

0. Summary

The objective of the project is to recover wasteland and formulate society that sustainably uses natural resources by undertaking tree plantation and other activities for recovering environment with people’s participation, thereby contributing to promoting self-sustaining economic activities of the local people, which is balanced with environmental conservation in Attappady in Southern India. The relevance is high since the Government of India emphasized recovering environment in the forest areas and reducing poverty of tribal people, while Attappady had issues of degraded forest areas and worsening poverty situations. Japan’s ODA policies emphasized recovering environment and reducing poverty. The effectiveness and the impact are high since wasteland was recovered by tree planting and other activities with the people’s participation, and local people raised their awareness on environment protection, leading to the formulation of society that sustainably uses natural resources. The efficiency is fair since the expenditure was within the plan but the period was extended. The sustainability is fair. Although organizational and technical aspects of the operation and maintenance do not have problems, some budget for the operation and maintenance is not secured and some facilities are not appropriately maintained. In light of the above, this project is evaluated to be satisfactory.

1. Project Description



Project Location (Kerala State)



(Mountains with rich vegetation by plantation)

1.1 Background

The project area is Attappady block of Kerala State that is a part of Biosphere Reserves. Although this area used to have rich vegetation, it had excessive development activities, and land degradation was rapidly worsening because of the pressure of population increase. Given this situation, it was needed to undertake comprehensive conservation of wasteland while conserving nature and recovering land productivity, and to promote sustainable regional development by generating income, making

productive investment, providing means of production through extension activities, and increasing income of the local people.

1.2 Project Outline

The objective of the project is to recover wasteland and formulate society that sustainably uses natural resources by undertaking tree plantation and other activities for recovering environment with people's participation, thereby contributing to promoting self-sustaining economic activities of the local people, which is balanced with environmental conservation in Attappady in Southern India.

Loan Approved Amount/ Disbursed Amount	5,112million yen /4,867million yen
Exchange of Notes Date/ Loan Agreement Signing Date	January 1996 /January 1996
Terms and Conditions	Interest Rate: 2.1% Repayment Period: 30 years (Grace Period: 10 years) Conditions for Procurement: General untied
Borrower / Executing Agency	President of India/ Local Self Government Department of Government of Kerala
Final Disbursement Date	March 2010
Main Consultant	Nippon Koei

2. Outline of the Evaluation Study

2.1 External Evaluator

Keiichi Takaki, FASID

2.2 Duration of Evaluation Study

Duration of the Study: October, 2011 – December, 2012

Duration of the Field Study: February 6 – March 2 & August 8 – September 10, 2012

3. Results of the Evaluation (Overall Rating: B¹)

3.1 Relevance (Rating: ③¹)

3.1.1 Relevance with the Development Plan of India

The Government of India established National Wastelands Development Board under Ministry of Environment and Forests and implemented wasteland development measures on the ground of 7th Five Year Plan (1985-90). However, these measures entailed mostly tree planting, and the effect was limited.

In 1992, the Government of India established the Department of Wastelands Development under Ministry of Rural Development in order to implement comprehensive development plans that included not only tree plantation but also income generation activities such as agricultural

¹ ③: High, ② Fair, ① Low

processing, livestock, and others².

The 8th Five Year Plan (1992-97) expressed concern over negative impact of degraded vegetation on environment and society, and emphasized importance of corrective measures.

At the time of the ex-post evaluation, the 11th Five Year Plan (2007-2012) was effective with the priority in conserving and expanding forests. It also stated the importance of people's participation and the necessity to ensure livelihood for poor people such as schedule tribe for sustainable recovery of forests while referring to National Forest Policy, 1988 as the approach to actualize these priorities.

From the above, this project is consistent with development policies of India.

3.1.2 Relevance with the Development Needs of India

In India, wasteland was expanding in the whole country because of increased demand of firewood, timber, and fodder due to population increase, as well as flood, soil erosion, tree felling and others. In 1984, 40% of the total land became wasteland.

Kerala state where the project was implemented is located in the southernmost part of India, and had the highest population density at the time of the project appraisal. The production per capita was 16th among all the 24 states in 1992, and the living standard was among the lowest in India. Scheduled tribe³ constituted about 1.1% of the state population, and wasteland accounted for one third of the whole land in accordance with the statistics in 1984.

The project site is Attappady and is located in the northeast of Palakkad district of Kerala State, and is a part of the Nilgiri Reserve, one of seven Biosphere Reserves in India. However, because of development pressure due to increased population and other factors, land became degraded, and about 60% of the area became wasteland. From 1960s, attempts to stop degradation were made, but the measures were not comprehensive, and did not include water resource development and others due to financial limitation. Measures were mostly of land development such as constructing terrace⁴ of which effect was rather limited.

This environmental degradation affected the people of scheduled tribe, indigenous people of this

² The implementing agency of this project was AHADS (Attappady Hills Area Development Society) which was newly established for this project under Local Self Government Department of Government of Kerala

³ Scheduled Tribe is the administrative category after India's independence for the people who lived in India before the immigration of Aryan people who constitute the majority of contemporary India. It is for the purpose of giving them priority measures since they are extremely poor with disadvantages in economic and social opportunities. Attappady has the three Scheduled Tribes that are Irula, Muduga, and Kurumba.

⁴ A method to cut a piece of sloped plane of a mountain into a series of successively receding flat surfaces, which resemble steps, to prevent soil from running off.

area, the most. Fertile land was sold to settlers and these people of scheduled tribe had no choice but to live among mountains, and began to live by slash and burn agriculture. Since slash and burn agriculture does not wait for regeneration of trees, it exhausted forest resources, and this led these people to lose their means of living, a vicious cycle, and their lives became even more difficult. Their patterns of their livelihood brought the broad range of serious environment degradation that included degradation of forests, soil erosion, and dry rivers and wells.

This project aimed to recover environment that included forest, soil, and water in Attappady and improve lives of local people and promote self-sustaining economic activities so that they do not have to rely on environment excessively. Thus, it was consistent with development needs.

3.1.3 Relevance with Japan's ODA Policy

Japan's ODA policy for India had priorities in economic infrastructure (electricity and transportation), and poverty reduction (agriculture & rural development, and environmental conservation (tree plantation)), following the policy dialogue between the Japanese government's mission for the comprehensive economic cooperation for India and the Government of India in March 1995.

From the above priorities, this project concerned poverty reduction and environmental conservation. Thus, it was consistent with Japan's ODA policy.

From the above, this project has been highly relevant with India's development plan, development needs, as well as Japan's ODA policy, therefore its relevance is high.

3.2 Effectiveness (Rating: ③)

3.2.1 Quantitative Effects

I evaluated quantitative effects of outcomes of "recovery of wasteland" and "formulation of society that sustainably uses natural resources" by examining how much below indicators were achieved.

(1) Recovery of wasteland

I evaluated an outcome of recovery of wasteland is by examining following indicators: 1) water depth of wells (wells that became dried because land became wasteland), 2) recovery of farmland (agricultural land became barren and not suitable for agricultural production because of environmental degradation), and 3) regeneration of forests (the recovery conditions of trees which almost died because of land becoming infertile).

1) Water level of wells

In Attappady, the degradation of soil reduced its moisture holding capacity, and many wells became dried up. Thus, water coming back and rising water level indicate improved soil quality.

Table 1 shows levels of water depth of the driest areas in Attappady from 2004 to 2012. Although the water levels of some wells became shallower in 2008, it shows that water-holding capacity below ground was improved by soil recovery and conservation measures, indicating land becoming suitable for production activities.

Table1. Changes of water depth of the driest wells in Attappady (unit : meter)
(Observations were made on May 1st of each year except 2012 when it was on February 1st)

Wells	2004	2006	2008	2010	2012
Panchayat well	1.5	2	2.1	6.75	11
Ramamoorthy	3.5	9.1	4	7.4	11.5
Choriyamooapan	1	2.1	0.7	2.3	4
Masani	2.5	3.1	0.9	2.8	6
Vellingiri	4.5	6.25	3.6	6.7	12
Abdul Kareem	1.5	2.1	1.9	2.7	5.1
Jayavel	0.2	0.5	1.1	2.9	7

Source : AHADS

2) Recovery of Farmland

Tables 2 and 3 indicate the production areas and productivity level of beans, vegetable and other products in Attappady in 1996, 2000, 2005, and 2010 when the project was completed. Both production areas and productivity became about three times compared with those of 1996. Prior

Table 2. Cultivated areas in Attappady

Product	Cultivated Areas (ha)				Percentage of cultivation area in 2010 vis-à-vis that in 1996
	1996	2000	2005	2010	
Beans	141	189	262	339	240
maize ⁵	148	200	276	406	274
Spice	138	181	217	254	180
Rice	8	12	22	26	310
Vegetable	150	184	231	272	180
Banana	209	230	502	606	290
Arecanut ⁶	225	290	450	500	220
Coconut	300	315	320	750	250

Source : AHADS

Table 3. Productivity of Agricultural Products in Attappady Block

Product	Productivity (ton/hectare)				Percentage of productivity in 2010 vis-à-vis that in 1996
	1996	2000	2005	2010	
Beans	95	125	170	373	390
maize	193	248	367	381	197
Spice	730	964	1154	1366	190
Rice	6	8	16	20	360
Vegetable	299	347	429	558	190
Banana	13,063	14,375	31,375	39,375	300
Arecanut	338	405	675	1,200	360
Coconuts (thousands)	1,071	1,125	1,142	1,867	170

Source : AHADS

to the project implementation, much land was barren and not suitable for production. The project implementation improved the land, and the annual increase of cultivated areas in Table 2 confirms its achievement. Land improvement contributed to improving productivity together with increased inputs such as water, inputs, labor and others. It also indicates a positive cycle of stable/active production and recovery of farmland

⁵ According to AHADS, about 30% of maize is estimated to be produced by the people of Scheduled Tribe with slash and burn agriculture in Attappady. The cultivation areas for maize in Table 2 do not include areas where they practice slash and burn agriculture.

⁶ It is a kind of coconut grown in tropical areas in Asia and Africa.

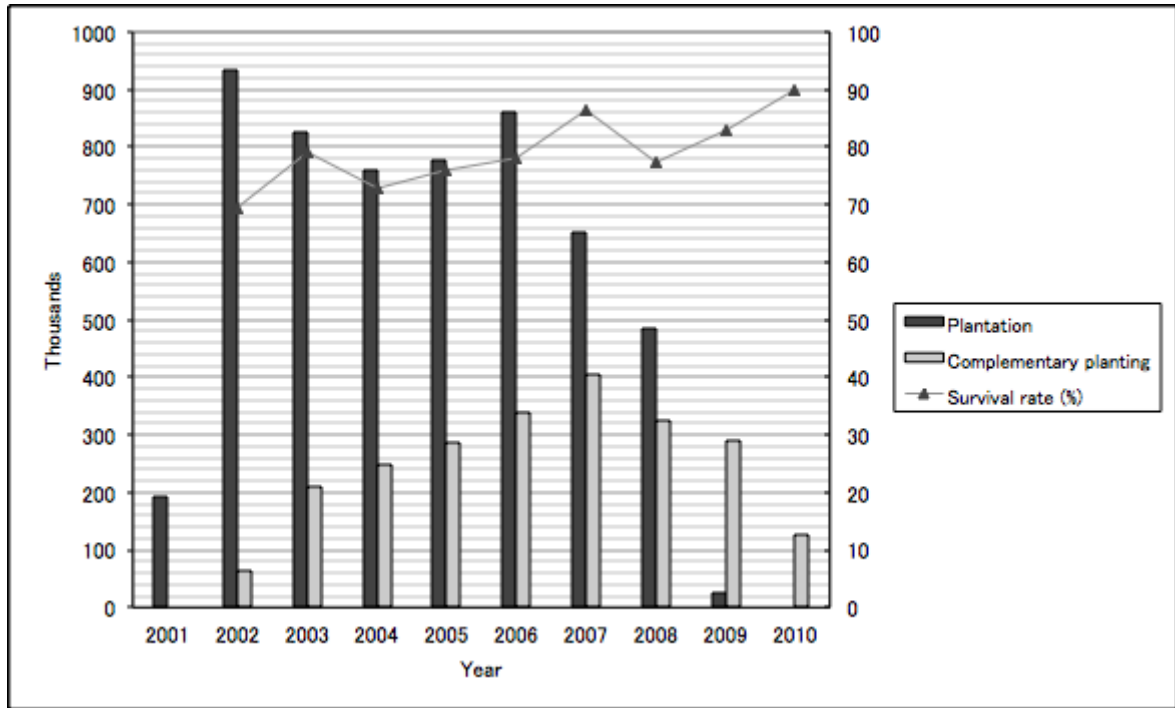


Figure 1. The number of trees planted, the number complementary planting, survival rate
Source : AHADS

3) Recovery of forests

Figure 1 concerns the number of trees planted, the number trees complimentarily planted, and survival rate⁷. The survival rate refers to the percentage of all trees newly planted and complimentarily planted in the previous years. The survival rate increased from 69.5% in 2002 to 90% in 2010. This indicates recovery of soil conditions together with improved organizations and skills for maintaining trees.

As discussed above, the water depth increased, agricultural land was expanded, agricultural productivity was improved, and survival rate of trees was improved. From these, it can be said that the environment was much recovered.

(2) Formulation of society that sustainably uses natural resources

One of the project outcomes was the formulation of society that sustainably uses natural resources. In order to use resources sustainably, it is important that people comply with rules that protect environment and use natural resources. This ex-post evaluation conducted a beneficiary survey⁸ to collect information of how much responsibly people used natural resources in each year from 1999

⁷ Plantation was started in 2001 and complimentary planting was started in 2002, and the data of survival rates were collected from 2002.

⁸ In order to select respondents of the beneficiary survey, I randomly selected 10 villages from all the target villages of this project, and then randomly selected 40 households from each of the selected 10 villages. I administered the questionnaire survey to the household heads or their spouses of the selected households. In total, I collected the data from 393 households. It should be noted that the responses were based on the recollections of the respondents and may not be necessary accurate.

to 2011. The result shows that people were not necessarily responsible in 1999 but they became more responsible since 2006, indicating that people changed their behavior to use natural resources in the forest more responsibly.

Table 4 concerns statistical analyses⁹ of why people became more responsible in using natural resources. This analysis indicated factors that contributed to behavioral changes of the local people who became more responsible in using natural resources. The results indicate that people became more responsible in using natural resources (1) if they are more aware that environmental conservation is necessary in order to maintain and improve their livelihood, (2) if the leader and community cooperative with the project, (3) if people feel responsible in conserving environment and they are cooperative with one another, and (4) if they trusted AHADS.

From the result, people became responsible in using the natural resources, because people improved their awareness on their awareness of environment and changed their behavior to protect it. The result also indicates that it is not only by changes in individual awareness and behavior, but also changes in their social environment. When village leaders and community cooperate

Table 4. Analysis of the degree by which people responsibly use natural resources¹⁰

Factor	Coefficient
The degree by which people are aware that environmental conservation is important in order to maintain and improve livelihood	0.19***
The degree by which village leader and community are cooperative with the project	0.10***
The degree by which people feel responsible in conserving environment x the degree by which people are cooperative with one another	0.08***
The degree by which people trust AHADS	0.04***
intercept	0.64***
sigma_u	0.46
sigma_e	0.40
rho	0.57
R ²	Within = 0.63 Between = 0.41 Overall = 0.51
	Pob>Chi2 = 0.000

*** p<0.01 ** p<0.05 * p<0.1

Source : Beneficiary survey

⁹ The statistical analysis was by mixed effect model.

¹⁰ The figures with the asterisks indicate that they are statistically significant, meaning those factors with the coefficients with the asterisks are possibly affecting “the responsible use of natural resources by the people.”

with the project, when people cooperate with one another to enhance their awareness on the importance of environment, and when they trust AHADS, people become more responsible in using natural resources. From above, we can say that the society that responsibly uses natural resources was formulated.

3.2.2 Qualitative Effects

The qualitative outcomes of the project at the time of the appraisal were that “to provide another source of income to the peoples of scheduled tribes who were dependent on the assistance from the state government and promote their self-sustenance,” and “to conserve the precious environment.” The achievements in these regards were as follows.

(1) Economic independence of the people of Schedule Tribes.

In the interview at the time of field survey for the ex-post evaluation, the respondents said “Prior to the project, many people did not have working opportunities, and had to go outside Attappady to work. Since the project gave them working opportunities, they did not have to go outside Attappady and they lived together with their families.”

People of the Scheduled Tribes were engaged in construction of check dams¹¹ and irrigations as part of this project by which they earned wages. These improved their living standard. Figure 2 indicates the numbers of households that received wage by the project. Since 2000 when the project began full implementation, it increased gradually and reached 7,639 in 2006, after which it decreased as the constructions were completed.

On the one hand, about economic independence of the people, people said in the interview that “Working for the project gave more cash income than farming their own land, and many people did not engage in agriculture.” This project did not necessarily promote economic self-sustenance. I will discuss this later in the section of impact with the result of the beneficiary survey.

¹¹ Check dams were constructed in order to prevent soil from entering rivers and to store water.

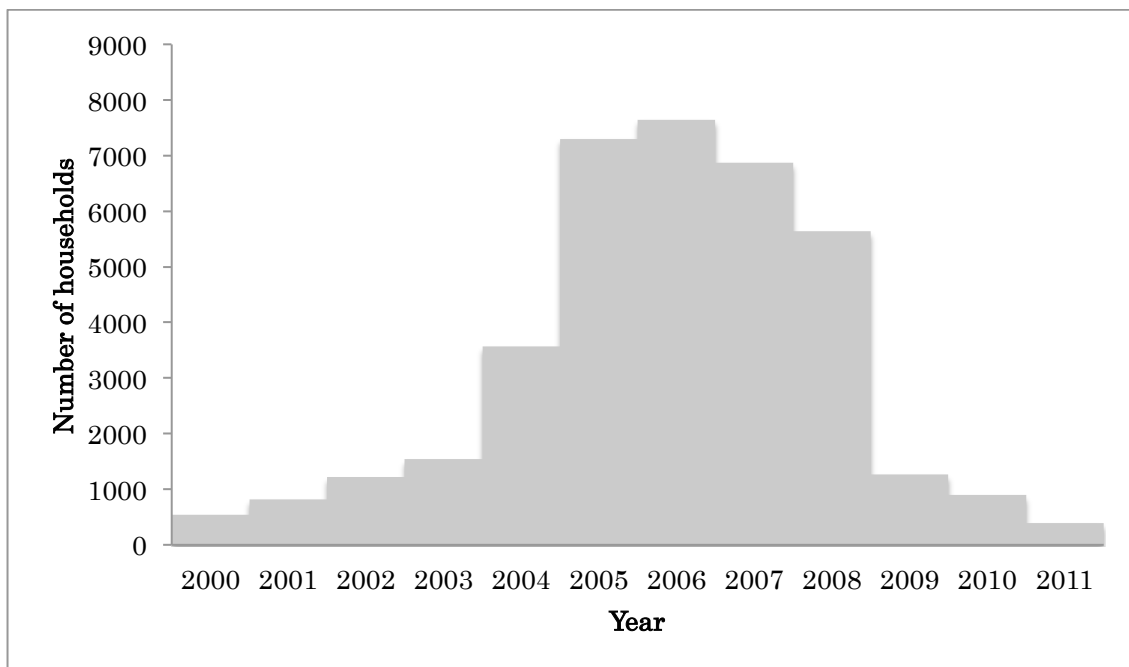


Figure 2. The number of households¹² that were engaged in and received wage from the project
 Source : AHADS

Attappady block had many incidents of starvation before the project. In order to see how the project improved the situation, the beneficiary survey asked the respondents the number of meals a day, and the degree by which they were well fed in each year from 1999 to 2011¹³. Figure 3 shows the results that the average numbers of meals were 2.37 in 1999, 2.63 in 2005 and 2.87 in 2011. The degree by which people were well fed was that they were not so well fed in 1999, and they gradually became better fed, and in 2011, they had some sufficiency. These indicate improvement of their living standard.

¹² According to AHADS the number of the households of Scheduled Tribe is estimated about 8,000.

¹³ The actual question was “How well fed were your family in each year from 1999 to 2011?” and the responses were in the scale of 5=very much well fed, 4=fairly well fed, 3=not well fed, 2=not well fed at all, 1=hardly fed.

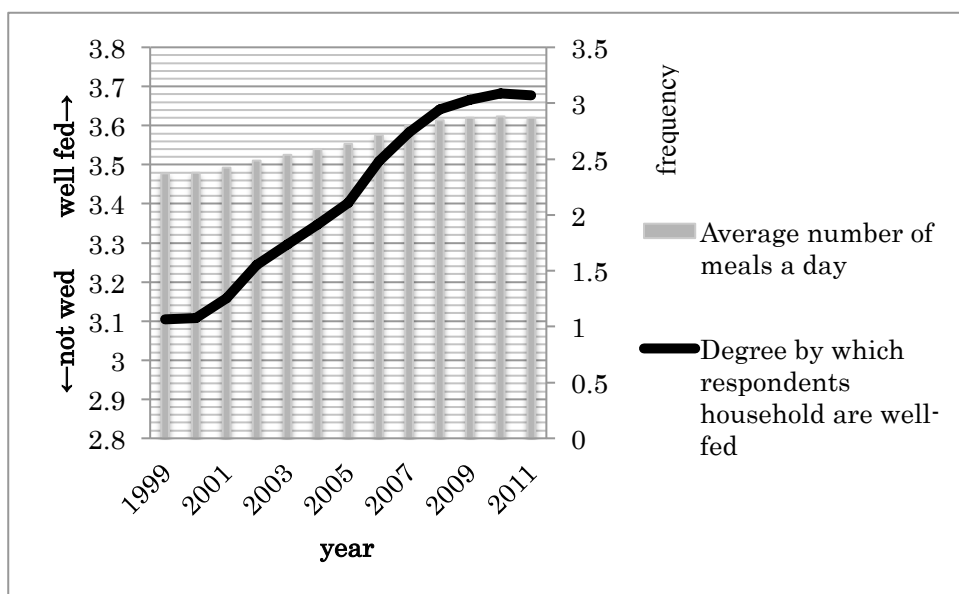


Figure 3. Average number of meals and the degree of being well-fed of the respondents

Source : Beneficiary survey

(2) Conservation of Ecosystem

Prior to the project, the area was wasteland. After the project implementation, the area had seven million vegetation in both state and private land. The survival rate improved from 60 to 90%. Prior to the project, rivers that only had water during rainy season prior to the project have water throughout years after the project. Groundwater increased and more water from wells is available. Check dams and other facilities for soil and water conservation purpose had the effects on soil conservation. These indicated recovery of ecosystem.

3.3 Impact

3.3.1 Intended Impacts

Next, I evaluate the impact of “self-sustaining economic activities of the local people, which is balanced with environmental conservation.” The beneficiary survey of this ex-post evaluation shows that the main working opportunities of the local people are wage work (agriculture and non-agriculture), self-employed agriculture, and employment in public and private sectors. The self-sustaining economic activities balanced with environment conservation among them are relatively stable, and not excessively exploiting environment, and these are self-employed agriculture and employment. On the one hand, wage work is only for the period need, thus not stable, and may not be necessarily self-sustaining.

As indicated by Tables 2 and 3, Attappady expanded cultivated areas, and increased productivity. 80% of people of Scheduled Tribe in Attappady block own land, and many farmed with water from rain and wells in their neighborhood. However, environmental degradation reduced rainfall, and moisture holding capacity of soil became lower, which lead to lower agricultural productivity, and

many stopped farming before the project implementation. The project improved moisture holding capacity through soil conservation and water resource development, and irrigation was installed, water became available and people started farming. However, the beneficiary survey with the respondents who were scheduled tribe found that the main source of income in each year from 1999 to 2011 was wage labor with about 35% of all the respondents in non-agriculture as indicated in Figure 4. The second most common source of income was wage labor in agriculture, and it was 34% in 1999, and 31% in 2011. Self employed agriculture was 20% in 1999 and it became 18% in 2011. Those who had the wage labor for the project accounted for 3.8% in 1999 and gradually increased until 2007. Then, as the construction was completed, the working opportunities also decreased. This was followed by the increase in the wage labor in non-agriculture and other source of income. This indicates that the household that could not earn wage went for wage in non-agriculture and other income source.

The above indicates that although agriculture expanded, it was by those who are relatively well-off and are not of scheduled tribe¹⁴. On the one hand, wage labor by the people of the Scheduled Tribe increased, and their self-employed agriculture did not increase. This indicates that expansion of agriculture do not correlate with independent economic activities by the tribal people, the project has not necessarily expanded self-sustaining economic activities of the local people.

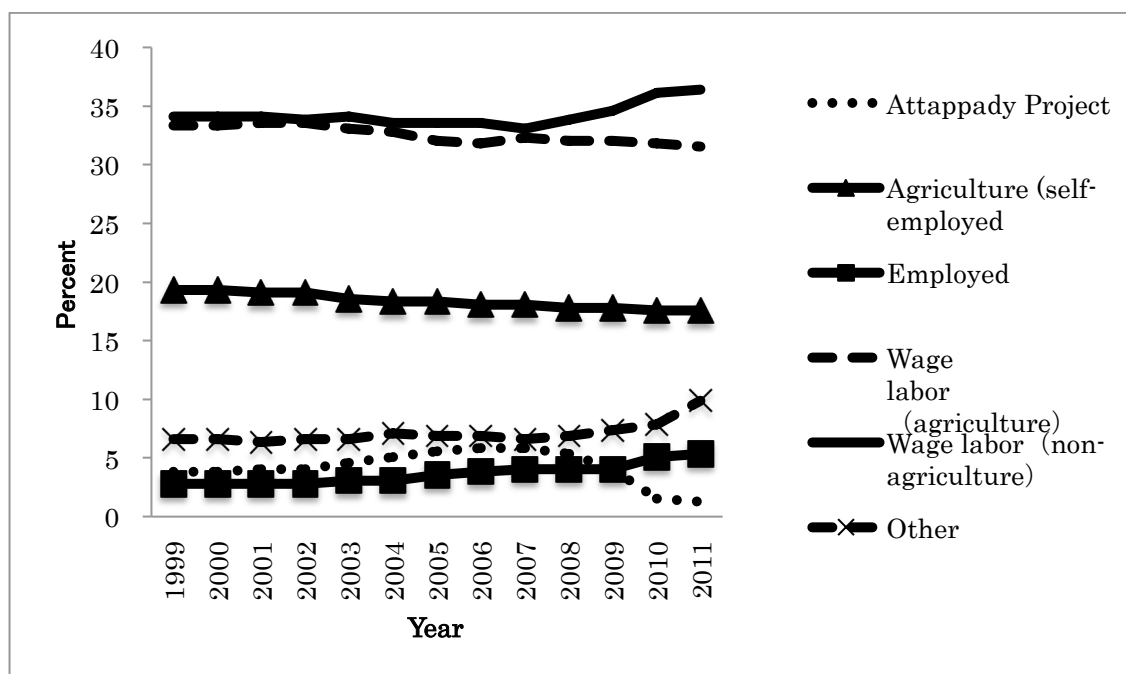


Figure 4. The Main source of income of the respondents

Source : Beneficiary survey

¹⁴ Respondents of the beneficiary survey were all of Scheduled Tribe.

3.3.2 Other Impacts

(1) improved women's status

Other impact includes improved women's status in their communities. Prior to the project, women in Attappady had no contacts outside their own communities. The project gave them literacy education and training for acquiring technical skills, they participated in people's institutions, and they interacted with government, NGO and banks. These experiences gave them confidence, and made them less reluctant to have contacts with those outside of their communities. People's institutions have a rule that Governing Bodies should have a certain minimum numbers of women with an intention to improve women's status in their communities. Actually, 56% on average, more than half of the Governing Body members were women. By participating in this project, they had more opportunities of leadership.

A negative impact is that because of wage income by participating in this project, many men spent it on excessive drinking and drugs, and these became nuisance in the communities. To deal with these problem, women established a People's Institution called Thai Kula Sanghams and This also improved their social status as well.

(2) Capacity Development of People's Institution

This project established five people's institutions (PIs) that are User Association (UA), Ooru Vikasana Samithies (OVS), Joint Forest Management Committee (JFMC), Thai Kula Sanghams, Income Generation Activity Groups The beneficiary survey collected data on how effectively each organization functioned ¹⁵ (refer to Figure 5). The result demonstrated that in 1999 these institutions were not effective, and then their effectiveness gradually improved.

In order to find the factors that contributed to improving effectiveness of PIs, I analyzed the data by statistical method¹⁶ (refer to Table 5). The results indicated that people's activeness in the project activity, people' trust in AHADS, PIs responsiveness to people's needs contributed to PI's effectiveness.

For the PIs to function, the cooperation with AHADS is necessary. When people trust AHADS, people would be more receptive to the advice by AHADS, and it may improve the effectiveness of PIs. From this it can be said that in order to improve the effectiveness of PIs, it may be advisable to ensure whether people and implementing agency have the trust relationship, and if not the effort to promote trust relationship may improve effectiveness of PIs.

¹⁵ For this data, I asked the question, "How effective was your People's Institution in achieving project objectives?" for each of five PIs, and received the responses in five scales (5=very effective, 4=effective, 3=neutral, 2=not so effective, 1=not effective at all).

¹⁶ The statistical analysis was by mixed effect model.

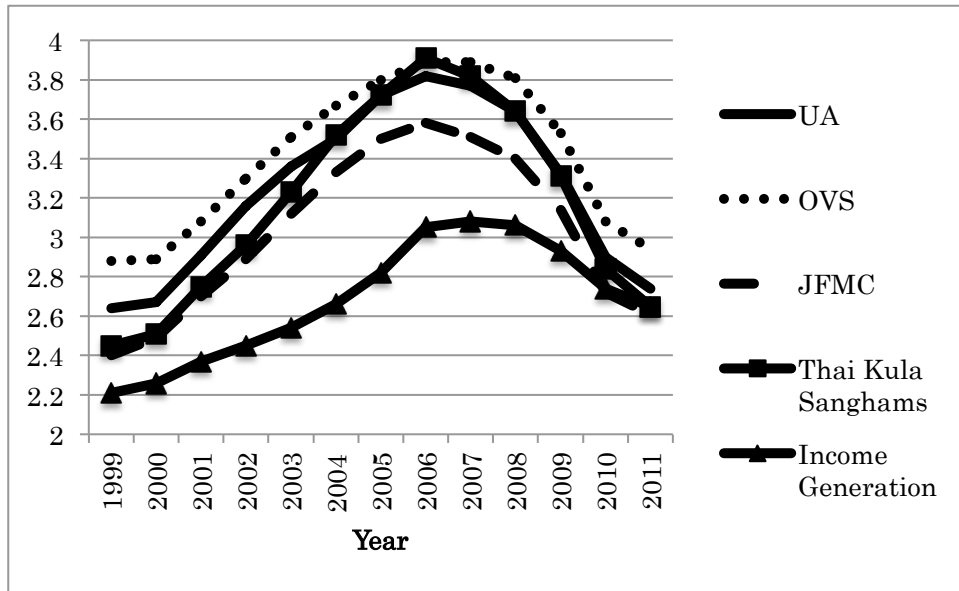


Figure 5. Effectiveness of People's Institutions

Source : Beneficiary survey

Although the members of the governing body are elected by all the members of the PIs, they may manage the PIs differently and they may differently respond to the community needs. The analysis indicates that those PIs that are responsive to the people's needs have higher effectiveness. When PIs can meet their needs, they can be more cooperative with the activities of the organization and improve the effectiveness. In order to improve organizational effectiveness, meeting people's needs is important.

From the result, the project recovered wasteland and contributed to formulating a society that sustainably uses natural resources. Although the contribution to promoting self-sustained economic activities of the people balanced with the environmental conservation is limited, the project contributed to improving women's status and PIs. Thus, this project has largely achieved its objectives, therefore its effectiveness is high.

Table 5. Analysis of Capacity of People's Institution¹⁷

Factors	Users Association	Ooru Vikasana Samithies	Joint Forest Management Committee	Thai Kula Sanghams	Income generation activity groups
Active participation in the project activities	0.10***	0.09***	0.06***	0.04***	0.01**
Trust in AHADS	0.07**	0.05***	0.08***	0.06***	0.06***
Responsiveness to community needs	0.78***	0.79***	0.80***	0.85***	0.89***
intercept	0.03	0.14***	0.05	0.07	-0.02
sigma-U	0.30	0.31	0.38	0.29	0.32
sigma-e	0.45	0.44	0.40	0.42	0.25
rho	0.30	0.33	0.47	0.32	0.62
R2 within	0.70	0.70	0.72	0.76	0.87
between	0.77	0.79	0.79	0.82	0.90
overall	0.73	0.74	0.76	0.80	0.90

Source : Beneficiary survey

3.4 Efficiency (Rating: ②)

3.4.1 Project Outputs

The outputs were planned to achieve the objective of soil recovery and conservation, and water resource development in Table 6. The plan and achievements are listed in Table 7.

The area of wasteland to be recovered by the project was determined in the following manner. Attappady block was divided into 146 micro watersheds, where user associations (UAs) were established, and these UAs formulated microplans for recovery and reuse of wasteland with the technical help of consultants. The plan and the achievements are in Table 7, and the percentage of the achievements vis-à-vis the plan is mostly 100%.

¹⁷ The numbers with asterisks indicate that they are statistically significant, meaning factors with numbers with asterisks possibly contributed to effectiveness of People's Institutions.

Table 6. Contents of soil recovery and conservation measure, and water resource development

Measure		Treatment	Effects
Soil recover and Conservation Measures	Agronomic Measure	Plantation, Agroforestry (fruit tree plantation, grass raising), agriculture	To prevent soil erosion and increase rainfall infiltration by covering surface, thereby increasing productivity of land and promoting effective use
	Land Development	Construction of terrace	To prevent run-off of soil and increase rainfall infiltration
Water Resource Development		Check dam	To prevent soil run-off to river and store water

Table 7. Plan and Actual of Output

Items		Plan (2003)	Actual (2011)	The percentage of the actual vis-à-vis the plan
Soil recovery And conservation (Vegetative measures)	Land for soil recovery and conservation measures	16,065	16,344	102
	Agroforestry (ha)	4,905	5,347	109
	Land for improved cultivation (ha)	2,084	2417	116
	Mulberry land for Sericulture (ha)	574	181.5	32
	Plantation (ha)	3,938	3776	96
Soil recovery And conservation (land development measures)	Drainage Treatment (km)	361	342	95
	Small scale irrigation (km)	800	764	96
	Structures for water and soil conservation measures (drains, terraces, and others) (km)	158	279	177
Water resource development	Irrigation facilities (no)	91	134	147
	Check dam (no)	493	311	63
	Installing pond for recharging aquifers (no)	1,749	1,339	77
Assistance for tribal people	Cattle sheds (no)	4	3	75
	Community Centers (meeting halls) (no)	116	102	88
Infrastructure	Chavadiyur Bridge* (no)	1	1	100
Total Hamlet Development Program	Houses (no)	2,047	1,981	97
	Energy saving cooking device (no)	3,822	3,679	96
	Lights and solar battery (no)	3,822	3,679	96
Health and educational facilities	Hospital buildings (no)	4	4	100
	Drinking water supply scheme at Agali ** (no)	1	1	100
	School buildings (no)	12	12	100

Source : AHADS

* Length : 135metre Width : 7.5metre

** The number of user households : 2,500 (1,200 tribal people included)

The reasons why some outputs did not reach the goal were as follow. The achievement of mulberry land for sericulture is 32% of the plan. This was because the introduction of this activity

was late, and the local people did not have sufficient time to have more interest in this activity.

The achievement of the check dams for water resource development is 64% of the plan with 311 check dams constructed. The other check remaining in the plan dams were shifted to structures for water and soil conservation measures that were 177% of the plan. This component includes drainage treatment that prevent run-off of soil, and it has the same structure of check dams. The places where they constructed 311 check dams already had the structure of drains and did not have to construct them.

This project understood the importance of poverty reduction of the tribal people in order to recover and maintain the environment. However, at the beginning of the implementation, the project did not plan sufficiently for the facilities that directly contributed to the improvement of the living conditions of these people. In 2002, "Total Hamlet Development Program" was added to construct houses, schools, and hospitals. The achievements were 1,981 houses with the plan of 2,047 houses (ratio of the achievement to the plan: 96.8%), 4 hospitals and 12 schools as planned. Because of this component, many tribal people acquired houses, and their living standard was improved, and they did not have to do activities to damage the environment such as felling trees for firewood, grazing of live stocks and exposing soil. Thus, this component was useful for effectiveness and sustainability of the project.

3.4.2 Project Inputs

3.4.2.1 Project Cost

The plan was 6,338 million yen vis-à-vis 5,663 million yen (plan ratio 89.3%). Approved yen loan was 5,112 million yen, and the disbursement was 4,867 million yen (plan ratio 95.1%). It was lower than planned

3.4.2.2 Project Period

The planned project period was 87 months from January 1996 to March 2003. The actual period was 172 months until February 2010 (Plan ratio 198%). Because of the delay in the implementation, L/A period was extended twice since March 2002.

The reason why the project implementation was delayed was as follows.

(1) Delay in the recruitment of AHADS staff

At the beginning of the project implementation, AHADS were to be staffed by the government officials all over India by the open application. However, the project site did not have basic infrastructure such as tap water and electricity, and no officials applied to the positions. AHADS opened the posts to the general public, and recruited 96 staffs although they had 168 positions. Gradually, they recruited staffs, but the delay in filling the positions delayed the project

implementation.

(2) Delay in microplan

With regards to the preparation of the implementation plan, detailed plans for 15 watersheds of Attappady block was to be prepared, based on the master plan prepared by Centre for Water Resources Development and Management (CWRDM), a public company of Kerala state government. And they microplans for all 146 micro watersheds were to be prepared. In June 1999, CWRDM prepared detailed plans for 10 watersheds, and AHADS technical committee rejected them on the ground that they were not detailed enough for the implementation. Then AHADS was required to make the detailed plan. However, at that time AHADS staff did not have experiences in designing and implementation, and members of UA did not have experiences of contractors. They had to work on plan, designing, and implementation with trial and error, and these required time. It took until 2003 to complete all the microplans.

(3) Delay in people's participation.

Although the project was assuming the people's participation, only few were cooperative at the beginning of the project implementation. Prior projects by the government did not take in account people's intention, and people did not trust government organization. It took about 4 years to gain the full cooperation of the local people.

In 1999, the first people's institution was registered, and it took until 2002 to formulate all the PIs. AHADS undertook various activities to nurture trust relationship with local people such as camping together with the local people. Those villages had serious social problem of alcoholism and use of drugs. In order to respond to the needs of community, AHADS did awareness program by play and films, removing alcohol suppliers from the area, and burn the plants for drugs. Through these cooperation to solve problems by the local people, AHADS acquired cooperation from the people.

(4) Addition of Total Hamlet Development Program

At the beginning of the project planning, the project intended to promote self-sustained economic activity to avoid people's excessive use of forest resources for sustainable conservation of environment. However, the seriousness of people's poverty was more than expected. The project took this into account, and added Total Hamlet Development Program that included construction of local people's houses. Although this addition caused some delay in the project implementation, this addition was necessary, as mentioned in the section of the output, in order to ensure effectiveness and sustainability.

From the above, although the project cost was within the plan, the project period was exceeded, therefore efficiency of the project is fair.

3.5 Sustainability (Rating: ②)

3.5.1 Structural Aspects of Operation and Maintenance

This project was implemented by AHADS that was established specifically for managing the project and operate project activities under Local Self Government Department of Government of Kerala. AHADS had the Governing Body of which Chairman was Secretary to Government, Rural Development Department, and members were representatives of central, state, and local governments.

The number of staff members were 86 officials, and the total number was 126 including secretary, drivers, photo copier, cleaners and others (as of March 2011)

For the project implementation at the field level, Attappady block was divided into 146 micro watersheds, and villagers living in 93 micro watersheds were organized into User Associations (UAs) and were engaged in planning, implementation and management for the construction of facilities for the recovery of environment. All the villagers living within each of these micro watersheds were the members, and nine persons were elected to be the office bearers of the governing body. Among these nine office bearers, at least five had to be women, and at least six had to be of Scheduled Tribe. Remaining 53 micro watersheds were state forestland, and villagers living in this neighborhood constituted Joint Forest Management Committee and engaged themselves in plantation and forest protection.

In 166 villages of Attappady block, Ooru Vikasana Samithies (OVS) was established of which governing body was consisted of 13 office bearers which had to include at least three women. In addition, Thai Kula Sanghams was established by women to campaign against social problems such as alcoholism. Income Generation Activity groups were established for income increasing the income of the members. The number of groups, the number of members, and their function are as in Table 8.

Table 8. The number of People's Institution, the number of members and the functions

Name of the people's institution	The number of groups	Total number of members except income generation groups	Functions
User Group	93	30,702	To plan, construct and maintain facilities
Joint Forest Management Committee	53	9,227	Plantation and maintenance of forests
Ooru Vikasana Samithies	166	19,754	To plan, construct and maintain facilities for community development
Thai Kula Sanghams	111	1,990	To be engaged in campaign against social problems such as excessive drinking and illegal drugs
Income Generation Activity groups	220	12-15member in each group	To be engaged in income generating activities

Source : AHADS

PIs are the only mechanism by which villagers participated in the project activities, and they had the function of contractors to construct facilities of this project. In order to support these PIs, AHADS divided Attappady block into five areas (Figure 6), organized five Field Management teams each of which had AHADS staff who were experts on forestry, agriculture, soil conservation, civil engineering, and extension, and supported the PIs of area to which they were assigned.

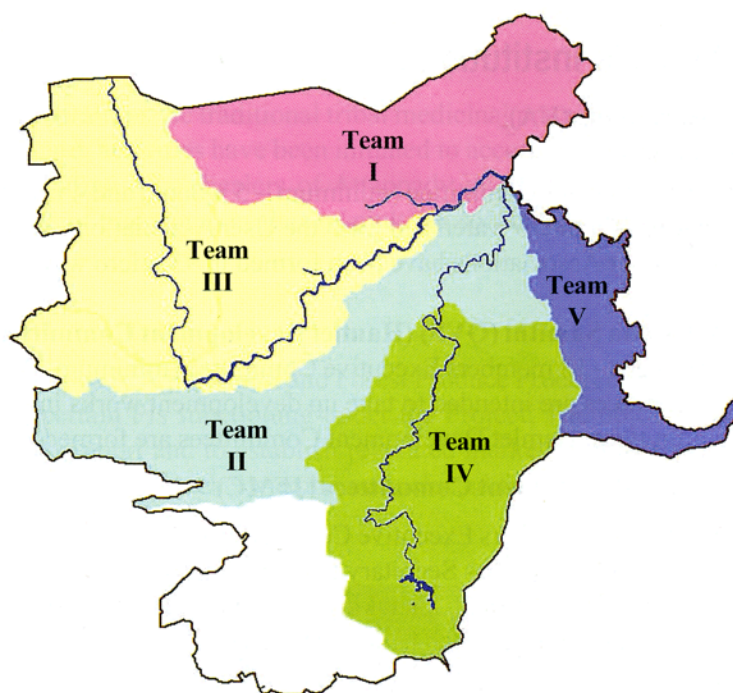


Figure 6. Assigned areas of AHADS Field Management Team

Source : AHADS

After the project implementation, the maintenance and operation of the project outputs such as forests and facilities were transferred to PIs and local governments. Maintenance and operation of forest was entrusted to JFMC that employ forest watchers to patrol and keep eye on illegal felling, and JFMC decides the necessary arrangements for the maintenance and management of the forests that include the number of the watchers, their wages and frequency of patrolling.

Facilities such as check dams and others are owned by the UAs and OVS and they are responsible for the maintenance and operation. As for the maintenance of check dams of the large size, heavy machines are necessary, which requires additional funds and the request is forwarded to Kerala state government.

The facilities of which maintenance and operation were transferred to the state and local governments are as follows. Hospital buildings were transferred to the health department of Kerala state government, and its maintenance and operation is taken care of by HMC (Hospital Development Committee) whose members are medical officers, and the Grama Panchayath President, Grama Panchayath members and others. The budget for the maintenance and operation is covered by Kerala health department and local governments.

School buildings were transferred to Kerala education department and its maintenance and operation are entrusted to school headmasters who are also the officials of the department. The actual maintenance is the responsibility of PTA (Parent Teachers Association) of which members are the representatives of students' parents and teachers. The budget for the maintenance is from Kerala state government, local government, and donations from parents and others.

Agali drinking water scheme is maintained by Agali Grama Panchayath. The number of user households is about 2,000 and each household pays the fee of 60 rupee per month, and this fee is used for its maintenance and operation.

Although AHADS was expected to be reduced in its size and engage itself in supporting PIs, it continued its functions with the size similar to during the project implementation until March 2012. Since April 2012, Kerala state government has not disbursed the budget, and made a decision to continue it in a smaller size with 12 staff members, and is presently deciding the organizational structure. Until when the Kerala state government decides the organizational structure, AHADS have a temporary organizational arrangement and assists PIs as necessary

3.5.2 Technical Aspects of Operation and Maintenance

The members of PIs were engaged in the construction of the facilities such as irrigation facilities, check dams and others, and learned knowledge and skill necessary for maintenance and operation of these facilities. When they need technical assistance, AHADS in the new organizational

structure will assist them, thus no technical problem is expected.

At the time of the field survey for this ex-post evaluation, I visited hospitals, schools, a bridge and Agali drinking scheme, I observed that their maintenance conditions were mostly good, and were functioning as planned. AHADS stated that the local governments have necessary technique to maintain and manage these facilities, and if they need technical assistance, they have the organizational arrangement to have the assistance from external agencies, and no technical problem is expected.

3.5.3 Financial Aspects of Operation and Maintenance

After the project implementation until the end of FY2011¹⁸, Kerala state government had the budget of 178 million rupee for the maintenance and management of the facilities constructed by the project. AHADS was engaged in maintenance and operation together with PIs, and spent 117 million rupee. However, there is no budgetary allocation since April 2012. AHADS said that the consideration of the budget for the maintenance and management is at the final stage, and is expected to be soon. However, there is no guarantee for this budget yet.

During the project implantation, UAs, OVSS, and JFMCs received 4% of the contract amount for the administrative fee, and each saved it as Community Development Fund in the PIs' bank account. The balance as of August 2011 is as in Table 9, and its use is determined by the PIs, and PIs can spend it with the agreement of AHADS. Currently, it is used for the maintenance expenses of the project outputs such as forests and facilities, and the capital for the loan for the economic activities of the PI members. Each PI determines the loan periods and the interest rates (the annual interest rate has to be at least 4%). The loan disbursement as of October 2012 is about 710,000 rupee for dairy and other business activities. In addition, one million rupee is to be disbursed for purchasing seeds and fertilizer for agricultural production.

Table 9. The total balance of Community Development Fund
as of August 30, 2011

People's Institutions	Balance (1,000 rupee)
OVS (Total of all 166 groups)	3,642
Users Association (Total of all 93 groups)	4,867
JFMC (Total of all 53 groups)	12,831
Total	21,340

Source : AHADS

¹⁸ A fiscal year in India starts in April and ends in March next year.

Local governments that received facilities such as hospital buildings have sufficient budget for maintenance and operation, and are expected to have it in the future.

3.5.4 Current Status of Operation and Maintenance

PIs are in charge of operation and maintenance of many facilities that they constructed in the project implementation, and AHADS provide necessary technical assistance. Thus, it mostly appears no problem. AHADS said that some check dams that were transferred to PIs have sand deposited, and it will be removed soon once they have the necessary fund for this from the State government. On the one hand, as stated in the section of technical aspects of operation and maintenance, I observed that the facilities transferred to local governments were in good conditions and functioning adequately as planned.

Some problems have been observed in terms of budget for the operation and maintenance, and the current status of the maintenance therefore sustainability of the project effect is fair.

4. Conclusion, Lessons Learned and Recommendations

4.1 Conclusion

The objective of the project is to recover wasteland and formulate society that sustainably uses natural resources by undertaking tree plantation and other activities for recovering environment with people's participation, thereby contributing to promoting self-sustaining economic activities of the local people, which is balanced with environmental conservation in Attappady in Southern India. The relevance is high since the Government of India emphasized recovering environment in the forest areas and reducing poverty of tribal people, while Attappady had issues of degraded forest areas and worsening poverty situations. Japan's ODA policies emphasized recovering environment and reducing poverty. The effectiveness and the impact are high since wasteland was recovered by tree planting and other activities with the people's participation, and local people raised their awareness on environment protection, leading to the formulation of society that sustainably uses natural resources. The efficiency is fair since the expenditure was within the plan but the period was extended. The sustainability is fair. Although organizational and technical aspects of the operation and maintenance do not have problems, some budget for the operation and maintenance is not secured and some facilities are not appropriately maintained. In light of the above, this project is evaluated to be satisfactory.

4.2 Recommendations

4.2.1 Recommendations to the Executing Agency

Although this project was highly effective in recovering degraded environment and organizing people, it is important to continue to support people's institutions so that they can operate and maintain the project outputs so that the project effectiveness will be sustained. For this purpose, it is important to use accumulated know-how by implementing this project. Kerala state government

decided to continue it in a smaller size, and it should determine the organizational structure, and plan appropriate activities and implement them as soon as possible.

4.2.2 Recommendations to JICA

Although Kerala state government decided to maintain AHADS in a smaller size and made it responsible for operation and maintenance of the project outputs, its concrete directions are not yet clear. Kerala state government should be urged to make the pertinent decision and implement the new organization of AHADS as soon as possible.

4.3 Lessons Learned

One reason why the project implementation was delayed was that AHADS needed about four years to nurture cooperative relationships with the local people. At the time of planning, information on people's needs was not collected, and the difficulty that AHADS faced in nurturing the cooperative relationships had not been expected. As the lesson of this project, especially those projects that involve people's participation should collect information on the relationships between people and government organizations, social situations, living conditions, development needs and others. If they identify problems that may be expected to make project implementation difficult, the risk of delay should be assessed, and the implementation schedule should be sufficient for dealing with such risk.

In this project, it was important to promote self-sustained economic activities so that environments would not be damaged again. People's livelihood was improved by the wage from construction activities. However, their economic activities were not necessarily promoted. It can be a lesson that the project should have undertaken more activities to promote people's self-sustaining economic activities.

Comparison of the Original and Actual Scope of the Project

Item		Plan (2003)	Actual (2011)	
1.Project Outputs	Items			
	Soil recovery And conservation (Vegetative measures)	Land for soil recovery and conservation measures	16,065	16,344
		Agroforestry (ha)	4,905	5,347
		Land for improved cultivation (ha)	2,084	2417
		Land for Sericulture (ha)	574	181.5
		Plantation (ha)	3,938	3776
	Soil recovery And conservation (land development measures)	Drainage Treatment (km)	361	342
		Small scale irrigation (km)	800	764
		Structures for water and soil conservation measures (drains, terraces, and others) (km)	158	279
	Water resource development	Irrigation facilities (no)	91	134
		Check dam (no)	493	311
		Installing pond for recharging aquifers (no)	1,749	1,339
	Assistance for tribal people	Cattle sheds (no)	4	3
		Community Centers (meeting halls) (no)	116	102
	Infrastructure	Chavadiyur Bridge* (no)	1	1
	Total Hamlet Development Program	Houses (no)	2,047	1,981
		Energy saving cooking device (no)	3,822	3,679
		Lights and solar battery (no)	3,822	3,679
	Health and educational facilities	Hospital buildings (no)	4	4
		Drinking water supply scheme at Agali ** (no)	1	1
		School buildings (no)	12	12
		Original	Actual	
	2.Project Period	July 1995 – March 2003 (93 months)	October 1995 – February 2010 (176 months)	
3.Project Cost				
Amount paid in Foreign currency	688 million yen	240.17 million yen		
Amount paid in Local currency	5,650 million yen	4,896 million yen		
Total	6,338 million yen	5,136.17 million yen		
Japanese ODA loan portion	5,112 million yen	4,866.6 million yen		
Exchange rate	1 rupee = 2.89 yen (As of April 1995)	1 rupee = 2.62 yen (Average between October 1995 and February 2010)		