India

Afforestation Project in Aravalli Hills

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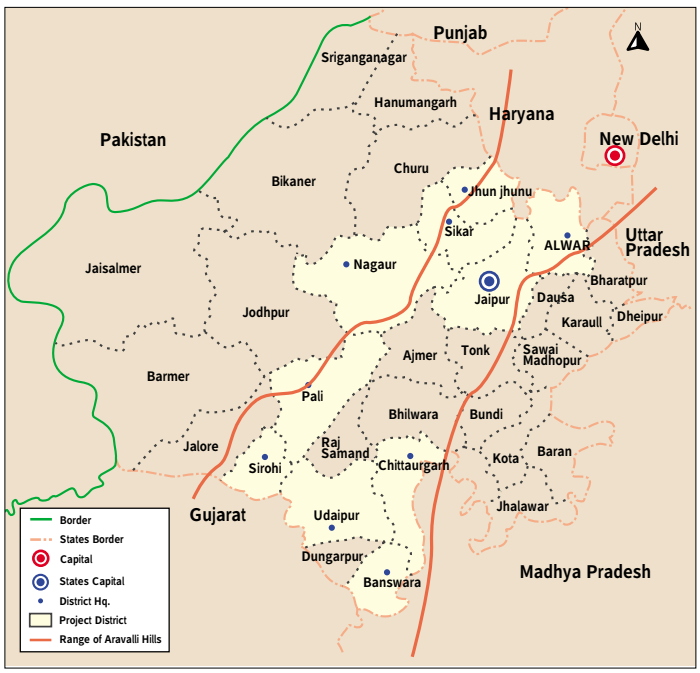
1 Results and Evaluation

The Afforestation Project in Aravalli Hills (referred to below as the project) was a community forestry project which aimed to restore the forest of the Aravalli Hills in the state of Rajasthan, in India 's northwest, and thereby improve socio-economic conditions for the area 's residents. The centre the project was the afforestation of a total of 150,000 hectares.



The evaluation team evaluated the economic/ environmental aspects and the social development aspects separately. The first was evaluated according to the OECD/DAC five evaluation criteria, while the evaluation of social development was based on the importance of issues in social development and did not necessarily conform with the DAC five criteria. Finally, the two respective evaluations were collated into an overall evaluation. The content of this evaluation, the lessons learned, and recommendations to be drawn from this project are summarized below.

The evaluation team members listed below were selected by the committee for cooperative study of the Japan Society for International Development, following a request from the Japan Bank for International Cooperation (JBIC). This report represents the views of the evaluation team and is not the opinion of the Japan Society for International Development.

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1) Evaluation of Economic and Environmental Aspects (Evaluation based on the DAC Five Evaluation Criteria)

1. Effectiveness

Of the eight project objectives, three can be regarded as having been fully attained, namely afforestation, job creation and improvement of habitat for wild animals. For example, 151,390ha were afforested, relative to a target of 146,000ha, meaning that 103.7% of the target was attained. The project targeted women and scheduled (particular) tribes and castes for job creation, and 51.5% of jobs created by the project went to women (38.7% of the regional population), 41.9% to people from those tribes (15.5% of the targeted regional population) and 27.6% to people from the castes (17.7% of the population). These figures show that the job creation target was also attained. The target for the improvement of habitat for wild animals was to build 200 anicuts (water storage dams to secure drinking water for wild animals in protected areas), and 201 were actually built. As a result, the number of tigers living in the Sariska sanctuary rose from 18 (in 1991) to between 25 and 28 (in 1999).

However, the objectives for supplementing fuel and fodder for regional demand have not been adequately met in terms of the macro-scale sufficiency rate, although on the micro scale there are some regions where the project satisfies 20~30% of local demand for animal feed. It was not possible to evaluate the other four objectives, improvement of the hydrologic balance , encouragement for the use of cow dung on agricultural land by supplying alternative fuel , conservation of genetic resources and improvement of biodiversity , and use of forests to improve the living environment on the basis of quantitative data.

From the above, we conclude that the main objectives of the project were attained, but problems with the intermingling of the indirect project ŝ goal, and with the lack of project design of the data monitoring for each objective need to be solved.

2. Sustainability

This project aimed to use participatory forestry in order to break the cycle of poverty and environmental destruction, which mainly results from increasing population and increasing numbers of domestic animals, and to create mechanisms for the sustainable use of forestry resources in the region. In India the participatory management of forestry resources by the government (mainly Department of Forest of each State) and villagers has been specified in the Joint Forest Management (JFM) Scheme under the 1988 and 1992 revisions of the Forest Conservation Act. This project was one of the first ODA projects to be based on JFM in India. Therefore the central theme for evaluating the sustainability of this project is whether or not the JFM scheme functions sustainably.

In general, JFM formalizes tree planting by using government resources, and regulates the subsequent protection and use of the forest by villagers. The specific operation of the scheme varies from state to state. The guidelines for the JFM scheme in Rajasthan initially aimed for independent forest management by the Village Forest Protection and Management Committee (VFPMC), but in practice it was difficult for the committees to be independent. Following a government order in 1999, the Department of Forest placed cattle guards or provided VFPMCs with financial support to do so, to guard the forests after planting. The grave financial position of the state government and the Department of Forest necessitates cautious examination to determine whether or not the 1999 JFM scheme is functioning sustainably.

We attempted to evaluate the sustainability of the commons, which was formed from above by the government in a

short period of time, very soon after the completion of the project, so this analysis was based on the state of the forestry resources and of the villagers 'organizations which manage and use those resources. The survival rate of the planted trees was used as a substitute indicator for the sustainability of the resources, and the attendance rate at the villagers ' VFPMC meetings was used as a substitute indicator for the sustainability of the organization. The attendance rate was the total attendance over a year divided by the number of members. From this analysis, two types were identified, the Jaipur type (highly sustainable resources and low organizational sustainability) and the Udaipur type (poor sustainability of resources and high organizational sustainability) (see Figure 1).

Afforested sites of the Jaipur-type VFPMCs had tree survival rates averaging 72%, above the overall average (average for all VFPMCs), but the average per capita meeting attendance rate was 0.7, below the overall average. This appears to be because the average membership of a VFPMC is high at 188, giving each member a small area of only 0.35ha.

In Udaipur-type VFPMCs, the tree survival rate averaged 58%, below the overall average, but per capita meeting attendance rates averaged 2.4 times, above the overall average. Apparently this occurs because the membership of Udaipur-type VFPMCs is smalll, averaging 23, meaning each has a large forested area of 4.43ha.

The difference between Jaipur-type and Udaipur-type VFPMCs is also related to differences in the percentage of farmers in the population (60.47% in the Jaipur type and 82.9% in the Udaipur type) and the area of farm land per farmer (3.09hs and 1.62ha respectively).

The main incentive for farmers to manage forest resources is the fodder that can be obtained from the forest land. For VFPMCs to be sustainable, they must succeed in nurturing both the trees and the fodder plants. Whether it is the Jaipur-type VFPMC, where survival rates are high, or the Udaipur-type, where meeting attendant rate are high, there is the possibility that forest resource management based on the JFM scheme may not function adequately if they continue as they are at present. The operating system must be reformed in order to make the project more sustainable, including early lopping and frequent thinning.

3. Efficiency

The survival rate of planted trees was used as a substitute indicator for the efficiency of the project. While the survival rate in farm forestry is relatively low (35.7%～55.0%), the same for the whole project is high (61.19% ～87.24%).

4. Impact

The positive impacts observed from this project were a more advanced qualitative composition among domestic animals (changes from goats etc. to water buffaloes etc.), which reduces pressure on the environment, and stimulation of self-governing organizations through the founding of VFPMCs. One potential negative impact is the exclusion of some villagers when an area of forest is assigned to a specific VFPMC. There was also some ripple effect impact observed, but its magnitude was small.

5. Relevance

Community forestry based on the JFM scheme incorporated in the project is one effective method of breaking the cycle of poverty and environmental destruction, and as such it is necessary.

Such objectives of the project as preventing soil deterioration and desertification, and improving the environment by promoting forestry, remain significant and rational today. It can be confirmed that the results of the project and its

overall objectives are largely consistent.

However, as the sustainability analysis showed, the design of the JFM scheme has not been developed enough with regard to the provision of sustained incentives for managing forestry resources.

2) Social Development Aspect (The significance of JFM support and future tasks)

1. JFM and VFPMCs

This is a community forestry project which can be classified within the broad definition of a participatory development project. It is also a ground-breaking project in that it is one of the first example of an ODA loan project supporting JFM and it envisages indirectly targeting the poor.

The afforestation work related to the project has effects with economic impact on the poor, through employment in tree planting, priority provision of wood and fuel, and reduced drought damage due to elevated water tables. Social development impact through the activities of VFPMCs has also been observed. However, these effects are all incidental, and it is hard to imagine the poor being lifted from poverty by the project alone.

2. Effects of JFM

Employment in tree planting by the Department of Forest has a significant effect for temporary wage income. JFM work can sometimes make a direct contribution to forest protection when the VFPMC participates in monitoring work. People can also reduce their expenditures by obtaining fodder and fuel from the plantation, and poverty pressure on adjacent areas is reduced. The improved access to the administration through foresters is also important.

There are almost no instances of forest protection work being done independently without support from the Department of Forest, and the current scheme appears to be unable to achieve objectives such as strengthening the organizational capacity of VFMPCs and empowering women.

3. Entry Point Activity (EPA)

EPA is beyond the scope of the project, but it is too important to overlook from the point of view of social development, and therefore it was made the focal point of this evaluation report. Current EPA can have a dramatic effect in motivating residents, and it contributes to a certain level of social infrastructure building, but there is a problem with the sustainability of effect.

Generally, the major issues to be borne in mind are that residents may rely excessively on outsiders with the introduction of EPA (spoiling effect), ant that if social development type EPA is introduced, the Department of Forest cannot be expected to monitor it.

In this project, where residents are more dependent on the forest than other states are, support activities which motivate residents to engage in the sustained management of forests seems to be more appropriate than EPA which has no direct link to forests. Since the project does not include any EPA component, the Department of Forest has been working to discover other existing resources from other departments and donors. However rather than comprehensive support based on single donor, which would stop completely if the donor stopped providing funding, EPA activity based on a combination of donors assistance, as it has been in the past, would be more desirable as a way of encouraging the self-help efforts of the Department of Forest.

4. Tasks Facing JFM

The project has delivered some level of success as one of the first ODA loan support to JFM. However, the representatives of VFPMCs have commented that We won t be able to go on working without some input from the Department of Forest . If the VFPMCs, as residents organizations, are expected to extend their activities to independent social development, the current JFM scheme is going to require radical reform.

Furthermore, while the VFPMCs are residents organizations, from the social development point of view it must always be borne in mind that there could be some people who are unable to join the organization. The current scheme has no effective response to this problem.

If JBIC characterizes future JFM support as social development or poverty reduction , the scheme will need to be radically improved, including a preliminary survey and monitoring of the methods of organizing residents, the system for monitoring social development activities, and the sustainable growth of forest monitoring systems.

3) Overall Evaluation

Evaluating the project with five levels for each of the five points of the five DAC evaluation criteria (4.0+: very good, 3.0+: Good, 2.0-: Poor, 1.0-: Very poor) it scores 4.5 for effectiveness, 2.5 for sustainability, 4.5 for efficiency, 3.5 for impact and 3.5 for relevance. The overall average of scores is 3.7 (see Figure 2). Overall, this project can be deemed to be delivering good results. For social development impact, the project can be given a positive evaluation in terms of strengthening organizational capacity, empowering women and giving better access to government administration, including evaluation of future potential.

Thus this survey team s overall evaluation grade for this project is good . There are major tasks linked to sustainability, but they are difficult issues common to all community forestry projects and are not specific to the project. The project s formation of VFPMCs and its strong record of afforestation brought these problems more clearly into view. It can be regarded as a positive result and should certainly not be regarded as entirely negative.

4) Lessons Learned and Recommendations

The lessons learned from the project and related recommendations are stated below.

1. The tendency towards over-ambitiousness and please-everyone approach are seen from time to time in the setting of objectives for community forestry projects, and that tendency is evident in this project. A clear distinction must be made between targets to be achieved within the project period and project s indirect goal. The targets set should be quantified numerically as far as possible, and as the monitoring system is an important part of the project design, ones which cannot be monitored should not be set as targets.

2. The system for forestry work must be reformed to enable sustainable management of forest resources by VFPMCs based on the JFM scheme. It is particularly important to get the planting density, lopping and thinning right, in order to make forest growth compatible with fodder production. There is also scope for measures based on regional characteristics to find the right scale and forested area for VFPMCs. In order to maintain high survival rates while raising the economic value of the forest, fruit and lumber trees should be selected that are resistant to dryness and termite attack, and techniques for growing them should be developed. That kind of broad technical development is essential to encourage farm forestry.

3. The main negative effect of the formation of VFPMCs under the JFM scheme is the possibility of some villagers being excluded. People who were not included in the organization of the VFPMC for some reason are excluded from the pastures (plantations) which they have traditionally used, and may suffer increased economic and social disparities between themselves and VFPMC villagers. If the JFM approach is to be supported in future, surveys should be made before the VFPMC is formed to investigate the traditional patterns of use of the afforestation site, and monitoring methods should be added to see whether any people from outside the village are unjustly excluded. Moreover, if a forestry project is formed as an anti-poverty measure, the people excluded in the process should be identified and provided with some form of mitigation to give the project a more coherent approach.

4. Opinion was divided within the evaluation team on the issue of what kind of EPA is appropriate for a community forestry project, or indeed whether EPA is needed at all. However, the team was agreed that the effect of EPA does not extend beyond the project introduction period, and beyond that time it has little sustained effect on forest resource management. If the social development aspect of future JFM is emphasized, it will have to be evaluated as an EPA social development project. The current JFM scheme does not appear to be able to provide villagers with adequate sustained incentives for forest management, either from the top or from the bottom. If EPA is regarded as essential for stimulating the VFPMCs, the Rajasthan Department of Forest and JBIC should conduct a joint survey of the social development effect of EPA, with reference to cases in other states, and the opportunity could be taken to re-examine the position of EPA. Particular consideration needs to be given to the limitations on the effects of EPA, which only apply at the time of introduction, and to the implementation of EPA in connection with forest resources.

In any case, careful consideration must be given to the necessity of EPA and its role and functions within a project.

5. In order to assure the sustainability of forest resources management, the potential for improvement in the existing JFM scheme should be pursued and the current approach to community forestry could usefully be reconsidered with a view to repositioning it as environmental improvement project in a wider context. In addition, the potential for a more radical restructuring, that would make anti-poverty measures the central component of a comprehensive regional development project, should be investigated and considered.

Figure 1　Relationship Between Survival Rate and VFPMC Activity

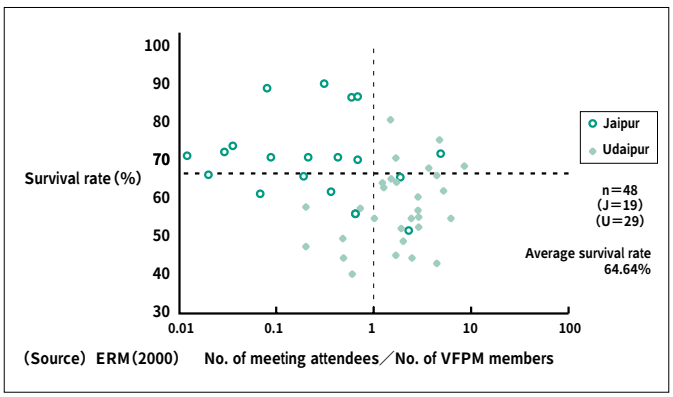
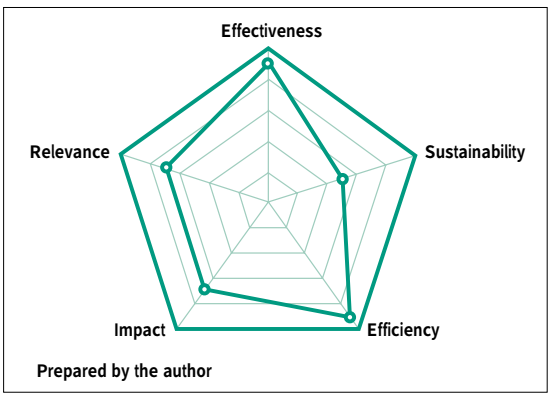


Figure 2　Quantification of the Five Evaluation Criteria



JBIC View

This project carried out afforestation in the Aravalli Hills of Rajasthan state in the northwest of India. It aimed to prevent desertification, enrich the ecology, augment local supplies of essentials such as fuel and fodder, and improve socio-economic conditions by creating employment opportunities.

The project having the objecitive to rehabilitate the public functions of the forest, also had unique aspect in that its implementation was done under participation and cooperation by local residents and the benefits from the forest were shared with such residents. Japan Bank for International Cooperation asked the Japan Society for International Development to conduct a third-party ex-post evaluation of the project with reference to the economic and environmental aspects, and to the social development aspects.

This evaluation report tries to look at the project from several new dimensions, partly because it was conducted in cooperation with the Japan Society for International Development the member of which being composed of many scholars in developing field. Specifically, this evaluation went beyond the concept of the conventional specific project evaluation that follow the objectives and the scope of the project, presenting views on social development and anti-poverty policies for the whole field of forestry projects. For example, Entry Point Activity (EPA), which was not included within the scope of the project itself, is examined in various ways. This examination produced a proposal on how such activities should be conducted in future, based on the evaluators ' research experience of social development in other countries and other cases. This evaluation suffered limitations due to a lack of data concerning environmental conservation effect and other areas, and some points still require consideration, such as the standardization of evaluation. Nevertheless, the evaluation process included an experimental five-grade quantitative evaluation in line with the five DAC evaluation criteria.

1.JBIC View 1

The optimum form of JFM (concerning the 2nd paragraph of 1) 2. and the second paragraph of 2) 2.)

For the VFPMCs under the JFM scheme to be sustainable, they must all ultimately be free of dependence on staff and on funding allocations from the Department of Forest. According to the guidelines for the state of Rajasthan, which date from March 1991, the basic policy for JFM is that the conservation, development and management of degraded or denuded forest lands shall be conducted with the cooperation and participation of residents 'organizations and similar bodies That means that the adopted rules do not necessarily envisage independent management of forests by the VFMPCs from the beginning. (The detailed rules for responsibilities of the Department of Forest are not clearly defined in the guideline, however the 1999 guidelines specify more clearly that the responsibilities include the dispatch of cattle guards and monetary responsibilities of the Department).

2.JBIC View 2

Entry Point Activity (concerning the 3rd paragraph of 1) 5. and the third paragraph of 2) 3, and 4) 4.).

Entry Point Activity has been carried out in other Japan 's ODA loan project for afforestation in Tamil Nadu. Under that project it was known as buffer zone activity and mainly involved community development in the interest of

building confidence and the creation of alternative sources of income. The Department of Forest, which protects state-owned forests, is in the position of restricting the activities of residents who use the forests illegally to make a living. Community development aims to improve the relationship between the two parties and to help the residents trust the Department of Forest and the JFM scheme by building infrastructure that meets the needs of the community (in many cases the Department of Forest pays for the materials and the residents provide the labor). Alternative income source creation work targets those who are dependent on the forest, making a living by gathering fuel and fodder and grazing animals, and those micro and small-scale farmers and landless farm laborers who must make a living by illegal logging in seasons with no crops. Alternative sources of income (such as sewing, mechanical weaving, basketmaking from bamboo or other non-timber forest products, and pickling) are created for those people in order to provide the afforested area with sustained protection and encourage the independence of the residents. The Tamil Nadu afforestation project gained the full cooperation of NGOs in the training and monitoring of income improvement projects.

EPA is regarded as highly significant for the following reasons:

- It aims primarily for confidence building.
- It commonly involves contribution from the residents in line with their needs, as in the Tamil Nadu afforestation project.
- It creates alternative income sources suited to the life-cycles of forest resources in order to provide forests with secure protection and make the residents more independent.

Considering these significant aspects of EPA, JBIC will continue to examine it as a possible approach in future ODA loan projects.

To comment on the WFP projects, they were implemented with no relation to the schedule of this project and the areas covered do overlap, but even when the same kind of activities are pursued within the projects, they are not necessarily carried out as EPA.

3. JBIC View 3

Independence for the villagers (concerning 4) 4.)

As full independence for the villagers will take time, it will be difficult to achieve within the implementation period of the project, however, JBIC regards the incorporation in projects of systems able to deliver independence in the future to be an important task to work on. Furthermore, JBIC does not regard structures beyond the technical and financial means of villagers to be luxuries. Rather, JBIC recognizes the need to empower the villagers to negotiate effectively with the government agencies which should be responsible for the construction of such structures. Income improvement through EPA and improvement of organizational capacity through VFPMCs are steps in that process to such empowerment.

Project Summary

(prepared by JBIC)

1) Outline of Loan Agreement

Loan Amount / Loan Disbursed Amount	¥8,095 million / ¥7,933 million
Exchange of Notes / Loan Agreement	December 1991 / January 1992
Terms and Conditions	Interest rate : 2.6%, Repayment period : 30 years (10 years for grace period)
Final Disbursement Date	March 2000
Borrower / Executing Agency	President of India / Department of Forest, the State Government of Rajasthan

2) Comparison of Original and Actual Scope

Item	Plan	Actual
① Project Scope	1) Reforestation in barren hills: 25,000ha*1 2) Rehabilitation of degraded forest:101,500ha*1 3) Plantation on community land: 19,500ha*1 4) Farm forestry: - Creation of nurseries in 20 locations.*1 - Distribution of 85 million seedlings.*1 5) Improvement of habitat in wildlife sanctuaries (construction of 200 small water storage dams). *1	1) Same as left: 25,400ha 2) Same as left: 105,930ha 3) Same as left: 20,060ha 4) Same as left: - 27 - 95 million 5) Same as left: 201
② Implementation Schedule	Apr. 1992 ~ Mar. 1997 (After the change of project scope *1: Apr. 1992 ~ Mar. 1998)	Apr. 1992 ~ Mar. 2000 *2
③ Project Cost Foreign currency Local currency Total ODA loan portion Exchange rate	 ¥554 million Rp. 1,664 million ¥9,524 million ¥8,095 million Rp. 1=¥5.39 (at the time of appraisal)	 — Rp. 2,930 million ¥9,669 million ¥7,933 million Rp.1=¥3.36 (From a weighted average of disbursement times)

*1 The project scope was changed in June 1997, increasing the forested areas on reforestation in barren hills, rehabilitation of degraded forest and plantation on community land, the numbers of nurseries, the numbers of seedlings distributed, the numbers of water storage dams built in wildlife sanctuaries and other elements. The figures presented here are for after the change. The additions were requested by the executing agency because a balance was left unused from the ODA loan due to exchange rate changes. JBIC approved the request based on the following considerations, among others:

①Residents of areas within Aravalli Hills that were not originally scheduled for afforestation strongly desired afforestation.

②Expansion of the planted area would reduce the pressure imposed by tree felling by the poor.

③The forest coverage rate in the Aravalli Hills as a whole remained low.

*2 The original project scope was completed by March 1997, and the additional scope by March 1998, as scheduled. When the loan disbursement deadline arrived in March 1999, it was extended by a year because planting and transplanting of trees in 1998 failed, due to lack of rainfall, and had to be repeated. The delay in the implementation period was caused by that situation.

Forest land (foreground) Revived by the Construction of a Protective Wall

VFPMC Members

Badodia Afforested Area in the Jaipur Area