SHGs were formed and started IGAs, such IGAs contribute to the improvement of livelihoods. By the time of ex-post evaluation, 1,428 SHGs were formed and mainly engaged in small scale dairy husbandry and MFP processing.
- (e) **Improvement of Agricultural Production through Soil Improvement:** As a result of afforestation and moisture conservation activities of the Project, the water-retaining capacity of soil has been improved and it enhanced the agricultural productivity in the region. As seen in

Table 9, the result of the post-project survey indicates the improvement of agricultural productions in all six districts surveyed.

(vii) People's Awareness/ Ownership

It is considered that villagers perceive practical benefits such as upliftment of livelihood, while they contribute to improving natural environment through participating in the project activities. VFPMCs appropriately carry out social fencing, and in fact incidences of illegal grazing and harvesting have become minimal. Likewise, through the experiences of fulfilling their duties and roles as key stakeholders, and also of reaping tangible benefits from the Project, the people's awareness and ownership towards the Project have been enhanced.

3.3 Impact

3.3.1 Intended Impacts

As to the intended impacts set at the time of project appraisal, i.e., "the improvement of socio-economic conditions through restoration of forest resources and conservation of biodiversity", refer to 3.2.2 Qualitative Effects of this report.

3.3.2 Other Impacts

1) Impacts on the natural environment

At the time of project appraisal, a concern over the introduction of a non-native species, *Acacia tortillis*, along with native *Acacia* was raised. According to the executing agency, *Acacia tortillis* has been introduced in the region for more than a few decades for the purpose of greening deserts. Also, the field observation of the ex-post evaluation confirmed that non-native and native species have been co-habituated so far without any negative impacts on the natural environment.

In addition, at the time of project appraisal, recharge of groundwater through improved water-retaining capacity as a result of afforestation and moisture conservation activities of the Project was expected as one of the positive impacts on the natural environment. According to the results of the baseline survey and the post-project survey, as well as the result of the beneficiary survey of the ex-post evaluation, positive impacts in this regard are actually observed as seen in Table 10 and Table 11.

Table 10: Changes in Groundwater Level (Depth from the Ground Surface)
(Unit: feet¹⁸)

District	Baseline Survey (2005)	Post-Project Survey (2010)
Chitorgarh	145	117
Sawai Madhopur	93	89
Banswara	220	187
Dungarpur	160	155
Udaipur	83	80
Bikaner	128	124

(Source) Post-Project Baseline Survey (Impact Assessment) under Rajasthan Forestry and Biodiversity Project (2010)

(Note) During Participatory Rural Appraisal, villagers were asked about ground water level. They have answered the water level of community-owned wells and/or private wells from the ground surface.

Table 11: Recharge of Groundwater (Increment of Water Level)
(Unit: feet)

District	Village	Increment of water level
Sikar	Dagra	Approx. 10
Jaipur	Jabar	-
Jaipur	Barwara	Approx. 25
Udaipur	Gaonda-Pal	Approx. 7-8
Udaipur	Soorajgarh	Approx. 10

(Source) Beneficiary Survey

(Note) During FGD, villagers were asked about ground water level. They have answered the changes in water level of community-owned wells and/or private wells from the ground surface. In Jabar village, participants in FGD do not have quantitative knowledge on this matter, the same information was not collected.

2) Land Acquisition and Resettlement

No land acquisition and resettlement were required by the Project.

The Project has largely achieved its objectives, therefore its effectiveness is high.

3.4 Efficiency (Rating: ②)

3.4.1 Project Outputs

Outputs of the Project consist of four components, namely, (i) Afforestation, (ii) Joint Forest Management (JFM) Consolidation, (iii) Biodiversity Conservation and (iv) Training. Except for some activities under Biodiversity Conservation and Training whose actual attainments were below the planned output, the actual attainments of many other activities including major afforestation works exceed the planned output.

¹⁸ One foot is approximately 0.3 meters.

Component-wise performances are as follows:

(i) Afforestation

Afforestation in Aravalli Hills area, afforestation in IGNP area and farm forestry were produced mostly as planned.

Table 12: Afforestation in Aravalli Hills Area

(Unit: ha)

Plantation Model	Planned	Actual
Reforestation of Barren Hills	3,000	3,000
Rehabilitation of Degraded Forest (I)	85,000	85,000
Rehabilitation of Degraded Forest (II)	5,000	5,000
Fuel wood plantation on Panchayat land	20,000	20,000

(Source) JICA's Project Appraisal Document, Project Completion Report

Table 13: Afforestation in IGNP Areas

(Unit: ha)

Plantation Model	Planned	Actual
Canal Side Plantation ¹⁾	5,000	5,000
Sand Dune Stabilization	3,000	3,000
Block Plantation	1,200	1,200
Pasture Development	2,000	2,000
Plantation along Water Courses	1,000	1,000

(Source) JICA's Project Appraisal Document, Project Completion Report

(Note) 1) Unit for Canal Side Plantation is running km (RKM); three RKM is nearly equal to one ha.

Table 14: Farm Forestry

(Unit: million seedlings)

	Planned	Actual
Sales of seedlings	20	
By March 2008		16
From April 2008 ~ June 2010		4
Total		20

(Source) JICA's Project Appraisal Document, Project Completion Report

As to farm forestry, 16 million seedlings were sold to farmers by March 2008, the end of project period set at the time of project appraisal. After that, due to the delay of farm forestry activities as well as construction of biological parks, the project period was extended till June 2010. Along with this extension, sales of seedlings were continued to achieve the planned figure. The reason for the delay in achieving the planned figure is that it took time to produce seedlings and sales of seedlings started in

full scale only after three years from the project commencement.

(ii) Joint Forest Management (JFM) Consolidation

Under this component, four sub-components, i.e., (a) IGAs, (b) setting-up of community funds, and (c) small-scale infrastructure development for community, were implemented.

(a) IGAs

VFPMC members who were interested formed SHGs and started IGAs with financial support of Rs. 20,000 from the Project. By the time of ex-post evaluation, 1,428 SHGs were formed and mainly engaged in small scale dairy husbandry and MFP processing.

(b) Setting-up of community funds

Community fund named Corpus Fund was set up for each VFPMC with the initial capital of Rs. 100,000 from the Project, and VFPMCs was expected to carry out minimal O&M activities by utilizing the interests of the Corpus Fund incurred. As of March 2011, total asset value of all the Corpus Funds amounted to Rs. 123.62 million including interests incurred by that time. By the time of ex-post evaluation, 1,012 VFPMCs were established and therefore the number of formed Corpus Funds was also 1,012.

(c) Small-scale infrastructure development for community

Based on a micro plan which was formulated jointly by FD and VFPMC in each target village, small-scale infrastructure was constructed in almost every target village as an entry point activity to facilitate villagers' participation¹⁹. For example, construction of community water tanks, reservoirs, community centres and bus stops and rehabilitation of public water sheds were carried out.

(iii) Biodiversity Conservation

The planned as well as the actual figures related to the biodiversity conservation are as seen in Table 15. While figures related to two sub-components, i.e., moisture conservation measures and closure for biodiversity conservation exceeds the planned amount, figures related to the other two sub-components, i.e., development of biological parks and eco-tourism, were less than planned.

¹⁹ From the beneficiary survey, it became known that there were a few villages where village infrastructures were improved by the previous afforestation projects and did not require any further such developments.

Table 15: Biodiversity Conservation

Sub-components	Planned	Actual
Moisture conservation measures (nos.)	2,283	2,599
Closure for biodiversity conservation (ha)	1,600	1,600
Biological parks (nos.)	2	2 ¹⁾
Eco-tourism development (ha)	500	400

(Source) JICA's Project Appraisal Document, Project Completion Report

(Note) 1) Related activities are still ongoing under the Rajasthan Forestry Biodiversity Project Phase II (ODA Loan)

As to the biological parks, it took more time than originally expected for the following actions, and the related activities are still ongoing under the Rajasthan Forestry Biodiversity Project Phase II (ODA Loan). The executing agency aims to open them by December 2014 at the latest.

- The entire process till obtaining a final approval from Central Zoo Authority (CZA), i.e., applying for an approval, revising its design based on instructions from CZA and applying again after revision for an approval
- Employment of consultants who are familiar with designing zoos
- Employment of contractors

As to eco-tourism development, the executing agency commissioned World Wide Fund for Nature, India to conduct a study on eco-tourism before delineating the exact areas. Based on the recommendation of the study which identified areas of 400 ha to be targeted, the very 400 ha areas were conserved and developed as eco-tourism sites. Nature trails as well as camping sites were developed and the sites were just opened to the general public at the time of ex-post evaluation.

(iv) Training

The achievement level of this component is as seen in Table 16.

Table 16: Training

(Unit: persons)

Training Courses	Planned	Actual
VFPMC member	12,500	21,441
Panch, Sarpanch, teachers and NGOs ¹⁾	4,500	7,251
Farmers and village elders	14,000	15,036
Forest guards and cattle gards	1,020	4,229
Range officers' orientation course	370	378
Officers training within country	165	5
Study tour/ overseas training of officers	10	0

(Source) JICA's Project Appraisal Document, Project Completion Report

(Note) 1) Panch and Sarpanch are elected leaders of a village level statutory institution of local government called Panchayat in India.

Due to the raised awareness on the Project along with its progress, more-than-expected people participated in training courses, and therefore the actual number exceeds the planned number. According to the beneficiary survey, it became apparent that VFPMC officials and its members who participated in the training courses have acquired practical knowledge and skills on planting and tree-felling techniques. Also, study tours to see the plantation works as well as VFPMC activities in other villages were conducted, and these tours provided valuable opportunities for villagers to share knowledge and information.

On the other hand, as to both in-country training and overseas training for officers of FD, the actual achievement level was far below that planned since officers were not allowed to participate in training courses at that time due to the then strict austerity policy of the state government²⁰.

3.4.2 Project Inputs

3.4.2.1 Project Cost

While the planned project cost was 10,830 million yen (of which 9,054 million yen was ODA Loan), the actual cost amounted to 10,058 million yen (of which 8,318 million yen was ODA Loan), which was lower than planned (93% of the planned). A breakdown of the actual project cost is as seen below.

²⁰ However, the state-owned Forestry Training Institutes in Jaipur, Alwar and Jodhpur currently provide a wide range of training courses for FD personnel, and staff members including senior officers are obligated to take certain courses. Now, many staff members have participated in training courses and enhanced their capacities.

Table 17: Project Costs

Item	Planned			Actual		
	1Rs.=2.45Y (As of September 2009)			1Rs.=2.40Y (Average between April 2003 to September 2010)		
	Foreign Currency	Local Currency	Total	Foreign Currency	Local Currency	Total
	million yen	million rupee	million yen	million yen	million rupee	million yen
1. Plantation works	0	2,221	5,441	0	2,344	5,626
2. JFM consolidation	0	336	823	0	319	766
3. Biodiversity conservation	0	288	707	0	375	900
4. Community extension	0	27	66	0	15	36
5. Training	25	10	50	0	20	48
6. Research	0	15	36	0	11	26
7. Planning, monitoring and evaluation	0	29	73	0	14	34
8. Equipment	0	158	389	0	142	341
9. Supervision and design works	0	161	393	0	134	322
10. Price escalation	1	179	438	0	0	0
11. Physical contingency	1	171	419	0	0	0
12. Interest during construction	219	0	219	219	0	219
Sub-total (ODA Loan)	246	3,595	9,054	0	3,374	8,318
13. Administration cost	0	725	1776	0	725	1,740
Total	246	4,320	10,830	219	4,099	10,058

(Source) JICA's Project Appraisal Document, Project Completion Report

3.4.2.2 Project Period

The actual project period was extended to 88 months from March 2003 to June 2010, as compared to the planned period of 61 months from March 2003 to March 2008, due to the delay in activities of farm forestry and biological parks. Therefore, the project ran (144%) longer than planned. With the extension of project period till June 2010, plantation works as well as moisture conservation activities were also continued by utilizing remaining foreign portion of the project cost which was originally allocated for training, etc.

3.4.3 Results of Calculations of Internal Rates of Return (IRR)

At the time of project appraisal, economic analysis was conducted using sales of forest produces, impacts on soil and water sources, reduction of CO², etc., as benefits, and its economic internal rate of return (EIRR) was calculated as 32.6%. At the time of ex-post evaluation, EIRR was not recalculated, due to the fact that data needed, i.e., sales of forest produces, reduction of CO₂, etc., which represented the entire project, was not available.

Although the project cost was within the plan, the project period exceeded the plan; therefore efficiency of the Project is fair.

3.5 Sustainability (Rating: ③)

3.5.1 Institutional Aspects of Operation and Maintenance

O&M of the Project were carried out jointly by the Forest Department (FD) and VFPMC.

The Forest Department, the State Government of Rajasthan

At the time of ex-post evaluation, the number of staff members of FD was 13,749. Its organization has undergone several structural changes since the time of project appraisal, and currently a principal secretary of forest along with a deputy secretary of forests, an additional secretary of forests, four principal chief conservators of forests and eight additional principal chief conservators of forests run the forest department.

In reality, 80 officers and 4,720 field functionaries of the target 18 districts have been responsible for O&M activities, i.e., plantation maintenance work and rehabilitation of moisture conservation facilities, etc., and the O&M structure is considered as substantive. Primary responsibility for O&M falls on forest division heads and officers in each forest division in the 18 districts, while actual O&M activities in the fields are carried out jointly by those officers and VFPMC members under the Joint Forest Management (JFM) scheme²¹.

VFPMC

In the Project, 1,012 VFPMCs have been established and these VFPMCs have engaged in O&M activities along with officers of FD under the Joint Forest Management scheme. Actual O&M activities are mainly carried out by VFPMC members hired by the forest department. In addition, VFPMCs play an important role to carry out surveillance for illegal grazing and tree felling called social fencing, as an essential O&M activity.

The rationale behind the VFPMCs' active participation in O&M activities is the existence of incentives, i.e., shares of economic benefits from forest resources. For example, as to the major forest produce such as timber, sales profits are shared equally between FD and VFPMC, while as to MFP, benefits entirely go to villagers. Each VFPMC sets out rules and regulations autonomously in order to distribute such benefits from MFP as equitably as possible among villagers. (Examples: (i) A VFPMC

²¹ A forest management strategy called Joint Forest Management (JFM) is an approach based on the mutual trusts and partnerships involving both the state forest departments and local communities. The policies and objectives of Joint Forest Management are detailed in the National Forest Policy of 1988 and the Joint Forest Management Guidelines of 1990. A village committee known as VFPMC in case of Rajasthan and FD enter into a JFM agreement. Villagers agree to assist in the safeguarding of forest resources through protection from fire, grazing, and illegal harvesting in exchange for which they receive non-timber forest products and a share of the revenue from the sale of timber products. In the field level in Rajasthan, officers of FD explain outlines of afforestation programs under JFM in target villages, and form VFPMC once the villagers agree to start the program. At least one person from each household becomes a member of VFPMC, and this inclusiveness is a distinguishing feature of VFPMC in Rajasthan.

formulates a rule on a period for fire wood collection. For a set period, any villagers can freely enter forests and collect fire woods (ii) sales profits of major forest produce such as bamboos are managed centrally by VFPMC.)

As seen above, in addition to the substantive O&M structure of the forest department, VFPMCs' participation in O&M activities is significant under JFM scheme, and thus O&M structure as a whole is concluded as firmly arranged.

3.5.2 Technical Aspects of Operation and Maintenance

Staff members of FD (80 officers and 4,720 field functionaries) who have been engaged in O&M activities such plantation maintenance work and rehabilitation of moisture conservation facilities have extensive working experiences, and moreover they regularly undergo training provided by the state-owned Forestry Training Institutes²².

O&M activities of the Project, consisting mainly of reconstruction of fences, rehabilitation of moisture conservation facilities and regular pruning of trees, require simple techniques of civil works and knowledge on trees, and do not require advanced techniques. Thus, VFPMC members are able to undertake such activities under supervision of and instruction from officers of FD. In addition, the beneficiary survey revealed that many villagers including VFPMC members had profound local knowledge on forest resources²³. Currently no problems or concerns relating to technical aspects of O&M are identified and so are expected for the future.

On the other hand, as to construction of biological parks and eco-tourism development under the component of biodiversity conservation, the parks are still under construction and the eco-tourism is just started recently and in fact actual experiences on O&M activities for these activities are not yet accumulated. By considering the fact that the implementation experiences of the above mentioned activities are less, compared to the afforestation activities, measures for smoother implementation, i.e., hiring external consultants and setting up a special working unit, are currently taken²⁴.

3.5.3 Financial Aspects of Operation and Maintenance

Under the Mahatma Gandhi National Rural Employment Guarantee Act (NREGA), a national job guarantee scheme, the State Government offers at least one hundred days of employment in every

²² The state-owned Forestry Training Institutes in Jaipur, Alwar and Jodhpur currently provide a wide range of training courses for FD personnel, and staff members including senior officers are obligated to take certain courses. For example, the institutes offered more than 30 courses in 2011, i.e., "Forest Conservation Act and Effective Management", "Preparation of Working Plan", "M&E in Afforestation Programmes", "Joint Forest Management and Conflict Resolution", etc.

²³ For example, a villager explained about mixing method which is employed in their locality. That method produces a mixture of sand and small branches of a particular plant for sand stabilization.

²⁴ These measures are taken under Rajasthan Forestry and Biodiversity Project Phase II (ODA Loan).

financial year to adult members of any household willing to do public work-related unskilled manual work at the statutory minimum wage. Currently, the forest department utilize this scheme to hire villagers in the project areas to carry out O&M activities.

As to O&M activities which mainly VFPMCs are supposed to take up, Corpus Fund was originally planned to be utilized; however all the major O&M activities such as reconstruction of fences, rehabilitation of moisture conservation facilities and regular pruning of trees have been carried out by NREGA budgets, and therefore utilization of Corpus Fund has been very limited²⁵. As of March 2011, total asset value of all the Corpus Funds was Rs. 123.62 million including interests incurred by that time, and only one out of 1,012 VFPMCs utilized Rs. 13,000.

As seen above, although Corpus Fund has not been utilized as expected, NREGA budgets have been allocated enough to carry out necessary O&M as seen in Table 18, and therefore no financial problems have arisen.

²⁵ Activities such as surveillance on illegal grazing and harvesting, which are important but do not require substantial budget, have been implemented mainly by VFPMCs.

Table 18: NREGA Budgets Allocated for the Target 18 Districts

(Unit: million Rs.)

No.	District	FY2009	FY2010	FY2011	FY2012	Total
1	Ajmer	55.4	164.9	147.7	8.5	376.5
2	Alwar	89.8	208.6	307.6	0.0	606.0
3	Banswara	126.8	156.2	144.6	261.2	688.8
4	Bhilwara	187.6	127.2	225.4	2.2	542.5
5	Bikaner	74.8	429.1	318.7	241.2	1063.8
6	Bundi	78.0	121.9	145.7	8.1	353.7
7	Chittorgarh	36.1	146.7	310.6	51.4	544.8
8	Dausa	22.8	92.2	45.4	0.0	160.4
9	Dungarpur	70.1	90.0	134.3	5.4	299.8
10	Jaipur	104.1	248.9	156.6	127.7	637.3
11	Jaisalmer	113.5	121.9	236.9	104.4	576.7
12	Pali	129.4	320.0	199.4	0.0	648.8
13	Rajsamand	80.0	136.0	245.9	0.0	461.9
14	Sikar	147.9	76.1	151.0	33.1	408.1
15	Sawai Madhopur	78.9	276.1	139.8	183.4	678.2
16	Sirohi	47.1	174.3	87.6	2.5	311.5
17	Tonk	51.4	42.7	89.6	0.0	183.7
18	Udaipur	379.0	149.2	644.4	0.0	1172.6
	Total	1872.7	3082.0	3731.2	1029.1	9715.0

(Source) Forestry Department, the State Government of Rajasthan

(Note) Activities carried out by the NREGA budgets include not only O&M activities such as reconstruction of fences, rehabilitation of moisture conservation facilities and regular pruning of trees, but also cultivation of bio fuel crops for livelihood improvement. Also, the above budgets were used for activities not only in the villages under the Project but in every village requiring such activities within 18 districts.

3.5.4 Current Status of Operation and Maintenance

As to O&M activities relating to afforestation and moisture conservation, officers of FD prepared the documents called *Plantation Journal* for each plantation block. The journal compiles all the records of afforestation works and O&M activities, and the officers together with VFPMCs plan and implement O&M activities in accordance with the journal. Through the field observation under the ex-post evaluation, it was confirmed that afforested areas and moisture conservation facilities were maintained well, and also illegal grazing and harvesting were reduced under appropriate surveillance of VFPMCs.

As to the development of biological parks and eco-tourism sites under the component of biodiversity conservation, as mentioned earlier, actual experiences on O&M activities are not yet accumulated enough to analyze its appropriateness; however, as to eco-tourism development, it is confirmed that

the sites are maintained in good condition and the number of visitors and the amount of income from entrance fees are properly recorded.

To sum up, as to institutional aspect, O&M structure is firmly arranged, as to technical aspect, measures for concerned activities such as development of biological parks and eco-tourism sites have been already taken, while no technical problems are identified regarding afforestation works and moisture conservation activities, and as to financial aspect, although Corpus Funds were not utilized as expected, enough budgets have been allocated through NREGA program. In conclusion, no major problems have been identified in the operation and maintenance system, and therefore sustainability of the project effect is high.

4. Conclusion, Lessons Learned and Recommendations

4.1 Conclusion

The Project was designed to improve the natural environment as well as socio-economic conditions of the target regions in the state of Rajasthan, India, through afforestation and biodiversity conservation with active participation of communities. Both at the time of project appraisal and at the time of ex-post evaluation, the national government as well as the state government have adopted robust forest policies aiming at one third of geographical area to be under forest cover, and therefore the Project is in line with the development policies. Also, the underprivileged who highly depend on the forest resources are concentrated in the project areas; thus the need for afforestation and biodiversity conservation with participation of communities including the poor households are indeed high. Together with the consistency on the assistance policy to India by Japanese sides, the relevance of the Project is high. Under the Project, the expected effects and positive impacts such as the improvement of natural environment, soil conservation, mitigation of forest resource exploitation, improvement of livelihood, etc., were produced and therefore the effectiveness of the Project is also high. On the other hand, as for the efficiency, although the Project was implemented within the planned project cost, the project period was extended beyond the planned project period; thus the efficiency is concluded as fair. As for sustainability, the Forest Department, the state government of Rajasthan, has the appropriate organizational structure, technology and financial sources for operation and maintenance (O&M), and in fact, the actual O&M conditions is observed to be good; thus the sustainability of the project effect is high. In light of the above, this project is evaluated to be highly satisfactory.

4.2 Recommendations

4.2.1 Recommendations to the Executing Agency

None

4.2.2 Recommendations to JICA

None

4.3 Lessons Learned

As to an effect indicator set in the Project, namely, 39 million man-days of labour employed, its breakdown and basis for calculation were not recorded, and therefore it was unable to pursue exact reasons why the target figure was not met. In order to improve projects, it is essential to compare the target and the actual figures of Operation and Effect Indicators set at the time of project appraisal, and if there are any discrepancies, it becomes important to examine the reasons behind them. Thus, it is desirable that not only the target figures but the basis of calculation be clearly recorded.

Comparison of the Original and Actual Scope of the Project

Item	Original	Actual
1. Project Outputs	<p>a. Afforestation</p> <p>i) Aravalli Hills area</p> <p>Reforestation of Barren Hills 3,000 ha</p> <p>Rehabilitation of Degraded Forest (I) 85,000 ha</p> <p>Rehabilitation of Degraded Forest (II) 5,000 ha</p> <p>Fuel wood plantation on Panchayat land 20,000 ha</p> <p>ii) IGNP area</p> <p>Canal Side Plantation 5,000²⁶</p> <p>Sand Dune Stabilization 3,000 ha</p> <p>Block Plantation 1,200 ha</p> <p>Pasture Development 2,000 ha</p> <p>Plantation along Water Courses 1,000 ha</p> <p>iii) Farm forestry</p> <p>Sales of seedling: 20 million seedlings</p> <p>b. JFM Consolidation</p> <p>i) IGAs</p> <p>ii) Setting-up of community funds</p> <p>iii) Small-sacale infrastructure development for community</p> <p>The targets were not set.</p> <p>c. Biodiversity Conservation</p> <p>Moisture conservation measures (nos.) 2,283</p> <p>Closure for biodiversity conservation (ha) 1,600</p> <p>Biological parks (nos.) 2</p> <p>Eco-tourism development (ha) 500</p> <p>d. Training (persons)</p> <p>VFPMC members 12,500</p> <p>Panch, Sarpanch, teachers and NGOs 4,500</p> <p>Farmers and village elders 14,000</p> <p>Forest guards and cattle guards 1,020</p> <p>Range officers' orientation 370</p> <p>Officers training within country 165</p>	<p>a. Afforestation</p> <p>i) Aravalli Hills area</p> <p>Reforestation of Barren Hills 3,000 ha</p> <p>Rehabilitation of Degraded Forest (I) 85,000 ha</p> <p>Rehabilitation of Degraded Forest (II) 5,000 ha</p> <p>Fuel wood plantation on Panchayat land 20,000 ha</p> <p>ii) IGNP area</p> <p>Canal Side Plantation 5,000</p> <p>Sand Dune Stabilization 3,000 ha</p> <p>Block Plantation 1,200 ha</p> <p>Pasture Development 2,000 ha</p> <p>Plantation along Water Courses 1,000 ha</p> <p>iii) Farm forestry</p> <p>Sales of seedling: 20 million seedlings</p> <p>b. JFM Consolidation</p> <p>i) IGAs</p> <p>By the time of ex-post evaluation, 1,428 SHGs were formed and engaged in IGAs.</p> <p>ii) Setting-up of community funds</p> <p>By the time of ex-post evaluation, 1,012 Corpus Funds were established.</p> <p>iii) Small-sacale infrastructure development for community</p> <p>Small-scale infrastructure was constructed in almost every target village as entry point activities.</p> <p>c. Biodiversity Conservation</p> <p>Moisture conservation measures (nos.) 2,599</p> <p>Closure for biodiversity conservation (ha) 1,600</p> <p>Biological parks (nos.) 2²⁷</p> <p>Eco-tourism development (ha) 400</p> <p>d. Training (persons)</p> <p>VFPMC members 21,441</p> <p>Panch, Sarpanch, teachers and NGOs 7,251</p> <p>Farmers and village elders 15,036</p> <p>Forest guards and cattle guards 4,229</p> <p>Range officers' orientation 378</p> <p>Officers training within country 5</p>

²⁶ Unit for Canal Side Plantation is running km (RMK); three RMK is nearly equal to one ha.

²⁷ These activities are on-going under Rajasthan Forestry and Biodiversity Project Phase II (ODA Loan)

	Study tour/ overseas training of officers 10	Study tour/ overseas training of officers 0
2.Project Period	March 2003 – March 2008 (61 months)	March 2003 – June 2010 (88 months)
3.Project Cost		
Amount paid in Foreign currency	246 million yen	219 million yen
Amount paid in Local currency	10,584 million yen (4,320 million Rs.)	9,838 million yen (4,099 million Rs.)
Total	10,830 million yen	10,058 million yen
Japanese ODA loan portion	9,054 million yen	8,318 million yen
Exchange rate	1 Rs. = 2.45 yen (As of September 2002)	1 Rs. = 2.40 yen (Average between April 2003 and June 2010)