Private Forest Plantation Development in Sri Lanka: Issues and Challenges

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Abstract

Sri Lankan forest policy and the forestry sector master plan of 1995 emphasize commercial forest plantation development by private sector management to produce sufficient industrial and other woods to meet increasing demand. However, the nature of forest control and the form of ownership provide an essential link between forest resources and their use. The solution to problems of common access to resources in tropical forest management has often failed to safeguard either forest resources or the livelihood of dependents. The privatization of forest resources has sometimes impoverished the majority while enabling short-term gain for a few whose economic decision making is distant from the considerations of socio-economics and environmental externalities. Sudden and abrupt changes in the control system or ownership may trigger phases of resource destruction or degradation. In the establishment and management of private forest plantations, it is of practical importance to identify the issues and challenges of private forest plantation development. This paper discusses the issues and challenges in terms of available land and selection of lessees, knowledge and plantation culture, commercial incentives and rights, marketing and market development, the pay-off/benefits, and legal and regulatory environment.

INTRODUCTION AND BACKGROUND

It has been estimated that 80 percent of the total land area in Sri Lanka was covered by forest in 1794. Almost half of the forest cover was lost due to export oriented plantation agriculture and export of timber by 1950 (Fernando and Samarasinghe, 1988). Today, the forest cover has been depleted to 25 percent of the total land area (1.63 million hectares) (Bandarathilake, 1991). Poor land use patterns in agriculture, massive agricultural land settlements, land encroachments by landless poor and illicit felling are identified as the main causal factors. Evidently, the rate of forest destruction has already caused acute shortages of forest produce and also severe environmental hazards in many parts of the country.

Reforestation has been the responsibility of the Forest Department over a period of 100 years. Realizing the importance of people’s participation in tree growing, the department made several attempts over the years, such as: the Cooperative reforestation program; the Community forestry project; the Village

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revegetation program; and the Participatory forestry project, leasing lands and providing incentives for the
participants. Except in the Farmer wood-lot components, the people’s participation was limited to rather a
short period of the planned rotation age of 3-4 years of the tree crop. On the other hand these programs
required relatively fertile lands close to their villages for the purpose of inter-cropping with short-term
agricultural crops. Most of the barren lands in the dry zone, however, could not be utilized for the above
programs mainly due to the remoteness and poor soil fertility. The new program “Private sector
participation in reforestation” was launched in 1995 to obtain private sector involvement in tree growing in
these dry zone lands.

At present, there is tension and debate concerning the current forest policy of commercial forest plantation
development among the government, politicians, bureaucrats, peasants, environmentalists, forest scientists,
and others. However, the government of Sri Lanka observes international forest-related conventions,
principles and policies that have been agreed to by Sri Lanka (FSDD, 1996). In the third world particularly
in the area where trees are rapidly disappearing, policy has yet to be developed to grow trees to provide
wood for industry. Arguments as to whether a finite forest resource should be used mainly for the benefit of
rural people living nearby or mainly for commercial purposes only arise when forest resources have become
too low to satisfy both ends (Shepherd, 1986). Therefore sudden and abrupt changes in the control system
or ownership may trigger phases of resource destruction or degradation. It has been recognized that the
solution to problems of common access to resources in tropical forest management has often failed to
safeguard either forest resources or the livelihood of dependents. Some authors writing about the “tragedy
of the commons” recommend that “the state” control most natural resources to prevent their destruction:
others recommend that “privatizing” those resources will solve the problem (Martin, 1998).

The transition of forestry reflecting profound social, economic and institutional changes has to be moved
from an era in which the state dominates forest management to one in which commercial enterprises will
dominate the production of forestry. The shift in paradigm recognizes explicitly that a much greater suite of
forest values, both tangible and intangible, (should be sustainable rather than just timber harvest) (Knowski,
1998). Plantation forestry is merely a technology for delivering the benefits of trees to societies. On the
verge of implementing the New Forest Policy, it is practically significant to identify the pros and cons of
private forest plantations elsewhere in the world with relation to the potential consequences of commercial
forest plantation development under the prevailing conditions in Sri Lanka.

AVAILABLE LANDS AND SELECTION OF LESSEES

Available Lands
Applications were solicited from the private sector in 1995 for the leasing of 10,800 hectares of
abandoned state lands selected from 5 districts in the dry zone of the country (Table 1).

<table>
<thead>
<tr>
<th>District</th>
<th>Available Extent (ha)</th>
<th>Number of Proposals</th>
<th>Requested Extent (ha)</th>
</tr>
</thead>
<tbody>
<tr>
<td>Anuradhapura</td>
<td>5,719</td>
<td>177</td>
<td>3,578</td>
</tr>
<tr>
<td>Kurunegala</td>
<td>175</td>
<td>39</td>
<td>519</td>
</tr>
<tr>
<td>Matale</td>
<td>1,069</td>
<td>333</td>
<td>5,719</td>
</tr>
<tr>
<td>Polonnaruwa</td>
<td>1,275</td>
<td>17</td>
<td>252</td>
</tr>
<tr>
<td>Monaragala</td>
<td>2,595</td>
<td>149</td>
<td>4,118</td>
</tr>
<tr>
<td>Total</td>
<td>10,833</td>
<td>715</td>
<td>14,186</td>
</tr>
</tbody>
</table>
The government emphasizes through this program the need for the improvement of the vegetation of the abandoned lands under private sector management with the aim of reaping silvicultural, economic, social and environment benefits. Land is a resource that often can be improved and used repeatedly. However, there is always a danger that serious misuse of land may not only waste its present value but almost irreparably damage future usefulness (Evans, 1992).

The Lessees
It was intended to lease out the land to private individuals and institutions. In response to the government advertisement, a total of 3,572 applications were received. Although applications were twice called for under the same program (for private forest plantation development) during the 1980s, the number of applicants was not sufficient even to launch the program. However, the 3,572 applications received in 1995 indicate the changing socio-economic situation in the country and also suggest an increasing environmental awareness.

Each and every applicant was subsequently requested to submit a project proposal. However, only 715 applicants from the 5 districts sent the proposals in response to the request made by the department (Table 1). The requested extent of the land by the applicants (14,186 ha.) is considerably high compared to the availability of land (10,833 ha.) to be leased for private forest plantations. According to the submitted proposal, most of them (89.6%) are individuals and only 10.4% are companies and institutions. However, the majority (56%) of the applicants live outside the district. Very often, the private forest plantation benefits the rich company outside the village community. They often fail to deliver the promised social and environmental benefits. This may actively harm the poor village communities who were depending for a living on the forest resources (Foley and Barnard, 1984).

Through an interview assessing the experience and financial capability of the applicants, 103 were selected for allocation of land. Due to some administrative delays the land was finally handed over only to 53 applicants in April 2000. The total extent allocated was 507 hectares. They are supposed to complete the planting work on their land within two years.

Size of Holdings
The extent of land requested by the total applicants varies from 2 hectares to 200 hectares. Among them, more than 85% have requested land areas of less than 20 hectares (Table 2).

<table>
<thead>
<tr>
<th>Extent (ha)</th>
<th>Number of Applications</th>
<th>% of Total</th>
<th>Cumulative %</th>
</tr>
</thead>
<tbody>
<tr>
<td>0-5</td>
<td>1,246</td>
<td>34.9</td>
<td>34.9</td>
</tr>
<tr>
<td>6-10</td>
<td>1,058</td>
<td>29.6</td>
<td>64.5</td>
</tr>
<tr>
<td>11-20</td>
<td>742</td>
<td>20.8</td>
<td>85.3</td>
</tr>
<tr>
<td>21-30</td>
<td>74</td>
<td>2.1</td>
<td>87.3</td>
</tr>
<tr>
<td>31-40</td>
<td>197</td>
<td>5.5</td>
<td>92.9</td>
</tr>
<tr>
<td>&gt; 40</td>
<td>255</td>
<td>7.1</td>
<td>100.0</td>
</tr>
<tr>
<td>Total</td>
<td>3,572</td>
<td>100.0</td>
<td></td>
</tr>
</tbody>
</table>

Even in the USA, small woodlands control a major portion of both timber supply and environmental value of the forest (Minckler, 1975). On the other hand, encouragement of a sizable plantation resource may be viable and will eventually attract industry (Evans, 1992). In Giong Rieng, Vietnam the size of private forestlands largely varies depending on financial capacity. Therefore, rich households have larger land areas and get richer from their land while the poor remain at subsistence level leading to fierce land accumulation.
Foley and Barnard (1989) have suggested withdrawing subsidies and other support for commercial tree growing by large farmers, and compensating the poor affected adversely.

KNOWLEDGE AND PLANTATION CULTURE

Knowledge and Experience
About 20% of the applicants have specialised experience in agriculture and forestry. The majority of them are presently working in the agriculture and forestry fields while some of them are retired agricultural and forest officers. Another 70% of the applicants have general experience in agriculture and forestry. Both categories are quite confident that they will be able to implement their reforestation program without outside technical assistance. Hence, the knowledge and technology could be effectively transferred to them with minimum effort and expenses.

Only about 11% of applicants have indicated that they would seek assistance from the Forest Department or through other means for their reforestation program. Even without prior knowledge and experience, the people who are interested in forestry could efficiently manage their forest plantation. In the United States 59% of potentially productive forestlands (300 million acres) were owned by neither farmers nor foresters but teachers, doctors, lawyers, businessmen, hunting clubs and citizens who love the outdoors (Minckler, 1975).

Selection of Tree species
Almost all the proposals (95.6%) have indicated Teak as the most preferred species. The other species desired are Halmilla and Margosa respectively. Even, the state owned plantation mainly consist of Teak, considering the climatic suitability under dry zone conditions (FSDD, 1996). In fact, they pay attention very carefully in selecting the species taking in to consideration the fast growth and economic value. Very often, it is of no matter to the private sector tree growers how technically sound or how ecologically suited the particular tree species is to the particular locations. The tree will be politely ignored or firmly rejected by the private growers if the tree is perceived as neutral to cash need or negative to the cash or flow input.

Managerial ability
More than 20% of the applicants have sent their proposals with the details of: (1) the species proposed and with the justification for it; (2) the source of planting materials; (3) the planting schedule; (4) details of inter-cultivation and animal husbandry; (5) experience in forestation; (6) financial capabilities; and (7) the protection program. All the applicants have proposed to carryout inter-cultivation with annual and perennial agricultural and fruit crops at least for the first 4 years of planting. More than 90% of the applicants have submitted realistic cost estimates for the establishment and management of forest plantations which indicate that they are well aware of the costs and benefits of the program.

Culture
In Sri Lanka and other developing countries private investment is minimal. Unlike in Western Europe and America, forestry has not yet become a fully-fledged business. On top of the above, a conducive business environment for forestry has yet to be made.

The objective of the growers should be harmonious with the ecological conditions of the forest and socio-economic conditions in the community. Practically, private forest plantation organization is often a difficult idea to convey in a culture where foraging in the forest for all kinds of produce, such as food, fuel etc is the norm. The community often views the forest as an inexhaustible resource. Eventually, failure in communication and differences in cultural background become an obstacle, private forest growers may not adequately appreciate local ideas of land tenure and the productive capability of local inhabitants (Evans, 1992).
LEGAL ISSUES, TECHNICAL SUPPORT AND COMMERCIAL INCENTIVES

Compared with all other plantation crops and export crops, where many incentives and subsidy schemes are available, there are not any incentive schemes, such as credit facilities or insurance available for the forestry sector in Sri Lanka. Therefore, the government should provide sufficient incentives, such as extension services, technology transfer, subsidized credit programs, infrastructure improvement etc, to promote the private forest plantations. Those promotional measures have to be continued until the program becomes self-sustaining. On the other hand, there is no need for many incentives for leasing lands. Demand for woodlands is increasing and prices for forest products, as well as for land are going up steadily as the land is a hedge against inflation (Minckler, 1975). Even though the Lessees have not requested it in their applications, to encourage the private sector to grow trees in abandoned barren lands in the dry region, provision of commercial incentives and secured rights would be an important factor in the success of the program.

The Agreement
The lands demarcated for the purpose of leasing out to the private sector for a period of 30 years are under an agreement subject to the following main conditions.

- The lessee should primarily engage in reforestation, inter-cultivation of agricultural and fruit crops. Animal husbandry is also allowed.
- The lessee is entitled to the total harvest of timber and the harvest from agricultural crops and animal husbandry.
- The lessee should pay an annual rent to the government based on the total value of leased land.
- Technical advise required for the establishment and management of plantations will be supplied by the Forest Department.

Rights
In most cases forest management problems are property right problems. The management strategy that has been proposed by the forest policy in 1995 is to support the private sector seeking to raise forest plantations on 10,800 hectares of abandoned state lands with appropriate land titles (FSDD, 1996). The government insists on promotion of the private sector to establish, manage and harvest the commercial forest plantations. It has become difficult to predict how quickly the private tree growers are will be encouraged to go into full production on a commercial basis. The difficulties are inherent in large-scale interventions on land where no clear private right of ownership existed (Howes and Endagama 1995). Secure rights over trees, even for poor private tree growers provides incentive to plant and protect trees to the benefit of the poor, national economy and environment.

The logging ban removed an important of source of income for local households involved in private forest plantations resulting in a higher level of poverty and making very little incentive for them to get involved in forest management. It is recommended that the logging ban should be relaxed so that they will have an incentive to invest in and protect their forests. In Vietnam, the Giong Rieng Commercial private forests are managed by households, and the local authorities are not responsible for their protection. However when forest robberies are carried out by poor households, the forest owner warns the thief and as a result forest destruction is uncommon on the site (Nam, et. al., 2001).

Research and Development
The appropriate form of technology will vary with social, economic and environmental circumstances. It is therefore necessary to apply science, concepts of ecology and socio-economic wisdom to attain a successful private forest plantation. For the optimum use of land, land capability evaluation and preparing a land-use plan it is very important to gather data to classify land according to what it may be able to grow (Evans, 1992).
Research would be conducted on forestland taking into account the priority and constraints in terms of which private growers must operate, to grow forest trees for their commercial purposes. For instance, fast growing Gliricidia, which is adequate for home consumption, will not be sufficient for the brick industry, bakeries and tobacco processing barns in the area. To meet the growing demand slower-maturing species will have to be selected and pursued (Howes and Endagama 1995).

**Financing**
Even without any incentive and with all the agreed conditions, the applicants are willing to participate in the private forest plantation program. This is an indication that the majority of the applicants have an array of reasons other than purely financial benefits to get involved in the program. However, the Forest Department has revealed that financial capability seems to be the most important factor in successful implementation of the program.

Private household forest management systems do not stabilize their living conditions due to a lack of capital to invest in production. Limited assistance in provision of inputs, and initial financial support might also be appropriate to encourage private growers. Provision of credit is the most important factor for the participation of private individuals in a forestry project in the Philippines to grow trees (Foley and Barnard, 1984).

**Extension, Education and training**
According to the lease agreement, the Forest Department is responsible for providing technical advice to the private tree growers, required for the establishment and management of plantations. Evidently, people managed the forest better where there was better training, education and leadership. Therefore, the government has to provide extension services to promote desirable rural development through private forest plantations. The growers have to be encouraged to plant trees by being given advice, training and demonstrations. The contribution of the extension method in achieving goals varies enormously (Evans, 1992). In the case of both conservation and of supply enhancement of wood, the government has to provide the private forest growers with extended skills by available extension expertise.

Extension sometimes is successful in promoting trees and awareness while sometimes singularly failing without the market promised in extension work. The extension effort often fails with no provision for follow-up visits or insufficient time for proper training and advice. Moreover, the Extension Officer may tend to possess a package of technological practices but very little skills in the art of communicating ideas to private forest growers.

**Tax Incentives**
Under the private forest plantation agreement, the lessee should pay an annual rent to the government based on the total value of leased land. Generally, forestlands may be taxed annually just as other real estate. Forest land value could be assessed based on 1. Actual present use, 2. Present market value of land, and 3. Forest productivity (Minckler, 1975).

Offering tax incentives such as reduced tax or complete exemption on income earned from tree planting or taxes on the land is another method of encouraging tree growing. Profit from trees is exempt from tax in Gujarat, India. However, since small holders are often not taxpayers, tax incentives tend to benefit the rich (Foley and Barnard, 1984).
**Other Incentives**
Private forest plantation programs require transport facilities and operation facilities such as nurseries and workshops. Further, improving marketing and transport facilities stimulates commercial tree growing by the private sector. However, most developing countries are short of funds to meet the cost of forest plantation development and this often results in heavy reliance on overseas aid.

**MARKETING AND MARKET DEVELOPMENT NEEDS**

**Market Demand**
Sri Lanka at present produces only 90% of the estimated sawn-wood consumed in the country. The demand for forest products, particularly timber is met by over exploiting the existing forest, which is not sustainable in the long run. If the current trends continue with unsustainable forest management systems and utilization patterns, the area under forest cover will go down to about 17% by 2020 (FSDD, 1996). It has also been predicted that without appropriate policy measures and action there will be an acute shortage of industrial wood in the country in the very near future (Davidson, et. al., 1989). The general argument is that if there is no market for wood grown, enthusiasm for maintaining forest plantations soon diminishes and what has been achieved is largely wasted.

Teak is very popular and generates high income through up-market priced timber, compared to other forest trees in Sri Lanka. The private tree growers therefore prefer to grow Teak on their leased land, to cater to the high market demand and reap the maximum benefits from their plantains. However, some forest species face problems of “over familiarity”, they are preferred because the species is well-known even though it is inferior to another potentially available species (Evans, 1992).

**Market Stability**
The existence of an assured market is one of the most critical factors in promoting private forest plantations. Therefore, creating a stable commercial market for tree products is very useful particularly in cases where the existing market is uncertain. Producing tree products for small holder-marketing cooperatives can also be an alternative strategy.

**New Industries**
Over-supply of wood would normally create a fall in prices. Therefore, new markets would have to be found for the surplus products. Establishment of wood-fired power plants with high investments and new wood using industries, as organizational inputs are other strategies for entirely new markets (Foley and Barnard, 1984). Tree planting to create an industrial resource is rarely undertaken by private individuals. Frequently, a forest industry develops causing damage to the natural resource and converts to plantation produce after some years (Evans, 1992).

**Guaranteed Prices**
Reasonable and stable market prices would encourage private sector participation in forest plantation management. Guaranteeing wood prices is one of the direct strategies for creating a stable market for trees produced in the Philippines (Foley and Barnard, 1984).

**BENEFITS AND TRADE-OFFS**

Though it is too early to assess the performance of the plantation program, the early results indicate that about 50% of the agreement holders have commenced their work within the first five years and continue according to the agreement.
For the Participants
Private forests may be desired for timber, aesthetics or a combination of these or other uses. Many (46%) of the participants in the program consider the investment in forest plantations as an investment for the future especially for their children. Having a piece of forested land for aesthetic reasons is one of the other reasons for participating in the program.

Households manage all forestland in the Giong Rieng Private Commercial Forest Farm in Vietnam. Since the forest’s value is nearly triple that of paddy, the tendency is for the farmer to convert part of their rice lands to forest. They obtain the highest annual income from both rice farming and forestry as well. Further more, it is found that forest destruction is uncommon. Most of the households tap family labor for related activities while few resort to exchanged and hired labor. Their investment in forestry is insignificant (Nam et. al, 2001). However, in Sri Lanka in a liberalized economic and open market environment, the private sector is much more concerned with commercial ventures with high and quick returns than forest planting programs.

Forest plantation development may tie up land and capital, and involve some continuing oversight for several years. Therefore, the private growers may resist plantations because the time-scale often seems too long and the benefits too remote (Evans, 1992). In some other cases the private growers, with their rights to exploit, and lack of awareness of the environmental and true economic value of the forests have over – exploited forest products. Very often rich forest growers accumulate lands through land transfer practice. They profit more from forestry than that they enticed to amass more land (Nam, 2001). Moreover, susceptibility to diseases and pests and maintenance of long-term productivity are two possible risks associated with monocultures.

For the Community
Providing wood and other forest needs of the rural community is also cited as an objective of many private forest plantations. The strategies of private forest plantations therefore have to be evaluated not just in terms of effectiveness but also in terms of the local community's role in forest protection and economic dependence on forests.

Many private forest owners go against the needs of local people and exploit the forest resources because they have no vested interest in doing otherwise. They may rarely specialise or accept reduced return in order to provide benefits to the community. Although the plantations increase the total biomass production in the area, they may actually reduce the local availability of fuel and fodder where traditional custom permits farmers and poor villagers to graze animals (Foley and Barnard, 1984).

Alleviating rural poverty by providing employment opportunities for the local community through the commercial forestry sector is also a very important policy issue. Evidently, private forest plantations usually require less labor than agricultural crops leading to a reduction in local employment opportunities. People in parts of India are turning to farm forestry as it reduces both their labor costs and the problems of farm management (Foley and Barnard, 1984). On the other hand, in Mekong Delta of Vietnam, the contract forestlands serve as a buffer zone around the strictly protected forest area by mobilizing the local people. However, it has been revealed that poverty in the area together with low levels of education provide people with less opportunity for sustainable forest management and results in increased forest destruction (Nam, et. al., 2001).

For the National Economy
Total employment in the forestry sector in Sri Lanka was estimated as 331,000 in 1995 (FSDD, 1996). The contribution of the forestry sector to GDP was 2.2% in 1996 (Central Bank of Sri Lanka, 1997). According to the FSDD (1996), the true contribution of the forestry sector to the national economy is more than 6%, excluding all the tangible benefits. Presently, growing pressure on forests for firewood,
construction timber and other non-timber forest products has led to a rapid decline in forest area. The Forest Sector Master Plan (ESMP) in 1995 emphasized the sustainable management of forest plantations to provide for the ever-increasing demand for bio energy wood and non-wood forest products and services. Therefore, the private forest plantation program is expected to produce sufficient industrial and other woods, by new management strategies, to cater to the rapidly increasing demand without disturbing the natural forest resources. Although a large number of applicants are presently interested, establishment of forest plantations in ecologically degraded lands and other barren lands, which are desirable from a national perspective, may be the least attractive for the private sector. They may prefer to grow trees on the most fertile land that often is more profitable.

Demand for industrial wood is projected to grow at a rate of 15 to 40 percent over the next 15 years and developing countries will take an increasing share of this growth (Barbier, 1994). There are numerous wider economic and social benefits associated with timber production and trade that are also important for rural infrastructure development and the provision of other social amenities. Providing employment, particularly in rural areas where there is serious unemployment and poverty is an important consideration in assessing the development value of private forest plantations. Wood-related industries are an important source of employment generation in the manufacturing sector of many developing countries. Moreover, plantation development can also have considerable prestige value politically. Political influence can even affect selection species (Evans, 1992).

**For the Environment**

Some of the participants (28%) in the private forest plantation development program consider environmental protection to be the main influencing factor. However, the literature has sited many experiences where private forest plantations have had more adverse impacts on the local environment. According to Jodha, (1986), the privatization of forest resources has often enabled short-term gain for a few, whose economic decision making is distanced from the consideration of environmental externalities. Forest destruction has become serious in private leased forestlands as destruction brings them quick benefits particularly in income. In the case of private forest growers living in poverty, destruction of the forest is widespread. On the other hand, as the private lessees grow trees for the market they may plant trees which give them the highest and most secure rate of returns rather than that which might be preferred from an environmental stand point. Even tree density in private forest plantations is low, as they have to thin every year to select high quality trees to sell. It could be seen as forest destruction compared to the high density in state forests for the purpose of environmental conservation (Nam, et. al., 2001). The private forest growers often sell their products to distant markets. Therefore, the burning of crop residues instead of collection for firewood by the local community tends to continue the depletion of common resources in the forested areas (Foley and Barnard, 1984).

**LEGAL AND REGULATORY ENVIRONMENT**

The success of private plantation forest depends partly on the law and its enforcement by the government. Many countries therefore, have enacted numerous laws to regulate the use of forest resources irrespective of its ownership. There are many problems encountered in enforcing the law effectively when many officers are inexperienced, poorly paid, and have to deal with large and influential companies.

**Land-use patterns**

The nature of forest control and in particular the form of ownership, provide the essential link between forest resources and their use. Government dominance of plantation ownership may retard the development of competitive markets. Whilst the relationship between control, use and condition of the resources is not constant, broad correlation exist between systems of control and pattern of use (Mather, 1990). Governments rarely legislate directly to dictate how the land is used. Swaziland's Control of Tree Planting
Act in 1972 severely limited new plantations of more than two hectares except on marginal lands unsuitable for agriculture (Evans, 1992).

Logging Ban
Governments impose logging ban regulations to prevent the illegal felling of trees particularly in natural forests. On the other hand, the logging ban restricts the income that could be obtained from private forest plantations due to the incorporated marketing irregularities. According Nam, et al., (2001), forest products do not contribute much to household income due to the existing logging ban policy in Vietnam. Relaxing the logging ban would create incentives for the private sector to actively participate and invest in forest plantations.

Non-timber forest products
Some regulations on forest practices have also been introduced for environmental and social reasons. Evidently, many private companies work in cooperation and respect rights and interests of community groups including non-timber benefits in forest plantations (Umali and Agaloos, 1998).

Conservation
Commercially managed forests are best for households with large farms. However, a study in Vietnam concluded that even under the strict Protection Management System, effective conservation of the forest and maintenance of biodiversity is not attended to by the forest protection team paid by government due to lack of incentives and job satisfaction, attributed in part to understaffing and low salaries (Nam, et al., 2001).

CONCLUSIONS AND POLICY RECOMMENDATIONS
The private forest plantation development program in Sri Lanka is at the initial stage and it is therefore too early to assess the full effects accurately. However, based on our analyses and experiences elsewhere, the following are considered likely to influence the outcome of this program in Sri Lanka.

The real impact of private forest plantations varies greatly from program to program depending on the extent to which the program becomes a significant element in the local ecological, environmental and socio-economic system. The success of the private forest plantation program heavily rests on the actual objectives of the private forest growers and the compatibility of their objectives with the forest, environment, community and the government. Private forest plantation programs implemented elsewhere often fail to deliver social and environmental benefits without a private forest plantation culture and their efforts rely primarily on market incentives and maximizing financial returns.

We therefore recommend the following:

- Support for comprehensive research to evaluate the potential negative impacts of the program to better inform the processes of planning, management, monitoring and evaluation of private forest plantations;

- Promotion of a forest plantation culture among government officials, private sector tree growers and the local community capable of facing issues and challenges arising in implementation of the new forest policy;

- Fostering of favorable conditions such as secure rights, promising technology, reasonable financial terms and an industrially integrated market, along with strong government commitments to increase the likelihood that plantations are more profitable and less risky for private investors.
• Amendment or revision of forest regulations through a comprehensive study to better support the private sector in its development of commercial forest plantations in unproductive barren lands.

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