

Beyond good wood: Exploring strategies for small-scale forest growers and enterprises to benefit from legal and sustainable certification in Indonesia

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Abstract

There is a growing trend towards small-scale forest operators engaging in certification initiatives in response to growing demands for certified timber. We aimed to analyse whether certified smallholders gain better access to timber markets and better financial incentives. We used three smallholder forest enterprises from Gunungkidul and Kulon Progo districts, Java, Indonesia as case studies of different managerial operations. Two were farmer cooperatives and the other was an external trading company in partnership with village-level farmer groups. Different certification schemes and managerial approaches were analysed whether such factors influenced the ability of smallholders to access certified timber markets and obtain improved offers for their timber. We found that smallholders find it challenging to enter and participate in certified timber markets and to obtain the promised premium prices. The obvious costs of certification and uncertain benefits are major challenges for smallholders. Even when market opportunities are present, certification alone is insufficient to tap into these markets. Certified forest enterprises need dedicated managers with adequate entrepreneurial skills to establish networks and contacts with potential buyers, and to actively seek information on what is specified by certified timber processors.

Keywords: smallholder growers, certification, market access, premium prices, entrepreneurial skills, market networks

1 Introduction

The past twenty years have witnessed a worldwide trend in certification initiatives, which specify how

forests should be managed and timber produced. In general, certification is a process by which forest practices are assessed against a set of predefined standards agreed upon through independent audits (Viana, 1996; Rametsteiner & Simula, 2003; Cashore *et al.*, 2004; Durst *et al.*, 2006). The scope of forest and timber certification varies, from a wide range of environmental, social and economic aspects to schemes that focus more on legality (Maryudi, 2016). To encourage

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forest managers to implement desirable practices, certification promises market incentives of improved access and/or premium prices for certified products. Certification continues to gain wider support, reflected in the increase in the total area of certified forests. By May 2015, the area of certified forest worldwide, for two major schemes, Forest Stewardship Council (FSC) and Programme for the Endorsement of Forest Certification (PEFC), reached nearly 450 million ha (a tenth of the world's forest cover), including an estimated 7.5 million ha certified under both schemes (UNECE/FAO, 2015). This is a sharp increase from only six million ha in 1996 (UNECE/FAO, 2005). In addition to this, the number of Chain-of-Custody (CoC) certificates grew steadily to a total of 39,609 active CoC certificates in May 2015 (UNECE/FAO, 2015).

Certification, particularly the scheme provided by FSC, was not originally designed for small or non-industrial operations (Lindstrom *et al.*, 1999; Rickenbach, 2002; Gulbrandsen, 2004; Butterfield *et al.*, 2005). In fact, certification was seen with great scepticism and was even opposed by small-scale operators in many countries, principally in Europe and North America (Lindstrom *et al.*, 1999; Rickenbach, 2002; Maryudi, 2005). This was largely due to potentially adverse economic consequences (Lindstrom *et al.*, 1999). In addition, certification was perceived as incompatible with smallholders with diverse goals and interests, unlike large scale and uniform forest operations (Rickenbach, 2002). Nonetheless, there is a growing trend in small-scale forest operators practicing sustainable or legal forest production in response to demands for certified/legal raw materials (Kandel, 2007; Wiersum *et al.*, 2013; Maryudi *et al.*, 2015; Fujiwara *et al.*, 2015). For example, FSC reported that in 2015 small-scale forestry made up 22% of all forest management certificates (FSC, 2015). In Indonesia, there have been efforts to encourage smallholder farmers to adopt certification (Hinrichs *et al.*, 2008; Maryudi, 2009). In part, this could be facilitated by streamlined standards and procedures exclusively designed for small-scale operations (Durst *et al.*, 2006; Overdeest, 2010; Wiersum *et al.*, 2013). The FSC, for example, now provides schemes for groups and Small or Low-Intensity Managed Forests (SLIMF). This trend may indicate increased confidence among small-scale operators that certification provides ways to unlock opportunities in timber markets, either improved market access or premium prices for certified products.

Demand for certified timber products are reported to be growing in eco-sensitive markets (UNECE/FAO,

2013). The public procurement policy on legally certified timber has also helped increase the growing interest in the market-based policy instruments (Cashore & Stone, 2012; Maryudi, 2016). Although evidence of a willingness to pay higher prices for legal/sustainable timber is unclear (Tiesl *et al.*, 2002; Jensen *et al.*, 2003; Anderson & Hansen, 2004; Owari *et al.*, 2006; Cai & Aguilar, 2013), there are at least strong signals from consumers' preference for such products (Hansmann *et al.*, 2006; Rickenbach & Overdeest, 2006; Brockmann *et al.*, 2012). In addition, export-oriented processing industries in timber producing countries are said to seek certified/legal timber (Harada & Wiyono, 2014; Maryudi *et al.*, 2015). Owari *et al.* (2006) argue that processing industries consider certification as important for maintaining market share and selling products. This may explain the increasing trend in small-scale forest operators practicing sustainable or legal forest production.

However, small-scale wood-processing industries prefer to buy logs through middle-men, because it is simpler and does not involve the complicated procedures of purchasing and transporting the logs, including unofficial payments, which frequently account for 15 to 20% of the log prices (Triple Line Consulting, 2005). This supports the view that timber produced by small-scale tree growers fits the domestic market, where small-scale wood-processing industries will accept low-grade timber. This is a major concern for certified forest managers, particularly smallholders, who are struggling to capture market opportunities. While some have identified short-term financial benefits from engaging in certification (e.g. Harada & Wiyono, 2014; Maryudi *et al.*, 2015), others (Holding Anyonge & Roshetko, 2003; de Jong *et al.*, 2010; Perdana *et al.*, 2012; Foundjem-Tita *et al.*, 2013; Rohadi *et al.*, 2015) pointed out the difficulties faced by smallholders who wish to tap into potential markets. Maryudi *et al.* (2016) point out the importance of studies on the impacts of certification on smallholder forest operations in Indonesia. This is because tree planting and the sale of the subsequent timber contribute approximately 10–15 percent of the rural household income (Perdana *et al.*, 2012; Rohadi *et al.*, 2015). In this paper we aim to analyse whether certified smallholders gain better access to timber markets and even better financial incentives. Findings from this study will provide insights into how to best assist smallholders so that they can select the best and most appropriate strategies for their tree planting activities and marketing of the timber.

2 Smallholder tree growing in Indonesia: A brief overview

In the Indonesian context, smallholder tree growing (*Hutan Rakyat*) is defined as forest that is privately owned by a farmer with a minimum land size of 0.25 ha, and where a closed canopy of timber trees and/or other types of plants cover more than 50 % of the area; and/or in the first year a minimum of 500 trees per hectare are planted in the same area (Ministry of Forestry, 2009). Rural people across Indonesia have planted trees as part of their shifting cultivation, home gardening, farm forestry and meadow grazing (Michon & de Foresta, 1995). In most cases, smallholder tree growing in the country is far more diverse than industrial forestry in terms of species mix, age classes, and silvicultural operations. Planting systems vary and are decided by the individual farmer's preference, the socio-economic environment, and biophysical farm characteristics (e.g. soil types, slopes and farmland sizes). In many cases, a mixture of different trees and agricultural crops is the most popular arrangement as it produces seasonal crops to satisfy their daily needs (Awang *et al.*, 2007; Rohadi *et al.*, 2012). More trees are planted in areas less suited to agriculture and in extreme terrains (Buddhisatyaningrum, 2005). In recent years, intensive tree growing, including on fertile land, is not uncommon as rural people have more opportunities to earn an income from off-farm activities and are less reliant on subsistent farming (Sabastian *et al.*, 2014).

Initially, trees were grown to either improve the environment or to meet the owners' need for fuelwood and construction timber (Nawir *et al.*, 2007). The recent growing demand for timber in the processing industries appears to have further encouraged tree growing (Sabastian *et al.*, 2014; Nawir, 2013). It is estimated that standing timber stocks, in smallholder tree plantations, had reached 125 million m³, 15 % of which was said to be ready for harvest (Shantikoko *et al.*, 2013). Timber from smallholder plantations is increasingly sought by processing industries amidst the declining timber supply from state forests. For example, approximately 50 % of timber used by export-oriented furniture industries in Jepara – one of Indonesia's furniture centres – is sourced from smallholder plantations (Yovi *et al.*, 2009).

Rural farmers usually consider their tree plantations as an investment and insurance, while their daily livelihoods come from agricultural crops and off-farm earnings (Perdana *et al.*, 2012; Sabastian *et al.*, 2014). In most cases, trees are harvested intermittently only in hard times, particularly when farmers have no other liquid assets (Perdana *et al.*, 2012). Nonetheless, harvests

have become more frequent in recent years. Many dimensions of rural life are changing fast and rural farmers spend more cash on electronic goods such as mobile phones, televisions, washing machines and motorbikes than they did in the past. In many cases, trees are harvested to satisfy these changing lifestyles. This raises concern about the future sustainability and timber supply from smallholder plantations as harvesting becomes more common.

3 Research methods

There are both sustainable forestry certification and legality verification for small forest operations in Indonesia. Sustainable certification is provided by two different bodies: 1) the Forest Stewardship Council (FSC) and 2) the Indonesian Ecolabel Institute (LEI), whereas the legality verification (known as *Sistem Verifikasi Legalitas Kayu*–SVLK) is of the Indonesian Ministry of Environment and Forestry (Maryudi, 2016). The study selected three smallholder enterprises from the two districts of Gunungkidul and Kulon Progo, the Special Region of Yogyakarta (in the south of Central Java), representing the different certification schemes, i.e. FSC, LEI and SVLK (see Maryudi *et al.*, 2015 for their details). The enterprises act as a parent group for smaller farmer groups, usually at the village level. The study focused on whether smallholders under certification are able to utilise the good credentials of their timber products. Smallholder tree growing have impressively expanded in the two districts. Particularly in Gunungkidul, smallholder tree growing is often regarded as one of Indonesia's reforestation success stories, and is often considered one of the most commercialised timber marketing hubs for local, national and international markets (Awang *et al.*, 2007; Nawir *et al.*, 2007).

The three case studies differ in their managerial operations (details in Table 1). Two are cooperatives of village-level farmer groups. The other is an external trading company in partnership with village-level smallholder groups that wish to engage in certification. The different management styles may influence the ability of the respective groups to find buyers for their timber. This study did not assess the demand side, i.e. whether a particular certification scheme might be preferred in the timber markets. Nonetheless, our aim was to test the hypothesis that adopting different certification schemes have impacts on market access. Studies show that consumers generally prefer certified timber products (Brockmann *et al.*, 2012) with a skewed preference for a particular certification scheme (Anderson

& Hansen, 2004; Hansmann *et al.*, 2006; Rickenbach & Overdeest, 2006).

Our research was conducted between April and October 2015. The primary data for the study was collected through semi-structured, in-depth interviews. Interviews were conducted with the managers, member farmers and a number of key actors in the value chains such as timber collectors, traders and industries. Those involved in the certification preparation of the respective enterprises were also interviewed. We also analysed documents, records and reports, particularly with regard to the costs of certification, timber sales and prices, and timber buyers.

4 Results

4.1 The case studies

Case study 1: The Koperasi Wana Manunggal Lestari (KWML) Cooperative

In 2006, the Farm Forestry Working Group (*Kelompok Kerja Hutan Rakyat Lestari*), Universitas Gadjah Mada, and the district government of Gunungkidul facilitated the establishment of KWML, a cooperative of three farmer groups from three villages, with a total membership of 635 farmers, covering a forest area of 815 ha. KWML was one of the earliest management units of smallholder plantations in Indonesia. A committee, elected from the farmers, acts as manager of the whole forest. The cooperative regulates the harvests, by setting the annual allowable harvests for the whole group. It also has a role as a business unit, facilitating the members when marketing their timber. The cooperative and the supporting working group choose the certification provided by the national certification body (LEI), which exempts the cooperative from certification costs. In 2006, the LEI certificate initially covered 815 ha, but during a survey in 2012 the coverage was expanded to 1,153 ha. KWML was later declared eligible for SVLK-certification. The SVLK-certification was fully subsidized by central government through the *Multistakeholder Partnership Programme* funded by the British Government.

Case study 2: The Koperasi Wana Lestari Menoreh (KWLM) Cooperative

In 2007, Telapak (NGO) in collaboration with a local NGO (*Yayasan Bina Insan Mandiri*) and a local office of Credit Union established KWLM as a community logging programme. The programme later became a cooperative of smallholder farmers from 15 villages, with a total area of about eight thousand hectares. In

2011, the cooperative gained FSC certification for 210 hectares. Unlike KWML, this cooperative has a non-farmer manager with a university degree. The Humanist Institute for Cooperation (*Humanistisch Instituut voor Ontwikkelingssamenwerking–HIVOS*), a Dutch organisation for development, has covered the certification costs through Telapak. In 2015, KWLM also received SVLK certification, which was self-funded from revenues generated from timber sales as well as group savings. All members are obliged to sell their timber to the cooperative. The collaboration with the credit institution is crucial as the cooperative is able to provide soft loans for the members to delay their cuts when maximum annual cuts are reached. KWLM also works with non-certified smallholder forests to supply the demand for non-certified timber.

Case study 3: Dipantara Forest Project

In contrast to the previous two groups, Dipantara is a timber company operated by professionals and chaired by a former senior officer from the State Forest Company (Perhutani). Dipantara has a strong portfolio of supplying timber to processing industries. It does not have forests, instead it purchases timber from tree farmers to be sold to the processing industries. Dipantara collaborates with groups of smallholders at the village level. Viewing the potential certified timber markets, the company and 35 farmer groups have agreed to engage in FSC certification, which was achieved in 2012. The farmer groups have left the management responsibilities of the certification of their forests to the company, including paying the costs on their behalf. The company promised to purchase the farmers' timber at a premium price once the forests are certified. To prepare the certification, Dipantara worked with The Forest Trust (TFT), which has close links with both FSC and buyers of FSC-certified timber. Dipantara not only purchases certified timber from the farmers, but also continues its business with non-certified timber.

4.2 Costs of certification

The cost of certification varied considerably across our three case studies. Sustainable and legal certification generally incurs two types of costs: 1) indirect costs for improving the forest management, and 2) direct costs for the certification audits (start up and surveillances). The indirect costs for improving forest management and to meet the required standards of the certification are rarely documented. In our case studies, investments were made to: 1) establish a registered farmer group cooperative, 2) create 'management contracts' (group

Table 1: Summary of the case studies

Managerial operator (Parent group)	Case study 1 KWML Cooperative	Case study 2 KWLM Cooperative	Case study 3 Dipantara Forest Project
Type of managerial operation	<ul style="list-style-type: none"> • Cooperative of smallholder groups • Manager and committee members elected from smallholder farmers 	Cooperative of smallholder groups	<ul style="list-style-type: none"> • Trading company in partnership with smallholders • Manager and committee are from the company
Profile of manager	Farmer with high-school education (Grade 12)	Non-farmer with a university degree	A former director at state-forest company
Certification	<ul style="list-style-type: none"> • LEI in 2006 (re-certification in 2012) • SVLK in 2011 	<ul style="list-style-type: none"> • FSC in 2011 • SVLK in 2015 	FSC in 2012
Members and forest area	3 smallholder groups from 3 villages <ul style="list-style-type: none"> • 635 farmers with 815 ha under 1st LEI certification in 2006 (1,153 ha after 2nd certification in 2012) • 594 ha under 1st SVLK in 2011 (1,236 ha after 1st SVLK surveillance in 2012) 	18 smallholder groups (15 under certification) <ul style="list-style-type: none"> • 1,083 farmers with 700 ha under FSC • 1,341 farmers with 808 ha under SVLK 	100 smallholder groups (35 under certification) <ul style="list-style-type: none"> • 330 ha under FSC (no information on the number of the farmers)
Annual sustainable cuts from certified forests	≈ 700 m ³	≈ 500m ³	≈ 640 m ³

constitutions and rules) regulating the members, 3) improve the organisational capacity and forest operations, 4) map the forest, 5) establish management plans, and 6) conduct environmental assessment and monitoring. The certified entity (parent group) is required to organise the members and to ensure that each of its smallholder members follow the required standards. Each of our case studies revealed that it took more than a year before the enterprise could finally apply for certification.

It is difficult to calculate the costs for conducting each activity as the challenges faced by the farmer groups differed prior to the certification audits. In addition, the required actions and documentation standards also varied with the different certification bodies. The managers and the supporting NGOs estimated that the preparatory work might have cost them equal to or even more than the first certification audit. They suggested a conservative estimate of USD 5,000–10,000 per certification case depending on the number of farmer groups involved and the size of forests to be certified. The figure is slightly higher compared to other non-industrial forest certifications in other countries. For instance, the indirect certification costs of O’Neill Pine Company (OPC) in the US

with 894 hectares were about USD 3,000 (see Butterfield *et al.*, 2005). The lower costs of OPC certification could be due to there being fewer members involved. There were only 47 forest owners involved in the certification, much lower than our case study enterprises.

The direct costs for the first audit and surveillance were even higher despite the simpler audit procedures compared to those for large enterprises (Table 2). The case study enterprises pay between USD 110 and 175 ha⁻¹ year⁻¹ for their FSC certification. As a comparison, the certification of Sample Forest in Guatemala of 750 hectares costs USD 21.33 ha⁻¹ y⁻¹ (see Molnar, 2003). To put these figures into perspective, the certification costs of large-scale forest operations in Indonesia range from USD 1.07 to USD 3.64 ha⁻¹ y⁻¹ (Ruslandi *et al.*, 2014). The costs of LEI certification and SVLK legality certification of KWML, which look comparably lower to FSC certification, are still higher than those of large operations.

KWML and KWLM only managed to cover the costs because of funding from donors, channelled through NGOs assisting the groups to improve their forest prac-

Table 2: Start-up costs of certification and surveillance audits for smallholder plantations

Type of certification	Case study	Certification costs (× 1,000 USD)		Type of surveillance	Validity period	Total cost for the whole validity period (× 1,000 USD)
		Start-up certification	Surveillance audit			
FSC sustainable certification	KWLM, Dipantara	13	8	Annual	5 years	37
LEI sustainable certification	KWML	8	0.5	Annual	5 years	12
SVLK legality verification	KWML, KWML	3	3	Biannual	10 years	18

* Estimated costs for submitting annual reports to the certification body. No field surveillance conducted; surveillance was based on evaluation of the annual report

Source: interviews with the group managers and invoices from the certification bodies

tices and to prepare the certification documentation. In many cases, donors usually only provide short-term assistance, the certified groups are then left with the challenge of maintaining the certification. In the case of KWML, when it was unable to self-finance the recertification, its LEI certificate was suspended. It was only when further funding was available that KWML was able to recertify its forest operation. The financial benefits that offset the costs are crucial to the certified groups continuing the good wood business (discussed below). Both KWML and Dipantara managers also suggested that the enterprises could reconsider certification if the expected benefits were minimal.

4.3 Timber sales, prices and market access

Certification initiatives are based on the notion of market incentives provided to forest enterprises to implement improved practices. The incentives may include better market access and higher prices for certified timber products. The three case studies established contracts with export-oriented processing industries, which were willing to purchase the certified timber at higher prices compared to non-certified timber (Table 3). The NGOs assisting the respective enterprises connected the managers with the buyers and facilitated the initial contract. However, our research identified different approaches employed by the case study enterprises in utilising the good credentials of their timber.

KWML adopted a less 'pro-active' strategy compared to KWLM and Dipantara. It waited for the buyers to come to them, assuming that certified timber would be sought after as there were few certified smallholder forest operations. A limited network was said to be one of the main explanatory factors. The manager admitted to having limited entrepreneurial skills and said he

was more familiar with farming activities. In addition, he could not commit fully to finding links to processing industries, as he had to dedicate most of his time to his farm. Initially, KWML relied on an early contract with a furniture company (*Jawa Furni Lestari*–JFL); attempts to broaden the network with more processing industries were unsuccessful. The manager said that there were rarely any real buyers, those that came to the cooperative never made a purchase. With no logs in the store due to member farmers' intermittent harvests, it is difficult for KWML to attract buyers, which prefer to check the logs before purchasing. The members will only harvest trees when transactions are secured as the cooperative lacks financial capital to buy logs from its members. The intermittent tree harvests also contribute to KWML's inability to supply processing industries in regular volumes. The *Koperasi Hutan Jaya Lestari* Cooperative, an FSC-certified smallholder in Sulawesi, experienced a similar situation (Harada & Wiyono, 2014).

As a result, between 2007 and 2009, KWML recorded only three transactions with a processing industry for total timber sales of about 300 m³ (100 m³ y⁻¹), much lower than its annual allowable cut amounting to 700 m³. In the following year it recorded its lowest sales of certified timber of only 2 m³ to JFL. Similarly, the sales of its legally verified timber are no better. In 2012, KWML managed only one sale of two legally verified teak logs of about 0.4 m³ to JFL. The contracts with JFL, for both certified and legally verified timber, were totally abandoned by the end of that year. Individual KWML farmers are free to sell their timber if the cooperative is unable to find markets for certified timber. The farmers tend to sell their timber in non-certified timber markets where there is no premium price.

Table 3: Price differences between certified and non-certified teak logs in each size class

Log diameter (in cm)	Price differences (%)		
	KWML	KWLM	Dipantara
10–15	14–27		not applicable
16–19	8–20	20–30*	35
20–29	5		29
30–39	3		15

* Detailed information on different log diameter unavailable
Source: interviews with the managers and purchase notes

In contrast, KWLM and Dipantara have established more proactive strategies to find links to high value markets for their certified timber. Each of the enterprises employs a full time and highly qualified manager, who is tasked with creating business plans, and establishing networks and contacts with potential buyers. The managers are actively engaged in business meetings and even use web-based information and technologies. The KWLM manager, for instance, utilises the FSC-website to obtain contact details and information on FSC-certified processing industries from which the cooperative can learn about their products and their required timber specifications. Similarly, the Dipantara manager uses his vast experience in timber selling as a director in the state forest company, which has numerous clients in the processing industries. He pointed out a major weakness in the way the state company sells its timber; it pre-determines the specifications of its logs, while different processing industries have different requirements for their products. Dipantara uses these *niche markets* to its full advantage. Its contracts with processing industries have steadily increased from only one in 2008 to twelve in 2013.

Both KWLM and Dipantara have stored logs in contrast to KWML that only harvests trees when it has a buyer. This helps potential buyers to identify which logs they need. Both enterprises are able to buy trees from their members with loans from financial institutions. KWLM collaborates with a credit institution to provide micro credit for its members. The cooperative also accumulates financial capital from its timber sales. The premium price of its timber is divided equally between its members and the cooperative. To accumulate funds, both KWLM and Dipantara have become more integrated. They have more farmer groups than when they started, even from different districts, and they also sell non-certified timber. This strategy is said to be very important, it enables them to offer their mem-

bers premium prices for certified timber, even when purchases from processing industries decline. As with any small-scale operation, both KWLM and Dipantara are still prone to competition with larger integrated companies. At the time of our research, the state forest company in the region offered massive discounts of up to 50 % on their timber. Understandably, many of their clients have abandoned their contracts and switched to the discounted, better quality timber.

4.4 Side benefits of engaging in certification

Our case studies have also revealed that the small-scale enterprises have continued to maintain their certification of sustainable forestry and legal verification. While smallholders' continue to receive funding for maintaining and renewing their certification, the potential windows of opportunities from certification and legal verification may also explain the smallholders' continued certification. Certification has been promoted as an avenue to improve forest practices and governance. Experience shows that a number of stakeholders – governmental, non-governmental and donors – are in many cases committed to providing financial and technical assistance for improving the livelihoods of smallholders and to invest in capacity building and physical infrastructure.

To date, few smallholder groups have engaged in either certification or legal verification due to the continued concerns that the financial benefits hardly outweigh the costs. This is an opportunity for the currently certified groups to absorb the wide range of aid, as our case studies revealed. In most cases, the aid is framed in the context of rural development and empowerment of smallholder farmers. Farmer members were given free seedlings, fertilisers, farm equipment, livestock (cows, goats and sheep) and often, micro loans. The KWLM and Dipantara farmers even receive a share of the profits. As a cooperative, KWML and KWLM

have a credit scheme for their respective members. In KWLM, the members have access to loans of more than USD 10,000. At the end of a financial year, they also receive dividends from the profits accumulated by the cooperative. In many cases, soft loans and dividends often serve as the main motivations for farmers to join a cooperative (see Harada & Wiyono, 2014).

Certification also provides opportunities for smallholders to increase their understanding of the requirements for managing their forests sustainably. Support from external stakeholders for the capacity building of farmers is notable in the case study villages. This includes training, cross-visits, internships and specialist consultations. In all cases, the farmer members are also trained to apply better silvicultural practices to improve the quality of the stand with the aim of obtaining better income from the wood. In most cases, smallholder tree farmers in Indonesia rarely apply appropriate silvicultural practices (singling, pruning, thinning and fertilising) and post-harvest management (Roshetko *et al.*, 2012). The poor silvicultural practices explain the smallholders low quality timber (Hardiyanto & Prayitno, 2007). The members are also trained to estimate the volume of harvested wood and associated prices. This is beneficial as in many cases farmers are often disadvantaged in transactions by traders who often conduct appraisals below the actual timber volume (Perdana *et al.*, 2012).

In addition to the funding received for the certification, KWML has received considerable assistance from the government (central and local) and donors since it was first certified in 2006. The most cited reason is that the cooperative demonstrates good forest management. For instance, in 2010, KWML received grants from the provincial government of nearly USD 4,000 as a start-up for a cattle business. In 2012, it also received a grant from the government of Japan for a training centre and office as well as a set of processing and drying machines. It is expected that these machines will support the cooperative's forest activities, not only planting but also processing industries. The group is also able to regularly generate income from providing timber milling and drying services. The district government has also sporadically provided the group with in kind (free seedlings, fertilisers etc.) and financial assistance.

5 Discussion

The core rationale that encourages farmer members to engage in certification is the promised premium prices for certified timber that exceeds the price offered when

they sell non-certified timber to local traders. For the certified groups, the business of certification is only visible when the economic returns offset the costs. Our research has clearly shown that certification involves high transactional indirect and direct costs. Auld *et al.* (2008) argued that compared to integrated forestry, non-industrial operations face higher costs of preparing for, paying for and responding to certification audits. Small groups with intermittent harvests generally lead to uncertain supply and a high cost per unit reflected in a greater percentage of costs for maintaining their certification (Irvine, 2000; Nussbaum *et al.*, 2001). Our case studies revealed that due to the size of the forest, certification becomes an extremely expensive business for smallholder tree growers. Expanding the scope of forest operations, i.e. more farmers and forest area under certification might be an option; all of the case studies have pursued this strategy.

Scaling up of further adoption of these certification programmes might be challenging, as small-scale enterprises must rely on assistance and facilitation from external parties. This is shown in all of our case studies. Similar case studies have also found that smallholder farmer groups rely heavily on external donors for organising them and bearing the certification costs (Bass *et al.*, 2001; Hinrichs *et al.*, 2008). Analysts doubt such models can sustain since donors usually only provide short-term assistance. Such is clearly evidenced in the KWML case. Combined with the limited benefits from being certified, the cooperative gave up its good forest certification due to its lack of financial resources. Globally, decertification of small-scale operations is not uncommon. For instance, in 2009 FSC decertified 47% of the earlier certifications of their small operations (Wiersum *et al.*, 2013). In contrast, suspension of certification of large operations is largely due to non-compliance to the standards (Forest Watch Indonesia, 2013). The high transaction costs appear to be the main issue for small-scale forestry. Our case studies revealed that whether smallholder groups remain in the 'good wood' business depends on their ability to self-finance and receiving worthwhile benefits from the certification.

While we did not assess the dynamics on the demand side, the case studies suggest that processing industries demand certified timber, particularly those with export orientations (see also Maryudi *et al.*, 2015). That KWML is unable to utilise the good credentials of its timber appears to be linked to its lack of market channels. This mirrors the common picture of smallholder farmers; they lack the capacity to understand market information and have weak linkages with market agents (Roshetko & Yuliyanti, 2002; Holding Any-

ongue & Roshetko, 2003; Roshetko *et al.*, 2008). In contrast, KWLM and Dipantara's success suggest that innovations and professionalism are useful for smallholder groups for tapping into the potential markets. The group managers actively searched for information regarding potential buyers of certified timber, what timber they specify and when they need the timber, and so on, using the internet and networking. There is also an increasing trend in the use of mobile phones and internet among smallholders that is said to provide avenues for timely and wider delivery of useful market information (Salami *et al.*, 2010). In Ecuadorian Amazon, smallholders obtain contracts with the buyers via phone calls or internet (Mejía & Pacheco, 2014). The use of mobile phones and internet in sub-Saharan Africa is also said to have had a positive impact on the way smallholders reach their customers (Aker, 2009).

6 Conclusion

Certification initiatives, both for sustainable forestry and legal verification, are promoted as a market-based policy instrument to promote improved forest management. The idea is that managers will be rewarded when they manage their forests wisely and sustainably. Smallholder tree growing in Indonesia is increasingly recognised as having good forest practices, as it produces a number of economic, ecological and social benefits for the farmers, the broader societies and the environment. Such is the main driver to encourage smallholder farmers to engage in certification to enjoy improved benefits from their tree growing activities. The more benefits smallholders obtain from tree growing, the more incentive for them to improve and sustain their productive base leading to an improved forest condition and environmental services.

There is a growing body of literature indicating growing market potential, particularly in Europe, for certified timber products. A number of companies, particularly do-it-yourself home improvement retailers, are entering certified wood markets as a response to a growing number of consumers willing to pay for forest products from sustainable and socially-responsible sources. Locally, there are emerging market opportunities for some timber industries, mostly for international markets looking for certified timber. However, our study has two major conclusions. First, we conclude that smallholders find it challenging to enter and participate in certified wood markets and to obtain the promised premium prices and remain vulnerable in the good wood business. The obvious costs of certification and the uncertain benefits have become major challenges for smallholders to become

incorporated into the markets. While the streamlined procedures were introduced to cut the costs, the costs are still clearly prohibitive for smallholder groups in Indonesia. Expanding the scope of forest operations, i.e. aggregating smallholder forest resources, will not necessarily achieve a better economy of scale as the complexity and diversity of smallholder forests also tends to increase with scale.

Secondly, we also argue that even though the market opportunities are there for the taking if a forest is certified, being certified alone is insufficient to tap the market opportunities. Certified forest enterprises need dedicated managers with adequate entrepreneurial skills to establish networks and contacts with potential buyers and to actively search for information on the log specifications required. They may also need to work closely with processors of certified logs. In many cases, tree growers and their cooperative managers are more familiar with farming activities. In addition, they may not be able to fully focus on the marketing of their timber as much of their time is devoted to their own farming activities. Taking these points into consideration, we advocate the importance of building the capacity of smallholders, particularly the managers and committee members, in entrepreneurship and marketing skills. Smallholder groups may need support that links them with potential buyers. More importantly, they clearly need channels to certified markets. Partnerships with more established forest companies might also be a more viable option, particularly when smallholder farmers and the group managers are not prepared to or unable to self-finance the certification and to deal with the complexities of the timber markets. Established companies are usually more prepared and knowledgeable about promotion, negotiation, financing, payments and risks in the market. They may also bring technical, marketing and management expertise to the smallholders and their groups. The partnership must nonetheless be based on mutual benefits and shared values and risks between the participants. Other incentives of policy instruments might be more effective in increasing the comparative advantages of smallholder tree-growers in becoming more competitive commercially, compared to other plantation development and management strategies. For example, supporting robust and competitive enterprises at the management level by developing programmes for improving smallholders' business skills complemented by better silvicultural practices.

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References

- Aker, J. C. (2009). Mobile Phones, Markets and Firms in Sub-Saharan Africa. *Private Sector & Development*, 4, 10–12.
- Anderson, R. C. & Hansen, E. N. (2004). Determining consumer preferences for ecolabeled forest products: an experimental approach. *Journal of Forestry*, 102 (4), 28–32.
- Auld, G., Gulbrandsen, L. H. & McDermott, C. L. (2008). Certification Schemes and the Impacts on Forests and Forestry. *Annual Review of Environment and Resources*, 33, 187–211.
- Awang, S. A., Wiyono, E. B. & Sadiyo, S. (2007). *Unit Manajemen Hutan Rakyat: Proses Konstruksi Penguasaan Lokal*. Banyumili Art Network, Yogyakarta.
- Bass, S., Thornber, K., Markopoulos, M., Roberts, S. & Grieg-Gran, M. (2001). Certification's impacts on forests, stakeholders and supply chains. A report of the IIED project: Instruments for sustainable private sector forestry. International Institute for Environment and Development, London. Available at: <http://pubs.iied.org/pdfs/9013IIED.pdf> (last accessed: 26.11.2016).
- Brockmann, K. L., Hemmelskamp, J. & Hohmeyer, O. (2012). *Certified tropical timber and consumer behaviour: The impact of a certification scheme for tropical timber from sustainable forest management on German demand*. Physica Verlag, Heidelberg.
- Buddhisatyaning, T. (2005). *Ragam Pola Hutan Rakyat di Dlingo, Bantul*. In: Awang, S.A. (Ed.). *Petani, Ekonomi dan Konservasi: Aspek Penelitian dan Gagasan, Seri Bunga Hutan Rakyat, Pustaka Hutan Rakyat*. Debut Press, Yogyakarta, Indonesia.
- Butterfield, R., Hansen, E., Fletcher, R. & Nikinmaa, H. (2005). *Forest Certification and Small Forest Enterprises: Key Trends and Impacts - Benefits and Barriers*. The Forest Trends, Washington DC.
- Cai, Z. & Aguilar, F. X. (2013). Consumer stated purchasing preferences and corporate social responsibility in the wood products industry: A conjoint analysis in the US and China. *Ecological Economics*, 95, 118–127.
- Cashore, B., Auld, G. & Newsom, D. (2004). *Governing through Markets: Forest certification and the emergence of non-state authority*. Yale University Press, New Haven.
- Cashore, B. & Stone, M. W. (2012). Can legality verification rescue global forest governance? Analyzing the potential of public and private policy intersection to ameliorate forest challenges in Southeast Asia. *Forest Policy and Economics*, 18 (5), 13–22.
- Durst, P., McKenzie, P. J., Brown, C. L. & Appanah, S. (2006). Challenges facing certification and eco-labelling of forest products in developing countries. *International Forestry Review*, 8 (2), 193–200.
- Forest Watch Indonesia (2013). Certification Rift in Indonesia. Available at: <http://fwi.or.id/english/publikasi/certification-rift-in-indonesia/> (last accessed: 12.11.2016).
- Foundjem-Tita, D., Tchoundjeu, Z., Speelman, S., D'Haese, M., Degrande, A., Asaah, E., van Huylbroeck, G., van Damme, P. & Ndoye, O. (2013). Policy and Legal Frameworks Governing Trees: Incentives or Disincentives for Smallholder Tree Planting Decisions in Cameroon? *Small-scale Forestry*, 12, 489–505.
- FSC (2015). Market Info Pack: An overview of recent trends and current status of Forest Stewardship Council (FSC) certification. Available at: <https://ic.fsc.org/preview.2015-fsc-market-info-pack.a-5067.pdf> (last accessed: 11.01.2017).
- Fujiwara, T., Awang, S. A., Widayanti, W. T., Septiana, R. M., Hyakumura, K. & Sato, N. (2015). Effects of National Community-Based Forest Certification on Forest Management and Timber Marketing: A Case Study of Gunung Kidul, Yogyakarta, Indonesia. *International Forestry Review*, 17 (4), 448–460.
- Gulbrandsen, I. (2004). The emergence of non-state authority in forestry. In: Bostrom, M., Foellessdal, A., Klinton, M. & Soerensen, M. P. (eds.), *Politics consumerism: its motivations, power and conditions in the Nordic countries and elsewhere*. pp. 320–337, Nordic Council of Ministers, Oslo, Norway.

- Hansmann, R., Koellner, T. & Scholz, R. W. (2006). Influence of consumers' socioecological and economic orientations on preferences for wood products with sustainability. *Forest Policy and Economics*, 8, 239–250.
- Harada, K. & Wiyono (2014). Certification of a Community-based Forest Enterprise for Improving Institutional Management and Household Income: A Case from Southeast Sulawesi, Indonesia. *Small-scale Forestry*, 13 (1), 47–64.
- Hardiyanto, E. B. & Prayitno, T. A. (2007). Present Utilization of Small-Diameter Teak Log from Community Teak Plantations in Java and Eastern Indonesia. Technical Report ITTO PPD 121/06 Rev. 2(I), International Tropical Timber Organization (ITTO), Yokohama, Japan. Available at: http://www.itto.int/files/itto_project_db_input/2592/Technical/PPD121-06%20Technical%20Report%20.pdf (last accessed: 26.11.2016).
- Hinrichs, A., Muhtaman, D. R. & Irianto, N. (2008). *Forest Certification on Community Land in Indonesia*. Deutsche Gesellschaft für Technische Zusammenarbeit (GTZ) GmbH, Eschborn, Germany.
- Holding Anyonge, C. & Roshetko, J. M. (2003). Farm-level timber production: orienting farmers towards the market. *Unasylva*, 54, 48–56.
- Irvine, D. (2000). Certification and community forestry: Current trends, challenges and potential. Background paper for the World Bank/WWF Alliance Workshop on Independent Certification, Nov. 9–10, 1999, Washington, D.C., USA.
- Jensen, K., Jakus, P. M., English, B. & Menard, J. (2003). Market participation and willingness to pay for environmentally certified products. *Forest Science*, 49 (4), 632–641.
- de Jong, W., Cornejo, C., Pacheco, P., Pokorny, B., Stoian, D., Sagogal, C. & Louman, B. (2010). Opportunities and challenges for community forestry: Lessons from tropical America. In: *Forests and society – Responding to global drivers of change*. IUFRO World Series Volume 25, pp. 299–313, IUFRO, Vienna, Austria.
- Kandel, P. N. (2007). Effects of forest certification towards sustainable community forestry in Nepal. *Banko Janakari*, 17 (1), 11–16.
- Lindstrom, T., Hansen, E. & Juslin, H. (1999). Forest certification: the view from Europe's NIPFs. *Journal of Forestry*, 97 (3), 25–30.
- Maryudi, A. (2005). Beberapa kendala bagi sertifikasi hutan rakyat. *Jurnal Hutan Rakyat*, 7 (3), 25–36.
- Maryudi, A. (2009). *Forest Certification for Community-Based Forest Management in Indonesia: Does LEI Provide A Credible Option?*. Institute for Global Environmental Strategies, Japan.
- Maryudi, A. (2016). Choosing legality verification as a policy instrument to tackle illegal logging in Indonesia. *Forest Policy and Economics*, 68, 99–104. doi: 10.1016/j.forpol.2015.10.010.
- Maryudi, A., Nawir, A. A., Permadi, D. B., Purwanto, R. H., Pratiwi, D., Syofi'i, A. & Sumardamto, P. (2015). Complex regulatory frameworks governing private smallholder tree plantations in Gunungkidul District, Indonesia. *Forest Policy and Economics*, 59, 1–6. doi:10.1016/j.forpol.2015.05.010.
- Maryudi, A., Nawir, A. A., Sekartaji, D. A., Sumardamto, P., Purwanto, R. H., Sadono, R., Suryanto, P., Soraya, E., Soeprijadi, D., Affianto, A., Rohman, R. & Riyanto, S. (2016). Smallholder farmers' knowledge of regulations governing the sale of timber and supply chains in Gunungkidul District, Indonesia. *Small-scale Forestry*, 1–13. doi:10.1007/s11842-016-9346-x.
- Mejía, E. & Pacheco, P. (2014). Forest use and timber markets in the Ecuadorian Amazon. Center for International Forestry Research, Occasional Paper 111. Available at: http://www.cifor.org/publications/pdf_files/OccPapers/OP-111.pdf (last accessed: 26.11.2016).
- Michon, G. & de Foresta, H. (1995). The Indonesian agro-forestry model: Forest resource management and biodiversity conservation. In: Halladay, P. & Gilmour, D. A. (eds.), *Conserving Biodiversity outside Protected Areas: The roles of traditional agroecosystems*. pp. 90–106, IUCN, Gland, Switzerland.
- Ministry of Forestry (2009). Statistik kehutanan Indonesia (Forestry statistics of Indonesia) 2008, Ch. 3. Rehabilitasi lahan dan perhutanan sosial (Land Rehabilitation and Social Forestry). Available at: http://storage.jak-stik.ac.id/ProdukHukum/kehutanan/Statistik_Kehutanan_2008_RLPS.pdf (last accessed: 12.01.2017).
- Molnar, A. (2003). *Forest Certification and Communities: Looking forward to the next decade*. The Forest Trends, Washington D.C.

- Nawir, A. A. (2013). Commercial community tree-growing inside state forests: an economic perspective from eastern Indonesia. *International Forestry Review*, 15 (2), 200–217.
- Nawir, A. A., Muniarti, Rumboko, L., Hiyama, C. & Gumartini, T. (2007). Portraits of rehabilitation projects in Indonesia: impacts and lessons learnt. In: Nawir, A. A., Murniati & Rumboko, L. (eds.), *Forest rehabilitation in Indonesia: Where to after three decades?*. pp. 113–175, Center for International Forestry Research (CIFOR), Bogor, Indonesia.
- Nussbaum, R., Garforth, M., Scrase, H. & Wenban-Smith, M. (2001). *Getting small forest enterprises into certification: An analysis of current FSC accreditation, certification and standard-setting procedures identifying elements which create constraints for small forest owners*. ProForest, Oxford, England.
- Overdevest, C. (2010). Comparing forest certification schemes: the case of ratcheting standards in the forest sector. *Socio-Economic Review*, 8, 47–76.
- Owari, T., Juslin, H., Rummukainen, A. & Yoshimura, T. (2006). Strategies, functions and benefits of forest certification in wood products marketing: Perspectives of Finnish suppliers. *Forest Policy and Economics*, 9 (4), 380–391.
- Perdana, A., Roshetko, J. M. & Kurniawan, I. (2012). Forces of competition: smallholding teak producers in Indonesia. *International Forestry Review*, 14 (2), 238–248.
- Rametsteiner, E. & Simula, M. (2003). Forest certification—an instrument to promote sustainable forest management? *Journal of Environmental Management*, 67, 87–98.
- Rickenbach, M. & Overdevest, C. (2006). More than Markets: Assessing Forest Stewardship Council (FSC) Certification as a Policy Tool. *Journal of Forestry*, 104 (3), 143–147.
- Rickenbach, M. G. (2002). Forest certification of small ownerships: some practical challenges. *Journal of Forestry*, 100 (6), 43–47.
- Rohadi, D., Herawati, T., Padoch, C. & Race, D. (2015). Making timber plantations an attractive business for smallholders. Center for International Forestry Research, Policy Brief No.114. Available at: http://www.cifor.org/publications/pdf_files/infobrief/5515-infobrief.pdf (last accessed: 26.11.2016).
- Rohadi, D., Roshetko, J., Perdana, A., Blyth, M., Nuryartono, N., Kusumowardani, N., Pramono, A. A., Widyani, N., Fauzi, A., Sasono, J., Sumardamto, P. & Manalu, P. (2012). Improving economic outcomes for smallholders growing teak in agroforestry systems in Indonesia. Final Report: FST/2005/177. Australian Centre for International Agricultural Research (ACIAR). Available at: http://aciarc.gov.au/files/node/14530/fr2012_11_improving_economic_outcomes_for_smallho_12552.pdf (last accessed: 26.11.2016).
- Roshetko, J. M., Astho, A., Rohadi, D., Widyani, N., Manurung, G. S., Fauzi, A. & Sumardamto, P. (2012). Smallholder Teak Systems on Java, Indonesia: Income for families, timber for industry. In: Meyer, S. R. (ed.), *IUFRO Small-Scale Forestry Conference 2012: Science for Solutions Conference Proceedings*. pp. 162–167, IUFRO, Amherst, USA.
- Roshetko, J. M., Snelder, D. J., Lasco, R. D. & van Noordwijk, M. (2008). Future Challenge: A Paradigm Shift in the Forestry Sector. In: Snelder, D. J. & Lasco, R. D. (eds.), *Smallholder Tree Growing for Rural Development and Environmental Services: Lessons from Asia*. pp. 453–486, Springer Verlag, Dordrecht, Netherlands.
- Roshetko, J. M. & Yuliyanti (2002). Pemasaran untuk hasil-hasil wanatani di tingkat petani. In: Roshetko, J. M., Mulawarman, W. J., Santoso & Oka, I. N. (eds.), *Wanatani di Nusa Tenggara*. pp. 101–111, ICRAF and Winrock International, Bogor, Indonesia.
- Ruslandi, Klassen, A., Romero, C. & Putz, F. E. (2014). Forest Stewardship Council certification of natural forest management in Indonesia: Required improvements, costs, incentives, and barriers. In: Katila, P., Galloway, G., de Jong, W., Pacheco, P. & Mery, G. (eds.), *Forest under Pressure: Local Response to Global Issues*. ch. 15, pp. 255–273, IUFRO, Tampere, Finland.
- Sabastian, G., Kanowski, P., Race, D., Williams, E. & Roshetko, J. (2014). Household and farm attributes affecting adoption of smallholder timber management practices by tree growers in Gunungkidul region, Indonesia. *Agroforestry Systems*, 88 (2), 257–268.
- Salami, A., Kamara, A. B. & Brixiova, Z. (2010). Smallholder Agriculture in East Africa: Trends, Constraints and Opportunities. African Development Bank, Working Papers Series No 105. Available at: <http://www.afdb.org/fileadmin/uploads/afdb/Documents/Publications/WORKING%20105%2020PDF%20d.pdf> (last accessed: 26.11.2016).

- Shantiko, B., Purnomo, H. & Irawati, R. H. (2013). *Furniture, timber and forest ecosystem service value chains*. Center for International Forestry Research (CIFOR), Bogor, Indonesia.
- Tiesl, M. F., Peavey, S., Newman, S., Buono, J. & Hermann, M. (2002). Consumer reactions to environmental labels for forest products: a preliminary look. *Forest Products Journal*, 52 (1), 44–50.
- Triple Line Consulting (2005). *Sawn Timber Supply Chain Study*. Final Report. International Finance Corporation Program for Eastern Indonesia SME Assistance (IFC-PENSA), Jakarta.
- UNECE/FAO (2005). *Forest Products Annual Market Review 2004-2005*. Available at: <http://www.unece.org/forests/fpamr2005.html> (last accessed: 12.11.2016).
- UNECE/FAO (2013). *Forest Products Annual Market Review 2012-2013*. Available at: <http://www.unece.org/forests/fpamr2013.html> (last accessed: 12.11.2016).
- UNECE/FAO (2015). *Forest Products Annual Market Review 2014-2015*. Available at: <http://www.unece.org/forests/fpamr2015.html> (last accessed: 12.11.2016).
- Viana, V. M. (1996). *Certification of Forest Products: Issues and Perspectives*. Island Press, Washington DC.
- Wiersum, K. F., Humphries, S. & van Bommel, S. (2013). Certification of community forestry enterprises: experiences with incorporating community forestry in a global system for forest governance. *Small-scale Forestry*, 12 (1), 15–31.
- Yovi, E. Y., Bahrani & Nurrochmat, D. R. (2009). Sources of timber and constraints to the timber acquisition of Jepara's small-scale furniture industries. *Jurnal Manajemen Hutan Tropika*, 15 (1), 32–40.