ISSN 1022–5439

ITTO

Tropical Forest UPDATE

Volume 24 Number 1 2015

A newsletter from the International Tropical Timber Organization to promote the conservation and sustainable development of tropical forests

Moving beyond conflict on procurement

Public timber procurement policies have been a hot topic of debate among governments, tropical timber traders and environmental groups for a very long time. Environmental groups argue that tropical timber-importing countries can lead the way to sustainable forest management by buying only certified or at least legally verified tropical timber; timber-exporting countries say that such procurement policies give non-tropical timber an unfair market advantage; and traders worry about the cost of conforming to new standards. Public timber procurement policies, therefore, are a divisive issue in international forest policy.

Yet, as Martin and Baharuddin demonstrate in their article on page 3 of this edition of the *Tropical Forest Update*, major changes are underway in the tropical timber trade that overshadow the impacts of public timber procurement policies. Most notably, the trade is shifting from its traditional markets (such as the European Union and the United States) towards emerging, south–south and domestic markets.

Such a shift need not—and indeed should not—reduce the impetus in the trade to provide credible evidence of legality and

Inside: the impact of public procurement policies; timber legality verification

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Images: Cover: ITTO's Executive Director, Emmanuel Ze Meka, inspects the identification tag on a Cameroonian log in Shanghai, China, as part of the monitoring of ITTO Project TFL-PD 017/09 Rev.2 (M). That project, described on page 17, aimed to assist small and medium-sized forest enterprises in China in procuring legal tropical timber from sustainably managed forests. *Photo: Li Qiang, ITTO*

Above: An officer from Guatemala's National Environmental Police checks a timber consignment at Izabal, Guatemala (see page 14). *Photo: INAB/ITTO*

... Editorial continued

sustainability, and a great deal of work is being done in tropical countries to this end. Degen and Bouda (p. 8) report on an ITTO-funded project that is investigating DNA fingerprinting and stable isotope techniques, which could assist timber traders in meeting their due-diligence obligations and authorities in ensuring that timber-legality laws and regulations are adhered to. Estraviz and his co-authors (p. 11) report on Ecuador's new system for collecting and recording forest information, developed partly through an ITTO project, which is an important step in ensuring timber legality in the country. García (p. 14) reports on a similar project in Guatemala—also with assistance from ITTO—that has enabled the country to establish a system for the real-time collection of standardized, high-quality data on the flow of forest products with a view to strengthening the oversight of the forest sector and increasing its efficiency.

Understanding and meeting the verified-legality needs of customers is a major challenge for small and medium-sized forest enterprises in China. Such enterprises generate more than 90% of China's total industrial forest output, yet they are largely unaware of the issues around procurement and the increasing need to source their timber from verified legal and sustainably managed forests. Luo Xinjian and Meng Qian (p. 17) report on an ITTO project that assessed the understanding among SMFEs of the risks posed to their businesses by the lack of an adequate approach to timber procurement. The project also provided training on timber procurement to selected pilot enterprises, and developed an online information-sharing platform with the aim of helping SFMEs to interact more effectively with relevant government departments and to communicate on policy and market developments.

Nagahisa (p. 21) describes the *Guideline for Verification on Legality and Sustainability of Wood and Wood Products* (the "goho-wood guideline"), which was introduced by the Government of Japan in 2006 with the aim of combating illegal logging. Japanese companies are able to use one of three methods for verifying the legality of their timber imports.

Oliver (p. 22) rounds off the topic of procurement by recapping some of the major changes in the tropical timber trade that have occurred in the last decade, which he says are "some of the most dramatic" to have occurred in the trade for at least 60 years. Oliver believes that two distinct markets have evolved in the tropical timber trade: an "in crowd" of enterprises that have been influential in the development of forest certification and progressive procurement policies, and the "outcasts", who are unable or unwilling to access certified supply chains. Oliver says that the approach inherent in many public timber procurement policies is having increasingly less traction in tropical countries and that "a much greater focus is needed on partnerships" between buyers and suppliers to progressively raise environmental performance. The European Union's Forest Law Enforcement, Governance and Trade Action Plan, which combines demand-side and supply-side actions, has the potential, says Oliver, to "help establish the pre-conditions in which a much larger range of operators are able to benefit from the move towards sustainability".

It is possible to move beyond the rhetoric and conflict that have often characterized debate on public timber procurement policies by taking concrete steps to provide timber legality assurance, including through the use of new technologies. Partnerships between buyers, suppliers and other stakeholders, supported where necessary by governments and intergovernmental organizations like ITTO, can achieve positive outcomes for all.

The impact of timber procurement policies

The effects of governmental procurement policies on tropical timber are swamped by wider economic changes and market shifts

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Pointed policy: These greenheart piles are destined for the United Kingdom, which has a strong public timber procurement policy.
Photo: Durable Wood Products/Guyana Forestry Commission

Timber procurement policies are intended to address concerns among the public and in the private sector about the environmental credentials of forest products. Many purchasers demand that products come from sustainable—or at least legal—sources and that claims of legality and sustainability are verifiable in order to maintain credibility with buyers in the marketplace. These requirements and policies have important implications for tropical timber suppliers.

Recognizing the importance of timber procurement policies, ITTO commissioned a review of the state of practice, which was published in April 2010 as ITTO Technical Series No. 34 (*The Pros and Cons of Procurement*, by Markku Simula). In its subsequent deliberations on the topic of timber procurement policies and legality measures, the International Tropical Timber Council has taken note of the rapidly evolving market requirements for tropical timber. At its 47th session in November 2011, the Council requested the ITTO Secretariat to commission follow-up work.

This article summarizes the study that arose from the Council's request. The study analyzed the economic impacts of governmental timber procurement policies on tropical timber markets, updated developments on legality requirements, and assessed market implications and opportunities for ITTO producer and consumer member countries.[1] The main outputs of the study were:

- an update of the information provided in *The Pros and Cons of Procurement*;
- an analysis of the impacts of timber procurement policies on markets and trade, taking into consideration their relevant effects on demand, supply, costs and prices, as well as the financial implications for exporting countries;
- an examination of the challenges faced by ITTO producer and consumer countries in complying with and implementing timber procurement requirements; and
- recommendations for further action by ITTO to promote trade in tropical timber in the context of timber procurement policies.

Trends in timber procurement policies and issues related to legality

The introduction of new public-sector timber procurement policies as a proactive tool to promote the consumption of forest products from sustainably managed forests has subsided measurably from the most active period of 1999–2005. This is due in part to a change in the focus of the international dialogue on forests resulting from the inclusion of forests and sustainable forest management in the climate-change debate at the 13th Conference of the Parties to the United Nations Framework Convention on Climate Change (Bali, Indonesia, December 2007). With a reduced focus on public timber procurement, private-sector efforts—including those of trade associations and the leading forest certification schemes—have sought to fill the gap. These efforts have greatly expanded the market share of timber products bearing some form of label to underpin consumer confidence in the social, institutional and environmental credentials of the timber products they are buying.

1 See www.itto.int for a list of ITTO members.

In a related development, a number of ITTO consumer member countries have adopted measures on timber legality as a necessary first step in ensuring sustainable forest management. Efforts to ensure the legal origins of timber and trade in timber products have spawned hundreds of initiatives. Legislative actions taken by a number of ITTO consumer member countries and country groups have been discussed extensively at sessions of the International Tropical Timber Council. The three receiving most attention are: 1) the European Union (EU) Timber Regulation; 2) an amendment to the US Lacey Act; and 3) the Australian Illegal Logging Prohibition Act.

Our study distinguished between public timber procurement policies, private-sector timber procurement practices, and timber legality assurance requirements. Public timber procurement policies apply to government timber purchases, which comprise a very small proportion of the modern marketplace. The timber procurement practices of private companies are intended to be economically advantageous while maintaining social credibility. Only a small (but visible) number of direct retail firms have policies related to timber procurement; the preponderance of policies on forest products relate to the use of paper with recycled content. Timber legality verification affects the entire timber market of a country and represents the greatest challenge to tropical producers that supply traditional markets.

Loading up: Peru's pilot timber-tracking system can trace this timber—heading for the export market—to its harvesting site in the Peruvian Amazon. A number of ITTO consumer member countries have adopted measures on timber legality as a necessary first step in ensuring sustainable forest management. *Photo: Bosques, Sociedad y Desarrollo*

Development and trade flows in major importing countries

Markets for tropical timber are dynamic, and ITTO members are interested in the evolution of the broader market for timber products. In order to understand how timber procurement policies and legality requirements might affect market development, therefore, the study took a broad view of relevant trade and market changes. Most countries classify imported and exported commodities in accordance with the World Customs Organization's harmonized commodity description and coding system, popularly known as the Harmonized System (HS), which came into effect in 1988 and is updated periodically. The category of imports and exports recorded in Chapter 44 of the HS ("HS 44") covers primary and secondary timber products consistent with the categories specified in the International Tropical Timber Agreement 2006 and those reported regularly in the *ITTO Review and Assessment of the World Timber Situation*. Importantly, HS 44 covers not only roundwood, sawnwood, veneer and plywood but also such value-added items as mouldings, millwork, builder's joinery and carpentry, parquet elements, wooden tools and kitchenware.

Our study identified the following important developments concerning international trade in HS 44 products:

- Globally, the value of HS 44 imports almost doubled between 2001 and 2011.
- ITTO producer and consumer countries compete globally in almost every market that imports HS 44 products.
- Each ITTO member country is both a producer and consumer of HS 44 products. ITTO producer countries are important (and growing) markets for HS 44 products originating in other ITTO member countries.
- China has become the top importer of HS 44 products and is also a leading exporter of HS 44 products.
- India has become the 13th-largest importer of HS 44 products and is also a growing exporter.
- The EU27[2], the United States, Japan and the Republic of Korea remain large and important markets for HS 44 products, but the market share of ITTO producer countries in these mature economies has declined. The share of China has increased significantly.
- ITTO producer countries are successfully supplying emerging-economy markets.

Market shares of public and private procurement in importing countries

The share of the market for any specific or even general line of timber products occupied by public procurement in a country is not obtainable directly from public statistics; therefore, our study relied on estimates and took a case-study approach. An analysis of Belgium shows that the direct impact of a public timber procurement policy on timber imports may be quite limited—equal to central-government procurement of building, furniture, landscaping or other uses of timber with an expected service life of more than one year. In Belgium, the share of

2 EU27 = the European Union member countries as of early 2013 (when most of the data for the study were gathered): Austria, Belgium, Bulgaria, Cyprus, Czech Republic, Denmark, Estonia, Finland, France, Germany, Greece, Hungary, Ireland, Italy, Latvia, Lithuania, Luxembourg, Malta, the Netherlands, Poland, Portugal, Romania, Slovakia, Slovenia, Spain, Sweden, and the United Kingdom. Croatia (a relatively minor timber trader) became the 28th EU member in mid-2013 and is not canvassed here.

government purchases in the timber market is likely to be less than 2%.

Market suppliers tend to have a "feel" for the role of public procurement in specific product lines. In the case of the United Kingdom, the effects of a central-government timber purchasing policy may be much wider than direct spending by the central government. The leadership and supplier consolidation effects of the policy in the United Kingdom led timber-product suppliers there to conclude that somewhere between 20% and 40% of sales are impacted (directly or indirectly) by the central government's timber procurement policy.

Due diligence? Dried sawnwood in the Republic of the Congo destined for Amsterdam. Such timber is often used in public construction projects in Europe. *Photo: CIB*

Commonalities and differences among procurement policies

Most public timber procurement policies have stabilized and passed through important phases of public consultations and rule-setting. Recently, policies have broadened to include paper and to emphasize recycling and waste reduction. In implementation, many public timber procurement policies have been absorbed into a broader set of "green" or environmental guidelines or requirements addressing energy efficiency, waste reduction and recovery, and water conservation. Similarly, the policies of most private-sector firms on timber procurement have been integrated into broader codes of ethics on the environment and forests.

There is considerable variation in the implementation of government timber procurement policies with respect to responsibility for record-keeping and audit management, with the differences tending to reflect past practices in the country or firm. Many procurement policies accept third-party systems of verification as sufficient assurance of legality or forest sustainability. There continues to be significant divergence in policy implementation in both the public and private sectors on the adequacy of various forest certification systems.

Most EU public timber procurement policies will require a round of adjustment to their implementation procedures to accommodate the entry into force of the EU Timber Regulation. Equally, adjustments in public procurement will be made in Australia as the rules for the Illegal Logging Prohibition Act 2012 are finalized.

The cases of Belgium and Italy

Advocates and detractors of public timber procurement policies have taken strident positions on the potential impacts and effectiveness of such policies. We used case studies in Belgium and Italy to assess the impacts of public timber procurement policies on importing markets.

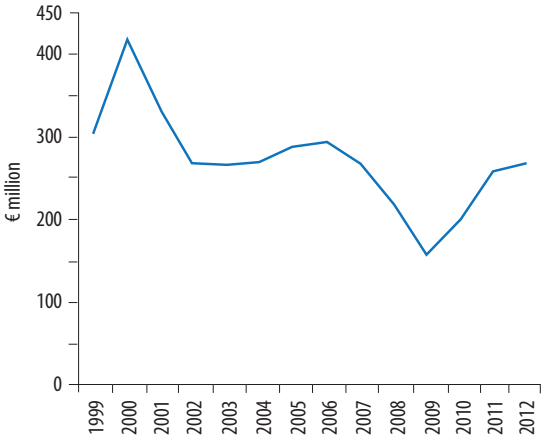
Belgium's federal policy, which has been articulated in an online guide on sustainable procurement, requires all federal agencies and authorities to only use timber derived from sustainable forest management. A review of relevant Italian ministry websites and documents, as well as personal communications, indicated no explicit public policy on timber procurement. A comparison of the two case studies can therefore help in understanding both how a policy goes from adoption to implementation and whether policy impacts are distinguishable from general trends in an economy.

The direct economic impact of Belgium's timber procurement policy is limited (as indicated above). The value of tropical timber imports has declined markedly due to weak economic growth and displacement by other products: the total value of tropical industrial roundwood imported into Belgium declined by 49% between 2001 and 2012. The value of tropical sawnwood imports increased by 45%, but the value of tropical plywood imports declined by 36%.

Italy has been home to a large and vibrant furniture and construction industry. Since 2008, however, it has seen significant reductions in furniture exports and a steady contraction in construction expenditure. Italy's import value of HS 44 products from the EU27 increased between 2001 and 2012, while imports from ITTO producer countries declined by 68% and imports from non-EU27 ITTO consumer countries declined by 17%. Effectively, therefore, the decline in HS 44 imports from ITTO producer countries to Italy (with no public timber procurement policy) was more pronounced than the decline in imports to Belgium (which has a public timber procurement policy).

Similar comparisons were made for a wide range of other European import markets. The general pattern of reduced imports from ITTO producer countries was apparent in all cases except Poland (an economy in transition that has grown strongly in the last decade) and was largest in those countries most deeply affected by the economic downturn, which began towards the end of 2008 and continued through 2012. Few of those countries have public timber procurement policies. This analysis suggests, therefore, that the market effect of public timber procurement policies is lost in the dominant tidal effects of economic expansion and contraction.

Figure 1: Value of Belgian HS 44 imports from ITTO producers, 1999–2012



Source: EUROSTAT data, obtained 15 July 2013.

Our analysis of Belgian imports shows that tropical timber imports experienced a "chill" during the period of vibrant debate that occurred before and just after the implementation of the federal timber procurement policy (Figure 1). Because federal procurement amounts to less than 2% of the total timber market in the country, this chill was not directly attributable to a change in federal purchases; rather, it reflected broader uncertainty in society and the market. The subsequent expansion of forest certification and chain-of-custody certification appears to have helped some ITTO producer countries to meet the standards set and commitments made toward sustainability by both government and the private sector. Imports from a number of ITTO member countries (e.g. Cameroon, China and Gabon) have increased substantially in recent years.

Financial impacts

ITTO producer-country HS 44 export earnings were higher in 2011 than in any preceding year. At the global level, however, HS 44 export earnings have been more volatile and have not yet regained the level achieved in 2007. The EU27 has been importing progressively lower quantities of HS 44 products from ITTO producer countries, a trend that began before the introduction of public-sector timber procurement policies in a number of EU countries. The decline in HS 44 imports from ITTO producer countries is evident broadly across the EU but is greatest in Greece, Italy, Spain and a number of other countries without public timber procurement policies. These declines in imports are attributable largely to the broad-based economic recession, which deepened progressively between 2008 and 2012.

As a group, ITTO producer countries have sustained their market share in Australia and New Zealand, the economies of which have been relatively prosperous in the last decade or so compared with most of those in the EU. Exports from ITTO producer countries in Asia to Australia increased more than five-fold between 2001 and 2012.

In the United States, imports of HS 44 products more than halved between 2005 and 2011, from US$25.6 billion to just under US$12 billion; this trade is dominated by softwood lumber imports from Canada. ITTO producer countries maintained their share of total imports during this period of market contraction. The US market for HS 44 imports had contracted by more than US$10 billion by the end of 2008. Thus, the entry into force of the 2008 Lacey Act amendment occurred after this strong market correction, and implementation of the amendment occurred in a period of increasing United States imports from ITTO producer countries.

Challenges in meeting timber-procurement requirements

In many cases, tropical timber suppliers and consumers have demonstrated an ability to comply with public and private procurement policies. However, complying with the necessary procedures, including certification, typically requires sustained commitment on the part of suppliers as well as significant financial, organizational and social resources. Government timber procurement is a niche segment in any national market, and not all producers find it profitable to obtain the required certification.

The proponents of the various forest certification systems are yet to achieve a reasonable degree of reciprocity, mutual recognition and respect. The subtle variations in certification requirements among national timber procurement policies and private-sector procurement practices increase cost and cause confusion among suppliers and consumers.

The Forest Law Enforcement and Governance and Trade initiative

The EU has conducted an extensive and broad-based outreach effort through voluntary partnership agreements (VPAs) within the context of its Forest Law Enforcement, Governance and Trade (FLEGT) initiative. The aim of FLEGT VPAs is to facilitate trade in legal timber through capacity building and civil-society involvement, and the EU has engaged in negotiations on VPAs with many tropical timber-producing countries.[3] The EU's FLEGT initiative aims to assist trading partner countries in building the capacity to issue FLEGT licences for timber exports to the EU. The EU considers that timber accompanied by a FLEGT export licence meets the legality requirements described in the EU Timber Regulation.

3 As of mid-2013, the list comprised Cambodia, Cameroon, Central African Republic, Republic of the Congo, Democratic Republic of the Congo, Côte d'Ivoire, Gabon, Ghana, Guyana, Honduras, Indonesia, Lao People's Democratic Republic, Liberia, Malaysia, Myanmar, Philippines, Thailand and Viet Nam. Discussions on VPAs have since commenced with Bolivia, Colombia, Ecuador, Guatemala, Peru, Papua New Guinea, Solomon Islands and Sierra Leone.

Central to the success of the FLEGT timber export licensing system is a transparent system in the timber-producing country to verify the compliance of timber exports with the applicable national laws. This system of verification or validation of legal compliance is broadly referred to as a timber legality assurance system, although the specific nomenclature varies from country to country.

Trade agreements are complex to negotiate and implement, and, as of mid-2014, none of the countries engaged in the FLEGT VPA process had succeeded in issuing FLEGT licences for timber exports to the EU. Many tropical timber-producing countries have a serious lack of capacity to cope with timber legality and other procurement policy requirements. Economically weaker countries see value in VPAs beyond the market benefits they offer. They see, for example, new opportunities for obtaining international assistance to strengthen law enforcement to reduce illegal felling and impose greater restraint on the over-exploitation of their forests.

Experience has shown that building the social and administrative infrastructure necessary to issue FLEGT licences is challenging—and perhaps more elaborate and time-consuming than any of the parties had expected. Nevertheless, there is general keenness among FLEGT practitioners and VPA stakeholders to strive to attain the goals of the EU's FLEGT initiative.

Ability of suppliers of tropical timber to meet the requirements and costs of timber procurement policies

The ability of tropical timber suppliers to meet the requirements and costs of timber procurement policies is a function of their ambitions and capacities. Well-organized and capitalized firms are meeting requirements by obtaining certification endorsed by the Forest Stewardship Council or the Programme for the Endorsement of Forest Certification. The public effort to provide legality assurance through a sector-wide approach (i.e. the FLEGT VPA approach) has proved to require considerable skill, capacity and technological resources. It is a laudable objective but represents costs that are not directly attributable to timber procurement policies.

Recommendations to ITTO and its members

Our analysis of recent market conditions shows that tropical timber suppliers are competing successfully in many emerging markets. In addition, south–south trade and domestic markets in producer countries account for a rapidly increasing share of tropical timber consumption. These markets should be an increasing focus of ITTO's efforts to develop and showcase producer-friendly policies that promote legal and sustainably produced timber.

We recommend, therefore, that ITTO and its members *seek to reinforce the presence and relevance of ITTO in expanding and emerging markets for tropical timber.*

Prior ITTO analyses and our study show that well-capitalized firms can fund product research and development and will invest in marketing to protect the reputations of their products and processes. Equally, these firms will undertake investments to assure their customers of the environmental credentials of their products. We recommend that ITTO and its members *seek to understand why relatively few forest-product firms with market clout and global presence operate in the tropics*.

The policy dialogue in ITTO must move beyond old battles over access to traditional markets. Although these markets remain important, they nevertheless consume a declining share of the output of tropical forests. Patterns of economic growth, tropical timber consumption and trade have shifted dramatically in the last 30 years. Efforts by ITTO producers and consumers to promote fundamental concepts of sustainability, legality, lifecycle analysis and renewability should focus increasingly on emerging markets. These markets represent the future, and ITTO can play a central role in helping to develop and implement trade, procurement and other policies—such as green building codes—that are effective and which promote the consumption of legal and sustainable tropical timber as a building material of choice. We recommend, therefore, that ITTO and its members *give up the old arguments and operate in today's markets*.

*The full report of this study (*The Impact of Timber Procurement Policies, *ITTO Technical Series No. 44) is available at www.itto.int.*

Verifying timber in Africa

An ITTO project has helped develop DNA fingerprinting and other tools for verifying claims about timber species and geographic origin in tropical Africa

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Fingerprint: Wood samples are taken from a tree in southwestern Ghana during a training workshop in May 2014.
Photo: Bernd Degen, Thünen Institute, Germany

Illegal logging and associated trade is the cause of many economic and environmental problems in both timber producer and timber consumer countries. An estimated 50% of timber exports from the Amazon Basin, Central Africa, Southeast Asia and the Russian Federation originate from illegal logging (Li et al. 2008; Goncalves et al. 2012), and an estimated 7–17% of the global timber harvest (100–300 million m^3 of logs per year) is from illegal sources (Dieter et al. 2012). Illegal logging reduces the tax income of timber producer countries, and illegally harvested timber also competes unfairly in the marketplace with legally and sustainably produced timber. The World Bank Group (Goncalves et al. 2012) estimated that illegally harvested timber results in annual losses in governmental and private-sector revenues and assets of US$10–15 billion. The illegal timber harvest causes forest degradation, excessive greenhouse gas emissions and the loss of biodiversity, and it increases the likelihood of deforestation.

Legal instruments such as the European Union Timber Regulation (EUTR) and the United States' Lacey Act have been established to combat illegal logging and the trade of illegally sourced timber by requiring importers to conduct due diligence on the legality of the timber they import. But practical mechanisms for identifying the tree species and geographic origin of wood and wood products are still lacking. DNA fingerprinting and stable isotope techniques use characters inherent to the timber and are impossible to falsify; they could be useful mechanisms for timber traders in meeting their due-diligence obligations, and they could greatly assist authorities tasked with ensuring legality.

Developing wood identification tools

With a view to demonstrating the applicability of DNA fingerprints and stable isotopes, ITTO financed Project PD 620/11 Rev.1 (M): "Development and implementation of species identification and timber tracking in Africa with DNA fingerprints and stable isotopes". This project, which is now in the final stages of implementation[1], is being implemented by the Thünen Institute of Forest Genetics in Germany, supported by 14 collaborative agencies in Africa, Asia and the Pacific, and Europe. It operates in seven African countries: Cameroon, the Republic of the Congo, the Democratic Republic of the Congo, Côte d'Ivoire, Gabon, Ghana and Kenya; all these countries except Kenya are ITTO members.

Selection of focus species

In 2011, representatives of participating African countries who attended a workshop in Yaoundé selected three species—iroko (*Milicia excelsa*), sapelli (*Entandrophragma cylindricum*) and ayous (*Triplochiton scleroxylon*)—for the development of DNA fingerprinting and stable isotope reference databases as tools for verifying the declared geographic origin of wood. These species were selected because they are harvested and traded in significant volumes, they occur widely in the participating countries, and they are economically important in tropical Africa. The yearly timber production of these three species in natural forests in the above-listed countries is estimated at more than 10 million m^3, of which more than 1 million m^3 is exported.[2]

1 Donors to the project are the German Federal Ministry of Food and Agriculture and the governments of the United States and Australia. The project is expected to conclude in July 2015.

2 These volumes are estimated based on documents received from the ministries in charge of forests in the participating African countries.

Development of reference databases

DNA fingerprinting

The project collected more than 5400 leaf, cambium and wood samples as reference material over the distribution areas of the three species (Figure 1). For each species, more than 1000 gene markers (single nucleotide polymorphisms—SNPs[3]) were developed, and all samples were genotyped for at least 70 SNPs.[4] Groups of individuals with similar genetic composition ("genetic clusters") were identified based on these data and set in a geographic context to create genetic geographic reference maps that are now available to tests claims of geographic origin (Figure 2).

Testing such claims involves extracting DNA from wood samples and comparing the genotypes with the genetic reference material. It is now possible, for example, to use the database to verify a claim that a wood sample is sapelli from Cameroon by determining whether the genotype of the sample matches the genetic clusters in the reference data for Cameroon. This process is referred to as DNA fingerprinting.

Figure 1: Distribution of sampling locations for the three tropical African timber species

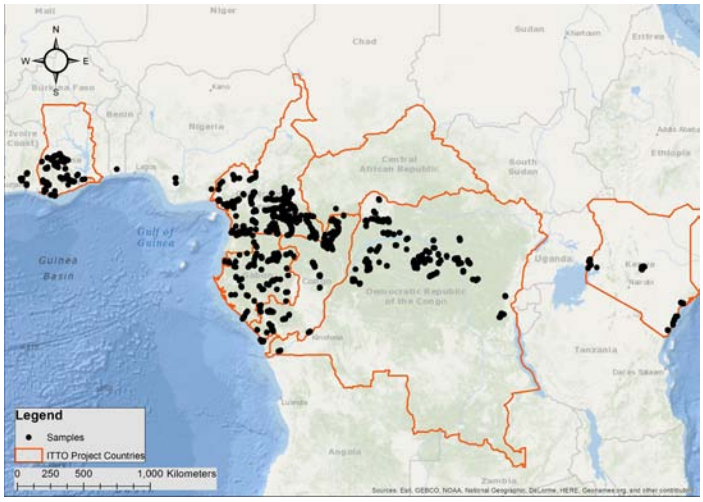
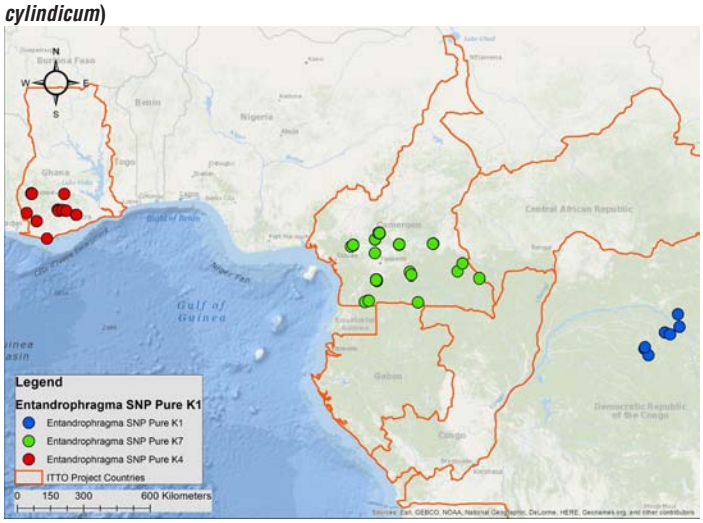


Figure 2: Distribution of genetic clusters for sapelli (*Entandrophragma cylindicum*)



Note: Each colour represents a genetic cluster that can be compared with the declared genetic cluster found in wood samples.

3 SNPs are variations in the genetic code caused by the change of a single base (i.e. one of four alternative letters of the genetic code). This variation is caused by point mutations.

4 The genetic reference data were developed by the Thünen Institute of Forest Genetics, the University of Adelaide (Australia) and the University of Brussels (Belgium).

Stable isotopes

A similar approach was taken to developing a database of stable isotopes.[5] The methodology involved screening 3–6 stable isotopes of carbon, hydrogen, nitrogen, oxygen, strontium and sulphur for each of the three target species. The resultant reference database can be used to determine the region of origin of a sample.[6]

Additional databases

Another collaborating agency, Plant Genetic Diagnostics GmbH (Grosshansdorf, Germany), identified differences in DNA sequences that can be used to help identify, to the species level, 21 important timber taxa in Africa. For example, wood anatomy alone cannot distinguish between species within the *Khaya* genus, but DNA sequencing can.

Blind tests are being run in the final stages of the project to evaluate the power of the various timber identification tools—DNA fingerprinting, stable isotopes, DNA sequencing and the more conventional approach of using anatomical characteristics—and the potential for combining various techniques.

Technology transfer to Africa

To help build capacity and transfer technology, the project established three reference laboratories in tropical Africa: at the Forest Research Institute of Ghana in Kumasi for West Africa; at the Institut de Recherche en Ecologie Tropicale in Libreville, Gabon, for Central Africa; and at the Kenya Forestry Research Institute in Nairobi for East Africa. Staffs at these labs and elsewhere in Africa are being trained to apply DNA fingerprinting and wood anatomical tree species identification techniques and to perform simple DNA fingerprinting and stable isotope tests for determining origin. In the future it is envisaged that these labs will do DNA testing directly on timber products, either to ensure legality before export or to check claims of timber designated for domestic markets. The idea of regional labs implies that neighbouring timber-producing countries are also able to access and make use of these facilities.

Practical application of DNA tests in the timber sector

Tests for timber products using DNA fingerprinting and wood anatomical approaches are common practice at the Thünen Centre of Competence on the Origin of Timber in Germany.[7] Such tests are available for an increasing number of species (Degen et al. 2013; Jolivet and Degen 2012; Höltken et al. 2012).

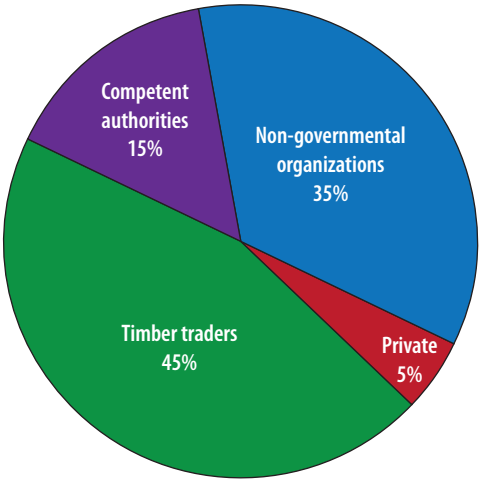
5 Isotopes are non-radioactive variants of the same chemical element—they have the same number of protons but a different number of neutrons. The isotope ratio for a given element shows a geographic pattern.

6 The isotope reference database was developed by Agroisolab GmbH in Jülich (Germany), Josephinum Research in Wieselburg (Austria) and the Department for Environment, Food and Rural Affairs (United Kingdom).

7 www.ti.bund.de/en/infrastructure/the-thuenen-centre-of-competence-on-the-origin-of-timber.

The coming into force of the EUTR in March 2013 more than tripled the number of DNA tests conducted at the Thünen Centre of Competence on the Origin of Timber—from 136 in 2013 to 436 in 2014. Figure 3 shows the percentage of wood samples submitted for testing in 2014, by organization type. Timber traders wanting to verify the claims made by suppliers on the species and origin of their timber submitted nearly half (45%) of the samples. Another 35% of the samples were submitted by non-governmental organizations running campaigns to sensitize the public about the trade of illegally harvested timber. Authorities in European Union member countries responsible for overseeing the implementation of the EUTR—including the Federal Institute for Agriculture and Food (Bundesanstalt für Landwirtschaft und Ernährung) in Germany and the National Measurement Office in the United Kingdom—as well as the Department of Economic Affairs (Eidgenössisches Departement für Wirtschaft, Bildung und Forschung) in Switzerland submitted 15% of samples, and private entities wishing to clarify the species and origin of their timber purchases submitted the remaining 5%.

Figure 3: Percentage of wood samples submitted for testing at the Thünen Centre of Competence on the Origin of Timber, by organization type, 2014



Note: n = 436.

Several institutions in addition to the Thünen Centre of Competence on the Origin of Timber have the capacity to test claims on the species and origin of timber. The Global Network of Timber Tracking[8] provides an overview of these; it is also developing a reference database and standards for the application of the tools.

Since the EUTR came into force, many timber traders have reinforced their efforts to verify the chains of custody of their products through paper-based certificates. Nevertheless, cases have arisen in which chain-of-custody-certified wood products have been shown to have false claims about species or geographic origin; this highlights the importance of the independent auditing of claims using DNA fingerprinting and wood anatomical testing (to determine species) and DNA fingerprinting and stable isotope testing (for geographic origin).

Costs

The verification of a species claim using macro and microscopic inspection of wood anatomical traits costs around €100 per sample. The cost of DNA fingerprinting and isotope tests to verify claims of origin is €150–400, and it takes from three days to three weeks to obtain results.

The same quality assurance processes should be applied to DNA and isotope tests as for other aspects of the timber production process. Thus, tests should be applied using a sampling approach, as required in the norms of the International Organization for Standardization.

Conclusion

The project developed reference databases for three African timber species that can be used to verify claims about the origin of timber consignments. Reference databases for other species also exist or are being developed. In the longer term, the development of three testing laboratories in Africa should help build local expertise in the verification of timber species and origin.

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Ecuador's new public forest information system

A comprehensive data management system in the forest sector is helping policymaking, law enforcement and forest investment in Ecuador

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Checkpoint: Transported timber is monitored at the Tandapi forest checkpoint as part of the SAF. *Photo: SAF/ITTO*

Ecuador has a new system for collecting and recording forest information, greatly increasing the country's capacity to monitor, control and analyze the harvesting and flow of forest products. Equipped with sufficient trained personnel and computer software and hardware and with data-collection points in strategic locations throughout the country, the Forest Administration System (*Sistema de Administración Forestal*—SAF) issues forest harvesting licences and waybills for timber and non-timber forest products, as required by the national forest law and regulations.

Financed partly through ITTO Project PD 406/06 Rev.1 (M), the SAF is part of a nationwide initiative led by the Ministry of Environment (*Ministerio del Ambiente*) to promote the protection and legal use of Ecuador's rich and biodiverse forest resources through good institutional governance. The SAF is a cross-cutting tool for the management of forest activities; it generates information that can be translated into effective control procedures and improved capacities to monitor and verify the legality of all forest operations, from forest harvesting to the transport of forest products to their final destinations.

Complementing the SAF is the Forest Production System (*Sistema de Producción Forestal*—SPF) for the monitoring and control of forest plantation establishment and production, which operates in a similar manner to the SAF. The SPF is administered by the Ministry of Agriculture, Livestock, Aquaculture and Fisheries (*Ministerio de Agricultura, Ganadería, Acuacultura y Pesca*—MAGAP), while the Ministry of Environment is in charge of monitoring the flow of timber from both natural and planted forests.

The two systems—the SAF and the SPF—strengthen the institutional presence of the Government of Ecuador as the body responsible for the sustainable development of the country's forest sector, including in the implementation of major new initiatives (see box). The SAF and the SPF have the same architecture, which was developed on the basis of legal and technical standards established by government institutions.

The SAF upgrades the public forest administration sector in Ecuador

The establishment of a new forest governance structure in Ecuador is based on the paradigm outlined in the 2008 Constitution of Ecuador for the management, conservation, sustainable harvesting and restoration of natural resources and biodiversity. This structure requires greater clarity and cohesion among laws, public policies and institutions in the forest sector.

Initially, the search for improved forest governance through the Ministry of Environment focused on the empowerment of communities, key stakeholders and institutions. The Ministry of Environment, through the National Forest Directorate, was responsible for coordinating the development of a new governance plan and proposing structural changes in relation to forest resources, while recognizing that these resources provide not only timber but also other services that support economic and social development.

The National Forest Directorate requires that high-quality information on the transaction of forest products harvested in both natural forests and forest plantations is disseminated effectively. Before the development of the SAF, the Ministry of Environment did not have the operational capacity to provide information on the management and monitoring of the country's forest resources in an efficient and effective manner.

The Government of Ecuador, through the Ministry of Environment, considers that addressing illegal forest product harvesting and deforestation is the shared responsibility of all relevant stakeholders, including forest owners, timber intermediaries, forest industries, civil-society organizations and government agencies. The forest governance framework has five action pillars: 1) forest information; 2) forest monitoring and administration; 3) forest incentives; 4) forestry culture; and 5) land-use planning. The first two of these pillars guide decision-making by ensuring the generation of adequate information on the basis of an integrated digital platform at the national level; the SAF now performs that function.

Reforestation incentive initiative

The aim of the Reforestation Incentive Programme for Commercial Purposes (*Programa de Incentivos de Reforestación con Fines Comerciales*), which was launched in January 2013, is the establishment of 25 000 hectares of new plantations per year in the five-year period from 2013 and, ultimately, a total forest plantation estate of 1 million hectares by 2038. The incentive consists of non-repayable financial assistance to cover up to 75% of plantation establishment costs and up to 75% of maintenance costs for the first four years for individuals and companies, and up to 100% of those costs for associations, production cooperatives and communities. There is also a parallel programme to distribute loans provided by the National Financial Corporation (*Corporación Financiera Nacional*).

Figure 1: The homepage of the Forest Administration System—SAF—can be accessed via the website of the Unified Environmental Information System

Note: This homepage is available at www.saf.ambiente.gob.ec.

The SAF, which can be accessed through the website of the Ministry of Environment (Figure 1), is linked to a geographic information system; it is possible to use the system to validate site coordinates and to show the locations of forest harvesting activities. The SAF enables the monitoring of each regulated procedure along the forest value chain and involves all forest value-chain stakeholders, such as forest regents, landowners, agents, forest operators, forest companies, chainsaw operators, timber transport operators and nursery owners. The Ministry of Environment uses the SAF to ensure the legality of forest transactions and to facilitate the review and approval of forest harvesting plans and programmes. Table 1 outlines the major functions of the SAF.

Benefits of the SAF

All legal timber production from natural forests in Ecuador is processed through the SAF, and all national statistics on natural forest timber marketing are derived from the SAF database. Since 2010, all national reports—such as the annual report "Forestry Figures" (*Cifras Forestales)*—have been based on data collected, processed and stored by the SAF.

The SAF helps in coordinating the various institutions with relevance to the forest sector, such as the Internal Revenue Service (*Servicio de Rentas Internas*) and the National Customs Service of Ecuador (*Servicio Nacional de Aduanas del Ecuador*). The National Transit Authority (*Comisión Nacional de Tránsito*) also plays a role in monitoring by coordinating data received from global positioning systems installed in timber transport vehicles.

The SAF generates a large amount of data for the Central Bank's national accounting system; among other things, this enables forest institutions and companies to access accurate information on their contributions to the national economy. The SAF makes it possible to quantify the value of the forest sector to society and decision-makers and thereby is expected to help improve national forest policies. Thus, the SAF supports the design of development plans and policies for the forest sector and encourages public and private investment.

Table 1: The main SAF functions

Module	Step	Activity
Forest registry	1	A forest registry application is generated (by any stakeholder)
	2	Forest activities are certified at a technical office
Application for plantation logging or establishment, or agroforestry programme approval	1	The operator fills out a programme approval application
	2	The application is submitted to a technical office
	3	Waybills are issued as the only documentation authorizing the movement of timber products at the national level (with an identified end destination, or without an identified end destination pending subsequent declaration)
Application for natural forest harvesting programme approval	1	The regent fills out an integrated management plan (IMP) approval application
	2	The IMP is reviewed and approved by a technical office
	3	The regent fills out a programme approval application
	4	The technical office reviews and (if appropriate) approves the programme, of which there are several types—sustainable forest harvesting, simplified management, legal conversion and private protection forests
	5	Waybills are issued as the only documentation authorizing the movement of timber products at the national level (with an identified end destination, or without an identified end destination pending subsequent declaration)

Real-time monitoring of forest product flows

The SAF has 13 fixed checkpoints throughout the country and nine mobile forest and wildlife control units. At the Tandapi checkpoint (pictured on page 11), for example, officers of the National Forest Directorate verify that transported forest products are accompanied by valid transport waybills, and they check that the information recorded matches the truckload.

Technicians from the Ministry of Environment and now also from MAGAP interact regularly with stakeholders in the timber production chain with the aim of continuing to improve and strengthen the SAF and the SPF, including by introducing new features (such as traceability functions for tracking harvested timber to its final destination). Both the

Figure 2: The main SAF screens: 1) homepage; 2) profile selection; 3) site registry; 4) programme approval application; 5) issuing of licence; and 6) issuing of waybills

Ministry of Environment and MAGAP recognize and respect each other as key stakeholders in ensuring the sustainability of the systems and the forests in general.

Information to strengthen forest governance

The SAF database continues to grow with the addition of new registered plans, harvesting licence applications and other transactions related to natural forests. This database is of significant value to government staff responsible for implementing public policies.

The institutions responsible for forest management in Ecuador now have a tool that allows them to combat illegal logging and land-use change in natural forest areas. The development of the SAF has strengthened forest governance in the country and ensured the implementation of actions in support of timber harvesting and marketing in an organized and legal manner with the effective participation of all concerned parties. The Government of Ecuador supports the SAF, which it regards as a practical, technically sound and legally viable mechanism acceptable to all stakeholders in the value chain.

The concept of a social pact with the private sector to demonstrate the legal origin of timber may now be more feasible and also more appealing to stakeholders in the timber production chain. The SAF can help ensure the organized, inclusive development of actions towards such a pact.

The role of SAF and SPF in public policymaking

The introduction of the SAF and the SPF has made it easier to enforce public policies for economic and social development in Ecuador based on the rational use and development of forest resources. The successful development of an administration system for the production of national forest statistics is strengthening the capacity of the forest sector to contribute effectively to sustainable development in Ecuador. The SAF has attracted significant interest from stakeholders outside the forest sector interested in developing similar systems.

The success of the project can be attributed largely to well-orchestrated planning and a consistent, phased approach to the implementation of actions that themselves were complementary to government initiatives outside the project. Above all, however, the positive project outcome was the result of the perseverance and dedication of government officers working hand-in-hand with stakeholder representatives, including the private sector.

The introduction of the SAF is benefiting forest owners by reducing the time and cost of obtaining government approvals (previously, for example, documentation had to be presented physically at technical offices and now it can be presented online). The SAF has also increased the efficiency and transparency of forest administration and made it more user-friendly in the processing of approvals. This in turn, is facilitating compliance with laws and regulations.

The SAF is designed to complement other initiatives promoted by the Ministry of Environment to collect information and statistics on natural resources in Ecuador, such as the Biodiversity Information System (*Sistema de Información de la Biodiversidad*) and the National Forest Monitoring System (*Sistema Nacional de Monitoreo de Bosques*), currently under construction. The data generated by these systems is made accessible to the general public through the Unified Environmental Information System (*Sistema Único de Información Ambiental*); they serve to ratify the commitment of the Government of Ecuador to strengthened decision-making capacity and public policy development based on the regular provision of up-to-date information.

The official video of the SAF is available at www.youtube.com/watch?v=BoEzziRApzA.

Guatemala's timber traceability system

ITTO projects have helped Guatemala establish a comprehensive electronic forest information system

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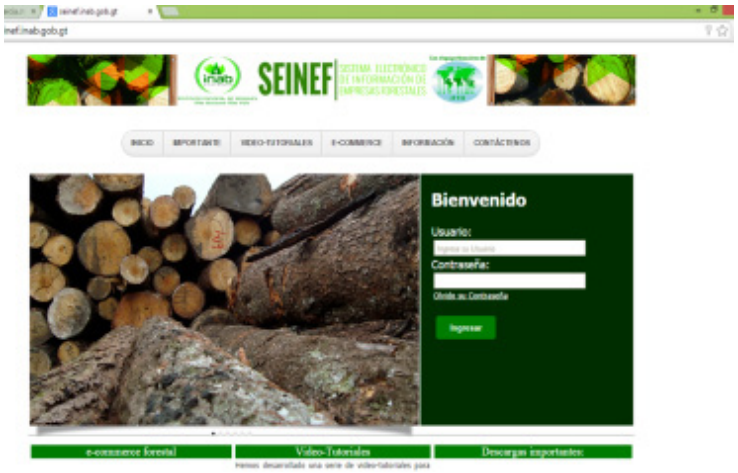
Verification: An officer from Guatemala's National Environmental Police checks that a timber consignment has the appropriate documentation at Izabal, Guatemala. *Photo: INAB/ITTO*

Like many other timber-producing countries, Guatemala finds it difficult to determine the legality of forest products, and it is an even greater challenge to guarantee that current monitoring mechanisms promote legal forest practices. Part of the difficulty is that many monitoring and verification actions are carried out manually and are subject to the discretion and bureaucracy of regulatory institutions.

ITTO Project PD 340/05 Rev.1 (M) was implemented to help create the Forest Statistical Information System of Guatemala (*Sistema de Información Forestal de Guatemala*—SIFGUA) and thereby increase the quality and timeliness of forest-related information. Completed in 2011, the project aimed to "formulate, develop and implement a national forest statistical system to facilitate the collection, processing and dissemination of information on reforestation, deforestation, forest management, forest harvesting, timber industrialization and processing, employment regimes, and marketing of forest products in domestic and foreign markets". SIFGUA achieved this aim mainly through the implementation of interinstitutional agreements and by applying appropriate work and information-gathering methodologies.

In 2012, ITTO approved a second project (TMT-PD 004/11 Rev.2 [M]), undertaken as part of the ITTO Thematic Programme on Trade and Market Transparency; the aim of this project was to strengthen SIFGUA with a view to automating requests and approvals for forest-related processes required by law, increasing market transparency and trade, and improving decision-making in the forest sector. The project was implemented jointly by the National Council for Protected Areas (*Consejo Nacional de Áreas Protegidas*, CONAP, the authority in charge of managing forests in natural protected areas) and the National Forest Institute (*Instituto Nacional de Bosques*, INAB, the authority in charge of managing forests outside natural protected areas).

SIFGUA seeks to automate forest-related processes, minimize response times, standardize forms, clarify procedures, avoid data duplication, minimize human error, limit officers' discretionary powers and bureaucracy, and meet the deadlines established by law to process requests and applications. It consists of three information systems: 1) the Electronic Forest Enterprises Information System (*Sistema Electrónico de Información de Empresas Forestales*—SEINEF); 2) the Electronic Forest Administration System in Protected Areas (*Sistema Electrónico de Administración Forestal en Áreas Protegidas*—SEAF-CONAP); and 3) the Electronic Forest Management System (*Sistema Electrónico para la Gestión Forestal*—SEGEFOR—for forests outside protected areas). These three systems perform complementary functions (Table 1) but are independent of each other. Each is described further below.



Data portal: The homepage of the Electronic Forest Enterprises Information System (www.seinef.inab.gob.gt), known as SEINEF, is designed to register, monitor and control the flow of forest products through forest companies.

The Electronic Forest Enterprises Information System

The strategy for generating and disseminating forest information through SIFGUA involves the use of a traceability system known as SEINEF. The aim of this system is to register, monitor and control the flow of forest products through companies that are legally established and registered with INAB. During development, the SIFGUA team—with collaboration from stakeholders in the private sector—identified the critical points in data collection, such as records of entries into companies' stock inventories; yield levels; diversity of products and species; and records of inventory exits. All data must be obtained using a reliable, safe, standardized document.

Table 1: Interrelation and operation of systems developed by SIFGUA

	Information system	Services/processes	Activities
Forest Information System of Guatemala—SIFGUA	Electronic Forest Enterprises Information System (SEINEF)	Registry of forest enterprises Verifying the traceability of forest products entering forest enterprises	Electronic registration of forest enterprises
			Submission of initial information report
			Submission of (quarterly) reports on forest product stock entries, processing and exits
			Printing of company bills of transport
		Monitoring of forest enterprises	Identification and supporting documents
			Uploading of monitoring results and reports
	Electronic Forest Management System (SEGEFOR)	• Forest harvesting • Forest incentives • National Forest Registry • Applications for company bills of transport • Export permit applications	Electronic registration
			Compliance with technical and legal electronic requirements
			Verification and validation of information by INAB officers
			Issuing of approval
		Miscellaneous applications	Application receipt acknowledged by INAB officers
			Acknowledgement sent to users confirming receipt and electronic follow-up/processing of response
	Electronic Forest Administration System in Protected Areas (SEAF-CONAP)	• Harvesting permit applications • Registration of professionals developing management plans for protected areas • CITES certificates	Electronic registration
			Compliance with technical and legal electronic requirements
			Verification and validation of information by INAB officers
			Issuing of approval

The participation of forest-sector stakeholders was important in the design and testing of trial versions of SEINEF, particularly the inputs of companies on their daily use patterns. The success of this step was vital because it enabled the involvement of end-users in the development and use of the system.

The implementation of SIENEF would not be possible without suitable revisions, updates and amendments to the regulatory framework; therefore, the next step was to introduce the "forest enterprise monitoring regulation"[1] and the "regulation for forest products transport and legal sourcing".[2] These two regulations, which entered into force in February 2014, made the adoption of SEINEF mandatory for forest enterprises.

SEINEF is an innovative tool designed for use by enterprises of all sizes, from the small (e.g. carpentry workshops, furniture factories and timber warehouses) to the very large (forest corporations and exporters). SEINEF provides these users with a wide range of services, such as the digitization and review of their regular reports (carried out automatically by the system); the verification of supporting documentation on inventory entries and exits; and analyses of yield levels and internal flows. A direct benefit for businesses is a reduction in the time and cost of obtaining authorizations. For example, Edy Corado, General Manager of Natural Woods, an exporter of engineered timber flooring, made the following comment:

"We entrepreneurs base our decisions on figures—if we get positive figures, we will be willing to change, and SEINEF has proven to be a helpful system, not only to keep our records in order for INAB but also to streamline the process. We no longer need to visit an office to have our report reviewed, which used to take up to three months, and then we had to go back to the office to pick up the report. This was a costly and tedious procedure for obtaining an approval."

Supporter: Edy Corado (right), the general manager of a wood-exporting company, says that SEINEF has been helpful for his business.
Photo: INAB/ITTO

1 Available at: www.inab.gob.gt/Documentos/Reglamentos/REGLAMENTO_EMPRESAS_1.pdf.
2 Available at: www.inab.gob.gt/Documentos/Reglamentos/REGLAMENTO_TRANSPORTE.pdf.

Another significant outcome of the project, which was in fact the *raison d'être* of SEINEF, was the standardization of a single timber transport document for the industry—the "company bill of transport" (Figure 1). SEINEF generates this document electronically if the applicant meets three requirements: 1) it should be an active, registered operator in INAB's National Forest Registry; 2) it should be up to date in the submission of quarterly reports; and 3) it should have a timber stock balance on the basis of which the document may be issued. These three requirements ensure that INAB is able to monitor the company bills of transport it issues, and they make it possible to follow a traceability procedure to check irregularities at any stage of the process. Company bills of transport are numbered and have unique QR barcodes (machine-readable optical labels), and they are printed on special paper that minimizes the potential for falsification.

SEINEF outcomes

As of January 2015, 1814 enterprises were registered with INAB, of which 1440 (nearly 80%) were already using SEINEF. Collectively, these enterprises reported an initial stock volume of timber of 341 240 m^3 to SEINEF. By the end of 2014, this figure had increased with the inclusion of timber from natural forests outside protected areas (169 026 m^3) and within protected areas (59 365 m^3), while plantation timber amounted to 351 820 m^3 and imports were 59 365 m^3. Local company-to-company transactions were 395 815 m^3, of which 343 139 m^3 was handled through SEINEF's electronic company bill of transport system, accounting for 86.7% of total transactions. Reported inventory exits amounted to 918 220 m^3, of which 115 929 m^3 was for export.

Figure 1: A printed example of a company bill of transport, showing the QR barcode

SEAF-CONAP and SEGEFOR

The aim of SEAF-CONAP and SEGEFOR is to automate various forest services provided by CONAP and INAB in accordance with their legal mandates. SEAF-CONAP, which is managed by CONAP, is designed to automate forest harvesting permit operations in protected areas, the registration of professionals developing management plans in protected areas, and the issuance of CITES [Convention on International Trade in Endangered Species of Wild Fauna and Flora] permits, among others. SEGEFOR, which is managed by INAB, will automate services associated with forest harvesting, forest incentives, the National Forest Registry, applications for company bills of transport, and export permit applications for forests outside protected areas. Like SIENEF, both systems will issue electronic transport documentation, and this process will facilitate the automated real-time verification of stocks, progress in harvesting operations and on-the-road monitoring of timber shipments.

Benefits of SIFGUA's automated tools

The main objective of SIFGUA is to automate processes and approvals for forest stakeholders and to collect, process and analyze information so as to disseminate it to the general public through its website.[3] SIFGUA involves the real-time collection of standardized, high-quality data with a view to strengthening the oversight of the forest sector and increasing its efficiency. Data are now available through SIFGUA on, for example, forest industries operating in Guatemala, timber production, timber products, timber exports and imports, timber species, and forest areas under approved management plans.

SIFGUA is an important tool for all forest-sector stakeholders in Guatemala because it provides them with free access to accurate, up-to-date information for forest-sector decision-making. In the longer term it should help increase forest investment by improving data on the contributions of the forest sector to gross domestic product; market trends; forest production; the socioeconomic impacts of forest activities; and the dynamics and legal origin of forest products.

Digital age: SIFGUA puts an end to stacks of unused paper files. *Photo: INAB/ITTO*

3 www.sifgua.org.gt.

Procuring legal and sustainable tropical timber in China

An ITTO project has established an online platform to facilitate the flow of information on timber legality for small and medium-sized forest enterprises in China

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Verified legal? A worker in a Shanghai woodflooring factory measures moisture content in a sample of floorboards. China's small and medium-sized forest enterprises face significant challenges in procuring timber from verified legal and sustainably managed forests. *Photo: Li Qiang, ITTO*

China is now the world's largest importer and exporter of wood products, and more than 90% of its total industrial forest output is generated by small and medium-sized forest enterprises (SMFEs). A large proportion of the raw materials used by these SMFEs—including significant volumes of tropical timber—are imported. Many SMFEs export finished products, and many others supply larger companies with processed tropical timber parts and components for assembly and export. China's SMFEs, however, face significant challenges in procuring timber from verified legal and sustainably managed forests, challenges they are poorly equipped to address.

The majority of SMFEs in China do not understand procurement. They lack an appreciation of international market requirements for verified legal and sustainable timber; chains of custody; timber tracking; and the importance of meeting the needs of their international buyers in achieving corporate social responsibility objectives.

As part of its efforts to improve the capability of SMFEs, the Government of China formulated and implemented ITTO Thematic Programme Project TFL-PD 017/09 Rev.2 (M): "Equipping small and medium-sized forestry enterprises in China for procurement of tropical timber from legal and sustainably managed forests". The project, which was implemented by the Research Institute of Forestry Policy and Information (RIFPI), commenced in 2011 and was completed in 2014.

Project objective

The development objective of the project was to contribute to China's procurement, production and trade of legal and sustainably harvested tropical timber products in support of sustainable tropical forest management. The key problems addressed by the project were the lack of understanding among SMFEs of procurement policies for imported tropical timber, the lack of application by SMFEs of such policies, and the lack of appreciation among SMFEs of the risks to their markets posed by the use of unsustainably or illegally harvested tropical timber.

The project was implemented in the Yangtze River Delta region (Figure 1), where China's tropical timber imports, production, consumption and trade are concentrated.

The first stage of the project involved surveying SMFEs in the project area through questionnaires and interviews with stakeholders. The aim of the survey was to assess the understanding, knowledge and awareness of SMFEs about:

- the international requirements for tropical timber procurement; and
- how a lack of an adequate approach to procurement would undermine their trading opportunities in Europe, the United States and other countries with mechanisms designed to eliminate illegal timber from international trade.

The findings of the survey were used to identify opportunities and challenges for addressing the shortcomings of SMFEs with respect to procurement and to develop project activities. One hundred and thirty-three wood-processing enterprises were surveyed in Jiangsu and Zhejiang provinces, comprising 61 woodflooring companies, 26 plywood companies, 16 wood-furniture companies and 25 laminate flooring companies; some of the main results of the survey are discussed below.[1]

1 The full results of the survey have been published and are available from the author and the ITTO Secretariat.

Figure 1: The project area, which included the cities of Shanghai, Huhou and Jiashan in Zhejiang Province and Zhangjiagang in Jiangsu Province

SMFE knowledge and understanding of the international regulations

Of the surveyed enterprises, 28% reported that they had heard of either the Lacey Act or the European Union Timber Regulation. Most of the surveyed enterprises purchase timber raw materials in local timber markets and do not import timber directly; they are likely, therefore, to be 2–3 steps removed from the original importer along the supply chain. Because the timber is purchased in the domestic timber market, the issue of legality arises in the minds of few purchasing enterprises.

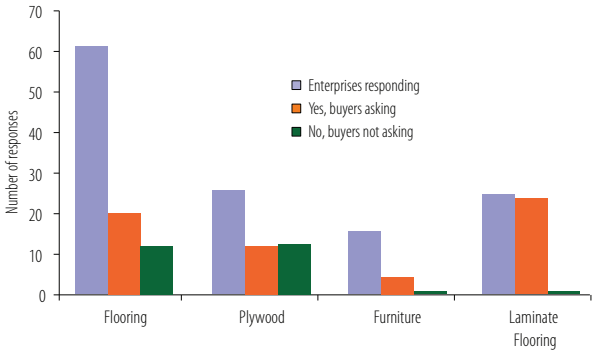
Requests by foreign importers for proof of legality

In response to the question: "Are overseas buyers requesting proof of legality?", less than 10% of SMFEs indicated that buyers were asking for proof of legality. Figure 2 shows that while buyers of laminate flooring were particularly interested in proof of legality, sustainability or certification, relatively few purchasers of other products were making inquiries in this regard.

Other key findings of the survey include the following:

- SMFEs are confused by the various existing timber trade policies of importing countries.
- Many tropical timber countries cannot provide adequate documentation on legality for SMFEs to satisfy demand in the European Union and the United States.
- The supply chain for imported and domestic timber is complicated, and tracking is a challenge.

Figure 2: Response to the question: Are foreign importers requesting proof of legality, sustainability or certification?



- Information sources are limited: more than half of surveyed enterprises obtain information through the internet and at trade fairs, while only 10% acquire information from governmental or formal association sources.
- Enterprises lack effective communication with government agencies and, because of this, they are insufficiently engaged in policy development.
- SMFEs find that Chinese institutions and timber associations are ill-equipped to provide advice or training on meeting market requirements for legality.
- Standards for legality verification are not uniform.
- There is low recognition among SMFEs of the need for legality verification.
- Third-party legality verification management systems are too expensive for SMFEs.
- The cost of third-party legitimacy identification cannot be transferred to buyers.
- SMFEs do not have the management capacity to sustain a legality verification system.

Obstacles to wider implementation of timber procurement policies by SMFEs

SMFEs in China have the following characteristics: low output, which leads to a lack of bargaining power in negotiating prices; difficulty in accessing financing; low investment in research and development; low market development; low value-adding; a lack of management skills (traditional family management styles prevail); ad hoc organizational structures; and difficulty in recruiting skilled and experienced staff. SMFEs are also disadvantaged by: poor institutional support; poor communication with authorities; weak and inexperienced sector associations; and a lack of access to information on technological developments, markets and global forestry and environmental developments.

SMFEs in China face more challenges than their larger counterparts. In an environment with increasing market

Box 1: Outputs of Project TFL-PD 017/09 Rev.2 (M)

Output 1: Published and disseminated a report titled "China's tropical timber processing SMFEs and their opportunities for procurement of timber from legal and sustainably managed forest".

Output 2: Published and disseminated a report titled "Policy suggestions for promoting procurement of timber from legal and sustainably managed forest in SMFEs".

Output 3: Published and disseminated a journal titled "Market information, procurement of timber from legal and sustainably managed forest and technology for China's SMFEs".

Output 4: Delivered training on sustainable forest management and technology for pilot enterprises to 40 SMFE representatives.

Output 5: Convened a workshop titled "Procurement of timber from legal and sustainably managed forest and trade of international tropical forest products: challenge and opportunities for SMFEs".

Output 6: Established an SMFE–government stakeholder sustainable procurement and production forum.

Output 7: Increased operational capacity of the executing agency in the research and servicing of SMFEs.

competition, survival is the key issue for all SMFEs. They generally have inexperienced management and are widely dispersed, which means they lack negotiating power, influence and the capacity to represent their own interests. They have great difficulty in reporting their problems in production and management to governmental organizations; in most cases, therefore, they must rely on their large-sized counterparts to represent their interests, which is unlikely to produce optimal outcomes. As a result, policy decision-making processes are unlikely to identify and adopt measures to support SMFEs. Many of the surveyed SMFEs expressed the view that they did not expect any beneficial or favourable policies from either local or central government agencies.

Associations can act for SMFEs, increasing their bargaining power and facilitating the exchange of information on policy development. In general, however, existing associations are poorly equipped to do so.

Communication platform

Project TFL-PD 017/09 Rev.2 (M) achieved a number of outputs related to the specific objective (Box 1). The main one was the development of a website (Output 6 in Box 1; see Figure 3), called the Forest Products Index (FPI), which operates as a platform for information exchange between the private sector and the government. The platform will continue to be supported financially by the State Forestry Administration (SFA) and the Shanghai Timber Association beyond project completion.

The FPI provides detailed information—based on the inputs of several private companies—on the production of timber products such as veneer, fibreboard, facing paper and flooring. It also provides data on imports and exports in timber markets important to China, such as those of the United States, the European Union and Japan, and fosters links between China's wood-product enterprises and those in producer countries. Chinese manufacturers and traders at home and abroad now have a better understanding of the market situation for tropical wood products, thanks to information delivered via the daily updated public "Wechat" account through the FPI. In short, the FPI provides a modern means by which stakeholders—industry, government agencies, research institutions and associations—can share information on timber procurement and sustainability and engage in a dialogue on these issues.

The information generated by the FPI is distributed to SMFEs as well as to the SFA and the Ministry of Commerce and is available on the website. Around 100 enterprises, five associations and three research institutes and universities are participating in the information-sharing system, including by submitting data each month. Government agencies are using the FPI to gauge trends in the sector.

The FPI enables SMFEs to provide feedback on the usefulness of the FPI and related information. It is the first non-profit platform in China to offer a concrete means for providing and obtaining trade and market information and regulatory and policy developments. It is expected that, over time, the information generated by the FPI will contribute to effective policymaking. The outputs of the project have become a reference point for government agencies and other stakeholders in their decision-making and collectively are considered a significant step forward for SMFEs in China.

The project enabled the RIFPI to strengthen its relationship with Chinese government agencies such as the SFA, the Ministry of Commerce and the General Administration of Customs. The planning and financial departments of the SFA now pay more attention to developments in the tropical wood-product market, and they have initiated

Adding value: Wood-carvers apply their craft to very-high-value rosewood in a medium-sized enterprise in Shanghai. *Photo: Li Qiang, ITTO*

Figure 3: The website of the Forest Products Index

Note: This website is available at: chinafpi.org.

new projects focusing on the tropical timber trade. Many other industry and trade associations around China want to cooperate with the Chinese Academy of Forestry to tap into the information services arising from the project. Box 2 summarizes the project's main impacts.

Lessons learned

The lessons learned from the project include the following:

- It is necessary to ensure the sustainability of project outputs to maintain momentum in the two-way flow of information.
- It is crucial that a project aimed at supporting SMFEs involves a two-way flow of benefits (to and from the SMFEs). Training on timber legality and third-party identification in two pilot enterprises was an important element in this.
- Sufficient time should be spent in designing and testing questionnaires (including through pre-survey test runs). In this project, the survey of SMFEs formed the basis of the approach taken in reaching out to the SMFEs and was therefore crucial for project success.
- Field surveys should be divided into several stages (rather than conducted intensively in a short timeframe). A phased approach would allow for the adaptation of survey techniques and questions in the light of experience.
- The project executing agency should aim to develop and maintain long-term cooperation with governments, enterprises, associations, research facilities, non-governmental organizations and others to ensure that project benefits will be maintained beyond the life of the project.

Box 2: Project impacts

Project TFL-PD 017/09 Rev.2 (M) generated considerable momentum, interest, outputs and outcomes, laying the foundation for Chinese tropical timber-processing SMFEs in the project area to adopt systems for the procurement of timber from legal and sustainably managed forest. Specific impacts include the following:

- The field training and increased information flow raised awareness among SMFEs of the importance of sustainable forest management.
- The research report helped improve the application of forest laws and policy and may have increased the use of timber from legal and sustainably managed forests by SMFEs. Some SMFEs have taken the initiative to consult with authorities on issues such as due diligence under the European Union Timber Regulation and certification.
- Training provided by the project helped Chinese SMFEs in the project area to improve their management techniques, increase production efficiency, and gain a better understanding of international market requirements.
- The FPI communication platform provides the opportunity and means for timber SMFEs and relevant government departments to communicate on policy and market developments. FPI's Wechat has more than 1000 users, who can access Wechat and the FPI website to obtain a wide range of market, trade and policy information.
- The FPI reflects the business climate and shows trends in the production and trade of wood-based manufacturing companies.

The ITTO project has attracted considerable domestic and international attention due to its excellent performance. For example, an SMFE specializing in woodflooring wrote: "The Forest Products Index is very constructive and is an information guide especially for resource-intensive enterprises. This is the first time to read such professional long-term regular information statistics."

Further information on the project is available at: chinafpi.org.

Goho-wood: Japan's system for combating illegal logging

Japan has developed a system by which companies may verify the legality and sustainability of their timber using one of three methods

by Akane Nagahisa

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The Government of Japan introduced its *Guideline for Verification on Legality and Sustainability of Wood and Wood Products* (the "goho-wood guideline"[1]) in February 2006 to combat illegal logging. The government also added wood and wood products verified as legally and sustainably supplied in accordance with the goho-wood guideline to the list of designated procurement items under the Law Concerning the Promotion of the Procurement of Eco-friendly Goods and Services by the State and Other Entities (the "Green Purchasing Law") in April 2006.

The Basic Policy of the Green Purchasing Law applies to five categories of wood and wood products:

1. paper (e.g. form paper and printing paper);
2. stationary (e.g. envelopes and notebooks);
3. office furniture (e.g. chairs, desks and shelves);
4. interior fixtures and bedding (e.g. bed frames); and
5. public works material (e.g. lumber, glued laminated timber, plywood, laminated veneer lumber and flooring).

Under the goho-wood system, individual companies are to verify the legality and sustainability of the wood and wood products they handle, and they are accountable for this verification. The goho-wood guideline specifies three verification methods (see box); of these, method 2 (see figure) is most prevalent (see table).

The goho-wood system has been enhanced by the recent introduction of a monitoring system in which third-party entities examine certified companies for their conformity with the codes of conduct of their industry associations. The Government of Japan is committed to promoting the supply of legal wood and wood products through the goho-wood system and to the continual improvement of the system through measures such as checks on its operation and information exchanges with stakeholders.

The goho-wood guideline is available at: www.goho-wood.jp/world/guideline/en.html.

Verification methods specified in the goho-wood guideline

Method 1: sustainable forest management and chain-of-custody certification systems. This method uses the certification provided by forest and chain-of-custody certification systems, such as the Sustainable Green Ecosystem Council (which operates a scheme in Japan for forest management and chain-of-custody certification), the Forest Stewardship Council and the Programme for the Endorsement of Forest Certification.

Method 2: verification of conformity with industry association codes of conduct. This method involves industry associations certifying that their individual member companies are conforming with their voluntary codes of conduct. Companies certified by their industry associations provide the next company in the production chain with a certificate of legality and sustainability, thus forming a chain of verification of legality and sustainability.

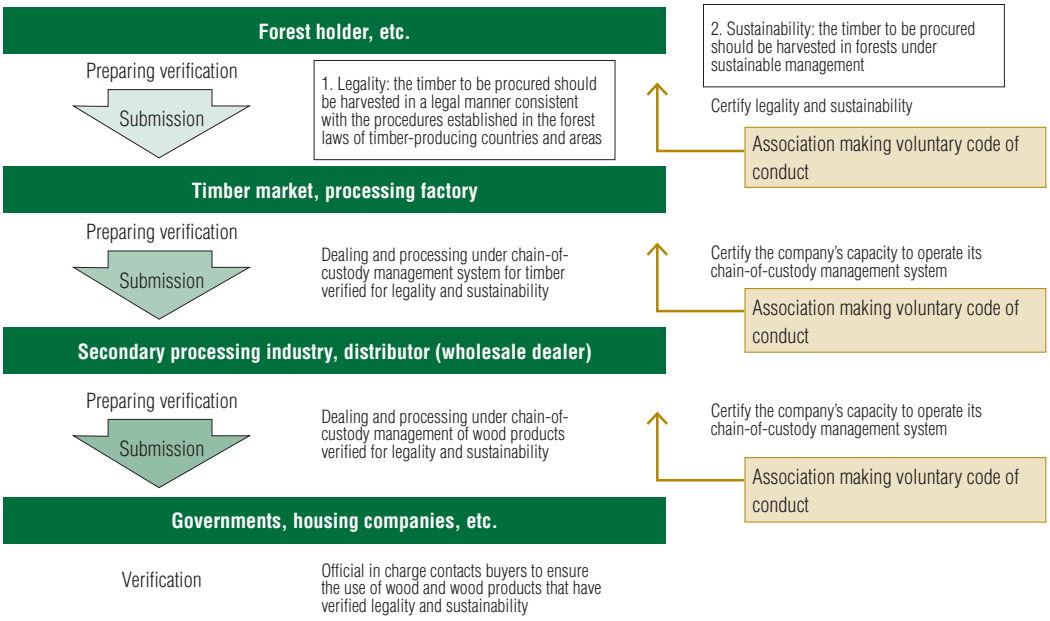
Method 3: verification by individual companies using their own systems. Those companies (especially large companies) not adopting methods 1 or 2 may verify the legality and sustainability of their products by applying their own measures to the entire production process, from the harvesting of the timber to the delivery of finished products. This method must demonstrate that it is at least as reliable as the verification obtained using method 2.

Table: Number of certified companies, by verification method

Method 1 (as of November 2014)				Method 2 (as of March 2014)	Method 3 (as of December 2013)
FSC	PEFC	SGEC	Total		
1 098	207	361	1 666	11 111	17

Note: FSC = Forest Stewardship Council; PEFC = Programme for the Endorsement of Forest Certification; SGEC = Sustainable Green Ecosystem Council. See text for descriptions of each method.

Figure: Illustration of verification by companies under the authorization of industry associations (Method 2)



Source: www.goho-wood.jp/world/resources.

1 "Goho" means "legal" in Japanese.

Timber procurement policies must evolve

The EU's FLEGT Action Plan provides a firm foundation on which to build effective trade measures that take into account the wider market context

by Rupert Oliver

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The last decade has seen some of the most dramatic changes in the tropical timber trade for at least 60 years. These changes have critical implications for the development of effective, efficient and equitable timber procurement policies in the European Union (EU) and other industrialized nations. Without efforts to adapt, buyers in these markets could become irrelevant in driving positive change.

ITTO's soon-to-be-published Independent Market Monitor (IMM) baseline report[1] shows that the EU's Forest Law Enforcement, Governance and Trade (FLEGT) Action Plan provides a framework with real potential for overcoming the limitations of previous consumer-led initiatives to promote trade in legal and sustainable tropical forest products. The FLEGT Action Plan directly links constructive engagement on the supply side through voluntary partnership agreements (VPAs) with, on the demand side, the EU Timber Regulation (EUTR), which is designed to remove illegal wood from trade.

The changing tropical timber trade

Rapid rise in south–south trade

Perhaps the most dramatic change in the tropical timber trade in the last decade has been the rapid increase in the relative share of emerging market demand for tropical timber, a trend that deepened in the wake of the financial crisis in Europe and North America. Data in the IMM baseline report show that China's share of global tropical timber import value increased from 15% in 2004 to 28% in 2013, and India's share increased from 4% to 7%; in contrast, the EU's share fell from 24% to 12%.

Decline in EU tropical timber trade

The IMM baseline report traces the recent decline in the EU's tropical timber trade and the factors that have driven this trend. The volume of the EU timber trade with tropical countries has declined sharply since the onset of the financial crisis, but the economic downturn obscures a longer-term and even more troubling trend of declining market share for tropical hardwoods in the EU. While this decline is often blamed on environmental prejudices, there are many other commercial reasons.

The lack of a consistent supply of tropical timber has become a profound problem for European buyers. This is fuelled, in turn, by increasing diversion to other emerging markets and by infrastructure challenges in tropical countries. The buyers themselves are also partly responsible for the lack of consistent supply because of their strong preference for a limited range of species.

The financial crisis has also meant greatly reduced access to credit for European timber importers. There is less willingness to make speculative purchases of tropical wood, particularly when prices are volatile and products may take several months to arrive. The financial crisis has gone hand-in-hand with a very strong trend towards just-in-time procurement of smaller mixed consignments in the EU, which favours readily available local materials.

Rising competitive pressure on tropical hardwoods

There has been a considerable increase in competitive pressure on tropical timber from substitute products. The EU's large and sophisticated wood-panel industry has developed new surfacing technologies to give products the look and feel of real wood, and, as a result, panel products are taking a rising share of the mouldings and interior-furnishings markets. Rather than importing a variety of woods, European furniture and flooring manufacturers are applying a wide range of stains to oak to create diverse colours and looks.

There is mounting competitive pressure in markets for exterior products. The European timber industry is investing in thermal and chemical modification that can achieve durability properties in temperate panels and timber formerly associated only with tropical woods; there is now at least 300 000 m^3 of production capacity for these products in the EU. Entirely new materials, such as wood–plastic composites, are competing directly with tropical wood in the external decking sector.

Underlying the decline in tropical wood's competitiveness are significant structural challenges. Numerous studies have shown that tenure insecurity, information gaps, informality, the small scale of operations and a lack of business organization and capacities present formidable barriers to securing financial investment in sustainable timber harvesting and processing industries in many tropical countries (see, for example, Oliver and Donkor 2010). The IMM baseline report shows how the recent growth in demand in Asian markets has led to a significant rise in log exports from African countries at the expense of further-processed products.

Low impact of demand-side measures

Due partly to a widespread failure to foresee these dramatic changes in the tropical timber trade and to accommodate the challenges of the tropical wood sector, timber procurement policies in the EU and other industrialized countries have had only limited influence on forest practices in the tropics (see the article by Michael Martin and Dato' Baharuddin elsewhere in this edition).

Beyond central-government contracts and sectors in which the commitment to buy certified wood tends to be strongest (e.g. those in which sales are dominated by larger manufacturers, distributors and retailers, including

1 The IMM mechanism has been established to support the implementation of bilateral VPAs between the EU and timber-supplying countries. The IMM provides independent scrutiny to assess concrete changes in the EU timber market and monitors the extent to which the market recognizes and appreciates VPA-licensed timber. The IMM baseline report is expected to be released in 2015.

paper, panels and do-it-yourself), the impact of timber procurement policies is constrained in Europe. A large swathe of Europe's joinery and furniture industries has had only limited engagement on this issue. The EU has more than 300 000 wood-joinery and furniture manufacturers, each of which employs fewer than ten people. The green procurement movement has barely scratched the surface of these highly fragmented industries.

A small "in crowd" and a lot of outcasts

Looking at the overall impact of timber procurement policies to date, it's hard to escape the conclusion that two entirely distinct markets have evolved. There is an "in crowd" of enterprises that are heavily engaged in forest certification and very influential in the development of progressive procurement policies. And there are "outcasts", who are unable or unwilling to access certified supply chains, partly through a lack of finance and partly through structural constraints. There is a clear dichotomy between industrialized and developing countries in their uptake of certification and also between large-scale (state and private) enterprises and smallholders.

Need for greater emphasis on buyer–supplier partnerships

This dynamic needs to change if demand-side measures are to help bring about positive changes towards legal and sustainable forest practices. The approach inherent in many public timber procurement policies, in which EU governments simply require that products are certified, has increasingly less traction in tropical countries. A much greater focus is needed on partnerships in which EU buyers and suppliers in tropical countries work together to progressively raise the standard of environmental performance. Procurement policies must provide space to recognize progress within realistic timescales, and there is also a clear need for innovative mechanisms that facilitate participation by small-scale forest enterprises in markets for verified legal and sustainable timber products.

The decrease in significance of EU buyers in tropical timber trade flows shows how important it is for timber procurement policies in the EU to provide tropical producers with more positive incentives. Requirements for legally verified and certified products must be backed by active promotion to increase the use of sustainably managed tropical hardwoods.

The EU needs to work closely with other industrialized nations to ensure consistency among procurement policies, and equitable demand-side measures should be extended into south–south trade. Governments in tropical countries should be encouraged to adopt policies requiring all public procurement tenders (including, and notably, those funded through aid or development projects for infrastructure, health and education) to use only legal timber sources. Initiatives like the World Bank Eco-Cities project should encourage the use of legally verified tropical timber in place of other more environmentally damaging materials. As imports into tropical countries rise, the importing countries should be encouraged to impose due-diligence requirements similar to those in the EUTR.

The potential of FLEGT

The EU FLEGT Action Plan can make a significant contribution to improving the effectiveness, efficiency and equitability of timber procurement policies in the EU and the wider international trade. A considerable strength of EU FLEGT is that it establishes a direct link between a wide-ranging regulatory demand-side measure in the form of the EUTR and a supply-side measure in the form of VPAs to facilitate and support forest governance reform in timber-supplying countries.

All those countries now implementing VPAs are committed to applying their timber legality assurance systems to all exports, not just those destined for the EU, and all VPAs emphasize stakeholder engagement. Implementation therefore demands—and provides—a foundation on which to build verification procedures for smallholders alongside big corporations. There is growing recognition of the need within this process to rekindle interest among small-scale loggers and traders through incentives such as improved tenure rights for those who choose the legal path and the development of simplified regulations to reduce transaction costs.

On the demand side, FLEGT requires efforts to ensure recognition and market reward for VPA licences in the EU as a step on the road to sustainability. Alongside CITES [Convention on International Trade in Endangered Species of Wild Fauna and Flora] certificates, VPA licensing is the only form of evidence not subject to additional due-diligence requirements under the EUTR. The EUTR applies to all timber traded in the EU, irrespective of origin, and is not limited to those few market segments where there is specific demand for environmental product labels. VPA licensing will not replace or duplicate forest certification, but it will help establish the pre-conditions in which a much larger range of operators are able to benefit from the move towards sustainability.

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Fellowship report

The FLEGT VPA process is helping strengthen forest governance in Honduras

by Catty Samaniego

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Stacked: Pine logs ready to be transported to a sawmill in Honduras. The country's forest industry has a number of structural problems. *Photo: C. Samaniego*

The European Union (EU) developed its Forest Law Enforcement, Governance and Trade (FLEGT) Action Plan with the aim of addressing timber illegality and strengthening forest governance in timber-producing countries. The FLEGT Action Plan features provisions for the negotiation of voluntary partnership agreements (VPAs), which are legally binding trade agreements between the EU and participating timber-producing countries outside the EU aimed at ensuring that timber and timber products exported to the EU come from legal sources.

Seventeen countries have so far joined this initiative globally; in Latin America and the Caribbean, Honduras is the first country to embark on a VPA negotiation process. Given its leading regional role in implementing FLEGT policies, Honduras has become the focus of attention for other countries in the region.

VPA negotiation in Honduras: progress and discussion

Honduras has been negotiating a VPA with the EU since 2012. The main achievements of this process include: the delineation of the negotiation process; the formulation of a participation structure, roadmap and action plan, as well as communication guidelines; the development of a list of forest products to be covered by the VPA and its submission to the EU; the establishment of FLEGT VPA multistakeholder platforms; the definition of "legal timber"; and the development of legality tables.

The VPA negotiation process has also led to other efforts, such as: the mapping of stakeholders in the forest production chain; consultations on factors affecting legality in the timber trade; proposals for legality tables; and studies on the potential impacts of the FLEGT VPA on livelihoods, land tenure and indigenous communities. The FLEGT VPA process, therefore, is assisting significantly—and will no doubt continue to assist—in addressing illegality and strengthening forest governance in the country.

Criticisms of the process

Two points of criticism about the Honduran VPA negotiation process are the improvised nature of stakeholder involvement in negotiations, and the lack of clarity on who should participate formally and who should be part of the negotiating and technical teams. These shortcomings have most likely arisen because of the lack of protocols and regulations guiding the participation of stakeholders based on the proposed structure, and because the communication guidelines are yet to be implemented. Those guidelines include the registration and accreditation of participants at three levels within the participation structure, and the appointment of an information officer who is responsible for gathering and systematizing information on the VPA negotiation and disseminating this information to stakeholders at all three levels.

Critics have focused not only on the lack of a formal definition of stakeholder participation but also on the legitimacy and representativeness of participants. Questions have arisen on whether participants have the required competence—by virtue of their roles, mandates and/or rights over the management of forest resources—to make decisions in this field. The good news is that the Honduran national forest authority (the National Institute for Forest Conservation and Development, Protected Areas and Wildlife) is willing to incorporate other stakeholders in the process. To this end, it has approached various public

institutions with direct and complementary expertise in forestry, as well as indigenous peoples' organizations, beneficiaries of the Social Forestry System (such as forest owners, agroforestry federations and cooperatives), reforestation operators and carpenters/joiners, among others. As the negotiation process continues, the need to formalize and regulate stakeholder involvement will become more evident.

Another critical issue in the negotiation process is that it is still unclear how the VPA will lead to the resolution of structural problems concerning governance, land tenure, forest access and forest land-use change, contradictions within the forest legal framework, the lack of consistency in planning instruments and policies in the forest sector, corruption, and the lack of respect for indigenous peoples' rights to forest resources and to free, prior and informed consent. Forest-sector institutions are perceived as weak, disjointed and inconsistent in their actions. They do not promote change, lack the necessary law enforcement capacity, have limited decision-making mechanisms and platforms, and have no clear view of their representativeness or legitimacy in the sector; their focus on short-term actions is hardly strategic. These institutions have limited operational capacity and poor institutional coordination and complementarity, and they respond to everyday situations by taking emergency remedial actions. They need greater transparency and credibility.

Given the magnitude of the country's institutional and structural problems, which go beyond the forest sector, some civil-society stakeholders have argued that the definition of legality in FLEGT policies should not focus on the definition of "legal timber"; rather, it should involve a broader discussion of forest governance. They argue that it will be difficult to set up legality tables—which are the basis of the process—under a definition of "legal timber" and to offer alternative solutions to these problems without improving forest governance.

Potential VPA aspects that could help strengthen forest governance

The problems with governance in the Honduran forest sector are complex; the implementation of a VPA will not eradicate them, but it may help create enabling conditions for addressing them. Indeed, improvements can already be seen in those conditions, and this will become even clearer once the negotiation of the VPA is concluded and the VPA begins to be implemented. The negotiation process has led to a review of the legal framework for the forest sector. It has also helped in articulating policies and planning instruments that would enhance coordination among agencies with direct and complementary competence in the forest sector, promote local participation, ensure the involvement of stakeholders with major rights, claims and demands, and enable the participation of new stakeholders.

Record-keeping: A worker registers the arrival of logs at a sawmill in accordance with local laws. *Photo: C. Samaniego*

By debating structural problems such as land tenure, land-use change, poverty and social security, and by generating improved platforms for dialogue and discussion on forest governance, it is my view that processes such as the FLEGT VPA will gradually be mainstreamed into national and regional forest-sector institutions. The VPA could help improve forest-sector competitiveness in the medium to long term by increasing transparency on timber origin and in supply chains, improving the reputation of Honduran entrepreneurs and helping ensure that Honduran timber is given preference in international markets because it is sourced from a FLEGT-licensed country. The VPA will also facilitate the establishment of a reliable traceability system for national markets and improve conditions for the Social Forestry System.

The FLEGT VPA process will improve transparency in the sector by providing mechanisms for traceability, monitoring and verification. It will improve participation and decision-making by strengthening stakeholder capacities, promoting the involvement of new stakeholders, improving participation platforms, and ensuring compliance with the principle of free, prior and informed consent.

Conclusion

In the three years of VPA negotiations, stakeholders in the forest sector in Honduras have engaged in valuable discussions on the structural problems affecting forest-sector governance. Under the definition of legal timber proposed in FLEGT policies, it will be possible to devise strategies that address the structural problems underlying illegality and weak forest governance in the country. The VPA negotiation process itself is also helping to strengthen forest governance by improving the institutional framework and approaches to participation, decision-making and transparency.

Participation: Representatives of indigenous communities attend a meeting as part of the VPA FLEGT process. *Photo: C. Samaniego*

Through the VPA negotiation, stakeholders have become aware that processes are slow; their participation increases gradually and according to their interests, and some stakeholders may at times play a more significant role than others. Stakeholders have also become aware that when a new process is launched there are no recipes to follow but that, through such processes, they can learn lessons and become more effective. They get to know the strengths and weaknesses of all participants and to analyze forest-sector problems from different perspectives.

More broadly, the VPA will boost the country's political and commercial visibility. Honduras should be able to capitalize on this visibility in the EU and its member states to invest in the systems required for the legal management of forest resources and their competitiveness in international markets. If properly managed, this political and commercial visibility can help change people's perceptions of the Honduran forest sector so that, in the future, Honduras may be regarded as a country with a low risk of forest illegality.

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ITTO fellowship applications in the 2015 autumn cycle

ITTO offers fellowships to promote human resource development and strengthen professional tropical forestry and related expertise in member countries. The next deadline for applications is 21 August 2015 for proposed activities starting after 1 February 2016. To apply online, please visit www.itto.int/feature20 (online applications open from 1 June 2015), or contact Dr Chisato Aoki, Fellowship Coordinator, at: fellow-application@itto.int; fax +81-45-223 1111 (see page 2 for ITTO's postal address).

Market trends

One up, one down—the economic performance of the US and EU diverge in 2014, but the outlook is positive for both in 2015

2014 started on a positive economic note: the turn-around in the United States (US) economy created optimism that the worst of the crisis was over. Indeed, timber demand trended up for much of the year—not by much, but at least it was an improvement on the performance in 2013.

Prospects quickly dimmed, however: the economies of the European Union (EU) member states stagnated, economic growth in China slowed as structural reforms began to bite, and confidence was sapped by a deflating housing bubble.

In Japan, where domestic consumption is the main driver of economic wellbeing, the lingering effects of the 3% increase in consumption tax in April 2014 (from 5% to 8%) wrong-footed the government and the Bank of Japan. The latter was forced to pump cash into the economy to try to break the deflationary cycle gripping the country, but this had little effect.

European Union imports

EU tropical hardwood imports up marginally in 2014

The latest Eurostat trade data (to end October 2014) show that tropical hardwood imports into the EU were marginally higher in 2014 than the historically low levels recorded in 2012 and 2013.

The volume of EU imports increased slightly in the first ten months of 2014 (year-on-year) for tropical sawnwood, veneers, mouldings, glulam and flooring. There was, however, a decline in EU imports of tropical plywood and logs (Figure 1).

The weak or negative growth in imports can be attributed to the lacklustre performance of the construction and joinery sectors in much of Europe in 2014, supply constraints, logistical problems (particularly for shipments out of Douala port in Cameroon), and the EU Timber Regulation (EUTR), which encouraged buyers to focus on a reduced range of tropical suppliers.

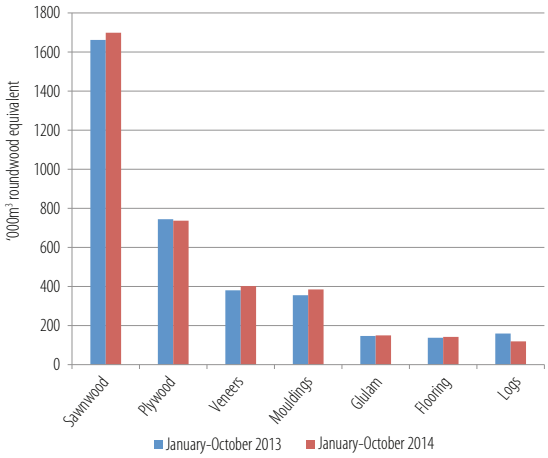
Total tropical hardwood imports were fairly static at low levels in most EU countries in 2013 and 2014 (Figure 1). There were slight gains in the Netherlands, Portugal, Spain and the United Kingdom, but these were offset by declines in Germany and Italy.

Indonesian wood products fare well in Germany

After two years of robust growth, Germany's construction sector shrank in 2014. Germany's imports of tropical sawn hardwood declined from the country's four largest suppliers—Cameroon, Côte d'Ivoire, Ghana and Malaysia. Imports of tropical hardwood products to end October also declined (by 5.2% compared with the same period in 2013), to 348 000 m³ (roundwood equivalent).

At least one tropical supply country fared well in Germany in 2014, however—German imports of

Figure 1: EU28 tropical wood product imports, January–October, 2013 and 2014



Indonesian plywood, S4S sawn lumber, mouldings, veneers and flooring components all increased. This may be at least partly due to the mandatory certification of timber products now required in Indonesia under that country's timber legality system (known as SVLK). The implementation of a tough EUTR inspection regime in Germany and the German government's decision to confiscate a consignment of African wenge logs due to an alleged breach of the law have sensitized importers to the need for legally verified timber.

Hint of recovery in EU imports of sawn tropical hardwood …

EU imports of sawn tropical hardwood increased by 2% in the first ten months of 2014 compared with the same period in 2013, to 806 000 m³ (roundwood equivalent). Imports from Cameroon, a major supplier, fell by 9%, to 247 000 m³, but this decline was offset by increases from Brazil (+11%), the Republic of the Congo (+14%), Côte d'Ivoire (+13%), Gabon (+7%) and Malaysia (+11%).

… and in EU plywood market

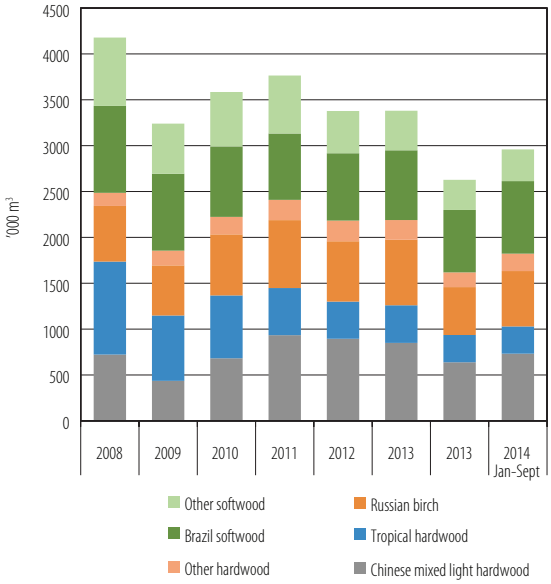
After considerable turbulence during the recent recession, the EU plywood market has stabilized and even shown signs of recovery. Supply and prices have also become more consistent, and the industry appears to have adjusted well to the demands of the EUTR. Figure 2 shows EU plywood imports in the period 2008–2013, plus January–September in 2013 and 2014. After a tentative recovery in 2010 and 2011, plywood imports dipped in 2012 and were static in 2013. On the other hand, EU plywood imports amounted to 2.96 million m³ in the first nine months of 2014, 12% more than in the same period in 2013

Major reviews of FLEGT Action Plan and EUTR under way

The European Timber Trade Federation reports[1] that the European Commission is undertaking major reviews of

1 This section is sourced from *ETTF News*, winter 2014/15.

Figure 2: EU28 plywood imports, by timber type, 2008–2013, January–September 2013–2014



Source: FII Ltd analysis of Eurostat COMEXT.

the EUTR and the Forest Law Enforcement Governance and Trade (FLEGT) Action Plan in 2015. These reviews will be as wide-ranging and consultative as possible: "The Commission wants a balanced mix of stakeholders consulted, including governments, private sector and civil society," said Bernard Crabbé from the European Commission Directorate General for Development and Cooperation.

Consultants appointed for the statutory review of the EUTR have started collating data on implementation and enforcement. Online stakeholder consultation will also take place early in 2015, and EU member states will submit EUTR biennial reports in April. The Commission will submit its EUTR report on the functioning and effectiveness of the EUTR to the EU Council and Parliament by 3 December 2015, and the report will be made available publicly. Any necessary reforms to the EUTR will follow in 2016.

The review of the FLEGT Action Plan, including the FLEGT voluntary partnership agreement (VPA) initiative to help producer countries implement forestry and timber legality assurance systems, began with a November 2014 meeting between consultants and the European Commission Steering Committee.

Wider consultation was due to start this February, including surveys of private-sector and civil-society engagement in member states and VPA signatory countries, bilateral meetings and a "multistakeholder workshop" in Brussels on 16–19 March. A "web-based tool" will allow further stakeholder input. The FLEGT review team will visit VPA signatory and other producer countries, China and EU member states, and the process is expected to be completed by October.[2]

Joint ITTO–ETTF project to streamline EUTR implementation

A project to facilitate the efficient implementation of the EUTR, now being developed by the ETTF with ITTO support, will establish an online platform to provide EU importers with updated information on timber legality laws in supplier countries with which they must comply to meet due-diligence requirements.

The Netherlands and Japan pledged US$100 000 to the project at the 50th session of the International Tropical Timber Council, convened in Yokohama in November 2014. A total of US$150 000 is required for the project to proceed.

ETTF Secretary General André de Boer is confident that the remainder of the funds will be secured early in 2015, including through a contribution from the Sustainable Tropical Timber Coalition, which is now actively promoting tropical wood in the European market. Under the EUTR, timber must be legal under the laws of the country of origin, but companies are on their own when it comes to researching those laws.

According to Mr de Boer, the project: "would effectively establish a one-stop shop for EUTR-applicable producer country legislation and documentation. A central data resource would not diminish individual due-diligence responsibilities, but make their task more straightforward and raise standards. Ultimately if all companies, and EUTR competent authorities, referred to the same current information it would also ensure more uniform implementation of the Regulation and enhance its effectiveness against illegal timber."

Mr de Boer also noted how the platform would benefit suppliers. "Under EUTR, EU 'operators' must have access to documentary evidence of legality and they are currently doing this individually," he said. "This is leading to suppliers being asked for all kinds of information and feeling overwhelmed by a tsunami of requests." A one-stop online EUTR legality information database would help streamline information flow and reduce the burden on suppliers.

Source: *ETTF News*, winter 2014/15

United States

Strong demand for wood–plastic composite and plastic decking

According to market research company Freedonia's latest market outlook[3], the strongest market growth in the US in the next four years will be in wood–plastic composites and plastics; however, wood will remain the main material in US decks.

The outlook for tropical hardwood use in decking is positive. Even when overall decking demand declined during the downturn in the housing market, demand for tropical hardwood decking was maintained. Homeowners in the US now look for low-maintenance materials, and tropical hardwoods are durable and offer a natural, attractive appearance compared with wood–plastic composites and plastic products. Tropical hardwood decking is known to perform well over the long term, while wood–plastic composites have experienced in-use performance issues.

2 For review updates go to: ec.europa.eu and www.euflegt.efi.int/eu-flegt-evaluation.

3 "Wood & Competitive Decking: Demand and Sales Forecasts, Market Share, Market Size, Market Leaders".

Overall US demand for decking is forecast to grow by 2.4% per year between 2013 and 2018, with total demand in 2018 projected at US$6.5 billion. The majority of decking will continue to be wood because of the low price of treated softwood decking and the large number of existing wooden decks, which are mostly renovated with the same materials. Treated softwood and tropical hardwoods are forecast to account for about 80% of decking by volume in 2018; the annual growth of wood-decking demand is forecast at 1.1%.

Viet Nam, the largest supplier of US wooden bedroom furniture

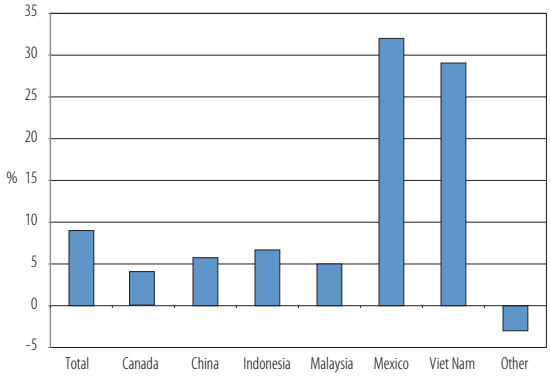
The value of US wooden bedroom furniture imports increased in four consecutive quarters to mid-2014—by 4.5% and 8.8%, respectively, in the third and fourth quarters of 2013, and by 4.6% and 8.8%, respectively, in the first and second quarters of 2014. The rise was driven by an ongoing recovery in the real estate market, falling unemployment, and an improvement in consumer sentiment.

Overall, US wooden bedroom furniture imports are forecast to have expanded by 4.5% in 2014, to US$3 billion. If current trends continue, they should also rise by almost 4% in 2015.

Viet Nam is the largest supplier of US wooden bedroom furniture, and its share of the market rose in the first seven months of 2014 to account for over 40% of the market. China was the second-ranked supplier, with a share of 14% of the US market. US imports from China were down by 9% in mid-2014 compared with the same period in 2013.

US wooden furniture imports from Italy and India grew in 2014 (year-on-year to end October), but suppliers in Poland shipped less furniture to the US in 2014 (to end October) than in the same period in 2013. The largest year-on-year growth in wooden furniture imports was in Mexico, with an increase of more than 30%; Viet Nam was not far behind, with a year-on-year increase of 29% (Figure 3).

Figure 3: Percent change in value of US wooden furniture imports, 2013–2014, year-on-year to October



Sources: US Department of Commerce, US Census Bureau, Foreign Trade Statistics

Prospects brighten in US and Eurozone

The prospects for economic growth in Europe are still limited by a weak investment environment and high unemployment. Nevertheless, the European Commission is forecasting that the economies of all EU member states will grow in 2015, and there is hope that both markets will be "up" in 2015. Economic activity is expected to pick up moderately in the Eurozone over the course of 2015 and to accelerate in 2016.

Since the northern autumn of 2014, a number of developments have brightened the short-term outlook. Oil prices have declined faster than before, the euro has depreciated significantly, the European Central Bank has announced quantitative easing, and the European Commission has presented its "Investment Plan for Europe". All these factors are set to have a positive impact on growth.

In the US, economic data are beginning to signal that 2015 could deliver strong growth there. Growth in gross domestic product (GDP) was 3.9% in the third quarter of 2014, extending recent strong quarter-on-quarter performances. With unemployment down to below 6%, consumer sentiment is set to strengthen, pushing up everything from home sales to furniture purchases.

This would be great news for a country in which 70% of its GDP derives from consumer spending, and it might be why the US economy is forecast to grow by 3.1% in 2015. There are risks, however: any sharp downturn in the growth of either China or Europe could derail US prospects.

Topical and tropical

Compiled by Ken Sato

Project to stimulate intra-African timber trade

A US$1.4 million ITTO project funded recently by the Government of Japan aims to promote socioeconomic development and the sustainable management of African forests by expanding the further processing of tropical timber and increasing the intra-African trade of tropical timber and timber products. African countries import timber and timber products worth about US$4 billion annually, but less than 10% of these products originate within the African continent because of the low capacity of the region's timber-processing sector and the lack of policies to promote intra-African trade. The one-year ITTO project will improve the competitiveness of African timber and timber products in domestic, intraregional and global markets by facilitating trade arrangements for the export of timber and timber products in the region; producing draft national strategies for further timber processing in pilot countries and business development plans for pilot enterprises; establishing a pilot market news service; implementing technical training in timber processing in selected enterprises; and providing selected national industrial/trade associations with technical assistance.

Read more at: www.itto.int/news_releases/id=4291.

Better management of agarwood

ITTO and the Secretariat of the Convention on International Trade in Endangered Species of Wild Fauna and Flora (CITES) have released the report of a regional workshop on the management of wild and planted agarwood taxa, held in January 2015 in Guwahati, India. Agarwood is a resinous wood that forms in species of *Aquilaria*, *Gyrinops* and several other genera native to Southeast Asia. These species produce a dark aromatic resin in response to infection by a type of fungal mould and the resin-embedded wood, called agarwood, is highly valued for its fragrance—prices of up to US$2 million per kg of woodchips have been recorded for the highest-quality agarwood. The workshop aimed, among other things, to make progress on the management and conservation of agarwood-producing species.

The workshop report and other materials are available at: www.itto.int/outputs.

CITES ban hits afrormosia

In March 2015, CITES banned the export of all CITES-listed species from the Democratic Republic of the Congo, the Lao People's Democratic Republic and Nigeria because these three countries failed to submit an "ivory action plan" by a stipulated deadline, and a previous CITES decision stated that, in such a case, trade in all CITES-listed species from those countries would be banned. Among other things, the ban will affect exports of two tree species—afrormosia (*Pericopsis elata*) and *Prunus africana*. CITES recently approved an export quota of more than 23 000 m^3 of afrormosia for the Democratic Republic of the Congo based on work conducted under the ITTO–CITES Programme.

More information is available at www.cites.org.

Peru may use GPS on boats to combat illegal logging

The EFE news agency has reported that Peru's Commission for the Fight against Illegal Logging is considering installing global positioning system (GPS) devices on river boats in the Amazon as a measure to halt the transport of illegally logged timber. Such devices are already installed on Peruvian fishing boats in the Pacific Ocean to keep them from entering areas where fishing is banned, and the Commission for the Fight against Illegal Logging is in discussion with the National Forest and Wildlife Service to set rules for the use of GPS devices on river boats. The position of High Commissioner for the Fight against Illegal Logging was established in September 2014 after four Ashéninka leaders were murdered by suspected illegal loggers in the Ucayali region near the border with Brazil.

Source: goo.gl/mv5pHL.

RIL maintains biodiversity in tropical forests

The most comprehensive study on reduced-impact logging (RIL) published to date (*Journal of Applied Ecology* 52(2): 379–388) has found that RIL can maintain biodiversity in tropical forests used for timber production. The five-year study by researchers at the Durrell Institute of Conservation and Ecology surveyed wildlife communities in Guyanese rainforests before and after timber harvesting and found that RIL had a "relatively benign" effect on birds, bats and large mammals. The researchers concluded that, if RIL is adopted extensively, forestry concessions could represent sizeable and important additions to the global conservation estate.

Source: onlinelibrary.wiley.com/doi/10.1111/1365-2664.12391/full.

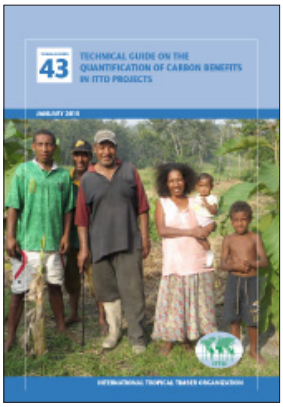
Indonesia Ministry of Industry against log exports

Indonesia's Minister of Industry, Saleh Husin, has given a strong indication that he opposes changing the country's policy banning log exports because of the adverse affect such a change would have on wood-based industries, especially furniture-makers. There had been suggestions that the Ministry of Environment and Forestry was considering allowing the export of logs of specific species because of low domestic prices. Minister Saleh said that his ministry fully supported the development of the national furniture industry, especially for small and medium-sized enterprises, which need help in remaining competitive in an era of free trade. The minister indicated that he would coordinate with the Minister of Environment and Forestry on the issue.

Read this story and others in the 16–28 February 2015 edition of the ITTO Tropical Timber Market Report: www.itto.int/direct/topics/topics_pdf_download/topics_id=4292&no=1.

Recent editions

Compiled by Ken Sato



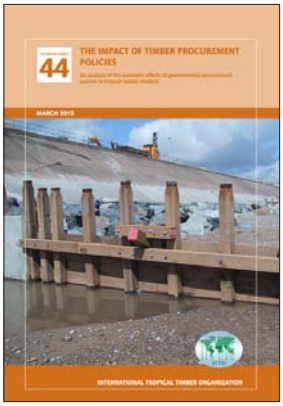
Robledo Abad, C. 2014. *Technical guide on the quantification of carbon benefits in ITTO projects*. ITTO Technical Series No. 43. International Tropical Timber Organization, Yokohama, Japan.

ISBN: 978-4-86507-016-3

Available at: www.itto.int/technical_report

The aim of this technical guide is to support forest managers in monitoring and reporting on the carbon benefits of forestry projects. Although directed primarily at the managers of ITTO projects, it is likely to also help other forest managers in understanding the scientific, technical and social aspects of climate-change mitigation through forestry.

In line with the Intergovernmental Panel on Climate Change's *Good Practice Guidelines for Land Use, Land Use Change and Forestry*, which recommend monitoring carbon benefits as a function of land or activity area and emission factors per activity, this technical guide provides step-by-step advice on the actions that should be taken to include carbon benefits and climate-change mitigation in forest-related projects. The monitoring of carbon benefits should be planned in a way that is complementary with other monitoring activities.



***The impact of timber procurement policies: an analysis of the economic effects of governmental procurement policies in tropical timber markets*. ITTO Technical Series No. 44. International Tropical Timber Organization, Yokohama, Japan.**

ISBN: 978-4-86507-017-0

Available at: www.itto.int/technical_report

Timber procurement policies are intended to address concerns among the public and in the private sector about the environmental credentials of forest products. Many purchasers demand that products should come from sustainable—or at least legal—sources and that claims of legality and sustainability are verifiable in order to maintain credibility with buyers in the marketplace. These requirements and policies have important implications for tropical timber suppliers.

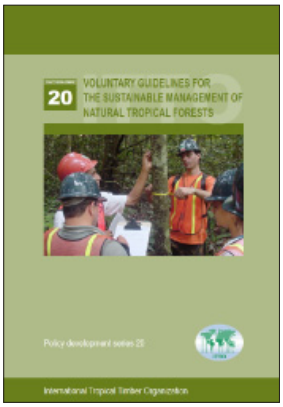
This publication includes: an update of information on the public timber procurement policies of ITTO consumer countries; an analysis of the impacts of timber procurement policies on markets and trade; an examination of the challenges faced by ITTO producer and consumer countries in complying with and implementing timber procurement requirements; and recommendations for further action by ITTO to promote trade in tropical timber in the context of timber procurement policies.

ITTO 2015. *Voluntary guidelines for the sustainable management of natural tropical forests*. ITTO Policy Development Series No. 20. International Tropical Timber Organization, Yokohama, Japan.

ISBN: 978-4-86507-015-6

Available at: www.itto.int/policypapers_guidelines

This publication is an update of ITTO's first policy guidance document on the management of natural tropical forests published in 1990. The new



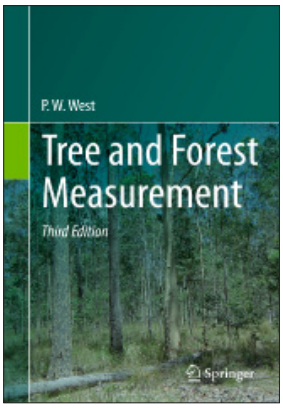
voluntary guidelines are supported by increased knowledge and the emergence of a wide range of new challenges and opportunities for tropical forest management. They are designed to provide guidance on the policy, legal, governance, institutional, ecological, social and economic issues that need to be taken into account in the planning, implementation and evaluation of sustainable forest management in natural tropical forests to ensure the sustainable provision of forest goods and environmental services.

Puppim de Oliveira, J.A., Telwala, Y., Ma, H.O. & Rastall, R. 2014. *UNU-IAS/ITTO policy report on strengthening development in international-local institutional linkages in REDD+: lessons from existing forest-carbon initiatives*. United Nations University/Institute of Advanced Studies, Tokyo, Japan.

ISBN: 978-92-808-4552-5

Available at: www.itto.int/technical_report

This study seeks to understand how best to connect local and international institutions based on lessons learned from existing initiatives in the forest sector that aim to achieve greenhouse-gas emission reductions in order to inform the current debate and actions on REDD+.



West, P.W. 2015. *Tree and forest measurement*. Third edition. Springer Dordrecht, Heidelberg, New York and London.

ISBN: 978-3-319-14708-6

Available at: www.goo.gl/a10tYz

This book, a fully revised third edition, describes the essential principles of modern forest measurement, whether using simple hand-held equipment or sophisticated satellite imagery. It particularly focuses on measuring forest biomass over large areas, a key aspect of climate-change studies, as well as the volume of commercially available wood. Written in a straightforward style, it is accessible to anyone who works with forests, from the professional forester to the layperson. It considers not only how and why forests are measured but also the scientific basis of the measurements taken.

Meetings

15 March–15 June 2015
Ecologic Restoration and Silvicultural Management of Mangroves
Online course presented by PRONATURA, Mexico
Contact: manglares@pronaturaveracruz.org; pronaturaveracruz.org/ecoforestal/drestauracionmanglar.php

9–11 April 2015
Coppice Forests: Past, Present and Future
Brno, Czech Republic
Contact: Tomas Vrska, tomas.vrska@vukoz.cz

14–19 April 2015
Milan Furniture Show
Milan, Italy
Contact: salonemilano.it/en-us

22–23 April 2015
Robotics in the Forest
Montreal, Canada
Contact: Jean-Francois Gingras, jean-francois.gingras@fpinnovations.ca; fmtc.fpinnovations.ca

4–15 May 2015
United Nations Forum on Forests 11
New York, USA
Contact: unff@un.org; www.un.org/esa/forests

7–9 May 2015
VIII International Congress on Agroforestry Systems
Iguazu, Argentina
Contact: novedades.forestales@inta.gob.ar; www.congresosafssp.com.ar

11–16 May 2015
3rd World Teak Conference 2015
Guayaquil, Ecuador
Contact: Roger Meder, roger.meder@csiro.au; P.K. Thulasidas, thulasidas@kfri.org; teaknet.org/world-teak-conference-2015-11-16-may-2015-guayaquil-ecuador

19 May 2015
Mobilization of Woody Biomass for Energy and Industrial Use Smart Logistics for Forest Residues, Pruning and Dedicated Plantations
Rome, Italy
Contact: Raffaele Spinelli, spinelli@ivalsa.cnr.it; www.infres.eu/en/final-conference

18–20 May 2015
Japan Biomass Power Market
Tokyo, Japan
Contact: maureen@cmtsp.com.sg; www.cmtevents.com/aboutevent.aspx?ev=150514&

24–29 May 2015
17th International Boreal Research Association Conference
Rovaniemi, Finland
Contact: IBFRA2015@metla.fi; www.ibfra2015.org

26–28 May 2015
CIOSTA 2015 Conference: Environmentally Friendly Agriculture and Forestry for Future Generations
St Petersburg, Russian Federation
Contact: Mike Wingfield, mike.wingfield@fabi.up.ac.za; ciosta2015.org

2–4 June 2015
First International Symposium on Innovation, Intelligence and Technology for Forests
Mato Grosso do Sul, Brazil
Contact: www.treslagoasflorestal.com.br

2–5 June 2015
Global Challenges of Air Pollution and Climate Change to Forests: 27th International Biennial Conference of IUFRO Research Group 7.01 "Impacts of Air Pollution and Climate Change on Forest Ecosystems" and Working Group COST Action "GreenInUrbs"
Nice, France
Contact: Andrzej Bytnerowicz, abytnerowicz@fs.fed.us; iufro-nice2015.com

7–12 June 2015
58th International Convention Society of Wood Science & Technology
Grand Teton National Park, Wyoming, United States
Contact: www.swst.org/meetings/AM15/index.html

8–12 June 2015
Tree Biotechnology 2015 Conference: Forest—the Importance to the Planet and Society
Florence, Italy
Contact: Conference Organizers, info@treebiotech2015.it; www.treebiotech2015.it

12 June 2015
International Symposium on Timber Trade Legality Assurance
Tokyo, Japan
Contact: Takeshi Goto, goto@itto.int; www.itto.int/workshop_detail/id=4352

14–18 June 2015
10th North American Forest Ecology Workshop 2015: Sustainable Landscapes: From Boreal to Tropical Ecosystems
Veracruz, Mexico
Contact: alejvela@colpos.mx; nafew.org

16–19 June 2015
15th Congo Basin Forest Partnership Meeting
Cameroon
Contact: pfbc-cbfp.org/events_en/events/meeting-pfbc.html; dany.pokem@pfbc-cbfp.org

27 June–1 July 2015
10th World Bamboo Congress: Bamboo for a Greener Future
Damyang, Republic of Korea
Contact: Susanne Lucas, susannelucas@gmail.com; www.worldbamboocongress.org

6–9 July 2015
4th International Conference on Forests and Water in a Changing Environment
Kelowna, Canada
Contact: Contact: Adam Wei, adam.wei@ubc.ca; Shirong Liu, liusr@caf.ac.cn; www.forestandwater2015.com

19–23 August 2015
New Frontiers of Forest Economics: Forest Economics beyond the Perfectly Competitive Commodity Markets
Beijing, China
Contact: shashi.kant@utoronto.ca; neffe.nsd.edu.cn

23–30 August 2015
Sustaining Ecosystem Services in Forest Landscapes: Concepts, Research, and Applications
Tartu, Estonia
Contact: sandra.luque@irstea.fr; iufrole2015.to.ee

1–4 September 2015
A Global Perspective on the Ecology and Management of Bark and Wood Boring Insects
Bariloche, Argentina
Contact: Barbara J. Bentz, bbentz@fs.fed.us

7–11 September 2015
XIV World Forestry Congress
Durban, South Africa
Contact: WFC-XIV-Info@fao.org; www.fao.org/forestry/wfc

9–11 September 2015
Ecobuild Southeast Asia
Kuala Lumpur, Malaysia
Contact: www.ecobuildsea.com

9–11 September 2015
Wilder By Design? Managing Landscape Change and Future Ecologies
Sheffield, United Kingdom
Contact: info@hallamec.plus.com; www.ukeconet.org/events/event/wilder-by-design

6–7 October 2015
Timber Expo 2015
Birmingham, United Kingdom
Contact: www.timber-expo.co.uk

12–16 October 2015
6th International Wildland Fire Conference
Pyeongchang, Gangwon, Republic of Korea
Contact: www.fire.uni-freiburg.de/course/meeting/2015/meet2015_02.htm

13–17 October 2015
Linking Ecosystem Services to Livelihood of Local Communities
Seoul, Republic of Korea (13–14 October); Naju-si, Republic of Korea (15 October); Gurye, Korea (16 October)
Contact: Dr Kim Minkyung (Seoul National University): min34071@gmail.com; Dr Koo Ja-Choon (Korea Rural Economic Institute): selenium78@krei.re.kr

21–24 October 2015
Scientific Cultivation and Green Development to Enhance the Sustainability of Eucalypt Plantations
Nanning City, Guangxi, China
Contact: sxchen01@163.com;

28–31 October 2015
Eco Expo Asia
Hong Kong, China
Contact: www.ecoexpoasia.com; ecoexpo@hongkong.messefrankfurt.com

16–21 November 2015
51st Session of the International Tropical Timber Council and Associated Sessions of the Committees
Kuala Lumpur, Malaysia
Contact: Emmanuel Ze Meka, Executive Director, ITTO, itto@itto.int; www.itto.int/workshop_detail/id=4240

16–21 November 2015
3rd European Forest Week and 72nd Joint Session of the ECE Committee on Forests and the Forest Industry
Engelberg, Switzerland
Contact: paolo.cravero@unece.org

21–23 April 2016
Perception–Prediction–Action: Managing Risk in Uncertain Times
Istanbul, Turkey
Contact: riskanalysis-iufro.org//meetinginformation.html

25–29 April 2016
IUFRO All-Division 7 Conference: Global Change and Forest Health—Climate Change, Biological Invasions, Air Pollution, Forest Pathology, Forest Entomology, and their Interactions
Istanbul, Turkey
Contact: eckehard.brockerhoff@scionresearch.com

15–19 August 2016
15th International Peat Congress
Kuching, Malaysia
Contact: peat2016@gmail.com; www.ipc2016.com