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Who is importing forest products from Africa to China? An analysis of implications for initiatives to enhance legality and sustainability

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Abstract Global forest product value chains are increasingly subject to regulatory requirements, such as legality and sustainability certification. For African forest products, a shift in the export destinations of forest products towards China, the leading timber product manufacturer, has raised concerns that social and environmental product and process standards are declining. Aggregate drivers of this shift have been documented, yet there has been little enterprise-level analysis of Chinese actors in African timber imports based in China. This paper provides an initial analysis, highlighting implications for existing and emerging regulatory initiatives. Data show that although an increasing number of Chinese private enterprises is engaged in African timber imports, import volumes remain concentrated among a small number of geographically clustered private and state-owned firms. Government-led schemes are beginning to address timber legality concerns. But given China's growing domestic market for finished wood products, sustainability certification requirements driven by the US and EU will not be sufficient to ensure improved sourcing by Chinese firms.

Keywords China · Africa · Timber trade · Standards · Certification · Global value chain

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1 Introduction

Between 1999 and 2009, the value of trade between Africa and China grew from USD 4.8 billion to USD 72 billion. China has now become Africa's second largest trading partner after the US (or third largest when the EU25 is considered).[1] In general, China's imports from Africa are dominated by commodities, while China's exports are dominated by manufactured goods (Broadman 2007). In part, this reflects Africa's relative abundance of natural resources and China's growing comparative advantage in labour- and increasingly capital-intensive processing. It also reflects the development of China's role in global value chains (GVC) as a manufacturing base to provide processed products and consumer goods for both western and domestic markets (Goldstein et al. 2006; Tull 2006).

Among China's commodity imports from Africa, forest products are the third largest, after oil and mineral ores.[2] The volume of China's forest product imports from Africa has doubled in the last decade from around 1.7 million m^3 in 1999 to 3 million in 2009. Logs have accounted for over 80 % of the total volume of forest products imported to China from Africa.[3] Sawnwood, veneer and pulp account for most of the remainder, while imports of other products such as fibreboard and wood chips have been limited (Kozak and Canby 2007). This preference for raw materials such as roundwood and pulp imports reflects China's strong wood processing and wood-based product manufacturing industry.

While African roundwood is but a small share of China's total imports, averaging 8 % by volume over the period 1999–2009, China's share of Africa's exports has been increasing. In 2000, China accounted for 35 % of African timber exports, but by 2009 this share had doubled to over 78 %. The majority of African log imports by China come from central African countries, especially those rich in *okoumé*, although eastern African countries also export smaller volumes to China. Gabon has historically been the most important roundwood supplier to China. Republic of Congo, Cameroon and Mozambique have also been exporting substantial volumes.

China's emerging role in Africa's forestry sector has raised a range of concerns, some of which are better substantiated than others. The broad range of concerns is reflected in claims of adverse impacts on African forest environments (Mackenzie 2006; Milledge et al. 2007; Cunningham et al. 2008), disadvantaged labour conditions (Mackenzie 2006), claims that China is a leading driver of illegal timber trade (Mackenzie 2006; Milledge et al. 2007; Asche and Schüller 2008), and statements that Chinese business practices fuel corruption and undermine governance in African countries (Roque 2009). China's clear preference for unprocessed logs has been said to limit African countries' abilities to create employment and develop value-adding capabilities (Mackenzie 2006), while others note that some sector-level changes brought about by changes in the structure of exports may in fact be beneficial for African forest product sectors given its current capacities (Terheggen 2010).

Global forest product commodity chains are increasingly subject to regulatory standards (ITTO 2010). The US Lacey Act and the EU Forest Law Enforcement Governance and Trade (FLEGT) Action Plan (EU 2003) are examples of major instruments attempting to address international trade in illegal timber and in some cases also the sustainability of forest management. Given the role of the EU as a significant importer of most African

[1] UN Comtrade data, last accessed July 2012. Total trade = sum of imports and exports of Total No 95.

[2] See UN Comtrade data.

[3] All wood product data in this and the following paragraph are based on Canby et al. (2007) updated by authors.

forest products, and the EU and US as the world's largest wood product consumer markets, these initiatives may potentially ensure implementation of safeguards to protect African interests. By contrast, a shift in African export destination from developed countries to China may be associated with a decline in product and process standards, including civil society (environmental) standards (Kaplinsky et al. 2011; Terheggen 2010).

If Chinese imports of African wood products are also to ensure implementation of legal, social and environmental safeguards, it is necessary to understand China's role in global forest product value chains in general, and the role of specific Chinese actors in particular, since it is these actors who would be the target of regulation. This article addresses this latter need, analysing the emergence of China's role in the global forest product value chain, specifically that of Chinese importers based in China sourcing roundwood from Africa. The implications of our findings for existing and emerging regulatory initiatives are discussed.

The second section discusses the importance of standards in GVC and the key role of governors on the distribution of activities within a chain. The third section outlines China's general role in forest product chains and then identifies importers of African forest products by enterprise type, geographical location within China, and by scale of import volumes. Section 4 summarises relevant international and Chinese domestic initiatives to ensure environmental and social safeguards in the forest product trade. The concluding section analyses the implications of China's enterprise-level trends for these regulatory initiatives.

2 Governance and standards in global value chains

GVC describe the sequenced activities that are necessary to bring final products to consumers, starting with the extraction of raw materials, their processing into intermediate and final products, and other activities such as design and marketing (Kaplinsky and Morris 2007). The GVC framework allows the identification of actors within chains, the spatial mapping of actors' positions and activities, and a construction of the structure of production. The GVC literature is based on the recognition of disintegrated production processes enabled by modern communication and information technologies, which reduces transportation costs and barriers to trade, and facilitates producer responses to changes in consumer tastes (Milberg and Winkler 2010). Enterprises play key roles in GVCs, as firms in the North have been observed to create capacities in the developing countries to which they outsource non-core activities (Gereffi 1994).

The GVC framework recognises that observed patterns of a spatial division of labour and (intermediate) product flows, next to the distribution of value-added and incomes along chains are a result of initiation and institutionalisation. Lead firms govern chains in ways that enable them to coordinate nodes of production. Lead firms also have the power to set the rules and conditions of participation for other chain actors (Gibbon et al. 2008; Sturgeon 2007). Chains governed by lead firms are in its most simplistic form categorised as either buyer-driven (often in labour-intensive sectors) or producer-driven (capital-intensive manufacturing sectors), although more nuanced models of governance have since been developed (Gereffi et al. 2005; Gibbon et al. 2008).

The need for chain governance, the setting of rules and enforcement of operational parameters has led to the formulation of standards. Firms introduce performance standards that allow them to codify complex information, to reduce transaction risks, and to control the access of suppliers to their core activities and markets. Concurrently, firms operate in

an environment in which public and private standards are dictated to them (Nadvi 2008). Governments first established standards governing products (e.g. quality) in reaction to concerns about social and ecological impacts of processes (e.g. sustainability, child labour) since the 1970s. NGOs and consumer pressures have often led to the introduction of private standards. These may take the form of voluntary agreements (e.g. Forest Stewardship Council, Programme for Endorsement of Forest Certification) and industry codes of conduct.

The reference to private standards by government initiatives (e.g. government timber purchasing rules now often refer to FSC and PEFC accreditations) or the cooperation of private industry associations with NGOs (e.g. the FSC scheme started as a collaboration between NGOs, scientific institutions, and private industry) has blurred the lines between types of standards to some degree. In general, a multitude of standards affect industries (see also Sect. 4). These standards are set both by lead firms within a GVC and by institutions external to GVCs such as governments and private initiatives (Sun and Canby 2010; Terheggen 2010). Standards can be said to reflect notions of the public, and consumers in particular, about product and process features, or to a smaller degree about the structure of and distribution of incomes within GVCs (e.g. Fair Trade industries).

In the past, GVC studies took it as given that lead firms, institutions, plus final markets governing and influencing GVCs are situated in developed countries. Yet with the increasing dominance of emerging economies, most prominently China, there are now studies that focus on a possible difference between GVCs driven by developed countries and emerging economies (Fold and Larsen 2011; Kaplinsky et al. 2011; Terheggen 2010, 2011; Tijaja 2010). These studies argue that emerging economies are different in their consumption patterns, their stage of industrial development and consumer awareness, differences that are likely to be reflected in the structure, distribution of income and governance system of a GVC.

For example, Fold and Larsen (2011) discussed the relevance of Russia and Eastern European countries for African agricultural smallholders given that quality requirements and food safety standards are considerably lower there than in Northern markets. Tijaja (2010), studying the cassava industry in Thailand, found that China sets lower standards and demands less processed or lower value products compared to the EU. Kaplinsky et al. (2011) conclude that, since China-driven chains are less standard-intensive across all types of standards (firm, public, private), upstream chain actors may be forced into low-technology low-skills niches of the chain with potentially serious implications for countries' economic development prospects. Discussing the impact of China on Gabon's tropical timber value chain, Terheggen (2010, 2011) notes the re-allocation of factors of production towards extractive instead of processing activities and a change in traditional distributions of value-added.

3 The role of China and Chinese importers in global timber-based value chains

3.1 China's changing role in the global timber-based value chain

China's wood-based manufacturing industry has benefited from several aspects of general domestic and international trade reforms initiated in 1978, and China's forestry sector now accounts for 5.3 % of total GDP (SFA 2010). The sectoral structure of the industry has changed from a state-controlled and state-owned industry towards a more diverse landscape of state-owned enterprises, as well as private companies, traders and specialty wood

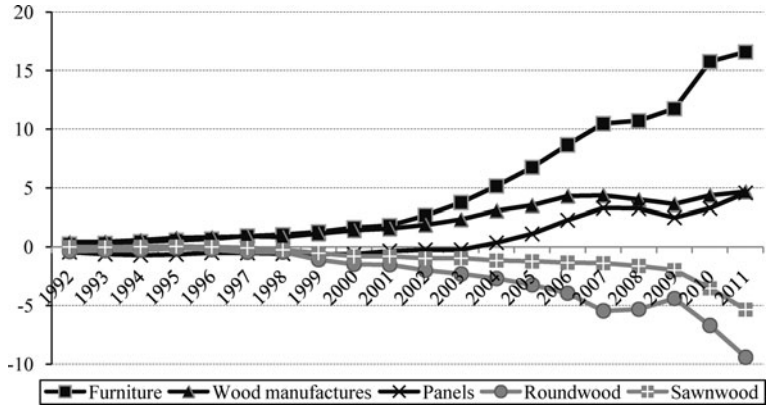

Fig. 1 China's trade surplus in processed forest product groups (1992–2011, in billion USD). *Source* UN Comtrade, compiled by authors

distribution markets. An improved business environment further attracted foreign investors that introduced modern processing technologies and managerial expertise. One key reform was the abolition of import licence requirements, which also made it much easier for Chinese firms to source necessary inputs abroad.

Chinese industries have exploited the new economic opportunities and developed the necessary skills to undertake activities further downstream in the value chain. As shown in Fig. 1, China now runs a trade surplus for all processed forest product groups, such as wooden furniture, wood manufactures and panels. Over the period from 1992 to 2011, China's trade balance for roundwood and simply processed forest products, like sawnwood, worsened. Chinese industries thus no longer import processed products, and the rapidly developing timber-based processing sector requires input materials to process products domestically. The strongest African timber consuming sectors in China are the (antique) furniture, wood mouldings, flooring and plywood industries. Industry experts believe that export-oriented plywood manufacturers almost completely depend on imported timber.

Wood-based panel (WBP) is an upstream product of the industrial chain, mainly used in processed products, such as furniture. There are three categories of WBP: plywood, fibreboard and flakeboard. WBP makes use of a variety of wood materials, including by-products of other processes, and is thus an efficient way to use wood material and save timber resources. With a strict domestic logging ban in place, and strong domestic and overseas demand for WBP, WBP production has greatly increased. From 1999 to 2009, WBP production increased at an average annual growth rate of 25 %, and in 2003, China replaced the USA as the biggest WBP producer in the world (Yuan et al. 2007). The production of plywood, for which African timber is often used to produce face veneer, increased from around 1.6 million to 45.3 million cubic metres over this period.[4]

China has a long history of furniture manufacture and is now the biggest furniture manufacturing and exporting country in the world. Wooden furniture is an important product type, accounting on average for around 30 % of total furniture production in China (China Furniture Association, various years). In recent years, due in part to international demand, wooden furniture production has been steadily increasing. In 2009, 205 million

[4] FAO ForesSTAT, accessed July 2012.

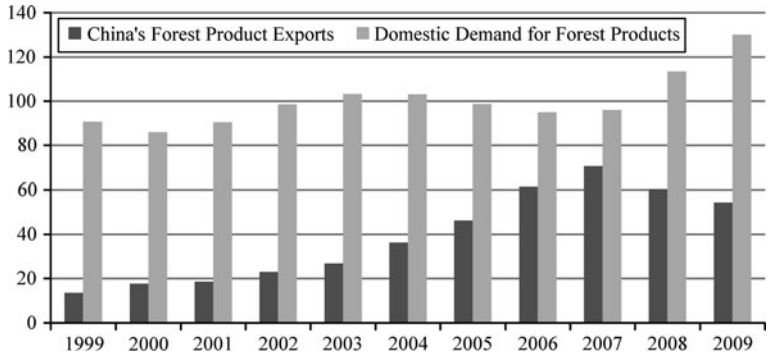

Fig. 2 China's exports of forest products and domestic demand (1999–2009, in million m^3 RWE). *Source* China customs (various years) and SFA (2010), compiled by authors

pieces were produced, three times more than in 2000, and China is now the biggest furniture exporting country (SFA 2010). The antique furniture sub-sector strongly depends on particular species of wood, and almost all roundwood exported from Mozambique to China is absorbed by this sub-sector.

Wood flooring is a newly emerging industry in China. Following broader economic development and rapid increases in the stock of housing in China in particular, wood flooring has gradually come to dominate the domestic household decoration industry (China Building Material Industry Association 2006). There are three main types of wood flooring: laminated wood floor (LWF), solid wood floor (SWF) and engineered wood floor (EWF). Limits on the supply of solid wood resources have greatly boosted the development of LWF and EWF. In 2000, LWF and SWF accounted for almost all wood flooring production. Since then, the production of EWF has increased, while SWF has slowly decreased, gradually being substituted for by LWF and EWF. Due to features such as colour, some African tropical timbers have particular roles in wood flooring production.

Developed countries, foremost the EU and US, are a significant final consumer market for Chinese manufactured products. Compared to 1999, by 2007, the EU market for Chinese manufactured timber products had grown over 800 % and the US market by nearly 400 % (Canby et al. 2007). Despite this growth in export markets, Chinese domestic demand has grown to provide the dominant consumer market for Chinese manufacturers of wood-based products. A rough estimate of the size of China's domestic consumption is shown in Fig. 2, which is based on subtracting exports from the sum of China's imports of forest products and domestic timber supply.

On average, from 1999 to 2009, exports accounted for only a quarter of total consumption of Chinese wood products, illustrating the scale and importance of China's domestic market for forest product manufacturers in China. The rise in private timber consumption is strongly related to the growth of the construction and housing sectors. Specifically, the latter was stimulated by national housing and banking sector reforms of the 1990s (Gao 2010), which allowed private ownership of housing, divested state-owned housing to individuals, and provided easier private access to capital. From 1999 to 2003, an annual average of around 1 billion square metres of urban residential housing was under construction each year, and from 2004 onwards, this steadily increased, exceeding 3 billion square metres under construction in 2009, with completions following a similar trend.[5]

[5] http://www.stats.gov.cn/tjsj/ndsj/2010/indexeh.htm, Tables 5–19.

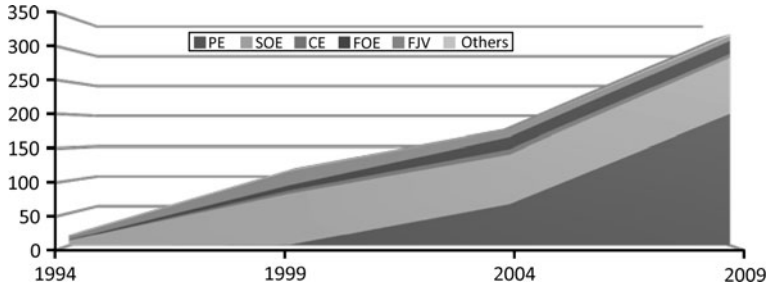

Fig. 3 Number of Chinese enterprises involved in African timber imports (1994, 1999, 2004 and 2009, by enterprise type). *PE* Private enterprises, *SOE* state-owned enterprises, *CE* collective enterprises, *FOE* foreign-owned enterprises, *FJV* foreign joint ventures. *Source* China customs (various years), compiled by authors

The financial crisis beginning in 2008 led to a sharp decline in wood-based product exports, but this decline was more than made up for by the increase in domestic consumption, driven in part by a large number of construction projects initiated as a result of China's own stimulus package. By 2009, Chinese domestic consumption of wood-based products had exceeded 100 million cubic metres, more than twice the volume of China's total exports (SFA 2010). Thus, although the USA and EU are important consumer markets, domestic consumption is the largest market for Chinese manufactured wood-based products.

3.2 Chinese actors in African timber imports

While some research has documented the impacts of the China-Africa forest product trade in Africa (Cerutti et al. 2011; Terheggen 2010, 2011; Mackenzie 2006), actors, trends and drivers on the Chinese side have rarely been investigated below the aggregate level presented in the previous sections (but see IUCN 2009a). Enterprise-level data from China Customs (various years) on roundwood timber imports from African countries were obtained for a sample of years between 1993 and 2010. We use this data to understand trends in the total numbers of Chinese enterprises involved in the import trade, and their composition by ownership (e.g. state, private), and to document the development of geographical clusters within China of firms involved in the African timber import business.[6]

As the total volume of African roundwood imports has increased, the number of enterprises involved in import activities has increased. In 1994, only 16 enterprises were engaged in timber imports from Africa, but by 2009 this figure had reached 323. Based on the classification reported in the customs data, importing enterprises were categorised by form of ownership: state-owned enterprise (SOE), collective enterprise (CE), private enterprise (PE), foreign-owned enterprise (FOE), foreign joint venture (FJV) and 'other' (Fig. 3).

[6] Data from China Customs on the specific firms and their volumes of import is the most comprehensive source available. Many of the African exporting countries do not report comprehensive data, so checking data accuracy using mirror statistics is not feasible. By its nature, data on illegal imports is not available, although estimates using other sources suggest that illegal imports to China are still significant (Lawson 2010). A range of other sources of error may also exist, including differences in product classification and mis-attribution of source of original for shipments through Hong Kong (Castaño 2006). While we are aware of the potential shortcomings of this data source, it is the only available data source providing consistent data over a long period.

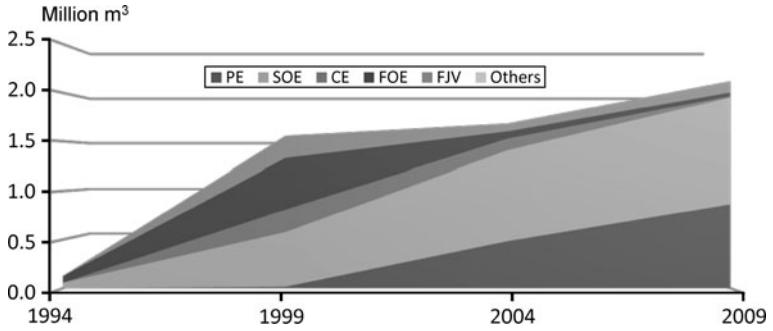

Fig. 4 Import volume by different types of Chinese enterprises involved in African timber imports (1994, 1999, 2004 and 2009 in million m^3). *PE* Private enterprises, *SOE* state-owned enterprises, *CE* collective enterprises, *FOE* foreign-owned enterprises, *FJV* foreign joint ventures. *Source* China customs (various years), compiled by authors

In 1994, the main types of enterprise engaged in imports from Africa were SOEs (50 %) and FJVs (37.5 %). In the second half of the 1990s, the number of SOEs engaged in the trade increased significantly, but since 2000 the number has remained relatively stable. The involvement of private enterprises began in 1999, but skyrocketed after 2004, growing from one in 1999 to 201 in 2009. In absolute terms, except for FJVs, the number of enterprises of all types engaged in the trade has increased, but the proportion of private enterprises has increased significantly. A larger number of private enterprises are now engaged in African timber imports than SOEs.

Regulatory changes explain these trends. Prior to 1994, timber-importing rights were limited to SOEs only. A change in Chinese government regulations effective from 1994 allowed the involvement of other enterprise types (State Council 1994), but private enterprises were only permitted to apply for import licences as of 1999 (MOFTEC 1998). Further changes in the regulations in 2004 (State Council 2004) also relaxed the requirements for private enterprises, leading to an explosion of the numbers of private firms joining the trade. Private enterprises now account for the majority of Chinese firms engaged in importing timber from Africa.

For each of the selected years, SOEs account for the largest proportion of total imports by volume (on average 50 %), followed by private enterprises (around 30 %). Thus, the average volume of timber imported per enterprise is higher for SOEs (10,337.5 m^3) than for other enterprise types, including PEs (average import volume of 6,416.3 m^3) (Fig. 4). The average volume of imports by each private enterprise has increased significantly over time, and some of the largest importers in individual years are now private enterprises. Nevertheless, within the top thirty importers, PEs account for a smaller number of firms than SOEs, and the same pattern is seen in the data on imports by volume.

In general, a high proportion of total import volumes are consistently shared among a relatively small number of firms (all types of ownership). For the selected years analysed, the customs data show that the top five enterprises account for over 40 % and the top thirty enterprises account for over 80 % of African timber imports by volume. Adding total imports together over the five periods analysed, only nine firms conducted 40 % of total imports, indicating a high level of concentration.

A comparison of the name list of enterprises among the top five and top thirty importing enterprises in 2004 and 2008 shows that three out of the top five firms and nine out of the top thirty firms are present in both lists. Out of the top thirty importers by volume in 2008

and 2009, nineteen companies are present in both lists. Most private firms import small or even very small amounts. Other enterprise types have been marginalized in the African timber import trade. According to a small number of enterprise interviews conducted, the large number of private enterprises importing small volumes includes many non-specialised companies purchasing timber simply to fill part-empty containers returning from Africa. It is also not uncommon for a major importing firm to reduce or cease imports for a year after importing a particularly large consignment. The high degree of concentration of import volumes among a small number of firms partly explains the fluctuation in African timber import volumes to China between years. Several major importers' decisions can have clear impacts on the total volume imported to China. This effect is also reflected in fluctuations in the total volume of imports at provincial level.

Enterprises engaging in the Africa timber trade are mostly concentrated in a small number of provinces, particularly Guangdong, Zhejiang, Shanghai and Jiangsu. Together, these four provinces account for 80 % of the total number of enterprises engaging in the trade. By volume, the major importing provinces in China are Jiangsu, Zhejiang and Shanghai. Shandong's share of total African timber imports is relatively small, at around 14 %, but the number of enterprises involved is also relatively small, indicating that there are a few but large importers active in that province.

In the major importing provinces, the scale of African timber imports has increased gradually over time. The distribution of the major importing provinces is closely associated with the development of specialised industrial clusters within the Chinese wood products processing and manufacturing sectors. Guangdong, Zhejiang and Shandong are major centres for the furniture industry. In 2009, these three provinces produced 67 % of the total number of pieces of furniture in China. Jiangsu, Zhejiang and Shandong are three of the major plywood manufacturing industry clusters in China. From 1991 to 2009, they together produced nearly 40 % of the total production of WBP in China. Shanghai's role is mainly that of a port, but since it is located close to Jiangsu and Zhejiang provinces, it plays a major logistical role in the chain.

There are some common characteristics in the development of these industry clusters (Lu et al. 2010). Only some of these provinces have areas with rich forest resources and developed a processing industry initially based on their own resources (e.g. Linyi in Shandong, Pizhou in Jiangsu). More characteristically, the development of these wood-based processing industrial clusters has been developed without local supply of raw materials. All major importing provinces are located near the eastern coast of China. Favourable transportation facilities, including both for ocean-borne and land-based transport, have increased the access of these regions to both domestic and overseas resources. Guangdong is home to China's first special economic zone and was the first province to implement foreign trade rights reforms. Preferential policies in different periods attracted many firms to set up business in these industrial clusters, as local governments sought to boost economic growth and local tax revenues.

The development of vertically integrated operations can also be observed among some of the major importing firms. In terms of upstream links to roundwood production, among the top 30 importing enterprises in 2009, five have been identified as having made investments in forest resources management in Africa.[7] In terms of forward links to processing activities, 40 % of the companies own factories, mainly engaging in secondary processing to supply other firms in the nearby industrial clusters. Changes in the policy

[7] Identification of the firms with investments was initially done using internet sources, and subsequently verified during fieldwork in Africa.

environment have thus enabled some firms to secure their access to inputs and presumably lower their costs through integration of multiple functions in the value chain.

4 Regulatory environmental initiatives

The preceding sections have shown that China has increasingly become not only a major processor of wood-based products destined for western markets, but also a major consumer of wood-based products, much of which originates from overseas wood supply sources. The majority of timber imports are handled by a relatively small number of large importers, located in clusters. China has become the largest export destination for Africa's wood products, an essential node of the forest product value chain, and to some degree a standard setter. It has been argued that as markets shift towards China, product and process standards decline (Kaplinsky et al. 2011; Terheggen 2010). Here, we outline some of the major regulatory initiatives that aim to increase the standards applied to wood-based products and identify their potentials and shortcomings in the light of China's changing role in GVC.

4.1 Existing regulatory initiatives globally

A holistic global convention that specifically addresses forest ecosystems and industry does not exist. Instead, the global governance system is made up of a collection of non-binding multilateral environmental agreements (e.g. the UNCED Forest Principles), international environmental laws (e.g. the International Tropical Timber Agreement, CITES), regional agreements, national legislation and trade laws (GATT principles and WTO regulations). It is unlikely that a global 'forest convention' will be agreed in the near future (Humphreys 2006), and given current trade laws, discrimination by importers of forest products based on silviculture practices, such as sustainable forest management, in producer countries is not possible.

Instead, a number of state, civil society and private sector initiatives have arisen to address the legality and sustainability of wood production and trade in wood-based products over the last decades (Sun and Canby 2010). Some initiatives target the demand side (e.g. public procurement policies), while others target the supply side (e.g. improving forest governance). Various forms of certification have arisen to enable verification of behavioural changes along the value chain. It should be noted that some industry actors, particularly producers in developing countries, regard such standards as non-tariff barriers to trade due to the high costs associated with a third-party accreditation required under some standards (Choon and Ginnings 1999; Taylor et al. 2005).

Northern consumers and NGOs have played important roles in lobbying governments and the private sector, as well as initiating and implementing some of the existing certification schemes. This trend started in the 1970s as a reaction to increasing concerns about large-scale deforestation of tropical forests and the impact consumers' consumption has on ecological and social systems in producer countries in the South. Two private standards dominate the industry, the Forest Stewardship Council (FSC) and the Programme for the Endorsement of Forest Certification (PEFC).[8] These are voluntary standards that can be endorsed by producers and processors alike.

[8] Previously called the Pan European Forest Certification scheme.

Public procurement policies (ITTO 2010; Toyne et al. 2002), such as the various national programmes of EU member states that are following from a 2004 European Commission guidance on green purchasing (EU 2003), typically require evidence of legality as a precondition for public procurement, though some (e.g. Denmark, Belgium, Netherlands, UK) national procurement policies also require certification of sustainability of the supply source. These policies now frequently accept FSC and/or PEFC certificates as proof of the legality of procured forest products from sustainable sources.

Other major government-led initiatives include the US Lacey Act and EU Regulation 995/2010. Legislative initiatives aim to place a legal requirement on national actors within their jurisdiction to ensure that all wood-based products are legal. Although the specific legislation differs, typically such legislation requires importers of all wood products to demonstrate evidence of legality at the timber source. This requirement is thus transferred to suppliers at upstream nodes of the value chain, with the intention that timber producers and exporters have an incentive to avoid illegal forest management practices or to trade in illegally supplied products.

The EU is also implementing a Forest Law Enforcement Governance and Trade Action Plan. Under EU FLEGT, Voluntary Partnership Agreements (VPAs) are signed between the EU and timber producing countries. The agreements commit the EU to provide financial, technical and institutional support to assist the countries to improve forest governance, enforce forest law, and capture revenue from planned exploitation of forest resources. On this basis, FLEGT promotes legality assurance based on the laws and procedures of the timber producing country. The legality assurance system covers chain of custody, verification, licensing and independent monitoring procedures.

There are also a number of non-government schemes, involving the private sector and sometimes civil society actors. These include procurement policies set by individual retail firms (e.g. B&Q, Home Depot, IKEA, Wal-Mart and others), which require suppliers to be able to document country of origin of timber sources, and/or sustainability as evidenced through third-party verification systems. In some cases, corporate policies are driven by corporate social responsibility, but such initiatives are also increasingly due to the perceived risk of prosecution under the US Lacey Act or emerging national legislation in the EU. A number of these private schemes adopt already existing third-party certification systems, such as FSC or PEFC. In western countries, industry associations have often played important roles in encouraging, supporting and sometimes requiring members to adopt legality or sustainability certification procedures.

The driving force behind the initiation and adoption of standards in the industry is consumers. In the past, consumers' purchasing decisions were often dominated by traditional factors such as price, quality, branding and availability. Over the past few decades, non-traditional factors such as environmental impact and sustainability have come to play an increasingly dominant role in consumers' purchasing behaviour, particularly for products largely dependant on natural resources (e.g. timber) or from highly valued ecosystems (e.g. tropical forests).

4.2 Existing regulatory initiatives in China

Within China, public discussions of the domestic environmental impacts of consumption, initiated by consumer groups, the media and/or civil society, have only recently appeared in the media, and discussions regarding overseas impacts have not yet achieved sufficient profile to form public opinion. The degree of consumer awareness of industry practices in tropical timber producer countries is generally low.

Within China, both state and industry-led initiatives are at an early stage. China currently has no legislative requirement to demonstrate the legality or sustainability of imported forest products. China's green procurement policy (known domestically as the 'eco-labelling' policy) covers WBPs, wood flooring, and wood furniture. This policy, announced in late 2006 by the ministries of Finance and Environmental Protection, requires that central government (from 2007) and provincial governments (from 2008) give priority to eco-labelled products in their procurement activities (MOF and SEPA 2006).

The technical guidelines on eco-labelling certification of wood-based products (MEP 2010) require that the Convention on International Trade in Endangered Species of Wild Fauna and Flora (CITES) is adhered to, but requirements relating to sustainable forest management refer only to domestically sourced wood materials. Beyond this, China's green procurement policy has no requirements on timber legality or sustainability for imported wood products. However, it is expected that by 2015 certified timber products will be included in the procurement list under the eco-labelling policy (Lu 2010).

A Chinese national timber legality verification system is under development by the State Forestry Administration (Chen 2010; Zhang 2010). The Chinese National Legality Verification System is similar to the EU FLEGT/VPA process, but looser than EU VPAs in requiring evidence of legality. Available information suggests that the Chinese scheme, by contrast, will have no specific requirements on timber supplying countries to set up a legality assurance system, using instead a variety of alternative forms of legality evidence, including documentation from several of the existing sustainability certification schemes. There is a potential risk that the certificate issued by the Chinese government under this scheme will not meet requirements of either public or private sector procurement policies in Chinese export markets, and even if the flexibility in documentation required addresses legality, demonstration of sustainability of source will not be required.

Outside government, there are a small number of initiatives at an early stage of development. Most Chinese companies involved in the trade and processing of African wood-based products have been relatively passive in developing explicit policies to ensure legality and sustainability in their supply chains. About 1,400 Chinese, mostly export-oriented, companies have chain of custody certifications either by FSC (1,300 by the end of June 2010) or by PEFC (97 by Aug 2010). Among the top 30 firms importing African timber, less than a third has FSC certification. Partly they were pushed to do so by their international customers, and some have been supported in achieving certification by support programmes run by NGOs. This confirms that standards covering legality and sustainability set by buyers in final markets are generally passed on to upstream actors of the value chain.

Although there are hundreds of wood product industry associations in China, only a few have recently begun to consider adopting codes of conduct regarding timber legality. This has been driven by a concern over how Chinese exporters will meet the specific requirements of the US and EU legislation, indicating that the Chinese timber trade and processing sector is beginning to respond to legislative initiatives in export markets. Finally, some retailers, supported by civil society groups, such as Greenpeace China, have begun to establish responsible purchasing policies (RPP) on a voluntary basis. Most of these firms are the Chinese branches of international companies (e.g. B&Q China and Home Depot China), and only one domestic retailer is involved (Liu 2009).

Beyond these initiatives, however, a recent study of wood products manufacturers who mainly serve the domestic market (Chen et al. 2011) demonstrated that these firms are generally not aware of industry practices in timber supplying countries. Their understanding of certification schemes like FSC and PEFC is described in that study as

"extremely low". In general, firms are doubtful about the economic benefits of accreditation given the assumed unwillingness of Chinese consumers to pay premiums.

5 Implications for regulatory initiatives

African tropical hardwoods play unique roles in China's large wood-based product processing and manufacturing industry. China is now the largest export destination for African roundwood. This partly reflects the role of China in meeting resource needs to supply traditional importing countries in the EU and US. However, particularly since the decline in western demand after the 2008 financial crisis, for the Chinese wood manufacturing industry in general, Chinese domestic demand is now more important than western export markets.

Chinese SOEs and private firms are both major players in African timber imports. Especially after the Chinese government lifted the requirement to hold import licences, the number of private firms engaged in the African timber trade increased rapidly. However, inspection of customs data shows that a large proportion of total imports from Africa are determined by the procurement decisions of a relatively small number of firms. Some of the major importers have vertically integrated operations that cover timber production in Africa, importation and primary processing in China. Importers in general, and the major importers in particular, are concentrated in a small number of industrial clusters in a few provinces in eastern China. These clusters are partly a result of geography, with all major ports being located in China's eastern coastal area, with good transportation links. What implications do these findings have for initiatives aiming to improve legal trade in sustainably sourced timber from Africa?

The trend towards increased regulation in developed countries has prompted some Chinese firms to achieve internationally recognised certifications such as FSC and PEFC. In theory, these standards should be communicated along the value chain from the consumer (in the EU and US), to manufacturers and processors in China, to upstream actors in Africa. In practice, however, previous research has found little evidence to support this assumption (Mackenzie 2006; Terheggen 2010), with requirements regarding technical specifications being transmitted upstream but with little or no reference to legality and sustainability.

The decline in importance to Chinese timber and wood product sector firms of western consumer markets that are characterised by increasingly stringent legality and environmental standards weakens these firms' incentive to improve responsible sourcing through regulatory innovations in China. The majority of Chinese firms, for whom the domestic market is the primary concern, will not be greatly influenced by consumer demands and buying decisions of lead firms in the North, and most Chinese firms' understanding and awareness of certification schemes originating overseas remains very limited. Instead, domestic regulatory requirements would apply requirements that may or may not be communicated to upstream actors in Africa (and elsewhere).

There are no current laws or regulations requiring evidence of legality for imported timber, since legality and sustainability of imported timber are not addressed in the current government procurement policy. A Chinese national legality verification system has begun to be drafted. The strength of the proposed scheme lies in its potential to link with the ongoing EU FLEGT/VPA processes in timber supplying countries, although the scheme may also allow other forms of legality documentation that might not be acceptable within the

FLEGT/VPA process. The scheme will not require evidence of sustainability, though some sustainability certifications may be acceptable as evidence of legality.

In the absence of domestic legal instruments providing incentives to improve sustainability of sourcing, it appears that initiatives to engage the major importing enterprises in developing responsible sourcing practices and policies is a practical approach. Unless initiatives involve all the major importers, they are unlikely to be successful since the high costs associated with accreditation would increase production costs for these firms relative to their competitors. It is relevant, therefore, that import volumes from Africa are highly concentrated among a small number of geographically clustered firms. This suggests that transaction costs of initiatives working with these firms would be lower than one might otherwise expect. Some of the firms play multiple roles in the value chain and may be in a position to exert influence on downstream actors within their industrial cluster.

Since import volumes from specific countries are even more highly concentrated among a small number of firms, this further suggests that initiatives in African supplying countries intending to engage Chinese importers in sustainable forest management and trade initiatives should be well placed to target Chinese firms whose participation would bring significant benefits for improved sourcing in supplying countries.

There are indications that Chinese forest officials are well disposed towards bilateral cooperation to improve legality and sustainability in supplying countries (IUCN 2009b). Most developed countries' national and trade association legality and sustainability initiatives are conceived as a gradual process of improvement. This will also be the case with initiatives targeting China as the major export destination of African timber. Engagement of Chinese government and private sector stakeholders in supply country sustainability initiatives may be the best way to support this gradual process of improvement.

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