

India

Eastern Karnataka Afforestation Project

External Evaluator: Koichi Ishii
(Pegasus Engineering Corporation)
Field Survey: May 2008

1. Project Profile and Japan's ODA Loan



Location of the Project Site



Community Forest of the Village

1.1 Background

Karnataka State encompasses an area of 191,800km² with a population of 52,730,000¹, a population density of 275 people/km²², and it is located in the south-western region of India. The forests in this state are largely located in the western region and are concentrated in the coastal areas.

In the area targeted by the project located in the eastern region of the state, there was little forest land. However there was an increasing demand for fuel in both the urban and rural areas as well as for lumber used for construction of housing coming from the rising population and economic growth. This demand led to the excessive harvesting of forest products beyond the forest's regenerative cycle, which not only lowered the watershed protection functions, but also caused the depletion and deterioration of the forests, soil runoff, decline in arable land, flood damage, desertification, and destruction of the ecosystem, and decreased habitable areas. Thus, the forests in the eastern region of the state were in extremely poor condition.

¹ Equivalent to 5.1% of the entire country (2007)

² National average is 329 people/ km².

Due to the different climatic conditions, the state's vegetation consists of tropical evergreen forests, tropical semi-evergreen forests, tropical deciduous forests in the western region, tropical deciduous forests in the southern region, and scrub in the eastern region. Healthy forests are distributed in the western region; and in the eastern and southern regions, much of the forests are degraded with a low canopy density³ and the forest cover rate⁴ is only 9% for the region. Thus, there was a need to help meet the demand for lumber, to reduce the pressure of cutting down the forest, to prevent deforestation in the eastern region, and to revitalize the degraded forest lands.

1.2 Objective

The objective of this project is to implement a sustainable, community-participatory afforestation project (planting trees, extension activities, and others) in the continuously degraded forest lands of the Karnataka State by preventing further degradation of the forest lands, revitalizing the degraded forest lands, promoting conservation of the region's biodiversity, and improving forest productivity, and thereby contributing to improving the region's environment as well as reducing poverty.

1.3 Borrower/Executing Agency

President of India/ Forest Department, State Government of Karnataka

1.4 Outline of the Loan Agreement

Loan Amount/Disburse Amount	15.968 billion yen/ 14.831 billion yen
Date of Exchange of Notes/ Date of Loan Agreement	January 1997/ February 1997
Terms of Conditions	
Interest Rate	2.1%
Repayment Period	30 years
(Grace Period)	(10 years)
- Procurement	General Untied
Final Disbursement Date	May 2005

³ Canopy density means the percent area of land covered by the canopy of trees (Definition by Ministry of Environment and Forests in India).

⁴ Forest cover rate means the percent area of all lands, more than one hectare area, with a tree canopy density of more than 10 percent (Definition by *State of Forest Report 2005*).

2. Finding (Overall Rating: A)

2.1 Relevance (Rating: a)

2.1.1 Relevance at the time of appraisal

The government of India pursued several measures in forestry sector such as prevention of deforestation, conservation and growth of forests through its five-year-plans by following National Forest Policy which aims to transform one-third of its national land area into forests and trees from 1950s. Also in the Eighth Five-year Plan (1992 to 1997), the pursuit of afforestation and poverty reduction were cited as the major issues. Following this national policy, Karnataka State planted trees in about 249,000ha of land during the four-year period up to 1995, which is a reflection of the state's awareness of the importance of afforestation.

Meanwhile, the demand for forest products (especially wood for fuel) increased mainly among the poor, who consisted of 30% of the rural population, and the pressure towards deforestation grew. Under these conditions, the local community and the Forest Department jointly worked together to pursue Joint Forest Management (JFM) in order to conserve the forest, distribute the benefits, and reduce the community's dependence on the forest. Thus, degraded forests were regenerated, and the need to adequately manage forest conservation by the state government grew to sustain ecosystem.

2.1.2 Relevance at the time of evaluation

Following the above mentioned National Forest Policy, India's Tenth Five-Year Plan (2002 to 2007) aims to achieve 25% of total land area covered by forest by the end of the plan's term. Recovering the functions of the forest through soil and water conservation, forest management that takes into consideration the local community's livelihood, research and development, extension activities, and others are emphasized. This project's approach is consistent with this project plan. The rate of forest and tree cover⁵ in 2005 was 23.4%; and in the Eleventh Five-Year Plan (April 2007 to March 2012), the objective to increase the rate of forest and tree cover by 5% at the end of the plan is cited.

Although the rate of forest and tree cover in Karnataka State is on the rise, it was 21.2% as

⁵ Forest and tree cover rate indicates the percent area of forest cover (area of all lands, more than one hectare area, with a tree canopy density of more than 10 percent which is measurable from a satellite) is higher than 10% of the land in the targeted region) and tree cover (tree patches outside the recorded forest area exclusive of forest cover and less than the minimum mappable area of one hectare which is not measurable from a satellite).

of 2005, which was lower than the above mentioned national average (23.4%). Moreover, since the rate of dense forest (in which the canopy density is 40% and above), is not increasing, the need to regenerate the degraded forest lands still remains. The need to conserve the biodiversity of the forests consisting of multiple ecosystems continues to be recognized. Based on the Tenth Five-year Plan mentioned above, the state government's development plan recognizes the need to regenerate 450,000ha of deforestation and contains multiple schemes such as implementation of the Forest Department's Regional Working Plan, setting up of the Village Forest Committee (VFC), and a micro plan⁶ formulated by the Forest Department.

Following this project, with the Phase 2 Japanese ODA loan project⁷ started in 2005, the afforestation project (especially the community-participation projects), fostering human resources, research development, extension, biodiversity conservation activities continues and the importance of afforestation projects has not changed.

Therefore, this project has been highly relevant with the national policies both at the time of appraisal and ex-post evaluation.

2.2 Efficiency (Rating: a)

2.2.1 Output

In addition to afforestation, which is a major component that consists of 67% of the project cost, this project also consists of multiple other components such as providing research, extension, training, construction of an office, an information system, office machinery, vehicle for use in management operations and others. When the ex-ante and ex-post evaluations are compared, afforestation that surpasses what was designed has been carried out. One of the reasons for this is that surplus funds stemming from currency exchange fluctuations were used to carry out additional planting of trees. The project at the time of appraisal and its performance is shown in Table-1 below.

⁶ The span of micro plan is ten years, and it is reviewed by the Forest Department and the VFC every five years.

⁷ The phase 2 project aims to tackle the state's foremost priority issues, such as regenerating degraded forest lands and conserving biodiversity, while simultaneously aiming to improve the living standards of a segment of the poverty group of about six million living in the rural areas of the state. In this phase 2 project, of the remaining 450,000ha of degraded forest lands that weren't covered in the phase 1 project, about 180,000 ha is targeted for regeneration.

Table-1 Project Output

Plan (at the time of appraisal)	Actual (at the time of ex-post evaluation)
<p>(1) Afforestation Activities Afforestation area (470,500ha)</p> <p>Number of trees planted (292.54 million)</p> <p>a) Management of ecologically sensitive and biodiversity rich areas: 20,000ha</p> <p>b) Management of degraded areas to encourage natural regeneration *: 80,000ha</p> <p>c) Afforestation on degraded forest lands*: 46,000ha</p> <p>d) Afforestation on government waste lands/ village common lands *: 12,000ha</p> <p>e) Afforestation on roadsides/ canal sides/ railway track sides: 5,000ha</p> <p>f) Afforestation on foreshores of tanks *: 5,500ha</p> <p>g) Afforestation on vacant lands in urban areas institutions: 2,000ha</p> <p>h) Afforestation on farm forest(supply of seedlings): 300,000ha</p>	<p>(1) Afforestation Activities Afforestation area (557,870ha) (119% of planned output)</p> <p>Number of planted trees (344.04 million) (118%)</p> <p>Number of self-help groups due to livelihood improvement activities: 2,912</p> <p>a) Management of ecologically sensitive and biodiversity rich areas: 20,898ha</p> <p>b) Management of degraded areas to encourage natural regeneration*: 81,627ha</p> <p>c) Afforestation on degraded forest lands *: 46,613 ha</p> <p>d) Afforestation on government waste lands/ village common lands*: 22,584 ha</p> <p>e) Afforestation on roadsides/ canal sides/ railway track sides: 10,209 ha</p> <p>f) Afforestation on foreshores of tanks *: 8,132 ha</p> <p>g) Afforestation on vacant lands in urban areas institutions: 9,953 ha</p> <p>h) Afforestation on farm forest(supply of seedlings): 357,843 ha</p>
<p>【Items of Special Note】</p> <p>(1) a) to c) are afforestation of degraded forest areas, d) to g) are afforestation activities in areas other than degraded forest, h) afforestation of privately owned land</p> <p>(2) (*) refers to VFC afforestation activities</p>	
<p>(2) Research, extension, training</p> <p>(3) Coordinating with NGOs and others NGOs are expected to play a large role in raising the awareness of local community groups and in extension activities</p> <p>(4) Construction of an office, providing an information system, office machinery, vehicle for use in management activities</p>	<p>(2) Research, extension, training</p> <p>(3) Coordinating with NGOs and others To implement support for VFC activities such as helping to formulate a micro plan, assistance to improve livelihoods, and others</p> <p>(4) According to the Plan, although the following were added. Additional afforestation activities Additional training facilities and activities Additional districts targeted for livelihood improvement activities</p>

	(occupational training and microfinance) Maintenance of afforested land
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The afforestation activities of this project exceeded the area of afforestation targeted in the project. As of 2005, the rate of forest cover in Karnataka State was 21.23%, and the total afforestation area in the project was equivalent to 2.9% of the area of the state. One of the reasons why the afforestation area exceeded the project design was that the surplus funds stemming from currency exchange fluctuations were used to plant additional trees. In conjunction with afforestation activities in this project, soil and water conservation facilities such as trenches, levees, stone levees, check dam, and others were provided; and the JFM approach was adopted in afforestation activities mainly on government land where the goal was to regenerate degraded forest lands. Under this approach, a micro plan (which included afforestation) was formulated for each VFC, and a comprehensive land use plan, which did not distinguish between Degraded Forest and public land, was designed based on a consideration of the region's socioeconomic conditions.⁸ In a before and after comparison of project output, afforestation exceeded the planned targets.

For components other than afforestation, the Forest Department's facility improvements were implemented overall as planned; and in the area of training and extension activities for the Forest Department staff members, VFC members, students, and others, a performance that exceeded the project's target was achieved. Of the various training activities, forest extension and training activities were implemented much more frequently than that planned at the time of appraisal, and the focus were especially on training activities for staff members of the Forest Department who were involved in the project. Several NGOs were actively carrying out support activities, thus a system of coordination is further anticipated in future. Working with NGOs allowed coordination between the Forest Department and the VFC to proceed smoothly in organising VFCs, preparing micro plans, having discussions with the VFCs, and implementing afforestation activities through JFM. Since the training facility was constructed at the end of this project, actual operations just begun and its effectiveness were late to surface. About the newly introduced GIS information system, some concern can be seen in an inconsistency between the map being monitored by the system and that based on actual measurement. However, components other than afforestation were largely implemented as planned.

⁸ In the formulation of the land use plan, not only the executing agency but also other departments such as that of horticulture, agriculture, and NGOs are allowed to participate. It is perceived that this sort of system has changed the relationship between Forest Department staff members and those depending on forest from hostile to cooperative.



Degraded forest lands after
afforestation



Facility for soil and water
conservation

2.2.2 Project Period

At the time of appraisal, the implementation period of the project was planned for 61 months from December 1996 to December 2001, but in actuality, it was implemented for 102 months from December 1996 to May 2005 (67% overrun). The reason for the delay was the extended term of works due to the additional afforestation works that were funded by increased funds stemming from currency exchange fluctuations.

2.2.3 Project Cost

The actual total project cost was 17.395 billion yen in contrast to the 18.786 billion yen planned at the time of appraisal or about 93% of the project budget. Despite the slight drop in foreign currency portion, the domestic currency portion that comprised most of the cost remained as estimated. The project cost was within the budget mainly because of the currency exchange fluctuations.

2.2.4 Overall Efficiency

As explained above, the actual project period exceeded the period planned at the time of appraisal by 67%, but the performance of the major component, afforestation, exceeded the planned target by 19%, and the total project cost was reduced by about 7%. In view of these factors, it was judged that this project was implemented efficiently.

2.3 Effectiveness (Rating: a)

2.3.1 Actual Afforestation Area, and Preservation of the Forest Lands and Regeneration of the Degraded Forest Lands

The areas afforested in this project accounts for 14.6% of the total forest area of the Karnataka State (year 2005 data). As the rate of forest cover in the state has recovered from 16.9% at the time of appraisal to 18.4% (see Table 2), this project is considered to have partly contributed to this recovery (although it takes several years before the saplings planted in this project grow into forest trees).⁹ In addition, the per capita number of trees planted is 4.5 trees. Appropriate supplemental planting has been carried out on the loss of saplings due to blight.

Table 2 Rates of Forest Cover and Forest & Tree Cover in Karnataka State

Year	State's Forest Area by Rate of Tree Crown (km ²)			Forest Cover Rate (%)		Forest & Tree Cover Rate (%)
	Dense Forest (40% and above)	Open Forest (Between 10 and 40%)	Total	State	Project Area	State
1995	24,859	7,521	32,380	16.88	10.40	-
1997	24,854	7,546	32,400	16.89	10.42	-
1999	24,832	7,632	32,464	16.93	10.46	-
2001 ¹⁰	22,461	10,835	33,296	17.36	11.43	21.24
2003	22,102	13,144	35,246	18.37	11.66	21.18
2005	22,098	13,153	35,251	18.38	11.68	21.23

Source: Forest Department/Forest Survey of India

2.3.2 Survival Rate of Planted Trees

The survival rate of the planted saplings has been high since the 1980s in the state. The average survival rate of the planted trees in the project has surpassed 70% for the past four to six years as shown in Table 3. Out of about 340 million trees planted under this project, it is estimated that 250 million have survived after four to six years.

⁹ The period for tree growth differs according to the tree species, but generally requires five to ten years. (According to data from FAO afforestation projects. Reference cited from URL <http://www.fao.org/forestry/11833/en/>)

¹⁰ The computation method used in 1999 and 2001 differs. The accuracy of the scale reduction of the survey map was increased from 1/250,000 to 1/50,000.

Table 3 Survival Rate According to Plantation Models

Sl. No.	Plantation Models	Survival Rate %
1	Management of ecologically sensitive, archeologically important and wild life potential areas	81.96
2	Natural regeneration	63.77
3	Trench mound cum pit plantation	70.13
4	Mechanised plantation	73.21
5	Irrigated bamboo plantation	73.08
6	Irrigated bamboo and teak plantation	81.47
7	Irrigated Fruit Orchard	72.15
8	Foreshore plantations	65.90
9	Strip plantation (Roadside, railway line side and canal side)	71.29
10	Urban forestry	71.51
11	Afforestation in institutional (school) land	76.01
12	Development of tanks, parks and recreation spots in urban areas	69.02
13	Farm forestry	77.40
	Average survival rate	73.61

Source: Mid-term evaluation by external institutions (October 2002) and evaluation at the time of project completion (September 2005)

2.3.3 Biodiversity Conservation

According to the sample survey¹¹ implemented by the Forest Department in the project site called Kodakkol in 2007, in the non-afforestation areas, the number of precious plant species is 8 and the total number of the plants is 25. In contrast, in the afforested areas, the number of precious species is 19 and the total number of the plants is 263.¹²

2.3.4 Improving Forest Productivity

According to a report by the Forest Department, the productivity of afforested areas has improved by a range between 20% and 500% after afforestation. The annual productivity of forest products in the project area is shown in Table 4. The production volume of bamboo, fodder, fruit, and other forest products for special use, as well as fuel wood, has exceeded the

¹¹ The number of precious species in the afforestation and non-afforestation areas was compared. "Precious species" indicates plant life. Some of the precious species that were counted in the afforestation and non-afforestation areas were overlapping.

¹² The survey results are published in the September 2007 issue of *My Forest*, a quarterly journal issued by Karnataka Forestry Department.

project targets given at the time of appraisal. The annual production volume of fuel wood is 340,000 tons. Since a lengthy period of time is required for the process from tree planting to harvesting as a forest product, afforestation needs to be continued and monitored. However, the objective of improving productivity at the project targeted areas has been achieved.

Table 4 Annual Production Volume and Monetary Value of Forest Products

Forestry Product	Annual Production Volume		Annual Monetary Value (million rupees)	
	Plan at the Time of Appraisal	FY2007 Performance	Plan at the Time of Appraisal	FY2007 Performance
Fuel wood	284,000 tons	340,000 tons	195.88	234.50
Bamboo	12,310,000 numbers	112,500,000 numbers	18.46	168.75
Fodder (grass/leaves)	5,842 tons	15,900 tons	1.00	3.18
Fruit	10,224 tons	46,700 tons	102.24	467.00
Other Forest Products for Special Use	-	100 tons	-	0.10

Source: Forest Department

2.3.5 Afforestation Component Internal Rate of Return

With regard to the internal component of the project at the time of appraisal, the economic internal rate of return (EIRR) is calculated using the sales value of the forestry products during 30 year period as the benefit and the afforestation and maintenance costs as the cost. This calculation produces an EIRR of 13.6%. However, re-calculation using the same conditions for the present evaluation produces an EIRR of 12.3%. This value is below the value obtained at the time of the appraisal since local currency conversion of the project cost is higher than that in the plan. However, if the opportunity cost is considered, investment in this project continues to be relevant from a national economic standpoint.

2.3.6 Effect of Components Other Than Afforestation

The following effects can be seen for components other than afforestation in this project. The training facility constructed under the project is being adequately utilized, strengthening the capacity of Forest Department staff members in JFM related training, and educating VFC

members has been effective.¹³

In terms of the research and development component, as a result of breeding, the productivity of several tree species has increased, and improved seedlings has been used at the afforestation site. In addition, due to extension activities in the important technology of raising seedlings such as root trainer, grafting, cutting, and others, higher productivity in the future is expected. Since the start of the research related to this project is one year after the start of the project, it has been in the later stages of the project that the research is used for the project planning and implementation.

The facilities and equipment provided under the project have been well used largely the project, and thereby have contributed to the efficient operation of the project by the Forest Department. According to the Forest Department's survey, the 90% of the training facility and 80% of equipment have been used on a daily basis. The introduction of the GIS information system is under review due to concerns about its technical inconsistency with the survey map (as mentioned in 2.2.1). Components other than afforestation which support afforestation activities have also been effective.

Therefore, this project has largely achieved its objectives, and effectiveness is highly satisfactory.

2.4 Impact

2.4.1 Regional Environmental Reforms

According to direct observations and interviews with local residents, the afforestation area has had the following major impact on environmental conservation.

Moist deciduous forest:

Existence of medium to high density natural trees due to regenerated trees on government and community lands, growth of seedlings and grass

Scrub forest:

Existence of natural trees with medium to high density on degraded forest lands where natural regeneration is expected, on government and community lands and around reservoirs, the effect of recharging the water source by check dams, growth of seedlings and grass,

¹³ Implementing training for the JFM with regard to jointly owned forestry products effectively helped the activities to be carried out smoothly.

decrease in soil erosion, rise in moisture and soil water content, reduced damages from drought by the rise in groundwater level (on average, water level of 200m rose by 100m)

Dry deciduous forests:

Growth of trees along roads, railways and canal, in urban areas and around public facilities

The regenerated forests have been effective in appropriately improving the regional environment and its impact has appeared due to the following factors.

- Native tree species were mainly selected.
- Works to recharge the water source such as small-scale dams and others were implemented.
- Gained the VFC members' participation in adequate forest conservation through training activities and others (e.g., implemented measures to prevent livestock from entering the afforested areas)

From the standpoint of biodiversity, the trees selected for planting have been appropriate since native tree species are given priority, and this has produced a favourable impact in improving the regional environment. The selection criteria for the tree species used in afforestation have been based on JFM guidelines¹⁴ based on which native tree species that are suited to the soil in the afforestation area with a high survival rate have been given priority. In a segment of the highly degraded forest lands, acacia and other types of non-native species that are generally planted in India have been selected. Thus, the ratio of native tree species is 80% of all the tree species that have been planted.

Additionally, by the production of forest products, the pressure on the natural forest for felling has been reduced. The impact of the afforestation project on the regional environment will be over a broad spectrum although it will take more time to come into effect in comparison to other development projects.

2.4.2 Impact on Poverty Reduction

The number of workers employed and the days worked during the implementation of the project has been a total of 45,700,000 man/days for the entire project. Approximately 30% of the employed workers are women.

In an interview survey of the community members living near the forest areas, the residents acknowledged that they are now able to collect fuel wood (lower branches and leaves) in the nearby forest and no longer have to travel long hours to a distant site to do the same work,

¹⁴ Guidelines on JFM implementation methods that were selected by India's Ministry of Environment & Forests in 1993.

thereby reducing the burden on women and children. It has been confirmed that they are now able to spend their time doing other productive activities which lead to the increase in the income of many households engaged in agriculture and livestock and to the lower dependence on the forest for their livelihood. In addition, favourable changes have also been seen in some areas, notably an increase in household income, an improved diet due to expanded farm work, an improved living environment due to increased production of construction materials (bamboo), and an improved rate of school attendance by children, who have been freed from the task of collecting feed and fuel materials. This favourable impact has been relatively large especially for Scheduled Tribes¹⁵ who depend on forest products for their livelihood (consist of 6.6% of the provincial population, 8.2% of the entire Indian population) and poverty-level farmers.

The socioeconomic effects that have been verified in a survey on beneficiaries have been the following: the increased application of forest resources, the reduced expenditure to obtain fodder and fuel wood, the diversified means of livelihood, the improved living standards, notably in the area of food, clothing, and shelter, an increased spending on children's education, the reduced burden on mainly women engaged in collecting firewood and feed, the upgrading to quality livestock (e.g. from goats to dairy cows), the increased income from farming and livestock farming, and the reduced dependence on the forest.

The number of beneficiaries of this project is equivalent to the number of people who have participated in Village Forest Committees (of the local communities) that have implemented the afforestation activities, which is calculated to be a maximum of about 450,000 people. This is about 1.0% of the total population of the state.



Soil Erosion



Women Participants in the Gathering

¹⁵ They are the tribes specially designated in the Constitution based on the standards such as the degree of their socioeconomic disparity with other communities, their cultural uniqueness in religions, languages and others as well as their way of living in highly isolated areas such as forests..

2.5 Sustainability (Rating: b)

2.5.1 Executing Agency

2.5.1.1 Organisation

The Forest Department has prepared the basic facilities and equipment for the project and the efficiency in the project implementation is adequately high. The institutional structure of the headquarters and regional level, the number of departments, and other factors at the time of project appraisal and at the time of ex-post evaluation are almost the same. The forest is maintained by “Social Fencing” which is carried out mainly by the VFC.

2.5.1.2 Technical capacity

The Forestry Department has experienced of the social afforestation project co-financed by the World Bank and UK Department for International Development (DFID) and the afforestation project supported by the latter, and has produced favourable performance (as notably shown in the survival rate). The Forestry Department made full use of these adequate past experiences and technology in this project. In the afforestation project in the Eastern plains region, an area of 200,016ha has been afforested and 3,149 VFCs has been formed. In the formulation of the micro plan, socioeconomic conditions of the targeted rural communities and their needs have been taken into consideration. As regard to the technical capacity of monitoring forestry, the introduction of GIS is under review. In two research institutions, it is observed that research results have been applied in trial afforestation activities. JFM approach continues to be taught in training activities, in which the training approach of the participatory rural appraisal (PRA) is being introduced. Forest Guards and Foresters are being recruited annually. To impart initial training to these recruited personnel, an amount of Rs. 20 million is provided annually. Besides, to impart project related trainings, an amount of Rs.177.33 million was provided under JICA assisted Phase 1 EKAP from 1997-98 to 2004-05 and Rs.291.35 million under JICA assisted Phase 2 KSFMBP from 2005-06 to 2010-11. Therefore, no problems have been observed in the technical capacity for operation and maintenance of the executing agency.

2.5.1.3 Financial status

In the annual budget amount of the Forest Department, the trend of gradual increase is observed when compared between the project period (1996-2005) and the post project period (2006-2007). This is because of the implementation of the phase 2 of the project. The share of budget for forestry sector in the development budget of Karnataka State in FY2007 is about the same as that of FY1995 which is 1.6%. Thus, the stable allocation of a budget to the forestry sector is expected also in future. The annual maintenance cost has been in the trend of increase in response to the expansion of the afforestation area.

In the areas that JFM have been introduced, the forestry development funds have been established for the VFCs to save and manage a share of the profits gained from the sale of mainly non-timber forestry products. This fund is supposed to be used after 3 years of afforestation for the maintenance of the afforested areas. 25% of the total harvest value reserved in the forest fund until FY2002 is judged to be adequate from medium- and long-term perspectives. However, a periodical verification of financial status is required.

2.5.2 Operations and Maintenance

The organisational structure of the Forest Department that oversees the operation and maintenance of this project consists of the Chief Conservator of Forests, several Divisional Forest Officers, who manage the department, and Range Forest Officers, who are responsible for the end-level sections of the organisation.

The various facilities and equipment that have been constructed and provided under this project are presently well utilized and are generally adequately maintained.

In this project, there is a problem that the volume of the forest development fund, a financial source for the maintenance of this project fluctuates depending on the future harvest volume of forest products and its period. Thus the financial sustainability based on the forest development fund for re-afforestation needs to be monitored. However, as no major problem has been observed in technical and structural capacity, sustainability of this project is evaluated to be moderate.

3. Conclusion, Lessons Learned, and Recommendations

3.1 Conclusion

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

3.2 Lessons Learned

In this project, the JFM approach raised the awareness of community residents in the targeted afforestation areas to participate in the project. The approach will be beneficial in formulating the similar projects in future. However, during the early stages after afforestation, the harvest volume tends to be low, as a result of which the share of the benefits distributed to the VFC tends to be small. Thus, direct support such as activities to improve livelihoods must be

included until benefits obtained from the forest become stable.

The major objective of the project is evaluated as having been adequately met, but issues remain, notably a project design that has taken into consideration a system of collecting and monitoring data for each objective.

3.3 Recommendations for the Forest Department of Karnataka State

3.3.1 Strengthening Community Participation

Since there are many tree species that have not reached the harvest stage, it is recommended that a projection of the harvest period, harvest volume, changes in market price, harvest ratio, and other factors for the short- and medium-term period of five to ten years need to be prepared for each tree species, and a periodic review of the micro plan based on a practical financial plan should be implemented. It should be considered that these activities may require the assistance from NGO.

3.3.2 Appropriate and Efficient Management of the Afforestation Areas

The financial sustainability based on the forest development fund for re-afforestation needs to be monitored. The adequacy of the actual funds required should be periodically checked by the Forest Department against the projected cash flow for the medium to long-term period.

Comparison of original and actual scope

Item	Plan (at the time of appraisal)	Actual (at the time of ex-post evaluation)
(1) Output	<p>(1) Afforestation Activities Afforestation area (470,500ha)</p> <p>Number of trees planted (292.54 million)</p> <p>a) Management of ecologically sensitive and biodiversity rich areas: 20,000ha</p> <p>b) Management of degraded areas to encourage natural regeneration *: 80,000ha</p> <p>c) Afforestation on degraded forest lands *: 46,000ha</p> <p>d) Afforestation on government waste lands/ village common lands *: 12,000ha</p> <p>e) Afforestation on roadsides/ canal sides/ railway track sides: 5,000ha</p> <p>f) Afforestation on foreshores of tanks *: 5,500ha</p> <p>g) Afforestation on vacant lands in urban areas institutions: 2,000ha</p> <p>h) Afforestation on farm forest(supply of seedlings): 300,000ha</p>	<p>(1) Afforestation Activities Afforestation area (557,870ha) (119% of planned output) Number of planted trees (344.04 million) (118%) Number of self-help groups due to livelihood improvement activities: 2,912</p> <p>a) Management of ecologically sensitive and biodiversity rich areas: 20,898ha</p> <p>b) Management of degraded areas to encourage natural regeneration *: 81,627ha</p> <p>c) Afforestation on degraded forest lands *: 46,613 ha</p> <p>d) Afforestation on government waste lands/ village common lands *: 22,584 ha</p> <p>e) Afforestation on roadsides/ canal sides/ railway track sides: 10,209 ha</p> <p>f) Afforestation on foreshores of tanks *: 8,132 ha</p> <p>g) Afforestation on vacant lands in urban areas institutions: 9,953 ha</p> <p>h) Afforestation on farm forest(supply of seedlings): 357,843 ha</p>
	<p>(1) a) to c) are afforestation of degraded forest areas, d) to g) are afforestation activities in areas other than degrade forest, h) afforestation of privately owned land</p> <p>(2) (*) refers to VFC afforestation activities</p>	
	<p>(2) Research, extension, training</p> <p>(3) Coordinating with NGOs and others</p> <p>NGOs are expected to play a large role in raising the awareness of local community groups and in extension activities</p>	<p>(2) Research, extension, training</p> <p>(3) Coordinating with NGOs and others</p> <p>To implement support for VFC activities such as helping to formulate a micro plan, assistance to improve livelihoods, and others</p> <p>(4) According to the Plan,</p>

	(4) Construction of an office, providing an information system, office machinery, vehicle for use in management activities	<p>although the following were added.</p> <p>Additional afforestation activities</p> <p>Additional training facilities and activities</p> <p>Additional districts targeted for livelihood improvement activities (occupational training and microfinance)</p> <p>Maintenance of afforested land</p>
(2) Project Period	December 1996 to December 2001	December 1996 to May 2005
(3) Project Cost		
Foreign Currency	1.399 billion yen	1.011 billion yen
Local Currency	17.387 billion yen (5.537 billion rupees)	16.384 billion yen (6.277 billion rupees)
Total	18.786 billion yen	17.395 billion yen
ODA Loan Portion	15,968 billion yen	14,831 billion yen
Exchange Rate	1 rupee = 3.14 yen (As of May 1996)	1 rupee = 2.61 yen (Average from January 1997 to May 2005)