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Options for Teak Industry Development in South-East Sulawesi, Indonesia

SADI-ACIAR research report

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Australia Indonesia Partnership

Kemitraan Australia Indonesia

ACIAR's participation in the Australia–Indonesian Partnership

The Australia–Indonesia Partnership (AIP) supports Indonesia's reconstruction and development efforts, both in and beyond tsunami-affected areas. Assistance will involve long-term sustained cooperation focused on economic and social development.

As part of the AIP, the Smallholder Agribusiness Development Initiative (SADI) aims to improve incomes and productivity for farmers and agribusiness, in response to market opportunities, in four eastern provinces—East Nusa Tenggara, West Nusa Tenggara, South East Sulawesi and South Sulawesi.

ACIAR's commitment to SADI focuses on supporting market-driven adaptive research, improving the transfer of knowledge and developing the capacity of key institutional stakeholders. This commitment will overcome constraints and barriers that prevent smallholders and agribusinesses successfully engaging with the market.

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Cover photograph: Teak boards air-drying in a village setting, Konsel District. These boards are cut from roughly-squared logs using a manually-guided chainsaw. The wide kerf of the saw, and the inevitable inaccuracies of the guidance, result in a significant loss of high-quality wood. (Photo DSCN2186)

Frontispiece: The study area. The red circles indicate urban centres visited; the red stars indicate sites of field visits.

Contents

Study objectives

1. Assess the market prospects for teak in South-East Sulawesi, and commercial potential for expansion of smallholder involvement in the industry
2. Identify social, economic and technical constraints to higher economic returns from the teak industry in South-East Sulawesi, for example:
    - Community attitudes
    - Financial and investment constraints
    - Technical impediments with respect to, for example:
        - Silvicultural management, including use of mycorrhizae
        - Availability of superior germplasm, especially selected clones
        - Use of intercropping systems, especially with spices
        - Integration with pasture production
    - Processing and manufacturing limitations
3. If warranted, provide recommendations on ACIAR-supported activities, focused on South-East Sulawesi, that will link to related projects in Indonesia supported by ACIAR and others
4. Identify appropriate South-East Sulawesi partners for any new activity suggested.

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- In Kendari, Ir Suhendro Basori, Section Chief with the Sulawesi Tenggara Provincial Forestry Office, shared a professional commitment to effective community management of teak plantations and offered every collaboration and support.
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- At the Australian National University, Dr Lesley Potter, Visiting Fellow, Research School of Pacific and Asian Studies, offered valuable advice and many practical tips.

Abbreviations

ASMINDO	Indonesian Furniture Industry and Handicraft Association
CBO	Community-based organisation; village association
CIFOR	Center for International Forestry Research
CSO	Clonal seed orchard
FOB	Free on board
FORDA	Forestry Research and Development Agency
FSC	Forest Stewardship Council
GIS	Geographic information system
ha	Hectare
HTR	Hutan Tanaman Rayat (Community Forestry Program)
ICRAF	International Centre for Research in Agroforestry (World Agroforestry Centre)
IFC	International Finance Corporation
JAUH	Jaringan Untuk Hutan (network for forests)
KHJL	Koperasi Hutan Jaya Lestari (district cooperative)
Konsel	Konawe Selatan District, South-East Sulawesi
KPH	Kesatuan Pengelolaan Hutan (Forest Management Unit)
M	Million
m	Metre
mai	Mean annual increment
NGO	Non-government organisation
pa	Per annum
PENSA	Pengembangan Usaha (Program for Eastern Indonesia SME Assistance)
PP	Perum Perhutani (state-owned forest enterprise)
RECOFTC	Regional Community Forestry Training Centre
sed	Small-end diameter
SKSHH	Surat Keterangan Sah Hasil Hutan (letter of legal forest product)
SPA	Seed production area
SSO	Seedling seed orchard
TFT	Tropical Forest Trust
WTO	World Trade Organization

Currency (May–July 2007)

(ex Forex)

US$1.00 = Aus$1.19

US$1.00 = Rp8964

Aus$1.00 = Rp7574

Summary

Indonesia is one of the world's largest growers of teak (*Tectona grandis*), with an estimated 1.7 M ha of teak plantations accounting for about 31% of the global plantation resource of teak, 5.7 M ha. This national teak resource supports an export furniture industry worth over US$1.8 billion annually. Up to 3.1 million households are involved in teak growing through farm forestry operations.

Teak has a long history as an exotic plantation species in Indonesia, where it is believed to have been introduced some 800 years ago. For over 400 years, teak has been grown in intercropping systems in South-East Sulawesi where it is a common part of local farming systems.

Teak is important in South-East Sulawesi and 'Muna teak' (from the island of Muna) enjoys considerable market credibility. Emerging community involvement in forest management, consistent with evolving Government of Indonesia policies, will see increasing areas of teak planted in South-East Sulawesi. Supporting this expansion in the Konawe Selatan District is the Tropical Forest Trust, which seeks to link furniture retailers in the markets of Europe and North America with growers of FSC-certified wood. TFT has successfully supported a forestry cooperative to gain FSC certification for their planted teak resource.

It is unlikely that there will be an expansion of secondary teak processing in South-East Sulawesi because of a lack of skills, poor export-orientated infrastructure and lack of scale. The expanding teak resource from South-East Sulawesi will be essential, however, to the maintenance of established and sophisticated processing facilities in Java. There are opportunities to improve primary log processing in South-East Sulawesi and to consider export of rough-sawn, kiln-dried lumber rather than squared logs.

There is a strong rationale for ACIAR to become involved with the expansion of the teak resource in Sulawesi. Teak grows well in eastern Indonesia and there are few technical constraints; it fits with long-established local traditions and conditions and with local industry and land use patterns; people from all walks of life can participate as most people in rural areas have access to land; the teak industry is mature and future prospects are bright; and teak enjoys strong support from the communities and the local governments.

ACIAR is in a position to offer considerable assistance to the smallholder teak growers in South-East Sulawesi through support for existing social forestry initiatives in the province and for ensuring that initiatives in growing teak are linked with the markets. A broad suite of opportunities has been identified including socio-economic studies and assistance in the establishment of reliable inventory systems, in improving cultivation options and intercropping alternatives, in improving primary processing and the use of log off-cuts, and in demonstration plantings of alternative plantation species.

Several potential partners have been identified for ACIAR-supported initiatives, including Universitas Haluoleo (Unhalu); the Tropical Forest Trust; the Centre for Biotechnology and Forest Tree Improvement, Forestry Research and Development Agency (FORDA), Yogyakarta; the Provincial Forest Service, Sulawesi Tenggara; the Center for International Forest Research (CIFOR); the World Agroforestry Centre (ICRAF); SENADA: Indonesia Competitiveness Program; and the Gadjah Mada University.

Introduction

Teak in Indonesia

Indonesia has an estimated 1.7 M ha of teak plantations and is one of the world's largest growers of teak (*Tectona grandis*), accounting for an estimated 31% of the global plantation resource of 5.7 M ha (Bhat and Ma 2004). Teak has a long history as an exotic plantation species in Indonesia where it is believed to have been introduced some 800 years ago. Most of the teak plantations have been established on Java, where the largest grower is Perum Perhutani (a state-owned forest enterprise) which manages over 1 million ha of teak-bearing plantation forest with a net area of teak estimated to be 600 000 ha (ITTO 2006). In addition to the Perum Perhutani plantations, there are significant areas in community plantations and private smallholdings — Nawir and Manalu (2006) estimate that some 1.2 M ha are committed to farm forestry in Indonesia, primarily under systems growing teak. Outside Java, teak is popularly grown in the provinces of South Sulawesi, South-East Sulawesi and East Nusa Tenggara, where over 60 000 ha are in formal plantations and extensive areas in smallholdings. Teak is among the most popular tree species for smallholdings, confirmed by a recent survey by the Central Bureau of Statistics (ITTO 2006).

Commercial teak plantations are dependant upon community involvement during establishment. Teak is commonly interplanted with agricultural crops such as maize in a system widely known as 'taungya'; this formed the basis for the social forestry system introduced by the Ministry of Forestry through Perum Perhutani in Java in the 1980s (Hindra 2005).

Teak production and furniture manufacture are major industries in Java, where logs and timber sales total over 600 000 m^3 annually, harvested from an estimated 8000–10 000 ha (Suhaendi 1998). A recent proposal to ITTO suggested that the demand for teakwood for the furniture and flooring industries in Java was 8.2 M m^3 annually, whereas the supply was only 2.7 M m^3 — just 33% of demand (ITTO 2006). Production from farm forests has become an important part of teak supply, and an estimated standing volume of 23.8 M m^3 could potentially be harvested (Nawir and Manalu 2006).

Community-grown teak plantations usually have much shorter rotations (<20 years) than those grown commercially by government agencies, and they lack silvicultural inputs such as thinning and pruning. It is uncommon for genetically improved germplasm to be used for community plantings. Young trees from community plantations are clearly different to those from long-rotation plantations: the trees have shorter clear boles, more knots and smaller diameter, and fetch lower prices.

South-East Sulawesi

The province of South-East Sulawesi consists of the southern and south-eastern part of Sulawesi Island and off-shore islands (frontispiece). It has a total area of about 38 140 km^2, and is divided administratively into four regencies, one municipality and an administrative municipality, 64 districts, 165 sub-district and 644 villages (Table 1, Anon. 1999). In 2000, the province had an estimated population of 1.8 million (Table 2, Anon. 1999).

Potter and Lee (1998) observed that:

By Indonesian standards, it is a small, undeveloped province which has struggled to attract outside attention. Historically the two islands off the south coast of the mainland peninsula, Muna and Buton, were the centre of population and activity. The sultanate of Wolio (or Buton) was located at Bau Bau on Buton island, an important stopping-off point for ships travelling to and from the spice islands of Maluku. At that time the mainland peninsula was sparsely populated, occupied by the Tolaki people on the east coast and the Mekongga in the west around Kolaka. Isolated tribes resided in the mountainous north.

After South-East Sulawesi was declared an independent province in 1964 the provincial capital was built at Kendari, marking a shift of economic activity and political power to the mainland. While Muna and Buton still have the highest densities in the province, Kendari is now the most populous regency and Kendari and Kolaka are experiencing rapid population growth of around 4 and 5% per annum. Much of this growth has been due to transmigration from Java and Bali. In the last 10 years alone 59 000 formal transmigrants have been relocated to South-East Sulawesi. There are also considerable numbers of Bugis and Bajau people living around the coasts. The province has a population density of about 38 people per square kilometre.

South-East Sulawesi's economy remains small. There is a large government sector, very little manufacturing and only modest trade … Central government grants make up a large percentage of regional expenditure. Nickel and fish constitute 99% of international exports … Most of the population, however, earns its livelihood from subsistence-oriented smallholder agriculture. They engage in dryland swidden farming of rice, corn and cassava, supported by the exploitation of forest products or fishing and the management of estate trees and livestock (cattle and poultry). Yields of both food crops and tree crops are low because of infertile soils, limited use of inputs and minimal maintenance. Farmers keep their food crops for household consumption and sell tree crops and forest products for cash. Crops sold are traded with other islands. Seventy-eight per cent of inter-island exports from South-East Sulawesi are estate crops, mostly grown by smallholders. They include cashew, copra, cotton, kapok and cocoa. Another 10% are forest products, primarily sawn timber and rattan.

Table 1. Administrative structure, province of South-East Sulawesi

No.	Regency	Capital	No. of —		
			Districts	Sub-districts	Villages
1.	Kendari	Unaaha	18	22	290
2.	Kolaka	Kolaka	10	27	99
3.	Buton	Bau-Bau	19	37	160
4.	Muna	Raha	12	30	95
5.	Municipality of Kendari	Kendari	3	26	-
6.	Administrative municipality of Bau-Bau	Bau-Bau	2	23	-
	Total		64	165	644

Table 2. Population ('000) of the province of South-East Sulawesi, 1990–2000

Regency	1990	1996	1997	1998	1999	2000
Kendari	192.1	630.0	655.0	680.4	706.8	733.8
Kolaka	241.6	317.4	332.3	345.7	360.5	375.9
Buton	395.7	437.2	443.4	449.5	455.4	461.4
Muna	227.9	258.8	263.7	268.6	273.4	278.2
Total	1357.3	1643.4	1693.4	1744.2	1796.1	1849.3

Figure 1. (a) Economic activity on the small islands around Sulawesi is greatly constrained by costs and difficulties of communication and transport (2161)**; (b) Ancient teak tree, Napabalano Nature Reserve, Muna; at 350 years of age this tree is probably amongst the oldest planted teak in the world** (2065)**; (c) the forest office built of teak in 1910 in Raha, the capital of Muna District and the original capital of South-East Sulawesi** (2098)

The topography of South-East Sulawesi is dominated by hills with over 60% of the province on slopes >15° (Figure 1). The geology is largely sedimentary (>67%) and the soils are dominated by red-yellow podsolics (>60%) (Anon. 1999).

The climate of the province is dominated by the wet and the dry seasons. The highest temperature in the province is about 31°C, the lowest 19°C and the average 25–27°C. The rainfall in South-East Sulawesi varies across the province and divides the province into two zones: the wet zone, with total rainfall of >2000 mm per year (Kendari–Kolaka, and the northern parts of Buton and Wakatob) and the semi-dry zone, with a total rainfall of <2000 mm per year and typified by strong seasonal drought (Kendari and Kolaka and

southern part of the South-East Sulawesi peninsula). There is an average of 109 rain-days per year.

Low and unpredictable rainfall, small population and shortage of extensive tracts of flat land have deterred development of large-scale agricultural estates.

Teak in South-East Sulawesi

In South-East Sulawesi province, particularly on Muna Island, teak plantations are a common part of the rural landscape and have been established for over 400 years. Potter and Lee (1998) offered a historical perspective to teak introduction to Muna:

> Dutch colonialists speculated that they were natural, while others said they were brought from Java by a trader from Maluku. It is now widely believed that the first Islamic king of Tiworo in Muna's north-west was given teak trees by the Sultan of Demak in Central Java when he made a pilgrimage to the sultanate in the sixteenth century. Upon returning to Muna he decreed that farmers should replant their fields with teak after cultivation, leading to its rapid spread. Whether true or not, this story's popularity reveals the immense significance of Muna's teak forests to the modern inhabitants of South-East Sulawesi. Muna's teak is a living reminder of their historical connection with the centre of Islamic religion (Demak) and the centre of power (Java) in the Indonesian nation. This is a source of immense pride for a strongly religious people living in an undeveloped and neglected province who are conscious of the need to establish their place and identity in the modern state. Prior to this century the Sultan of Buton prohibited ordinary citizens from cutting teak, reserving it for royal purposes.

The teak resources on Muna reached an estimated 60 000 ha at one stage, 10 000 ha of which were on private lands. In 1969, the local government committed to expanding and managing the teak plantations with funds from the central government. This forest rehabilitation program was continued until 1982, particularly in Konsel where some 32 000 ha of teak plantations were established. Between 1982 and 1999, the project was renamed and managed under a Timber Estate Development Program.

During Indonesia's reformation period 1997–1998 it was not clear which level of government had primary responsibility for management of the teak resources in South-East Sulawesi. The local provincial forest service was unable to take a firm stand and in the absence of strong government control, the planted teak forests in Muna and Konsel began to be cleared by widespread illegal logging. The resource on Muna was reduced to 21 000 ha. Around 1999–2000 the Konsel teak plantations that were planted in the 1970s were mature enough to harvest and these also attracted illegal loggers, reducing the stocked areas to about 8000 ha.

In the 1980s large plantations were established as part of government-sponsored rehabilitation projects, and these are in the process of conversion to community management through the Ministry of Forestry's HTR Program. An estimated 30 000 households are involved in teak growing in South-East Sulawesi (Nawir and Manalu 2006).

The Government of Indonesia has legislated to provide community forestry rights to state forests and will engage in a comprehensive benefit-sharing arrangement. For community (or privately) managed plantations on state land, the state will involve commercial banks to offer loans to cover the cost of establishment (currently Rp7 M per ha or ~Aus$1100.00). This will be treated as a non-commercial loan to the grower to be repaid at harvest when 15–20 years old. The only subsequent tax (benefit) taken by the Government is a 10% log tariff (taken as 10% of the Government value for a particular wood — generally less than the market rate).

Figure 2. (a) Teak seed, Perun Perhutani, Cepu, Java, ex clonal seed orchards: in 2006, Perum Perhutani collected 41 tonnes of clean teak seed (2260)**; (b) and (c) Teak germinants and seedlings at Pelangang Nursery, Konsel District** (2181, 2177)

Because of the diversity of stakeholders in community forestry, all parties have recently agreed to create a Provincial Commission on Social Forestry chaired by the Head of the Forestry Department. This took over two years of negotiations to set up, but now includes most stakeholders and sectors — agriculture, livestock, horticulture. A network of concerned local NGOs, JAUH ('Jaringan Untuk Hutan' or network for forests) is represented and it helped to form the district cooperative KHJL ('Koperasi Hutan Jaya Lestari') which is central to the work of the Tropical Forest Trust in Konsel (Konawe Selatan District). JAUH helped to provide training in management of the KHJL cooperative.

Only 30% of the plantations established in Konsel prior to 2002 are now in existence — that is, ~8000 ha out of 24 538 ha — due mainly to encroachment and indifferent management.

Under the new community forestry agreements with the cooperative in Konsel, the provincial forest service will still help with specialist activities such as roads and protection — issues which require infrastructure and technical capacity. Although the cooperative will be responsible, the forest service will make contributions via assistance with annual management plans, harvesting plans, inventory, etc. Fifteen-year-old teak is being used as the benchmark for the future of community plantations.

The species that can be planted under the government's community forestry initiatives are limited — teak is favoured (Figure 2) but alternatives include fruit trees, eucalypts and species such as jatropha (*Jatropha curcas*, a tropical oil-seed plant of potential use for bio-diesel).

The government process of permits will continue for community plantations. The community will apply to the district forest service for permits to cut their trees. The forest service will conduct an inventory and then provide the permits specifying cutting plans. After harvesting the trees, a report is prepared describing the species and volume cut and this is submitted to the district forest service. This report is assessed against what the forest service measures on the ground and a wood origin certificate is then issued which allows the logs to be traded freely. Annex 1 demonstrates the administrative process for harvesting trees and moving logs from the forest to the processing plants. Annex 2 demonstrates the costs which have to be met along the value chain from the forest to the factory.

The attractiveness of teak plantations as a land-use alternative is clearly understood by the many households that plant and manage teak in South-East Sulawesi. Among the reasons offered by community members for teak's attractiveness were:

- easy to plant and establish
- simple to manage
- easy to manage if the grower is away (job in the city, absentee landholder, migrant labour, work on other islands, etc.)
- requires few additional inputs after establishment
- stable markets
- excellent prices — steadily increasing at a time when prices for other commodities (cacao and cashew) are constant
- can be harvested when convenient to the grower
- acts as a de facto bank account.

This community rationale for planting teak is consistent with that of teak smallholders in northern Lao PDR (Midgley et al. 2007).

The financial attractiveness has been further demonstrated in a study by IFC/PENSA (Triple Line Consulting 2005) which studied the cash flow for a notional hectare of teak plantation on Java (Table 3).

Table 3. Derived cash flow (Rp × 1000) of 1 ha of teak plantation over a 20-year rotation

Year	Cost item						Total costs	Income	Net cash flow
	Seeding	Planting	Fertiliser	Pruning	Weeding	Land rental			
1	11 100	3 000				500	14 600		–14 600
2			1 332	83	600	500	2 515		–2 515
3			1 332	83	600	500	2 515		–2 515
4			1 332	83	600	500	2 515		–2 515
5			1 332	83	600	500	2 515		–2 515
6						500	500		–500
7						500	500		–500
8						500	500		–500
9						500	500		–500
10						500	500		–500
11						500	500		–500
12						500	500	4 140	3 640
13						500	500		–500
14						500	500		–500
15						500	500	2 550	2 050
16						500	500		–500
17						500	500		–500
18						500	500		–500
19						500	500		–500
20						500	500	288 000	287 500
Total	11 100	3 000	5 328	333	2400	10 000	32 161	294 690	262 529

The study concluded that:

> …this cash flow gives a Net Present Value (NPV), with a cost of capital of 12%, of Rp10.7 million (US$1120) per hectare of plantation. The internal rate of return (IRR) is over 14%. This cash flow also includes the cost of land rental to the farmer. The cash flow ignores any sales price increase over and above standard inflation. Over the last five years, teak prices have consistently increased at a higher-than-inflation rate so the likely return will be higher than this. If the land rent is removed, the NPV rises to Rp14.9 million and the IRR to 16%. This shows that it is a fairly robust project and probably worth investing in.

Figure 3. (a) Teak is an intimate part of farm life in Sulawesi: a scene north of Raha, Muna Island (2072)**;**
(b) Teak intercropped with maize, planted 2005; Passar Sore, Java (2305)**;**
(c) An indigenous agroforestry system, Konsel District: *Gliricidia sepium* as a cover between crop rotations. The cover crop competes with weeds between agricultural rotations, lessening the work needed to establish the succeeding crop, which in this case includes teak (2200)

In Konsel, the rationale for the community enthusiasm in teak (Figure 3) lies in the high expectations that people have — a single ha of teak (@ 4 m × 4 m spacing) at age 15 years is commonly believed to have a value of Rp1.3 billion as squared logs at the farm gate. Logs are squared by the growers using chainsaws or via contract on the farm. These figures are high (they suggest a mai of over 20 m^3/ha) and need to be confirmed to avoid expectations being unfulfilled. A more credible mai for well-managed community teak plantations would be 13–14 m^3/ha.

Of note in smallholder teak plantings was the reluctance for smallholders to undertake silvicultural thinning — they believe that all trees have economic worth and are reluctant to cut trees (for whatever reason) unless they can be sold.

Figure 4. (a) Perhutani teak plantation, Passar Sore, Java, planted 1956 (2292)**; (b) mature teak is girdled two years before felling to reduce the weight of the crown and log, reducing damage at felling** (2282) **(c) Log yard, Perun Perhutani, Passar Sore** (2298)

This will offer challenges to silvicultural research and may require reimbursement for trees fallen in any silviculture demonstration. This finding is consistent with those from northern Laos (Midgley et al. 2007).

Teak logs are graded into three broad categories, with a minimum 1.1 m length — A1, A2, A3:

- A1: <20 cm sed
- A2: 22–28 cm sed
- A3: >30 cm sed.

Growers cut logs to maximise the number of A3 logs. Prices vary from site to site, from farm gate to log yard, and whether or not the logs have been squared and have any defects.

Notional prices received by growers in Muna were:

- A1: <20 cm sed and sell for Rp1.2 M/m^3
- A2: 22–28 cm sed and sell for Rp1.8 M/m^3
- A3: >30 cm sed and sell for Rp2.2 M/m^3.

A market premium is emerging for certified teak logs. Members of the Tropical Forest Trust are now specifying Konsel teak in orders for the European market and are willing to pay higher prices to gain certified teak for their products. For certified logs from the TFT-supported cooperative in Konsel, notional prices for squared teak logs were:

- for certified squared logs: Rp1.5 M/m^3 at farm gate and Rp5.3 M/m^3 FOB
- for non-certified logs: Rp0.5–0.7 M/m^3 at farm gate and Rp1.5 M/m^3 FOB.

The problem with the non-certified trade is that is includes a lot of logs illegally removed from government forests.

Availability of Teak Germplasm and Nursery Capacity

Forest services at all levels were aware of the need to offer growers high quality germplasm. In South-East Sulawesi, some 50 ha of teak seed production area (SPA) was seen on Buton and 37 ha at Muna. It was reported that an SPA had also been established in Konsel, but it was yet to produce seed.

Perhutani, operating in Java, has 1300 ha of clonal seed orchards (CSO) varying in age from 23 to 11 years which produce 20 tonnes of seed annually. Bulk samples of this CSO seed is available for Rp850 000 /kg (≈US$100). The low productivity is a result of variation in timing of fruiting between different clones. Flowering occurs in January–February and seed is ready to collect in July–September. No problems were seen in exporting samples of seed.

In 2006, Perum Perhutani produced a total of 41 tonnes of clean seed (from a total of 53 tonnes of seed collected) — 33 tonnes were used for routine Perhutani operations, 3 tonnes used for public relations, and 5 tonnes were available for public sale. Viability of seed is about 65%.

Perhutani has collected vegetative material from 600 candidate plus trees from throughout Indonesia, including Muna, and established replicates in clonal banks at Cepu, Java. Protocols for propagation via tissue culture have been developed for 12 of these clones — these can be made available as rooted propagules.

For access to Perhutani seed and tissue cultured clones, contact:

> Ir Sudarsono MBA
> Kepala Pusat Penelitian dan Pengembangan Perhutani,
> Jln Wonosari – Batokan
> Cepu, Kahupaten Blora
> Jawa Tengah 58302, Java
>
> Ph: +62 296 421233
> Fax: +62 296 422439
>
> Copies to Ir Sarkoro Doso (Deputy Director, Development) and Ir Wahid (Deputy Director, Research)

The central government has funded the establishment of advanced teak nurseries in Konsel, Muna and Buton Districts, each with a capacity of two million plants.

Community Interaction and the Role of the Tropical Forest Trust

In Konawe Selatan District (Konsel), people from 46 villages in four sub-districts formed a cooperative called 'Koperasi Hutan Jaya Lestari' (KHJL) in 2003. This cooperative is staffed by people from Konsel. The cooperative was formed in response to the proposed new Government of Indonesia (GoI) legislation on community forestry whereby communities can be permitted to manage state forests. Community groups were formed in each village and this created the basis for sub-district fora which led to a district forum. The Forest Department has a number of areas totalling 38 959 ha in the pipeline for community forestry permits. The need was felt for an umbrella organisation for the district through which the communities could operate and negotiate — organise cutting permits, liaise with NGOs, etc. After formation of KHJL, however, confusion remained regarding the status and interpretation of the community forestry legislation, so the permits allocating forest management responsibilities to communities were not issued.

The NGO, JAUH, and TFT came to the district in 2004 to assess the potential for teak. A memorandum of understanding was signed between KHJL and TFT to work towards certification of the community-owned teak resource. Thus KHJL accidentally moved from management of community forests to certification of privately-owned plantations. Of the original 38 959 ha planned for allocation, 24 000 were designated teak plantation, 30% of which (8000 ha) was stocked. Within the 46 villages, forests in 12 were certified (involving 192 households). TFT and JAUH offered training to KHJL (and its members) in forest management, nursery technology, silviculture, financial management, use of GIS and corporate management.

Since gaining FSC certification in 2005, 20 containers of certified squared teak logs have been sent to manufacturers in Java. In 2006, 13 more units (villages or groups of villages) were added to the certified area (now totalling 25 units and 571 households), making the certified teak resource 575 ha (Barr 2006).

Within the original 38 959 ha, only 28 116 ha are eligible to be covered through the GoI HTR Program (Community Forestry — Hutan Tanaman Rayat) which has enabling legislation at national level.

Within KHJL, there are three departments:

- Management and Marketing of Forest Products (primarily teak)
- Savings and Loans
- Animal Husbandry. The cooperative had been provided with 100 cattle under a GoI livestock program.

The cooperative also acts as a facilitator for its members in dealing with other GoI programs for agriculture, horticulture and agricultural commodities such as cashew, cacao and pepper. The cooperative has also formed a Women's Group to look after the needs of women in the community, and so far has run short courses on vegetable seeds and teak nursery techniques.

The Savings and Loans Department of KHJL appeared to be struggling. One of the attractions of the cooperative for members was the possibility of obtaining loans during times of household need (the wedding of a child or the death of a family member). Unfortunately the

cooperative does not currently have the resources to finance this expectation. As things are currently run, there are loans repayments on the 7th, 15th and 21st days of the month. In between, no funds are available. The president does his best to locate alternative sources of finance for members in financial need, but the prevailing commercial interest rates are apparently a disincentive (6% pa vs 3% pa via the cooperative). The members of the cooperative mostly possess significant assets in the form of teak trees. There appears to be an opportunity to put in place a micro-financing scheme which builds upon the corporate structure of the cooperative and the tree assets of its members — members who might be cash poor but asset rich (through their trees). The area of microfinance for the cooperative is still emerging and members are unsure of what models will be most suitable for their needs. The senior administration of KHJL indicated that they would appreciate independent advice on alternatives available to them. ACIAR could realistically examine various micro-finance options for poor villagers with tree assets.

The cooperative has a database that records which members have what tree resources. There is a great local enthusiasm to plant teak — when they began in 2003 the membership agreed to plant 10 trees for every tree cut — now they have members who are suggesting that 1 ha be planted for every tree cut! The broad community within the district — from senior civil servants, to policemen and farmers — is involved in teak planting and KHJL expects its membership (currently more than 500) to increase as new resources mature.

Teak Trade and Processing in South-East Sulawesi

Almost all of the wood processing industry in South-East Sulawesi consists of sawmills, with only small value-adding facilities (furniture, local carpentry) to meet domestic needs. Most teak leaves Sulawesi Tenggara as green, rough-sawn lumber or squared logs (Figure 5a).

Sawmills are spread across the province, and they transport their squared logs or sawn lumber (Figure 5b) to Kendari for shipment to Java in containers. In 2004 there was a profitable export market for green rough-sawn lumber to Hong Kong, Taiwan and China — exports totalled US$6.7 M for that year (FOB average of US$634 /tonne). In an effort to prepare Indonesia for WTO membership, the national Trade Department decreed that all sawn lumber exports must be kiln dried. With this requirement, the producers in Sulawesi Tenggara could not compete and in 2005 the trade dropped to US$81 000 (FOB average US$653 /tonne). The Trade Department is running a promotion to attract value-adding industries to the forestry and wood industries sector, but there do not appear to be the economies of scale that are available in centres on Java such as Surabaya and Semarang (Figures 5c, 6c). In addition, the local infrastructure to handle containers and connect directly with international ports is limited. There is also a lack of local expertise in dealing with sophisticated international wood product markets.

International trade is encouraged by the administration in the province, but is hampered by poor infrastructure and the need to tranship exports via the large ports in Java. The Trade Department would like to promote more kiln drying in Sulawesi to standards required by the processors in Java. In the short term it is difficult to see how processing industries in South-East Sulawesi could compete with the large and sophisticated (and well-established) furniture industries in Java.

This conclusion is shared by the processing industries, which have relocated to other areas or limit their business to the export of squared logs.

Figure 5. (a) Squared logs ready for collection, Konsel District (2209)**; (b) Sawn teak stock prepared by village carpenters, Konsel District** (2189)**;**
(c) plantation-grown mahogany for door panels, Perhutani manufacturing unit, Cepu, Java (2224)

Figure 6. Examples of teak furniture. (a), (b) Local teak furniture, Konsel District (2196, 2194)**;**
(c) Outdoor furniture for export, Perhutani manufacturing unit, Cepu, Java (2213)

The Teak Supply Chain and the Furniture Business

Indonesian teak is primarily used in the furniture industry. From 2000 to 2005 the Indonesian export furniture industry grew by 17%, and is now worth US$1.8 billion annually (Development Alternatives Inc. 2007). The largest markets are the USA and Europe.

The teak supply chain is complex and not for the faint-hearted. The IFC/PENSA project, in their worthy 'Sawn Timber Supply Chain Study', outlined the documentation required for the legal movement of teak logs and sawn timber on Java — irrespective of whether the trees had been grown on private land (Figure 7). This complexity is mirrored by that recorded by the Tropical Forest Trust (Annexes 1 and 2) and Perum Perhutani (2001).

The PENSA report also provided a diagrammatic representation of the teak supply chain, confirming the complexity (Figure 8).

Industries processing teak make an important contribution to the local economies of many districts in Java. The prosperity of these industries depends upon the reliable supply of teak logs from Java and outer islands such as Sulawesi. Triple Line Consulting (2005) reported great difficulty in assessing the precise number of teak-based industries. There are many unregistered and unmonitored sawmills and furniture manufacturers. Rough estimates suggest that:

- there are about 6000 medium to large-scale furniture companies in Indonesia of which 2300 are based in Central and East Java
- only 678 actively export their products
- in Central Java alone there, are over 8400 furniture and handicraft manufacturers of all scales
- up to one million small and home-based unregistered industries act as sub-contractors to larger enterprises.

One of the most vibrant centres for manufacture of teak furniture and carving of teak wood is Jepara, Java, which has over 1500 enterprises which process teak wood. Wood furniture exports from Jepara alone were worth over US$123 million in 2005.

Typical teak-based enterprises

A small enterprise

The business described below is typical of the small family-run enterprises in Jepara, Central Java.

The factory used only planted trees as the resource base — primarily teak with some neem (*Azadirachta indica*), *Dalbergia speciosa*, mahogany and acacia — as directed by clients. They do not mix species in the furniture products. In recent times they have used durian wood and jackfruit wood (for window and door frames). Sometimes they market their own design to clients, but sometimes clients request a specific design. Most wood is purchased through a wholesaler who knows what their needs are and who attends to the multiple challenges of permits and shipping. They mix A1, A2 and A3 categories of teak logs into their products

depending on the product being made (i.e. table tops are made from A3, legs from A2 and the sub-frame from A1). Acacia has been used only occasionally at the request of a client.

Most of the product is for export. The offcuts are sent to their friend's factory — it has a finger-jointing/laminating facility. Material too small for finger-jointing is used for fuel to run kilns. Prices for residues vary with size, but are typically Rp6.5 M/m^3 = Rp2.2 M for a small truck load. The business buys quite a number of squared logs from Sulawesi. They have used *Acacia mangium* as a substitute for teak at the request of clients. Drying is a basic affair — in the dry season, planks are air-dried in the sun; in the wet season, an uncontrolled, wood-fuelled kiln is used.

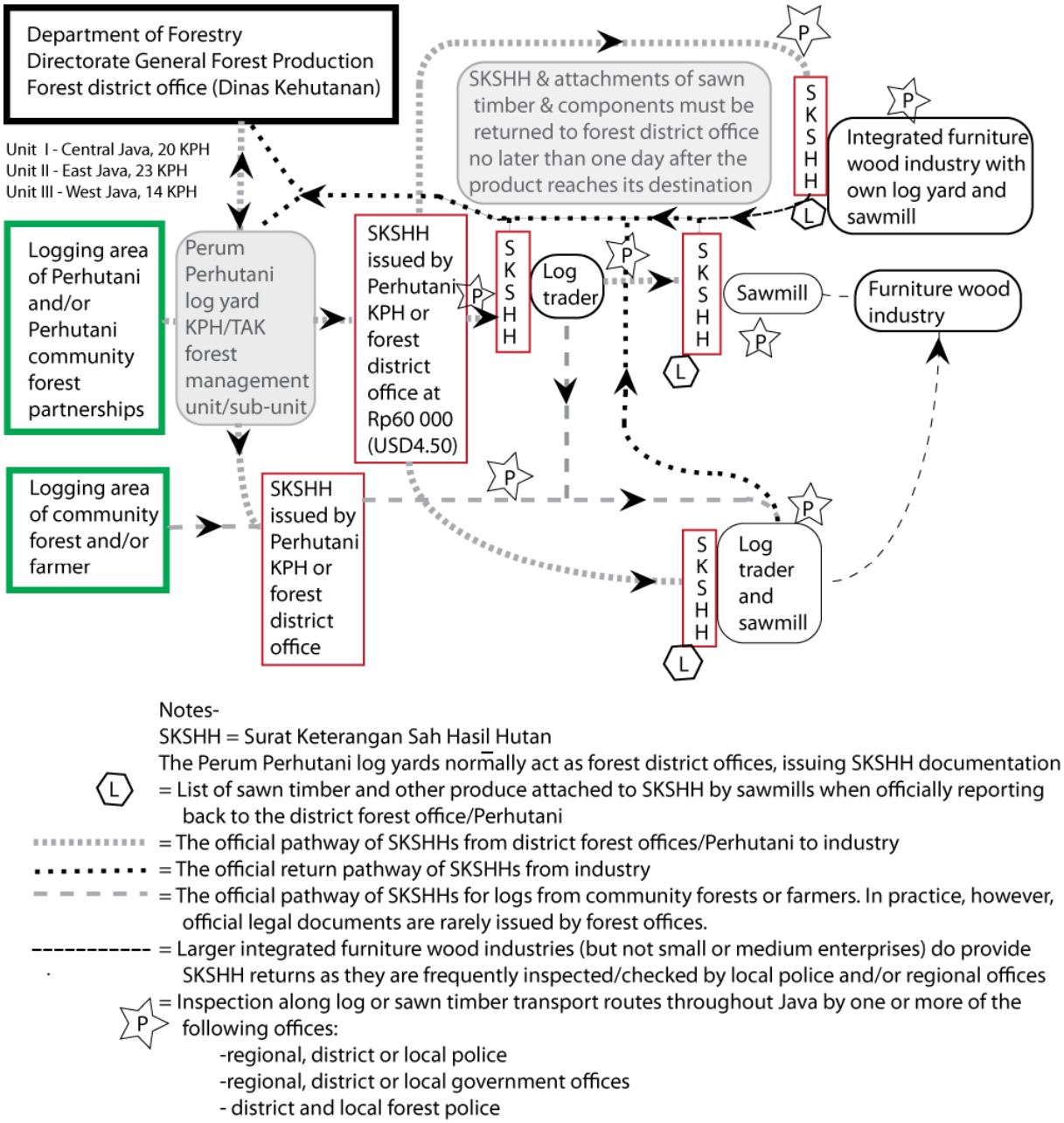

Figure 7. Documentation required for the legal movement of teak logs and sawn timber in Java (after Triple Line Consulting 2005)

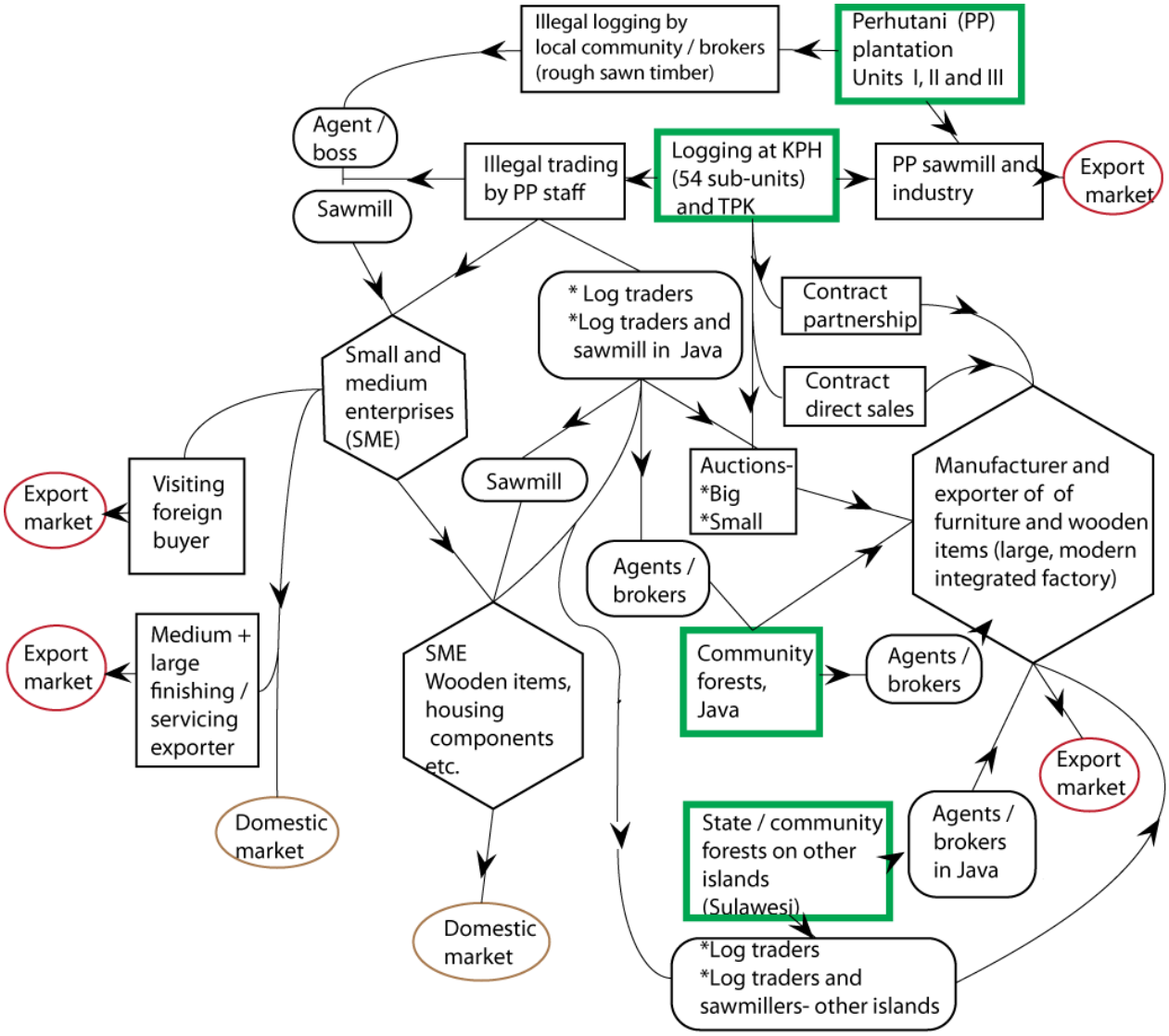

Figure 8. Diagramatic representation of the teak supply chain (after Triple Line Consulting 2005)

The owner prefers sun-drying as this keep the wood 'strong'. Export markets require a moisture content (MC) of 13–14%. If they use mahogany, the MC is 12–13%. Their teak furniture is stored in a warehouse for three months before shipment to help continue the drying process and to make sure that there is no cracking as the moisture content changes. The cost of delivered round logs of teak to their processing facility is about:

- A1 16–19 cm sed Rp2 M/m^3
- A2 22–28 cm sed Rp3.5 M/m^3
- A3 >30 cm sed Rp6.0 M/m^3.

Many of hundreds of small creative businesses are involved in wood carving and furniture in Jepara — using teak, mahogany, acacia (very little), *Dalbergia speciosa*, durian, mango, jackfruit and some *Samanea saman* — all planted trees. The sector is extremely competitive and creative in designs, using old and new styles combining new and old wood (e.g. old timbers from houses, railway sleepers) in very attractive furniture.

A larger enterprise

A larger sophisticated furniture manufacturing enterprise was represented by the Perum Perhutani Furniture manufacturing unit at Cepu, Java. This production unit of Perhutani uses primarily A3 grade teak and mahogany for its products that are sold into high-end markets in USA and Europe (with some in Jakarta). Logs are sawn in an adjacent sawmill to planks 30 mm thick. The timber is kiln dried — normally for one week — to a MC of 8–12%. The unit uses wood from Perhutani plantations only. The delivered cost of logs to the sawmill averages Rp4.5 M/m^3 for categories A1, A2 and A3.

Products include outdoor furniture, doors, flooring and indoor furniture such as tables and chairs. Polishing/finishing depends on the client's needs — normally no finishing for outdoor furniture. Extensive use is made of finger-jointing techniques using epoxy resins and polyurethane. Products spend two hours in the laminating press, are then allowed to cure for one day and then put through the thicknesser.

In the past the unit used only the best quality teak for niche markets — the A3 category. Expanded markets have necessitated the use of A2 and A1 categories (plus mahogany). The unit pays US$3800 /$m^3$ for rough-sawn A3 timber and an average of US$3200 /$m^3$ for A2 and A1 grades. As an average across all categories, recoveries are about 40%. The Director understands that private operators pay Rp4.2–4.7 M/m^3 for A3 squared logs from Muna and Rp3.2–4.0 M/m^3 for A3 logs from Javanese sources.

The factory uses mahogany grown in Perhutani plantations. This is popular in the markets and cheaper than teak.

Indonesian Furniture Industry and Handicraft Association (ASMINDO)

Indonesia's national association for furniture and handicraft, ASMINDO, has a strong presence in Jepara, Java (http://www.asmindojepara.com/news.php). The Jepara wood furniture and wood carving industry operates in a number of sub-districts (Tahunan, Jepara, Pacanan and others) and is a major contributor to the local economy. There are some 1500 small family businesses in the sector, with 300 large enough to have their own export businesses. Almost all of the industry targets export markets. After the Asian financial crisis 1997, there was a drop in the US dollar value of exports but the volume of exports has steadily increased (Table 4). The number of exporters has increased between 1999 and 2005, and there are more export destinations. Not all exporters are members of ASMINDO.

The woods most commonly used in Jepara are:

- Teak 60%
- Mahogany 25%
- Other species 15%.

In 2005–2006 several manufacturers used *Acacia mangium* for furniture, although drying was more expensive than for teak. Mahogany and teak are dried for 7 days to 8–10% MC; *A. mangium* takes 15–20 days to dry to 8–10% MC. This additional drying cost is significant for industries operating on small margins. Kilns are normally associated with sawmills and will serve a cluster of processors. Small furniture processors can hire these facilities if needed to get timber to required standards. The normal size of smallholder kilns is 5–10 m^3 and of commercial kilns, >20 m^3.

ASMINDO members were aware of the benefits of using certified wood and regarded certification as a serious issue. However, with many small processing industries and many large and small wood suppliers providing wood of many species, the management of chain-of-custody requirements is impossible. Only four or five of the larger members purchase their teak from certified sources.

ASMINDO is keen to develop a concept of a central warehouse which could supply members with certified wood — probably kiln dried, rough sawn. This could be used for orders from clients who specify certified wood. They have spoken with Perhutani about this and have sought USAID involvement via their SENADA project. SENADA is a four-year project financed by USAID to generate growth, jobs and income by increasing the competitiveness of Indonesia's major labour-intensive light manufacturing industries — including the furniture industry.

Table 4. Jepara's wood export industry

Item	Year						
	1999	2000	2001	2002	2003	2004	2005
Total value of exports (US$ million)	201.42	200.51	74.74	76.11	111.73	138.4	123.65
No. of exporting companies	221	358	436	451	410	408	402
No. of destination countries	64	68	71	88	82	84	81

Source: ASMINDO, Jepara. Based on Disperindagkoppn Kabupaten Jepara

The association felt that illegal logging was of main benefit to the larger wood users such as veneer mills, plywood mills and pulp mills. The furniture industries become the victims of the behaviour of these larger industries. ASMINDO wants greater publicity for the fact that that its members in Jepara use legal sources of wood.

The future was uncertain — members felt it difficult to find wood as the forest resource shrinks. They hope for the establishment of greater areas of plantations to support their industry. There is some pessimism regarding the supply of wood. Members preferred teak from agroforests and smallholders because prices are generally lower than those of Perhutani for logs of similar quality.

Rubberwood was not used by manufacturers in this area as the rubber plantations are far away.

Competition from Vietnam, China and others is a serious issue, but Jepara's natural advantage is in the skills of its wood carvers and the creativity which backs up the local industry. Maintenance of high standards and new creative products are important.

ASMINDO's view for the future included a wish for a centralised marketing/warehousing system for wood of a standard acceptable for its members — kiln dried, rough sawn and legal (preferably certified) — from a range of species.

Gaps in Existing Supply Chain Analyses

Supply chain analyses are an important part of the chain-of-custody requirements for certification. Currently available analyses of the teak supply chain focus on three general components: growing, processing and marketing (Figure 9). These analyses offer valuable information for these components and this information is being used operationally. An important additional component which has received little attention is that of harvesting and haulage.

Harvesting and haulage can typically represent 70% of the cost of wood delivered to the mill door. The processes between felling the trees on farms, and delivery at the mill (when processing studies typically begin) are almost entirely in the hands of small private enterprises and are poorly understood. Opportunities exist to study and understand this important component of wood delivery and identify possible efficiencies which might be gained. Questions which might be addressed are shown in Figure 10 and include:

- how are trees selected for harvest and how are they brought to roadside?
- who measures the trees and how are volumes agreed?
- how are the logs loaded and transported to the local log yard and subsequently to the port?
- who controls the shipping of logs from South-East Sulawesi to Java?

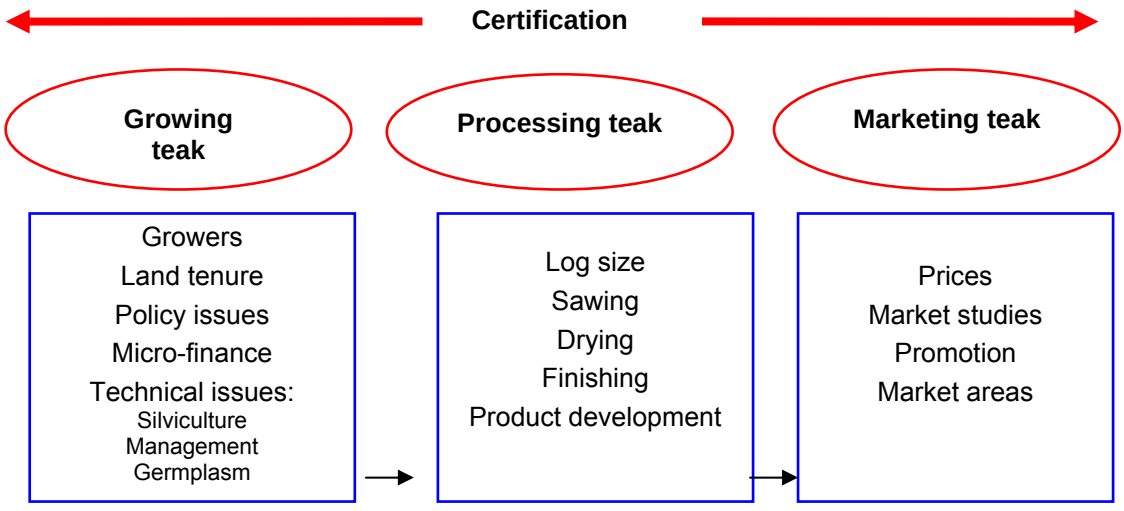

Figure 9. Components of existing supply chain analyses

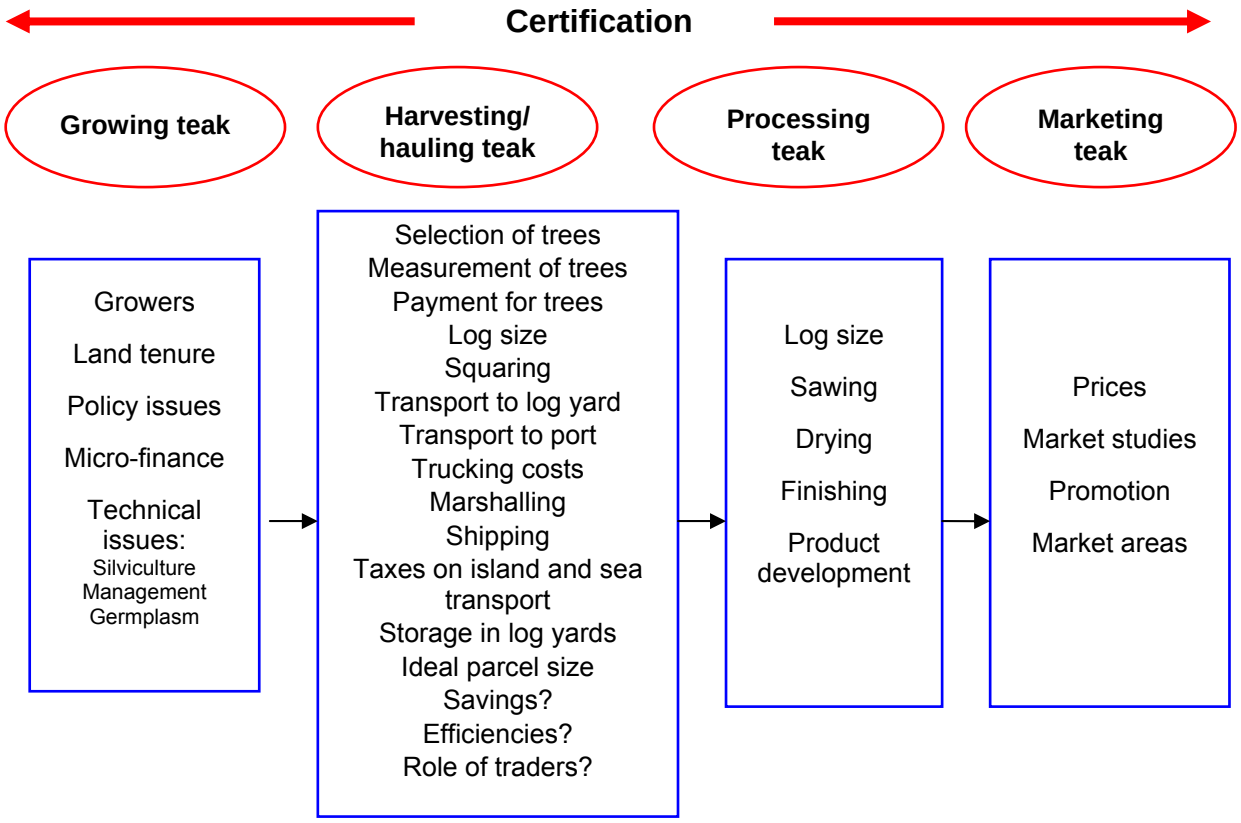

Figure 10. Suggested components for modified supply chain analyses

Conclusions and Recommendations

Market demand

Indonesia's export furniture industries are dependant upon reliable supplies of high quality wood, including teak. There is a strong and increasing market demand for teak in Indonesia and an emerging demand for teak which is certified to international standards. In response to this need, increasing numbers of smallholders are growing teak and the national resource of smallholdings has an estimated current area of 1.2 M ha (Nawir and Manalu 2006). Nawir and Manalu reported the latest statistics from the Ministry of Forestry and the Central Bureau of Statistics indicate that there are about 3.1 million households directly involved in farm forestry, including teak. This non-formal, farm-based resource is an integral part of the supply chain for Indonesia's exports of manufactured teak products.

In addition to the expanded plantings on private lands, emerging government policies in Indonesia facilitate the management of extensive areas of forest by communities. In South-East Sulawesi, it appears likely that over the next three years 24 000 ha of teak plantings will be assigned to community management. This represents one of the largest and most significant undertakings of this nature in the forestry world and is deserving of assistance.

In line with increasing demands elsewhere in Indonesia and fostered by the long-established links between teak growers in South-East Sulawesi and the processors in Java, market prospects for teak in South-East Sulawesi are promising. Commercial expansion of Indonesia's teak resource will be dependant upon an expansion of smallholder involvement in the industry. The success of this expansion and more effective engagement with international markets will require information and support to which ACIAR can contribute.

Community attitudes

The communities of South-East Sulawesi were very supportive of an expansion of teak smallholdings. The efforts of the Tropical Forest Trust (TFT) to effectively engage smallholders in the market chain are to be applauded. TFT's experience has demonstrated that increasing numbers of households believe that the long-term prospects for teak are good and are joining the forestry cooperative in Konsel District. This mission witnessed an increasing trust between provincial forestry authorities and communities.

Traditionally, teak plantations in Indonesia are routinely established using intercropping systems. In areas such as Java with high population densities and great hunger for land, such systems are very effective. South-East Sulawesi, however, is largely 'land-rich' but 'labour poor' — it has land for planting but few people to undertake cultivation and tending of intercrops. There may be possibilities for integration with pasture/animal production, but at this stage farmers suggested that they did not have the resources to purchase and look after significant numbers of cattle.

Technical issues

Indonesia has a long history in the routine management of teak plantations, most commonly on long rotations — 60 years or more. Smallholdings are managed on much shorter rotations (<20 years) and with fewer silvicultural inputs such as thinning and pruning. Whilst a shortage of germplasm was not reported, there did appear to be communication difficulties between those with quality germplasm and those who need to use this material.

Prospects for an ACIAR contribution

The study identified several areas where ACIAR-supported research would be able to make a significant contribution to the profitability of the teak business chain. The following themes for possible research collaboration were developed in consultation with communities, private processing companies, government agencies, research suppliers and NGOs:

In Sulawesi

- *Microfinance* — Opportunities for delivery of microfinance to teak growers who are cash poor but 'tree rich' and are limited under existing systems. Can the tree assets of smallholders become collateral in microfinance negotiations? What are the underpinning socio-economic factors for successful micro-finance systems?
- *Volume and yield tables* — Development of volume tables and form factors suitable for Konsel — are the yield tables derived for Java suitable? Are they suitable for trees grown in home gardens? Is the standard loss factor for conversion from standing volume to squared log volume (currently 30%) realistic? This factor was developed for squared logs prepared in mills — preparation via free-hand use of wide-kerf chainsaws is obviously more wasteful.
- *Assessment* — Accurate assessments of wood volumes from home gardens and teak smallholdings. What intensity of sampling (other than 100%) is acceptable? How to establish and maintain permanent sample plots? How to manage the resource and sustain reliable supplies to industry? How to inform industry of how much timber is available? Accurate estimates of annual allowable cuts are vital for industry planning and will influence market demand and negotiated prices.
- *Cash flow* — Alternative sources of income as teak matures. Are there ways of influencing or enhancing cash flows while teak matures, or during intercropping in years 1–3?
- *Labour supply* — Problems with labour availability in Konsel which has plenty of land and few people.
- *Resource allocation and management* — How to allocate equitably 24 000 ha of state forests under the proposed Social Forestry program in Konsel? If allocations are simply made at 1 ha per household, who gets the best hectare? Perhaps allocation to cooperatives or village associations (CBOs) may be more equitable. The socio-economic data needed to assess options need to be identified. What systems work for Konsel? for Buton and Muna? — all have quite different recent histories. Alternatives need to be developed and transparently discussed.
- *Quality planting stock* — Support for developing sustainable supplies of high quality teak seed.

- *Alternative species* — Demonstration plantings of mahogany and other alternative species such as *Palaquim* (nyato); links with the mahogany germplasm collections assembled under AusAID's SPRIG project in the South Pacific, and links with Fiji.
- *Mycorrhiza* — No evidence was seen to demonstrate a need for work on mycorrhiza. Whilst there were reports of enhanced growth associated with the addition of mycorrhiza in glasshouse trials, there was no evidence that enhanced growth was sustained in long-term field trials.
- *Prosperity through cooperatives* — Socio-cultural study of the Konsel community to better understand why the cooperative scheme (KHJL) is successful. This would offer useful information to initiate similar schemes in Muna and Buton. The success of new cooperative schemes requires an understanding of the different socio-economic circumstances in the three regions.
- *Initial log processing* — Business analysis for developing local 'squared log' facilities (similar to the village rice mills) to help reduce the losses incurred through the freehand use of chainsaws. Indications are that up to 15% better recoveries could be achieved. (Chainsaws also have a high operating cost if fully costed.) Perhaps this could be done through existing sawmills in Konsel. All wood from Konsel for export must go through a certified sawmill to satisfy the provincial forest service's requirements. Currently, the sawmill simply uses a bandsaw to smooth the rough-sawn squares prepared using chainsaws (adding to the losses!). The growers favour squaring logs in the field as this reduces the weight to be carried to roadside. Perhaps log length could be shortened to 1.8 m to lessen the weight of round logs. A study of the potential for round logs vs. squared logs could have immediate impact.
- *Improving utilisation* — Examination of the potential to better utilise flitches lost in the squaring process. These are currently left in the field. Perhaps a study tour by KHJL members to Jepara, Java, could demonstrate what can be done with these valuable pieces of wood. Such a visit would also offer the growers a broader appreciation of the overall teak supply chain.

In Java

- *Drying schedules for tropical acacias* — Acacia wood is plentiful and cheap in Indonesia. It can be used for good quality furniture, but its utility is limited because of prolonged drying requirements — 20 days to 8–10% MC vs 7 days for teak of similar dimensions. Research to reduce this extended period would have an immediate economic impact on many small processors.
- *A mahogany initiative* — (Link with demonstration plantings in Konsel). Plantation mahogany enjoys high market status and market chains are established on Java. Mahogany has proven to be a popular tree in community forestry plantings on Java and grows well as a roadside tree in South-East Sulawesi, but the seed available is derived from the very early introductions, 100 years ago. An opportunity exists to widen the genetic base for mahogany and to begin the process of tree improvement. Australia has a comparative advantage with this via the genetic resource base established in Vanuatu and Fiji under the AusAID-supported SPRIG project. This base included new material from Central and South America. As a prerequisite to this project, it is suggested that a business study be conducted — establish a 'virtual' industry supply chain of mahogany from South-East Sulawesi and assess what growth rates, rotations and prices would have to be achieved to make mahogany competitive with the mahogany locally available on Java.

- *Regional collaboration* — Community involvement in the forestry sector via teak smallholdings is becoming popular in many areas of South-East Asia. It makes sense that experiences are shared and that proponents can learn from one another. Support Indonesian participation at the forthcoming *Processing and Marketing of Teak Wood Products of Planted Forests* to be held at Peechi, India 25–28 September 2007.

Appropriate South-East Sulawesi/Indonesian partners for any new activity

There is a great deal of goodwill surrounding teak cultivation in South-East Sulawesi and all stakeholders indicated a great willingness to engage with ACIAR to make teak smallholdings more profitable. Among the potential partners whom ACIAR might contact for research initiatives are:

- **Universitas Haluoleo (Unhalu).** Ir Faisa Danu, Senior Lecturer, Forestry Department, Faculty of Agriculture
- **Tropical Forest Trust**. The TFT has successfully assisted the forestry cooperative in Konsel gain FSC certification for their teak plantations. The cooperative now has over 500 members and the area certified exceeds 400 ha.
- **Centre for Biotechnology and Forest Tree Improvement, Forestry Research and Development Agency (FORDA), Yogyakarta**
- **Provincial Forest Service, Sulawesi Tenggara.** Ir Suhendro Basori, Section Chief, Provincial Forest Service, Sulawesi Tenggara, Kendari
- **Center for International Forest Research (CIFOR).** CIFOR has played key roles in several successful projects which have received ACIAR support.
- **World Agroforestry Centre (ICRAF).** ICRAF is playing key roles in teak-related projects which are receiving ACIAR support.
- **SENADA: Indonesia Competitiveness Program.** Developing international market share by pursuing 'green' market certification strategies. This is a program by the furniture industry value chain. USAID is supporting SENADA, a four-year program whose goal is to increase Indonesia's economic growth and employment by improving the competitiveness of major, labour-intensive light manufacturing industries.

Other Projects Involving Teak

Non-ACIAR projects involved in teak

ITTO: Development of Value-adding Processes for Short-rotation, Small-diameter Community Teak Plantations in Java and Eastern Indonesia

This four-month pre-project (US$54 000) seeks to promote the development of value-adding processes for small-diameter teak logs harvested from community forests. A study of teak plantations managed by local communities identified major shortcomings of these plantations, such as much shorter rotations (<20 years) and lack of proper silvicultural practices. Teak logs produced by local communities have shorter stems, inferior mechanical properties and lower durability due to the lower proportion or absence of heartwood. In order to address these technical constraints, the pre-project aims at collecting baseline data and relevant information on community-based teak plantations and utilisation of community-based plantation teak in Java and eastern Indonesia. Based on the results of the pre-project study, a full project proposal aiming at the development of value-adding process for short-rotation, small-diameter logs from community teak plantation will be formulated.

Tropical Forest Trust (TFT), Konawe Selatan District, South-East Sulawesi

In Konawe Selatan District, people from 46 villages started by creating a cooperative called Koperasi Hutan Jaya Lestari (KHJL). Nearly two hundred farmers joined the cooperative. In 2004 they began working with Tropical Forest Trust, a nonprofit organisation based in Switzerland, to close the gap between existing management practices and those that the FSC deems as responsible forestry. KHJL applied for the certification assessment at the end of 2004. After on-site evaluations of forest areas in a sample of twelve of the active villages involved in the cooperative, the auditing team compiled a full assessment report, which was reviewed by SmartWood. In May of 2005, KHJL farmers received their certification. The certificate was issued by the SmartWood program of the Rainforest Alliance (2006), an FSC accredited certifying body. KHJL dispatched its first shipment of teak wood on 19 May 2005.

KHJL's certification was funded through Tropical Forest Trust (TFT) with the support of Castorama France, the Jysk group and other European retailers — and PT Intertrend Utama, an Indonesia garden furniture manufacturer, who all wanted to secure a reliable supply of FSC-certified teak.

Indonesian Ecolabeling Institute (LEI)

On 18 October 2004 , the Indonesian Ecolabeling Institute (LEI) granted its first sustainable community-based forest management certificates to two Wonogiri community groups managing teak forests with the support of WWF and local NGOs. These first certifications have allowed LEI to field test and refine its new community forest management standard.

The certification covers an area of about 800 ha of valuable teak and mahogany forest. Since July 2004, WWF has been collaborating with local NGOs, including ARuPA and PERSEPSI, to promote sustainable forest management and improve market access in Wonogiri through LEI's community-based forest certification system. These pioneering certifications

demonstrate that communities can achieve certification. The challenge now is to help the communities secure commercial and other benefits as a result of the certification. WWF and its partners are developing market links between the communities and a Dutch buyer who has expressed strong interest in a long-term partnership with the two communities, as well as Indonesian companies in Bali and Yogyakarta.

In mid-December 2004, WWF hosted a meeting about the progress of community teak certification in Java. Representatives of PERSEPSI, ARuPA and LEI agreed to start to expand their community certification programs, particularly to other villages in Wonogiri, which have been encouraged by recent progress in the area. Accordingly, PERSEPSI is developing a plan to extend the program to cover up to 20 000 ha of community forests in Java.

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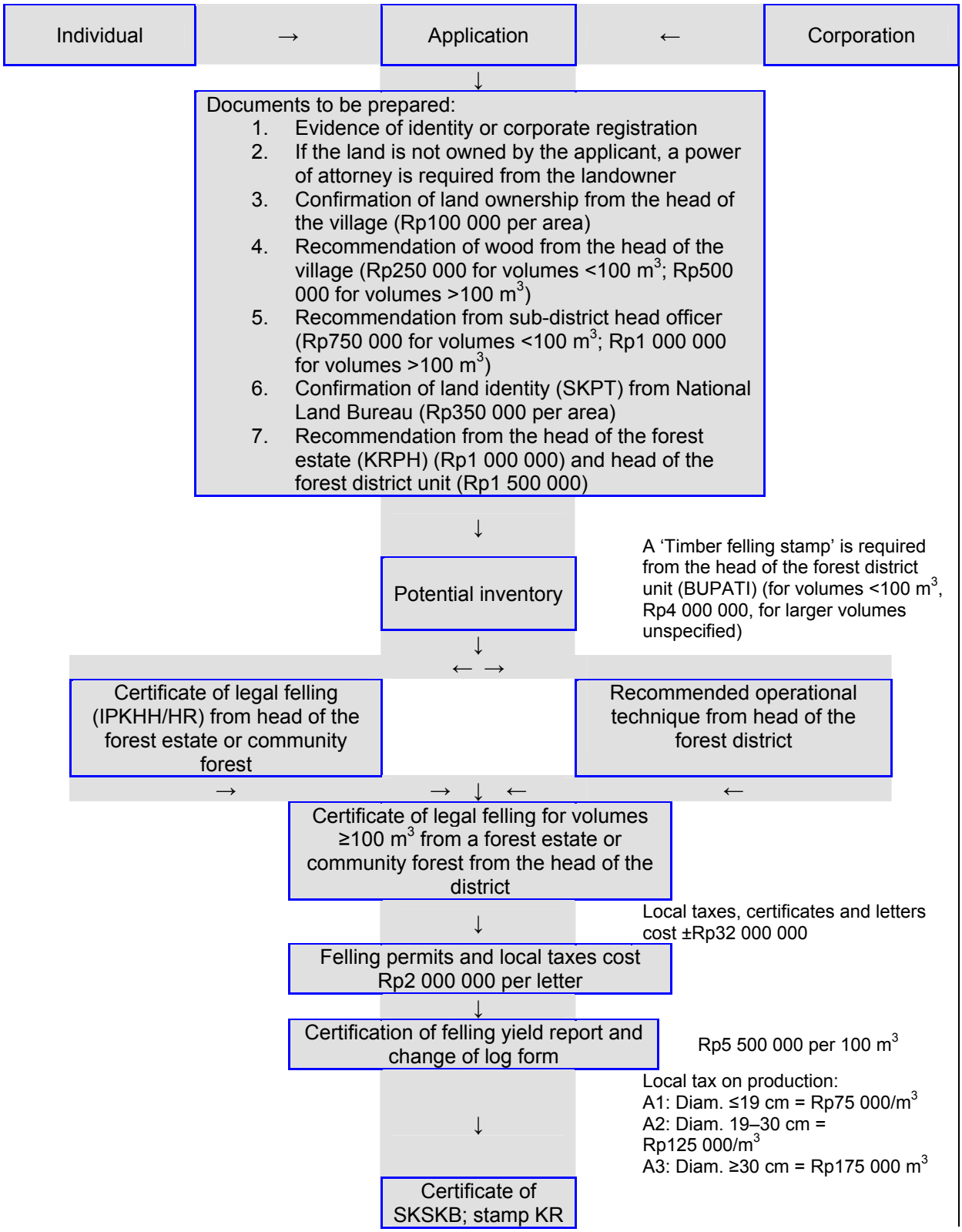
Annex 1[1] Selling teak: documents and costs

Administrative requirements for legally felling and documenting for sale plantation-grown teak



[1] Courtesy Tropical Forest Trust (an unofficial translation from a project document in Indonesian)

Annex 2[2]. Breakdown of delivered costs of teak

Actual planning recapitulation for container shipping, 2006

Item No.	Activity	Cost (Rp)	Cost (%)
A.	**Buying wood**	350.232.108	43.884
	Subtotal A	350.232.108	43.884
B.	**Operational costs**		
1.	Manager fee/operational cost permanent	1.257.000	0.158
2.	*SKSHH (letter for legal forest product) published*	13.200.000	1.654
3.	Wood transport from TPn (log cutting area) to TPK (log yard area) and	44.385.000	5.561
4.	Wood transport from log yard sawmill area to Kendari	35.302.000	4.423
5.	Container loading cost	9.860.000	1.235
6.	Truck FUSO loading cost	7.084.000	0.888
7.	*Wood legal letter from head of the village*	900.000	0.113
8.	*Wood legal letter transport from KRPH (head of resort forest estate/Perhutani)*	1.145.000	0.143
9.	Loading and unloading in sawmill	4.050.000	0.507
10.	Wood washing in sawmill	56.424.915	7.070
11.	SP3PAD*	2.063.397	0.259
12.	*Unpublished cost of letter for legal forest products*	3.750.000	0.470
13.	*Stamp cost for letter for legal forest product*	400.000	0.050
14.	PKAPT* cost	36.492.745	4.573
15.	*LHP* document cost (Rp1.000.000/dock)*	2.700.000	0.338
16.	*Stamp for LHP* document (Rp 2.000.000/dock)*	5.400.000	0.677
17.	*Wood change form cost (Rp3.779.300/dock)*	10.254.668	1.285
18.	Local wood tax (Rp23.775.000/200 m^3; 4.44 container per dock)	64.073.502	8.028
19.	*SKSHH (letter for legal forest product) published, first series*	4.350.000	0.545
20.	Support transport cost to Kendari	1.500.000	0.188
21.	Container truck cost	9.950.000	1.247
22.	FUSO truck driver lump sum	650.000	0.081
23.	IPKTM* cost	22.660.000	2.839
24.	RPBI* cost	5.811.255	0.728
25.	Wood grader assistance incentive	210.000	0.026
26.	FUSO truck driver lump sum	550.000	0.069
27.	Wood transport from Joshua to Nurdin (name of man)	250.000	0.031
28.	SIUP* cost	853.000	0.107
29.	Industrial fee	1.150.000	0.144
30.	*Advance payment for Polda (police provincial office) car*	8.406.521	1.053
	Subtotal B	355.083.004	44.492

[2] Courtesy Tropical Forest Trust. (unofficial translation from project document in Indonesian)

Item No.	Activity	Cost (Rp)	Cost (%)
C.	**Administrative costs**		
1.	Office rent	5.400.000	0.677
2.	Office equipment and copying	5.214.650	0.653
3.	Material for new member and KU training	3.048.700	0.382
4.	Cost of letter for legal forest product (in the beginning process)	2.536.500	0.318
5.	Wood grader legacy fee	3.150.000	0.395
6.	Transport and consumption good for sawmill officer	5.257.609	0.659
7.	LHP process cost (transport, consumables and copying)	1.101.172	0.138
8.	Tax document delivery cost	0	0
9.	Operational treasurer fee	2.223.500	0.279
10.	Head cooperative fee	700.000	0.088
11.	Telephone/communication cost for…	1.169.321	0.147
12.	Salary for inventory and computer staff	6.200.000	0.777
13.	Seed and seedling cost	7.395.849	0.927
14.	Transport to Kendari and miscellaneous	6.919.718	0.867
15.	Annual cooperative meeting	6.573.367	0.824
16.	Buy motorcycle	3.000.000	0.376
17.	Buy laptop computer	3.000.000	0.367
18.	Office water and electric cost	210.715	0.026
19.	Consumables and transport for inventory team	2.809.000	0.352
20.	Miscellaneous costs	4.494.900	0.563
21.	Packing list cost	0	0
22.	Staff inventory and computer technician incentive	400.000	0.050
23.	Wood harvesting operational cost	270.800	0.034
24.	*Donation for cooperative district office*	500.000	0.063
25.	Unclassified*	20.000.000	2.506
26.	FSC Fee	100.100	0.013
27.	Loan for cooperative officer	400.000	0.050
28.	Credit payment to Musram and donation	700.000	0.088
	Subtotal C	92.775.900	11.625
	Total cost per container (Subtotals A+ B + C)	798.091.012	100.000

Wood selling	1.031.932.400
Raw profit 2	232.841.388
Revolving fund (20%)	45.568.278
Raw profit 3	186.273.111
Cooperative management fee (40%)	18.627.311
KU fee (10%)	74.509.244
Income before tax payment	93.136.555
Income tax (1.5%)	1.397.048
Total profit	91.739.507
SHU (30%)	27.521.852
Cooperative management (10%)	9.173.951
Saving for next month (60%) / development cost	55.043.704

* Details not available
Items in italics are unofficial costs.
The total wood sold was 277.8187 m^3, equivalent to 12 containers.