IN COMPETITION: TEAK SMALLHOLDERS IN JAVA, INDONESIA

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Introduction

The area of planted teak forests is estimated to be 4,346 million ha, of which 83% is in Asia (Kollert and Cherubini 2012). In Indonesia, most teak plantations are on Java, where the largest grower, Perum Perhutani, a state-owned forest enterprise, manages 2,442,101 ha of teak plantation (Perhutani 2010).

In addition to Perum Perhutani, there are approximately 1.2 million ha of smallholders' plantations in Indonesia that primarily produce teak (Nawir *et al*. 2007). Smallholding plantations rarely use improved germplasm or benefit from silvicultural management such as fertilizer application, weeding, thinning and pruning. Smallholders' teak is different from long-rotation industrial plantations that benefit from professional management, smallholders' logs are shorter, have smaller diameter, less clear wood, more knots, and obtain lower prices (Roshetko and Manurung 2009). Despite these shortcomings, smallholding teak plantations are an important source of wood for many teak manufacturers and retailers in Indonesia.

What happens to the teak between producer, processor and consumer is frequently unclear. Producers may have difficulties in addressing who are the users of their teak, who are their competitors, and what strategy should be pursued to obtain the highest price. Other issues also exist, such as who are the end-consumers and what form of the product creates high demand. These questions are important indicators relevant to smallholders when initiating a marketing strategy.

To fully engage in market opportunities it is imperative for smallholders to understand their target market and develop active marketing strategies. Key factors for consideration are negligence in smallholders' teak management that limits the teak's potential value, the barriers faced by new market participants, the bargaining power of buyers (i.e. traders or collectors), and competition among smallholding teak producers.

Methods

Sampling and Data Collection

The research methodology integrated both primary and secondary market information to identify actors in the smallholding teak chain, marketing practices, market access, and its problems and opportunities. To analyze the smallholders' teak market, a multi-step research methodology was conducted, including a households and smallholding teak producers survey, rapid market appraisal (RMA), which is an iterative process and interactive research methodology used to better understand complex market systems in a short time (Budidarsono *et al.* 2009, ILO 2000, Ostertag *et al.* 2007), in-depth interviews and focus group discussions.

Figure 1. Map of Gunung Kidul district. Gunung Kidul district positioned on a map of Java Island and Indonesia.

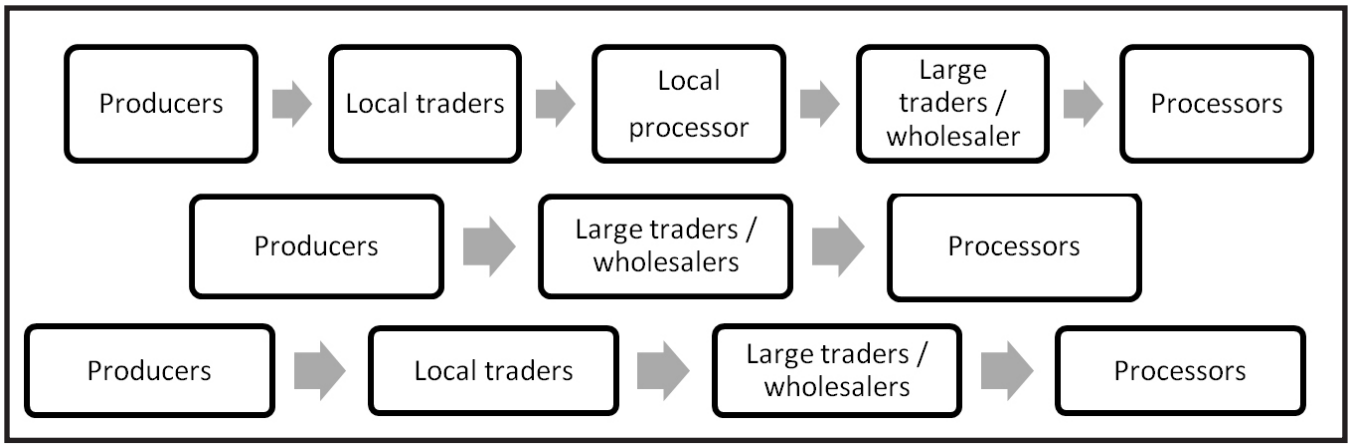

Figure 2. Smallholder teak chain actors in three product flows.

The RMA was used to identify and assess the problems and opportunities related to the smallholding teak market system, how the teak flows from production to consumption, and to understand how the teak commodity system is organized, operates and performs. To identify existing actors involved in the smallholding teak trade, a snowball sampling method was used, which relies on referrals from initial subjects to generate additional subjects. The direction of the snowballing approach was from producers to mills.

The households and teak producer surveys were carried out in 37 hamlets in Gunung Kidul, a district within Yogyakarta province, Indonesia, representing seven sub-districts, namely Semin, Nglipar, Karangmojo, Paliyan, Semanu, Purwosari, and Tepus. Data collection took place between August and September 2007. The survey of 275 households used a stratified purposive sampling method to ensure that smallholders were included from various regions. Determinant factors used were: 1) type of topography, 2) geographic representative, 3) land fertility, 4) human population density, 5) community forest area, 6) existing similar research projects, and 7) inputs from the district government. Data collection employed semi-structured questionnaires and was validated with in-depth interviews and focus group discussions. The data identified valuable decision-making information for developing marketing strategies.

Results and Discussions

Characteristics of the Households and Smallholding Teak Producers

Smallholder teak plantation is dominating the forest cover in Gunung Kidul. The recent total forest cover in the area has reached more than 42,000 hectares or about 28.5 % of the total district land area (Rohadi *et al.* 2012). More than 29,000 hectares (69%) of these forests are teak farm forests (BPS Gunung Kidul, 2008). Based on the surveyed area, an average of only 10% of farmers' land is allocated to teak production. Similarly, the economic contribution of teak sales to total household income averaged 11.6% (between 2007 and 2008). Teak farmers in Gunung Kidul considered teak plantations as their financial reserve, maintained until all other disposable assets (motorcycles, electronic devices, jewellery, and livestock) had been sold. For some of Indonesian ethnic groups, especially the Javanese people, teak has become an important part of their culture and is considered more desirable than other wood species or agricultural crop in the country (Muhtaman *et al*, 2006).

Roughly 80% of the respondents harvested their teak when faced with significant financial needs, such as weddings, school fees, medical expenses or social/cultural commitments. Only 14% of respondents harvested trees based on economic maturity. Most farmers (82%) practiced intercropping of agricultural crops and teak, where the timber trees benefited from the fertilization of the food crops. Smallholding teak production systems in Gunung Kidul were intercropped beyond the 2–3-year tree establishment period. Annually, 44% of teak systems were intercropped with agricultural crops. Various agricultural crops were cultivated in agroforestry systems. The most common commodities were upland rice (*Oryza sativa*), cassava (*Manihot utilissima*), peanut (*Arachis hypogaea*), soybean (*Glycine max*), corn (*Zea mays*), bananas (*Musa* spp) and various vegetables. These agricultural crops contributed an average of 25% of total household income.

Actors directly involved in the smallholding teak timber marketing chain (those who actually handled the products), consisted of producers, local traders, large-scale traders (wholesalers) who bought teak logs from local traders, and processors.

Table 1. Activities and costs in the teak market chain.

Activities Involved	Cost Represented
Physical possession	Storage and delivery costs
Ownership	Inventory carrying costs
Promotion	Personal selling
Negotiation	Survey time and legal costs
Financing	Terms and conditions of purchase and sale
Risking	Price guarantees, repairs and possible loss, and illegal charging
Payment	Collections, bad debt costs

Rivalry and Threats of New Entrants

By focusing on perceived barriers, critical issues related to rivalry and entry into the teak market were identified—access to markets, market knowledge, financial resources, and tree production and management—that affected product quality. With competitive advantages—including labour, a tree-planting culture to maximize tree production on farms (Carsan and Holding 2006), low production costs (Rohadi *et al*. 2012), and market demand that exceeds supply—smallholder producers in Gunung Kidul are competing head-on with Perum Perhutani, which produces high quality timber on a vast forest plantation managed under intensive principles. Other than round logs, Perhutani also produces value-added products such as sawn timber, flooring, and outdoor furniture. The company produced 477, 736 m3 of teakwood in 2008 and marketed 423,308 m3 in the same year (Perhutani 2010). The teak manufacturing industry in Indonesia concentrated in Central Java. The industrial demand for teak in Central Java alone is 1.5 to 2.2 million m3 per year (Roda *et al*. 2007). The difference is supplied from community forests in Java and other teak-growing regions, imported from overseas, and illegally logged from the vicinity of Perhutani plantations (Ewasechko 2005).

Smallholders' teak systems can be described as overstocked, slow growing, and of suboptimal quality and production (Roshetko and Manurung 2009). Smallholders are unaware of the high demand in the teak-processing industry but with traders' frequent visits and constant requests for teak, producers may perceive that they can still enter and play in the market by selling teak stands to traders. With neighbouring producers using wildings or planting similar seedlings and implementing similar management, competition is hardly noticeable.

Bargaining Power of Suppliers

Researchers found no significant disincentives related to farmers' input costs because most initial inputs were supplied through a forest rehabilitation and regreening program initiated by the Government of Indonesia in the early 1980s. Germplasm costs are very low as most farmers (72%) use wildings from existing teak stands to establish teak systems, 30% use locally produced seedlings, and 20% use coppice growth. Only 12% of farmers have ever used improved quality seedlings, mainly accessed through government reforestation programs. Meanwhile, there are management costs for fertilizers and weeding, conducted in association with annual crop production and improvement. Other management is conducted when opportunity costs are low for off-farm work (Perdana *et al*. 2012).

To obtain bargaining power at the supply level, a value-added approach should be taken to increase smallholders' net profit from their teak-growing enterprise. Smallholders are, by definition, scattered and generally there is a need to bulk their harvest in order to access targeted markets or the processing industry. Bulking can be done through different modalities and with different actors: traders, processing companies, or collective marketing arrangements. Bulking has a strong logistical component and requires a cost-efficient organization and control of transactions. Teak smallholders could market their timber collectively to improve their economies of scale, which also implies a division of labour to make the whole process efficient, lower their transaction costs, increase quality control, and provide an incentive to increase production, improve access to credit, and obtain communal equipment and services.

Bargaining Power of Buyers

In contrast, overwhelming bargaining power was in the hands of the buyer, and intermediaries, who were continually eroding producers' profits by putting downward pressure on market prices. Much has been written about intermediaries and their role as facilitators and scroungers (Bignebat *et al*. 2009, Gabre-Madhin 2001, Klerkx and Leeuwis 2008, Perdana 2010, Pokhrel and Thapa 2007). As facilitators, traders searched the marketplace, arranged both buyers for the timber and supplies for the manufacturers, performed various sorting functions, and served to minimize the number of contacts in the channel system (Coughlan *et al*. 2006, Perdana 2010).

At the farm level, standing trees were the preferred unit of sale. Negotiation was done without clear quality or value standards. Generally, farmers did not engage in timber processing or conversion activities. Traders usually visited the farm to measure, assess and negotiate the price for individual trees or blocks. In practice, all traders would measure the tree diameter at an

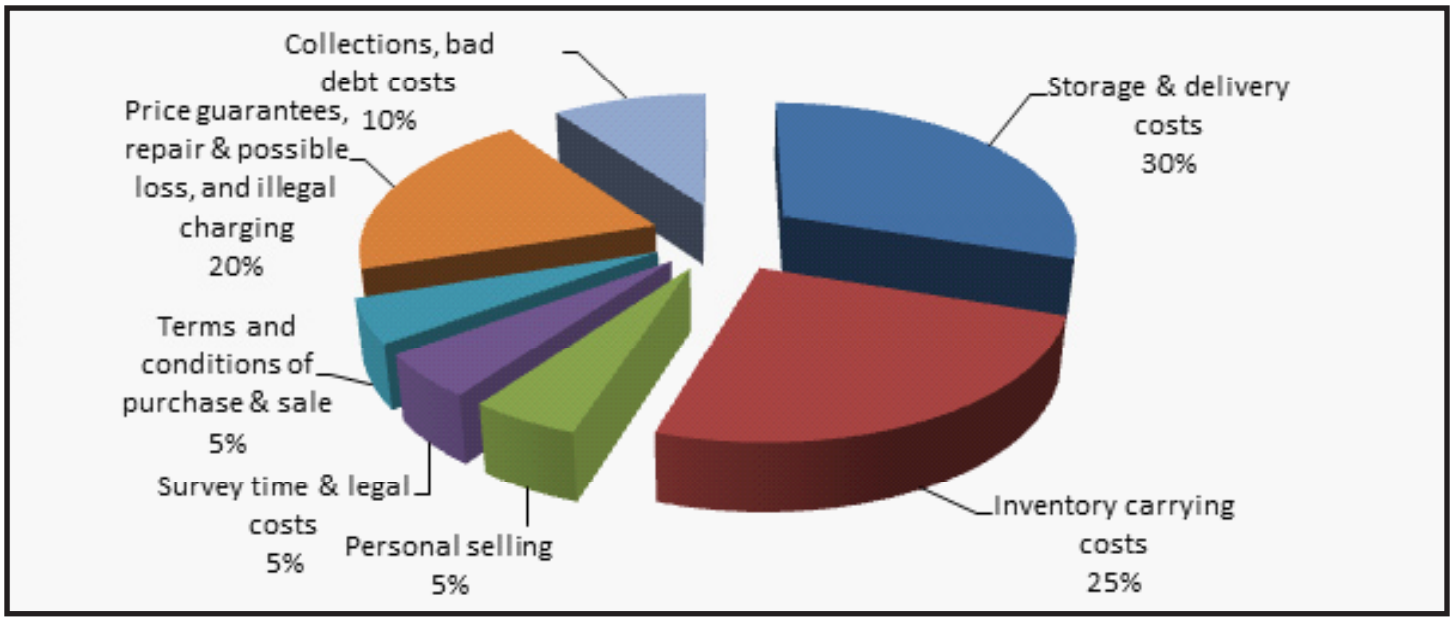

Figure 3. Share distribution of represented costs of teak product flow.

over-the-head level, and not at the normal diameter at breast height. To obtain a better price, most producers (51%) collected information from neighbours or other producers who had recently sold trees. Roughly 31% of farmers improved their negotiating position by offering the same trees to more than one buyer. The remaining teak farmers (18%) acted as price takers (Perdana *et al*. 2012).

This aspect of the buying and selling process incurred risks for both teak producers and traders. With harvesting costs averaging $27.26 per tree ($81.93 per m3) but varying greatly, traders sometimes made a net loss owing to unforeseen or arbitrary costs: a distance of one kilometre from the nearest road could increase harvesting costs up to 20%, undetected tree defects reduced the quality of teak wood, decreasing profit by up to half, transaction costs for obtaining timber transport documents from the village and local government authorities could equal 10% of the total cost (Perdana *et al*. 2012). An efficient channel is critical to any current or potential industry participant concerned about the availability and cost of current and future supply of smallholders' teak.

With regards to the flow of teak timber in market channels, traders managed various interactions—physical possession, ownership, promotion, negotiation, financing, risking, and payment—each carrying costs of its own. From the traders' point of view, each interaction represented sunken costs, costs that may not be recovered because the price was negotiated and agreed prior to the harvest. A significant amount of risk was embedded from the beginning of the trade process. The activities and costs incurred are shown in Table 1 and Figure 3.

Considering these circumstances, teak traders as intermediaries played an important role. First, the traders searched the marketplace. Guided by their information network, they visited teak growers and explored upstream for product supply. Traders had to repeat this search process frequently because supply, quality, and prices changed often. Second, traders performed various sorting functions by accumulating the harvests of multiple teak producers into homogenous lots for sale to the manufacturers. Third, traders served to minimize and facilitate the number of contacts in the channel system.

Role of Government

Generally, smallholders' teak plantations were only marginally profitable, which was partially due to restrictive regulatory requirements. As a result, farmers limited their investment (time and funds) in these systems. The timber transport policies applied by the government created a disincentive for farmers to engage in better teak marketing practices. Improvements in timber marketing strategy could be made through dissemination of better market information to farmers, in particular the wood grading and quality standards used by industry, the development of business cooperation between farmers' groups and timber industries, for example, to meet the demand for certified furniture products, and by revising or simplifying timber trade regulations applied to smallholders' timber, in order to minimize transaction costs in the marketing process. Our research identified government policies (timber trade regulations) that increased transaction costs for smallholders and traders and served as a disincentive for smallholders' investment in teak plantations. At the time of writing, a certificate of origin is required of smallholders' teak traded in the region and must be obtained by traders at the district

forestry office. Further, government policies restricted smallholders' involvement in timber production because regulations designed for large-scale timber production (e.g. cutting and transportation permits, registration procedures) were applied to smallholders.

Government needs to provide more suitable timber trade regulations, specifically for timber coming from smallholders' plantations. The current regulations tend to generate high transaction costs that may hinder farmers' access to better markets. Providing farmers with more access to state land would be a good intervention, in particular, in regions where farmers' land is very limited, such as in Gunung Kidul and possibly other parts of Java. More access for farmers to state land would increase the economies of scale of smallholding plantations and at the same time potentially reduces unproductive land areas (Rohadi *et al*. 2010).

Conclusion

By looking at the smallholders' teak market, key issues that affected the market were identified. Weaknesses such as low bargaining power, high transaction costs, lack of accessible market information, low tree quality standards, and unfavourable policies were identified. Strategies, including collective marketing, may have the potential to overcome these problems.

The findings of the study lead to a number of recommendations to initiate effective marketing strategies for smallholders' teak: 1) Improve market information for smallholders by introducing producers to the log grading and pricing system that is used by the timber industry. In this context, training sessions led by industry experts can be implemented to improve the knowledge of farmers and middlemen of the teak grading system applied by most of timber industries. Local governments could introduce a standing tree valuation system to reduce marketing risk for both timber growers and middlemen. This could have considerable impact by motivating producers to improve their timber quality. Regular market information on teak prices and qualities could be provided through local mass media, such as radio and local newspaper, 2) Simplify timber trade regulations to minimize transaction costs, making the smallholding teak market more efficient, for example, by including smallholder teakwood into the certificate of origin scheme (*Surat Keterangan Asal Usul*) or to promote the exclusion of smallholder teak wood from the obligations of the certificate of legal logs (*Surat Keterangan Sahnya Kayu Bulat*) and certificate of legal forest product (*Surat Keterangan Sahnya Hasil Hutan*) to the Ministry of Forestry. Simpler procedures for timber distribution would provide incentives to smallholders to invest in teak plantations, 3) Develop links between teak producers and teak industries, for example, certified furniture exporters could provide new market opportunities for producers. Smallholders could be trained to apply the wood tracking system that is required for certified products. In return, producers might obtain a premium price for the timber. Collaboration with teak processing industries could further be developed by involving teak producers in furniture processing, such as by supplying semi-processed furniture components to companies. Teak producers could be involved in the wood-processing sector, especially furniture industries. Engaging farmers in furniture industries would reduce transaction costs and might provide opportunities for producers to receive benefits from the value added to their teak wood. Developing a sound strategy to strengthen cooperation between farmers' groups and the furniture industry would be an interesting area for further research.

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