ADB

Project Completion Report

PCR: BAN 25311

Coastal Greenbelt Project (Loan 1353-BAN[SF]) in the People's Republic of Bangladesh

October 2005

Asian Development Bank

CURRENCY EQUIVALENTS

Currency Unit – taka (Tk)

		At Appraisal	At Project Completion
		31 December 1994	23 June 2003
Tk1.00	=	$0.0248	$0.017
$1.00	=	Tk40.25	Tk58.415

ABBREVIATIONS

ADB	–	Asian Development Bank
BARI	–	Bangladesh Agriculture Research Institute
BFRI	–	Bangladesh Forest Research Institute
BME	–	benefit monitoring and evaluation
BWDB	–	Bangladesh Water Development Board
CFP	–	Community Forestry Project
CGP	–	Coastal Greenbelt Project
DFO	–	divisional forest officer
EA	–	executing agency
EIRR	–	economic internal rate of return
FIRR	–	financial internal rate of return
FD	–	Forest Department
FSP	–	Forestry Sector Project
GOB	-	Government of Bangladesh
LA	–	Loan Agreement
LUA	–	land-use agreement
MOEF	–	Ministry of Environment and Forest
MOU	–	memorandum of understanding
MTR	–	midterm review
NGO	–	nongovernment organization
PBSA	–	participatory benefit sharing agreement
PCR	–	project completion review
PIO	–	project implementation office
PP	–	Project Pro-forma
PPAR	–	project performance audit report
PPTA	–	project preparatory technical assistance
RIMS	–	resource inventory monitoring system
RRP	–	report and recommendation of the President
SDR	–	special drawing rights
SERF	–	shadow exchange rate factor
SOE	–	statement of expenditures
SWRF	–	shadow wage rate factor
TA	–	technical assistance
TFF	–	Tree Farming Funds
UANDP	–	Upazila Afforestation and Nursery Development Project

NOTES

(i) The fiscal year (FY) of the Government ends on 30 June. FY before a calendar year denotes the year in which the fiscal year ends, e.g., FY2004 ends in 30 June 2004.

(ii) In this report, "$" refers to US dollars.

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BASIC DATA

A. Loan Identification

1.	Country	Bangladesh
2.	Loan Number	1353
3.	Project Title	Coastal Greenbelt Project (CGP)
4.	Borrower	People's Republic of Bangladesh
5.	Executing Agency	Forest Department of the Ministry of Environment and Forest
6.	Amount of Loan	SDR15,763,000
7.	Project Completion Report Number	PCR:BAN 909

B. Loan Data

1.	Appraisal	
	– Date Started	16 July 1994
	– Date Completed	7 August 1994
2.	Loan Negotiations	
	– Date Started	2 November 1994
	– Date Completed	4 November 1994
3.	Date of Board Approval	2 March 1995
4.	Date of Loan Agreement	18 April 1995
5.	Date of Loan Effectiveness	
	– In Loan Agreement	17 July 1995
	– Actual	28 July 1995
	– Number of Extensions	1
6.	Closing Date	
	– In Loan Agreement	31 December 2002
	– Actual closing of account	23 June 2003
	– Number of Extensions	1
7.	Terms of Loan	
	– Interest Rate	1% per annum
	– Maturity (number of years)	40
	– Grace Period (number of years)	10
8.	Terms of Relending (if any)	None
9.	Disbursements	

a. Dates

Initial Disbursement	Final Disbursement	Time Interval
6 March 1996	23 June 2003	87 months
Effective Date	**Original Closing Date**	**Time Interval**
28 July 1995	31 December 2002	89 months

b. Amount (in SDR)

Category	Original Allocation	Loan Revised Allocation (2002)	Amount Cancelled (2002)	Amount Disbursed	Amount Cancelled at Closing Date
Strip Plantation Establishment (FX)	425,000	374,670	50,330	350,345	24,325
Strip Plantation Establishment (LC)	2,183,000	1,925,330	257,670	1,778,196	147,134
Strip Plantation Maintenance (FX)	216,000	372,960	(156,960)	305,346	67,614
Strip Plantation Maintenance (LC)	997,000	1,727,040	(730,040)	1,678,713	48,327
Homestead and Institution Plantations (FX)	421,000	332,200	88,800	326,479	5,721
Homestead and Institution Plantations (LC)	2,113,000	1,667,800	445,200	1,492,367	175,433
Trial Foreshore Plantations (FX)	66,000	65,456	544	64,062	1,394
Trial Foreshore Plantations (LC)	325,000	322,544	2,456	310,347	12,197
Nursery Development and Upgrading (FX)	276,000	122,269	153,731	128,019	(5,750)
Nursery Development and Upgrading (LC)	868,000	384,652	483,348	389,777	(5,125)
Public Awareness Campaigns					
Vehicles and Equipment (FX)	184,000	94,400	89,600	73,572	20,828
Vehicles and Equipment (LC)	46,000	23,600	22,400	18,913	4,687
Campaign Activities (FX)	203,000	156,654	46,346	146,522	10,132
Campaign Activities (LC)	533,000	411,346	121,654	378,322	33,024
Consultant Services (FX)	236,000	495,793	(259,793)	498,835	(3,042)
Consultant Services (LC)	111,000	233,207	(122,207)	225,975	7,232
Project Support					
Vehicles and Equipment (FX)	603,000	696,782	(93,782)	682,536	14,246
Vehicles & Equipment (LC)	32,000	36,982	(4,982)	40,105	(3,123)
Operation and Maintenance (FX)	252,000	251,971	29	237,630	14,341
Operation & Maintenance (LC)	728,000	728,079	(79)	641,529	86,550
Buildings (LC)	286,000	446,000	(160,000)	551,142	(105,142)
Staff Salaries (LC)	529,000	1,031,941	(502,941)	1,027,232	4,709
BME Activities (LC)	47,000	200	46,800	186	14
Research Support (LC)	94,000	94,000	0	68,865	25,135
Training Program (LC)	741,000	911,532	(170,532)	953,305	(41,773)
Unallocated (FX)	556,000	89,483	466,517	0	89,483
Unallocated (LC)	2,242,000	360,811	1,881,189	0	360,811
Service Charge (FX)	450,000	450,000	0	349,486	100,514
Total	**15,763,000**	**13,807,702**	**1,955,298**	**12,717,806**	**1,089,896**

BME = benefit monitoring and evaluation, FX = foreign exchange, LC = local cost.

10. Local Costs (Financed)

	Estimate			
Cost	**Appraisal**	**Revised (1999)**	**Revised (2002)**	**Actual**
- Amount ($'000)	17,628	16,235	13,825	12,732
- Percent of Local Costs	75	73	70	78
- Percent of Total Cost	60	59	57	62

C. Project Data

1. Project Cost ($'000)

	Estimate			
Cost	**Appraisal**	**Revised** (1999)	**Revised** (2002)	**Actual**
Foreign Exchange Cost	5,772	5,307	4,700	4,237
Local Currency Cost	23,508	22,115	19,705	16,325
Total	**29,280**	**27,422**	**24,405**	**20,562**

2. Financing Plan ($'000)

Cost	Estimate									Actual		
	Appraisal			Revised (1999)			Revised (2002)					
	Foreign Exchange	Local Cost	Total	Foreign Exchange	Local Cost	Total	Foreign Exchange	Local Cost	Total	Foreign Exchange	Local Cost	Total
ADB	5,772	17,628	23,400	5,307	16,235	21,542	4,700	13,825	18,525	4,237	12,732	16,969
Government	0	5,880	5,880	0	5,880	5,880	0	5,880	5,880	0	3,593	3,593
Total	**5,772**	**23,508**	**29,280**	**5,307**	**22,115**	**27,422**	**4,700**	**19,705**	**24,405**	**4,237**	**16,325**	**20,562**

ADB = Asian Development Bank.

3. Cost Breakdown by Project Component ($'000)

Component	Estimate					Actual		
	Appraisal	Revised (1999)[a]			Revised (2002)[b]			
	Total	Total	Foreign Exchange	Local Cost	Total	Foreign Exchange	Local Cost	Total
Plantation Establishment								
Road/Railside Strips	4,925	4,858	503	3,881	4,384	471	3,158	3,629
Homestead/Institution	4,876	4,834	446	3,612	4,058	442	2,737	3,179
Trial Foreshore Plantations	767	769	88	662	750	86	571	657
Nursery Development/Upgrade	2,052	1,997	164	951	1,115	168	653	821
Plantation Maintenance	2,497	3,395	500	3,175	3,675	404	2,492	2,896
Research Support	139	171	0	169	169	0	113	113
Training	1,100	1,776	0	1,462	1,462	0	1,460	1,460
Public Awareness Campaigns								
Vehicles & Equipment	388	370	127	88	215	96	40	136
Campaign Activities	1,236	1,210	210	730	940	195	590	785
Consultant Services	515	708	665	313	978	659	299	958
Project Support								
Civil Works (Buildings)	547	955	0	748	748	0	951	951
Vehicles & Equipment	1,053	1,004	935	187	1,122	938	164	1,102
Operation & Maintenance	1,816	1,784	338	1,423	1,761	316	1,139	1,455
Staff Salaries	1,121	2,002	0	1,798	1,798	0	1,958	1,958
BME Activities	88	86	0	22	22	0	0	0
Unallocated	5,263	889	120	484	604	0	0	0
Service Charge	668	614	604	0	604	462	0	462
Total	**29,280**	**27,422**	**4,700**	**19,705**	**24,405**	**4,237**	**16,325**	**20,562**

BME = benefit monitoring and evaluation.

[a] The loan reallocation in 1999 increases the categories for the consulting services, training and public awareness, strip plantation and staff salaries with the increases drawn from the unallocated category.

[b] The revised allocation in 2002 was due to the cancellation of $2.59 million and re-employed to Loan 1486-BAN (ADB. 1996. *Report and Recommendation of the President to the Board of Directors on a Proposed Loan to the People's Republic of Bangladesh for the Forestry Sector Project.* Manila.)

4. Project Schedule

Item	Appraisal Estimate	Actual
Consulting Services		
- Date of Contract with Consultant	July 1995	24 June 1997
- Date of Completion	June 1996	21 June 2002
Civil Works Contract		
Date of Award	July 1995	28 May 1997
Completion of Work	June 1997	39 June 2001
Equipment and Supplies		
Dates		
First Procurement	July 1995	18 Nov. 1995
Last Procurement	June 1997	18 June 2002

Item	Appraisal Estimate	Actual
Other Milestones		
- Reallocation of Loan Proceeds (first reallocation)		7 June 1999
- Reallocation of Loan Proceeds		24 July 2002
- Actual Loan Closing Date		30 June 2003

5. Project Performance Report Ratings

Implementation Period	Ratings	
	Development Objectives	Implementation Progress
From 1 January 1996 to 31 December 1996	Satisfactory	Satisfactory
From 1 January 1997 to 31 December 1997	Satisfactory	Satisfactory
From 1 January 1998 to 31 December 1998	Satisfactory	Satisfactory
From 1 January 1999 to 31 December 1999	Unsatisfactory	Satisfactory
From 1 January 2000 to 31 December 2000	Partly Satisfactory	Satisfactory
From 1 January 2001 to 31 December 2001	Satisfactory	Satisfactory
From 1 January 2002 to 31 December 2002	Satisfactory	Satisfactory

D. Data on Asian Development Bank Missions

Name of Mission	Date	of Persons	No. of Person-Days	Specialization of Members[a]
Fact Finding	11–30 Apr 1994	5	20	a. b, c, d, e
Appraisal	16 July–7 Aug 1994	8	23	a, b, d, f, g, h
Inception	17–24 Aug 1995	3	21	a, i
Review – 1	6–12 Feb 1996	2	12	a, i
Review – 2	28 Jan–6 Feb 1997	2	18	a, i
Special Loan Adm. Mission – 1	20–29 Oct 1997	2	12	j, k
Special Project Administration – 2	26–30 Apr 1998	1	4	j
Midterm Review	8–22 Nov 1998	5	70	j, a, l, m, n
Follow-up	8–10 Dec 1998	1	2	a
Special Project Administration – 3	10–13 Jan 1999	1	3	a
Forestry Sector	23–25 Mar 1999	1	2	a
Review – 3	27–29 Apr 1999	1	2	a
Review – 4	2–5 Nov 1999	3	12	j, a
Review – 5	18–26 Jul 2000	2	16	j, i
Review – 6	29 Oct–2 Nov 2000	1	4	J
Special Loan Administration – 4	17–21 Jun 2001	1	5	j
Review – 7	25 Nov–6 Dec 2001	2	22	j, i
Follow-up Mission	19–20 Mar 2003	1	2	o
Special Loan Administration – 5	7–13 Jun 2003	1	7	o
Project Completion Review [b]	26 April–9 May 2004	4	56	p, j, q,r

[a] a – project economist, b – agronomist, c – sociologist/staff consultant, d – forestry specialist/staff consultant, e – programs officer, f – counsel, g – sr. environment specialist, h – embankment engineer/consultant, i – asst. project analyst, j – project specialist, k – senior project specialist, l – social development specialist, m – associate operations analyst, n – social forestry consultant, o – natural resource management specialist, p – environment specialist, q – economist/international staff consultant, r – social forestry specialist/domestic staff consultant.

[b] The project completion report was prepared by Sanath Ranawana, Environment Specialist.


BANGLADESH
COASTAL GREENBELT PROJECT
(as completed)
N
0 25 50 75
Kilometers
89°00'E
91°45'E
25°30'N
22°00'N
INDIA
MYANMAR
Bay of Bengal
Panchagarh
Thakurgaon
Nilphamari
Lalmonirhat
Sayedpur
Rangpur
Kurigram
Parbatipur
Dinajpur
Teesta R.
Gaibandha
Joypurhat
Naogaon
Bogra
Jamuna R.
Sherpur
Brahmaputra R.
Jamalpur
Nawabganj
Bhuapur
Madhupur
Mymensingh
Netrokona
Mohanganj
Sunamganj
Tamabil
Chhatak
Sylhet
Kushiyara R.
Kulaura
Habiganj
Moulvibazar
Kishoreganj
Rajshahi
Ganges R.
Natore
Nalka
Sirajganj
Tangail
Bonpara
Ishurdi
Pabna
Kushtia
Meherpur
Rajbari
Faridpur
Padma R.
Chuadanga
Jhenaidah
Magura
Manikganj
DHAKA
Gazipur
Shahji Bazar
Brahmanbaria
Ashuganj
Narsingdi
Akhaura
Narayanganj
Daudkandi
Comilla
Chandpur
Laksham
Shariatpur
Madaripur
Gopalganj
Narail
Jessore
Meghna R.
Lakshmipur
Feni
Noakhali
Khagrachari
Rangamati
Khulna
Jhalakati
Barisal
Satkhira
Bagerhat
Pirojpur
Bhola
Pussur R.
Harinbhola R.
Patuakhali
Khepupara
Barguna
Chittagong
Dohazari
Patiya
Bandarban
Cox's Bazar
Teknaf
Project Area
National Capital
Divisional Headquarters
District Headquarters
Town/Village
District Boundary
International Boundary
Boundaries are not necessarily authoritative.

I. PROJECT DESCRIPTION

1. The coastal areas of Bangladesh are prone to severe damage from cyclones. In 1991, a devastating cyclone with winds exceeding 200 kilometers (km) per hour and a tidal surge of 6 meters (m) struck Bangladesh. About 140,000 lives and about $240 million worth of public infrastructure alone were lost. This and previous cyclones proved that dense forest cover along the coastline, particularly wide belts of mangrove plantations such as those found in the Sundarbans (a large natural mangrove area in the southwestern part of Bangladesh) and other coastal areas, are an effective buffer against the impacts of cyclones. The Coastal Greenbelt Project (CGP)[1] was formulated against this backdrop.

2. The Project was formulated from September 1993 to March 1994 and approved by the Asian Development Bank (ADB) on 2 March 1995. The Loan Agreement was signed on 18 April 1995. The Project was declared effective on 28 July 1995 and closed on 31 December 2002. It consisted of seven components: (i) embankment, roadside, and rail-side plantations; (ii) homestead and institution plantations; (iii) trial foreshore plantations; (iv) nursery development and upgrading; (v) research support; (vi) training programs; and (vii) public awareness campaigns.

II. EVALUATION OF DESIGN AND IMPLEMENTATION

A. Relevance of Design and Formulation

3. ADB has supported the forestry sector in Bangladesh since the early 1980s. In 1981, ADB approved the Community Forestry Project (CFP),[2] which introduced the concept of social forestry in 23 districts in the north and northwestern parts of the country. In 1989, ADB approved the Upazilla Afforestation and Nursery Development Project (UANDP),[3] which aimed to control depletion of forest cover in the central and northern regions. UANDP introduced the concept of participatory benefit sharing with communities. In 1990, ADB supported a technical assistance (TA) grant to prepare the Forestry Sector Master Plan[4] for Bangladesh. The CGP was approved in 1995, followed by the Forestry Sector Project (FSP)[5] in November 1996, and the Sundarbans Biodiversity Conservation Project[6] in 1998.

4. The CGP continued to support social forestry initiatives introduced under the previous projects. ADB's *Operational Strategy in Bangladesh* (March 1993)[7] supported involvement in the

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[1] ADB. 1995. *Report and Recommendation of the President to the Board of Directors on a Proposed Loan and Technical Assistance Grant to the People's Republic of Bangladesh for the Coastal Greenbelt Project,* Manila.

[2] ADB. 1981. *Report and Recommendation of the President to the Board of Directors on a Proposed Loan to the People's Republic of Bangladesh for the Community Forestry Project.* Manila. Loan 555-BAN for $11 million, approved in December 1981 and closed in July 1988.

[3] ADB. 1989. *Report and Recommendation of the President to the Board of Directors on a Proposed Loan and a Technical Assistance Grant (UNDP-Financed) to the People's Republic of Bangladesh for the Upazila Afforestation and Nursery Development*. Manila. Loan 956-BAN for $43.5 million, approved in March 1989 and closed in December 1995.

[4] ADB. 1990. *Technical Assistance to the People's Republic of Bangladesh for the Forestry Sector Master Plan*. Manila.

[5] ADB. 1996. *Report and Recommendation of the President to the Board of Directors on a Proposed Loan to the People's Republic of Bangladesh for the Forestry Sector Project. Manila.* Loan 1486-BAN for $50 million, approved in November 1996 and scheduled to close (with extension) in June 2006.

[6] ADB. 1998. *Report and Recommendation of the President to the Board of Directors on a Proposed Loan and Technical Assistance Grant to the People's Republic of Bangladesh for the Sundarbans Biodiversity Conservation* Project. Manila. Loan 1643-BAN for $37 million and TA 3158 for $12.2 million, approved on 27 November 1998 and cancelled on 13 January 2005.

[7] ADB. 1993. *Bank's Operational Strategy in Bangladesh*. Manila.

forestry sector because of the potential of investments in this sector, and in view of the dwindling fuelwood and fodder that particularly affected the rural poor. Similarly, at the time of project design, the Government supported measures to promote social forestry in accordance with the forest policy adopted in 1994. The Fourth Five-Year Plan (1990/91–1994/95) committed 2% of total public expenditure to forestry development.

5. Based on the report and recommendation of the President (RRP) (footnote 1), the goals of the Project were to (i) improve the coastal environment, and (ii) reduce poverty in the project areas. The purposes were to (i) increase vegetation cover to reduce the impacts of tidal surges and cyclones and improve the ecosystem, and (ii) improve local people's lives through supplementary income from forest products. The project preparatory technical assistance (PPTA)[8] proposed a project to establish a multipurpose green belt on foreshore areas, coastal embankments, and homesteads to prevent loss of life and damage to property during cyclones.[9] The scope of the actual project, however, targeted a much wider area and included strip plantations along roadsides and embankments and small block plantations in home gardens and institutions. While these interventions improved the general coastal environment and coastal ecosystems, they are not effective deterrents against cyclones. First, strip plantations are too narrow to serve as buffers against strong winds and tidal surges. Second, plantations were established throughout the coastal districts and not specifically along the coastal belt (i.e., along sea-facing embankments, and embankments adjacent to the coastline or along foreshore areas). The final project scope of CGP reflected a preference to continue with the social forestry program and to expand it to the coastal region.[10]

6. The PPTA final report was weak in (i) its social analysis,[11] (ii) the criteria developed for targeting beneficiaries, (iii) the assessment of institutional capacities, (iv) the recommendations on institutional arrangements, and (v) assessing the sustainability of FDs operations in the absence of projects under the development budget. Nongovernment organizations (NGOs) were mentioned as key implementing partners of the Project, but their role and implementing arrangements were poorly articulated. Similarly, the role and implementing arrangements for the Bangladesh Forest Research Institute (BFRI) and the Bangladesh Agriculture Research Institute (BARI) were unclear. The PPTA report also recommended the establishment of a new institution—the Coastal Greenbelt Authority, which was not supported by the Forest Department (FD) and therefore not adopted under the Project. Hence, the overall quality and contribution of the PPTA to the final project design is considered less than satisfactory.

B. Project Outputs

1. Embankment, Roadside, and Railside Plantations

7. Forest plantations were to be established along 1,300 km of riverine and coastal embankments belonging to the Bangladesh Water Development Board (BWDB). By project completion, 1,394 km of plantations were established mainly on riverine embankment. Sea-facing coastal embankments were excluded from the Project's scope from about mid-1998 since they

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[8] ADB. 1992. *Technical Assistance to the People's Republic of Bangladesh for the Tree and Palm Plantation Project in Cyclone-Prone Areas of Bangladesh*. Manila.

[9] Fountain Renewable Resources Ltd. In association with Desh Upadesh Ltd. 1994. *A Study on the Establishment of a Greenbelt along Coastal Areas through Plantations of Coconuts, other Plants, and Other Suitable Tree Species.* Bangladesh. (TA 1816-BAN main report, page 1).

[10] According to the back-to-office report of the pre-appraisal mission, 16 August 1994.

[11] The initial social assessment was not completed due to lack of data and time. It is noteworthy that major fieldwork of the PPTA was conducted during three field visits in 11 days.

were targeted for rehabilitation and protection under a World Bank project with BWDB.[12] The targets for railside and roadside plantations were (i) 20 km of rail-side land owned by Bangladesh Railways; (ii) 420 km of national highways and type-A feeder roads owned by the Roads and Highways Department; (iii) 280 km of type-B feeder roads of the Local Government Engineering Department; and (iv) 4,000 km of rural feeder roads under district, *thana* (subdistrict) and union councils.[13] The Project's physical accomplishments were significantly higher—838 km of national highways, type A feeder road and rail-side plantations, and 6,702 km of type B and rural feeder road plantations. Although a direct comparison of actual outputs and appraisal targets was not possible, it is clear that the actual outputs significantly exceeded the targets.[14]

8. At the time of the project completion review (PCR) mission in April 2004, all plantations observed were generally in good condition, with some showing remarkable growth for their age. However, the excessive density of trees caused by the delay in and/or absence of thinning was stifling growth[15] and meant that timber species were not likely to reach their full potential girth, and palm and some fruit species were unlikely to be productive. Loss of trees from illegal felling or damage from cattle was minimal, indicating a high degree of ownership and protection of the trees by the beneficiary groups. This can be attributed to the participatory benefit-sharing agreements (PBSAs), which legitimized beneficiaries' access to, and joint ownership of, the resource base.[16] Issuing PBSAs[17] and revising PBSAs' tenure from 1 to 20 years[18] (renewable by an additional 20 years) was the most significant achievement of the Project, as it enabled the beneficiaries to put land to productive use and created more opportunities to generate income. Many landless and poor people were able to raise their social status as they gained legitimate stakes in assets as a result of PBSAs.

9. The plantations yielded several tangible benefits. Planting, maintenance of plantations, and intercropping during the first 2 years generated around 3.5 million person-days of employment and considerable supplementary income for some beneficiaries. Thereafter, the most significant benefit has been brushwood, which is sufficient to meet the daily fuelwood requirement of those who collect it. Beneficiaries also receive the produce from thinning of plantations, which consist of larger branches. This is a lump-sum benefit, which is either used by the beneficiaries or sold. The fruit trees have potential to generate some revenue, but this would involve a process of protecting, harvesting, and marketing, which most groups are not prepared to undertake.

10. Targeting the beneficiaries of strip plantations appears to have been done well. The PCR mission observed that most beneficiary group members were poor. However, some groups included a small number of more affluent and influential community members (e.g., merchants, larger landowners, school masters, retired civil servants, etc.). These people would invariably become leaders of their respective groups, giving the groups greater stature and confidence to function. Such groups were more proactive in managing plantations, whereas groups that lacked

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[12] Coastal Embankment Rehabilitation Project.

[13] Union councils are the lowest level administrative offices in Bangladesh.

[14] Physical outputs of the plantation programs were recorded by the executing agency by the following categories (i) embankments; (ii) roads, highways, and railways; (iii) feeder roads; and (iv) foreshore. It was therefore not possible to directly compare them with the design targets.

[15] Plantations were supposed to be thinned after 5 years according to the RRP; however they were being thinned at 7 or more years.

[16] PBSAs specify benefit-sharing arrangements between the community group, FD, the land-owning agency, and the Upazilla Council. The salient features of the PBSAs are described in Appendix 1.

[17] The process was begun under the Community Forestry Project (CFP) (footnote 4). At the time of the PCR mission, 5,199 PBSAs were signed and 92 remained to be finalized.

[18] The original PBSAs issued under Loan 956-BAN (footnote 2) were for a term of 1 year.

such leadership figures were less likely to benefit from the plantations. Almost all group members were men, although women were said to have participated in planting and maintaining plantations during the project period.

2. Homestead and Institution Plantations

11. The aim of this component was to encourage people to replace old and unproductive trees in homesteads with new and high-yielding varieties. Seedlings and an initial amount of fertilizer were to have been provided at a subsidized cost as an incentive to participate in this program. FD was also expected to provide extension services for planting and maintenance. A total of 500,000 households were to be targeted for this activity, with each household eligible to receive 16 seedlings (6 fruit, 5 coconut, and 5 date palm). A further 20 million seedlings were to be distributed to institutions, including schools, colleges, religious institutions, local government offices, and cyclone shelters.

12. FD introduced this component by distributing 12.6 million seedlings (8.6 million to homesteads and 4 million to institutions) free of charge during the first 3 years. This ran counter to the project scope and was likely to have stifled the initiatives of private nursery owners to capitalize on the increased demand for plants (which was partly created by the Project). As recommended by the midterm review (MTR) mission, FD started to distribute seedlings at cost. A total of 12.4 million seedlings and 700,000 coconut palms were distributed during the remaining 4 years.

13. This component accounted for over 15% of the project cost and was expected to generate the most significant benefits. However, very little emphasis was placed on monitoring progress or impacts. Records on the number of seedlings distributed and their recipients were maintained at each nursery station, but the survival of trees or the benefits generated from harvesting produce were not monitored or supported. The MTR mission highlighted this lack of follow-through and absence of monitoring, but the situation remained much the same through to completion.

14. Homesteads visited by the PCR mission showed good growth. However, it was difficult to assess if these homesteads were representative. A systematic survey to assess the condition of homestead plantations and the benefits generated from this component would have required considerably more resources and time than was available during the PCR mission. This component was therefore excluded from the economic reevaluation of the Project.

3. Trial Foreshore Plantations

15. Five hundred hectares (ha) of foreshore lands were targeted under the Project[19] to advance BFRI's experimental planting and establish the basis for running large-scale plantations. PPTA consultants were also to assist with developing model foreshore plantations. However the plantations that were established were not linked to the research program of BFRI or the recommendations of the PPTA consultants. They were small-scale mound-type interventions that could not be replicated on a large-scale particularly due to the high unit cost. The MTR recommended that such plantations be discontinued because they had not been planted according to their experimental objectives and could not be put back on track during the remaining project period. FD followed the recommendation, but continued plantations on flat foreshore areas. In total, 665 ha of foreshore areas had been planted by project completion. In general, the trial foreshore

[19] Foreshore lands are areas that lie outside coastal embankments that are created by continuous deposit of riverine sediment. These areas are subject to continuous erosion and accretion and to varying degrees of salinity and tidal inundation.

plantations were not successful because of grazing animals, encroachments, or erosion of the raised mounds on which the trials were established. Some plantations, primarily *Casuarina equisetifolia* grown on sandy foreshore or dune areas, have survived mainly because they were protected by the farmers whose crops were sheltered from wind and sand deposition by the foreshore plantations.

4. Nursery Development and Upgrading

16. The Project target was to develop new nurseries and upgrade existing ones at 150 locations, establish temporary satellite nurseries to meet the seedling requirements of remote plantations, and finance the initial recurrent expenditure of all these nurseries. By project completion, 12 permanent nurseries and 200 satellite nurseries had been established and maintenance was supported at 149 existing nurseries. The permanent nurseries were expected to operate and be maintained beyond the project period. However, nursery activities and maintenance are supported through the development budget (i.e., project funds). Operation and maintenance of nurseries poses a challenge to FD, in the absence of projects. At one nursery center visited by the PCR mission, for instance, the training facilities (building, furniture, and equipment) developed under the Project had not been used since project completion.

5. Research Support

17. The Project involved obtaining research support from BARI on high-yielding seed varieties and from BFRI on models to establish foreshore plantations. However, the research support from these institutions did not meet the expectations of the Project. An agreement on the involvement of BARI, signed by the Ministry of Environment and Forest (MOEF) and the Ministry of Agriculture, was not implemented. The MTR mission attempted to revive this component by recommending that the program be coordinated by the Bangladesh Agricultural Research Council. By project completion, the main output of this component was several research studies by BFRI, which were diverse in scope and had no particular bearing on the Project (Appendix 2). Overall, the research support component was ineffective in strengthening the social and technical aspects of establishing or managing plantations, and bore no link to the rest of the Project.

6. Training Program

18. The Project aimed to provide in-country training to 1,400 FD staff members on (i) participatory planning and management; (ii) forestry extension, education, and communication; (iii) silviculture for coastal plantations; and (iv) nursery establishment, operation, and maintenance. An additional 21,000 community leaders, farmers, NGO workers, and local government officials were to be trained in participatory forestry. The project implementation consultants were expected to organize and implement the training programs (including regional study tours) for FD staff members, with NGOs training the beneficiary groups.

19. Overall, the Project trained about 900 staff members.[20] A total of 664 FD staff members received in-country training and 20 officers received overseas training in social forestry under the Project. In addition, about 220 FD staff members and beneficiaries attended several workshops and overseas study tours on technical issues related to forestry, given by the associated TA[21] and implementation consultants. Field staff of FD who were trained in social forestry stated that the

[20] A list of all training programs is in Appendix 3.

[21] ADB. 1995. *Technical Assistance to the People's Republic of Bangladesh for the Strengthening of Social Forestry in the Coastal Region*. Manila (TA 2304-BAN), which is further described in section G.

training had been useful. Most of them had remained with FD and were putting these skills into practice. A significant number of staff members hired under the Project were also trained. During project implementation, FD had agreed to absorb these staff to fill the large number of vacancies in the coastal Forest Divisions; however this had not happened by the time of the PCR mission.

20. Training of beneficiaries until the fourth year of the Project was done by FD, because of the delayed start to training by NGOs and implementation consultants. In all, about 48,500 beneficiaries were trained, exceeding the design target by almost 130%. Since FD field staff were responsible for developing the course content and training methodologies, the format, content and quality of programs varied by district and did not follow a systematic approach. Training by NGOs eventually began in 2001, ahead of the 2001/02 planting season. The late start meant that NGOs had limited opportunity to interact with beneficiary groups before and after the training. The programs were conducted as stand-alone programs and were therefore not very effective.

7. Public Awareness Campaigns

21. The Project supported public awareness and communication programs to promote project activities and illustrate the value of forest resources. Annual "tree fairs" featuring dramas and other exhibits depicting the importance of forestry were held in all the districts and attracted large numbers of rural people. A range of audiovisual materials were developed by the TA consultants (Appendix 4), but delays in replicating these materials and in procuring the audiovisual equipment impeded the dissemination of this information. The overall impact of the public awareness component is difficult to assess since no impact monitoring exercises were carried out during or after the Project. However, it was clear during the PCR mission that the Project had created significant awareness and appreciation for tree planting in the coastal districts.

C. Project Costs and Disbursements

22. The total project cost at appraisal was estimated at $29.28 million, including the service charge of $0.67 million during project implementation. The foreign exchange cost was estimated at $5.77 million, or 20% of the total cost, and the local currency cost at $23.50 million equivalent or 80% of the total cost. The loan was for $23.40 million equivalent and the Government was to provide $5.88 million. In 1999, a loan reallocation was approved, to transfer "unallocated" funds to consulting services, training and public awareness, strip plantation maintenance, and staff salaries. As approved by the Board in 2002, $2.62 million (1.96 million special drawing rights) was canceled and the amount re-employed to the FSP (Loan 1486-BAN) to finance the eligible rehabilitation costs of damage caused by the floods in southwest Bangladesh.[22]

23. Actual project cost was $20.56 million equivalent, consisting of $16.97 million in loan funds and a Government contribution of $3.59 million. The foreign exchange cost was $4.24 million (20% of the total actual cost) and the local currency cost $16.32 million (79% of total actual cost). Appendix 5 shows project costs by year and Appendix 6 shows how the ADB loan proceeds were used. Actual expenditure was less than the estimated cost because of (i) significant currency devaluation over the project period (from Tk40.25 per $1 at appraisal to Tk57.45 per $1 at completion), (ii) actual unit costs of certain activities being lower than appraisal estimates, and (iii) non-implementation of certain activities and procurements due to administrative delays.

24. Items below $50,000 were reimbursed using the statement of expenditures (SOE) procedure. SOE records and supporting documents were retained at the project implementation

[22] ADB. 2000. *Report and Recommendation of the President to the Board of Directors on a Proposed Loan to the People's Republic of Bangladesh for the Southeast Flood Damage Rehabilitation Project*. Manila.

office (PIO) for examination by ADB review missions. Overall, FD complied with ADB's disbursement procedures.

D. Project Schedule

25. The loan became effective on 28 July 1995 and was implemented over 7.5 years until 31 December 2002. The Project was completed on schedule in December 2002 and the loan account was closed on 23 June 2003. Appendix 7 shows the actual project implementation schedule compared with the appraisal plan. The delays in recruiting consultants and contracting NGOs (paras. 30, 31, and 32) affected the sequence of project activities. Group formation and capacity building were to be undertaken by NGOs during the first year followed by establishment of plantations in the third year. Instead, FD commenced establishing plantations from the second year onwards, with the aid of local labor. Group formation and strengthening activities started the year after. Similarly, the layout and design of foreshore plantations was to be undertaken in the second year, aided by the implementation consultants and inputs of BFRI. Actual plantations were to be established in year 3 and thereafter. However, FD began establishing foreshore plantations from the first year onwards.

E. Implementation Arrangements

26. A PIO headed by a full-time project director and two full-time project managers was to form the core project implementation structure. This arrangement was revised during implementation, since the FD suggested that "conservators of forests"[23] were more appropriate to fulfill the role of the project manager. With this change, the project activities were further integrated into routine FD operations. Field activities were facilitated by the district and *thana* coordinating committees, comprising representatives of the land-owning agencies, union councils, and NGOs working in the districts and *thanas*.

27. Project implementation was hampered by four key factors. (i) The Project Pro-forma (PP), which is the guiding document prepared by the Government for project implementation, was significantly inconsistent with the RRP and the project administration memorandum, which caused considerable confusion during implementation. For instance, the PP specified a project period of 5 years whereas the period in the RRP was 7 years. The differences between the PP and RRP were rectified only in 2000, 5 years after commencement of the Project. (ii) Frequent changes in project director during the first 3–4 years[24] of the Project caused delays and loss of institutional memory. (iii) ADB's project officer changed five times during the first 4 years resulting in a loss of institutional memory and inability to follow up on important issues systematically. (iv) Delays in engaging NGOs and implementation consultants meant that the planning and preparatory phase of the Project was omitted.

F. Conditions and Covenants

28. The Government complied with most conditions and covenants (Appendix 8). Partial, delayed, or noncompliance to some covenants are explained below.

(i) NGOs' participation in organizing beneficiary groups was significantly delayed. NGOs were not signatories to the land-use agreements (LUAs) and instead worked under service contracts (Loan Agreement [LA], Schedule 6, para. 7).

[23] "Conservators of forests" are the third-highest ranked officers in the FD.

[24] The position changed hands eight times from 1995 to 1998.

(ii) The LUAs were replaced by PBSAs, which provide tenure for 20 years, renewable by an additional 20 years. A total of 5,199 PBSAs have been finalized and 92 remained to be finalized at the time of the PCR mission (LA Schedule 6, para. 8 [b]).

(iii) The eventual selection of NGOs was done by thana coordinating committees that are convened annually by FD, rather than by a selection committee (LA Schedule 7, para. 9 [a]).

(iv) The criteria for selecting NGOs were developed but finalized only in the latter stages of the Project (LA Schedule 6, para. 9 [b]).

(v) The Government complied with the covenant on MOEF and Ministry of Agriculture entering into administrative arrangements to provide research support from BARI to FD. However, the arrangements were not implemented (LA Schedule 6, para. 12).

(vi) Benefit monitoring and evaluation activities were supported by the consultants. However, FD was unable to produce reports of the baseline, or follow-up surveys, and no data have been incorporated into FD's resource information and management system, as specified in the covenant (LA Schedule 6, para. 15).

G. Related Technical Assistance

29. The advisory TA 2304, financed by the Government of Norway (footnote 21), was attached to the Project. It provided 33 person-months of international and 84 person-months of domestic consultants and was implemented from January 1996 to August 2000. The consultants' key tasks included (i) formulating a long-term strategy and action plan for social forestry; (ii) producing public awareness campaigns on tree planting and providing technical support to improve FD's communications capabilities; (iii) developing systems and procedures for social and environmental evaluation of project activities that could be linked with FD's resource inventory monitoring system; and (iv) facilitating training of FD staff, including organizing regional study tours. On the whole, the consultants accomplished these tasks and documented their outputs well. However, many interventions were poorly incorporated into the routine functions and procedures of FD, partly because of an insular institutional ethos within FD and the limited absorptive capacity of its staff. FD claimed that it lacked control over the consultants because they were perceived to be directly accountable to ADB. It was notable that at the time of the PCR mission, FD did not possess a full set of the consultants' reports, which contained useful technical information on plantation management topics. Overall, TA 2304 is considered partly successful, primarily because it lacked ownership by FD and was therefore not effectively used. A separate TA completion report is attached as Appendix 9.

H. Consultant Recruitment and Procurement

30. FD adopted ADB's *Guidelines on the Use of Consultants* to hire implementation consultants, and *Guidelines for Procurement* to procure goods. FD's delay in finalizing the implementation consultants' evaluation caused the delay in hiring these consultants. The engagement of NGOs was delayed by almost 5 years because of revisions to the PP. Procurement of equipment and civil works were free of major problems or issues. A detailed breakdown of consultant inputs is in Appendix 10 and a list of vehicles and equipment procured is in Appendix 11.

I. Performance of Consultants, Contractors, and Suppliers

31. The Project included a consultancy package to assist with the procedural and substantive aspects of project implementation. The consultants' inputs were provided from August 1997 to June 2002,[25] and included 31 person-months of international and 45 person-months of domestic consultancy. The major activities assigned to the consultants were the following: (i) assess the soil and land information and select foreshore areas for trial plantations, (ii) conduct social surveys, (iii) assess suitable palm species for planting, and (iv) provide training in extension services. The delay in the start of the consultant inputs rendered some activities redundant and affected coordination of activities between the TA and implementation consultants. As with the TA 2304 consultants, the impact of the implementation consultants' inputs on FD was marginal. The large number of specialists addressing various institutional and technical aspects may have overwhelmed FD. FD claimed that the consultants required considerable supervision and guidance, which it was unable to provide because of staff shortages.

32. NGO involvement in the Project could largely be considered a failure. NGOs were to be engaged at the outset but were actually engaged only about 5 years after the Project began. Even at that stage, their involvement was limited to training the beneficiaries, whereas the envisaged role was that of a long-term partner of the community in the social forestry program. The change in the NGOs' role was influenced by a change in the contracting arrangement. NGOs were originally expected to be involved through a benefit-sharing arrangement[26] with the community but were eventually engaged on a service contract basis. An arrangement combining benefit sharing of the final harvest and an upfront payment to cover operating cost of involvement may have been a more effective strategy for sustainable NGO involvement in the Project.

J. Performance of the Borrower and the Executing Agency

33. FD performed certain activities effectively and efficiently because of its experience with previous projects and programs (e.g., establishing nurseries and producing seedlings, establishing plantations, and conducting certain public awareness activities). FD's field staff, in particular, showed strong commitment to implementing the Project. However, the delays in engaging NGOs and hiring consultants, the failure to link up with BARI to carry out adaptive research, the poor use of consultants, frequent changes in project director, and failure to assign sufficient counterpart staff reflect FD's insular approach to change. FD must undergo a process of institutional and attitudinal change if it is to practice social forestry effectively. Recent institutional changes such as the establishment of the Social Forestry Wing at the head office, the formulation of the social forestry rules, and efforts to establish tree farming funds (TFFs)[27] are positive developments in this regard.

34. FD also needs to improve the way it integrates project activities into its routine operations. Monitoring and evaluation systems were not implemented, in part because projects were perceived as being stand-alone. Although the Project initiated measures to incorporate information on the plantations into the FD's resource information management system, this practice was discontinued after completion of the Project. Overall, the performance of FD was considered partly satisfactory.

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[25] The contract was extended to cover the 2000/2001 planting season.

[26] An arrangement under which the partner NGO is to receive a share of the final harvest of plantations and is to be a party to the PBSAs.

[27] The TFF concept involves retaining a percentage of funds from the final harvest of plantations and investing them in replanting.

K. Performance of ADB

35. ADB fielded 15 missions from August 1995 to December 2002. The high turnover of the project officers responsible for the Project (five times before the MTR) caused a loss of institutional memory and ADB's failure to focus on key implementation issues effectively.[28] Review and/or special administration missions were conducted less than 7 months apart from 1997 onward. However, the gap of about 1 year between the first review mission in February 1996 and the second in January to February 1997 may have also delayed action on key implementation-related matters (e.g., recruitment of consultants and NGOs and resolving differences between the RRP and the PP). Long delays in resolving these issues reflected the intransigence of FD's bureaucracy and ADB's limited ability to influence outcomes. Similar conditions faced by the subsequent Sundarbans Biodiversity Conservation Project (footnote 6) contributed to eventual cancellation of that project. One of the goals of the MTR was to solve implementation problems, which it did by introducing strategic changes. The eventual engagement of NGOs and finalization of PBSAs were due to the persistence of ADB missions. Overall, ADB's performance is considered partly satisfactory.

III. EVALUATION OF PERFORMANCE

A. Relevance

36. The Project was considered relevant as it was consistent with ADB's development objectives for Bangladesh and the Government's own development agenda and priorities at the time of project design. The primary objective of improving the coastal environment, and more specifically of protecting the coastal areas from the impacts of cyclones, was relevant as cyclones caused considerable damage to life and property. The secondary objective of reducing rural poverty by creating alternative sources of livelihood was relevant as rural poverty in Bangladesh is significant. The project design facilitated the general improvement of the coastal environment but did not specifically create an effective coastal buffer against the tides and cyclones. Rather than focusing on the immediate coastal belt, including the foreshore areas and coastal embankments, the Project helped create plantations in coastal districts. Consequently, most strip plantations along roads and embankments were in the hinterlands. More emphasis on the foreshore component may have improved the Project's relevance. Overall, the Project is rated as partly relevant.

B. Efficacy in Achievement of Purpose

37. The Project achieved and exceeded the physical target of establishing plantations, which helped improve the coastal environment. It also raised the public's awareness of the benefits of tree planting. FD's competence and attitude toward social forestry advanced, especially in the field. However, the Project did not effectively create protection against cyclones and was not able to improve the living conditions of the poor by generating sources of alternative income. The foreshore plantation component, if expanded, could have contributed towards creating an effective buffer against the impact of cyclones and storms.

38. Improving social forestry, particularly by engaging NGOs, was an expected outcome of the Project. However, the PBSA—potentially a significant instrument in inculcating the concept of social forestry—remains biased in favor of FD, despite revisions to the tenure arrangements (Appendix 1). As a result, the PBSAs have not resulted in creating an effective social forestry culture at the grassroots, as expected. FD continues to make all key decisions on plantation

[28] This was partly due to the internal reorganization of 1994 and consequent shifting of projects and officers.

management (when to prune or thin trees, and even whether to remove trees broken by winds), with beneficiaries taking a passive role. The relationship between FD and the beneficiaries is similar to that of custodian and hired labor. Beneficiaries' participation was most active during the first 2 years, when community members were planting, maintaining, and watching plantations—services for which they were paid.

39. Other expected but poorly achieved outcomes included (i) establishing links with research institutes to advance adaptive research in foreshore plantations, (ii) establishing capacity within FD for effective social and environmental impact monitoring, (iii) adopting the geographic information systems and resource inventory monitoring applications, and (iv) instigating communication and public awareness. The efficacy of the home garden and institutional planting component could not be assessed because of lack of information. Overall, the Project is rated as less efficacious.

C. Efficiency in Achievement of Outputs and Purpose

40. At appraisal, the Project's economic internal rate of return (EIRR) was estimated at 21%. The re-estimated EIRR at the time of the PCR mission is not comparable with the appraisal estimates, because little quantitative information was available about the seedling distribution component. The Project's EIRR, excluding costs directly related to the seedling distribution component, is now estimated at 7.2%, indicating a less than efficient use of investment capital. A financial analysis of the embankment and road planting activities together has produced a financial internal rate of return (FIRR) of 14.2% after labor costs but before financing. At appraisal, the FIRR of embankment plantings was estimated at 27% and road plantations at 18%. The Project is likely to be financially efficient for beneficiaries, who are entitled to all the thinnings, plus a 50% share of the value of the final harvest, for no investment except for a modest input into ensuring the security of plantations. If timber prices are assumed to rise by 10%, the EIRR rises to 8.1%, while the same fall in timber prices would result in the EIRR falling to 6.2%. When all yields are increased by 10%, the EIRR rises to 7.9%, and when the yields fall by 10%, the EIRR falls to 6.4%. A combination of price and yield increases of 10% would produce an EIRR of 8.8%, or an EIRR of 5.5% if both yields and prices fell by 10% from those assumed for the base case. Details of the economic and financial reevaluation are in Appendix 12.

41. FD was remarkably efficient in implementing the core forestry aspects of establishing plantations. Facilitating social forestry proved to be complex. ADB was somewhat inefficient in supervising the Project because the project officer was changed often during the first 3 years. Similar high turnover of the project director also delayed implementation and affected the Project's efficiency. Balancing these issues, the Project is rated as less efficient.

D. Preliminary Assessment of Sustainability

42. Sustainability of the Project is considered less likely because of several factors. First, FD's regular revenue budget does not provide for maintaining and replanting plantations, and requires externally funded projects for these activities. Plantations that are not managed and harvested on time are susceptible to theft and eventual degradation. Second, the sustainability of beneficiary groups depends on actual and perceived benefits from involvement. Most group members have not received significant returns but expect a payback from the final harvest. Group members are not likely to be active in managing plantations since plantations do not regularly generate measurable returns. Last, other project interventions such as civil works, vehicles, equipment, and trained human resources will rapidly deteriorate without regular maintenance and upgrading.

43. The likelihood of sustainability would increase significantly if the TFF were operational. In September 2001, the project performance audit report (PPAR) of the UANDP[29] reported that FD had not "fully assessed the feasibility of establishing TFF at the local community level or any other level," (para. 29 of PPAR). It further stated that the sustainability of the UANDP would depend on the success of the FSP in instituting reforms, including the TFF. At the time of the PCR, progress in establishing the TFF had not advanced much. Formal approval to establish the TFF was granted by the Ministry of Finance in late 2002. However, key issues remained unresolved, such as (i) the scale at which the TFF would be established (at the level of each beneficiary group and the cluster of beneficiary groups—per district or national); (ii) the role of beneficiaries vis-a-vis FD and other officials in managing the TFF; (iii) definition of "final harvest", from which proceeds would be channeled to the TFF, in the context of mixed species forests that are not intended for clear felling; and (iv) adequacy of 10% allocation to TFF in the likely absence of FD budgetary support to match the TFF contribution for replanting.

E. Environmental, Sociocultural, and Other Impacts

44. Considerable tree cover along roads and embankments and in homesteads has improved the ecosystem and aesthetic conditions. Participants enjoyed a slight rise in social status, from beneficiary to owner, by having access to and partly owning the lands. As a result, some community groups have become empowered but others have remained passive participants. The Project was not especially beneficial to women; female participation in groups was low or nonexistent. FD staff, particularly those in the field, appear to have gained greater appreciation for social forestry interventions. However, as an institution, FD has built its capacity in social forestry only marginally. Overall, the above project impacts are moderate.

IV. OVERALL ASSESSMENT AND RECOMMENDATIONS

A. Overall Assessment

45. The Project improved the natural environment by establishing plantations along almost 14,000 km of roads and embankments and in numerous homesteads throughout 12 coastal districts, heightening public appreciation of forestry and conservation. Project-facilitated PBSAs between community groups and the Government are a significant achievement and a major breakthrough in creating an enabling environment for participatory management of the resource base. These were the key positive aspects of the Project.

46. The Project did not create the coastal greenbelt intended as a buffer against tidal surge and cyclones. The Project only marginally achieved its objectives to create considerable alternative income opportunities and help improve the living conditions of targeted local beneficiaries.[30] The Project aimed to develop social forestry applications by augmenting FD's limited skills through

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[29] ADB. 2001. *Project Performance Audit Report of the Upazila Afforesation and Nursery Development Project*. Manila (Loan 956-BAN [SF]).

[30] A benefit monitoring study conducted by the Planning Commission (Impact Evaluation of the CGP, Research Evaluation Associated for Development Ltd., for the Evaluation Sector, Implementation Monitoring and Evaluation Division, Ministry of Planning—second draft, May 2004), concluded that the Project would yield significant benefits. The study extrapolated from a random sample of beneficiaries and a control group. The methodology is lacking in clarity and rigor, and so the report may warrant further refinement before finalization. For instance, it claims that 71% of trained participants "marketed forest products", which contributed 63% of their mean monthly income. It appears that this conclusion was drawn from the response to a simple dichotomous choice question ("Do you market forest products?"). Furthermore, mean monthly income from forestry sources appears to have been estimated as the combined income from (i) collecting fuelwood, grass, leaves, etc.; (ii) "selling forest plantations"; and (iii) income from intercropping. Items (ii) and (iii) do not generate regular income.

partnerships with NGOs and consultants and through adaptive research. Most of these partnership arrangements did not materialize or were not effectively implemented. Incremental advancement of social forestry practices and new approaches to plantation forestry were minimal. Overall, the Project is assessed as partly successful.[31]

B. Lessons Learned

47. Key lessons learned from the Project are as follows:

(i) Delays in finalizing core implementation arrangement (e.g., engagement of TA consultants or partner NGOs) must be resolved promptly. The implications of prolonged delays should be assessed and, if necessary, certain project activities should be rescheduled to maintain the integrity of the Project's overall intent.

(ii) Essential implementation arrangements to be finalized during the Project should be linked to disbursement of funds on related project activities to avoid the activities commencing before arrangements are in place.

(iii) Projects that introduce innovative approaches and implementing arrangements require close supervision by ADB especially during the first few years. The officer responsible for processing should remain involved during implementation at least during the first 1–2 years. Alternatively, such projects may be prepared with close, active involvement of Resident Mission staff, who would be assigned as project officer after loan inception. Regular and timely review missions during this period are essential to keep the Project on track.

(iv) The Government of Bangladesh considers the PP as the guiding document for project implementation (para. 27).[32] The PP must therefore accurately reflect the project scope, implementing schedule and arrangements, breakdown of expenditure, and conditions and covenants. Ideally, executing agency staff involved with project preparation should have a role in preparing the PP, and should be finalized before project inception.

(v) Greater emphasis should be placed on monitoring of implementation and benefits and on evaluation systems. In some instances, continuous monitoring and evaluation linked to specific project activities may be more efficient and sustainable than benefit monitoring and evaluation programs.

(vi) Participatory resource management projects involve complex arrangements between the beneficiaries, intermediaries (NGOs), and custodians (FD, BWDB, etc.). Dynamics between parties, incentives for participation in project activities, and other such issues must be addressed in detail during preparation. Projects must also be flexible to accommodate changes, since the social dynamics between parties involved in such projects cannot be expected to remain fixed for long.

(vii) The Project could have encouraged greater private sector/community participation by outsourcing the production of plants under FD's supervision and quality control.

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[31] This PCR is part of a sample of PCRs independently reviewed by the Operations Evaluation Department. The review has validated the methodology used and the rating given.

[32] The PP was prepared by the External Resource Division and approved by the Executive Committee of the National Economic Council. In fact the project administration manual prepared by ADB and the executing agency is somewhat superfluous, given that the executing agency is required to adhere with the PP.

C. Recommendations

1. Specific Recommendations

48. Specific recommendations are as follows:

(i) FD should finalize pending PBSAs by the end of December 2005.

(ii) FD must prepare management plans for each social forestry plot that was developed under the Project. The PBSA specifies that plantations will be managed in accordance with a plan prepared by FD. The plans require preparing inventories of trees and assessing growth rates, based on which schedules for thinning, pruning, and final harvesting can be prepared. These plans should be prepared in consultation with beneficiaries. FD should start this activity immediately and complete it by June 2006.

(iii) Information on standing volume, species mix, and growth rate of species of each plantation, extracted from the management plans, should be entered into FD's management information system. All this information should be consolidated by the Divisional Forestry Offices. The division's social forestry asset base and schedules for thinning, pruning, and final harvesting should be available from the management information system and influence the respective division's annual budget requirement for maintenance and replanting. FD should initiate data management immediately and complete it by June 2006.

(iv) Simultaneous with recommendations (i)–(iii), plantations due for thinning and pruning must undertake these activities urgently. Revenue from thinning and pruning will motivate beneficiaries to participate in preparing and implementing management plans mentioned in recommendation (ii). FD could prepare, for each division, schedules to take all of these steps systematically, and implement the activities under FSP before June 2006.

(v) FD should place a higher priority on improving the management of social forestry plantations established under previous projects than on the establishment of new plantations.

(vi) Homestead and institutional planting activities of the Project were poorly monitored. However, FD continues to implement homestead planting under ongoing programs such as FSP. Hence, it is recommended that FD immediately develop a procedure to monitor homesteads that have been assisted under previous and ongoing projects. This would require a program of field surveys of a random sample of homesteads in each district. The information should permit FD to assess the survival rate of plants, cash flow, and labor invested by beneficiaries and beneficiaries' requirements (such as for extension services). The activity should be supported under FSP but eventually internalized within FD as a regular activity, to be carried out by field staff. The information from field staff should be consolidated by the Divisional Forestry Offices and entered into the management information system designed by the consultants. The initial assessment of homesteads and institutional planting programs should be completed before June 2006.

49. The dearth of information on many aspects of the Project posed a considerable challenge to its review. Consequently, key project components (such as seedling distribution to homesteads and institutions) were excluded from the analysis. Changes in socioeconomic conditions of beneficiaries were also difficult to assess in the absence of data on baseline or subsequent stages. Hence, FD must begin collecting information targeting a representative sample of beneficiaries and plantations established under the Project. The purpose is to establish a sound basis for assessing

the costs and benefits of the Project's interventions, and determine the viability for replication. It is recommended that FD complete this exercise before ADB's PPAR mission.

2. General Recommendations

(i) FD must prioritize the establishment and implementation of the TFF. CFP and UANDP plantations, which are ready to be harvested, can be selected to pilot-test the TFF concept. Appendix 13 provides the PCR mission's observations and recommendations on strategies to establish the TFF. Technical, legal, and other support, are provided by FSP. FD should commence pilot-test operations of the TFF in fiscal year 2005 and move to full-scale implementation by July 2006.

(ii) FD must begin formulating a strategy to continue funding its social forestry program following the completion of FSP. FD's practice of supporting all recurrent costs (except salaries) through the development budget is unsustainable. FD must therefore explore the gradual transition of certain expenditures to the revenue budget with the Ministry of Finance in FY2006, since FSP is due to end in June 2006.

KEY FEATURES OF THE PARTICIPATORY BENEFIT SHARING AGREEMENTS

Topic	Details
Parties to the agreement	Forest Department (First party) Land owning agency (Second party) Group of local participants (Third party) Nongovernment organizations (NGOs) (Fourth party) (In practice, NGOs were not a party to the agreements)
Duration of agreement	20 years, automatically renewable for a further 20 years.
Criteria for participation of third party	Local landless (owning less than 0.5 acres including homestead) agricultural workers. Owners of land adjacent to the plantations. Distressed women folk (given preference).
Activities covered	Raising plantations by the sides of roads, highways, feeder roads and/or council roads, flood control and coastal embankments, and on adjacent lands and cyclone shelters. Managing and protecting plantations. Sharing the benefits from plantations.
Terms for conducting activities	Plantations must be managed in accordance with a management plan prepared by the first party. The second party is consulted by the first party on the selection of tree species. The third party is paid an allowance for maintaining plantations (full amount in the first year and 50% in second year). The third party bound to maintain and protect plantations from third year on, free of charge. During cultivation and thereafter, the third party has to repair embankments free of charge, if they are damaged by roots or animals. The third party shall ensure that saplings are not damaged or destroyed and shall be bound to protect plantations. If plantations are damaged, the third party will take the immediate necessary and legal actions. If plantations are damaged due to negligence of the third party, the party is bound to restore plantations free of charge.
Terms for harvesting produce	The third party can harvest produce and fodder free of charge for use or sale.
Distribution of benefits between parties for roads and highways	First party 20% Second party 15% Third party 50% Tree Farming Fund 10% Union Council 5% If the third party does not perform its duties, the first party may cancel its share of the final proceeds.
Terms for suspension and/or cancellation	The agreement can be suspended by the first party at any time if the third party commits a substantial breach of terms and conditions. The first party may consult with a fourth party or similarly composed local participants prior to suspension. The third party is not entitled to claim any compensation nor file a suit in any court or arbitration against any parties of the agreement. If the second party wants to undertake any major expansion or rehabilitation of embankments, roads, railways or water ways, the third party shall be bound to vacate within 2 months' notice; the third party can sell or remove planted trees and/or cultivated crops during this time. Nothing in the agreement shall affect the right of the second party to immediate access to the land.
Settlement of disputes	Disputes shall be settled by the Secretary, Ministry of Environment and Forest, or his nominated representative. His decision shall be considered final.

Source: Copy of Participatory Benefit Sharing Agreement of the Forest Department.

RESEARCH TITLES UNDERTAKEN BY BANGLADESH FOREST RESEARCH INSTITUTE (BFRI)

1. Preparation of volume and growth/yield tables for six important species planted on embankments and road sides in the coastal areas of Bangladesh.

2. Development of nursery and planting techniques of some common palms for embankment plantation.

3. Study on the performance of existing embankment plantation raised by Forest Department.

4. Study on suitability of different species of palm and *golpata/hental* for planting on mounds and borrow pit of coastal foreshore.

5. Study on the effect of different spacing of trees for the favorable growth of grass in the slopes of the embankment.

6. Study on the influence of the canopies of trees grown in the embankments for the growth of agricultural crops.

LIST OF ALL TRAINING PROGRAMS

Year	Subject & Duration (days)	Training	PD Office	Chittagong	Feni	Noakhali	Lakshmipur	Bhola	Patuakhali	Pirojpur	Bagerhat	Barisal	Total
1995 – 1996	Social Forestry (3 days)	Officers											**0**
		Staff											**0**
		Beneficiaries		100	150	150	500	120	600	200	100		**1,920**
1996– 1997	Social Forestry (3 days)	Officers											**0**
		Staff		15		10				10	10		**45**
		Beneficiaries		200			2,834	672	3,333	728	839		**8,606**
1997– 1998	Social Forestry (3 days)	Officers											**0**
		Staff		45						45	25		**115**
		Beneficiaries		450	350	350	1,500	650	750	750	750		**5,550**
1998– 1999	Social Forestry (3 months)	Officers	8										**8**
	Social Forestry (3 days)	Staff	22		30	75		30		10		25	**192**
	Social Forestry (3 days)	Beneficiaries		350	350	350	350	350	550	500	450	750	**4,000**
		Officers											**0**
	Social Forestry (3 days)	Staff		30	15	15	15	15	15		20	20	**145**
	Social Forestry (3 days)	Beneficiaries		1,560	275	1,314	1,322	660	2,175	1,678	1,843	2,578	**13,405**
1999– 2000	Organization and Development												**0**
	(4 days) and Sustainable												**0**
	Agriculture and Ecology (4days)												**0**
	Study tour in Malaysia (5 days)	Officers	10										**10**
	and Philippines (6 days)												**0**
2000– 2001	Social Forestry Philippines) (42 days)	Officers	10										**10**
	Social Forestry (3 days)	Staff			10	20	25	15	20	20	20	20	**150**
	Social Forestry (3 days)	Beneficiaries		1,065	325	1,860	1,560	1,240	3,090	1,250	1,925	2,570	**14,885**
	Organization & Development (4 days) and Sustainable Agriculture and Ecology (4 days)												**0**
2001– 2002	Computer Training (10 days)	Officers	3										**3**
	Computer Training (10 days)	Staff	6										**6**
	Social Forestry (3 days)	Beneficiaries						90	115				**205**
	Total	**Officers**	**31**	**0**	**0**	**0**	**0**	**0**	**0**	**0**	**0**	**0**	**31**
		Staff	**28**	**90**	**55**	**120**	**40**	**60**	**35**	**85**	**75**	**65**	**653**
		Beneficiaries	**0**	**3,725**	**1,450**	**4,024**	**8,066**	**3,782**	**10,613**	**5,106**	**5,907**	**5,898**	**48,571**

PD= project district.

Source: Asian Development Bank estimates.

LIST OF DOCUMENTS AND REPORTS PRODUCED

No.	Title of Document/Report	Produced and/or Contributed By
1.	*Coastal Greenbelt Project Nursery and Plantation Manual*	PPMS
2.	*Handbook on Development of Communication Skills of the Foresters*	AVS
3.	*Plantation Journal for Social Forestry*	TL/EIAS/ M&ES/ PPMS/ MDMS
4.	*Handbook Supporting Plantation Journal*	TL/EIAS/ M&ES/ PPMS/ MDMS
5.	*Traditional Homesteads: Focus for Expansion of Risk Managed Social Forestry and Horticulture in Coastal Bangladesh*	EIAS
6.	*A Guide to Selecting Trees for Thinning in Strip Plantations in the Coastal Region*	TL
7.	Newspaper Clippings: Text and Cartoon (B&W) Published During Year in Bangladesh Press Emphasizing Timely Features of Coastal Greenbelt Project	PHS
8.	Strip Charts for Plantation Development Publication (B&W illustration)	TL/PHS
9.	Numerous posters for public awareness of CGP aims (all color print from original watercolor by Rezaun Nabi, Poster and Handbook Specialist)	PHS
10.	Cartoon Book (illustrated color and B&W) for CGP	PHS
11.	Audiovisual (i) "Natun Jiban" (New Life), Drama with songs tape (ii) TV short feature	AVS
	English:	
1.	Training Course on Social Forestry for Community Leaders	TL/ PPMS/ CC/ AVS
2.	Plantation Journal for Social Forestry	TL/ EIAS/ M&ES/ PPMS/ MDMS
3.	Handbook Supporting Plantation Journal	TL/ EIAS/ M&ES/ PPMS/ MDMS
4.	Worked Examples: (i) Examination of the Ecology of an Area Designated for Strip Plantation (ii) Procedures to Determine the Social Environmental Impact of Linear Plantations (iii) Procedures to Determine the Physical Environmental Impact of Strip Planting Systems (iv) Preliminary Recommendations for Tree Plantations Established by the CGP	EIAS
5.	Proposal for Institutional Reform: An Indicative Institutional Framework for Planning, Implementation, and Management of Social Forestry in Bangladesh	M&ES
6.	Green Coast: Newsletter of CGP. (Bangla Contribution) Illustrated (Articles contributed by TA team/implementation consultants/ PDCGP/ FSP/CERP)	Anutech
7.	Proposals for: (i) Establishing Communication Unit in the Forest Department (ii) Grassroots Communication Drive (illustrated)	CCs

No.	Title of Document/Report	Produced and/or Contributed By
8.	*Traditional Homesteads: Focus for Expansion of Risk Managed Social Forestry and Horticulture in Coastal Bangladesh*	EIAS
9.	Homesteads Needs Survey: Phase - I	EIAS/PPMS/ Sociologist
10.	Homesteads Needs Survey: Phase - II	EIAS/ PPMS/ Sociologist
11.	*Handbook on Communication Process for Forest Officials*	CCs
12.	An Outline Proposal for Interpersonal Publicity Campaign in Coastal Areas	CCs/ AVS
13.	A guide to selecting trees for thinning in strip plantations in the Coastal Region	TL
14.	Simplified thinning system for CGP strip plantations	TL
15.	Application of Pruning to Line Plantations	TL
16.	Trial Application of the Pilot Action Plan	TL/ CCs/ PPMS/ Sociologist
17.	Inspection of CERP polders in the Chittagong District; Evaluation of NGO-Assisted, participatory embankment plantation by CERP	TL/ PPMS
18.	1st Quarterly Report covering period – April to June 1996	TA Team
19.	2nd Quarterly Report covering period – July to September 1996	TA Team
20.	3rd Quarterly Report covering period – October to December 1996	TA Team
21.	4th Quarterly Report covering period – January to March 1997	TA Team
22.	5th Quarterly Report covering period – April to June 1997	TA Team
23.	6th Quarterly Report covering period – July to September 1997	TA Team
24.	7th Quarterly Report covering period – October to December 1997	TA Team
25.	8th Quarterly Report covering period – January to March 1998	TA Team
26.	9th Quarterly Report covering period – April to June 1998	TA Team
27.	10th Quarterly Report covering period – July to September 1998	TA Team
28.	11th Quarterly Report covering period – October to December 1998	TA Team
29.	12th Quarterly Report covering period – January to March 1999	TA Team
30.	13th Quarterly Report covering period – April to June 1999	TA Team
31.	14th Quarterly Report covering period – July to September 1999	TA Team
32.	15th Quarterly Report covering period – October to December 1999	TA Team
33.	16th Quarterly Report covering period – January to March 2000	TA Team
34.	Newspaper Clippings: Text and Cartoon (B&W) published during year in Bangladesh Press emphasizing timely features of CGP	Collected by CCs/ Support staff

AVS = Audio Visual Specialist; B&W = black and white; CC = coordinating committee; CERP = Coastal Embankment Rehabilitation Project; CGP = Coastal Greenbelt Project; EIAS = Environmental Impact Assessment Specialist; FSP = Forestry Sector Project, M&ES = Monitoring and Evaluation Specialist; MDMS = Monitoring Data Management Specialist; PDCGP = project director for Coastal Greenbelt Project; PHS = Poster and Handbook Specialist; PPMS = Participatory Planting and Management Specialist; TA = technical assistance; TL = team leader.

Source: TA Final Report, Project Management Unit records.

PROJECT COSTS BY YEAR
($)

Item	FY1995	FY1996	FY1997	FY1998	FY1999	FY2000	FY2001	FY2002	FY2003	Total
Plantation Establishment/ Maintenance										
Government		230,512	266,140	412,389	364,269	351,820	297,101	156,946	0	2,079,177
Asian Development Bank (ADB)	0	849,515	1,072,909	1,620,202	461,612	1,960,429	464,441	2,772,729	14,951	9,216,788
Training										
Government		4,208	18,733	14,109	7,187	48,727	90,656	35,177		218,797
ADB	0	23,070	103,938	78,250	38,892	296,717	500,460	199,600	0	1,240,927
Public Awareness Campaigns										
Government	0	6,130	123	18,896	8,622	30,408	18,567	18,914	0	101,660
ADB	0	49,444	82,103	132,103	64,426	216,337	133,905	137,901	2,874	819,093
Consultant Services										
Government	0	0	0	0	0	0	0	0	0	0
ADB	0	0	94,896	274,152	105,984	143,567	176,269	163,197	0	958,065
Project Support										
Government	0	72,547	162,639	167,918	230,220	183,921	150,652	225,021	0	1,192,918
ADB	0	381,777	654,523	540,200	949,672	588,031	463,220	695,247	0	4,272,670
Service Charge										
Government	0	0	0	0	0	0	0	0	0	0
ADB			13,043	29,565	58,342	69,892	95,304	116,412	79,285	461,843
Total	**0**	**1,617,203**	**2,469,047**	**3,287,784**	**2,289,226**	**3,889,849**	**2,390,575**	**4,521,144**	**97,110**	**20,561,938**

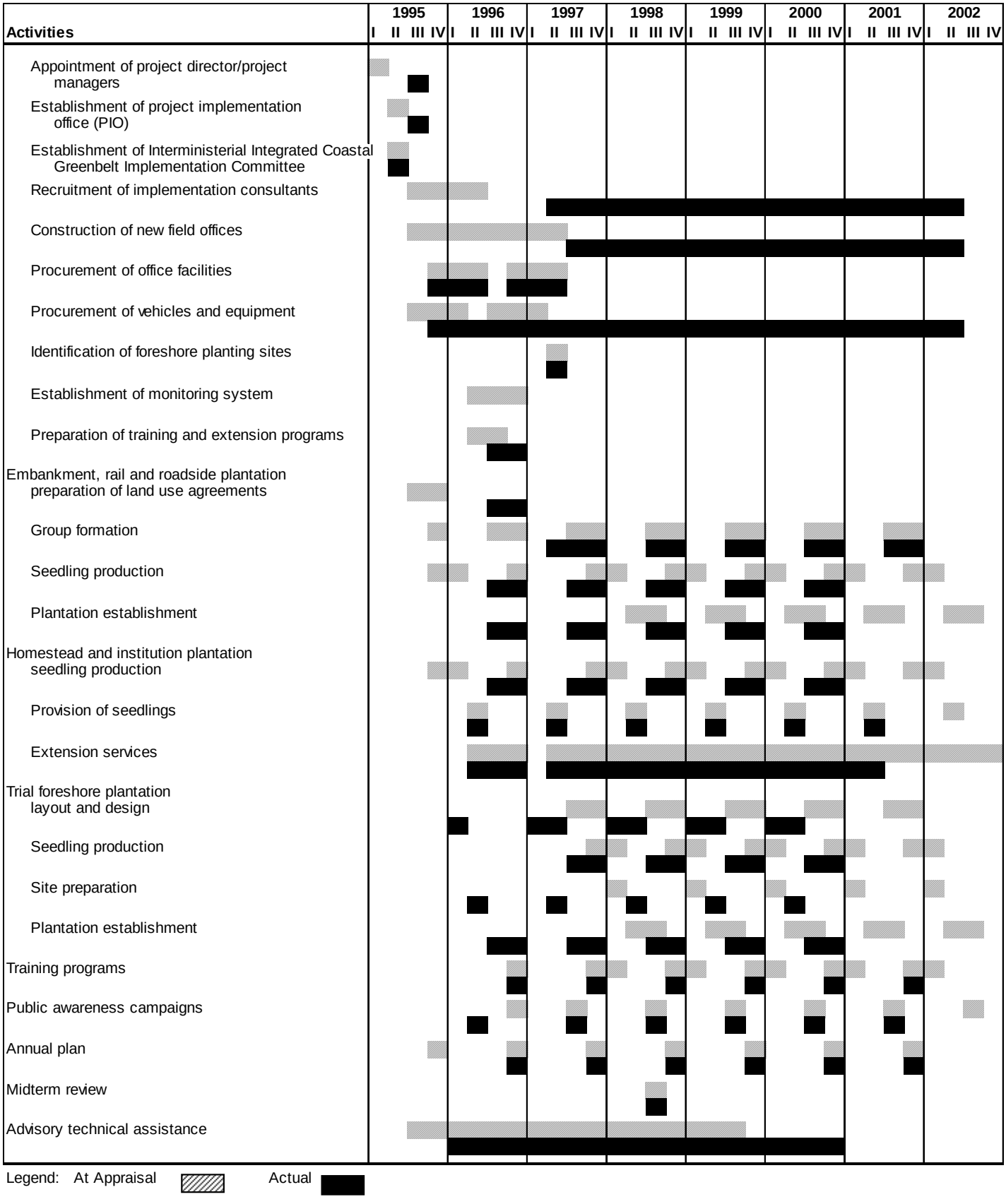
Note: Fiscal year should be from January to December.
Source: Asian Development Bank estimates.

USE OF ASIAN DEVELOPMENT BANK LOAN
($)

No.	Category Name	FY1995	FY1996	FY1997	FY1998	FY1999	FY2000	FY2001	FY2002	FY2003	Total
01	Strip Plantation Establishment	0	335,344	393,502	650,958	29,372	776,273	16,749	657,585	0	2,859,783
02	Strip Plantation Maintenance	0	11,885	144,494	195,515	177,877	578,662	118,538	1,389,398	7,198	2,623,567
03	Homestead Institution Plantations	0	464,460	464,980	543,120	101,930	353,430	76,708	452,090	6,929	2,463,647
04	Trial Foreshore Plantations	0	2,118	40,329	182,131	105,266	76,089	69,224	23,089	824	499,070
05	Nursery Development and Upgrading	0	35,708	23,835	40,298	33,441	151,090	165,233	230,540	0	680,145
06	Public Awareness Campaigns										
A	Vehicles and Equipment	0	6,066	0	0	3,449	88,683	8,550	13,522	0	120,270
B	Campaign Activities	0	43,378	82,103	132,103	60,977	127,654	125,355	124,379	2,874	698,823
07	Consultant Services	0	0	94,896	274,152	105,984	143,567	176,269	163,197	0	958,065
08	Project Support										
A	Vehicles and Equipment	0	199,263	315,277	116,858	239,089	55,437	480	66,955	0	993,359
B	Operation and Maintenance	0	71,660	124,606	136,328	177,083	214,040	198,269	246,743	0	1,168,729
09K	Buildings (Civil Works)	0	36,408	11,568	66,229	268,426	141,532	43,638	170,301	0	738,102
09N	Staff Salaries	0	74,446	202,818	220,785	265,074	177,022	220,833	211,248	0	1,372,226
09O	Budget Monitoring and Evaluation Activities	0	0	254	0	0	0	0	0	0	254
09F	Research Support	0	0	5,769	8,180	13,726	24,885	17,989	20,027	0	90,576
09G	Training Programs	0	23,070	103,938	78,250	38,892	296,717	500,460	199,600	0	1,240,927
10	Service Charge	0	0	13,043	29,565	58,342	69,892	95,304	116,412	79,285	461,843
	Total Disbursement	**0**	**1,303,806**	**2,021,412**	**2,674,472**	**1,678,928**	**3,274,973**	**1,833,599**	**4,085,086**	**97,110**	**16,969,386**

Source: Asian Development Bank estimates.

PROJECT IMPLEMENTATION SCHEDULE



STATUS OF COMPLIANCE WITH LOAN COVENANTS

Covenant	Reference in Loan Agreement	Status of Compliance
A. Implementation Arrangements		
The Forest Department (FD) of the Ministry of Environment and Forest will be the Project Executing Agency (EA) and will be responsible for the overall implementation of the Project.	Schedule 6, para 1	Complied with.
The Borrower will appoint a full-time project director with the rank of a 'conservator of forests' who shall be a forest officer from FD of suitable rank and experience in social forestry.	Schedule 6, para 2(a)	Complied with. Frequent change of project director hampered the smooth implementation of the Project at the initial stage. Subsequently, this problem was overcome.
The Borrower shall establish a project implementation office (PIO) within its coastal circle in FD. The project director shall head PIO and shall be staffed by qualified technical and administrative personnel for accounting, procurement, monitoring, and evaluation, with the appropriate number of supporting staff.	Schedule 6, para 2 (a)	Complied with.
The Borrower shall appoint two full-time project managers with the rank of deputy conservator of forests. Each project manager shall be assisted by the necessary supporting staff. One project manager shall be in charge of the districts of Noakhali, Feni, Lakshmipur, Chittagong, and Cox's Bazar, and the other shall be in charge of the districts of Bagerhat, Pirojpur, Barguna, Patuakhali, and Bhola. The project managers shall assist the project director in day-to-day management of the Project activities.	Schedule 6, para 3	Complied with in the early part of the Project. However, these two positions were discontinued because the divisional forest officer in each division could carry out the work.
The project managers shall prepare the Project implementation schedule, annual work programs, physical targets, budget allocations, and allocate personnel.	Schedule 6, para 4	Complied with. The work was done by the divisional forest officers.
The Borrower shall establish an Interministerial Integrated Coastal Greenbelt Implementation Committee (ICGIC) chaired by the principal secretary to the prime minister's office and comprising members from the Planning Commission, Ministry of Environment and Forest, FD, Ministry of Local Government, Rural Development and Cooperatives, Ministry of Finance, Implementation, Monitoring and Evaluation Division of the Ministry of Planning, Ministry of Agriculture, Ministry of Industries, Bangladesh Water Development Board, Roads and Highway Department and Bangladesh Railway. FD shall act as secretariat of ICGIC.	Schedule 6, para 5(a)	Complied with. The first meeting was held on 15 October 1995.

Covenant	Reference in Loan Agreement	Status of Compliance
ICGIC shall meet semiannually to be briefed by FD on the progress of Project implementation and outstanding operational and management issues. ICGIC shall provide FD, the line ministries concerned, and deputy commissioners in the project area with overall policy guidance and directions for Project implementation.	Schedule 6, para 5(b)	Complied with.
B. Other Implementation Matters		
The Borrower shall cause FD and selected nongovernment organizations (NGOs) to organize Project participants into groups of beneficiaries for establishing and maintaining plantations. The Borrower shall cause FD and the land-owning agencies to execute land-use agreements (LUAs) with the NGOs and groups of beneficiaries.	Schedule 6, para 7	Partially complied with. NGOs' participation in organizing groups was significantly delayed. NGOs were not signatories to the agreements and instead worked under service contracts.
FD shall have draft LUAs finalized and cleared by the Borrower for a term of 20 years automatically renewable for a further term of 20 years.	Schedule 6, para 8(a)	Complied with. The draft was approved and finalized in October 1994.
FD shall enter into an LUA with each group of beneficiaries under the Project upon terms and conditions satisfactory to the Asian Development Bank (ADB). Such terms and conditions shall set out benefit sharing schemes, the rights and duties of each of the parties in respect of Project implementation and operation and maintenance responsibilities for the development of social forestry acceptable to ADB, and other rights and obligations in respect of implementation of the Project.	Schedule 6, para 8(b)	Partially complied with. LUA was replaced by participatory benefit sharing agreements (PBSA) as decided under the Forestry Sector Project and made applicable to all forestry projects in Bangladesh. A total of 5,199 PBSAs were signed and 92 remained to be finalized at the time of the project completion review (PCR).
The Borrower shall ensure that suitably qualified NGOs are selected by an NGO selection committee convened annually by FD and including representatives from the Planning Commission, Ministry of Environment and Forest, FD, and NGO Affairs Bureau. Representatives from the Association of Development Agencies in Bangladesh shall also be involved as a nonvoting member of the committee. The first NGO selection committee will be convened.	Schedule 6, para 9 (a)	Partially complied with. The NGO selection committee was established in June 1995. The committee's first meeting was held on 18 November 1995. However, engagement of NGOs were significantly delayed.
The Borrower shall ensure that criteria for the selection of NGOs are prepared under the Project. Such criteria shall include (i) experience in social forestry activities, (ii) ties with the Project area, (iii) financial capability, (iv) record of proven competence in group formation, and (v) technical capability of staff in forestry activities.	Schedule 6, para 9(b)	Complied with late. Criteria for selection of NGOs were finalized only in the latter phase of the Project.

Covenant	Reference in Loan Agreement	Status of Compliance
C. Operation and Maintenance		
During the first 3 years, plantations established on embankments and roadside and railside strips shall be protected and maintained in accordance with the relevant LUA and with funds provided under the Project.	Schedule 6, para 10(a)	Complied with. The LUAs were replaced by PBSAs which provides tenure of 20 years.
Commencing from the fourth year, the Borrower shall finance the protection and maintenance of plantations established on embankments, and roadside and railside strips under the Project on the basis of the following percentages: Project Year 4 - 20% Project Year 5 - 40% Project Year 6 - 70% Project Year 7 - 90% Subsequent Years – 100%	Schedule 6, para 10(b)	Complied with.
Upon completion of the Project, and without limiting the generality of Section 4.09 of this Loan Agreement, the Borrower shall take full responsibility for maintaining all strip plantations established under the Project.	Schedule 6, para 10(c)	Complied with.
The Borrower shall ensure that block-type plantations are excluded from permanently occupied or cultivated land. On permanently occupied land, the Borrower shall adopt agroforestry forms of land use that shall permit occupiers and cultivators to continue to grow food crops for their livelihood in between space rows of trees. Participation shall be open to those existing occupiers and cultivators who are willing to plant trees according to FD's guidelines, and participants shall be entitled to retain all intermediate harvest and a share of the final tree harvest in accordance with the LUAs.	Schedule 6, para 11	Complied with.
D. Other Matters		
The Borrower shall ensure that administrative arrangements shall be entered into between the Ministry of Environment and Forestry and Ministry of Agreement for the provision of research support from Bangladesh Agriculture Research Institute (BARI) to FD for Project activities.	Schedule 6, para 12	Complied with. However, BARI did not participate in the Project.
The Borrower shall ensure that the PIO organizes a national forum on the development of the coastal greenbelt prior to the midterm review of the Project and invites Government agencies, donors, NGOs, and other relevant parties.	Schedule 6, para 13	Complied with. The national forum was held in December 1999.

Covenant	Reference in Loan Agreement	Status of Compliance
A joint midterm review shall be carried out by the Borrower, including the Implementation, Monitoring, and Evaluation Division (IMED) of the Ministry of Planning and ADB, to assess all aspects and components of the project including physical progress, social and environmental impact, costs incurred, benefits expected, and outstanding issues.	Schedule 6, para 14	Complied with. Midterm review carried out from 8–22 November 1998. IMED participated for one day.
To monitor the benefits of the Project, FD, in consultation with the relevant agencies of the Borrower, and ADB, shall compile the following information required for budget monitoring and evaluation (BME) activities during Project implementation: (a) benchmark information covering samples of households in the Project area, (b) follow-up information from annual monitoring on the sample groups, and (c) other specific socioeconomic data and information. The content and form of such surveys shall be compatible with and incorporated into FD's resource information and management system. Detailed BME procedures shall be prepared by consultants referred to in Schedule 5 of this Loan Agreement. FD shall evaluate the benefits of the Project after it has been completed in accordance with procedures agreed with ADB.	Schedule 6, para 15	Partially complied with. BME activities were supported by the consultant. However, FD was unable to produce reports of baseline or follow-up surveys and no data have been incorporated into FD's resource information and management system.
To enhance public awareness on the importance of tree planting, the Borrower shall ensure that FD organizes public campaigns in the Project area. To this end, the Borrower shall ensure that FD uses any media available and suitable for the purpose.	Schedule 6, para 16	Complied with. A wide range of public relations material was disseminated via television, radio, and print media. Educational and awareness materials were also distributed at "tree fairs".
The Borrower shall ensure that FD has adequate funds necessary for the operation and maintenance of plantations established under the Project, including any necessary replanting of trees on the foreshore area, embankments, and road and railside strips at an appropriate level after Project completion.	Schedule 6, para 17	Complied with. Responsibility for continuing plantation maintenance transferred to Forest Sector Project on 30 September 2002.
The Borrower shall ensure that a detailed assessment of the environmental impact of tree planting activities on public infrastructures will be undertaken under the Project.	Schedule 6, para 18	Complied with.

Covenant	Reference in Loan Agreement	Status of Compliance
The Borrower shall maintain, or cause to be maintained, records and accounts adequate to identify the goods and services and other items of expenditure finance out of the proceeds of the Loan, to disclose the use thereof in the Project, to record the progress of the Project (including the cost thereof) and to reflect, in accordance with consistently maintained sound accounting principles, the operations and financial condition of the agencies of the Borrower responsible for carrying out the Project and operation of the Project facilities, or any part thereof.	Article IV, Section 4.06 (a)	Complied with.
The Borrower shall (i) maintain separate accounts for the Project; (ii) have such accounts and related financial statements audited annually, in accordance with appropriate auditing standards consistently applied, by independent auditors whose qualifications, experience and terms of reference are acceptable to ADB; (iii) furnish to ADB, as soon as available but in any event not later than 6 months after the end of each related fiscal year, certified copies of such audited accounts and financial statements and the report of the auditors relating thereto (including the auditors' opinion on the use of the Loan proceeds and compliance with the covenants of this Loan Agreement as well as on the use of the procedures for statement of expenditures, all in the English language; and (iv) furnish ADB such other information concerning such accounts and financial statements and the audit thereof as ADB shall from time to time reasonably request.	Article IV, Section 4.06 (b)	Complied with. A minor change in implementation arrangements, extending the period for the EA to submit the audited financial statement from the end of each fiscal year to 12 months, was approved by ADB on 8 May 1998.
The Borrower shall furnish ADB quarterly reports on the carrying out of the Project and on the operation and management of the Project facilities.	Article IV, Section 4.07 (b)	Complied with.
Promptly after physical completion of the Project, but in any event not later than 3 months thereafter, the Borrower shall prepare and furnish ADB a report.	Article IV, Section 4.07 (c)	Complied with. The PCR report from the EA was received by ADB on 3 April 2003.

TECHNICAL ASSISTANCE COMPLETION REPORT

Division: SAAE

<table>
<tr><td colspan="2">TA No. and Name
TA No. 2304-BAN: Strengthening Social Forestry in the Coastal Region</td><td colspan="2">Amount Approved: $1,300,000
Revised Amount: $1,300,000</td></tr>
<tr><td>Executing Agency: Forest Department of Ministry of Environment and Forestry</td><td>Source of Funding:
Government of Norway</td><td>TA Amount Undisbursed
$85,063.73</td><td>TA Amount Utilized
$1,214,936.27</td></tr>
<tr><td colspan="2">Date
Approval Signing Fielding of Consultants
2 March 1995 23 April 1995 12 January 1996</td><td colspan="2">Completion Date
Original Actual
31 July 1999 30 June 2002
Closing Date
Original Actual
31 July 1999 30 June 2004</td></tr>
</table>

Description

The Coastal Greenbelt Project (CGP) aimed to promote the Government of Bangladesh's accepted policy of social forestry based on public participation. Previous Asian Development Bank (ADB) projects (i.e., Community Forestry Project and Upazilla Afforestation and Nursery Development Project) had contributed towards creating the enabling environment for social forestry. However the technical capacity to implement social forestry in the coastal region was considered to be weak. The technical assistance (TA) on Strengthening Social Forestry in the Coastal Region (hereinafter referred to as the TA) was designed to complement the CGP and assist in improving the technical capacity to undertake effective social forestry in the coastal region.

Objectives and Scope

The objective of the TA was to assist the Government in strengthening its social forestry program for expansion in the coastal region and related monitoring activities. The scope of the TA included: (i) formulating a long-term strategy for social forestry in accordance with the October 1994 Forest Policy; (ii) strengthening Forest Departments (FDs) capability to produce public communication material including audio-visual material; (iii) implementing participatory planting and management activities in the foreshore areas; (iv) assessing the environmental impact of tree planting on infrastructure including embankments, roads and railways; and (v) establishing effective monitoring systems and procedures on social and environmental aspects of forestry activities in the coastal region.

Evaluation of Inputs

The TA inputs were specifically targeted to address several areas as identified above. General terms of reference for the TA as a whole, and individual terms of reference for each specialist were prepared in detail and included as a supplementary appendix to the report and recommendation of the President (RRP). Selection of consultants was done according to ADB's *Guidelines on the Use of Consultants*, and consultants were mobilized in January 1996, six months after commencement of the Project. By completion the TA had provided 32.5 person months of international and 99 person months of national consultant inputs.

The consultants performed well and produced all the major outputs expected of them. They did so under difficult conditions, particularly due to (i) frequent changes of the Project Director which affected continuity of progress; (ii) lengthy delay in mobilization of the implementation consultants who had specific and complimentary roles in assisting the Project; (iii) long delay in contracting nongovernment organizations (NGOs) to assist with the social mobilization and training of beneficiary groups and (iv) significant uncertainty over plantation models and other project activities while the RRP and the Project Pro forma were reconciled. ADB review missions rated the consultant's performance as satisfactory throughout. The midterm review mission requested the consultants to undertake certain additional tasks, which were necessary in view of several gaps in the project identified at the time. The consultants incorporated these requests, displaying willingness and flexibility in their approach. The FD supported the consultants by releasing seven counterpart officers, mostly for short-term durations. Counterparts to the geographic information system (GIS)/resource inventory monitoring specialist and to the monitoring and evaluation/environmental impact assessment/participatory planning and management specialists were released on long-term assignments and received thorough exposure to these fields. FD also provided the consultants with office space within their own premises, which proved to be an efficient working arrangement.

Evaluation of Outputs

The consultants produced a series of handbooks and technical reports, training materials, proposals containing recommendations and strategies, reports of surveys, audio/visual material newsletters, and regular quarterly reports. The consultants also interacted with FD staff at the head office and in the field to obtain consensus, transfer skills and create institutional ownership. The outputs of the consultants were generally of good quality. Some of the outputs, such as the template for the plantation journals, were adopted by the FD. However it is unfortunate that the majority of consultants' outputs have not been adopted. The TA final report describes the impact of the TA on the FD in terms of several themes, summarized as follows.

Transfer of technology: most of the practical proposals forwarded by the consultants were not accepted by the FD and the CGP. Communications technology, public awareness techniques, skills in GIS and information management, techniques in monitoring and evaluation of socials and environmental impacts are some such examples.

Acceptance of operational strategies and plans: the long-term strategies for social forestry and operational 'action plans' for involving NGOs in social forestry were prepared in consultation with head office and field-level officers. However for the most part, these were disregarded by the FD.

A somewhat insular institutional ethos within FD and the limited absorptive capacity of its staff were the likely reasons for the above situation. The FD viewed some of the consultant's contributions as being useful, especially the audio/visual productions and support of the annual tree fairs. The plantation journals were also considered to be useful. However FD and the CGP viewed some consultant's inputs as being cumbersome due to their requirement for constant supervision and guidance. FD also expressed a perception of lacking control over the TA consultant's inputs since payment for consultants inputs were transacted directly with ADB.

Overall Assessment and Rating

The TA inputs were well designed and addressed certain key areas that needed support within FD. In this regard, the TA complemented the CGP well. The TA consultants completed their tasks on time and generally in accordance with the expected outputs specified in the terms of reference. The quality of these outputs was also generally good. However the outcomes of the TA were largely ineffective due to poor ownership and acceptance by the FD. Consequently most of the TA recommendations have remained unimplemented or discarded. The fact that the FD does not have even one full set of the reports and other outputs of the consultants demonstrate this unfortunate outcome. Accordingly, the overall assessment of the TA is rated as partly successful.

Major Lessons Learned

- The scope of the TA consultancy and the implementation consultants were inter-linked. The delay in commencement of the implementation consultancy resulted in creating a vacuum between the two consultancy programs. This affected continuity and effective implementation of the TA consultant activities. In projects involving more than one consultancy package, it is important to program the scope of work and implementation schedules of each package in a manner that the desired outcomes are not unduly affected by any unanticipated delays of other related consultancy packages.
- The TA consultants were selected and contracted by ADB whereas the implementation consultants were selected and contracted by the FD. The FD maintained a perception that the TA consultants were not responsible to report to the FD since the contract was between them and the ADB. Lack of ownership over the activities and outputs of the TA consultants was attributed to this cause. The TA consultants made a concerted effort to involve FD staff in their activities but were successful in doing so only in a few instances. Ownership of the outcomes of consultancy inputs must be clearly vested with the EA prior to the commencement of a consultancy assignment. Involving representatives from the EA in preparation and selection of consulting service packages and in the negotiations could help improve such ownership.
- It appears that demands on FD to provide counterpart staff, logistical support and be substantively engaged with two sets of consultants was beyond their absorptive capacity. Hence it may have been more appropriate to reduce the consultancy inputs and phase them over a longer period.

Recommendations and Follow-Up Actions

- The TA consultants produced some valuable and potentially useful outputs in the form of technical reports on various aspects related to the Project. However the FD does not possess a set of these documents even in its library. FD should compile a set of these reports and review and revise them as appropriate. They should then be adopted wherever possible.
- The information system and corresponding data collection procedures established by the TA consultants have more or less been abandoned. The system could have generated information of immense value for future management of the plantations and home gardens established under the Project. It would be advisable for the FD to revive the information management system and make use of it for routine operations.

Prepared by Sanath Ranawana Designation Environment Specialist

CONSULTING SERVICES

Item	Unit	Appraised	Per Contract	Revised	Actual
Loan No. 1353-BAN					
A. Consultant Services for Project Implementation					
International - 31 person-months					
Forest Training and Extension Consultant	person-months	15	15	15	15
Palm Plantation Consultant	person-months	4	4	4	4
Forest Training and Participation Expert/ Benefit Monitoring and Evaluation Expert	person-months			12	12
B Domestic - 45 person-months					
Soil and Land Information Survey	person-months	9	9	9	9
Social Survey Consultants (2)	person-months	18	18	18	18
Public Awareness and Social Monitoring Expert	person-months			6	6
Training and Participation Expert	person-months			6	6
Audio Visual Specialist	person-months			6	6
Total		**46**	**46**	**76**	**76**
TA No. 2304-BAN					
A. International - 33 person-months					
Social Forestry Planning and Management	person-months	15	15	15	15
Monitoring System Development	person-months	9	9	7	7
GIS & Resources Information				2	2
Environmental Impact Assessment	person-months	9	9	9	9
B. Domestic - 84 person-months					
Communication Material Production	person-months	42	42	30	30
Audio Visual Specialist	person-months			6	6
Poster and Handbooks Specialist	person-months			6	6
Participatory Planting and Management	person-months	24	24	24	24
Monitoring Data Management	person-months	18	18	10	10
Sociologist	person-months			8	8
Total		**117**	**117**	**117**	**117**

LIST OF VEHICLES AND EQUIPMENT

Description	Unit	Appraisal	Revised PP	Actual	Mode of Procurement	Remarks
Campaign vehicles	No.	10	1	1	LCB	Dhaka office
Vehicles (4WD jeep)	No.	18 {	10	10	LCB	4 - Dhaka office; 1 each at Chittagong; Feni; Lakshmipur; Pirojpur; Bagerhat and Barisal
			8			
Vehicles (4WD pick-up)				8		1 each at Dhaka office, Chittagong, Feni, Noakhali, Lakshmipur, Bhola, Pathuakali Pirojpur and Bagerhat
Motorcycles	No.	16	35	75	LCB	16 at Barisal District; 11 at Patuakali 9 each at Chittagong and Bagerhat 7 at Lakshmipur; 6 each at Feni, Noakhali, and Bhola 5 at Pirojpur
Bicycles	No.	40	200	200	LCB	43 - Lakshmipur; 32 - Bagerhat 23 - Chittagong; 22 each at Feni and Patuakhali; 20 - Pirojpur; 15 - Barisal 12 - Noakhali; and 11 - Bhola
Boats - speed boats	No.	32	8	8	LCB	2 each at Noakhali and Patuakhali 1 each at Bhola, Pirojpur and Bagerhat
- country boats			15	15	LCB	5 - Noakhali; 3 - Patuakhali; 2 each at Chittagong and Bhola; and 1 each at Pirojpur, Bagerhat and Barisal
Office equipment	No.	18				
Computer			16	16	LCB	7 - Dhaka office; 1 at each district
Printer			16	16	LCB	7 - Dhaka office; 1 at each district
Photocopier			12	12	LCB	3 - Dhaka office; 1 at each district
Typewriter			22	22	LCB	4 - Dhaka office; 3 each at Chittagong, Patuakhali, and Pirojpur; 2 each at Feni, Lakshmipur, and Bagerhat, 1 each at Noakhali, Bhola, and Barisal
Duplicating Machine			7	7	LCB	1 each at Dhaka office, Feni, Lakshmipur, Patuakhali, Pirojpur, Bagerhat, and Barisal
Fax/telex			10	10	LCB	2 - Patuakhali and 1 each at Dhaka office, Feni, Noakhali, Lakshmipur, Bhola, Bagerhat, and Barisal
Airconditioner			12	12	LCB	
Telephone			14	14	LCB	
Other equipment						
Camera				26	LCB	5 at Barisal; 4 each at Dhaka office, Noakhali and Lakshmipur; 2 each at 2 each at Chittagong, Feni, and Patuakhali; 1 each at Bhola, Pirojpur and Bagerhat
PA system				2	LCB	Dhaka office
Generator	No.			12	LCB	2 each at Noakhali, Bhola, Pirojpur, and Bagerhat; 1 each at Chittagong, Lakshmipur, Patuakhali and Barisal

4WD = four wheel drive; LCB = local competitive bidding; No. = number; PA system = public address system; PP = project proforma.
Source: Asian Development Bank estimates.

ECONOMIC AND FINANCIAL ANALYSIS

A. Economic Reevaluation

1. Methodology and Assumptions

1. An economic reevaluation showing a comparison between the economic internal rate of return (EIRR) at project completion with that projected at appraisal, was carried out. All components were included in the analysis, except for seedling distribution. The project completion review (PCR) mission was unable to locate survey information on which to base an analysis of activities carried out under this latter component. This was unfortunate, as investment costs for the component accounted for about 21% of baseline costs at appraisal and over 50% of the projected incremental economic value. The main primary data sources for the analysis were discussions with beneficiaries and Forest Department staff during field visits to several project areas. In addition, the Project midterm review report produced by the Asian Development Bank (ADB) in November 1998, and other ADB reports were reviewed. Choudhury,[1] in 2001, reviewed information about the growth rates of trees planted elsewhere in Bangladesh, and these data provided the basis for estimating the likely final yield from project plantations.

2. All costs and benefits are expressed in constant 2004 Taka (Tk) in the domestic price numeraire. A shadow exchange rate factor (SERF) of 1.09 was used to convert border market prices of traded goods to domestic prices. Investment costs of tradable goods were adjusted to constant 2004 values using the manufacturing unit value published by the World Bank in its *Commodity Price Projections* series, and non-tradable costs by the *General Consumer Price Index* published by the Bangladesh Bureau of Statistics. Table A12.1 shows the indices used. A shadow wage rate factor (SWRF) of 0.6 was used to adjust farm family and unskilled hired labor costs to economic values, reflecting a situation of less than full employment in most rural areas. The full value of the salary costs of incremental Project staff were included in the analysis. Duties and taxes have been removed and financial charges excluded from investment costs. A zero residual value has been assumed for Project equipment, vehicles and buildings. An exchange rate of Tk59.9 = $1.00 has been used to convert constant dollar values to their local currency equivalent. A 31-year Project life, which reflects the expected pattern of harvesting of Project trees, was assumed. Table A12.2 shows the total project cost in economic prices.

2. Prices

3. Incremental outputs of the Project comprise fuelwood, poles, sawlogs, coconuts, fruit (for the analysis, guava is used as an example) and intercrops such as pigeon pea *(Cajanus cajan)*. Given the quality features and characteristics of project outputs, economic stumpage values for timber products were derived from prices ruling in major rural markets rather than on the basis of a border price equivalent value. These prices were derived from competitive market prices by applying the SERF to the traded component of transport and the SWRF to the value of unskilled labor used in harvesting and transport. For leaves/prunings, coconut and guava, the farmgate financial price is taken as the economic price. Financial and economic prices used in the analysis are summarized in Table A12.3.

[1] Choudhury, Junaid K. 2001. *Does Forestry Pay in Bangladesh? Lessons from ADB's Forest Sector Projects.* Dhaka: Asian Development Bank and Bangladesh Forest Department.

Table A12.1: Exchange Rates and Multipliers

Item	Unit	1994	1995	1996	1997	1998	1999	2000	2001	2002	2003	2004
Average annual exchange rate for $1.00	Tk	40.21	40.28	41.79	43.89	46.91	49.09	52.25	56.09	57.54	58.50	59.90
Exchange rate ratio: 2004 to current year		1.49	1.49	1.43	1.36	1.27	1.22	1.15	1.07	1.041	1.024	1.00
Consumer price index (1985/86=100)		163.80	178.40	190.3	195.1	208.7	227.3	235.0	238.8	247.3	259.8	275.0
Domestic inflation Jun-Jul: 1996=1995/96	%	3.28	8.91	6.67	2.52	6.97	8.91	3.39	1.62	3.56	5.05	5.85
Domestic inflation; estimated calendar year basis	%	6.10	7.79	4.60	4.75	7.94	6.15	2.50	2.59	4.31	5.45	2.93
Local inflation factors: 1996=1.00, end-year				1.0000	1.0475	1.1307	1.2002	1.2302	1.2621	1.3164	1.3882	1.4288
Local inflation factors: 1996=1.00, midyear				1.0000	1.0237	1.0891	1.1654	1.2152	1.2461	1.2892	1.3523	1.4085
Inflation multipliers; constant 2004, midyear				1.4085	1.3758	1.2933	1.2086	1.1591	1.1303	1.0925	1.0416	1.0000
Manufacturing unit value (MUV) index	%	3.65	5.90	(4.93)	(6.98)	(3.78)	(0.34)	(2.12)	(2.94)	(1.25)	(6.48)	(2.18)
MUV factors; 1996=1.00, end year				1.000	0.9302	0.8950	0.8920	0.8731	0.8474	0.8368	0.8910	0.9105
MUV factors; 1996=1.00, midyear				1.000	0.9651	0.9126	0.8935	0.8825	0.8603	0.8421	0.8639	0.9008
MUV multipliers, constant 2004, midyear				0.9008	0.9333	0.9870	1.0081	1.0206	1.0471	1.0696	1.0426	1.0000

MUV = manufacturing unit value.
Sources: Asian Development Bank for exchange rates, Bangladesh Bureau of Statistics for inflation rates, and World Bank for MUV.

Table A12.2: Project Economic Costs, Constant (2004)
(Tk'000)

Item	1996	1997	1998	1999	2000	2001	2002	Total
Plantation Establishment/Maintenance								
Strip Plantation Establishment	25,492	29,260	46,709	9,202	49,173	6,869	33,257	199,962
Strip Plantation Maintenance	835	9,501	12,462	12,967	32,829	9,137	73,907	151,638
Seedling Distributions	36,163	35,706	39,783	12,050	22,813	7,212	24,639	178,367
Foreshore Trials	192	3,161	13,681	7,395	5,335	4,682	1,677	36,123
Nursery Development	2,841	1,872	3,047	2,413	10,556	11,358	15,510	47,597
Research Support	0	597	810	1,246	2,142	1,525	1,640	7,962
Training	2,267	9,978	7,095	3,321	23,935	40,041	15,416	102,052
Public Awareness Campaigns								
Vehicles and Equipment	403	0	0	267	6,827	663	1,053	9,213
Campaign Activities	3,757	6,152	10,837	4,712	9,621	9,297	9,193	53,569
Consultants	0	4,387	14,114	5,773	8,380	11,273	10,879	54,807
Project Support								
Civil Works (Bldgs)	3,274	1,017	6,470	21,633	11,453	3,486	13,373	60,706
Vehicles and Equipment	13,687	22,834	8,709	17,309	4,142	36	5,147	71,864
Operation and Maintenance	6,466	10,897	11,345	14,008	17,206	15,745	19,347	95,013
Salaries	8,011	23,712	24,216	26,812	18,014	21,052	21,061	142,877
Monitoring/Evaluation	0	21	0	0	0	0	0	21
Project Economic Cost (Tk'000)	**103,387**	**159,095**	**199,278**	**139,110**	**222,426**	**142,377**	**246,101**	**1,211,774**

Source: Base financial data from Asian Development Bank and Government of Bangladesh records.

Table A12.3: Financial and Economic Prices

Item	Factor	Unit	Value	
			Financial	Economic
Minor products				
Leaves/prunings		Tk/tonne	5,000	500
Coconut (at farmgate)		Tk/nut	7	6
Guava (at farmgate)		Tk/kg	10	8
Pigeon Pea (at farmgate)		Tk/kg	2	2
Fuelwood				
Retail price at major rural market		Tk/m^3	1,360	1,360
Marketing margin	20%	Tk/m^3	272	272
Transport and handling		Tk/m^3	375	315
Felling, limbing and local transport		Tk/m^3	327	216
Estimated stumpage value at market/economic prices		Tk/m^3	386	557
Poles				
Retail price at major rural market		Tk/m^3	2,340	2,340
Marketing margin	20%	Tk/m^3	468	468
Transport and handling		Tk/m^3	325	273
Felling, limbing and local transport		Tk/m^3	327	216
Estimated stumpage value at market/economic prices		Tk/m^3	1,220	1,383
Small sawlogs (short rotation)				
Retail price at major rural market		Tk/m^3	3,900	3,900
Marketing margin	20%	Tk/m^3	780	780
Transport and handling		Tk/m^3	325	273
Felling, limbing and local transport		Tk/m^3	325	215
Estimated stumpage value at market/economic prices		Tk/m^3	2,470	2,633
Large sawlogs (from long rotations)				
Retail price at major rural market		Tk/m^3	5,750	5,750
Marketing margin	20%	Tk/m^3	1,150	1,150
Transport and handling		Tk/m^3	375	330
Felling, limbing and local transport		Tk/m^3	350	252
Estimated stumpage value at market/economic prices		Tk/m^3	3,875	4,018
Saved maintenance costs				
Embankments -First 3 years from planting		Tk/ha	8,106	5,512
Embankments -Subsequent years from planting		Tk/ha	16,213	11,025
Kerosene				
Ex-refinery Chittagong		Tk/l		20.35
Marketing margin		Tk/l		0.14
Transportation		Tk/l		0.31
Wholesale price		**Tk/l**		**20.81**
Retailer margin		Tk/l		0.14
Wastage		Tk/l		0.03
Agents commission		Tk/l		1.27
Retail price economic		**Tk/l**		**22.25**
Retail price financial		**Tk/l**		**21.00**

Item	Factor	Unit	Value	
			Financial	Economic
Weighted average financial/economic timber prices				
(i) Short rotation harvest				
Proportion in poles	50%			
Proportion in small sawlogs	40%			
Proportion in large sawlogs	10%			
Weighted average price		Tk/m^3	1,986.00	2,146.39
(ii) Long rotation harvest				
Proportion in poles	10%			
Proportion in small sawlogs	30%			
Proportion in large sawlogs	60%			
Weighted average price		Tk/m^3	3,188.00	3,338.87

Tk/l = taka per litre; Tk/m^3 = taka per cubic meter; Tk/kg = taka per kilogram.
Source: Asian Development Bank estimates.

4. A direct comparison between current prices and prices at appraisal could not be made as no information was provided in the report and recommendation of the President (RRP), about the proportions of each wood class or whether there was any price difference in the market between fuelwood and timber. At appraisal, an economic price of Tk2,000 per cubic meter (m^3) for mixed fuelwood and timber was used to value project outputs. In 2004 prices, this is equivalent to about Tk3,000 to Tk3,200 per m^3. This is substantially higher than the Tk2,150 per m^3 in economic prices estimated by the PCR mission for material to be harvested from at about year 12, but similar in price to material to be harvested at year 25. This is estimated to comprise about 60% of higher value, larger diameter (over 45 centimeters) logs.

3. Project Benefits

a. Quantifiable

5. The planting densities, species mix, and subsequent management systems for the various types of plantings differ considerably from those proposed at appraisal. It is difficult, therefore, to make a direct comparison between actual outcomes and those described in the RRP. There was no provision for the harvesting of leaves and prunings by beneficiaries, for example, although it is clear from field observations that these are important sources of fuel. An allowance for this harvest has been included in the economic reevaluation. Detailed production models for embankment and roadside plantings show that a 10-year rotation yielding 18.5 m^3/ hectare (ha) of fuelwood and poles (3 rotations over a thirty-year analysis period) was envisaged at appraisal, with no intermediate thinning. Provision was made for infill planting in intermediate years, with full replanting after each clear felling. For embankment plantings, approximately 70% of all species were to be fuelwood and/or timber species, about 20% coconut and date palm with the balance of 10% being fruit species such as guava and mango. Over 90% of all plants for roadsides were to be fuelwood/timber species with the balance palms.

6. A planting density of about 1,320 plants/ha was proposed for embankments and about 2,200 plants/ha for roadsides. Actual planting densities are typically much higher than this (over 3,000 trees/ha in the case of embankments), which in many cases result to severe shading of coconut. The first flowering of coconuts is likely to be very delayed with the potential yield seriously depressed. As proposed, a cover crop of pigeon pea *(Cajanus cajan)* is usually planted for up to 2 years following tree planting.

7. In practice, project plantations are managed on the basis of much longer rotations than proposed at appraisal, with final felling of timber species not envisaged until 25 years from planting following the felling of short-rotation species in about the twelfth year from planting. Ideally, a first thinning should have taken place about 5 years after planting, but this was delayed in at least a third of the plantations. The PCR mission analyzed the journals for about 50 plantations in Noakhali and Lakshmipur forest divisions,[2] where thinning had already been carried out, to obtain yield data. Based on this analysis, yields of thinnings 5 years from planting of 9 m^3/ha for embankments and 13.5 m^3/ha for roadside plantings have been assumed for the reevaluation. Drawing Choudhury's analyses of harvests in other areas, mean annual increments in pure stands of 4 m^3/ha and 3.5 m^3/ha respectively for 12 and 25 year final harvests have been assumed.

8. In addition to timber, outputs of about 4,600 coconuts, 2,300 kilograms (kg) of date sugar and 450 kg of fruit (primarily mango)/ha of mixed embankment planting were assumed at appraisal. After considering the likely long-term impact on productivity of the management system currently being followed for embankment plantings, the PCR mission has estimated coconut output at full development at about 180 nuts from a hectare of mixed embankment planting plus fruit production (largely guava) at 2.4 tonnes. Little date sugar yield is expected. In the case of plantings along roads controlled by the Roads and Highways Department, production of about 70 coconuts and 950 kg of fruit/hectare, in addition to timber, was assumed. Very few fruit trees were planted along feeder roads. Yields used for the economic reevaluation are shown in Table A12.4.

9. An important consideration in assessing incremental project benefits is the situation that would have existed without the Project. As beneficiaries did not initially have legal rights to use embankment, roadside or foreshore areas, it is unlikely that any significant tree planting on these areas would have occurred without the Project. Some output in the form of grass and woody weeds that had previously been harvested by local people was lost as a result of Project activities. While the value of this output would normally be deducted from the with-Project output, it was not quantified in the RRP and could not be quantified by the PCR mission. Loss of paddy yield in fields adjacent to Project plantings due to shading from trees is a related issue. This was not considered at appraisal and could also not be quantified by the PCR mission.[3] Trials carried out by the Bangladesh Forest Research Institute have shown that yields of local paddy varieties, in particular, are very sensitive to shading and this is an issue that should be considered in the design of future plantings. All Project output is assumed to be incremental.

[2] These journals covered about 13% of the total area of Project plantings in these divisions.

[3] Land use agreements for roads and highways, feeder roads, and railways provide for a 10% share of final harvest proceeds for adjacent private landowners. While this is primarily to compensate them for land which they may have lost during road construction, it could also be considered as compensation for shading.

Table A12.4A: Yield Estimates: Fuelwood/ Timber Species
(ha)

Plantation Type	Leaves and Prunings (kg/ha)			Thinnings (m^3/ha)	Short Rotation Species (m^3/ha)			Long Rotation Species (m^3/ha)			
	Year 1[a]	Year 2	Year 3+	Year 5	Every 10 years	Total 30 years	Total Year 12[b]	Poles	Sawlogs		Total Year 25
									Small	Large	
Embankment											
Appraisal					18.4	55.2					
PCR	500	1000	1500	10			48	10	30	60	100
Highways											
Appraisal					18.4	55.2					
PCR	500	1000	1500	15			48	10	30	60	100
Feeder Roads											
Appraisal											
PCR	500	1000	1500	15			48	10	30	60	100
Foreshore Trials											
Appraisal					18	54					
PCR	500	1000	1500	15			48	10	30	60	100

ha = hectare; kg/ha = kilogram per hectare; m^3/ha = cubic meter per hectare; PCR = project completion review.
[a] Year refers to period from planting. Seedlings are typically a year old at planting.
[b] For the economic analysis, final short rotation yields have been increased by 10% to account for unauthorized harvests.
Source: Asian Development Bank estimates.

Table A12.4B: Yield Estimates: Other Species

Item	Unit	Year from Planting						
		3	4	5	6	10	15	20
Coconut (Appraisal)	nuts/tree			8		40	40	40
Coconut (PCR)	nuts/tree					5	18	20
Guava (PCR)	kg/tree		10	15	20	20	20	20

kg = kilogram; PCR = project completion review.
Note: The delayed and low level yield of coconut reflects the shading experienced at least until year 10 when grown in inadequately thinned mixed plantings. Guava yields are also assumed to be affected by shading but to a lesser degree than coconut.
Sources: Appraisal figures from the report and recommendation of the President and Asian Development Bank estimates.

10. With the exception of foreshore trials, Project physical achievements have been recorded as seedling kilometers[4] (skm). These have been converted to an area basis by the PCR mission by assuming (i) 1.5 ha/per skm for embankments (ii) 0.6 ha per skm for roads and highways plantings, and (iii) 0.3 ha/skm for feeder roads. Foreshore plantings have been recorded in hectares.

11. An additional benefit from embankment plantings emerged from a reduction in embankment maintenance costs because of tree cover. On the basis of information provided by Bangladesh Water Development Board at appraisal and updates by the PCR mission, maintenance costs for unplanted banks are estimated to be about Tk125,000/skm, Tk112,500/km for the first 3 years following planting, and Tk101,250/skm subsequently. In economic prices, the cost savings are valued at Tk5,512/ha and Tk11,025/ha respectively.

b. Non-quantifiable Benefits

12. Many beneficiaries appreciated the shade provided by plantations. Others thought that habitat for wildlife improved. In one area, farmers found that sand drift was reduced as a result of the shelter provided by a foreshore planting. In general, beneficiaries are expecting plantings to provide protection against extreme weather conditions although the extent that this will be realized remains to be seen.

c. Employment

13. Over 3.5 million person-days of employment were created during the implementation phase of the Project, mainly in planting and tree maintenance.[5] In addition, employment for semi-skilled persons was available in nurseries upgraded under the Project. About 35 person-days of labor per year is required for guarding a hectare of plantation, or about 186,500 person-days for the 5,330 hectares established under the Project. Homestead plantings also require labor for maintenance, while an estimated 56,000 person days will be required to complete the first thinning of all plantations. Additional employment has also been generated in the fuelwood industry while the wood processing sector is likely to require additional staff. Overall, it appears that the Project has had, and will continue to have, positive employment impacts.

4. Estimated Economic Internal Rate of Return

14. Enterprise margins per hectare in economic prices have been estimated for embankments, roads and highways, feeder roads, and foreshore trials. These are shown in Tables A12.5 to Tables A12.8 inclusive. Table A12.9 shows the phasing of plantation development and the areas used to estimate aggregate resource flows.

15. As shown in Table A12.10, the re-estimated EIRR for the Project for a 31-year life is 7.2% compared with 21% estimated at appraisal for a 30-year life. The two estimates are not directly comparable, however, as the reevaluation excludes benefits and direct costs of the seedling distribution component. If the RRP data are re-estimated with the seedling distribution component excluded, the EIRR is 4%. Higher wood products yields assumed by the PCR mission and lower than projected plantation investment costs in part explain the difference between the PCR estimate and the revised RRP estimate.

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[4] A seedling kilometer is the distance within which a defined number of seedlings has been planted—5,140 seedlings in the case of embankments, 2,000 in the case of highways and 1,000 in the case of feeder roads. To convert to hectares, the PCR mission has assumed an average planting density of 3 m^2 per plant.

[5] Government of Bangladesh. 2003. *Project Completion Report*. Dhaka (18 March).

16. If timber prices are assumed to rise by 10%, the EIRR rises to 8.1% while a fall in timber prices by the same amount would result in the EIRR falling to 6.2%. When all yields are increased by 10%, the EIRR rises to 7.9% or falls to 6.4% if yields are assumed to fall by 10%. A combination of price and yield increases of 10% would produce an EIRR of 8.8%, or an EIRR of 5.5% if both yields and prices fell by 10% from those assumed for the base case.

Table A12.5: Economic Margin for One Hectare of Embankment Plantation

(A) Composition of Plantings

Item	Percent of Area	Seedlings Planted
Short rotation species	50	2,570
Long rotation species	25	1,285
Fruit species	25	1,285
Total	**100**	**5,140**

Source: Asian Development Bank estimates.

(B) Plant Spacing and Tree Numbers, Fruit Species

Species	Planted (no.)	Final Spacing (m^2/ tree)	Final Density (trees/ha)	Final Number (mixed ha)
Coconut	308	70	143	9
Guava	977	16	625	119

ha = hectare; m^2 = square meter, no. = number.
Note: Twenty-four percent of fruit trees are coconut, 6% of all trees are coconut.
Source: Asian Development Bank estimates.

(C) Production

Product	Unit	Size (ha)	Years of Planting												
			1	2	3	4	5	6	7	8	9	10	11	12	25
Leaves/ prunings	t	1.00	0.50	1.00	1.50	1.50	1.50	1.50	1.50	1.50	1.50	1.50	1.50	1.50	1.50
Thinnings															
All species	m^3	0.90					9.00								
Final harvest															
Short rotation	m^3	0.50												26.40	
Long rotation	m^3	0.25													25.00
Subtotal		**0.75**													
Fruit															
Coconut	nuts	0.06										43.00	86.00	103.00	171.00
Guava	t	0.19				1.20	1.80	2.40	2.40	2.40	2.40	2.40	2.40	2.40	2.40
Intercrops															
Pigeon pea	t	1.00	1.00	0.50											

ha = hectare, m^3 = cubic meter, t = ton.
Source: Asian Development Bank estimates.

(D) Economic Margin at the Domestic Price Level

Product	Unit	Size (ha)	Years of Planting												
			1	2	3	4	5	6	7	8	9	10	11	12	25
Outflows															
Physical															
Forest guards	Person-days				35	35	35	35	35	35	35	35	35	35	35
Value															
Forest guards	Tk'000				0.63	0.63	0.63	0.63	0.63	0.63	0.63	0.63	0.63	0.63	0.63
Total outflows					**0.63**	**0.63**	**0.63**	**0.63**	**0.63**	**0.63**	**0.63**	**0.63**	**0.63**	**0.63**	**0.63**
Inflows															
Leaves/prunings	Tk'000		.25	.50	.75	.75	.75	.75	.75	.75	.75	.75	.75	.75	.75
Thinnings/prunings	Tk'000						5.01								
Short rotation timber	Tk'000													56.66	
Long rotation timber	Tk'000														83.47
Coconut	Tk'000											0.26	0.51	0.62	1.03
Guava	Tk'000					9.50	14.25	19.00	19.00	19.00	19.00	19.00	19.00	19.00	19.00
Pigeon pea	Tk'000		2.00	1.00											
Saved maintenance	Tk'000		5.51	5.51	5.51										
Saved maintenance	Tk'000					11.02	11.02	11.02	11.02	11.02	11.02	11.02	11.02	11.02	11.02
Total inflows	Tk'000		**7.76**	**7.01**	**6.26**	**21.27**	**31.04**	**30.77**	**30.77**	**30.77**	**30.77**	**31.03**	**31.29**	**88.06**	**115.27**
Net benefits	Tk'000		**7.76**	**7.01**	**5.63**	**20.64**	**30.41**	**30.41**	**30.41**	**30.41**	**30.41**	**30.40**	**30.66**	**87.43**	**114.64**

ha = hectare, Tk = Taka.
Source: Asian Development Bank estimates.

Table A12.6: Economic Margin for One hectare of Roads and Highways Plantation

(A) Composition of Plantings per Seedling Kilometer

Item	Percent of Area	Seedlings Planted
Short Rotation Species	70	3,598
Long Rotation Species	20	1,028
Fruit Species	10	514
Total	**100**	**5,140**

Source: Asian Development Bank estimates.

(B) Plant Spacing and Tree Numbers, Fruit Species

Species	Planted (no.)	Final Spacing (m^2/tree)	Final Density (trees/ha)	Final Number (mixed ha)
Coconut	123	70	143	3
Guava	391	16	625	48

ha = hectare, m^2 = square meter, no. = number.
Note: Twenty-four percent of fruit trees are coconut, 2.4% of all trees are coconut.
Source: Asian Development Bank estimates.

(C) Production

Product	Unit	Size (ha)	Years from Planting												
			1	2	3	4	5	6	7	8	9	10	11	12	25
Leaves/prunings	t	1.00	0.50	1.00	1.50	1.50	1.50	1.50	1.50	1.50	1.50	1.50	1.50	1.50	1.50
Thinnings															
All species	m^3	0.90					13.50								
Final harvest															
Short rotation	m^3	0.70												33.60	
Long rotation	m^3	0.20													20.00
Subtotal final harvest	**m^3**	**0.90**													
Fruit															
Coconut	nuts	0.02										17.00	34.00	41.00	69.00
Guava	t	0.08				0.48	0.71	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95
Intercrops															
Pigeon pea	t	1.00	0.50												

m^3 = cubic meter, t = ton.

Source: Asian Development Bank estimates.

(D) Economic Margin at the Domestic Price Level

Product	Unit	Size (ha)	Years of Planting												
			1	2	3	4	5	6	7	8	9	10	11	12	25
Outflows															
Physical															
Forest guards	Person-days				35.00	35.00	35.00	35.00	35.00	35.00	35.00	35.00	35.00	35.00	35.00
Value															
Forest guards	Tk'000				0.63	0.63	0.63	0.63	0.63	0.63	0.63	0.63	0.63	0.63	0.63
Total outflows					**0.63**	**0.63**	**0.63**	**0.63**	**0.63**	**0.63**	**0.63**	**0.63**	**0.63**	**0.63**	**0.63**
Inflows															
Leaves/prunings	Tk'000		0.25	0.50	0.75	0.75	0.75	0.75	0.75	0.75	0.75	0.75	0.75	0.75	0.75
Thinnings/fuelwood	Tk'000						7.52								
Short rotation timber	Tk'000													72.12	
Long rotation timber	Tk'000														66.78
Coconut	Tk'000											0.10	0.21	0.25	0.41
Guava	Tk'000					3.80	5.70	7.60	7.60	7.60	7.60	7.60	7.60	7.60	7.60
Pigeon pea	Tk'000		2.00	1.00											
Total inflows	Tk'000		2.25	1.50	0.75	4.55	13.97	8.35	8.35	8.35	8.35	8.45	8.56	80.72	75.54
Net benefits	Tk'000		2.25	1.5	0.12	3.92	13.34	7.72	7.72	7.72	7.72	7.82	7.93	80.09	74.91

ha = hectare, Tk = Taka.

Source: Asian Development Bank estimates.

Table A12.7: Economic Margin for 1 hectare of Feeder Road Plantation

(A) Composition of plantings/seedling kilometer

Item	% of Area	Seedlings Planted
Short rotation species	80	800
Long rotation species	20	200
Fruit species	0	0
Total	**100**	**1,000**

Source: Asian Development Bank estimates.

(B) Production

Product	Unit	Size (ha)	1	2	3	4	5	6	7	8	9	10	11	12	25
Leaves/prunings	t	1.00	0.5	1.0	1.5	1.5	1.5	1.5	1.5	1.5	1.5	1.5	1.5	1.5	1.5
Thinnings															
All species	m^3	0.90					13.5								
Final harvest															
Short rotation	m^3	0.80												38.4	
Long rotation	m^3	0.20													20.0
Subtotal final harvest	m^3	1.00													
Intercrops															
Pigeon pea	t	1.00	1.0	0.5											

ha= hectare, m^3 = cubic meter, t = ton.
Source: Asian Development Bank estimates.

(C) Economic Margin at the Domestic Price Level

Product	Unit	Size (ha)	1	2	3	4	5	6	7	8	9	10	11	12	25
Outflows															
Physical															
Forest guards	Person-days				35.00	35.00	35.00	35.00	35.00	35.00	35.00	35.00	35.00	35.00	35.00
Value															
Forest guards	Tk'000				0.63	0.63	0.63	0.63	0.63	0.63	0.63	0.63	0.63	0.63	0.63
Total Outflows			**0.00**	**0.00**	**0.63**	**0.63**	**0.63**	**0.63**	**0.63**	**0.63**	**0.63**	**0.63**	**0.63**	**0.63**	**0.63**
Inflows															
Leaves/prunings	Tk'000		0.25	0.50	0.75	0.75	0.75	0.75	0.75	0.75	0.75	0.75	0.75	0.75	0.75
Thinnings	Tk'000		0.00	0.00	0.00	0.00	7.52	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Short rotation timber	Tk'000		0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	82.42	0.00
Long rotation timber	Tk'000		0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	66.78
Pigeon pea	Tk'000		2.00	1.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Total Inflows	**Tk'000**		**2.25**	**1.50**	**0.75**	**0.75**	**8.27**	**0.75**	**0.75**	**0.75**	**0.75**	**0.75**	**0.75**	**83.17**	**67.53**
Net Benefits	**Tk'000**		**2.25**	**1.50**	**0.12**	**0.12**	**7.64**	**0.12**	**0.12**	**0.12**	**0.12**	**0.12**	**0.12**	**82.54**	**66.90**

ha= hectare, Tk = Taka.
Source: Asian Development Bank estimates.

Table A12.8: Economic Margin for 1 hectare of Foreshore Plantation

(A) Composition of plantings/seedling kilometer

Item	% of area	Seedlings planted
Short rotation species	50	1,650
Long rotation species	50	1,650
Fruit species	0	0
Total	**100**	**3,300**

(B) Production

Product	Unit	Size (ha)	1	2	3	4	5	6	7	8	9	10	11	12	25
Leaves/prunings	**t**	**1.0**	**0.5**	**1.0**	**1.5**	**1.5**	**1.5**	**1.5**	**1.5**	**1.5**	**1.5**	**1.5**	**1.5**	**1.5**	**1.5**
Thinnings															
All species	m^3	1.0					15.0								
Final harvest															
Short rotation	m^3	0.5												24.0	
Long rotation	m^3	0.5													50.0
Subtotal final harvest	m^3	1.0													
Intercrops															
Pigeon pea	t	1.0	1.0	0.5											

ha= hectare, m^3 = cubic meter, t = ton.
Source: Asian Development Bank estimates.

(C) Economic Margin at the Domestic Price Level

Product	Unit	Size (ha)	1	2	3	4	5	6	7	8	9	10	11	12	25
Outflows															
Physical															
Forest guards	Person-days				35.00	35.00	35.00	35.00	35.00	35.00	35.00	35.00	35.00	35.00	35.00
Value															
Forest Guards	Tk'000				0.63	0.63	0.63	0.63	0.63	0.63	0.63	0.63	0.63	0.63	0.63
Total Outflows					**0.63**	**0.63**	**0.63**	**0.63**	**0.63**	**0.63**	**0.63**	**0.63**	**0.63**	**0.63**	**0.63**
Inflows															
Leaves/prunings	Tk'000		0.25	0.50	0.75	0.75	0.75	0.75	0.75	0.75	0.75	0.75	0.75	0.75	0.75
Thinnings	Tk'000						8.36								
Short rotation timber	Tk'000													51.51	
Long rotation timber	Tk'000														166.94
Pigeon pea	Tk'000		2.00	1.00											
Total Inflows	**Tk'000**		**2.25**	**1.50**	**0.75**	**0.75**	**9.11**	**0.75**	**0.75**	**0.75**	**0.75**	**0.75**	**0.75**	**52.26**	**167.69**
Net Benefits	**Tk'000**		**2.25**	**1.50**	**0.12**	**0.12**	**8.48**	**0.12**	**0.12**	**0.12**	**0.12**	**0.12**	**0.12**	**51.63**	**167.06**

ha= hectare, Tk = Taka.
Source: Asian Development Bank estimates.

Table A12.9: Phasing of Planting

Item	Unit	Planting Year							
		1995-1996	1996-1997	1997-1998	1998-1999	1999-2000	2000-2001	2001-2002	Total
A. Embankments									
Seedling km planted	skm	130	261	289	210	236	268	0	1,394
Hectares planted	ha	200	402	446	324	364	413	0	2,150
B. Roads and Highways									
Seedling km planted	skm	102	145	167	120	127	169	8	838
Hectares planted	ha	61	87	100	72	76	101	5	503
C. Feeder Roads									
Seedling km planted	skm	337	558	1,263	1,233	1,661	1,650	0	6,702
Hectares planted	ha	101	167	379	370	498	495	0	2,011
D. Foreshore Trials									
Seedling km planted	skm								0
Hectares planted	ha		21	109	150	171	215	0	665

ha = hectare, km = kilometer, skm = seedling kilometer.
Source: Department of Forest records for skm and foreshore area.
Conversion of skm to hectares by Project Completion Review mission.

Table A12.10: Economic Internal Rate of Return, Constant 2004 Prices (Excludes Seedling Distribution)

Items	Unit	Year of Project											
		1	2	3	4	5	6	7	8	9	10	20	30
Inflows													
Net enterprise margins[a]													
Embankments	Tk'000	1,556	4,530	7,410	12,044	22,010	35,065	43,359	51,296	60,968	64,958	66,966	47,378
Roads and Highways	Tk'000	138	288	338	559	1,373	2,377	3,030	3,468	4,315	4,898	4,862	7,493
Feeder Roads	Tk'000	227	528	1,116	1,433	2,514	3,242	3,774	3,024	3,989	3,965	241	33,114
Foreshore trials	Tk'000	0	46	31	340	611	931	363	1,320	1,492	1,864	67	35,919
Total Inflows	Tk'000	**1,921**	**5,392**	**8,895**	**14,375**	**26,508**	**41,616**	**50,527**	**59,108**	**70,763**	**75,684**	**72,136**	**123,904**
Outflows													
Investment costs[b]	Tk'000	65,803	122,453	157,972	194,335	129,485	213,706						
Net Resource Flow	Tk'000	**(63,882)**	**(117,061)**	**(149,077)**	**(111,478)**	**(167,826)**	**(87,870)**	**163,179**	**59,108**	**70,763**	**75,684**	**72,136**	**123,904**

Economic internal rate of return (EIRR)	**7.2%**
Net present value (NPV) at 12% (Tk'000)	**219,233**

[a] For a single 25year rotation for each plantation class, aggregated according to the development phasing shown in Table A12.9.
[b] Includes plantation establishment costs and initial maintenance costs. Total investment cost differs from that shown in Table A12.2 as (i) direct costs of seedling distribution component have been excluded, and (ii) half of the nursery costs have been excluded to reflect the exclusion of the seedling distribution component which relied on seedlings produced by the nursery component.
Source: Asian Development Bank estimates.

AN OVERVIEW OF THE TREE FARMING FUND

A. Background

1. Based on the Social Forestry Rules 2003, the benefits (sale proceeds of the final harvest) from different types of social forestry plantations will be shared among the different stakeholders. In all cases, 10% of the sale proceeds have been earmarked as Tree Farming Fund (TFF). The basic idea behind the creation of the TFF is to attain self-sustainability and reduce dependency on donor funds for the reestablishment of the tree cover or plantation, as the next crop.

B. Existing Situation of TFF Management

2. TFF is a very recent concept incorporated in the forestry sector of Bangladesh. At the time of harvest of the plantations that started in year 2001, no clear guideline was available regarding the TFF. Under such a situation, although 10% of the sale proceeds have been kept aside as TFF, its uniform utilization was not done in absence of any clear central directive. Slowly, however, attempts have been made to clarify the procedure and application of the TFF. The Ministry of Finance has issued a set of guidelines through their memo no. OM/OB/OO-2/Ban-121/96/1038 dated 28-10-02. The salient features of these guidelines are as follows:

(i) Each beneficiary group at every social forestry center will operate a TFF.
(ii) All costs of reestablishing a plantation will be met from this TFF.
(iii) Any surplus after meeting the costs of reestablishing the plantation may be used for any tree-related activity.
(iv) A nine-member committee will be constituted by votes to deal with TFF at every social forestry area.
(v) A three-member fund management subcommittee will be constituted out of these nine members to operate the TFF.
(vi) The local Forestry Department (FD) staff and nongovernment organization personnel will be advisors to these TFF committees.
(vii) The TFF committees will get the fund transferred to their account by the divisional forest officer (DFO), to operate on the basis of resolutions of meeting.
(viii) The fund management subcommittee will maintain the account and, at the end of the financial year, shall submit it to the *thana* (district) coordination committee.
(ix) In case of any discrepancy, the district coordination committee's decision will be treated as final.
(x) Quarterly reports on TFF will be submitted by the DFOs to the (a) conservators of forests, and (b) project director, who will, in turn, submit the reports to the chief conservator of forests.

3. Our fieldwork suggests that, as the TFF is a 'financial matter', the field level officers are cautious in dealing with this fund. Most of the DFOs have kept this fund under some form of short-term deposit accounts in banks. Those who have used it got it properly accounted for through estimates, sanctions, vouchers, etc. with the help of their range and beat officers, in a similar manner as they incur the expenditure of other government funds.

4. Until today, major confusions and questions about the TFF arise at FD. In fact, the exact functional procedures are still lacking but FD has decided to use the TFF towards the reestablishment of plantations (second rotation crop).

C. Major Observations

5. In connection with TFF, the following major issues need to be discussed so that a better understanding of the concept and field implications of TFF could be developed and guiding principles for the formulation of TFF rules could be recommended.

1. Sustainability

6. The yields from different plantations are not expected to be uniform. The TFF from good plantations will be higher than that from poor plantations. An amalgamation of TFFs from a larger number of plantations will lead to an average, and shall compensate for the shortfalls in meeting the costs of reestablishment in the case of poor plantations.

7. The issue of sustainability may be viewed from the country, district, thana, plantation center, and beneficiary group levels.

8. According to the guidelines issued by the Ministry of Finance, the TFF has to be operated by the beneficiary group. Thus, based on this guideline, the sustainability of the beneficiary group will have to be considered. Sustainability occurs only if the plantation of the given group is enough to generate adequate TFF. If the TFF falls short of meeting the required costs (at least the costs of material) of plantation reestablishment, it will not be sustainable.

9. It may be a good idea to consider the issue of districts' sustainability. One possibility could be that the TFF from all plantation centers of the given district are amalgamated and used equally for all the plantation sites of the district, so that district sustainability is achieved.

10. The accumulated district TFF may be equally approachable from all the plantation centers of the given district through the TFF management committee to meet the reestablishment costs of the plantations, as far as possible.

2. TFF vis-à-vis the Plantation Reestablishment Costs

11. Currently, 49% of the costs of plantation reestablishment are drawn from the TFF. The rest (51%) is given from the donor fund. At most of the sites, the TFF cannot even meet this 49% of plantation reestablishment costs at present. Over and above, the costs of marking, felling, selling, and pricing of seedlings are additional requirements. In the absence of the matching donor fund and the support for seedling costs, the present amount of TFF is unlikely to provide for the reestablishment of the plantations (when there will be no donor fund).

12. FD should prioritize the TFF's primary objective of supporting plantation reestablishment by reducing external dependence. Reestablishment of the plantation, starting with the felling marks, should be treated as the first item to be kept aside from the sale proceeds. The quantity has to be sufficient to meet the required expenses (e.g. felling marking, felling, selling of the produce, nursery raising, planting, fertilizer application, beating up, immediate maintenance works). In view of the existing wood prices (sale proceeds of the wood), on an average, the costs of reestablishment (plantation raising costs) over an acre of land appears to be roughly about 20 to 23% of the sale proceeds of wood obtained from an acre.

3. Augmentation of the TFF

13. One of the basic concepts of fund management is its augmentation. Since the plantations require immediate replanting after harvesting especially within the given financial year, the funds kept aside as TFF are ploughed back after collection. Thus, the TFF under the existing management system has no scope for augmentation. The present system of providing 51% of the raising costs of second rotation plantation from donor fund will discontinue at the end of the project. For the first rotation plantation (new plantation for the first time) however, the donor fund as well as the Government of Bangladesh fund may be allowed as usual. In lieu of supporting a portion of the costs of reestablishing the plantations in the form of nursery and 51% of the raising costs of the second rotation plantations from the donor fund, a block fund should be placed with the proposed social forestry directorate (currently the FD). This block money may be invested as indicated in section D.

4. Nursery and Availability of TFF

14. The seedlings to be planted in the plantations have to be grown at least 1 year ahead in the nurseries. The TFF is generated in the year of felling from the proceeds from sale of the products. The plantation is to be raised in the same year. Moreover, the costs of marking, felling, selling, etc. have to be met before generating TFF. Thus, to meet the nursery and other expenditures, funds must be available at least 1 year before the scheduled generation of TFF so that the seedlings can be made available during the coming year for raising the plantation.

5. TFF and Total Cost of Plantation Reestablishment

15. An analysis of the costs of establishing and maintaining a nursery and raising a plantation indicates that on an average,

(i) about 64% of the nursery raising costs are material costs, and
(ii) about 61% of the plantations raising costs are material costs.

16. The TFF as a matter of principle should ideally cover the total costs of plantation raising. If not, it must at least meet the full costs of materials required in connection with reestablishing the plantation. Therefore, TFF has to meet approximately 75% (i.e. the material cost) of the total costs of nursery and plantation.

6. TFF May be Viewed as a Support from Public Exchequer

17. All stakeholders will be given their share of benefits. A portion (at present 10%) of the proceeds from sale of trees is set aside as TFF. The main objective is to sustain the tree cover or establish the next rotation plantations so that afforestation continues without external funding. The guidelines given by the Ministry of Finance, although not very clear, may be used to fit the field needs and requirements in formulating TFF rules in detail. The required draft rules are to be discussed by the Ministry of Finance, and incorporated in the accounting system to make it functionally adaptable. These guidelines may be used while formulating the TFF rules.

D. Suggestions for Improvement

18. The following are some suggestions for improving TFF administration:

(i) Ideally, TFF should cover the costs of seedling raising, marking, felling, selling, and the costs of reestablishment of plantation. Instead of the current rate of 10%, the TFF should constitute at least 20% of the sale proceeds if the costs are to be met. Since it may not be feasible to amend the existing rules immediately, the proposed enhancement of the TFF share may be adjusted from FD's share until the rules are revised.

(ii) The TFF should be recorded by using a separate 'receipt book', to be handled by the proposed district social forestry officer (currently the DFO). The TFF should be entered in a TFF cashbook, and should be deposited in a short-term deposit account opened under the name of the divisional social forestry officer (DFO).

(iii) The donor(s) may consider setting aside some money, about Tk50 million, as a block fund, which should be made available to proposed Conservator General social forestry (currently the chief conservator of forests). Part of this money may be given to some banking institutions such as the *Palli Karma Shahayak Foundation* (PKSF) to be used as source money to provide microcredit especially to social forestry participants. PKSF, however, shall have to guarantee the repayment of this amount with some interest (which may be as low as 2%) to be negotiated with the social forestry directorate (currently FD). The rest of this block fund may be kept as fixed deposit with a bank. This principal amount should never be withdrawn. The interest of this money may be given to the DFOs to compensate for the TFF shortfalls, if any.

(iv) A TFF management committee at the beat level, territorial forest division, and at thana (in the case of social forestry division) should be established.

(v) An FD representative at the fund management subcommittee should act as adviser to help in the maintenance of the accounts.

(vi) In view of the 'sustainability' issue, as discussed earlier, an amalgamation of TFF may be necessary in the long run. The level (e.g. plantation center, thana, district, national) at which such amalgamation should be made will be determined after an analysis of the particular realities and characteristics of the field concerned. However, our field observations suggest that an amalgamation may be more effective if done by the divisional offices.

(vii) A set of detailed rules for the management and operations of the TFF has to be discussed by the Ministry of Finance, and incorporated as part of the account system of the directorate of social forestry (presently the FD).