

Improving Economic Outcomes for Smallholders Growing Teak in Agroforestry System in Indonesia

ACIAR funded project (FST/2005/177)

Talking Teak:

Teak (*Tectona grandis*) is a commercial wood species in Indonesia, and is sought out by thousands of wood industries for products like fancy plywood, woodwork, furniture and woodcarving.

In the plantation forests of Java, teak is mainly produced by state-owned company Perhutani – to the tune of 650 thousand cubic meters of wood in 2001 and 2002 alone. Throughout the rest of Indonesia, millions of farmers also grow teak, but their total production output is not well documented. The latest national census in 2003 found smallholders produced nearly 80 million trees, with 25 percent of those ready for harvest.

Despite the ravenous demand for the timber in Indonesia, smallholders face major hurdles in running a profitable teak plantation. Poor silviculture techniques produce a poorer quality of timber, but smallholders often don't have enough money to invest in education or better farming methods. A lack of capital means they have difficulty waiting for even the duration of a teak rotation before needing to get money back on their planting investment.

Ignorance about market conditions means smallholders often sell their wood below market rates. They are further crippled by the transaction costs faced by their customers, the timber buyers. Some government policies do not help either, as cutting and transportation permits and registration procedures designed with wealthy large-scale timber companies in mind are applied to struggling farmers.

Supported by the Australian Centre for International Agricultural Research (ACIAR), this Project No. FST/2005/177, officially titled "*Improving economic outcomes for smallholders growing teak in agroforestry systems in Indonesia*". The project has been starting since 2 years ago, located at 7 villages in Gunungkidul district, Yogyakarta and will commence for 4 years. The project is aiming at improving the livelihoods of smallholders, by:

- Introducing advanced silviculture technology to smallholder farmers to improve their financial returns.
- Finding and designing financial schemes as incentives for smallholders to invest in profitable teak production techniques.
- Improving smallholders' access to markets.

Project activities and achievements

After more than two years the project has completed some of the main activities and produced promising achievements. These are detailed as follow:

1. Project initiation

- a. Project inception meeting was held at CIFOR campus, Bogor on May 28-30, 2007, followed by the project launching at the Bupati of Gunungkidul office on July 18, 2007. The project received great interest from various main stakeholders, involving central

government institutions (The Directorate General of Production Forest Development and The Directorate General of Land Rehabilitation and Social Forestry, all within the Ministry of Forestry office, and the office of Ministry of Cooperatives and Small and Medium Enterprise); local governments from the Province of Yogyakarta and the District of Gunungkidul; Bogor Agriculture University (Institut Pertanian Bogor); State owned company of Perum Perhutani; NGOs (WWF, PKHR and Arupa), local community representative, and from the project partners itself which also come from various research organizations (CIFOR, The World Agroforestry Center, Inter-CAFE IPB, The Australian National University and The Forestry Research and Development Agency/FORDA, the Ministry of Forestry). The project received strong supports from the local government from the District of Gunungkidul.

- b. Household surveys were conducted at project sites at seven selected villages in Gunungkidul district during August and September 2007. The surveys were intended for collecting baseline data of the rural livelihood and general understanding of the current smallholder teak management practices. Around 275 household respondents were interviewed and the data has been compiled and being analyzed. Some preliminary findings have been presented to the main stakeholders in Gunungkidul during the second project annual meeting on 8 May 2009.
- c. A short (16 minutes) documentary film entitled “Teak Farm for the Future” was produced and launched in May 2008. The film briefly tells the story of the important roles of smallholder teak plantations for rural livelihood in Gunungkidul area and highlights the scope of project research activities.

2. Advancing silviculture technology on smallholder teak plantation

- a. A study visit of project scientists and smallholder representatives to Perhutani’s industrial teak plantations at Cepu, as well as community teak plantations at surrounding Gunungkidul area was held in November 2007. The study visit was followed by holding a Focus Group Discussions (FGD) at Wonosari-Gunungkidul in December



Bringing smallholder teak growers to visit commercial teak plantations inspired smallholders to change their silviculture practices on their teak plantations.

2007, attended by over 60 smallholder representatives. Through these activities, smallholders were exposed to ‘best practices’ for teak management. Some farmers, for example, were impressed by the potential growth of teak when they are properly managed as they have seen during the study visits. Farmer group discussions which were facilitated by the project provided farmers with new knowledge and information.

- b. An inventory of smallholder teak farms was taken over February and March 2008. The inventory is objected to document the existing condition of farmers' teak systems and to cross-check the collected data from the household surveys. Data on existing conditions of farmers teak systems from 227 parcels of land (in total 20.5 ha) have been documented, providing a valuable crosscheck to the household survey data.
- c. Six Farmer's Demonstration Trials (FDT) was established, participatively by smallholders at three sub districts, i.e. Karangmojo, Purwosari and Paliyan in September and November 2008. The FDTs are objected to identify the 'best bet' silvicultural practices suitable to smallholder conditions. The FDTs are also useful to demonstrate the advantages of teak silvicultural management (thinning and pruning practices) to farmers. The trials are monitored on 6 monthly bases through the end of the project.



Farmers Demonstration Trial provides avenue for smallholders on how to apply best practices on their teak plantations.

- d. On-site training in silviculture was conducted during the establishment of FDTs. Farmers were involved in the activities and practiced silviculture techniques, including pruning, thinning, coppice management, and other methods of stand measurements.
- e. Manual of silviculture practices for smallholder teak plantations was drafted and tested. The manual was developed based on review of secondary sources (references), current management practices by smallholders, and expertise of project team members. The draft manual was then field tested by farmers and forestry extension officers. Once after it is finalized, the manual will serve as practical guidelines for smallholders to apply best practices on their teak plantations.

3. Finding and designing micro finance schemes for smallholder teak growers

- a. A financial survey of smallholder teak management practices was completed in September 2008. The survey interviewed and recorded data from 31 smallholder teak producers on the production input costs and household income, including the income share from teak wood sales. Data was being analyzed and some preliminary findings have been presented during the second project annual meeting.

- b. An indepth survey on 44 household repondents has been completed during 1 – 5 November 2008. The survey was objected to gain more understanding on factors affecting household access to credit sources.
- c. On site training on book keeping system and farmer’s collective action was provided by the project team to nine community groups in the project sites during 9 – 12 February 2009. The community groups include the Women group Bulusari (Katongan village), farmers’ business group or *Kelompok Usaha Bersama/KUBE* Berkah (Gelaran I-Bejiharjo village) and farmers’ groups Sumber Makmur (Candirejo village), Sedyo Mulyo (Gelaran II-Bejiharjo village), Sumber Rejeki (Karang Duwet village), Gunung Sari II (Karangasem village), Tri Lestari (Giri Purwo village), Marsudi Karyo (Giripanggung village) and Murah (Dadapayu village). The training helped farmers to improve their capacity on collective actions.
- d. Facilitation was provided to community groups to form a micro finance organization. Project team helped farmers during the establishment process, that include facilitation during farmers meetings, providing information related to different kinds of micro finance schemes, assisting farmers group on formulating organization vission and missions and helping the group on setting up organization statutes and bylaws. As a result, a micro finance organization known as *Lembaga Keuangan Mikro Gunung Seribu* was established with ten farmer groups as the first members. Each group agreed to deposit Rp 150,000 as the initial saving. The project provided loan of Rp 30 million with zero interest to the organization to help it running and developing.



Facilitating farmers' groups to establish a micro finance organization will help on strengthening smallholder' collective actions on improving their teak plantations

4. Improving smallholder’s access to market

- a. A rapid market appraisal (RMA) and market surveys were conducted in July - December 2007 to understand market characteristics and identify some key marketing problems faced by farmers and local traders (middlemen). The survey collected data related to business profiles, market channel and market specifications and the marketing costs.

- b. A study visit of project scientists and smallholder representatives to furniture factories in Jepara, Central Java was conducted in November 2007 (see 2.a) to provide smallholders experiences and understanding of teak market specifications and market demand. The visit enhanced smallholder knowledge on teak market specification and pricing system. Smallholders become more aware with the important of good timber quality for a better price.
- c. Two trainings on marketing aspect have been provided to smallholder teak growers and traders. The first training was held in 12 to 14 February 2008 to introduce farmers with the concept of Verification of Legal Origin (VLO). The training inform farmers with the background and concept of wood tracking system, current regulations on community teak marketing, practical experiences in implementing Chain of Custody (CoC) system in forest community and field practices on tree marking system and wood legality documentation. Sixty participants coming from teak growers in seven villages, local traders and other participants were attended the training. The second training was held in July 2008, introducing farmers with valuation techniques of teak trees, including stumpage value measurements and teak log grading system. Both trainings improved farmers' understanding with teak marketing system and could improve farmer strategy on marketing their teak timber.



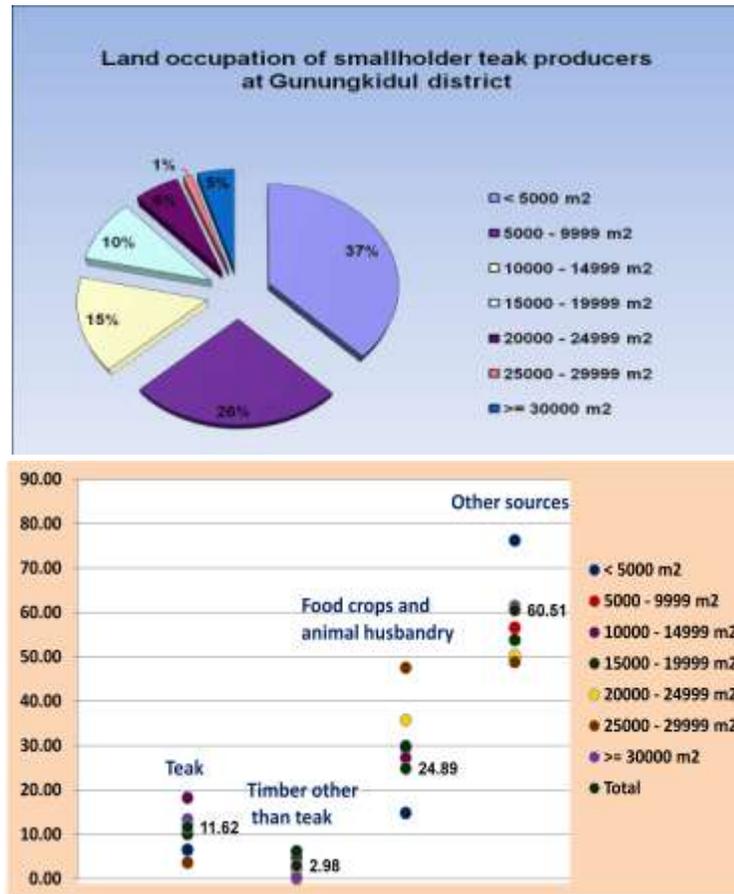
Smallholder's trainings on timber verification of legal origin and valuation techniques introduce farmers to new potential market access and better economic returns.

Teak Truths

1. Teak plantation in household economic structure

Smallholder teak plantation plays very important roles for rural people, in particular for the people at Gunungkidul district, Yogyakarta. It's important roles are reflected on farmer's land use system, where in average, around 10% of the farmer's lands are allocated for teak woodlots within their very limited land ownership. Farmers plant their teak trees in agroforestry systems on their home garden, as tegalan or kitren. Although the economic contribution of teak wood sales to household total incomes is relatively low (in average is around 11.6%), teak trees could easily cashed and provide significant amount of money. Teak plantations play as household saving accounts, where if necessary can be cashed to fulfil household needs, such as during the hard times, wedding ceremony or sending their children to new schools. The people in Gunungkidul will usually sell their teak wood as the last resource, when other cashed resources such

as motorcycles, electronic goods, jewellery and dairy animals are unavailable. These phenomena of harvesting teak trees to fulfil household urgent needs are locally known as *tebang butuh*.



Share of teak selling on household income at different size of land occupation

2. Current silviculture practices of smallholder teak plantations

Some significant impediments to profitable smallholder teak plantations are identified in their poor silvicultural techniques that lead to low quality timber. Most teak growers continue to depend on natural regeneration of their teak plantations, either through coppicing or natural seedlings. Most farmers don't do thinning and pruning for high quality timber. Growers lack motivation to improve their silvicultural practices as a result of their knowledge and capital limitations as well as the prevailing market incentive system.

Current silviculture characteristics are:

- a. Trees are established half by natural regeneration and half by planted seedlings. About 70 percent of seedlings can be traced from wildings and 30 percent from local nursery seedlings, and are usually planted close together (2 x 2 or 2 x 3 m). Smallholders have difficulty accessing higher quality teak seedlings.



Kitren, a model of smallholder teak plantations



Tegalan, an agroforestry system between teak and agriculture crops.

- b. Weeding and fertilizing are mainly carried out for their intercropping plants.
- c. Pruning is conducted to collect fuel wood from branches, rather than controlling timber quality. Branches are cut using a machete, leaving 15-20 centimetre-long-branch stubs.
- d. Thinning is more likely to be carried out on high grade timber, as farmers often cut the biggest tree to sell when they need the cash.

3. Smallholder access to loans

While almost all surveyed smallholders need financial loans, only 12 percent of the loans are used for long-term investment activities, such as purchasing fertilizers and farming equipments. Most of the loans are used to meet their daily needs or other urgent payments such as children's school fees. Most smallholders, about 70 percents, obtain loans informally, such as from families, relatives and Rotating Saving and Credit Associations (ROSCA). The amount of loans from informal sources generally is less than Rp 1 million. Smallholders have difficulties in accessing loans, in particular if it is going to be used to finance their teak plantations business. Formal banks, both government and private owned, reluctant to provide credit for teak plantations for several reasons, such as high risk business of long term timber plantations and insufficient available collateral. Formal banks do not have specific credit scheme to finance timber plantations. The study however identified some potential strategies to improve smallholder access to loans, among others are through strengthening the institution capacity of ROSCA and develop links with some alternative lending institutions.

4. Smallholder teak marketing practices

Most of teak growers currently sell their teak in form of trees. Harvesting is mainly done by middlemen. This marketing system incurs risk for both teak growers and middlemen. Teak growers lose income due to under-measurement during harvesting; and lower prices for their timber due to poor price information, weak bargaining position and low quality of teak timber produced. On the other side, the middlemen sometimes lose profits due to poor access to farms that resulting in high harvesting cost, tree defects that reduce the quality of teak logs and high transaction costs for obtaining timber transport documents from the village and local government authority. The study proposes some recommendation to improve smallholder marketing strategy, i.e.:

- a. Improve smallholder access to market information, such as by introducing log grading and price system applied in timber industries. The information will provide

options for smallholder to improve their timber quality for a better price, through better silviculture practices on their teak plantations and better harvesting techniques.

Farm gate prices		Local Trader Prices		
Circumference (cm)	Price (Rp/tree)	Log Qualities	Diameter (cm)	Prices (Rp/m3)
50	40,000	Piton	7	350,000
65	50,000	DL	8-15	450,000
101	300,000	UP	16-19	700,000
		UD	22-28	1,650,000
		UGD	more than 30	1,850,000

Teak grades and prices from smallholder plantations

- b. Develop collaborative linkages between smallholder timber growers, traders and timber based companies. For example, developing linkages with certified furniture exporters could provide new market opportunities for the smallholders. Farmers can be trained to apply wood tracking system that required for the certified timber trading. In return, farmers may get higher premium price for the timber. The collaboration could further be developed by involving teak producers in timber processing to supply semi finished furniture components to the companies.
- c. Simplify timber trade regulations to minimize transaction costs in timber marketing. Government agencies could be more involved in facilitating smallholder organizations to collaborate with timber based companies.

Research partners

Key personnel of the project team includes Dede Rohadi (Project leader - CIFOR), Ani Ardiwinata Nawir (socio-economist - CIFOR), Philip Manalu (research assistant – CIFOR), James Roshetko (Trees and market specialist – ICRAF), Gerhard Manurung (silviculture specialist – ICRAF), Iwan Kurniawan (marketing specialist – ICRAF), Michael Blyth (economist – Australian National University), Nunung Nuryartono (micro finance analyst – International Center for Applied Finance and Economics/Inter-CAFE, IPB), Nuning Kusumowardani (economist – InterCAFE, IPB), Jainal Effendi (research assistant – InterCAFE, IPB), Agus Astho Pramono, Nurin Widayani, Ika Heriansyah and Anies Fauzi (silviculture specialists – Forestry Research and Development Agency/FORDA), Sulistya Ekawati (socio-economist – FORDA), M. Joko Sasono, Murbani and Purnomo Sumardamto (district officers – Farm Forestry Consortium or *Kelompok Kerja Hutan Lestari*) and Suparman (field coordinator – farmer group representative from the Dusun Kepuh Sari, Katongan, Sub District Nglipar, Gunungkidul).

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