

Developing a High Value Timber Industry in the Leyte Based on Furniture Production: Future Prospects and Lessons from Experiences in Tropical Australia

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ABSTRACT

The desirability of and prospects for development of a high-value timber industry in Leyte, Philippines, are examined. Lessons are drawn from extensive research undertaken in tropical north Queensland, Australia, including studies of landholder attitudes; sawmilling activities, including the role of portable sawmills; potential financial returns from plantations of high value rainforest cabinet timbers; and marketing studies involving cabinet-makers and consumers. These studies suggest the need to demonstrate that money can be made from smallholder and community plantations, to have harvest security, to convince politicians and public about benefits of forestry, to be able to develop effective programs that target particular groups, and to develop a range of financing arrangements (e.g. carbon credits, institutional and venture capital) that allow early cash flows. Issues associated with the development of a furniture industry in the Leyte are discussed in the light of these research experiences.

Keywords: forest industry development; forestry financial models; sawmills; value chains; small-scale forestry.

INTRODUCTION

During the period of large-scale logging in the Philippines there was a complementary furniture industry utilising very high value native tree species including Narra (*Pterocarpus indicus*), Molave (*Vitex parviflora*) and Banuyo (*Wallaceodendron celebicum*) (Patindol, 1998; Mangaoang and Pasa, 2003). As these timbers have become scarce, the production of high-value furniture products has contracted. The government policies in recent years of supporting farm forestry and community forestry (particularly the Community Based Forest

Management and Community Based Resource Management initiatives) are leading to new timber supplies becoming available. Lawrence (1998, p. 78) found in a survey in Leyte and Bohol that 'farmers are cultivating at least 135 tree species. More than half of these are indigenous to the Philippines, and some of them are valuable timber species which are becoming scarce in the natural forest, such as dipterocarps, dao and narra. Exotic species include Gmelina or Yemane (*Gmelina arborea*), Mahogany (*Swietenia macrophylla* and *microphylla*) and Ipil Ipil (Lucaena species), as well as Australian eucalypts and acacias. Bagras (*Eucalyptus deglupta*), which is widely grown, is generally considered as a native species, though it was probably introduced from Indonesia.

Potential exists to redevelop a high-value timber industry in the Philippines, based on native and exotic species. On Leyte Island (the focus of ACIAR project ASEM/2000/088 titled *Redevelopment of a Timber Industry following Extensive Land Clearing*) there is a particular shortage of timber, and import of furniture from Cebu. This raises questions of priorities in terms of forest industry redevelopment priorities on Leyte, and whether there is a role for a high-value furniture industry.

There is a long tradition of furniture manufacture in the Philippines, and solid-wood furniture making continues, though on a reduced scale. Many superb pieces of furniture are to be observed in showrooms in the cities and rural towns, such as attractive dining room suites made out of Narra. At the lower end of the furniture market, many items are made out of rattan and Gmelina, both of which are reasonably readily available. Cebu City is the centre of the furniture industry, and there is annual furniture exposition in Cebu City and Manila. In earlier times, the Philippines was well known as furniture exporter.

The expansion of such an industry integrated with the production of high-value timber offers high employment and trade benefits for areas such as Leyte. Furniture-making skills and product recognition continue to exist. The silviculture for growing suitable hardwood species, both native and exotic, is now developed. Relative to low-value timber, smaller volumes of high-value timbers will support a processing industry. Also, the longer rotations of these species lead to greater environmental benefits than fast growing timbers such as Gmelina.

This paper discusses the key issues in developing a high-value timber industry in Leyte centred around a furniture industry, and draws on substantial experience in research undertaken on social and economic aspects of developing a farm forestry industry in North Queensland, Australia. While the social and economic context may differ between tropical Australia and the Philippines, there are a number of lessons to be drawn from this research that may be applied in the Philippines context.

WHY A HIGH-VALUE TIMBER INDUSTRY IN LEYTE?

Forest industry development can be achieved through industrial, farm or community forestry development. Each option will have different social, economic and environmental impacts. Furthermore, each of the three options will face different impediments to development. Harrison and Herbohn (in press) have summarised and ranked these impediments, as in Table 1.

Table 1. Impacts of impediments on industrial, community and farm forestry

Impediment	Impact on industrial forestry	Impact on community forestry	Impact on farm forestry
<i>Technical and Market Issues</i>			
Lack of information on profitability	Low	Low-med	High
Lack of labour	Low	Medium	High
Unavailability of seedlings	Low	High	High
Land and climate constraints	High	Medium	Medium
Lack of silvicultural knowledge	Low	Med-high	High
Lack of access to finance	Low-med	Med	High
Lack of access to timber markets	Low	High	High
Market distortions through crop subsidies	Low	Medium	Medium
Difficulty and cost of tree protection	High	Low	Low
<i>Social issues</i>			
Expectation of low returns	Low	Medium	High
Long payback period and high private discount rate	Low-med	High	High
Landlord-tenant relationships, uncertain timber rights	Low	Low-med	High
Insecure property rights to land and trees	Low	High	High
Impediments to log transport	Low	High	High
Other government regulations and disincentives	Low-med	High	High
Preference for multipurpose trees	Low	Med	High
Accessibility of nearby natural forest	Low	Med	Med
Negative or incorrect extension information	Low	Med-High	High

Harrison and Herbohn (in press) suggested that while overall the impediments listed in Table 1 would appear to have least impact on industrial forestry, farm and community forestry are more likely to be successful. They argued that in many situations industrial forestry is incompatible with the social context in which it is conducted. Forest companies frequently provide employment for local communities, and may provide improved roads and other infrastructure. Nevertheless, local communities frequently resent the incursion of forestry companies into their area. In practice, industrial forestry offers local communities

little long-term benefit and in many cases results in lowering of living standards. The areas devoted to industrial forestry often were previously used to support livelihoods of local people, and their withdrawal may place greater pressure on other land. There have been some reports of plantations being burnt in order for local communities to obtain employment to re-establish them. When the timber is harvested, there is often no value adding within the local community. Timber is transported to cities to be processed by medium to large sawmills and then used for either industrial construction or export.

In contrast, community and farm forestry systems appear to fit the social context of the Philippines much more closely than industrial systems. On this basis Harrison and Herbohn (in press) argue that they are the most appropriate forestry systems to develop a timber industry in many areas in the Philippines. This is not to say that industrial forestry systems have no place, but rather that greater rewards can be obtained by concentrating efforts on developing farm and community forestry.

One of the challenges for farm and community forestry systems is to find markets for their timber products. At present, timber harvested from farms is almost invariably processed on farm or in a nearby village. Recovery rates are high, but sawn timber quality is low. This type of processing produces low-value timber suitable for local use. However, if the amount of planting increases, new markets will need to be found and it is unlikely that there will be much scope for developing markets for low value timber. Value adding activities such as furniture manufacture offer great scope and are critical for the development of a high-value timber industry.

EXPERIENCES IN SMALL-SCALE FORESTRY FOR FURNITURE PRODUCTION IN TROPICAL NORTH QUEENSLAND

Forestry research has been undertaken in the Rainforest Cooperative Research Centre in north Queensland with the aim of gaining an understanding of the various social and economic issues associated with farm forestry. This has shed light on the factors limiting participation in farm forestry in the region and on how to formulate policy prescriptions to increase the participation rate by landholders. This research on socio-economic issues is somewhat unique in Australia, not so much in respect to individual projects but rather in respect to the breadth of work and the integrated approach which has been applied.

Studies of Landholder Attitudes

Surveys of landholders have identified the major impediments to greater participation in farm forestry, with Herbohn *et al.* (1998) identifying 'economic and structural impediments' as being the most important. These impediments were associated with either the uncertainty of future cash flows (future prices, long wait for returns, low timber prices, a lack of information about returns and uncertainty about profitability) or concerns that government intervention will

introduce restrictions on landholders in terms of plantation management and harvest. Impediments that fall within the economic and structural impediments group tend to dominate the ratings by landholders with the top three impediments falling within this classification. Recent research conducted in the Philippines suggests that many of these impediments are also important (see Harrison *et al.*, 2000; Harrison and Herbohn, 2001; Harrison and Herbohn, in press). Based on landholders attitudes to impediments, Emtage *et al.* (2001a) have identified distinct 'typologies' of landholders in north Queensland, each with particular socio-economic characteristics. Each group also has different attitudes as to what incentives were required for them to plant more trees. Identification of such typologies allows forestry support policies to be developed which can be targeted towards particular types of landholders.

Financial Models and Potential Returns

To address the lack of information about likely potential returns from farm forestry in north Queensland, major efforts have been devoted to developing financial models to predict returns from plantations of high-value rainforest cabinet timbers (e.g. Herbohn *et al.*, 1998; Emtage *et al.*, 2001b). These timbers have traditionally been used by cabinet-makers in the production of fine furniture and kitchens and for other high-value uses such as flooring and veneer. Application of the financial models indicates that low financial returns are likely when current stumpage prices for timber are obtained. Typically, landholders receive stumpage prices of between \$A30 - \$A50/m³ for standing timber. These current low stumpage prices are an important impediment to expansion of farm forestry.

Before any prescriptions can be made on how to increase stumpage prices, an understanding must be gained about the costs and mark-ups of all stages of the timber production pipeline. Returns to landholders can be increased by either redistributing current resources rents within the supply chain or by increasing the final output prices at the end with a redistribution to the landholder. As a result of these low predicted returns, a series of studies have been undertaken of various components of the timber production pipeline, including market-related studies involving cabinet-makers and consumers and processing-related studies involving sawmillers.

The financial model developed for north Queensland has been adapted to the Philippines situation (Venn *et al.*, 2001a). A critical component of this adaptation was the need to estimate potential growth rates of species with only sparse growth data (Venn and Harrison, 2001; Venn *et al.*, 2001b, 2001c).

Timber Marketing Studies – Cabinet-Makers

A number of studies have been undertaken to provide market information including surveys of cabinet-makers in Townsville, Cairns and Brisbane. These surveys have provided a clear understanding of the factors which are most important in influencing cabinet-makers in choosing one particular timber

species over another. Important differences arise between the northern markets in Cairns and Townsville and the southern sub-tropical markets.

Four factors have emerged as being important in the choice of inputs by cabinet-makers, namely timber quality, availability, customer requests and cost (Herbohn *et al.*, 2001). Cost is only important when it cannot be passed on to customers, as is the case when cabinet-makers are competing in the high-volume low-cost market segment. When this is the case, cabinet-makers are willing to trade-off the other three factors for low cost. Where cost is a factor, composite wood products are preferred over solid wood. Where cost can be passed on to the customer (as in the case of high value custom-made furniture and kitchens), the other three factors strongly influence the choice, with cost being less of a consideration. Cabinet-makers are willing to pay a premium for timber availability and will avoid timber inputs that are not readily available unless customers specifically request their use. When faced with such requests, the motto 'the customer is always right' comes into play. The data collected indicated that in North Queensland, many cabinet-makers were having difficulty in obtaining supplies of rainforest cabinet timbers (RFCTs) and in many cases were turning to other timber inputs thus reducing demand. In south Queensland markets, survey results were even more concerning, with large numbers of cabinet-makers, despite having very high regard for RFCTs, simply not trying to obtain them.

These research findings support moves by local growers to form co-operatives to market timber. If properly established, cooperatives can assist in overcoming some of the timber availability problems; however, it is not automatic that demand will also increase. In order to increase demand by cabinet-makers, customer demand must also be increased. The north Queensland research also indicates that cabinet-makers are probably willing to pay higher prices for the RFCTs since they can pass the cost on to customers (Herbohn *et al.*, 1997). Surveys have also identified the species that cabinet-makers most want planted in order to satisfy their future cabinet timber needs (Smorfitt *et al.*, 2002).

Timber Marketing Studies – Consumers

Surveys of the public have been undertaken to ascertain community attitudes to rainforest timbers and the reasons why people do or do not purchase products made from RFCTs (Smorfitt *et al.*, 2001a). This research indicates that many potential consumers are willing to purchase products made from RFCTs, although there is concern that rainforest logging may lead to environmental damage by approximately 30% of potential consumers. Importantly, a large number of potential consumers thought that RFCTs were no longer available. This has important implications, as consumer demand has been shown to be a major contributor to cabinet-makers choosing to use a particular species. These results highlight the need for promotion of RFCTs, possibly by a central marketing cooperative. Self-interest needs to be put aside for the communal

good, especially in the early developmental stages if the cooperative is to be successful. Initial assistance, such as government 'guarantees', may be required until the production cycle has done one full rotation and generated the first cash flow. Establishing a cooperative is the easy part, but making it work can be a different matter altogether.

Sawmilling Studies

A number of sawmilling studies have been undertaken, including a comparison of the cost-effectiveness and roles of fixed site versus portable sawmills and whether there is scope to increase the stumpage paid to landholders (e.g. Smorfitt *et al.*, 2001b; Smorfitt *et al.*, in process). It is clear that resource security and competition from imports (which is the major price driver) are key concerns of sawmillers and are preventing them investing further resources in new milling technology (Smorfitt *et al.*, in process). This research also indicates that portable sawmills offer potential to increase milling recovery rates and decrease milling costs. However, training and possibly registration are required to ensure the sawn timber produced is of adequate quality. The fixed costs make up a small proportion of total milling costs with the most costly variable input being labour. Another factor making important contributions to the per unit sawn timber milling cost is recovery rate which is impacted upon by a variety of factors such as log size and quality, species, and importantly the training, skill and experience of the miller.

DEVELOPING A HIGH VALUE TIMBER INDUSTRY IN LEYTE

A number of implications may be drawn for the development of a high value timber industry in Leyte, based on the research undertaken in the Rainforest CRC in north Queensland.

The need to demonstrate that money can be made from smallholder and community plantations

For landholders or communities to plant trees it is essential that it can be demonstrated that forestry activities are profitable. If the profitability of trees can be demonstrated then this is often sufficient encouragement for landholders to become involved in forestry. The most convincing mechanism to demonstrate profitability is for landholders to see others obtaining profitable returns from trees. A classic example is the exponential growth of farm-based *Gmelina* plantings on Mindinao once farmers saw their neighbours obtaining sound prices for farm-grown trees. Given that plantations have a production cycle of 10 years or more, it is difficult to convince people to invest resources now for an uncertain return in the future. This is particularly the case for slower growing, high-value furniture timbers such as Mahogany and most of the high-value native hardwoods. Financial models can be used to provide information about likely returns from plantations. If funding is available, a variety of assistance measures

can be implemented to decrease initial plantation establishment and early maintenance costs or provide livelihood assistance for lost earning capacity during plantation development.

Need for harvest security

There are widespread concerns about harvest security in Australia, and it is not surprising that similar concerns arise in the Philippines. In both countries, harvest rights are subject to government policies to protect native vegetation and land and water in plantation areas. Sometimes these concerns are unfounded and based on a lack of understanding of the regulations, but nonetheless they act as a real disincentive on tree planting. In Leyte, approval from the Department of Environment and Natural Resources (DENR) is necessary before timber can be sold, and there appears to be considerable uncertainty among smallholders about harvest and marketing regulations.

Need to convince politicians and general public about benefits of forestry

There are many impediments that need to be overcome in order for a vibrant timber industry to develop. Politicians can be both the source and solution of problems faced by forestry. Schemes that promote sustainable forestry such as Community Based Forest Management (CBFM) and Community Based Resource Management (CBRM) assist greatly in the promotion of forestry. For these schemes to continue, it is essential to convince politicians of the benefits of forestry. Financial and economic analysis is critical for this; politicians in general desire quantitative estimates of the payoffs from their programs. Forestry also produces important environmental and social benefits, and quantifying these non-wood benefits in financial terms aids in convincing politicians and public that the benefits of forestry to the community justify expenditure of general public resources on incentive measures.

Need to develop effective schemes that targeted to particular groups

Amongst small landholders (commonly referred to as small-holders), there are distinct groups with particular socio-economic characteristics and attitudes to farm forestry and tree planting, and no one policy measure or incentive scheme will be universally relevant to all landholders. Different types of landholders will require different types of incentives to become involved. For instance, for farmers with low disposable incomes, but with spare time, provision of free seedlings might be the best incentive. Alternatively, for farmers with greater financial resources and land, more secure harvest rights might be a more effective incentive. The secret of good policy is identifying factors limiting involvement and then providing mechanisms to overcome these on a sustainable basis. If landholders can be grouped, and these groups experience similar limitations, then it is much easier to develop effective policy.

Need for alternative financing arrangements (e.g. carbon credits, super funds) that allow early returns

The long wait for returns is an inherent impediment to smallholder forestry. In temperate climates in Europe, broadleaf species may take in excess of 120 years to mature and significant planting of these species has only come about because of high levels of annual subsidy payments. In developing countries, landholders have few spare resources and cannot afford to wait for trees to mature, even if these periods are relatively short by world standards. If widespread forestry is to be achieved, it is likely that some landholders at least, will need some form of short-term returns. One possibility is annual payments for carbon sequestration. However, initial research suggests that the transaction and monitoring costs are high, and large plantations areas may be needed in order to overcome these. There has been a massive increase in farm forestry in Australia recently (Herbohn, 2001) which is largely associated with forestry investment companies either purchasing farm land or entering into joint venture arrangements with farmers. Such arrangements are also possible in the Philippines. Another possible mechanism is the use of forward contracts in which landholders receive payment for timber that they will provide in the future, and there is anecdotal evidence that these are already being used in the Philippines.

Restoring the Furniture Industry

As illustrated by the North Queensland experience, there is considerable difficulty in resurrecting a furniture production industry following loss of the resource. This involves problems of reaching a threshold timber supply of species, availability of skilled tradespeople, funding for purchase of expensive equipment and market recognition of the products. While a minimum volume (of say 10,000 m³) is needed to set up a fixed-site timber mill in Australia, in the Philippines lumber merchants obviously operate with smaller volumes, bringing fitch timber from farms and producing sawn timber off a sawbench in their retail sales premises. Hence a resource is available for furniture manufacturers, although high quality timber is in very limited supply. Substantial areas of Mahogany have been planted, some of which are now reaching harvest age. On the other hand, native hardwoods including Narra have not yet demonstrated success as plantation species, and due to the relatively slow growth it will be some years before useful quantities of these species are produced in plantations. The main source at present is probably illegal logging of native forests. In many areas (including Leyte), cocolumber fills a critical supply gap, and is a sufficiently durable and attractive grained timber used for house framing, furniture (particularly parquetry tables) and souvenir items.

Another issue is who would make furniture. Industrial firms are probably best equipped to produce large volumes of special-purpose items, such as turned wood products. They are in the position to import their timber inputs, and to sell on both the domestic and high-price export markets. Most of the furniture production appears to be by craftsmen in the cities and barangays, for the local market. This can involve inter-island trade, e.g. there is regular import of timber to Leyte from Mindanao. Timber producers such as CBRM groups also have the

potential for low-level value-adding, providing funds can be obtained to provide training and purchase the necessary woodworking tools. If manufacture of high quality furniture targeted at the export market is to be undertaken at the local level, through small to medium-sized firms, a number of issues will need to be addressed. Much greater assistance in the purchase of machinery and in providing training will be required to improve the quality of the furniture produced to bring it up to an export standard. Export markets will need to be developed. It is not feasible that individual small to medium-sized manufacturers based in regional centers will be able to do this; cooperative arrangements will be needed to coordinate and aggregate the furniture manufactured by a number of firms. With this type of arrangement also comes the need for quality control measures to be put in place.

Forest Protection Issues

An important issue in the use of native timbers in the Philippines is the need to protect remnant native forests from illegal logging. There are strong environmental reasons for protection of native forests, as well as pressures exerted by foreign banks and NGOs. The DENR, which administers both environmental management and timber production, faces considerable difficulty in controlling logging, and there are areas where control appears impossible. This creates a situation where '[t]here is still a tendency for forestry in the Philippines to be associated more with forest protection than with tree cultivation on small farms. Most farmers see foresters as solely involved in implementing the logging ban' (Lawrence, 1998, p. 81). For example it is difficult for the DENR to encourage value adding in farm and community forestry, because it becomes impossible to track the sources of the elaborately transformed products. Notably, some of the exotic timber species now being grown in the Philippines are well-suited to production of high-value furniture, and with these the concern over illegal logging does not arise. Mahogany is notable in this regard. But some of the acacias and eucalypts can also be used to produce high-quality furniture, as is now being recognized in Australia.

CONCLUDING COMMENTS

There is great potential for a high-value timber industry to develop in Leyte, with important employment and revenue benefits. A wide variety of native tree species exist which have excellent timber properties. Much can be learnt from research into smallholder forestry in other areas such as tropical Australia. There are also some particular characteristics of the Philippines that mean that any industry will have its own unique characteristics.

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