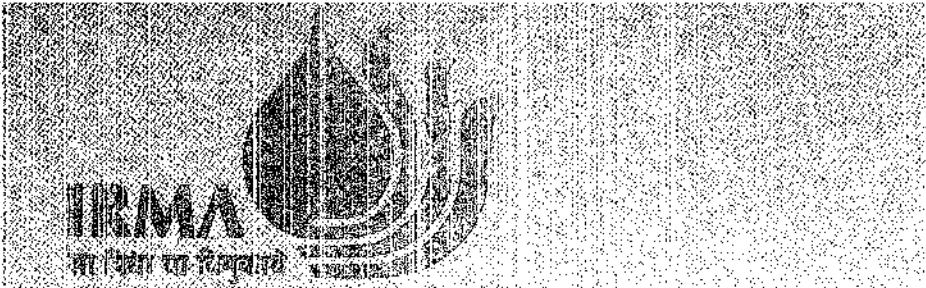


STATION OF VILLAGES: ENVIRONMENTAL  
STUDY OF ASIATIC VILLAGES  
IN GUJARAT

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September 1989

AFFORESTATION OF VILLAGE COMMON LANDS :  
A CASE STUDY OF ASLALI VILLAGE WOODLOT IN GUJARAT

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## ABBREVIATIONS

CCF	- Chief Conservator of Forests
CFP	- Community Forestry Project
DFO	- District Forest Officer
FD	- Forest Department
GOG	- Government of Gujarat
Ha	- Hectare
IRDP	- Integrated Rural Development Programme
IRMA	- Institute of Rural Management, Anand
IRR	- Internal Rate of Return
PRM	- Programme in Rural Management
Qt	- Quintal (100 kg)
RFO	- Range Forest Officer
Rs.	- Rupees
VP	- Village Panchayat
VW	- Village Woodlot
SHVW	- Self Help Village Woodlots
MVW	- Managed Village Woodlots
NREP	- National Rural Employment Programme
IRR	- Internal Rate of Return

## GLOSSARY

Amali	- <u>Tamarindus indica</u>
Bamboo	- <u>Bambusa bambos</u>
Bharwad	- A semi-nomadic middle caste community with animal husbandry as their main occupation
Commons	- A resource which is collectively owned/held and used
Crores	- Ten million
Deshi baval	- <u>Acacia nilotica spp. indica</u>
Datoon	- A deshi baval twig of finger thickness about 20 cm long used to clean teeth
Eucalyptus	- Eucalyptus hybrid
Gauchar	- Community (Village) grazing land
Ganda baval	- <u>Prosopis juliflora</u>
Gram sabha	- Village assembly consisting of all residents of the village above 18 years of age
Harijan	- A Scheduled Caste (lowest) usually sweepers and scavengers
Jamun	- <u>Syzygium cumini</u>
Khair	- <u>Acacia catechu</u>
Lakh	- 100,000
Malki	- Privately owned
Mahuda	- <u>Madhuka indica</u>
Mango	- <u>Mangifera indica</u>
Neem	- <u>Azadirachta indica</u>
Patel	- A middle caste community with farming as their main occupation
Pipal	- <u>Ficus religiosa</u>
Rambaval	- <u>Acacia tortilis</u>
Rayan	- <u>Manilkara hexandra</u>
Rabari	- A middle caste community with animal husbandry as their main occupation
Subbaval	- <u>Leucaena leucocephala</u>
Sirus	- <u>Albizia lebbek</u>
Sissoo	- <u>Delbergia sissoo</u>
Sarpanch	- President of Village Panchayat
Taluka	- An administrative unit smaller than district in size
Thakore	- A middle caste community
Vankar	- A Scheduled Caste
Village panchayat	- An elected body or council responsible for Village administration. This is the lowest unit of local government in Gujarat and many other states in India.
Vanmahotsava	- Festival of planting trees initiated in 1950.
Woodlot	- Plantation raised in a compact block of land
Waghari	- A Scheduled Caste

**AFFORESTATION OF VILLAGE COMMON LANDS :  
A CASE STUDY OF ASLALI VILLAGE WOODLOT IN GUJARAT**

**Abstract**

This paper presents an overview of the village woodlot (VW) component of the Community Forestry Project (CFP) of the Forest Department (FD) of the Government of Gujarat and the findings of a case study of a VW in Ahmedabad district of the State. The overview revealed that the VW scheme was planned and administered well by the FD. The case study showed that the Aslali VW scheme was technically and administratively feasible and financially viable. The benefit-cost ratio at the ten percent discount rate ranged from 2.22 to 2.69 and the financial internal rate of return (IRR) from 39 to 43 percent. The village panchayat (VP) received a substantial amount of income, over Rs.78,000, from the woodlot and used the money to augment the supply of drinking water in the village and for replantation of the harvested area. The villagers benefited from the fuel wood, datoons, and grass either collected free of cost from the VW or bought at a highly subsidised price. The study demonstrated that afforestation of village gauchars which are often degraded and produce nothing can bring about substantial benefits to the village community and that government intervention in managing of village common lands can avert 'the tragedy of the commons'.

The study pointed to the need for involving villagers in the scheme right from the very beginning, for making definite arrangements for distribution of benefits from the plantations among the villagers equitably, for educating and training them in the techniques of raising trees and managing the woodlots, and for motivating the VPs to take over the management of the woodlots established by the FD and to take up new plantations on their own. A scheme of afforestation of village common lands which takes into account the lessons of Aslali experience could go a long way in strengthening the financial position of VPs and putting the degraded common lands to more productive and ecologically sound use.

**INTRODUCTION**

India has a total land mass of nearly 329 million hectares (ha) of which about 140 million ha (42.55%) is under cultivation and the remaining 189 million ha is uncultivated. Most of the uncultivated land in India is degraded or wasted and is owned collectively by village communities/panchayats and by government. These lands are called village common lands and include most of the 80 million hectares of land classified as culturable waste, permanent pastures and other grazing lands, miscellaneous tree crops and groves, fallow lands and barren and uncultivable lands. No reliable estimates of the actual extent of village common lands in India are available. Whatever their actual extent, the significance of the village common lands in India is sufficiently high and their productivity miserably low to warrant serious attention of policy makers, planners, ecologists, economists, resource managers, political leaders and others interested in scientific development and management of India's land resources.

The problem of degradation of the village common lands can be traced to their collective or common ownership. These lands suffer from what Hardin (1968) calls "The Tragedy of the Commons". The essence of the tragedy is that the private marginal benefit from appropriation/use of common property resources is much higher than the private marginal cost of appropriation(1)\*. This induces more and more use of these resources and leads eventually to degradation or complete destruction of these resources.

A socially desirable use of the degraded village common lands seems to be to grow those species of trees which can provide fuel wood, fodder, timber and other useful minor produce to meet the requirements of local people who collectively own them and/or have access to them. Fortunately, trees, when properly managed, are a renewable resource. Like other rural development programmes, social forestry programmes are most successful when local people are most involved and when people perceive clearly that success of the programmes is in their self-interest. The Central and/or the State governments can provide money, technical advice, training, and saplings but unless community members

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\* Figures in brackets refer to the end notes.

understand why lands to which they have traditionally had free access for free grazing and wood gathering are being demarcated into a plantation, they are apt to view such projects with suspicion. This is the real crux of the problem of afforestation of village common lands in India. There is no single magic solution to this problem; some experimentation is necessary to find out which form of institutional/organisational structure is most appropriate for afforesting and managing the village common lands in India and averting 'the tragedy of the commons'. The FD of GOG and possibly those of many other state governments have done some innovative work in this field. This paper first presents an overview of the VW scheme in Gujarat and then describes and analyses the experience with establishing and managing a woodlot in a village in Ahmedabad district of the State. This is done with a view to find out whether the government intervention can avert the tragedy of the village common lands and put them to socially more productive use.

### Social Forestry in Gujarat

Forests in Gujarat state cover 1.965 million ha of land which constitutes about 10 percent of the State's total geographical area (Pinto et. al., 1984:18). The per capita forest area is estimated to be 0.06 ha which is lower than the all-India average of 0.11 ha and far below the world average of 1.04 ha (Pinto et.al. 1984:vi) Furthermore, only 60 percent of the area under forest cover is commercially productive and the remaining 40 percent of the forests are classified as wild life preserves, sanctuaries, and national parks. The reserved forests yield an average revenue of Rs.160 million per year which is roughly 2 percent of the State's total revenue. The forests contribute about 18 percent, 13 percent, and 5 percent respectively of the State's total requirements of firewood, timber, and small timber (poles) (Verma, 1987:90). On the whole, Gujarat is considered as a forest-poor state.

After having realised the inadequacy of its forest resources to meet the State's growing requirements of various forest products, especially fuel wood, timber, and fodder, the FD initiated a social forestry programme in 1969. The main objective of the programme was to promote tree plantation in individually -and communally - owned unused and/or waste lands and in the lands owned by other government departments such as Revenue, Public Highways, Railways etc. Initially, under this programme, strip plantation was done along road sides and canal banks. Components of VW, reforestation of degraded forests,

rehabilitation of degraded farm lands, plantations in malki lands, plantations in vacant lands of municipal corporations and industrial estates were added later on. To initiate, plan, direct, and coordinate the social forestry work in the State, the GOG created in 1969 within its FD a small Extension Forestry Wing headed by a Conservator of Forests who was assisted by two Deputy Conservators of Forests. In April 1980, Phase I of the Gujarat Community Forestry Project (CFP) was launched with World Bank financial assistance. Phase I was over in March 1985. Phase II of CFP was launched in April 1985 and will close in March 1990. Major components of Phase I of CFP were strip plantation (35%), village woodlots (36%), reforestation of degraded forest areas (28%), and afforestation in privately owned lands (1%). Besides, 150 million saplings were to be distributed free of charge to harness the private initiative in tree planting activity. Phase I had an original outlay of Rs.653.59 million (Pinto et.al., 1984:29).

### Village Woodlots in Gujarat : An Overview

The extent of gauchar (village grazing lands) in Gujarat state is estimated to be 8.44 lakh ha (Verma, 1987:91). Due to excessive and uncontrolled grazing, the gauchars have become completely denuded of any vegetation and hardly a blade of grass is available from those lands for animals to graze except during a short period of 2-3 months in monsoon. As a consequence, there is an acute shortage of forage grasses in the State and the worst sufferers are the landless poor households owning animals. There was and continues to be an urgent need to restore the gauchars and make them productive so as to meet the fodder and fire wood requirements of villagers. Realising this need, the FD added to its social forestry programme a scheme of establishing VW in 1974. Given the poor financial condition of most VP, it was unrealistic to expect them to raise VW on their own initiative and cost. Hence, the FD decided to take an initiative and raise plantations in village common lands at its own cost. The main objective of the VW scheme was to enable each participating VP to create and maintain its own fuelwood and fodder resources.

### Guidelines for Establishing Village Woodlots

The GOG laid down the following guidelines for implementing the VW component of the social forestry programme (Shukla and Dalvi, 1986 : 84):

1. A minimum of four ha of village gauchar should be set aside by the VP interested in the scheme for establishing a VW. This was subsequently reduced to two ha on the request of a few VPs;
2. The ownership of land will continue with the VP;
3. The VP will cooperate with the FD in protecting the VW and take over the management of the VW after it is successfully established (2);
4. The VP will be consulted by the FD in selection of tree species to be planted;
5. The FD will establish the VW and incur all the expenditure required for the purpose;
6. The villagers will be permitted to collect grass, fallen dry fire wood, and fruits free of charge; and
7. At the final harvesting, 75 percent of the sale proceeds after deducting the VW establishment expenditure will be made available by the FD to the VP and the remaining 25 percent will be deposited in a joint VP-FD account and could be used by the VP for replantation purposes under the technical guidance of the FD(3).

#### Procedure of Establishing the Woodlots

Establishing VW was a formidable and challenging task for the staff of the Extension Forestry Wing of the FD as it involved going out to the villagers and educating and persuading them to accept the plan and set aside a portion of their gauchar for the purpose. This was so particularly because the FD officials, like their counterparts in other states, were not trained and oriented for doing that kind of job. But thanks to their vigorous and persistent efforts, some 124 VPs in 16 of the 19 districts of the State came forward to set aside 906 ha of village commons for the purpose in the very first year (Shukla and Dalvi, 1986:84). Thereafter, the VW scheme caught on and more and more VPs adopted the scheme as time passed by.

Typically, in rainfed village woodlots, 8-9 month old plants raised in polybags of 15 cm x 25 cm x 200 gauge are planted at a spacing of 5 m x 5 m giving a total plant population of 400 per ha. After the launching of the World Bank-aided CFP in 1980-81,

the spacing was reduced to 2 m x 2 m in rainfed woodlots and to 1 m x 1 m in irrigated woodlots except for fruit plants in which case it was 4 m x 4 m. The plantation is protected from grazing by providing a trench-cum-live hedge fence.

In CFP, the main emphasis was on optimising the production of fuelwood and fodder by adopting closer spacing and reducing the time gap between two harvests. Normally, seventy five percent of the plot area was planted with fuelwood and fodder species and the balance with fruit plants and bamboos. To cut down the cost of replanting, preference was given to coppicing species suitable to the site (Shukla and Dalvi, 1986).

The CFP developed three models for VWs which are all under operation. These are: (a) Irrigated VW; (b) Rainfed VW (Saurashtra and Kutch); and (c) Rainfed VW (Mainland Gujarat). The CFP also made a distinction between the MVW and the SHVW. In a MVW, the VP spares land, cooperates in selection of species and protection of VW and agrees to take over the management of the VW after it is planted and established by the FD. A woodlot which is established by a VP on its own initiative but with free saplings and free technical advice from the FD, is termed as SHVW. As mentioned earlier, in the case of MVW, 75 percent of the net sale proceeds of the final harvest is transferred by the FD to the VP and the remaining 25 percent is deposited in a joint VP-FD account which could be used by the VP for replantation purposes. In the case of SHVW, the entire sale proceeds are retained by the concerned VP.

#### Achievements of the Woodlot Scheme

The targets set for establishment of the MVW have been, by and large, achieved. This was so because everything was done by the FD at its own cost and the FD had full control over resources required to do the job. However, the progress in establishing the SHVW was slow (Pinto et. al. 1984 : 5) The main reasons of the shortfall appear to be (a) lack of resources with the panchayats; and (b) lack of village level leadership. Information about the number of villages covered and the area brought under the VW in the State is given in Table 1. As of March 1989, woodlots had been established on 72,190 ha of gauchars in 12,363 villages in the State. This is approximately 9 percent of the total area under gauchars in the State. Thus, over 90 percent of the area under gauchars is not yet covered under the woodlot scheme. Afforestation of the remaining area or even a fraction

of that is a gigantic task and the FD alone cannot do it in foreseeable future.

**Table 1**  
Achievements of the Village Woodlot Scheme in Gujarat State, 1974-75 - 1988-89

Year	No. of Villages where woodlots have been set-up	Total area in which the woodlots have been set-up (ha)		
		Rainfed	Irrigated	Total
1974-75	121	906	0	906
1975-76	446 (120)*	2704	0	2704
1976-77	289 (167)	2280	0	2280
1977-78	459 (146)	2865	0	2865
1978-79	482 (160)	4153	0	4153
1979-80	409 (187)	4668	0	4668
1980-81	753 (158)	4354	225	4579
1981-82	1151 (206)	5745	399	6144
1982-83	1627 (335)	7012	689	7701
1983-84	1468 (431)	8376	827	9203
1984-85	1602 (386)	9885	1696	10581
1985-86	856 (357)	3839	988	4827
1986-87	855 (314)	2932	659	3591
1987-88	835 (342)	2504	940	3444
1988-89	1010 (501)	3665	879	4544
<b>Total</b>	<b>12363(3916)</b>	<b>64888</b>	<b>7302</b>	<b>72190</b>

Source: Records of the Forest Department, Social Forestry Project, Gujarat State, Vadodara.

\* The figures in brackets are the number of villages where woodlots have been established more than once.

#### Incentives

In order to motivate VPs to raise their own VW in gauchar the following incentives have been declared by the GOG for outstanding efforts. At the district level, three prizes, viz., the First Prize of Rs.1000, the Second Prize of Rs.700, and the Third Prize of Rs.300, have been instituted. At the state level also, three prizes, viz., the First Prize of Rs.10,000, the Second Prize of Rs.7,000, and the Third Prize of Rs.3,000 have been instituted.

In addition, it has been decided by the GOG to give 50 percent of the net revenue from road/canal side plantations to the adjoining VPs. This is a substantial amount and will augment the revenue of the VPs to enable them to provide basic facilities and amenities to the villagers.

A lot of doubt was raised about the success of the "self-help" model as more than 80 percent of the VPs had a meagre revenue income of only Rs.8200 per annum or less. The limited resources available with VPs were needed to carry on their routine functions and provide civic amenities to the community. Secondly, returns from the existing VWs had not yet started coming in. Hence, funds for establishing VW were made available from other sources notably from the centrally-sponsored National Rural Employment Programme. A few voluntary agencies also contributed towards this activity. Initially attempts were made to route the funds through the Taluka Panchayats to the VPs. But this experiment had to be abandoned due to administrative and other problems and the SHVW component continued to be a CFP-operated activity like the MVW except that the funds came from sources other than the CFP (Pinto et.al., 1984 : 33).

It was also hoped that the VPs would be persuaded to take over the management and protection of the VW after the initial establishment period of 3 years. However, it has not been possible to achieve this objective during the project period. The FD continues to play a major role in raising, protecting and managing the VW in Phase-II of the CFP also. The FD admits its failure to motivate the VPs to take over the VW (Pinto et. al. 1984 : 29).

Initial benefits in the form of grass, fallen dry firewood, fruits etc. have been considerable and have been freely enjoyed by the local community. Though in physical terms the VW component has exceeded the target, its coverage in respect of number of villages has fallen short of the target as more than one woodlots were established and larger areas (more than 4 ha) were covered in a large number of villages (3916 villages) mainly on account of ease of protection and requests from VPs.

The rate of survival has been generally between 60-65 percent with better growth registered in main land Gujarat compared to Saurashtra and Kutch. Damage from grazing has been minimal which reflects effective protection of the VW by the FD guards and cooperation of the community at large and particularly that

section of the community whose livelihood depends on rearing of cows, buffaloes, goats and sheep (Pinto et.al., 1984 : 34).

#### Aslali Village : A Profile

Agro-climatically, Aslali is a typical village representative of the semi-arid tropics of western India. The village is situated 14 km South of Ahmedabad on the Ahmedabad-Bombay section of National Highway No.8. It falls in the jurisdiction of Dascroi taluka of Ahmedabad district. It has a total geographical area of about 1277 ha and in 1981, it had a total human population of 4951 and livestock population of 1471. Some other basic statistics of the village such as geographical area, extent of private and common lands, livestock and human population etc. are given in Table 2. About 14 percent of the population belonged to

Table 2  
A Profile of Aslali Village

Total geographical area (ha)	1277
Land under cultivation (ha)	990
Gauchar (grazing land) (ha)	125
Land in village tanks and ponds (ha)	31
Revenue land (ha)	24
Total human population (1981)	4951
Literacy rate (percent)	54
Scheduled Castes population	379
Scheduled Tribes population	290
Total number of households	1287
Number of Patel households	800
Number of Thakore households	300
Number of Vankar households	100
Number of Rabari households	50
Number of Bharwad households	25
Number of Waghari households	12
Number of animals (cattle and buffaloes)	1321
Sheep and goats (1981)	150
Number of farm households (1981)	291
Number of agricultural labour households (1981)	573
Number of marginal/small farmers' households (1981)	179
Number of households having electricity (1981)	590
Number of households having piped drinking water connections (1989)	475
Community drinking water stand posts	10

Source : Village Panchayat office records.

the Scheduled Castes and the Scheduled Tribes. The village being located in the vicinity of Ahmedabad city had a relatively high rate of literacy at 54 percent compared to the State average of about 44 percent. The village also had a relatively large number of commuters who worked in Ahmedabad and resided in the village. The village had all the basic public facilities and amenities like piped drinking water, electricity, post office, schools, telephones etc. On the whole, it was a progressive village.

The normal annual rainfall in the village was about 780 mm which varied widely from year to year with a minimum of 250 mm to a maximum of 1300 mm. For three consecutive years, i.e., 1985-86, 1986-87, and 1987-88, the village received much less than the normal rainfall and was adversely affected by the consequent droughts. Black cotton and light loam were the two principal types of soil found in the village. In terms of density of tree cover, the Ahmedabad district in general and the Dascroi taluka in particular represented a poorly forested area; there were virtually no forests. According to the Imperial Gazetteer of India, although there were no forests worth the name in the area, trees like mango, rayan, Mahuda, baval and pipal were fairly common in the area and the people were aware of the economic benefits of those trees.

The village had 125 ha of gauchar and 31 ha under community tanks and ponds which for most part of the year remained dry. Some of the gauchar had been encroached upon and privatised by the villagers and in about 65 ha woodlots had been established by the FD. The extent of gauchar available in the village was larger than the average size of gauchar per village in the district. The reason as narrated by the panchayat Sarpanch (President) was that due to failure of the village ryots to pay land revenue to the State in olden days, their lands were acquired by the State and subsequently transferred to the village panchayat.

#### Establishment of a Woodlot in Aslali Village

As mentioned earlier, the VW scheme was introduced in the State in the year 1974-75. Under the scheme, village panchayats are motivated to set aside a part of their gauchar (a minimum of 2 ha) and place it at the disposal of the FD for raising a plantation or a woodlot. Aslali VP was one of the earliest few selected under the scheme. The VP initially agreed to provide 13 ha of its gauchar for the plantation. A resolution to this effect was passed by the panchayat. The scheme was, however, not



accepted without apprehensions. Some 50 percent of the villagers particularly the Bharwads and Rabaris were opposed to the idea of giving away the land mainly for two reasons, namely, (a) the land available to graze their cattle would be reduced; and (b) the benefits were not visible and were far too distant in the future. A meeting of the Gram Sabha was called by the Sarpanch of the village panchayat and the scheme and its benefits were explained to the villagers. In particular, they were told that (i) land ownership would remain with the village panchayat; (ii) the FD would raise the plantation at its own cost which would be recouped from the sale proceeds of the woodlot after final harvesting; (iii) the net revenue would be shared by the panchayat and the FD in the 50:50 ratio (later changed to 75:25); and (iv) the panchayat can utilise its share of the money in whatever manner it may like. The remaining 25 percent was to be put in a bank in a joint account of the panchayat and the FD for meeting expenditure on replantation of the harvested area. With these assurances and persuasion by the then Sarpanch and the panchayat committee members, the villagers agreed to give away 13 ha of their gauchar to the FD for raising trees. The land was dry having no irrigation facilities except a small seasonal pond.

The first plantation was raised in the year 1974-75 in 13 ha of land. Encouraged by the success of the plantation in the very first year, the panchayat provided a few ha of its gauchar every year to the FD for plantation and eventually the village ended up having approximately 65 ha of planted forest. Table 3 presents the information about year-wise area and number of trees planted and their survival rate for the whole village woodlot including the area planted in 1974-75.

It can be seen from Table 3 that from 1974-75 to 1977-78, deshi baval, neem, sirus and ganda baval were the major tree species planted by the FD in the woodlot. From 1978-79 onwards, more and more eucalyptus saplings were planted. Our interviews with a sample of villagers and the then Sarpanch of the panchayat revealed that the FD officials did not consult them while making decisions about the tree species to be planted in the woodlot. We were told that they (villagers) wanted more of deshi baval and that they did not want ganda baval and eucalyptus at all. The RFO told us that eucalyptus was planted because that was the most profitable tree species under the soil and climatic conditions prevalent in the village and for the irrigated land that was then available in the village. He then said that since generation of highest possible revenue from the gauchar to the village panchayat was also one of the objectives of the woodlot scheme,

Table 3  
Year-wise Area Planted and Number of Trees Planted and Their Survival\*

Year	Area planted (ha)	Number of trees planted	Number of trees that survived*	Tree species planted
1974-75	13.0	5200	3745 (72)**	neem (1169), deshi baval (1980), ram baval (305), khair (508), sirus (308), amali (730), jamun (85), ganda baval (115)
1975-76	4.0	1650	1172 (71)	deshi baval (1600), ram baval (10), neem (4), and ganda baval (36)
1976-77	4.0	1600	1436 (89)	deshi baval (1200), ganda baval (300), sirus (100)
1977-78	4.0	1600	1420 (88)	ganda baval (200), sirus (500), deshi baval (825), neem (75)
1978-79	10.0	4900	4067 (83)	deshi baval (1550), sissoo (400), jamun (300), eucalyptus (650), ganda baval (500), subaval (400), ram baval (1100)
1979-80	11.0	5500	5390 (98)	deshi baval (1375), ganda baval (900), sissoo (340), jamun (400), eucalyptus (2000) and others (485)
1980-81	8.0	15472	14471 (93)	deshi baval (4170), ganda baval (1400)
1981-82	4.0	30625	28493 (93)	eucalyptus (24000), subaval (6000), others (625)
1984-85	1.0	7200	6890 (95)	eucalyptus (5640), subaval (1400), others (160)
1985-86	4.0	25610	25610(100)	eucalyptus (12800), subaval (7690), sirus (2000), deshi baval (2110), others (1010)
1986-87	1.89***	12096	11605 (95)	eucalyptus (6400), subaval (2850), deshi baval (2600), jamun (128), bamboo (128).

Source : The Forest Range Officer, Dascroi taluka and Village Panchayat Records.

\* Survival is calculated after three years of plantation except for the year 1985-86 in which case it is after two years and the year 1986-87 in which case it is after one year.

\*\* Figures in brackets are percentages of the number of trees that survived to the total number of trees planted.

\*\*\* This does not include 13 hectares of replanted area that failed completely.

there was nothing wrong in planting eucalyptus which best served that purpose.

#### Management and Protection of the Village Woodlot

Protection of plantations in community lands is not an easy task because the village people have traditionally been used to freely graze their animals in these lands and therefore it is very difficult to stop them from doing so. In the absence of necessary institutional restrictions on individuals or groups, it is likely that they would free ride and destroy the plantation by illicit lopping and grazing even if they had initially agreed not to do so. Protection of plants is required against (i) death due to disease or drought or inadequate management; and (ii) biotic interference in the form of damage by wild animals, unauthorised lopping and felling by human beings and grazing and browsing by livestock. Solutions to the first kind of problems are technical in nature. With careful planting, protection, and management, most of these problems can be resolved. The survival rate of the Aslali village plantations has varied from 71 percent to 100 percent depending upon the rainfall and whether the plantation was rainfed or irrigated. This could be considered as a fairly good performance. In view of this it seems that the Aslali VW did not suffer due to plant diseases, droughts, and inadequate management.

The second category of problems require institutional solutions. Gupta (1987) argues that most of the domestic animals such as buffaloes, cattle, sheep, goats, camels etc in India are privately owned, illicit/unauthorised/premature grazing in planted areas can rarely take place without connivance of human beings. Solution to this problem therefore lies in institutional checks on aberrant human behaviour.

According to an understanding reached between the FD and the VP, the newly planted area was to be looked after by the FD for the first three years and thereafter the woodlot was to be handed over to the panchayat. The FD closed the area for grazing for the initial five years but the grasses that naturally grew up were sold to the villagers at a nominal price. To do this, the FD deployed a Forester, and a Forest Guard. Besides, the Range Forest Officer himself kept a close watch on the newly planted area. In addition, the Aslali VP also hired one watchman on its account from the very beginning, i.e., 1974-75 to keep a watch on the VW. According to one of the ex-Sarpanches of the VP, who

was in office at the initial stages of the plantation, this step was taken to ensure success of the plantation.

The Aslali plantation was protected in multiple ways. The methods employed were: (i) cattle proof trenching; (ii) live-fencing of thorny bushes/plants, e.g., ganda baval; (iii) closing of the planted area for grazing for five years; (iv) spacing and sequencing of species; (v) patrolling by the Forester and the Forest Guard of the FD; and (vi) patrolling by a paid watchman employed by the VP. These methods hardly need any elaboration. What seems to be worth noting was the foresightedness of the VP in employing a permanent watchman to look after the plantation from the very beginning and guard it against stray cattle, graziers, loppers etc. In 1988, the VP paid the watchman at the rate of Rs.350 per month. He was initially hired at Rs.100 per month in 1974-75. Employment of a watchman by the VP had two visible effects on the plantation, namely, (i) it ensured a high survival rate; and (ii) it developed confidence among the people that community plantations can be raised and protected by the VP successfully. It must be mentioned that this was possible despite the fact that the plantation fields were scattered in seven fragments which were widely apart from one another. Gupta (1987) has elaborately discussed various methods of protection of young plantations adopted in Madhya Pradesh and Uttar Pradesh. His study showed that the methods like cattle proof trenches, barbed wire fences and species sequencing etc. alone were not sufficient and that there was need for additional measures like a full time watchman for effective protection. And this is what was done by the Aslali VP by employing a watchman. Replicability of this approach, however, presupposes financially strong village panchayats.

In addition to these measures, the offenders were fined under the Indian Forest Act for felling and lopping of green trees. According to the official records of the FRO, Dascroi taluka, till May 1987, seven cases of illicit lopping and felling in Aslali woodlot had been reported.

The offenders were fined from Rs.50 to Rs.750 depending upon the extent of damage done by them. Most of these cases involved felling of deshi baval trees or lopping their branches without prior approval of either the VP or the FD.

## Economics of the Village Woodlot

Estimation of benefits and costs of a VW involves identification and quantification of both direct and indirect benefits and costs of afforestation which is a difficult task to do. The direct benefits accrue to the villagers in the form of fuelwood, small wood, timber, fodder, and employment. Measurement of these benefits can be done fairly accurately. The indirect benefits include protection of soil from water and wind erosion, addition of organic matter to the soil, improvement in the micro environment etc. Valuation of these benefits is very difficult. Besides, some other income and employment benefits are also generated from the woodlot from such activities as seed collection, collection of minor forest produce etc. which are most often not accounted for in estimating the benefits. On the cost side, the direct costs include financial outlays for land preparation, digging of pits, raising and planting saplings, irrigation, manuring and pesticides, protection etc. The major indirect cost is the loss of grazing for at least three years. Besides the direct and indirect costs, we should also take into account the opportunity cost of afforestation which is the net benefit sacrificed by not putting the land afforested to its next best alternative use. These factors make it extremely difficult to estimate correctly the social benefits and costs from social forestry programmes. Because of difficulties in estimating social benefits and costs, we limited our objective to determine the financial costs and benefits of the VW under study as they were actually incurred by and accrued to the FD, the VP, and the village people.

As we have mentioned earlier, although a total of 65 ha of gauchar was planted in Aslali village in phases over a period of time, only 13 ha of rainfed forest was harvested in the year 1985-86. Therefore, we present here costs and benefits for only 13 ha of the plantation. Some of the benefits accrued to the VP before the final harvesting was done. These benefits accrued from all of the forested area and were attributable to only baval plantation. It is difficult to correctly apportion the benefits to 13 ha of the woodlot that was harvested. The FD apportioned the benefits to the 13 ha plot on a pro rata basis. We used those figures for estimating the benefits. Later on, while attempting a benefit-cost analysis of the VW, we critically examine these estimates and accommodate the views of the villagers and the VP committee members about those benefits.

## Intermediate Benefits

From the VW, the villagers got a number of products after the plantation was completed and before the final harvest. These included forage grass, pods of deshi baval, datoons, wind fallen twigs etc. These materials were either freely collected by the people or auctioned to the people jointly by the FD and the VP; lately by VP alone.

According to a rough estimate made by the FD, intermediate benefits worth Rs.31,070 accrued to the villagers free of charge from the woodlot (Table 4). We tried to cross-check the accuracy of the estimate in our interviews with a sample of villagers but no clear picture emerged about the extent of the benefits to the villagers.

Table 4  
Intermediate Benefits to Villagers from  
Aslali Village Woodlot

Item	Quantity	Approximate Value (Rs.)
Grass	9000 Kg.	1800.00
Firewood	1360 qt.	27200.00
Fruits	207 Kg.	2070.00
Total	--	31070.00

Source: Based on information supplied by the Range Forest Officer, Aslali.

It has already been mentioned that free grazing was not allowed for the first five years of the plantation and, therefore, grasses grew naturally. To avoid competition of weeds with the plants for nutrients, manual weeding was done in the plantation area and the weeds and grasses, thus, removed were auctioned to the highest bidder who then sold them to the villagers. This compensated them, to some extent, for the loss of free grazing. Besides these benefits, the panchayat every year auctioned the woodlot for collection of pods of deshi baval, and cuttings for datoon etc. Table 5 provides estimates of such benefits that accrued to the VP.

Table 5  
Intermediate Benefits to Village Panchayat from  
Aslali Village Woodlot

Year	Commodity	Revenue Realised (Rs.)
1974-75	Grass	2000.00
1975-76	Grass	2000.00
1976-77	Grass & fuelwood	3000.00
1977-78	Fuelwood	1000.00
1978-79	Fuelwood	1100.00
1979-80	Fuelwood	1100.00
1980-81	Fuelwood	1100.00
1982-83	Fuelwood	1375.00
1983-84	Datoon	4011.00
1984-85	Fuelwood & pods of deshi baval	901.00
1985-86	Timber	866.00
Total		18,453.00

Figures of costs and returns from the 13 ha woodlot are presented in Table 6. The cost of establishment includes the cost of raising nursery, digging pits, making trenches, and planting but does not include the cost of supervision and protection by the FD which is estimated to be about 20 percent of the total cost. The cost of final harvesting includes the actual labour cost of felling trees, cost of transportation of the harvested material to the FD depot for auction and the cost of the tools and implements used for harvesting. The receipts include actual amount received from the sale of timber and fuelwood. A part (10 percent) of the produce was sold on a concessional rate (60 percent of the market rate) to the small and marginal farmers and landless labourers of the village.

Table 6 shows that the FD incurred a total expenditure of Rs.43,197 or Rs.3,323 per ha on establishment and harvesting of the 13 ha woodlot. The VP incurred Rs.10,520 on account of employment of a watchman for the woodlot. On the benefit side, the VP received Rs.18,453 in intermediate benefits before the final harvest and Rs.70,327 from the sale proceeds of the final harvest. Total net revenue to the VP amounted to Rs.78,260, or Rs.6021 for ha. This is a substantial amount of revenue that

Table 6  
Costs and Benefits of Aslali Village Woodlot  
(13 hectare plantation)\*

	Total (Rs.)	Rs. Per Hectare
<b>1. Costs</b>		
1.1 Cost of establishing the woodlot incurred by the Forest Department	10290.00	792
1.2 Cost of final harvesting incurred by the Forest Department	32907.00	2531
1.3 Total costs incurred by the Forest Department	43197.00	3323
1.4 Total cost incurred by the panchayat	10520.00	809
1.5 Total cost incurred by the Forest Department and the village panchayat	53717.00	4132
<b>2. Benefits</b>		
2.1 Benefits to the village panchayat before the final harvest	18453.00	1420
2.2 Gross sale proceeds from the final harvest realised by the Forest Dept	113524.00	8733
2.3 Net sale proceeds from the final harvest transferred by the Forest Department to the village panchayat (2.2-1.3)	70327.00	5410
2.4 Gross revenue to the village panchayat (2.1 + 2.3)	88780.00	6830
2.5 Net revenue to the village panchayat (2.4 - 1.4)	78260.00	6021

\* Compiled from the records of the Aslali Range Forest Office and Aslali Village Panchayat office. The benefits do not include the benefits that accrued to the villagers directly (Table 4) because they are based on very rough estimates of the Forest Department which could not be verified either from the village panchayat records or from the villagers.

accrued to the VP as a result of afforestation of its 13 ha gauchar land by the FD. There was no revenue accruing from this land to the VP before the woodlot was established and the gauchar was suffering from 'the tragedy of the commons'. The GOG intervention through its FD not only avoided the tragedy of the village gauchar but also made it a valuable and dependable source of income to the VP.

The VP has spent 75 percent of the net revenue in meeting 50 percent of the total cost of installing a new tube well and renovating an old one to augment the drinking water supply to the villagers. The remaining 50 percent of the total cost was contributed by the district panchayat, Ahmedabad. The VP put 25 percent of the net revenue in a joint VP-FD account. This amount was used by the VP for replanting the harvested area of 13 ha in 1986-87. But due to severe drought conditions, the plants did not survive.

#### Benefit Cost Analysis

The benefit-cost figures presented in Tables 6 and 7 represent actual benefits that accrued to the VP and the actual costs

Table 7  
Yearwise Total Costs and Total Benefits  
from Aslali Village Woodlot

Year	Total Cost (Rs.)	Total Benefits (Rs.)	Net Benefits (Rs.)
1974-75	4085.00	2000.00	-2085.00
1975-76	3134.00	2000.00	-1134.00
1976-77	3071.00	3000.00	-71.00
1977-78	624.00	1000.00	376.00
1978-79	445.71	1100.00	654.29
1979-80	508.69	1100.00	591.31
1980-81	417.85	1100.00	682.15
1981-82	390.00	0.00	-390.00
1982-83	520.00	1375.00	855.00
1983-84	520.00	4111.00	3591.00
1984-85	511.47	901.00	389.53
1985-86	33418.22	114390.00	80971.71
All	47645.94	132077.00	84431.06

incurred by the FD and the VP. However, these benefits accrued and the costs were incurred at different points in time and therefore simple summation of actual benefits and actual costs and subtraction of the total costs from the total benefits to arrive at net benefit is not a correct method of computing net benefits. To make the streams of costs and benefits comparable, computation of present values of costs and benefits as in the year 1974-75 or 1985-86 is necessary. We have computed presents values of costs and benefits as in the year 1974-75 when the VW was established. These estimates are presented in Table 8.

The figures in Table 7 are not simple disaggregations of the total benefits and total costs as reported by the FD but several adjustments were made to make the estimates more realistic and meaningful. Few comments in this connection are in order. The grass which grew naturally due to the closure of the area for grazing in the initial three years was not distributed free to the villagers as reported by the forest officials. But it was auctioned to the highest bidder with the condition that he could

Table 8  
Net Present Value, Benefit Cost Ratio and  
Financial Rate of Return as of 1974-75

Situation*	Discount Rate (percent)	Net Present Value (Rs.)	Benefit Cost Ratio	Financial Internal Rate Return (Percent)
I	10	35862.56	2.69	42.55
	15	20363.50	2.30	
	20	11540.21	1.94	
II	10	25962.70	2.22	38.86
	15	14556.29	1.93	
	20	8055.51	1.66	
III	10	30912.63	2.45	40.83
	15	17459.90	2.12	
	20	9797.86	1.80	

\*Situation I : Full benefits from the brushwood as reported by the Forest Department are taken into account.  
Situation II : No benefits from the brushwood are considered.  
Situation III: 50% of the reported benefits from the brushwood are considered.

sell the grass to the villagers only. The VP received annually Rs.2000 for three years from the auction of grass. Therefore this amount was considered as a benefit.

The total cost is somewhat underestimated in the sense that we have not included the cost of supervision, protection and technical guidance provided by the FD. According to the FD, this cost is roughly 20 percent of the total cost. The expenditure on watchman's salary incurred by the VP was apportioned on the basis of area under plantation in each year and only that share of the salary which was attributable to the 13 ha of the plantation was included in the cost.

Similar problems arose on the benefits side too. First of all, a part of the produce was sold to the villagers on a concessional rate (60 percent of the price determined by the GOG for the circle concerned). To estimate the actual market value of total output we valued total output at the market price. The FD claims that an estimated 1360 qt. of brushwood for fuel valued at Rs.27,200 was received free of cost by the villagers particularly landless people and small and marginal farmers and according to them some 265 families benefited. We asked a sample of 70 villagers about these benefits. Mixed opinions were expressed by the respondents, some of the respondents said they did not receive any benefits; others reported to have received some benefits but valued the benefits very low. Some of the villagers mentioned that the labourers who were engaged for the final harvesting of the VW used brushwood free of charge for cooking their food and a small portion was received by the villagers at a nominal cost. In this sense, it became an indirect cost to the village panchayat as the benefits that should have accrued to the VP from sale of the brush wood were given away by the FD to the labourers. But this was in accordance with the guidelines issued by the GOG under its Resolution of November 8, 1985.

To account for these irregularities, we calculated benefits and costs under three different assumptions. In situation I, we took into account the full benefits from brushwood as reported by the FD; in situation II, we did not consider this benefit at all, and in situation III, only half of the reported benefits were considered. For all these three situations, and at three different discount rates, estimates of net present value, benefit-costs ratio and financial internal rate of return (IRR) are presented in Table 8.

Table 8 shows that the VW was financially viable. The net present value was greater than zero, benefit cost ratio greater than one even at 20 percent discount rate and (the financial) IRR varied between 38.86 percent and 42.55 percent depending upon the different assumptions made about the benefits from the brushwood. IRRs of such high magnitude are rare indeed for rural development projects and hence the VW scheme ranks very high in terms of its potential contribution to capital formation in the rural sector. The potential could be realised through judicious planning and management of woodlots on village gauchar lands in India.

### **People's Participation and Opinions**

The success of social forestry programmes, as also of any other rural development programmes, depends to a large extent on effective people's participation at various stages right from programme planning to programme implementation. In the VW scheme, people's involvement is necessary in making such decisions as selection of site, selection of tree species, and determination of arrangements for protection and management, distribution of benefits, and marketing of produce. The FD should play a catalytic role in motivating and educating the village community so that they themselves can manage their plantations (Sen and Das, 1987 : 1).

To find out the extent and nature of villagers' involvement and their opinions about the VW, we interviewed a sample of 70 villagers and a few VP officials. Our sample of the VP officials consisted of the present Sarpanch and three ex-Sarpanches of the VP, two members of the VP and two employees of the VP. The sample of villagers was selected randomly. The sample consisted of 41 landed (59%) and 29 landless (41%) households. In terms of their caste composition, 28 households (40%) belonged to the upper castes, 32 households (46%) to the Backward Castes and the remaining 10 households (14%) to the Scheduled Castes and the Scheduled Tribes. Some 14 households (20%) belonged to the Rabari and Bharwad communities.

### **People's Involvement**

Except two of the ex-Sarpanchas and one present VP attendant, none of the sample households reported participation in any way in establishing and managing the VW. The ex-Sarpanches reported that they were casually consulted by the FD functionaries in selection of tree species for the woodlot and the VP attendant reported that before he took up the present job he worked on

daily wages to look after the plants in the VW. An ex-Sarpanch complained "The VP was not taken into confidence by the FD officials in establishing the VW. The FD did not keep the VP informed about its activities related to the VW nor did it provide us the details of the expenditure it incurred on the VW and later recouped from the sale proceeds of the final harvest". Our interviews with the FD officers revealed that the choice of tree species was made by them largely on the basis of techno-economic considerations. They told us that they had taken into account people's preference for deshi baval while making decisions about the tree species to be planted in the VW.

On the whole, the sample respondents opined that the VW was an exclusive concern of the FD and that their involvement in establishment and management of the woodlot was nil. They thought the VW scheme was yet another government programme.

#### Opinions About VW

Forty four of the sample households had negative opinions about the VW, 22 were indifferent (no opinions) and only four households had a positive opinion. Of those who had negative opinions, 18 households including 12 of the sample Rabari and Bharwad households complained that they did not have any good grazing lands left in the village for grazing their animals and that was causing them a great hardship. One of the Rabaris - Shri Nagjibhai - made a written complaint to the Chief Minister when the latter visited Aslali village in connection with the Van Mahotsava celebrations that "the GOG, by establishing the VW, had made the life of the Rabaris and the Bharwads miserable and that they were being forced out of their traditional occupation of cattle breeding and animal husbandry". In fact it was the Rabaris and Bharwads who initially opposed the proposal to establish the woodlot but were afterwards persuaded by the then Sarpanch to agree to it. They complained that neither the FD nor VP had made any alternative arrangement for supply of fodder and as a result they had been put to a lot of hardship. They held the Patels responsible for establishing the woodlot and the consequent hardship to them and hence their relations with the Patels are strained.

Six of the households complained that "ganda baval has grown so profusely everywhere including road sides that they find it difficult to use the roads in the VW to access their fields and that the thorn of the tree being very hard and non-brittle damages even tractor tyres." We were also told by the present

Sarpanch that one of the villagers had lost one of his eyes due to a prick of a ganda baval thorn. Four of the households complained against the eucalyptus plantation saying that "the tree depletes very rapidly ground water and hence no crops can be grown within a distance of 4-5 meters from the plantation". During our informal chat with villagers, we were told that "the thick canopy of ganda baval provides an ideal setting for illicit distilling of country liquor and as a result there are many bhattis (indigenous distilleries) in operation in the VW".

Those who had a positive opinion thought that the VW had improved the micro-climate of the village, reduced the run off, and provided a dependable source of revenue to the VP. In the opinion of 51 of the households the VW had benefited only the VP, 3 thought that it had benefited only the landed households (Patels) and two opined that it had benefited the landless households. Only 3 households each from the landed and the landless categories reported that they received some benefits from the VW in the form of fodder (grass), firewood, and datoon. But they were not able to correctly estimate the value of the benefits that they had received.

An ex-Sarpanch and two other members of the VP complained that "the VP could have made more money from the final harvest if it had been allowed by the FD to do the felling and sell the produce". But our further probe in the matter with the RFO revealed that the local labour was neither skilled in falling trees nor willing to do the job at the wage rate determined by the FD for the purpose which was lower than the locally prevalent wage rates.

Almost all of the respondents opined that the system of protection adopted by the FD and VP was satisfactory and that those who were caught red-handed doing illicit felling and/or lopping and carrying the produce thus obtained were fined by the FO and the fines recovered. Three of the respondents told us that "in a few cases the FD functionaries let the offenders loose after they (the offenders) paid them some money."

#### Opinions About Taking Over and Handing Over the Woodlot

As per the guidelines of the FD, the VW was to be handed over to the VP after three years of establishment. But the VW had not been handed over to the VP even as late as June 1989. We tried to find out the reasons for this and present below the views of the Sarpanch, VP, the CCF, and other officers of the FD.

The present Sarpanch of the VP, Shri Mohanbhai G Patel, ruefully observed during the course of a discussion with us on May 16, 1989: "The VP cannot manage the VW. We cannot protect the plantation from illegitimate lopping and felling of trees by the villagers particularly the Bharwads (a noraadic community of cattle breeders) from Kathiawad (Saurashtra) who have illegally settled on a parcel of the VP land bordering the VW. The VP cannot fine the offenders as heavily and recover the fines as effectively as the FD can do. After all, the offenders are our fellow villagers and belong to the caste/clan of one or the other member of the VP. We cannot afford to be rude to them and lose their votes in the next VP election. Further more, even if we somehow take over the VW, we will still need to secure the FD's permission to fell the trees. So, why should we bother ourselves with all the hassles involved in managing a VW when the FD can do and is willingly doing everything for us and we are getting 100 percent of the net sale proceeds from the final harvest." Similar views were expressed by three ex-Sarpanches and two sitting and two ex-members of the VP when we talked to them about this matter.

In a meeting with us, the CCF, CFP observed, "All of the VPs in Gujarat state where VW have been established by the FD hold similar views and none of them is ready to take over the management of the VW and hence very few of the VW have so far been handed over to VP". Reflecting for a moment, he further remarked "Intensive education could have positively changed the attitude of the VPs toward taking over the management of the VW but I did not have the requisite extension staff to do the job and the Training and Visit staff of the Department of Agriculture did not cooperate with us in doing this job. To remove this handicap, I have asked for more funds for extension education under Phase II of the World Bank-assisted CFP".

While talking to us, the Conservator of Forest, Programme Planning, Monitoring and Evaluation, observed that "Under the present political and socio-cultural conditions in rural areas, it is not possible for village panchayats to protect and manage the woodlots. The panchayats cannot impose and recover fines for illicit grazing, and lopping and felling of trees. Given the long gestation of woodlots and the uncertainty about their re-election, most Sarpanches are reluctant to take over the management of woodlots. Besides, when the panchayats are entitled to receive from the Department 100 percent of the net sale proceeds from their woodlots without any effort on their part, why should they take over the management of woodlots and

bother themselves with all the hassles associated with it"? "In my opinion, panchayat is not an appropriate institution for establishing and managing woodlots" he further added.

The DFO, Ahmedabad, told the team that "Most of the panchayats were so weak financially that they did not want to add to their liabilities further by taking over the woodlots and we also did not seriously try to hand over the woodlots to them. Furthermore, in a few cases where the woodlots have been handed over to the panchayats, we are receiving lots of complaints from the villagers about the misuse of woodlots by the Sarpanches and their allies." "Besides, most of the RFOs responsible for extension work consider their assignment as inferior to the regular function of plantation and supervision and are themselves not a motivated lot. How can they motivate the villagers?" he further observed.

From the foregoing views and opinions expressed by the FD officials, VP Sarpanches and villagers, it appears that neither the VP was willing to take over the management of the VW nor the FD tried to educate and motivate the villagers and the VP to take over it. It seems to us that the FD never tried seriously to hand over the VW to the VP because of its apprehension that the VP may not be able to protect the VW effectively.

#### Conclusions and Their Implications

On the basis of our review of the VW scheme of the CFP of the FD, we could conclude that the FD did a reasonably good job of establishing VW on village common lands and was able to achieve its targets. In terms of survival rate and growth of plants the VW in the Gujarat state in general and in Aslali village in particular performed very well. The FD was able to do all this because it did not have to depend on villagers' contributions to establish and protect the VWs. It had full access to and control over the financial, material, and manpower resources required to do the job. For all practical purposes, the VW scheme was an exclusive concern of the FD with practically no involvement of the villagers. Thus, the VW scheme proved to be yet another government programme perceived by the villagers as an act of patronage or favouritism by the GOG like the distribution of subsidised cows, buffaloes, and other assets and subsidised inputs under various rural development programmes including IRDP.

Our in-depth study of the Aslali VW showed that the scheme was technically (in terms of survival rate and growth performance of



the plantation) successful and financially viable. The woodlot generated net revenue of Rs.78,260 to the VP from the 13 ha of gauchar which yielded no revenue to the VP and was suffering from 'the tragedy of the commons' before it was afforested. Thus, the GOG intervention through its FD not only avoided the tragedy of the village gauchar but also strengthened the financial position of the VP which is a significant achievement in the context of India's current emphasis on empowering VPs so they could plan and implement various development programmes on their own. The VP used its share of the net sale proceeds of the final harvest and an equal contribution made by the District Panchayat for augmenting the supply of drinking water in the village.

However, the villagers were, by and large, left high and dry; most of them did not receive any benefits directly from the VW. The village did not become self-sufficient in meeting its requirements of fuelwood, fodder, and timber and the VP did not gain any experience in creating and managing VW. The faulty incentive structure built in the scheme did not provide any motivation to the VP to take over the management of the VW after three years of its establishment. In fact, there was a positive incentive for the VP not to take over the management of the woodlot; when the VP gets 100 percent of the net sale proceeds from the final harvest without any effort on its part, why should it bother about taking over the woodlot? The FD did not take any concrete steps to educate, motivate and persuade the VP to take over the woodlot nor did they care to see that the fallen dried fuelwood and grass (in the first three years) are made available to the village poor on a priority basis. Many poor villagers particularly the Bharwads were left worse off in the sense that the village common grazing lands which were freely available to them earlier for grazing their animals were now put under the VW from which only the VP and those who had piped water connections in their houses benefited.

Thus, on the whole, the Aslali VW scheme, though technically successful and financially viable, failed to achieve its intended goal of educating, enabling and motivating the villagers to establish and manage their own woodlot to meet their requirements of fuelwood, fodder, small wood, and timber. There is need to redesign the scheme such that it can involve villagers from the very beginning and educate, train, and motivate them to establish and manage their woodlots. Afforestation of village common lands is a gigantic task which the FD alone, without people's participation, cannot successfully handle. People's participa-

tion is a sine qua non of successful village woodlot schemes and hence should be deliberately and genuinely sought.

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We have tried our best to comprehend and interpret as objectively as we could the views and opinions of the FD officials, village panchayat officials and villagers, and to incorporate in the report the suggestions and comments of the reviewers but differences of opinion still remain. We alone are responsible for the views and opinions expressed and for any errors of omission and commission in this report.

### End Notes

1. Common property resources (CPR) are those resources which are owned/held collectively by a group or community of people who jointly use the resource and each one of whom has de jure equal access to its benefits and none of whom can be excluded from appropriation/use of the resource.
2. Three years including the planting year is considered as period of establishment.

3. Originally the net sale proceeds from the final harvest were to be shared by the village panchayat and the Forest Department in the 50:50 ratio. Later on, some influential Presidents of village panchayats approached the Chief Minister of Gujarat with a request that all of the net sale proceeds should go to the village panchayats. The Chief Minister intervened in the matter and as a consequence, the existing arrangement came into being.

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