TOWARDS A SUSTAINABLE

Paper Cycle

Sub-Study Series

6 The Role of Social/Farm Forestry Schemes in Supplying Fibre to the Pulp and Paper Industry

Sarah Roberts, Olivier Dubois

iied

Celebrating Twenty-Five Years

International Institute for Environment and Development

World Business Council for Sustainable Development

THE ROLE OF SOCIAL/FARM FORESTRY SCHEMES IN SUPPLYING FIBRE TO THE PULP AND PAPER INDUSTRY

Sarah Roberts and Olivier Dubois

December 1996

Sarah Roberts is a cross-cutting Research Associate with IIED. Olivier Dubois is a Research Associate in the Forestry and Land Use Programme at IIED.

CONTENTS

Tables and Figures

EXECUTIVE SUMMARY

Social forestry schemes are often seen as a desirable way of supplying fibre to the pulp and paper industry, since they reduce the need to exploit natural forests and establish large scale tree plantations, whilst at the same time providing social benefits. In some major pulp producing countries such as Scandinavia and the USA farm forests dominate private sector forestry and provide a key source of fibre to the paper industry.

This study concentrates on social forestry schemes for fibre supply in Southern countries, where there are clear links between deforestation and poverty and where the use of plantations is increasing. Three in-country case studies were commissioned: four corporate schemes in Brazil, a country which is playing an increasingly important role in pulp production and where the establishment of plantations has been controversial; of the Paper Industries Corporation of the Philippines (PICOP), one of the largest and longest running corporate schemes; and of the Indian experience of social forestry.

The scale, types and number of farmers involved and the terms and conditions of the four corporate schemes analysed in Brazil varied considerably. Generally, the motivation for companies involvement seems to have been to reduce their operational costs and improve their public image and it seems likely that these schemes will continue. Farmers participation depends on the opportunity cost of tree planting and the alternative options available to them. In some plantation areas there may be few alternative options.

The PICOP schemes seem to have been set up in an attempt to diversify its sources of woods and improve peace and order in and around its concession and comprise a variety of different schemes aimed at different occupants of the concession, many of whom had no legal title to the land. Some schemes offer certain forest occupants some rights to the land, although no legal title, whilst others require participants to move out of the area once they have planted the required amount of trees. Peace and order in the area do seem to have improved and although most occupants would still like a legal right to the land it seems that an increasing number of people who were formerly hostile towards the company are now involved in one of the schemes. PICOP also provides much of the infrastructure and social services in the concession which has improved the quality of life for people in the area, although there are dangers in communities becoming overly dependent on the company.

In India, the government invested a large amount of effort and money in social forestry schemes with the prime aim of meeting the fuel and fodder needs of the poor. Results were mixed, 10 billion trees were planted however the vast majority were commercial species often planted by richer farmers on land which had been previously used for agricultural crops. Schemes which involved tree planting on common land had very limited success. Most of the schemes had collapsed by the end of the 1980s due to falling prices and distorted markets leaving farmers wary about investing in trees.

Pulp and paper producers in India have tended to favour the establishment of plantations on government land over social forestry schemes, however as state supplies dwindled and concern about plantations grew, a number of companies set up some very innovative schemes with farmers, although in all cases it seemed like both the companies and farmers felt that

improvements were required.

Social forestry schemes definitely have a role in fibre supply to the pulp and paper industry but to date their success seems to have been mixed both from the point of view of the farmer and of the companies involved. For social forestry schemes to be sustainable it is important that all stakeholders are involved in their design and understand and agree to the terms and conditions, this is not easy but is essential if the schemes are to be sustainable and provide benefits to all parties. From a policy perspective, where social forestry is a viable option it should be favoured since such schemes supports rural dwellers whilst providing fibre.

There are several features which are required if farmers are to be involved in social forestry schemes:

- security of land tenure, although not necessarily a title
- access to credit scheme adapted to the situation in rural areas whilst the trees mature
- higher returns than other cash crops
- secure markets for the wood.

The three most contentious aspects of social forestry schemes for fibre supply appears to be:

- how much *choice* farmers have over the species they plant
- what *rights* they have over the trees, such as when they are harvested and to whom they are can be sold
- the *price* that the mill pays for the trees.

Reconciling the different priorities of those involved can be extremely difficult and has led to tension and problems in many of the existing schemes. It seems that a compromise needs to be reached where mills are guaranteed a proportion of the wood but pay a reasonable price for it. In this way mills can at least predict the minimum amounts that they will receive and farmers have a guaranteed buyer for a percentage of their crop even if the price may be below that of the market in a good year. However reaching this type of agreement is unlikely to be easy and it is essential that both sides are adequately represented. Collective bargaining is essential for farmers to negotiate effectively with powerful companies, in cases where farmers have few other options available to them and are not well organised it is much easier for them to be exploited.

1 INTRODUCTION

Social forestry schemes are often seen as a desirable way of supplying fibre to the pulp and paper industry since they reduce the need to exploit natural forests and establish large scale plantations whilst at the same time providing social benefits. The aim of this report is to contribute to the assessment of how successful such schemes have been in practice, both in terms of fibre supply and social benefits and to determine the potential for such schemes in the future. Much analysis has been done on social forestry schemes, this report only scratches the surface of the topic.

In 1993, approximately 252 million tonnes of paper and paperboard were produced from 148 million tonnes of wood pulp, 15 million tonnes of non wood pulp and 100 million tonnes of wastepaper (IIED Substudy No. 1, PPI 1995). Of the wood used for pulp production 71% came from natural forests and 29% from plantations (IIED Substudy No. 5). The plantations figure includes fibre supplied by large scale corporate plantations to trees planted on a couple of hectares of farmers land. Unfortunately it has proved impossible to break down the overall figure any further but it seems likely that fibre supplied from social/farm forestry accounts for approximately 8-10% of the overall plantation figure.

The term social forestry is a broad one which is used to describe a whole range of very different schemes with varying social components. Other terms such as community forestry, farm forestry and woodlots are also used to describe similar schemes. For the purpose of this report these terms should be understood to have the following meanings:

Social Forestry refers to any form of forestry that involves local dwellers, as such it encompasses both farm and community forestry

Community Forestry refers to any form of forestry where forest resources are managed communally. Community managed forests will involve the whole community whilst schemes which only involve some user groups can be designated communally managed forests.

Farm Forestry refers to the management of trees by individuals. If trees are grown separately from agricultural crops then these area can be referred to as woodlots. If the tree growing is combined with agricultural crops then this is agroforestry

The use of social forestry schemes to supply fibre for the pulp and paper industry varies greatly from country to country and is dependent on a variety of factors including the proportion of land under private ownership, land tenure arrangements, government regulation and incentives and the alternative options available to farmers and pulp and paper companies.

In many major pulp producing countries including the USA, Finland, Norway, Sweden and France the majority of forest land is under private ownership. Owners can either be industrial forest owners such as financial and investment institutions and wood processing companies or non-industrial forest owners who include farmers, rural non-farm residents and absentee owners. Much of the private forest land is farm forest. Although the proportion of farm forest has been declining in Western Europe and the USA, farm forests dominate private sector forestry in Scandanavia and to some extent in the USA (Mather 1990). For example, in America the largest paper company International Paper sources approximately 70% of its

wood supply from private woodlots, ranging in size from 10 to several thousand hectares. The average size was less than 50ha (Jorling 1995 pers comm.) In Nordic countries farm forests account for 75% of privately owned forests and 55% of the total forest area and are a major source of the fibre used for pulp production.

An example of a developed country where a high proportion of pulpwood is sourced from small farmers is Sweden, where 50% of the forest land is owned by small private owners, 38% by companies and 12% is in public ownership (Skogsindustrierna 1995). The proportion of private ownership has changed very little over the years. The negotiating power of small forest owners is increased if they are members of Skogsagarna, the National Federation of Forest Owners which negotiates wood sales with sawmills and pulp mills as well as providing advice on silviculture, environmental issues and regulation and acting as a lobbying and policy influencing body.

Box 1a

Case Study 1a: Malarskog Forest Association, Sweden

About 87,000 forest owners are members of Skogagarna which has eight regional associations. These are organised as producers cooperative and owned and controlled by the members. They are funded through membership fees, consultancy charges and they receive a percentage from all the wood sales that they negotiate.

Malarskog is the regional forest owners associations representing the middle part of Sweden. It has about 8,600 members who between them own around 600,000 ha of forest land. Malarskog employs approximately 400 people of whom about 170 are involved in advising members and selling their products. 50% of the forest owners in the area sell their wood via Malarskog and the rest negotiate directly with industry.

Malarskog owns five sawmills but also supplies wood to other sawmills and the pulp industry. Negotiations with sawmills and pulp companies normally take place twice a year. Who initiates these negotiations, and when, depends on the demand for wood, although there is monthly contact in order to arrange deliveries and so forth. Approximately 25% of the wood in the area goes to pulp mills in their region, including chips from Malarskog's sawmills. Their main customers for pulpwood are Stora, Korsnas and MoDo. Malarskog tries to tailor their wood supply to mills' demand. If there looks like there is going to be a shortfall they try to persuade forest owners to harvest a bit more, otherwise mills will import wood which is not in their interest.

Source: Malarskog literature.
Interview with Per-Ake Arvidsson, Malarskog Forest Association, Uppland.

In other countries social forestry schemes are often linked to plantations. In a survey of 18 of the largest plantation owning pulp and paper companies in North and South America, Asia, Southern Europe, South Africa and New Zealand it was found that 60% of them either ran an outgrower scheme or provided extension services to private landowners who grow trees (IIED Substudy No. 5).

Although social forestry schemes in developed countries deserve further study, this report focuses on social forestry schemes for fibre supply in developing countries where there are clear links between deforestation and poverty and where the use of plantations is increasing.

The study looks in detail at social forestry schemes in three developing countries, Brazil, India and the Philippines, examining the reasons why they were initiated, how they are implemented and how sucessful they are from the perspectives of the various stakeholders. The final section of the report discusses the lessons which can be learned from these schemes and analyses the important components of social forestry schemes for fibre supply.

There were a variety of reasons for looking at social forestry schemes in these particular countries. Brazil is playing an increasingly important role in pulp and paper production and the establishment of plantations there has been controversial. India has wide experience of different types of social forestry schemes and how Indian industries should source their wood requirements is currently a subject of fierce debate. In the Philippines, PICOP has one of the longest standing and largest corporate social forestry schemes in the world and therefore merited analysis.

IIED commissioned reports on social forestry schemes for fibre supply from in-country consultants in the above countries. Four social forestry schemes run by pulp and paper companies in southern Brazil were examined by Balensiefer (Klabin, Rigesa, Inpacel) and Isolan (Riocell), Corazon Lamug analysed social forestry schemes run by PICOP in the Philippines and Anil Agarwal and Sunita Narain looked at the impact of India's social forestry programme. In each country key stakeholders in the social forestry schemes, including farmers and the relevant company employees were interviewed. Unless otherwise referenced this report is based on the information received from the above consultants and research carried out by IIED.

2 CORPORATE FARM FORESTRY SCHEMES IN SOUTHERN BRAZIL

2.1 Background

In 1995, Brazil was the eleventh top paper and board producing country in the world (PPI 1995) and according to Brazilian national figures 80% of pulpwood comes from plantations. Demand for pulpwood is set to double by the end of the century (CCE 1992). The remaining natural forests are already under significant pressure from the wood industry and from shifting cultivation so the increase in pulpwood demand is likely to increase this pressure and also the area under plantations.

The first federal government laws on reforestation and plantations in Brazil were passed in the late 1960s and early 1970s and led to some major plantation schemes however, recently government incentives for plantations have been reduced (see Table 2.2a below). There have also been various reforestation initiatives by local governments, although these have tended to have very limited success, having insufficient resources at their disposal and encountering difficulties in collecting funds from taxes on harvested timber.

Most pulp and paper companies in Brazil have plantations despite the current lack of incentives, since any industry which consumes wood is legally obliged to replant the area of wood that it has consumed. If this obligation was not in place it is likely that most companies would still have large areas of plantations since on average they produce two to three times more usable timber per year than natural forests (25 to 40 m^3/ha/a for high yielding plantations compared to 10-20 m^3/ha for natural forests). It also allows companies to present a 'green image' to the outside world of reforesting rather than cutting down natural forests.

Table 2.1a Federal Government Policies on Reforestation and Plantations in Brazil

Year	Policy	Impact
1966	Fiscal incentives introduced for people investing over 50% of their income taxes in tree-planting (Law 5106). Originally only applicable to areas greater than 1,000 ha but was later reduced to 100 ha.	Law 5106 and 1134 provided the key to the growth in plantations. Planted forest area increased from 47,000 ha in the 1960s to 6.2 million ha in the 1990s. 3 million ha of this is eucalyptus and much of the rest pinus. The remaining area was planted with rubber, palm and acacia. Pulp and paper companies accounted for 31% of the area planted since the 1970s.
1971	Government introduced possibilities for joint ventures between the state and private sector industries who used wood as a raw material or energy source (Law 1134).	
1975	Introduction of reforestation programme REPEMIR, which assists small and medium producers (farms between 20 and 300 ha) reforest up to 20% of their lots.	Had very little success due to lack of funds, lack of efficient awareness raising and extension and insufficient technical support.
1988	Laws 5106 and 1134 abolished.	Plantation development has continued at the rate of 100,000ha per year, the majority planted by the pulp and paper industry

Source: Balensiefer 1995, ITTO 1995, IIED Substudy No. 5

Many companies source a proportion of their fibre supply from producers in farm forestry schemes. Overall about 350,000 ha have been planted with trees under these schemes, which represents just over 8% of the total plantation area. This next section analyses four company schemes in detail.

2.2 Analysis of Schemes

Table 2.2a below summarises the key features of the farm forestry schemes run by the four companies. There are significant differences in the number of years that the schemes have been running, their scope, the types of farmer that they target and the conditions that they impose. The scale of the schemes run by Riocell and Klabin is much larger than the others, both in terms of the area of land planted and the number of producers involved. Only Klabin and Riocell have harvested wood from farm forestry schemes as yet and they currently procure 10% and 20% of their fibre respectively from farm schemes. This is similar to the proportion planned by Rigesa and Inpacel. Klabin's target of it's farm scheme supplying 50% of its fibre needs is the highest of any of the schemes looked at in in this study.

All the companies seem to be trying to include farmers with small amounts of land in their schemes. Riocell and Rigesa target very small farmers, with Rigesa feeling that this will increase the social acceptance of the company in the area. Inpacel seems to be targetting small farmers and Klabin seem to have struck a good balance between the different farm sizes with their four different schemes. This is the only company of the four which is involving large farmers. The terms and conditions of the schemes vary considerably between the companies and are summarised in Tables 2.2b, 2.2c and 2.2d below.

Table 2.2a General Features of the Companies

Name of company	Years of activity company/ FFSs*	Monthly production of paper products (tons)	Fibre sources	Proportion of fibre supply originating from FFSs present	planned
RIOCELL	23/6	17,500	Eucalyptus (100%)	10	
KLABIN	50/13	45,000	Pinus (65%), Eucalyptus(25%), Araucaria (10%)	20	50
INPACEL	4/3	13,000	Pinus (70%), Eucalyptus (30%)	- (first harvest in 1996)	10-15
RIGESA	35/9	16,000	Pinus (93%), Eucalyptus (7 %)	-	10-15

* FFSs : Farm Forestry Schemes

Table 2.2b Features of the Farm Forestry Schemes for the Different Companies

Company	Total area, in ha (1994)	Total number of producers (1994)	Average area per producer (ha/unit)	Survival rates (%)	Cost to the company ,in 1994 (US$/ha)	Cost to the farmer, in 1994 (US$/ha)	Farmer's income After first harvest (US$/ha)	Farmer's income Per year (US$/ha /year)
RIOCELL	6,309	5,813	1.08	> 80	495 Notes: - Average since 1989: 152 - 60 % of this costs relate to the production of seedlings	200	Eucalyptus (first harvest after 7 years) 1,400	200 Note: 10 % used to refund RIOCELL)
KLABIN * - Donation - Sale of seedlings - Rental of farmers' land - Joint venture TOTAL	3,193 1,360 3,453 3,850 11,856	3,258 223 44 122 3,647	0.98 6.10 87.5 28.3	85 85 95 90	No information available	No information available	Pinus (first harvest after 8-9 years) 608 Eucalyptus (first harvest after 7 years) 1,519	76 217
INPACEL	1,831	128	14.3	> 90	322	107	No information available	
RIGESA	1,470	700	2.10	No information available	No information available	No information available	Pinus -	200 Note: this is an estimate

* The KLABIN company has four different types of contracts:
- donation of seedlings: concerns areas < 50 ha
- sale of seedlings: concerns farmers with areas > 50 ha who do not wish to rent their land or enter into a joint venture
- rental of farmer's land: concerns areas > 120 ha
- joint venture with the farmer: 7 years (for Eucalyptus) or 9 years contract (for Pine) between the farmer and the company. It concerns areas > 10 ha

Table 2.2c *Responsibilities of the Different Parties Involved in Farm Forestry Schemes*

Company	Rental of land	Seedling production	Seedling transport.	Provision of fertiliser	Provision of pesticide	Technical assistance	Land preparation	Plantation of trees	Maintenance operations
RIOCELL	No	*C*	T	F	**F**	C / T	F	F	F
KLABIN									
- Donation	No	C	C	-	C	C	F	F	F
- Sale of seedlings	No	*C*	**F**	-	*C*	C	F	F	**F**
- Rental of farmers land	Yes	C	C	C	C	C	C	C	C
- Joint venture	No	*C*	*C*	-	*C*	C	**F**	**F**	**F**
INPACEL	No	C	C	C	C	C	F	F	*F* (partially refunded)
RIGESA	No	C	C	**F**	F	C (involvement of T planned)	F	F	F

Source; Bafensiefer, 1995; Isolan, 1995

Explanation of symbols:
F: Operation carried out by the farmer;
C: Operation carried out by the company;
T: Operation carried out by a third party (government or parastatal agency)
Italic - Bold Symbols: operations charged to the farmer (usually refunded in kind upon timber harvest)

Table 2.2d Obligations of the Producers to the Companies

Name of Company	Obligation to plant species chosen by the company	Obligation to sell timber to the company	Beneficiaries of tree sale
RIOCELL	Yes	No	The farmer, minus 10% to refund the costs of seedling production.
KLABIN	No	No	- Donation: the farmer - Sale of seedlings: the farmer -Rental of land: the company minus 30% of wood sale paid to the farmer, in addition to rental - Joint venture: the farmer minus 15% to refund the costs incurred by the company.
INPACEL	Yes	Yes, except 5% allowed for domestic needs.	The farmer
RIGESA	No information available	No	The farmer

Of the schemes analysed, the one run by Riocell seems to be the least favourable to the farmer and the most favourable to the company. Apart from technical assistance all other operations are either carried out by third parties or the farmer or ultimately paid for by the farmer (e.g the production of seedlings). At the other extreme, the scheme operated by Inpacel seems to be the one which benefits the farmer the most. The partial payment for maintenance (second and third weeding) and the free provision of pesticide and feriliser by the company reduces the costs incurred by a farmer in the Inpacel scheme to 40% of of those incurred by a farmer on the Riocell scheme.

The farm forest programme run by Klabin appears to be the most comprehensive in terms of the number of options it offers, managing to take into account the diversity of farm sizes and the financial and social status of the farmers. It is also the only company which allows farmers to choose which species they plant.

All the farm forestry schemes discussed above make extensive use of external inputs (fertilisers, pesticides, improved seedlings). Information on survival rates is usually not very reliable since it requires regular visits to farmers, an activity often neglected by technical staff. If it is done, it is often biased by non representative sampling (eg. visits done to the same, more accessible and more favoured farmer). It is not possible to assess the reliability of the figures given by the companies in question, however the survival rates given, over 80% in all cases, seem very high. The survival rate seems to increase slightly with the size of the lot .

Generally, the least effective aspect of the schemes has been technical assistance. The usual reasons given for this are a lack of qualified personnel, poor logistics and insufficient funds. Riocell has already handed over part of this task to the government and Rigesa is in the process of doing the same.

An interesting aspect of all these schemes is that the farmer is under no obligation to sell the wood grown on his/her land to the company except in the case of Inpacel and under Klabin's rental scheme. This is in contrast to similar schemes in other countries (see sections 3 and 4) and may explain why a higher proportion of the costs are borne by the farmer in some of the schemes. It may be that there are few other markets for the wood in the area and therefore companies need not need to worry about not receiving an assured supply. However, further research on this is required.

Another interesting feature of these schemes is that although most companies seem to involve relatively small farmers in the schemes there do not seem to be any credit facilities offered which are usually required if poor farmers are to grow trees. Since no returns come from tree planting for at least seven years it is not clear how farmers with little or no capital can afford to do this if they are not offered credit. It may be that trees are a complementary source of income to agricultural crops. However, whether or not farmers can manage without credit whilst growing trees depends on how much capital they have, how much labour is required by the trees and what other sources of income they have. These aspects also require further research.

It proved difficult to get information on costs from the companies, with only two willing to disclose this information. Nonetheless the figures given indicates that the costs incurred by the farmer amounts to roughly 30% of total operational costs. This figure does not take into account the value of the share of the timber that the famer has to give the company in some of the schemes in compensation for costs incurred by the latter.

2.3 Costs and Benefits to the Stakeholders in Social Forestry Schemes

Companies

There seem to be two major reasons why companies enter into farm forestry schemes. The first is that such schemes can result in major savings to the companies. The costs of land is relatively high in southern Brazil (approximately US $1,450/ha) hence there may be advantages in sourcing a proportion of their fibre from land owned by small producers rather than buying the land outright, this compensates the purchase of trees. Sourcing fibre from farm forestry schemes also results in significantly lower labour costs. In most farm forestry schemes farmers carry out all the land preparation, planting and maintenance operations at their own expense. These operations account for between 30% and 50% of the total costs of plantation operations for the companies studied. The savings that the company makes from this far outweighs the administration and transport costs incurred in running the schemes by the companies, although the company still has to pay the farmers for the trees.

The second reason for operating a social forestry scheme is that the involvement of local producers can enhance the company's image both in the local area and in the world market.

From the company's perspective the negative aspects of farm forestry include the organisation that is required, the need to provide technical assistance and the lack of control over the trees. Obviously companies have far more control over what happens in their own plantations so when companies hit hard times farm forestry can be one of the first things to be cut, as in the case of Riocell which recently drastically reduced its farm forestry scheme (a 70% reduction in the numbers of farmers participating since 1993), citing the poor market situation as the reason. It seems unlikely that the corporate Riocell plantations have been reduced to the same extent. However, the other companies examined in Brazil do not appear to have followed the same course of action.

Farmers

Farmers participation in farm forestry schemes depends on the alternative options available to them. In some plantation areas there may be few options, particularly if the plantation is on good land or farmers have been displaced to make way for it. Their major motivation for planting trees is income generation but whether or not tree planting is a desirable and viable option depends on a variety of factors including opportunities for off-farm employment, the quality of the land, the wealth of the farmer, the availability of labour and the potential benefits of other products, for example cash crops.

Tree farming is less labour intensive than for annual crops but will only bring in an income after a minimum of seven years whereas two annual crops may be harvested each year. Thus, despite the extra work involved in annual crops many farmers may still favour these over trees or may simply not be able to afford to turn part of their land over to a crop for which the returns are deferred. They are more likely to consider planting trees on degraded or marginal land which is unsuitable for agricultural crops. However it is difficult to generalise as conditions and circumstances vary so much.

In the area where Klabin operates, the return from corn cultivation is in the region of US$115-120 ha/crop which is substantially lower than the returns from tree planting which for eucalyptus works out at around US$200/ha per year. However, two annual crops of corn can be planted and the returns are immediate. Other crops such as vegetables can generate higher returns than this if the market is good and the farmers have access to transport, which would seem to make tree planting unattractive, whilst more marginal land is used. In 1994, Rigesa surveyed farmers in the area to see how many of them would be interested in being involved in farm forestry schemes and found that about half would be.

Local Communities

The operation of farm forestry schemes by companies brings some benefits to the local community in terms of increased incomes of those participating, particularly as most of these schemes appear to be targetting small farmers. However, the importance of this is dependent on what other opportunities are available to local farmers and what was available before the schemes started. As all these schemes only plant trees on private land there are no benefits to non-landowners and the planting of eucalyptus and pinus which is required in most of the schemes mean that the trees have few non-timber benefits.

2.4 Future of Farm Forest Schemes for Pulpwood Supply in Southern Brazil

Given that the main motivations for companies to operate the schemes appear to be the reducing their operational costs and improving their public image it would seem likely that these schemes will continue. Good quality land is scarce and expensive in southern Brazil and with demand for pulpwood increasing it would seem sensible to continue and possibly expand pulpwood procurement from farmers. However, the pulp and paper market is a volatile one with cyclical high and low prices which may mean that social forestry schemes come under pressure when pulp prices fall.

Provided that they receive decent returns from tree planting, farmers who are already involved in social forestry schemes are likely to continue to plant trees, particularly on marginal or degraded land. Again market considerations are crucial. If farmers can get similar returns from annual crops they are likely plant these instead. However, if capital is not the most limiting factor then trees may be favoured since they require less labour. Whether or not new farmers become involved, depends on the opportunity costs of planting trees compared to other crops, whether or not they can afford to wait for the returns and what alternative sources of income are available to them.

Th government is likely to continue to support social forestry schemes since these result in reforestation whilst supporting rural incomes. The government seems prepared to play a supportive role, for example it is in charge of transportation and technical assistance for the Riocell scheme and is providing technical assitance for Rigesa.

3 THE PAPER INDUSTRIES CORPORATION OF THE PHILIPPINES SOCIAL FORESTRY PROGRAMME

3.1 Background

The Paper Industries Corporation of the Philippines (PICOP) is one of the most important industries in the Philippines and is one of the largest integrated timber pulp and paper companies in South East Asia. PICOP began as a government logging company in 1952 and expanded into a major producer of timber, pulp and paper, with a capacity or 122,000 tonnes per year of kraft pulp, 82,000 tonnes per year of newsprint and 68,000 tonne per year of kraft containerboard. It produces 60% of the newsprint used in the Philippines. It was privatised in 1994 after running into severe financial difficulties several years earlier.

PICOP has a 200,000 ha forest concession much of which was over-logged and for the last 12 years has been trying to diversify its sources of wood. Initiatives have included the establishment of industrial tree plantations in the concession and a variety of social forestry schemes which between them are reported to supply the company with 40% of its pulpwood requirements. However the industrial tree plantation programme has ceased and the social forestry programmes were constrained in 1992 due to PICOP's financial problems (Agrifor 1995). The government of the Philippines, which owns all forest land in the Philippines, set up an Integrated Social Forestry Programme (ISFP) which legitimised the occupancy of upland farmers on forest land who prior to that had no legal rights to the land. PICOP was exempt from implementing this in its concession and in the past had dealt harshly with illegal occupants, making relations between the company and the inhabitants of the concession difficult. However, in 1983 PICOP launched a modified version of the ISFP, the Modified Social Forestry Programme (MSFP) and other related social and agroforestry schemes. The key features of these are given in Table 3.2a below.

3.2 Analysis of the Schemes

PICOP operates a number of different schemes targetted at different groups in the concession. One set is aimed at private landowners farming in the vicinity of the concession, the other at forest dwellers who have no legal right to be in the concession. The main features of the different schemes are summarised in Table 3.2a below.

The MSFP is aimed at illegal occupants of the concession and comprises two schemes, the tree growers contract scheme and the plantation development scheme. Farmers who settled in the forest between 1975 and 1981 are eligible to enter into the tree growers scheme which legitimises their use of the land for as long as they continue to plant some of their land with trees. Originally farmers were provided with a 1 ha farm plot and a 9 ha tree farm plot in an adjoining area where they planted seedlings specified by PICOP. Farmers could also use the plot for any kind of farming activity. Farmers joining the scheme now are given 10 ha of land for a tree farm where the trees are spaced so as to allow intercropping (Agrifor 1995).

The plantation development scheme is aimed at people who arrived in the concession after 1981. They are organised into cooperatives which are given responsibility for the planting of certain areas of the concession with fast growing species. They are paid and then required

to move out of the forest concession area. This achieves PICOP's aims of planting trees and reducing the number of illegal occupants in the concession at the same time.

The agroforestry, outgrower and LEAF schemes which replaced it, are aimed at small private landowners who have land in the vicinity of the PICOP concession. In the agroforestry scheme, which ran until 1989, landowners were encouraged to set aside the best fifth of their land for agricultural crops and plant trees and crops together on the rest. Tripartite agreements were signed between the farmer, the development bank of the Philipinnes and PICOP. The bank provided the farmer with capital and PICOP provided seedlings, technical assistance and chainsaw assistance at harvest time. Farmers had to sell the trees to PICOP which deducted the costs of its inputs such as seedlings and chainsaw assistance from the price that it paid. This scheme ended in 1989 when it was replaced by the the Livelihood Enhancement through Agroforestry (LEAF) scheme.

The LEAF scheme is very similar with same tripartite agreements being entered into but is specifically aimed at low income farmers. It is supported by donors including USAID and has a more explicit capacity building component. So far, there have been two phases of LEAF and farmers from the first phase are involved in training farmers in the second. LEAF also offers various income generating opportunities to participants. Participants in the first phase had to plant up to 5 ha with trees, in the second up to 2 ha. The Outgrower scheme is also very similar to the above schemes but no financial support is provided by the bank.

All the schemes operated by PICOP specify the trees to be planted and all enourage planting agricultural crops between the trees. Tree plantations are inspected up to six times by PICOP in the first year and payments are made for each surviving tree. Once the trees are established (ie one year after planting) anyone on a plantation development contract has to leave the forest concession. Those on the tree growers contract are visited approximately five times a year for the next five years and paid for every surviving tree. Farmers are encouraged to grow crops between the trees although, the extent to which this is possible obviously depends on the maturity of the trees. Once the trees have matured the farmer is paid to harvest them and can then replant the area.

Table 3.2a Key Features of the Social Forestry Schemes Operated by PICOP

Scheme	Date started	Eligibility	Forestry requirements	No. of participants	Total no. of ha	Land Rights	Credit
Modified Social Forestry Programme - aimed at illegal forest occupants							
Tree Growers Contract	1984	Farmers who occupied the forest concession between 1975 and 1981	Have to plant 10ha with trees.	1,774	1,977	Legitimises occupancy of land for as long as they comply with the (renewable) contract	
Plantation Development Contract	1989	People who occupied the forest concession between 1981 and 1989	Responsible for planting certain areas with fast growing species.	709	1,810	Once the trees have been turned over to PICOP, they have to move outside the concession areas.	No
Total				2,483	3,788		
Schemes aimed at private landowners outside the PICOP concession							
Agroforestry	-1989	Private landowners	Plant the worst 80% of their land with trees.	4,404	15,192	Already have rights to the land.	From PDB
Outgrowers Scheme	1994	Private landowners	Plant the worst 80% of their land with trees	70		Already have land rights	No
LEAF		Low income private landowners	Plant up to 5ha with tree in phase I, up to 2ha in phase II with trees	700	approx. 2,000 ha	Already have land rights	From PDB
Total				> 1,100	> 16,000		

3.3 Costs and Benefits to Stakeholders Involved in the PICOP Schemes

The costs and benefits to the various stakeholders are summarised below

Table 3.3a Costs and Benefits to Stakeholders Involved in the PICOP Schemes

Stakeholder	Costs and Benefits
PICOP	Investments required in personnel, technology development and transfer seedlings and community development projects. Benefits include, increased peace and order in the forest, reduction in the cost of tree farm development and the provision of a steady source of pulpwood.
Growers	Costs are the use of their land and labour while the benefits are security of land tenure, increased income and other social service benefits.
Local Community	Benefits include stronger community organisations, improved infrastructure and social services, rural development and employment and increased income of inhabitants. There could be a danger in becoming overdependent on PICOP.

PICOP

There appear to have been three main motivations for the implementation of social forestry schemes by PICOP. The first is the hope that such schemes would provide a means of improving the relationship between the company and the local people and help restore peace and order in the forest concession. The concession is occupied by a a large number of people who have no legal rights to the land as well as members of the New Peoples Army, a rebel group, and in the past PICOP had dealt harshly with illegal occupants. Reducing the hostility would greatly reduce the costs of forest protection and management. Secondly, much of PICOP's concession was overlogged and the company required new sources of pulpwood. Thirdly social forestry schemes enabled PICOP to procure the species that they wanted at cheaper prices than from sellers outside the concession (Agrifor 1995). PICOP also receives support from donors for some of their schemes.

PICOP has invested a large amount of time, money and training into its various social forestry schemes and has reaped significant benefits. They employ 28 people in their Social Forestry department and a similar number in the two separate departments that deal with the agroforestry and LEAF schemes. To get the schemes going initially they ran an extensive awareness raising campaign using the farm programme on the local radio station and local publications to communicate the objectives of the social programme. This was followed up with meetings in the villages accompanied by personnel from the government forest bureau. The company then undertook a survey of the area to determine the number of illegal occupants and their living conditions. Most were very poor, some malnourished and all were very worried about being evicted from the forest. Those who are interested in being involved in one of the schemes then have their land surveyed by PICOP and then the contracts are signed.

The schemes seemed to have contributed to an increase in peace and order in the concession and a reduction in hostility towards the company. They have also resulted in a diverse and secure pulpwood supply accounting for a significant proportion of PICOP's requirements. The scheme is organised in such a way that once the trees are established they belong to the company, hence PICOP need not worry about farmers selling them to buyers offering higher prices.

Farmers

For most occupants of the forest concession the PICOP forestry schemes were one of the few options available to them. For those farmers who already have rights to their land the main benefits are increased income and access to the social services that PICOP provides. The people who perhaps gained most from the social forestry schemes were farmers who illegally settled in the forest between 1975 and 1981 and who have no legal right to farm there. Participation in the Tree Grower scheme legitimized their use of the land for as long as they participate in the scheme as well as providing them with an income. However, it does not give them any legal title to the land or security of tenure and there is still some hostility from people in the area who feel that participation in the schemes undermines their efforts to gain a legal title to the land. For those people who illegally occupied the forest after 1981 their only benefit from participation in the scheme is enough money to move out of the area which they are then required to do.

Participation in PICOP schemes also allow access to all sorts of company benefits including deferred payment of hospital bills and school fees membership of a credit cooperative which entitles them to loans and cash advantages.

The main problems with the schemes from the farmers point of view is the lack of control that they have over the species they plant and the low price that PICOP pays for the trees. PICOP supplies all the seedlings to farmers on the schemes which is resented by the farmers. They have also recently shifted from albeza falcataria to eucalyptus which the farmers dislike because it is more difficult to transport.

Although on the whole it seems that the returns from trees, although delayed, are worthwhile, the major disadvantage from the farmers perspective is the low price that PICOP pays for the trees compared to other wood byuyers. However, as most of the land which farmers are planting with trees are marginal and would not support agricultural crops there is little opportunity cost in tree planting. Credit is generally available to support farmers whilst trees are maturing however probably the biggest change that participants in the scheme would like to be made is to increase the price paid for the wood. Under MSFP, the company owns the trees hence there is no possibility for farmers to sell the trees on the open market. PICOP's prices are low in comparison to payment made by other wood buyers, however PICOP undertakes to buy the whole tree whereas most buyers will only pay good prices for good logs.

Local Community

The local community benefits from the increased income and options available to forest inhabitants. Community organisations have also been strengthened by the increase in

growers associations and cooperatives. PICOP is involved in a number of community projects and has provided much of the infrastructure and social services in the concession which improves the quality of life in the area, although there are dangers of becoming overly dependent on the company.

The ambition of most forest occupants is to have secure rights to land. Land use rights are only available to certain groups under the PICOP schemes and even they get no security of tenure or legal right to the land. Some forest occupants feel that the PICOP schemes are undermining their fight for land rights. However, it seems that an increasing number of people who have formerly been hostile towards the company are now involved in one of their schemes.

4 SOCIAL FORESTRY SCHEMES IN INDIA

4.1 Background

In India, all forest land is owned by the government with the exception of certain tribal areas. Each state manages its forest land through the forest department which can own up to 23% of the land, depending on the state. Table 4.1a below summarises the government policies on forests which are relevant to the pulp and paper sector.

Table 4.1a Government Forest Policies Relevant to the Pulp and Paper Sector

Year	Policy	Results and Problems
1950s and 60s	Long term contracts between forest departments and paper industry for supply of pulpwood.	Large scale deforestation, regeneration suppressed due to open grazing, lack of incentives for paper industry to reforest, large scale deforestation caused survival and economic problems for poor people as well as soil erosion and other ecological problems
1970s	Contracts renegotiated at higher rates and on a shorter term basis.	Deforestation continues as this was the cheapest option.
Late 1970s and 1980s	Social Forestry. Main aim was to meet the fuelwood and fodder needs of the poor.	Government encouraged a variety of afforestation programmes including farm forestry. Millions of trees planted, the majority commercial species on private land.
Mid- 1980s	Cheap import of pulp	The most successful of the social forestry schemes, farm forestry, collapses as farmers fail to find a renumerative market for their wood.
Late 1980s	Government insists that industry must source its wood from farmers. Joint Forest Management is introduced on state-owned forest lands.	JFM leads to regeneration of biodiverse forests on state forest land. Several companies introduce innovative farm forestry schemes.
Mid-1990s	Industry requests captive plantations on state owned forest land.	Environmentalists and pro-tribal MPs strongly oppose the request.

In the 1950s state department were ordered to enter into agreeements with the industry to meet their wood needs. The paper industry did very well from this, receiving an assured supply of pulpwood at very low rates. This policy came under heavy criticism in the 1960s

and 1970s as deforestation increased and the rates were revised upwards and contracts shortened. By the late 1970s there was widespread concern about the extent of deforestation and the effect that this was having on the rural poor in particular and a social forestry programme was initiated with the support of multilateral and bilateral donors. At the same time, paper mills who were concerned about their wood supply initiated some very innovative schemes with farmers to supply some of their pulpwood requirements. The main aim of the government programme was to meet the fuelwood and fodder needs of the poor, however the most successful part of the scheme was the growth of commercial species on private land which had significant impacts for the paper industry.

Table 4.1b Afforestation in India 1950-1990

Year/ Five Year Plan Period	Area afforested (million ha)	Cumulative (million ha)	Money spent (Rs million)	Proportion of total forestry budget spent on afforestation (%)
First 1951-56	0.052	0.052	12.8	16.8
Second 1956-61	0.311	0.363	68.6	32.3
Third 1961-66	0.583	0.946	211.3	46.0
1966-69	0.453	1.399	230.2	55.0
Fourth 1969-74	0.714	2.113	443.4	53.0
Fifth 1975-79	1.221	3.334	1072.8	51.0
1979-80	0.222	3.556	371.0	54.0
Sixth 1980-85	4.650	8,206	9260.1	134.0*
Seventh 1985-90				
1985-86	1.51	9.716	3785.6	
1986-87	1.762	11.478	4924.0	
1987-88	1.775	13.253	5408.3	
1988-89	2.119	15.372	6200.0	
1989-90	1.300	16.672	5080.0	

* From 1980 onwards a substantial part of the afforestation budget came from the rural development budget hence afforestation expenditure was more than the total forestry budget.

Table 4.1c below outlines the interest of the major stakeholder groups in forestry. These interests are often conflicting and hence different forest policies are preferred by different groups.

Table 4.1c Stakeholders Interest In Forestry

Stakeholders	Interests	Preferred Means of Implementation
Government	Good land use which meets the needs of the people without sacrificing the ecology.	Mix of policies that includes the participation of rural communities and industry in forest regeneration and afforestation.
Forest Bureaucracy	Control over forest land, increase in tree cover and jobs.	Policies which do not involve much participation in management. Captive plantations for industry.
Paper Industry	Pulpwood available at as cheap a rate as possible in as secure a manner as possible.	Long term supply contract with government. Captive plantations. Farm forestry schemes.
NGOs	Socially and ecologically appropriate landuse.	Joint Forest Management on state owned lands to meet peoples needs and farm forestry on degraded farmland to meet industry needs.
Rural Communities	Ability to collect fuelwood, fodder and other biomass needs from the forest. Income from the forest.	Regeneration of a diverse forest cover and afforestation with specific income generating species.
Farmers	Income generation with as little labour as possible. Species which give good returns but if possible also meet household needs.	Farm forestry with secure markets and a price on a par with the market price.

4.2 Social Forestry Schemes in India

4.2.1 Government Schemes

The prime aim of the Indian government social forestry programme which was supported by donors, including the World Bank, was to meet the firewood and fodder needs of rural communities by planting trees on private and government controlled land.

There were four components to the programme:

- Strip Plantations: - Planting trees along roadsides and canal bunds
- Farm Forestry: - Tree planting on private farmlands
- Village Woodlots -Planting trees on village common lands
- Planting trees on degraded state owned forest land.

In terms of the number of trees planted the social forestry programme exceeded its aims, with approximately 18 billion planted between 1981 and 1988. However, in terms of meeting

the needs of the rural poor the programme was much less successful. The majority of the trees planted (10 billion) were planted on private land and 80-90% of all the trees planted were non fodder species planted for sale on the commercial market, mainly by rich farmers on fertile land which had previously produced food crops.

The next section looks at the various social forestry schemes in more detail.

Farm Forestry

Farm forestry was the most successful component of the social forestry programme. Over 55% of all the trees planted were on private land and these had the highest survival rates. 70% (7 billion) of the trees planted were eucalyptus and of these 5 billion survived. The estimated yield of these was 25 million tonnes of wood annually. To put this into context, the yield of trees from government forests was 10 million tonnes annually. There were various markets for the wood but the main ones were the sale of poles which had a variety of uses and the sale of wood for pulp.

Farm forestry was particularly enthusiastically taken up in certain states. In Haryana which was not a region where trees had historically been planted, the area under trees increased by 53% per annum between 1975 and 1984. In the four northern states of India, seedlings were distributed by the forest department and between 80 and 96% of these were eucalyptus. An independent survey put the tree survival rate at 60%.

To begin with farm forestry was very lucrative. The World Bank calculated that it made good economic sense with internal rates of return of 25-30%. In Gujarat a farmer could get a return of Rs 314,000 per ha after five years on an initial investment of Rs 62,000 and the cost benefit ratio for farm forestry was estimated to be 1:5 compared to 1.2 for other cash crops such as groundnuts in the same region. In Haryana the cost benefit ratio for farm forestry was put at 1:3 whereas farmers were only just making a profit on agricultural crops (estimated at 1:1.2).

However, the scheme fell apart in the late 1980s as the price for the trees collapsed. Farmers in Guajarat stopped planting trees in 1984 as the price fell and by 1987, it was found that only one fifth of the 45 producers in Guajarat made a relative profit. For the others agriculture was a more viable option. None of the farmers who felled trees in 1987 took a second rotation. In the Punjab a 7-8 year old tree was reported to be unsaleable at Rs 15 whereas in the early 1980s it had been selling for over Rs 150 and eucalyptus pulp which had been selling for Rs 450/tonne in 1986 had fallen to Rs 250 per tonne in 1990.

There were three reasons for such a dramatic collapse in prices. Firstly, by the end of the 1980s it was cheaper for paper companies to import pulp from Scanadanavia and Canada than to buy wood from farmers, in part due to a reduction in import tariffs. Secondly government wood was still being sold at subsidised prices which distorted the market. For example, in Uttar Pradesh the Forest Corporation was supplying eucalyptus to a paper mill at a price of Rs 140 per tonne when the costs to the Corporation of raising the trees was around Rs 220 per tonne and the market price for eucalyptus was Rs 500-600. This created market uncertainty and reduced the willingness of mills to purchase wood from farmers. Thirdly, as more and more trees came onto the market the price dropped. In Haryana farmers were

being paid Rs 440-460 per tonne of eucalyptus in 1986, by 1988 the price had dropped to Rs 330.

Village Woodlots

These were schemes to plant trees on community land for community needs. The aim was that the trees would be managed by villagers who would share the profits of selling the trees on maturity. However, there was very little take up of the scheme. Village institutions seemed to have little interest or capability to take on the management of the trees. They seemed to feel that they could not deal with all the factions in the village and preferred the forest department to hire guards to protect the trees and manage the plantation but to share the profits with the villagers. One of the main problems seemed to be the intense pressure on the land. There is very little common land available and it was difficult to persuade villagers that tree plantations (particularly of non-fodder species) was a good use for it and hence it was difficult to protect the trees until they reached maturity.

The Social Security Scheme

This suffered from similar pressures to the woodlot scheme. The impetus for the scheme came from the fact that trees on common land were not surviving as well as those on private land, therefore this approach effectively privatised common land by giving the beneficiaries a lease to to the land or to the trees that were growing on the land. Participants received a monthly stipend for afforesting and protecting the land and an additional area to plant each year. However due to the pressure on common land, participants in this scheme often faced heavy opposition from other members of the village and in some cases this went as far as excommunication.

Tree Patta Scheme

In this scheme poor families were given 'usufruct' rights (rights over the use of the trees but not the land) to trees on government owned wasteland or growing on roadsides. Three years after it began in 1985 10 Indian states had leased approximately 100,000 ha of land under this schemes and over 500,000 people were said to be involved. However by 1990 the scheme had collapsed. There is no documentation on the benefits that the families received when the trees matured so it is not clear if this was a contributory factor. There were however significant problems with the conditions laid down by the state. The authorities were worried that the poor would misuse or take over the land so some states laid down very strict conditions on the trees which could be planted, how and when they were harvested and to whom the wood could be sold. In some cases the families did not get a secure right to the tree for two years. Such restrictions were a major factors in the scheme's demise.

Joint Forest Management

Joint forest management began in 1991 and grants village associations rights to government land. In return for their labour in protecting trees, villagers have the right to collect fuel, fodder and other items from the forest and a share in the net profits after the trees have been harvested (ie after the forest department has deducted all the expenses that it has incurred in the planting, marketing, harvesting etc). The community does not get any ownership or lease

rights to the land.

By 1995, approximately 1.5 million hectares of degraded forest land was being managed by village communities through 10,000 village protection committees in 10 states. As yet, very little has been harvested so it is not clear how the profits will be shared but the communities have benefitted in terms of non-timber forest produce. There is concern about the scheme with some observers feeling that the village communities actually have very little say in the management of the forest, or that the protection of one part of the forest simply shifts the pressure to another site. However, in some cases at least, Joint Forest Management has given villagers better bargaining power in the management ofthe forest.

4.2.2 Corporate Schemes

As government wood supplies dwindled and public concern about plantations grew, a number of pulp and paper mills began initiating farm forestry schemes.

Bhadrachalam Paperboards Ltd, Andra Pradesh

This company initiated a very innovative scheme in which a tripartite agreement was made between the company, NABARD, the main public sector bank and the farmer to plant fast growing species on his or her land for 12 years. The bank advances a loan to the farmer to cover the cost of raising the plantations and also a 'consumption' loan to enable the farmer to meet the household financial needs whilst the plantation is maturing. The mills undertake to buy the wood on maturity and after paying back the loan with interest and deducting the cost of the fertilisers and pesticides, they pay the residual amount to the farmer. The farmer is under no obligation to sell to the mill.

This scheme has some very interesting features which should make it attractive to farmers, they are loaned the money to cover their costs and living expenses and they are under no obligation to sell to the mill which should enable them to get a good price for the wood. The offer of the loan is significant as it makes the planting of trees viable to poorer farmers with little or no capital who could not otherwise afford to wait for the returns from trees.

However the company has found several difficulties with the scheme. Many farmers sell the wood on the market, mainly because they make more money this way. Hence despite the mill's investment in the scheme it is not guaranteeing them an assured supply of wood. Some farmers are selling their wood to contractors who then sell it on to the mill at an increased price. It is not clear why the company did not stipulate that at least a proportion of the wood should be sold to them. The company also says that it is difficult to predict when the farmers will move back to agricultural crops which increases the insecurity of supply. The company was aiming to increase the area under the scheme by 1,500 ha a year but so far have achieved a maximum increase of 1,328 ha per year.

There seem to be three main reasons for the slower rate of increase, the first being that many of the farmers in the area do not have a clear title to the land which disqualifies them from gaining a bank loan. Secondly many of the local farmers prefer to stick to agricultural crops and thirdly some state departments have introduced measures restricting the sale of eucalyptus seedlings or the raising of eucalyptus plantations due to concern about the species.

There are alternatives which can be pulped such as acacia and leucaena and farmers are quite keen to plant leucaena since it also yields fodder.

Because of the above problems the mill has been a strong advocate of plantations for industry on government land. However despite the difficulties it has encountered it has managed to increase its production significantly whilst running the scheme. Due to the problem of farmers selling their wood in the open market, the mill is in the process of separating the business of selling seedlings and offering technical assistance to farmers from the farm forestry scheme. In the future the mill is planning to charge for the seedlings at the point of sale itself so that this effort and money is not wasted if the farmer then sells the mature trees to another buyer.

Titaghur Paper Mills, West Benghal

This mill started a scheme to encourage farmers to grow hardwood when the supply of wood from the forest department began to become scarce. In 1981 the mill received 48% of their required wood from the forest department, but by 1985 the proportion had dropped to 28%. The scheme was designed to be accessible to farmers even if they only had very small plots of land. The company was prepared to enter into contracts with farmers with as little as 0.2 ha available for tree plantations so as long as they could pool together with other farmers to form a block of 4 ha. About 10,000 agreements were signed with farmers under which the mill was assured 25% of the wood at the time of harvest. If the famer wanted to sell the rest of the wood to the mill they could but they also had the option of selling it elsewhere.

The company had also been given an area of wasteland by the state government for plantations. To reduce public protest the mill and the forest corporation formed a joint venture called the West Banghal Pulpwood Development Corporation (WBPDC) to reforest the land. The WBPDC also approached poor farmers who had recently been given titles to very low quality land in the area which could not support any agriculture to encourage them to plant trees on this land. In total the WBPDC afforested 7,400ha of land, two thirds on farmers land and one third on wasteland.

At the present time it is impossible to judge how well the scheme will work as the mill closed as the wood was maturing. From the small amount that was harvested before the mill closed it seems that there are some problems to sort out. The WBPDC does not seem to have been trusted by farmers who complained of a lack of transparency in the system. For example, farmers were not involved in the harvesting and complained that they were not not told the value of the wood and some of them had received sums which did not seem to correlate wth the amount of wood that had been harvested. There was also some resentment over the stipulation that they had to sell 25% of their wood to the mill.

The mill is due to reopen in 1995 and the new managment are confident that these problems can be overcome and that more farmers can be involved. There is still so much wood standing that it will meet a significant proportion of the mills needs when it re-opens.

4.3 Costs and Benefits of Social Forestry Schemes in India

4.3.1 The Government Social Forestry Programme

The Government

The government invested a large amount of effort and money in social forestry schemes with mixed results. A vast number of trees were planted but the majority were commercial species planted on private, often highly fertile land by richer farmers. Fewer trees were planted on poor land or community land which would would have benefitted poorer farmers and those without land. Hence the programme had little impact on meeting the fuelwood and fodder needs of the poor which was the original focus of the social forestry programme. Most of the schemes which involved tree planting on common land had very limited success. One of the primary reasons for this seemed to be the lack of support from village institutions. The success of farm forestry resulted in significant areas being afforested and some farmers making a good profit. However, the dramatic collapse in prices is likely to make it difficult to renew interest in tree planting.

Farmers

Some farmers made a lot of money from farm forestry but many got their fingers badly burned when the prices collapsed making them unlikely to risk tree planting again. Tree planting seems appropriate for many areas of marginal land in India but for farmers with little capital, trees are a big risk and they require secure markets and financial support whilst the trees are maturing.

Local Communities

The social forestry programme increased some rural incomes significantly for a while. However the programme was relatively unsuccessful in meeting the fuelwood and fodder needs of the poorest in the community and attempts to plant trees on common land often ended up dividing villages. Recent attempts to improve participation in forest management such as Joint Forest Management are encouraging.

Companies

Pulp and paper companies have lobbied hard to be allowed captive plantations on government land and were not very interested in the social forestry programme, however, on the whole companies seem to have done quite well out of the government social forestry scheme as farm forestry increased wood supply and contributed to falling wood prices. However, when prices fell below those that were renumerative to farmers even companies which had invested in farm forestry schemes failed to support them. The collapse in prices is likely to make it harder for companies to persuade farmers to plant trees to supply their mills in the future.

4.3.2 Corporate Social Forestry Schemes

Table 4.3a summarises the main costs and benefits to the key stakeholders in corporate forestry schemes.

Table 4.3a Costs and Benefits to the Different Stakeholders in Corporate Forestry Schemes

Stakeholder	Costs and Benefits
Industry	The costs include major organisational effort to involve farmers, develop extension facilities and purchasing arrangements and keep up with the wood market. Social forestry schemes are a means of ensuring a good supply of pulpwood. Overall it may be cheaper than company plantation schemes although they have less control over them.
Farmers	May give farmers higher returns than alternative crops and will require less labour. Require renumerative prices on a par with market wood prices and are unlikely to be involved unless the returns from wood are higher than from alternative crops. Poorer farmer will require financial support whilst the trees are maturing.
Government	Land is afforested and rural incomes are supported with no investment required from the government. Company demands for plantations are highly contentious so government is supportive of social forestry schemes.
Forest Bureaucracy	To some extent feel that these initiatives marginalise them and their afforestation schemes so are not particularly supportive.
Banks	Interested in loaning money for plantations and would prefer to loan to large companies than individual farmers. If they do extend credit to farmers they would prefer to do it thorugh the auspices a large intermediary, such as a company.

Companies

As in other countries, companies have to invest considerable effort and money in social forestry schemes. In the case of Bhadrachalam this has not resulted in a secure supply of wood with farmers selling wood to other buyers rather than the mill. It is not clear why the mill did not stipulate that the farmers had to sell a certain proportion of their wood to them, it may be that the farmers would not be interested if this was the case or maybe the mill thought that there would not be much competition for the wood. In the event the mill has seemed unable to match the market price and felt that their investment had been partly wasted. In the case of Titaghur the new management seem keen to keep the scheme going and to iron out any problems.

Farmers

One of the biggest problems for farmers in India involved in tree growing seems to be the lack of a secure market. With government wood supplies distorting the market and volatile

prices, farm forestry seems to be quite risky. On the other hand from the analysis of the two corporate schemes farmers seem very resentful of any stipulations on who they can sell their wood to preferring to sell to the highest bidder. For poor farmers to be involved in tree growing requires credit whilst the trees are maturing and hence the Bhadrachalam scheme is attractive. However, whether or not a farmer is interested depends on the other options available to him or her and the returns from agricultural crops and many farmers seemed to have preferred to stick to the latter. Farmers also need to be able to trust the mill before they invest in tree planting and this trust seems to have been missing in the above examples.

4.4 The Future of Social Forestry Schemes in India

Land use, and forest use in particular, is contentious in India. There is currently significant pressure from companies for the government to allow captive plantations for industrial use on government owned land. This is being heavily resisted by environmentalists and pro-tribal groups who see Joint Forest Management and social forestry as more desirable options. The experience of the last twenty years has demonstrated that a large number of farmers throughout India are interested in planting trees on their land, despite the delay in returns.

However, it is also clear that there have been major problems in implementing social forestry schemes on common land and in sustaining farm forestry schemes. The most successful scheme has been farm forestry where the majority of species planted were commercial species on private land , often by richer farmers on better quality land. To meet the fuelwood and fodder needs of the poor who often are not landowners and to involve poorer farmers requires schemes which encourage tree planting on less fertile private land and common land.

However, planting on common land involves coming to agreement with groups of people which is much more difficult and time consuming than coming to an agreement with an individual. None of the schemes reviewed above seem to have been able to involve village institutions in ways which would sustain tree planting on common land. There are a number of issues which make this difficult, there is little common land and massive pressure on that which does exist, land rights are often not secure so decreasing the likelihood of people planting anything which has delayed returns and the forest bureaucracy can be cumbersome and corrupt.

Under Indian law, all trees are owned by the state and cannot be harvested or transported without permission. Receiving the required permits is a time consuming and often costly process which seriously decreases interest in tree growing. Some states are trying to improve this process but this will take time. Another fundamental problem seems to have been the lack of transparency to farmers and local communities as to what their rights and obligations are under the various schemes. Unless this is sorted out few schemes are likely to survive beyond the first harvest.

The other major problem is the volatile market for wood and it would seem that some compromise is required that would guarantee the mills a proportion of the wood and farmers a decent price. This would give farmers some security although maybe not the highest price and the mills would have assurances of getting some of the wood from the scheme that they have invested in.

5 CONCLUSIONS

This analysis of the social forestry schemes for pulpwood supply demonstrates that the success of such schemes from both the point of view of companies and farmers has been mixed. In many cases tree planting by farmers to supply the pulp and paper industry can bring benefits to both parties and is an appropriate way of using land and supplying fibre. However certain conditions are required for benefits to be generated for all parties.

The main parties involved, companies, governments/donors and farmers have very different motivations for participation in social forestry schemes. Only if all their objectives are met to some extent will the scheme be sustained.

Companies usually enter into social forestry scheme either to supplement a decreasing supply source as in the case of Titaghur or for cost reasons. All the companies discussed in this study only procured a small proportion of their pulpwood from social forestry schemes, usually in the region of 10-20%. There are significant costs involved in organising the schemes, providing technical support and so on but it seems that in most cases these are more than compensated by the savings that the companies make in terms of plantation establishment and maintenance. In Brazil, these savings were in the order of 30% of total operational costs per tree. The major concern from the companies perspective is predicting the amount of wood that they will receive from the schemes. Some companies stipulate that a certain proportion of the wood has to be sold to them, others do not and run the risk that farmers will sell to higher bidders.

An additional reason for companies investing in social forestry schemes is to try to improve the company image and reduce risk both in the local area and on the world market by projecting a 'green' and socially responsible image. In the case of PICOP where relationships between the company and local people were very bad, improving relations and 'order' in the area seemed to be one of the prime motivations for introducing the social forestry scheme.

Social forestry schemes have been enthusiastically supported by some *governments and donors* such as the World Bank who see social forestry as a way of afforesting land, helping to meet the wood needs of the poor, supporting rural incomes and providing wood for industry without increasing the pressure on natural forests or establishing large scale plantations. However in some cases at least, many of the social benefits hoped for are not delivered.

In India, where the primary aim of the social forestry programme was to meet the fuelwood and fodder needs of the poor, 80-90% of the trees planted were non-fodder species on private land. The main reason that most people planted trees was to generate income not for fuelwood or fodder nor for environmental reasons. Often the poorest people are those without land and hence they can only be involved in social forestry schemes which are based on common land.

It is much more difficult to come to agreements with groups of people than it is with individuals on the other hand groups of people have more bagaining power. Hence it is not surprising that, with the exception of the PICOP plantation development scheme, all

corporate schemes focus on farmers planting trees on private land. Because trees will not generate returns for at least seven years, only relatively well off farmers can afford to do this unless financial support is supplied until the trees mature. Hence many of the corporate farm forestry schemes operate in conjunction with development banks which supply loans. Even so, most banks require farmers to have a legal title to the land before they will offer them credit which disqualifies the poorest people in many cases.

Whether or not *farmers* are interested in planting trees depends on a variety of factors, including the type of land they have access to, the opportunity cost of growing other crops, the availability of other income generating opportunities, land tenure arrangements and availability of credit.

There are several features which are essential if farmers are going to plant trees on their land:

- security of land tenure, although not necessarily a title
- access to credit, credit schemes adapted to the situation in rural areas (e.g. collateral not based on land title) whilst trees mature
- higher returns than other cash crops
- secure markets for the wood

Without security of tenure few people will plant a crop for which the returns are delayed for years. Without access to credit whilst the trees are maturing, poorer farmers cannot afford to plant trees. Unless the returns are higher than for crops which have more immediate returns, farmers are unlikely to plant trees except on the poorest land where agricultural crops will not grow. Without secure markets for the wood farmers will be unwilling to risk planting trees.

The three most contentious aspects of social forestry schemes for fibre supply appear to be:

- how much *choice* farmers have over the species they plant
- what *rights* they have over the trees, such as when they are harvested and to whom they can be sold
- the *price* that the mill pays for the trees

Reconciling those priorities can be extremely difficult and has led to tension and problems in many of the exisiting schemes. It seems that a compromise needs to be reached where mills are guaranteed a a proportion of the wood but pay a reasonable price for it. In this way mills can at least predict the minimum amounts that they will receive and farmers have a guaranteed market for at least some of their wood even though it may be below market price in a good year. However reaching this type of agreement is unlikely to be easy and it is essential that both sides are adequately represented. Collective bargaining is essential for farmers to negotitate effectively with powerful companies. In cases where farmers have

few options available to them and are not well organised it is much easier for them to be exploited. An obvious example of this is the PICOP plantation development contracts where people with no land rights are effectively paid to leave the area. The Swedish Forest Owners Association described at the beginning of the report is a good example of how strong collective bargaining can benefit small producers.

Social forestry schemes definitely have a role in fibre supply to the paper industry and can be mutually beneficial to the parties involved. The main social benefits will be increased income generation by private landowners who may or may not be amongst the poorer section of society. For social forestry schemes to be sustainable it is important that all stakeholders are involved in their design and understand fully and agree to the terms and conditions. This is not easy but unless it is done schemes are more likely to founder, as some of the above examples have shown. Social forestry schemes will be most appropriate and effective if they meet local peoples needs and priorities. Social forestry schemes should be tailored to the particular area. Klabin in Brazil stand out as an example of social forestry programmes which have a range of schemes tailored to the different circumstances of various groups of local people

From a policy perspective, where social forestry is a viable option it should be favoured as a means of supplying fibre since it supports rural dwellers whilst providing fibre.

Possible improvement to social forestry schemes which deserve further investigation are:

- Planting different species and harvesting at different times so that there are always some trees on farmers land. In other words, what are the impacts of diversification of production processes

- Taungya schemes, where trees are planted further apart and farmer grow crops between them, as is being done in some of the PICOP schemes and tried out in Brazil

- Ways of supporting local producers organisations to strengthen their bargaining position

Further research is required on the technical constraints to pulping different species. If mills were happy to accept a greater range of species than they do at the moment (most tree planting schemes concentrate on eucalyptus) this could increase the benefits that the farmers gain from tree planting and reduce some of the need for a secure market since the trees would have more than one use. Having a mixture of ages and species on the a farmers plot woud also decrease the risks associated with tree planting. It would be interesting to compare this with agricultural plantations e.g. coffee, rubber.

Similarly taungya schemes reduce the risk to farmers since they are growing crops between the trees. It has been reported that Aracruz in Brazil is testing out a taungya scheme on its plantations since such schemes could possibly bring benefits to companies as well. Trees grown further apart have bigger diameters which means that they could be sold for timber as well as pulp so increasing the options available to the company. Although fewer trees could be planted in the same area some of the loss in income could be compensated for by savings in maintenance since this would be left to the farmer. Taungya scheme on company

land could provide a means for landless people to plant crops.

To sum up, farm forestry schemes for fibre supply are likely to continue since they can bring benefits to both companies and farmers. However, such schemes are unlikely to account for more than a small proportion of the total supply since farmers often grow trees on marginal or degraded land and companies are always going to want to have a significant proportion of their supply totally under their own control.

REFERENCES

Agarwal and Narain 1995. *The Role of Social Forestry in Supplying Fibre to the Pulp and Paper Industry: An Indian Experience.* Report for the IIED Sustainable Paper Cycle Study. IIED, London, UK.

AGRIFOR Consult 1995. *Comments on Dr Corazon Lamug's Report on "The Role of Social Forestry in Supplying Fiber for the Pulp and Paper Industry: The Case of PICOP in the Philippines".* Prepared for IIED, London, UK.

Balensiefer 1995. *A Pequena Producao Florestal no Suprimento de Fibras para a Industria de Polpa e Papel - O caso das Companias Klabin, Inpacel e Rigesa.* Report for IIED SustainablePaper Cycle study. IIED, London, UK.

CCE, 1992. *Etude des Modalites d'Exploitations du Bois en Liaison avec une Gestion Durable des Forets Tropicales Humides - Premiere Etude de Cas: le Bresil.* Commission des Communates Europeenes (CCE), DGXI Bruxelles, November 1992.

IIED Substudy No.1. 1995 *Fibre Sourcing Analysis for the Global Pulp and Paper Industry.* Wood Resources International, Ltd, USA. Report for the IIED Sustainable Paper Cycle Study. IIED, London, UK.

IIED Substudy No. 5 1995 *Paper Farming: The Role of Plantations in the Sustainable Paper Cycle.* Report prepared for the IIED Sustainable Paper Cycle Study, by IIED and SGS Forestry. IIED, London, UK.

Isolan 1995. *A Pequena Producao Florestal no Suprimento de Fibras para a Industria de Polpa e Papel - O caso da Riocell.* Report for IIED Sustainable Paper Cycle Study. IIED, London, UK.

ITTO, 1995. *Country Profile: Brazil.* ITTO, Tropical Forest Update, Vol 5, No.3, September 1995.

Lamug 1995. *The Role of Social Forestry in Supplying Fibre for the Pulp and Paper Industry: The Case of PICOP in the Philippines.* Report for the IIED Sustainable Paper Cycle Study. IIED, London, UK.

Malarskog, undated. Malarskog leaflet. Malarskog, Uppsala, Sweden.

Mather, Alexander S. 1990. *Global Forest Resources*, Belhaven Press, London, UK.

PPI 1995. *Pulp and Paper International Fact and Price Book*, 1995. PPI Brussels, Belgium.

Skogsagarna 1993. The National Federation of Forest Owners in Sweden, leaflet. Skogsagarna, Stockholm, Sweden.

Skogsindustrierna 1995. *A Search for Sustainable Forestry - the Swedish View.* Skogsindustrierna, Stockholm, Sweden.