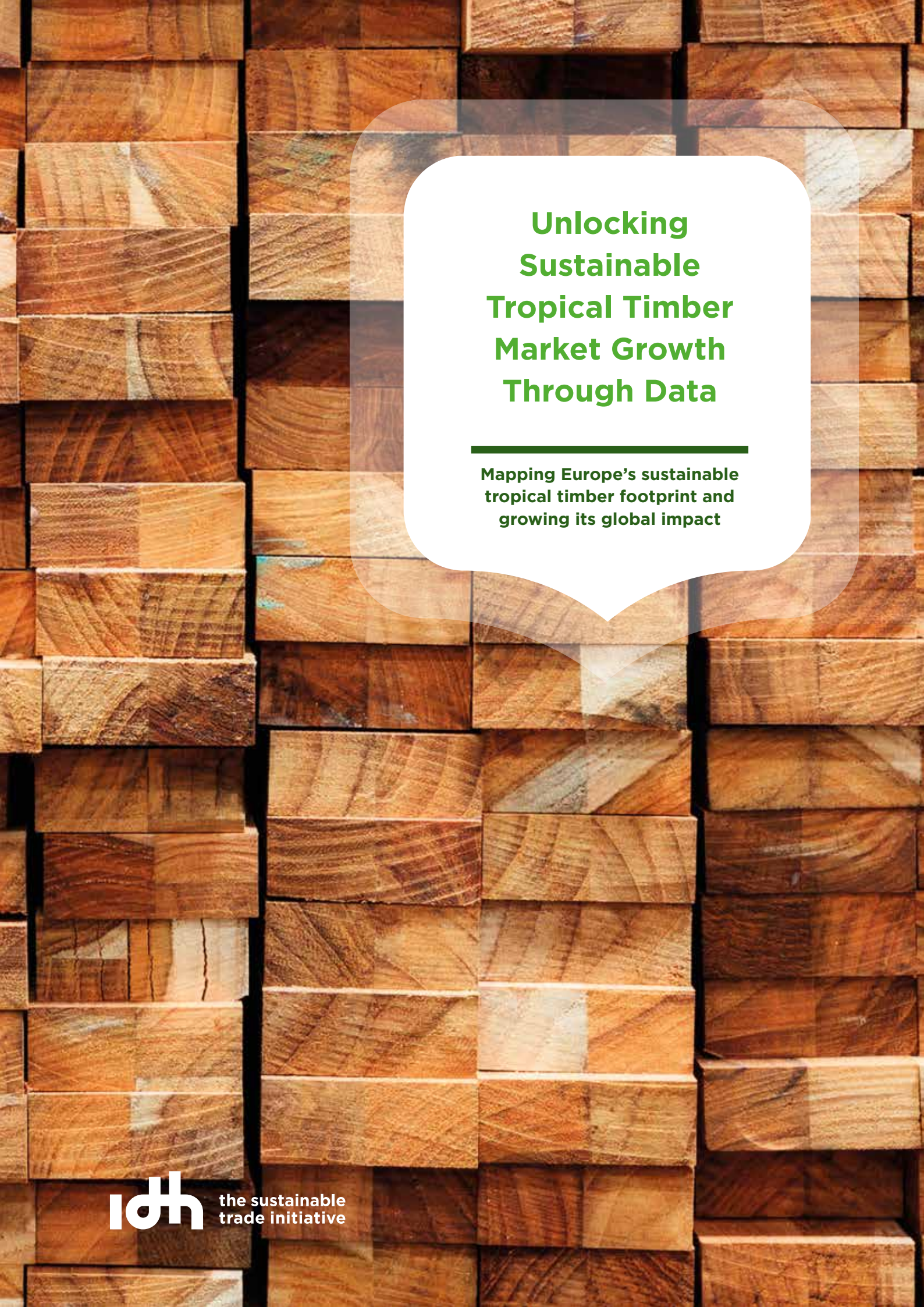

Unlocking Sustainable Tropical Timber Market Growth Through Data

Mapping Europe's sustainable tropical timber footprint and growing its global impact

the sustainable trade initiative

Colophon

Global Timber Forum (GTF) builds the capability of forest and wood-based industry associations to engage small and medium sized members on responsible trade. GTF has an existing global network of associations and stakeholders with experience in trade data and market research along with stakeholder engagement and communications expertise.

Stichting Probos is a leading not-for-profit Dutch knowledge institute committed to promoting sustainable forest management. Probos has over 50 years' experience in timber market and wood flow research and believes that all policy and strategies should be based on reliable data. Probos works for and with governments, the private sector, and non-governmental organizations.

We would like to thank the following individuals and organizations for their participation[1] in this study:

- The STTC Technical Committee
- PEFC International
- FSC International and many of their National Offices
- ATIBT, the International Tropical Timber Technical Association
- FLEGT Independent Market Monitor (IMM)
- The Borneo Initiative, TBI
- Le Commerce du Bois, LCdB
- UK Timber Trade Federation, TTF
- Malaysian Timber Council, MTC
- Interviewees in France, Germany, Italy, & Spain
- Rupert Oliver, Forest Industries Intelligence Ltd

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Unlocking Sustainable Tropical Timber Market Growth Through Data

Mapping Europe's sustainable tropical timber footprint and growing its global impact

the sustainable trade initiative
GTF growing responsible trade
probos
STTC
EUROPEAN SUSTAINABLE TROPICAL TIMBER COALITION

Photo Mark van Benthem, Probos

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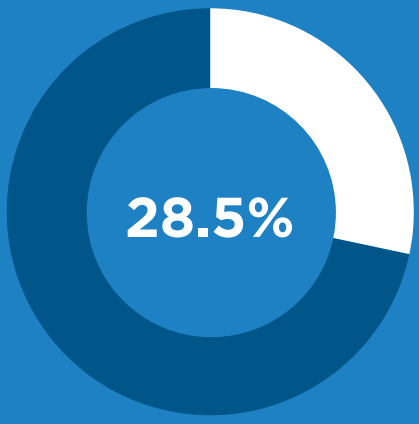
SOURCING VERIFIED SUSTAINABLE

TOTAL EU IMPORTS*

1,473,000 tonnes

Equals an estimated
2,300,000 m^3 (product)

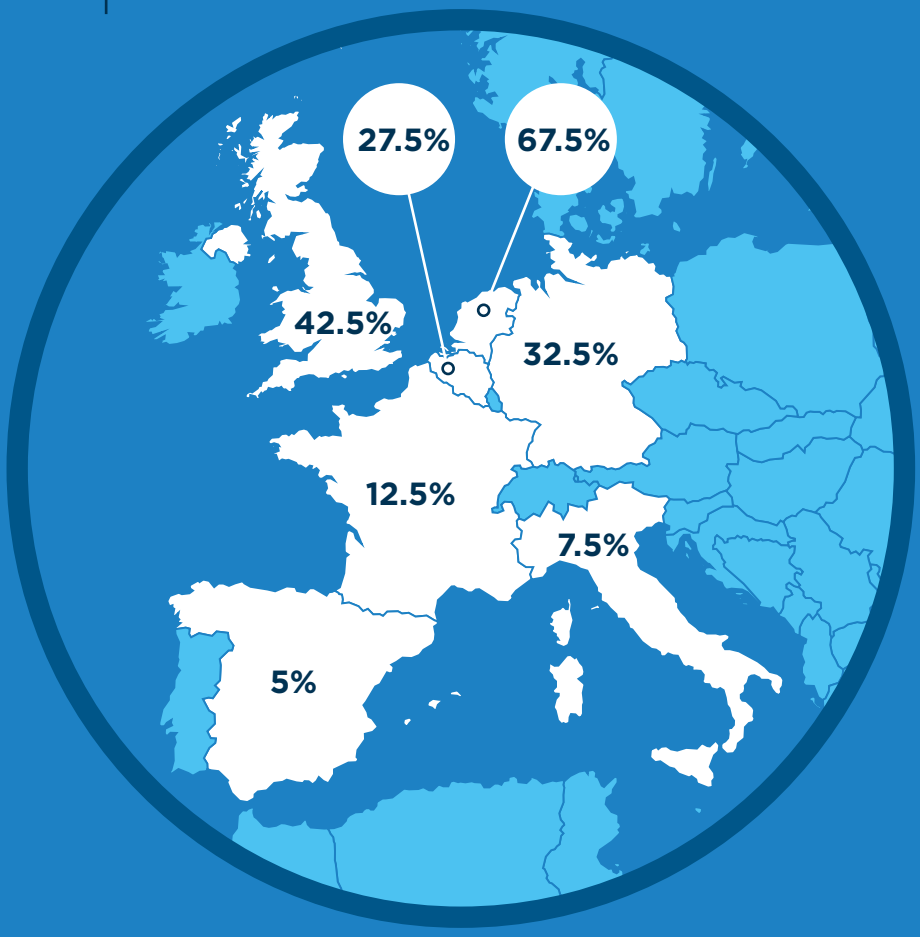


VERIFIED SUSTAINABLE TROPICAL TIMBER

11% FLEGT-licensed

VERIFIED SUSTAINABLE TROPICAL TIMBER IMPORT IN EU

These 7 countries cover app. **90%** of the total EU28 imports of primary tropical timber products



** Primary timber products (roundwood, sawn wood, plywood and veneer).*

SUPPORT RESPONSIBLE TIMBER SOURCING VIA:

- **Sustainable Forest Certification**
- **Sustainable Timber Procurement Policies**
- **Green building schemes**
- **FLEGT licensed timber**

TROPICAL TIMBER IN EUROPE

PRODUCTION AREAS

6.5%

of natural-semi-natural production forest area is certified in tropics worldwide (excluding plantations)

SOUTHEAST ASIA

6,689,000 ha FSC®/PEFC™ certified forest area = **9.9%** of total production forest area

1.6 billion people

According to FAO, more than 25% of the global population depend on forests for food and livelihoods

CONGO BASIN

4,494,000 ha FSC®/PEFC™ certified forest area = **11.4%** of total production forest area

LATIN AMERICA

3,508,000 ha FSC®/PEFC™ certified forest area = **3.8%** of total production forest area

12.5 million ha

of tropical forest would be impacted if EU imports 100% verified sustainable timber

SUSTAINABLE TROPICAL TIMBER CONTRIBUTES TO A.O.

SDG 1
Reduce poverty

SDG 2
Improve food security and nutrition

SDG 8
Promote inclusive and sustained growth

SDG 12
Ensure sustainable production and consumption

SDG 13
Support climate action

SDG 15
Protect and restore terrestrial ecosystems

Note: All % figures are mid-range of estimates. Sources: GTF and Probos

Executive summary

Tropical deforestation is degrading forests at alarming rates, threatening key ecosystems. Market demand for products from sustainably managed forests has the potential to halt this destruction and preserve forests in a state that serves the people who live in or near them, the tropical ecosystems and associated flora/fauna, and the profits of companies/governments that own forest lands. EU demand for certified tropical timber directly impacts land-use in the tropics, and this report builds upon the 2016 European Sustainable Tropical Timber Coalition (STTC) report '*How Sustainable are Europe's Tropical Timber Imports?*'[2] to explore how an EU commitment to 100% verified sustainable tropical timber could contribute to deforestation-free supply chains and help meet climate change mitigation targets. It provides an estimation of market scale, the share of verified sustainable tropical timber in the EU in 2018, and extends EU timber imports to consider the likely impact of increased certification on tropical forests and carbon emissions in the timber industry.

We know unsustainable timber production and harvesting practices pose threats to tropical ecosystems and lead to the destruction and conversion of forest lands. Conversely, when timber operations practice Sustainable Forest Management (SFM), forest ecosystems can be maintained nearly indefinitely, continuing to support communities, businesses, and provide ecosystem services. SFM generally requires careful assesment of forests, planning to minimize impact in all aspects of logging, harvesting on an ecological timescale, and constant monitoring to maintain best practices. SFM leads to forest conservation and climate change mitigation and provide significant social benefits to producer countries. SFM is promoted primarily through two avenues: strong governance in producer countries, and certification schemes. The EU currently promotes SFM through FLEGT Licensing, and strengthening governance is a crucial part of the fight to preserve forests, but for the most part enforcement is still insuffient in developing countries. Certification via FSC and PEFC are currently the most measureable way to guarantee SFM, and as a result certification rates are used to approximate timber from SFM origin in this study.

The methodology employs a proxy for market share – the *exposure to certification* method – which is based upon a basic analysis of forest and trade data. It considers the share of certified forests compared to the total forest area in the producer country, and then projects this share onto the export data of the producer country in question. The repeatable methodology allows for the current best estimate of the exposure of primary timber products on the EU28 market and individual member states' exposure to certification.

The results indicate that the EU28 imports 1,473,000 tonnes of primary tropical timber products, of which 1,258,000 tonnes come directly from International Tropical Timber Organisation (ITTO) producer countries. EU imports represent 12% of the total exports of primary tropical timber by ITTO producer countries (with the remainder exported mainly to China, India, Vietnam and within the ITTO member countries[3]). Most of Europe's imports are from Africa (56%), followed by Asia (25%), and Latin America (19%). The past decade has seen the tropical timber market in Europe decline overall in value, from nearly €7 billion in 2007[4] to around €4.5 billion in 2018.[5] The 2018 figures is the highest level since 2007 indicating a modest recovery. Overall imports from the main producers have fallen from 2.7 million tonnes in 2008 to around 1.3 million tonnes in 2018.[6] Reasons include economic recession, negative consumer sen-

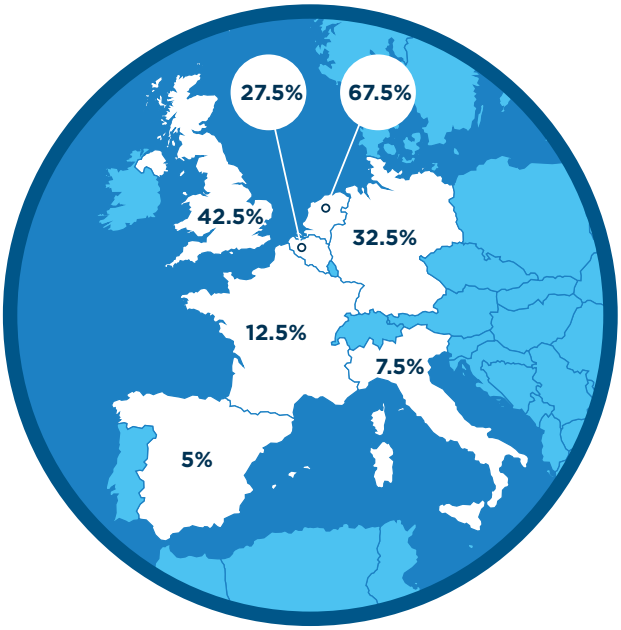
timent towards tropical timber, competition from other materials, shortage of supply, the introduction of EUTR, and increasing prefabrication.

Seven main importing countries (Belgium, France, The Netherlands, Italy, UK, Germany and Spain) represent approximately 90% of the EU28 primary tropical timber product import and are analyzed in greater detail. The exposure to certification is projected onto Europe as a whole and these countries individually. Among all the primary tropical timber products imported into EU28, we estimate that between **25%-32%**, so 28.5% on average, are exposed to certification. The exposure percentages of the top seven importing countries are :

- **Netherlands - 65%-70%**
- **United Kingdom - 40%-45%**
- **Germany - 30%-35%**
- **Belgium - 25%-30%.**
- **France - 10%-15%**
- **Italy - 5%-10%.**
- **Spain - 2.5%-7.5%**

We project the above percentages onto forest areas and demonstrate that the current demand for certified primary tropical timber products of the EU28 impacts between **2.7-4.4 million hectares** of semi and natural tropical forest (this land is maintained with SFM practices). Impressively, if the EU28 could source 100% verified sustainable primary tropical timber products it could have a positive impact on approximately **16 million hectares** of semi and natural tropical forests.

In addition to a positive impact on forest areas, we analyze the potential impact of EU demand for certified timber (using figures prepared for the exposure to certification analysis) on carbon pools in the tropical



forest. We show that there are opportunities for enormous impacts on carbon in improving forest operations. Based on the assumption that certification will prevent premature re-entry logging in the areas it covers, the EU trade in certified tropical timber has the potential to mitigate 55 to 88 million metric tons CO_2 a year.

In order to achieve the above impacts, NGOs, governments, and the private sector in EU timber importing countries not only need to commit to 100% sourcing of verified sustainable tropical timber but also promote the use of sustainable tropical timber as a material, and encourage market growth.

Civil society and knowledge institutions, you have an important role to play encouraging shifts to sustainable tropical timber. We ask for your support countering the narrative that all timber is not sustainable. You also have a role to play encouraging countries with low sustainable sourcing rates to prioritize sustainability.

European governments must address sustainable tropical timber in their procurement policies, ensuring that there is alignment in policy and enforcement across all levels of government. Governments of the seven main importers must enhance EUTR enforcement, shutting down illegal imports and giving sustainable timber greater market strength in Europe. And all of Europe must continue to work in partnership with key supplier countries (especially in Africa) and increase international cooperation with other emerging economies, particularly giants like Vietnam and China that are emerging as large secondary exporters of tropical timber.

The **private sector** must drive increases in demand. Trade associations, please continue to support and encourage members to increase purchases of sustainable tropical timber. Buyers must increase purchases, promote sustainable timber to customers, and ensure that the benefits and sustainability of products that bear labels like FSC are communicated. Construction and building companies must also work to educate their customers on the unique structural and sustainability benefits of timber. And prescribers should recommend wood based on qualities rather than species, ensuring that lesser-known timber has a market.

Last but not least, **all stakeholders'** contributions and collaboration are necessary to generate quality monitoring information – greater industry involvement and transparency will allow us to develop powerful and specific solutions to growing sustainable tropical timber imports.

It is only through intensified European ambitions and joint public-private actions that we will have the chance to protect and restore our tropical forests. Thus, in line with the release of the latest EU Communication (2019) on Stepping up EU Action to Protect and Restore the World's Forests, we urge the top importing and consuming countries in EU to recommit to 100% sustainable tropical timber.

Photo Mark van Benthem, Probos

Preface

This report is rooted in the understanding that Sustainable Forest Management (SFM) can prevent forest degradation, support the communities impacted by forestry, and sequester carbon. We aim to establish a benchmark for understanding Europe's current role in promoting SFM, and provide a roadmap for increasing impact.

In 2014 IDH – the Sustainable Trade Initiative – along with a number of key partners including the European Timber Trade Federation, ATIBT (Association Technique Internationale des Bois Tropicaux), FSC, and PEFC established the European Sustainable Tropical Timber Coalition (STTC) with the aim of accelerating European market demand for SFM timber products. From 2008 to 2014 demand for verified sustainable tropical timber in the European market began to shrink. European demand plays a crucial role in the rate of certification globally, and the STTC set the goal of having at least 50% of all European tropical timber imports come from sustainably managed forests by 2020. This report follows a benchmark study carried out in 2018. With less than one and half years remaining until 2020, we are just over half way to achieving our objective. Only by fully understanding the EU tropical timber market can we begin to leverage our power to transform forestry practices throughout the world.

We analyze tropical timber as a market, the rate of certification in EU tropical timber imports, the associated impacts on forest preservation and deforestation in producer countries, and the carbon footprint of the EU from tropical timber. Getting accurate data on certification is difficult (customs data does not differentiate between certified or uncertified timber), so we use certification rates in producing countries to extrapolate Europe's imports. The result is a best estimate of Europe's impact, which appears to be significant for the global fight to reduce deforestation. The EU has an outsize ability to affect sustainable timber throughout the world and we offer practical recommendations for producers, consumers, corporations, governments, and NGOs to power a market that demands increased certification.

The world needs SFM now. Europe must lead the shift to sustainable forest management (SFM) within the tropical timber industry. This report serves as a foundation for strategic efforts to increase certification, and the data show the need for change – if the EU28 sourced 100% verified sustainable tropical imports, an additional 11.7-13.4 million hectares of tropical forest would be positively impacted and the total `cradle to port of import' global warming potential (i.e. "carbon footprint") inclusive of stored (biogenic) carbon is in the region of -58 to -75 Gg CO_2 equivalent.

Photo Mark van Benthem, Probos

1 Introduction

Tropical forests are globally significant – they are home to some of the most biodiverse ecosystems on the planet, sequester enormous quantities of carbon, and sustain local communities and businesses – and face great pressures from extractive deforestation and conversion to agriculture. In 2018, 12 million hectares of tree cover were lost in the tropics, among which 3.6 million hectares were primary rainforests.[7] Conventional logging operations can clear-cut large swathes of forest, sometimes leading to conversion of the land to agricultural commodity production or replanting with fast-growing trees. When primary tropical timber operations are clear-cut, the degradation is extensive – tropical hardwoods require hundreds of years to reach maturity so forests simply can't return to anything resembling the destroyed primary ecosystem on a short time-scale.

Sustainable forest management (SFM) offers a way to support the longterm health of forests. When sustainably managed through high standard forest certification or equivalent governance models, a process that requires logging on an ecological rather than human time scale, tropical forest can be maintained and protected from illegal logging, encroachment, or conversion to agribusiness use.

On-going shifts in producing countries' forest management practices via the Forest Law Enforcement Governance and Trade (FLEGT) are still in process, strengthening the baseline in these countries and acting as a steppingstone towards sustainability. Many companies and governments still rely on forest certification as a proxy for responsible forest management, and chain-of-custody certification to demonstrate the origin of the wood. Certification is based on the idea of creating incentives for SFM by providing a market driven mechanism that benefits sustainable timber producers. For producing countries, certification can be a means to conserve forests and their species while engaging and providing for local communities, the workforce, and the forest management companies.[8]

The EU plays a major role in determining forest use in producing countries – markets for certified sustainable tropical timber have the potential to drive SFM and conservation. Europe has been a powerful force as the global lead in demand for voluntary forest certification (probably representing 50-80% of global demand for certified products), stimulating forest managers and their stakeholders to adopt higher standards of production through organizations such as FSC, PEFC, and their locally adapted standards. However, the market for tropical timber in Europe has declined in value and volume from its peak prior to the global financial crisis in 2008-2009. In recent years it's shown modest growth but remains significantly smaller than its peak. With new markets across Asia, and growing domestic/regional markets, many producers have stopped viewing Europe as their main export market.

This study aims to build on previous efforts to quantify the EU's role in the sustainable timber market by estimating the market share of certified sustainable and FLEGT-licensed tropical timber on the European market.[9] We also estimate the potential carbon sequestration benefits of increasing certified sustainable timber imports. For the purposes of this study, certification is used as a proxy measure for sustainable forest management. The hope is that this baseline data will help spur public and private initiatives to increase verified sustainable tropical timber imports.

The EU currently lags behind its collective goal of 50% certified tropical timber by 2020, but we have the tools to bend demand towards sustainable timber. To drive sustainable

timber we need activation from consumers, governments on both sides of the trade, and stronger commitements from industry and trade-groups. Growing the European market for sustainable tropical timber has the potential to stimulate sustainable forest management throughout the tropics, with implications for vital forests and ecosystems, forest workers, vulnerable communities, and greenhouse gas emissions. Continued market support for certified tropical timber directly aligns with the European Union's objectives laid out in "Stepping up EU Action to Protect and Restore the World's Forests" and the associated call to action for the private sector and public agencies.[10]

2 Background

Nearly half the world's forests are tropical forests. They span the earth within the bands of the tropics, and provide crucial ecosystem services that sustain life as we know it on this planet. Tropical forests are slow to grow – single trees can take centuries to reach maturity – and as a result are slow to recover when over-harvested. The vulnerability of tropical forests and the importance of the ecosystem services they provide has led to propagation of the belief that not a single tree should be cut down. However there is strong evidence that SFM successfully protects ecosystems, and also provides economic incentive for long-term protection and maintenance of tropical forests.

SFM encompasses a range of practices that can maintain the long-term economic and ecological viability of forests. Both regulation by producer countries and certification by organizations like FSC and PEFC provide pathways to verifying SFM practices, however enforcement of forest regulations in developing countries is often insufficient. Certification and governance are complementary, but for the purposes of this report certification is used as the way to guarantee true SFM practices with high fidelity. In this report we differentiate between certified sustainable timber and timber that is not certified. Non-certified timber is difficult to define because it broadly encompasses everything not FSC/PEFC certified – it includes companies that are operating within certification guidelines but haven't been certified, operations that are clear-cutting primary forests for lumber and converting that land to agricultural use, and everything in between, like operations that cut and replant at unsustainable rates. This range of practices contributes to tropical timber's poor reputation, and the ambiguity is why we use certification as a proxy measure for rates of SFM.

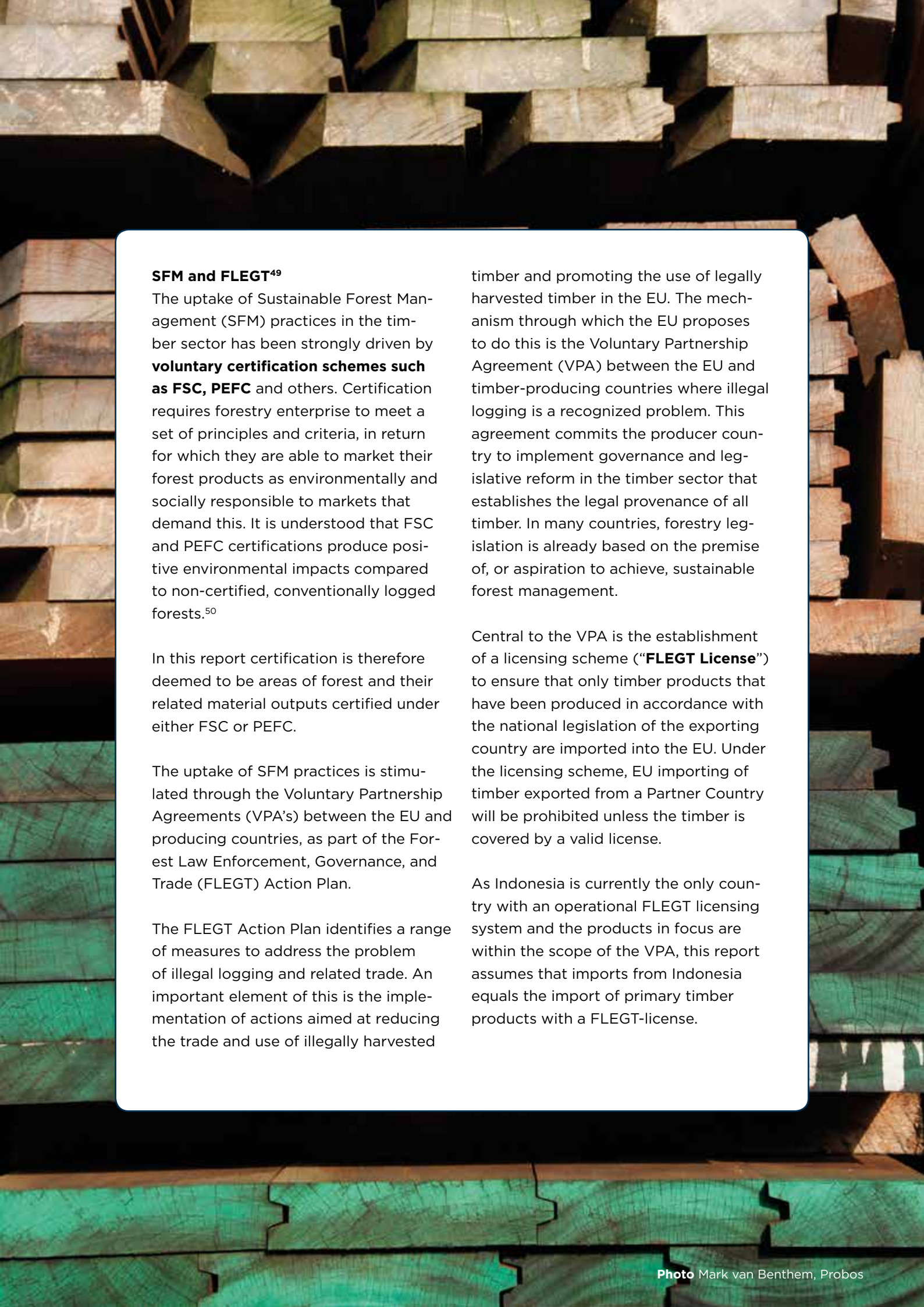
Central to this report is the understanding that timber can be harvested sustainably. When we harvest on a scale that recognizes the slow growth of these trees, we can actually produce a versatile product that is carbon negative (storing more carbon than is emitted during all stages from extraction to end-user). Certified sustainable operations require intensive planning, and harvesting operations are carefully controlled to minimize the impact on forest stands and soils. Reduced impact logging (RIL) is key to the sustainable harvesting of certified forests in the tropics. RIL includes a pre-harvesting inventory and mapping of individual trees to maintain species diversity and select trees that will minimize damage to the surrounding ecosystem. Selection and harvesting rates take into account the slow growth of the ecosystem to ensure the long-term viability of the forest as an ecosystem and resource. Precaution in designing the infrastructural requirements of RIL operations – including planning of roads, trails, and landings – is central to efforts to minimize disturbance and maximize safety. The actual harvesting in RIL operations is meticulous, often involving pre-harvest liana cutting in tree crowns, felling and bucking techniques that minimize damage to surrounding trees, and careful yarding. Post-harvest assessments are crucial to documenting impact, creating accountability for certification, and providing feedback to concession holders and logging crews.[11]

The results of certified RIL operations suggest a reduction in deforestation rates, greater preservation of undisturbed forest characteristics, and a host of other benefits. RIL reduces canopy gaps from logging, damage to other trees in concession, and impact on the microclimate relative to conventional logging. RIL sites remain functional ecosystems, supporting a diverse range of flora and fauna.

Photo Mark van Benthem, Probos

Certification is also associated with improved livelihood for communities at or near certified operations.[12] A 2005 CIFOR study found that FSC certification in developing countries improved worker conditions, reduced social conflicts, and secured land tenure and usage rights in certified communities.[13] A number of studies demonstrate the ways in which FSC leads to increased information sharing and involvement with indigenous groups that border certified timber operations. This involvement goes beyond cursory, creating mechanisms for disenfranchised groups to be compensated for damage.[14] These benefits are perhaps unsurprising given that three out of the first four principles of FSC focus on the people and communities affected by timber.

When tropical timber is harvested using strict standards like those mentioned above, it becomes a sustainable, renewable, recyclable, and biodegradable natural material with numerous applications. Relative to artificial materials such as steel, cement, and plastic, the sustainable production of timber and wood yields valuable, durable materials with small carbon/energy footprints and little pollution. Solid wood items and structures with adequate design and maintenance can last for centuries, and tropical timber in particular is a rich and varied resource with significant market and application potential. It covers the range from species ideal for joinery and interior decorative use, to incredibly dense, tough and durable varieties that can last for decades unprotected in the harshest exterior environments, even direct water exposure in marine applications.[15] Certified sustainable tropical timber is currently associated with an on-cost of 1%-25% over conventional lumber, so growing certification levels and impact requires commitments and market growth in Europe.



SFM and FLEGT[49]

The uptake of Sustainable Forest Management (SFM) practices in the timber sector has been strongly driven by **voluntary certification schemes such as FSC, PEFC** and others. Certification requires forestry enterprise to meet a set of principles and criteria, in return for which they are able to market their forest products as environmentally and socially responsible to markets that demand this. It is understood that FSC and PEFC certifications produce positive environmental impacts compared to non-certified, conventionally logged forests.[50]

In this report certification is therefore deemed to be areas of forest and their related material outputs certified under either FSC or PEFC.

The uptake of SFM practices is stimulated through the Voluntary Partnership Agreements (VPA's) between the EU and producing countries, as part of the Forest Law Enforcement, Governance, and Trade (FLEGT) Action Plan.

The FLEGT Action Plan identifies a range of measures to address the problem of illegal logging and related trade. An important element of this is the implementation of actions aimed at reducing the trade and use of illegally harvested timber and promoting the use of legally harvested timber in the EU. The mechanism through which the EU proposes to do this is the Voluntary Partnership Agreement (VPA) between the EU and timber-producing countries where illegal logging is a recognized problem. This agreement commits the producer country to implement governance and legislative reform in the timber sector that establishes the legal provenance of all timber. In many countries, forestry legislation is already based on the premise of, or aspiration to achieve, sustainable forest management.

Central to the VPA is the establishment of a licensing scheme ("**FLEGT License**") to ensure that only timber products that have been produced in accordance with the national legislation of the exporting country are imported into the EU. Under the licensing scheme, EU importing of timber exported from a Partner Country will be prohibited unless the timber is covered by a valid license.

As Indonesia is currently the only country with an operational FLEGT licensing system and the products in focus are within the scope of the VPA, this report assumes that imports from Indonesia equals the import of primary timber products with a FLEGT-license.

Photo Mark van Benthem, Probos

3 Methodology

The collation of data on the volume of certified wood products within the EU has been an on-going challenge. The underlying problem is that neither FSC or PEFC systems currently collect this information at source. Moreover, trade federations and importers are usually reluctant to share their own internal data when it is not in their interests to do so. FSC attempted to address this through the Online Claims Platform, however there was little support for this initiative. Therefore this project is presented by a consortium[16] equipped to deliver the project.

3.1 "Exposure to certification"

Traditionally trade flow studies apply a 'source approach,' a time consuming process that determines volumes of verified sustainable wood as they enter the market. Within the scope of this study and the budget available, it was not feasible to conduct source approach studies for all 7 main tropical timber-consuming countries, let alone the EU28. For the purposes of this report we draw on the concept of "*exposure to certification*" pioneered by the Forest Law Enforcement Governance and Trade (FLEGT) Independent Market Monitor (IMM). This approach measures the 'exposure' or 'access' to certified fiber rather than the 'share of timber supply' or 'market share'. It provides a useful insight into those timber trade flows between countries with significant gaps in the supply of certified material and those where certified supply is abundant.

The *exposure to certification* method is based upon a basic analysis of forest and trade data. It considers the share of FSC and PEFC certified forests compared to the total forest area. This share is then projected on the export data of the producer country in question. The analysis only includes direct imports and excludes indirect imports.

The basic method to calculate an estimate of exposure to certification was refined by using additional data sources and incorporating the experience of exporters, importers and organizations across the globe. Further analysis refined the area of productive forest and allowed us to make assessments of timber quantities actually produced in certified forests.

The net result is a repeatable methodology that allows for the current best estimate of the share of primary timber products on the EU28 market and individual member states level of exposure to certification. While interpreting the results of the exposure to certification measure it's important to keep in mind that it is *not the same* as the market share of certified sustainable products that enter the market.

It should also be noted that the primary focus of the analysis is the level of exposure to FSC and PEFC **certification**. Where appropriate some specific analysis of **FLEGT Licensed** materials (from Indonesia in 2018) has been included, though the total estimates of exposure to certification by region or country exclude FLEGT Licensing.

Due to the potential for substitution of sustainable tropical timber for other products to mitigate global greenhouse gas emissions, we also attempt to calculate the carbon impacts of certified wood imports using the data produced by the exposure methodology.

3.2 Description of sources

In order to generate the exposure to certification data for the import of **primary tropical timber products** of the EU28, a variety of input data have been combined to form a comprehensive database for our calculations. The list of product coverage of primary tropical timber products including corresponding HS-codes is presented as Annex 1.

The key data sources for the analysis include:

1. **Comext**[17] data on import of timber products (HS44[18]) by the EU28 countries.
   a. *These data have been validated and corrected where necessary (through the FLEGT IMM*[19] *dashboard).*
   b. *Primary timber products have been included in the analysis: roundwood, sawnwood, veneer, and plywood.*
   c. *Secondary products such as furniture are excluded from this analysis.*
2. **Food and Agriculture Organization of the United Nations (FAO)** data on total forest area, production forest area, and multifunctional forest area (Forest Resource Assessment, 2015 & FAO Status of tropical forest management, 2011)
3. **FAO Data on Industrial Forest Concessions** (FAO Forest Concessions – Past Present and Future, 2016)
4. **Data on forest certification** (FSC & PEFC website, facts & figures, and individual audit reports), excluding FSC and PEFC certified plantations.
5. Internal Probos Data on categorization of Tropical / Non-Tropical Countries
6. Internal Probos Data on tropical Timber Products (listing all relevant HS codes)
7. **International Tropical Timber Organization (ITTO)** Export data of tropical timber products (ITTO, 2016)

Although limited, there are some other data sources. For example the valuable work various timber trade federations are conducting, often within the framework of responsible sourcing, and extensive market studies available for the Dutch[20] and Belgian market.[21]

Additionally, as part of this study, we developed four types of **surveys**:

1) **Focusing on forest management information** with regards to average yield in regular and certified sustainably managed forests, areas set aside, rotation periods, etc. Targeting experts and representatives of the FSC and the PEFC national and regional offices.
2) **Focusing on imports by European traders**. E.g. in collaboration with French timber trade association *Le Commerce du Bois*.
3) **A combination of 1 and 2**, targeting large certified producers via ATIBT (International Technical Association for Tropical Timber, see also text box 1) and TBI (The Borneo Initiative).
4) A **specific questionnaire** that was developed for the purpose of this study and used at workshops and interviews in France, Italy, Spain and Germany. This questionnaire focused on certified sustainable tropical timber imports, market developments, and main domestic markets for tropical timber. The main actors, such as trade federations, national FSC and PEFC offices, research, etc., were contacted by national experts on the topic.

3.3 Steps to calculating exposure to certification

The input data have been used to perform the analyses and calculate quantities exposed to certification. To provide insight in the calculation process, the different steps are explained in detail within Annex 1.

Figure 1 Overview of the steps involved to produce the exposure to certification data and the carbon estimate.

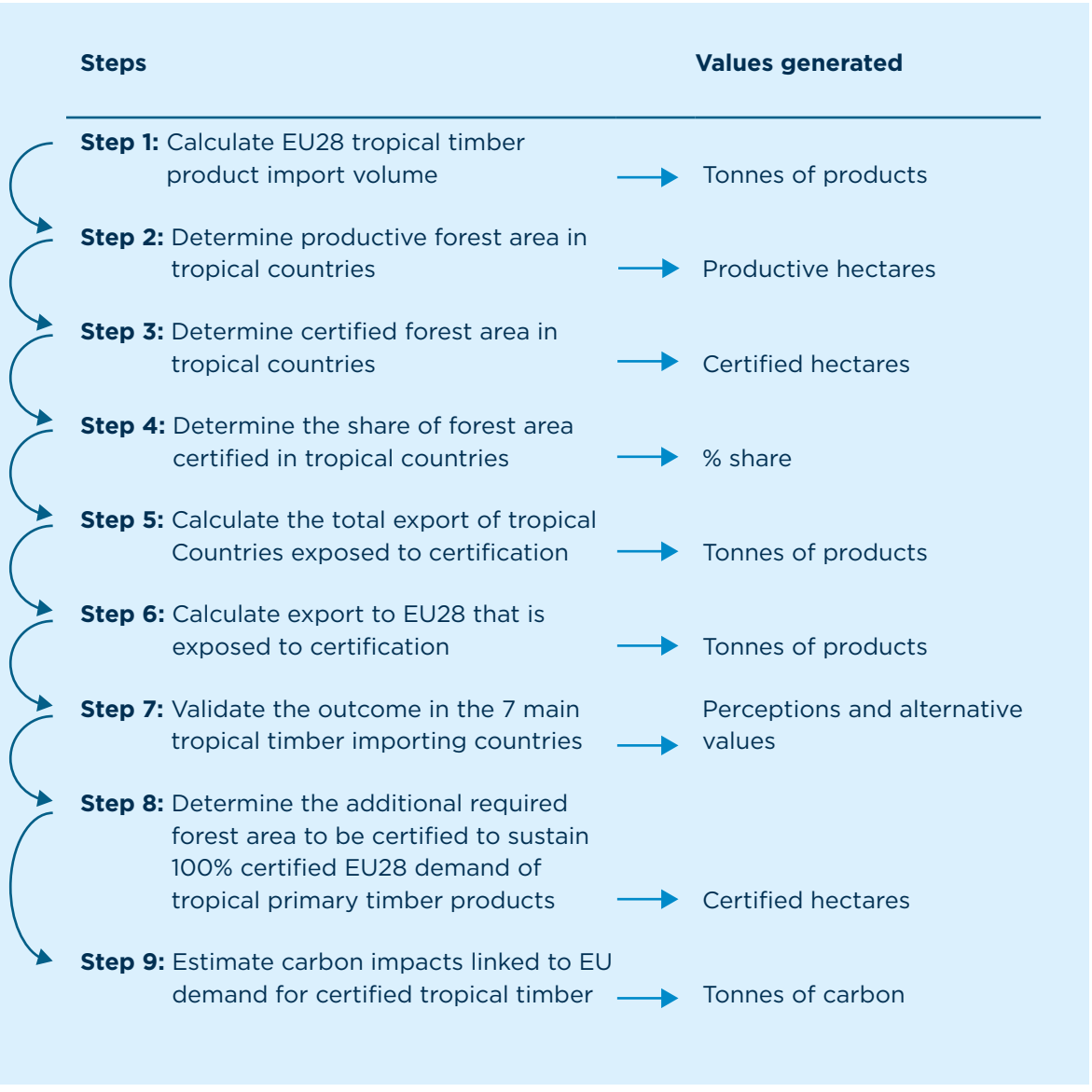


Photo Mark van Benthem, Probos

4 Tropical timber in Europe

4.1 Understanding Europe's increasing certification in a shrinking market

The total market for tropical timber products in the EU28 and Europe as a whole has been decreasing substantially for more than a decade.[22] The economic recession played an important role in this decrease, but other factors prevent the market from fully recovering from the recession while the rest of the economy in most EU28 countries picks up. To better understand this shrinking market our team of national experts gathered information on this topic that we compiled with information from the FLEGT IMM trade survey[23] and trade consultation in Antwerp.[24] The analysis makes clear that there is not one specific reason for this decline, but rather a number of linked reasons.

In all seven countries consumer opinion is mentioned as the, or one of the, most important reasons for the downward trend in the consumption of tropical timber products. Tropical timber "*is associated with deforestation and should therefore be avoided*" is a common consumer or specifier opinion. As a consequence, consumers do not buy these products whether they are certified or not. On top of this, architects, engineers and other specifiers avoid tropical timber products in their projects and in some countries or regions purchasing policies have been developed that exclude tropical timber products due to the negative image (though also to promote national timber products).[25] The negative consumer opinion regarding tropical timber products is amplified in marketing by producers of competing materials such as plastic, aluminum, and steel. Producers of competing timber products such as modified timber and wood plastic composites also make use of this negative sentiment. Often the marketing of competing products is better organized and funded and highlights the benefits of those products compared to `rainforest destruction'.

Shortage of supply of verified sustainable tropical timber is also cited as a reason for the downward trend. The booming of emerging economies such as China and India has contributed to the development of a South-South trade flow for tropical timber. This has led to shortages in the availability for other buyers. The introduction of export bans (especially of logs) in numerous African and Asian countries has also contributed to a reduction in supply. A number of those consulted in our surveys also noted that access was a major barrier to being able to purchase certified timber – they experience a shortage of producers willing to supply sustainable tropical timber for a variety of reasons including supply shortages, lack of volume of the requisite quality, and occasionally existing supply agreements prohibiting sales to new customers.

The introduction of the European Union Timber Regulation (EUTR[26]), as part of the FLEGT Action plan, is another factor that resulted in less demand for tropical timber. To avoid complex due diligence requirements associated with the import of (high-risk) tropical timber products, or out of risk aversion, some operators decided to stop or minimize this import. A number of large retailers stopped importing tropical veneer faced plywood from Africa and Asia in order to minimize risk and avoid the complexity of the traceability of all timber species used in plywood.

Increasing prefabrication has further reduced demand by reducing market focus on timbers that are adaptable for on-site use and instead focusing on other attributes, such as regular size, length and supply, which are in general less well served by tropical timbers (often supplied in random widths and lengths).

Although the general market for tropical wood within the EU28 has shrunk there are some markets that show positive trends according to interviewed organizations. In general the outdoor and decking sectors show a positive trend (excluding garden furniture). Waterworks, window frames, and construction timber also show positive growth. Growing demand for luxury products is spurring an increasing market for yachts, ships, and car interiors. However these trends of increased market volume are likely a consequence growth in total demand, not growth in market share (especially in an industry like construction).

Timber Terminology

This report quantifies four primary timber products utilized in the EU market:

Roundwood comprises all wood obtained from removals including all wood removed with or without bark, wood removed in its round form, split, roughly squared or in other form (e.g. branches, roots, stumps and burls, and wood that is roughly shaped or pointed).

Sawnwood is wood that has been produced from roundwood either by sawing lengthways or by a profile-chipping process, and must exceed 6 mm in thickness. Sawnwood includes planks, beams, joists, boards, rafters, scantlings, laths, boxboards, and "lumber."

Veneer is a thin sheet of wood of uniform thickness, not exceeding 6 mm thickness.

Plywood is a panel consisting of an assembly of veneer sheets bonded together with the direction of the grain in alternate plies generally at right angles.

Units vary across different sectors of the timber industry. Certification and non-profit bodies are most focused on hectares impacted by certification and for that reason use m^3 roundwood equivalent (m^3 RWE)[51] as a unit, forest managers measure their yield in m^3 of roundwood harvested, and as soon as the timber is transported weight becomes relevant, so exports are measured in tonnes. Roughly speaking, 1 ton is equivalent to 2-3 m^3 RWE. To understand the land use required for production of timber see Appendix 4 for figures of land-use by region (yield per hectare varies by region).

4.2 Imports and exports of primary tropical timber in EU28

Import figures

In 2018 the EU28 imported 1,473,000 tonnes of primary tropical timber products. More than 85% (1,258,000) of this quantity was imported directly from ITTO tropical timber producer countries.[27] The remaining 215,000 tonnes were mainly imported from China (80%), followed by a few smaller production countries.

Table 1 gives an overview of the EU28 imports of primary tropical timber products on an individual country level. **Belgium** is the biggest importer of primary tropical timber products, followed by **France**, the **Netherlands**, **Italy**, the **United Kingdom**, **Germany,** and **Spain**. These are the seven main importing countries of primary tropical timber products in the EU28 and together account for approximately 90% of the total EU28 import. Other EU28 countries cover the remaining 10% of the EU28 import with a total of 124,000 tonnes of primary tropical timber products. Portugal, Denmark, and Greece account for 70% of imports by other EU28 countries.

Figure 2 shows the relative division of EU28 primary tropical timber product import over the countries. Belgium accounts for 27% of the total imported volume, while Spain, the smallest of the seven main importers, covers just 5% of the total EU28 imports.

It is important to realize that the numbers presented above reflect import of primary tropical timber products at the point where they first enter the EU28. Intra-European trade, transit trade, and re-export are not

Table 1 Major importers of primary tropical timber products to the EU28 in 2018 (in tonnes)

Country	Sawnwood	Veneer	Plywood	Round-wood	Total
Belgium	282,000	4,500	21,500	31,000	**339,000**
France	129,500	49,000	4,500	32.,000	**215,000**
The Netherlands	164,500	3,000	20,000	2,000	**189,000**
Italy	8,500	32,500	13,500	10,000	**135,000**
United Kingdom	60.,500	0	43,500	2,500	**106,000**
Germany	63,000	3,000	22,500	500	**89,000**
Spain	39,000	19,500	500	2,000	**61,000**
Other	76,500	20,000	5,000	22,000	**124,000**
Total EU28	**894,000**	**131,500**	**130,500**	**102,000**	**1,258,000**

taken into account. Countries such as Belgium and the Netherlands serve as entry point for tropical timber products due to their large harbors, and the imported timber is distributed over the rest of Europe from these countries. When tropical wood consumption was considered France had the highest consumption followed by the United Kingdom, the Netherlands, and Belgium, demonstrating that high imports don't necessarily mean high consumption. The top 7 countries remained the same.

71% of the EU 28 total direct imports were sawnwood. Veneer, plywood, and roundwood had almost equal shares of the remaining 29% total imports (Figure 4).

Figure 2 Relative share (%) of EU direct import of primary tropical timber products in 2018 by country.

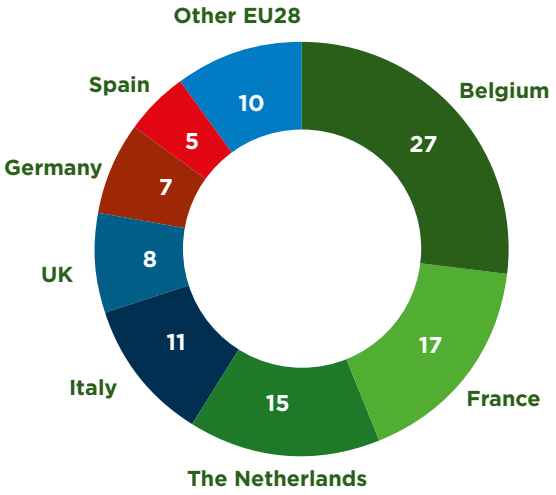


Figure 3 Country's tropical timber consumption as % of total EU28 in 2016

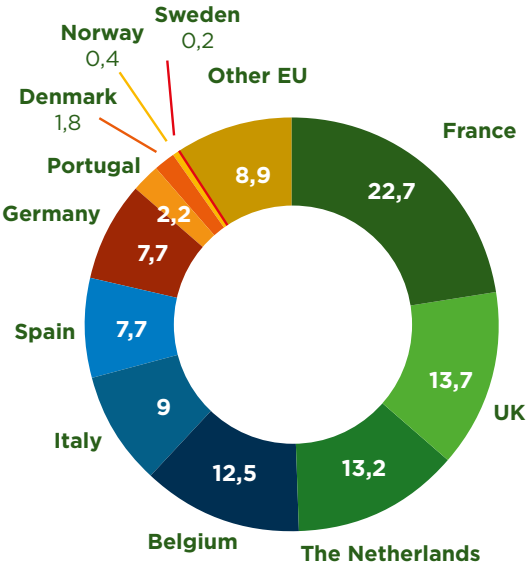
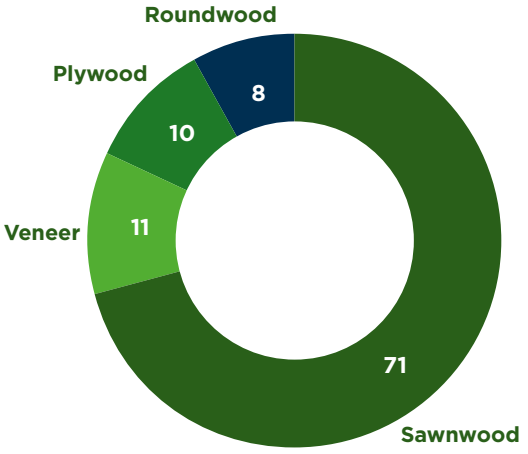


Figure 4 Division of product groups of the direct EU28 imports of primary tropical timber products in 2018, in %.



Exporting countries

Analyzing the origin of EU28 tropical timber imports for 2018 shows **Cameroon** (294,000 tonnes) is the largest supplier of tropical primary timber products to the EU28, followed by **Brazil**, **Gabon**, **Indonesia**, **Malaysia**, **Congo,** and **Côte d'Ivoire** (Table 2).

'Other' countries represent the remaining 27 ITTO producer countries. While interpreting these data it should be kept in mind that imports from countries with harbor facilities that serve a region, like for instance in Cameroon, can be result in an overestimation of the actual timber volume produced in that country and exported to the EU28.

Though Table 2 presents the seven main ITTO producer countries that export primary tropical timber products to the EU28, it's notable that more than 50% of the **roundwood** that is exported to the EU28 comes from 'other' countries. With 21,000 tonnes each, **Congo DR** and the **Central African Republic** represent approximately 80% of the tropical roundwood exported to the EU28 by 'other' countries. Roughly 10% of the tropical sawnwood exported to the EU28 originates from 'other' ITTO producer counties, of which **Ghana**, **Congo DR,** and **Myanmar** are responsible for almost half of the volume.

Figure 5 shows the relative share of ITTO producer countries' export of primary tropical timber products to the EU28. Cameroon accounts for 23% of the total export to the EU28, where Côte d'Ivoire, as the smallest of the seven main ITTO producer countries exporting to the EU28, represents a share of just 5%.

The countries of origin have been grouped in order to show which regions of the world as most important for the supply of primary tropical timber products to the EU28 (Table 3). **Africa** (708,000 tonnes) is the largest supplying region, followed by **Asia** (312,500

Table 2 Direct suppliers of primary tropical timber products to the EU28 in 2018 (in tonnes)

Country	Sawnwood	Veneer	Plywood	Roundwood	Total
Cameroon	265,000	19,000	1,000	17,500	**294,000**
Brazil	192,000	500	4,500	150	**197,500**
Gabon	99,000	61,500	13,000	500	**174,500**
Indonesia	76,000	500	85,000	0	**162,000**
Malaysia	108,000	500	15,500	500	**124,500**
Congo	47,500	11,000	0	29,500	**88,000**
Côte d'Ivoire	30,500	31,000	500	500	**62,500**
Other	84,500	7,500	10,000	53,000	**155,000**
Total	**894,000**	**131,500**	**130,500**	**102,000**	**1,258,000**

Note: Totals may not add up due to rounding of individual countries.

Figure 5 Relative share (%) of total primary tropical timber products exported to the EU28 by ITTO producer countries in 2018.

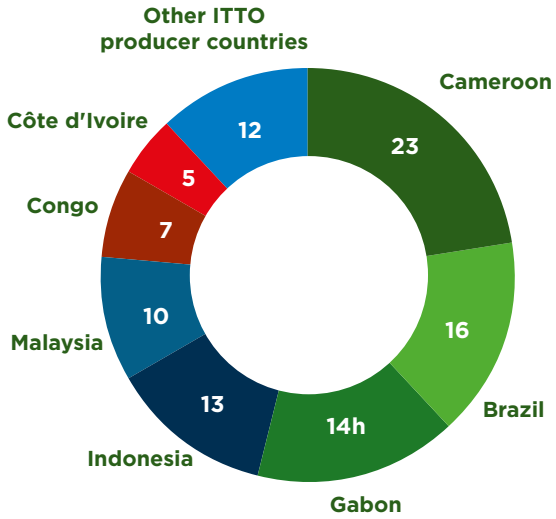
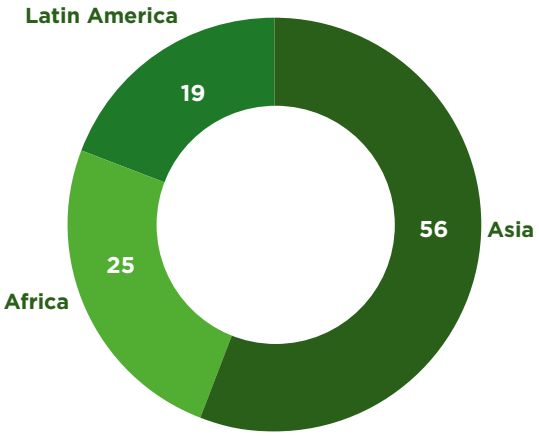


Figure 6 Relative share (%) of EU28 total primary tropical timber product import by the continental regions of origin in 2018.



tonnes) and **Latin America** (237,500). Moreover, Africa is the largest supplier of veneer (99%), roundwood (95%), and sawnwood (52%). Asia is the main exporter of plywood with 85% of the total volume exported to the EU28. The export of primary tropical timber products from Latin America to the EU28 mainly consists of sawnwood (96%).

Figure 6 shows the relative share of EU 28 primary tropical timber product imports by the continental regions of origin. **Africa** (56%) represents over half of the primary tropical timber imports of the EU28. **Asia** (25%) comes in second place, and **Latin America** (19%) covers the remainder of EU28 imports.

Table 3 Origin of primary tropical timber products imported by the EU28 by continental region in 2018 (in tonnes)

Region	Sawnwood	Veneer	Plywood	Roundwood	Total
Africa	467,000	129,500	15,000	96,500	708,000
Asia	199,500	1,000	111,000	1,000	312,500
Latin America	227,500	1,000	5,000	4,500	237,500
Total	**894,000**	**131,500**	**130,500**	**102,000**	**1,258,000**

Note: Totals may not add up due to rounding of individual regions.

Certification exposure of the EU28

The crux of this report drives at understanding certification exposure and associated environmental, sociological, and ecological impacts. We know that certification drives forest conservation, and understanding the scope of the EU market for certified timber translates directly to impact on the ground and in forests throughout the tropics.

Based on the exposure method an estimated quantity of 243,000-402,000 tonnes of primary tropical timber products directly imported into the EU28 is exposed to certification. After validation based on more robust certified tropical timber consumption data of the seven main tropical timber consuming EU28 countries, the lower boundary was adjusted to 317,000 tonnes. This adjusted number leads to an estimated exposure to certification of primary tropical timber products in the EU28 of 317,000-402,000 tonnes. That means that just 25% to 32% of the total direct import of primary tropical timber products by the EU28 is exposed to certification. Clearly this number lags behind the goal of 50% certification by 2020, and hopefully it provides impetus for increased action. Increasing certification has massive implications for forest preservation and limiting climate change.

Table 4 shows the estimated market share of primary tropical timber products exposed to certification within the seven main EU28 tropical timber importing countries.

With approximately 123,000 – 132,500 tonnes, the **Netherlands** is the largest importer of certified primary tropical timber products in the EU28, followed by **Belgium**, the **United Kingdom**, **Germany**, **France**, **Italy** and finally **Spain**.

Figure 7 Relative share (%) of EU28 direct primary tropical timber product imports exposed to certification by ITTO producer countries in 2018

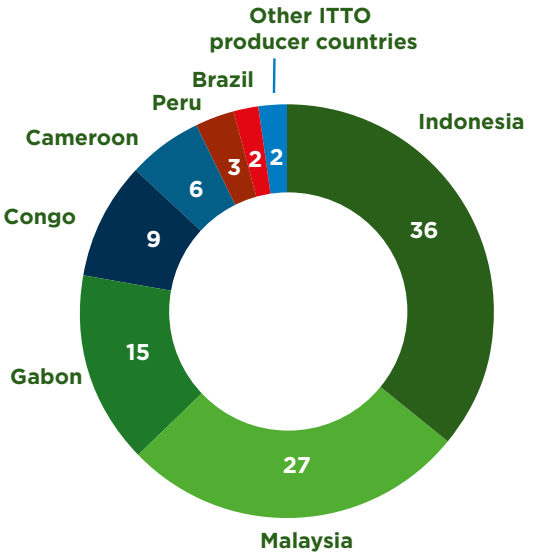


Figure 7 shows the relative share of EU28 primary tropical timber product imports exposed to certification by ITTO producer countries. **Indonesia (36%)** is by far the largest supplier, followed by **Malaysia (27%). Gabon (15%)**, **Congo (9%),** and **Cameroon (6%)** represent the largest African suppliers of certified primary tropical timber products. Latin American countries account for only 5% of total certified imports by the EU28, with **Peru** and **Brazil** as its leading countries.

20 ITTO producer countries, of which Cote d'Ivoire is the most prominent one, face the situation that currently no natural or semi-natural forest is FSC and/or PEFC certified. These countries export about 164,000 tonnes of primary tropical timber products to the EU28.

Approximately 77% of the imported certified primary tropical timber products by the EU28 carry the FSC-label. The remaining 23% is certified by PEFC, all of which can be attributed to Malaysia, Brazil, and Gabon (all the primary tropical timber products with a PEFC-certificate originate from these three countries). In fact, in 2018 only Malaysia exported PEFC-certified timber from natural and semi-natural forests.

FLEGT Licensing

In total, approximately 162,000 tonnes of primary tropical timber products with a **FLEGT-license** are imported by the EU28 directly from **Indonesia**, currently the only country where FLEGT-licenses can be issued. This represents roughly 13% of all the imported primary tropical timber products of the EU28. Between 89,000 and 142,000 tonnes of these FLEGT-licensed primary tropical timber products are estimated to be exposed to certification. This means that 28%-35% of the total quantity of primary tropical timber products exposed to certification that are directly imported by the EU28 from ITTO producer countries is also be accompanied by a FLEGT-license.

Table 4 Total direct import and estimated market share of primary tropical timber products exposed to certification for the seven main tropical timber importing countries of the EU28 in 2018

Country	**Import** (Metric Tonnes)	**Market share exposed to certification**	**Assumed certified import** (Metric Tonnes)	**Relative share within the total import exposed to certification by the 7 main EU28 tropical timber importing countries**
Belgium	339	25-30%	84,500 – 101,500	27.80%
France	215	10-15%	21,500 – 32,000	7.90%
The Netherlands	189	65-70%	123,000 – 132,500	38.30%
Italy	135	5-10%	6,500 – 13,500	3.00%
United Kingdom	106	40-45%	42,500 – 48,000	13.50%
Germany	89	30-35%	26,500 – 31,000	8.60%
Spain	61	2.5-7.5%	1,500 – 4,500	0.90%

Results ATIBT enquiry

The ATIBT enquiry is a collaboration between Probos and ATIBT focusing on trade data, yield per ha, area set-aside, and other nuances of timber operations. The ATIBT enquiries serves as a model for how detailed corporate/trade-group data can serve a crucial role in refining high-level data gleaned from customs data sets. Producing corporations/trade-groups are in the best position to share clear data on yields, certification, impacts, and trade-flows. As awareness of certification grows, and future iterations of this report are released, increasing industry buy-in in sharing market data will be crucial to understanding the market in order to best leverage change.

The enquiry was disseminated among ATIBT's members with (until recently) FSC and/or PEFC certified forests in the Congo Basin. Five companies replied to the enquiry and these five companies represent a certified forest area of approximately 4 million hectares in Congo Republic, Gabon, and Cameroon. Four out of these five completed the entire survey and one provided partial data. The data concerning average yield was used to help calculate the (potential) impact on the forest.

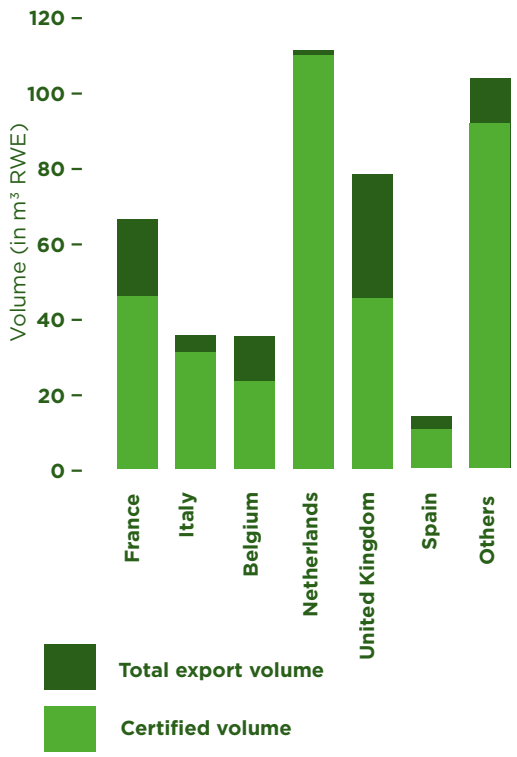
In 2018 the five companies harvested app. 1,160,000 m^3 of roundwood. Four of the companies reported the volume exported to Europe. These exports represent a volume of more than 440,000 m^3 roundwood equivalent (RWE) of a total harvested volume of almost 820,000 m^3 RWE. Thus, Europe was the destination for 54% of the total harvested volume. The four companies indicated that 80% of the exported volume to Europe was actually sold with a FSC or PEFC certificate. This is not completely demand driven, but partly due to company policy prescribing certified material to be sold as such.

Four companies provided more details, concerning European exports and indicated the share certified within the export flow to a specific country in 2018. France, Italy, Belgium, Netherlands, United Kingdom, and Spain represent 77% of the total export to Europe by these companies. Table 5 shows the results per country in absolute volumes. The share certified is highest for the **Netherlands** (99%), **Italy** (87%), and the group of other countries (88%), which mainly consist of **Germany** and **Denmark**. **France** (69%), **Spain** (73%), **Belgium** (66%), and the **United Kingdom** (58%) follow.

While interpreting these results it is important to keep in mind that they are based on the exports of four companies in Africa. For that reason, it is not possible to link these results to the overall market situation in the respective European countries. For instance, the high share for Italy is mainly the result of the imports from one company, while two other companies report much lower shares certified exports to Italy. This indicates that trade with one specific company can already result in large shifts in the market share. For the Netherlands however the share certified is almost 100% for the imports from all four companies. For most of the other countries this is not the case.

The outcome of the ATIBT enquiry delivers very valuable information to improve the data availability and better understand the practicalities behind the economics of managing certified concessions. We thank ATIBT and the members who participated in the survey for their contribution and encourage other primary timber producers and relevant organizations in other regions to follow their example and collect this kind of information.

Figure 8. Total export volume for the four ATIBT FSC- and/or PEFC certified members to European countries and the volume sold with a FSC- or PEFC certificate in 2018.



4.3 Impact on sustainably managed forests

It's easy to get lost in the mires of trade-flow data, but the reality is that every tonne of tropical timber can trace its origin back to a plot of land. On a granular level, the choice to purchase certified sustainable or not may directly impact an indigenous community or the long-term preservation of a biodiverse valley. Europe's imports intimately tie it to the ecosystems and communities of tropical forests, and have serious ramifications for their long-term sustainability. We know that Europe can and will do better than 25%-32% certified. To drive public and private support for certification, we aim to quantify the potential benefits of the EU28 sourcing 100% verified sustainable primary tropical timber products.

Direct imports to the EU28 total 1,258,000 tonnes from ITTO producer countries. This roughly translates into 4,104,000 m^3 RWE.

Using the trade flows quantified in this study, we distribute imports over the three continental regions: Africa, Latin America and Asia (Table 5). We calculated the average annual harvest per hectare in certified sustainably managed semi and natural forests for each region (excluding plantations). This average yield reflects the annual harvested quantity of roundwood divided by the total certified forest area and incorporates the rotation cycles of 25 or 30 years within certified forests.
For Africa this resulted in a harvest level of 0.27 m^3 RWE per hectare. For Latin America (0.4 m^3 RWE per hectare) and Asia (0.56 m^3 RWE per hectare) this number was substantially higher. Based on expert consultation we estimate that approximately 75% of the average harvest is in theory suitable for export to Europe. This results in average harvest levels of 0.20, 0.30 and 0.42 m^3 per hectare for Africa, Latin America, and Asia respectively.

Table 5 Overview of export to EU28, productive forest area, certified forest area, and forest area currently and potentially impacted by EU28 certified import by continental region.

	Africa	Latin America	Asia	Total
Productive forest area (1,000 ha)	66,464	91.623	82,264	**240,351**
Certified forest area (1,000 ha)	4,540	3.567	6,689	**14,796**
Currently impacted by EU28 (1,000 ha)	1,197 – 1,914	165 - 268	1,328 - 2,224	**2,689 – 4,406**
Potentially impacted by EU28, with 100% sustainable sourcing (1,000 ha)	10,859	2,546	2,718	**16,122**

Photo Mark van Benthem, Probos

Using these average harvest levels we can estimate that between 2.7-4.4 million hectares of forest are maintained with SFM practices under the current levels of EU28 certified natural and semi-natural forest tropical timber product demand. For perspective, a total of 14.8 million hectares (excluding plantations) is currently certified in the tropical regions, representing 6.2% of production forest in the tropics. Therefore, it is estimated that the EU28 currently impacts 18%-30% of all certified semi and natural tropical forests with its current demand for certified primary tropical timber products.

Projecting these figures onto a world in which EU sourced 100% certified tropical timber, we see the impact multiplied, protecting an additional 11.7-13.4 million hectares of tropical forest. This results in a total mid-range estimate of 16.1 million hectares of semi and natural tropical forest that can potentially be impacted by the current tropical timber demand of the EU28 (shifts in sourcing would affect average yield harvests and subsequently the forest area needed). In reality this shift in sourcing would further grow the total land dedicated to certified semi or natural forest as there are also other markets demanding these products.

We performed a similar analysis for the seven main tropical timber-importing countries of the EU28. With the current demand of certified primary tropical timber products, these countries impact approximately 2.4-4.0 million hectares of tropical forest. This represents roughly 16%-27% of the total certified productive semi and natural forest area in tropical regions. If these seven countries sourced switched to 100% verified sustainable for their current demand, they have the potential to impact a total of 14.5 million hectares of tropical forest.

Photo Mark van Benthem, Probos

4.4 Carbon footprint of the EU28

In addition to the other ecosystem services provided by tropical forests, they also serve as immense carbon sinks. Understanding the carbon impact of EU28 tropical timber imports has the potential to spur demand for sustainable products, and shift policies to encourage certification. We aim to use the results from the exposure study to estimate the current and future tropical timber carbon footprint for the EU28. There is great uncertainty in any calculation of the carbon impact of certified sustainable forest management. Increasing understanding of the carbon benefits of sustainable forest management is an important area for investment and study.

Lack of data tying certification to carbon emissions

Some of the major difficulties in accurately mapping carbon impacts from SFM timber include:

1) Carbon is not a focus of certification schemes. Forest certification systems have not been established to provide a metric of carbon emissions associated with forest operations and products, they don't require utilization of low intensity harvesting methods with the aim of reducing carbon emissions., and they have no requirement for certificate holders to measure the carbon impact of operations.

2) Limited data on the carbon emissions of harvesting operations in certified and uncertified forest hampers calculations. Data on certified forest area that is available from FSC and PEFC couldn't be readily disaggregated according to forest type and production capacity. Monitoring by operators, and translating data from specific operations on carbon pools in tropical forests to a global scale doesn't provide a realistic understanding of timber's carbon footprint. There is huge variation in the carbon content of different tropical ecosystems, and little understanding of the impact of different harvesting operations or conversion events on the Soil Organic Carbon stocks.

3) Ambiguity in existing studies as a result of limited data make extrapolations difficult. Few studies conclusively prove a linkage between SFM and a reduction in greenhouse gas emissions.

Recognizing these considerable data limitations and technical barriers, we nonetheless think it's valuable to make a first attempt at quantifying the carbon benefits from certified sustainable timber.

Role of certification in reducing carbon emissions linked to forest degradation

We turn to a 2016 analysis (*Sasaki et al.*[28]) which models longer-term impacts of Reduced Impact Logging (RIL) compared to Conventional Logging (CL) as a basis for our calculations. This study posits potentially very large carbon benefits from RIL operations, particularly when the negative consequences of "premature re-entry logging" are factored in. We use this study to provide a preliminary estimate of the extent to which EU demand for certified tropical timber may be contributing to reduced forest degradation and associated carbon emissions.

Defined as "re-logging before the end of the designated cutting cycle", premature re-entry logging is all too common in tropical regions where harvest regulations and forest management plans are not strictly applied. This practice leads to the repeated loss of carbon stocks in the affected concession until all marketable trees are harvested. Considering all

production forest in tropical regions, *Sasaki et al* estimate that preventing premature re-entry logging could reduce emissions by up to 1810.4 Tg CO2 year−1.

Given the content of FSC and PEFC certification standards implemented in the tropics, particularly the emphasis on ensuring the long term productive capacity is maintained, the need to protect environmental values, and the requirement to adhere to management plans, it is reasonable to assume that certification will prevent premature re-entry logging in the areas it covers. At the same time, with rising pressure on land and forest resources, and the significant governance challenges in many tropical countries, it can also be assumed that in the absence of certification, there is likely to be considerable pressure to harvest at the highest levels of intensity.

Drawing on the data in the current study, it has been shown that 6.2% of production forest in the tropics is certified. This combined with the data from *Sasaki et al* implies that certification may be effectively reducing emissions by up to 110 Tg CO2 year−1 (6.2% X 1810TgCO2 year-1). Tying this to our study's assumptions regarding EU's leadership in the global market for certified tropical products, at least 50% (55 Tg CO2 year-1) and up to 80% (88 Tg CO2 year-1) of this reduction in emissions might in theory be attributed to EU trade in certified tropical timber. This could be considered a conservative estimate as it does not consider the potential longer-term consequences of CL as a precursor to deforestation, which would be associated with even higher levels of emissions.

Table 6: Summary of estimated carbon impacts linked to EU demand for certified tropical timber

Process	Gg CO2 eq. year-1*
Avoided degradation due to EU demand for certified tropical timber	-55000 to -88000
Emissions to harvest, process, and transport certified tropical timber to the EU (excluding changes in forest carbon pools)	322 to 563
Carbon stored in certified tropical timber delivered to the EU	-380 to -637
Carbon footprint of certified tropical timber delivered to the EU (excluding changes in forest carbon pools)	-58 to -75
Substitution benefits of certified tropical timber in the EU	-456 to -764

**negative numbers represent carbon credit*

Estimated carbon footprint

The table below summarizes the estimates derived in the current study of carbon impacts of EU demand for certified tropical timber including the potential impact on carbon pools in the tropical forest, emissions during harvesting, conversion and transport to the EU, carbon sequestration in certified tropical timber at point of delivery to the EU, and potential carbon emission reductions due to substitution of certified tropical timber for alternative non-wood products.

The level of confidence surrounding all these estimates must be considered very low. However, the numbers are adequate to draw at least one reasonably robust conclusion – that the potential impact of certified forest operations on forest carbon pools will likely dwarf the carbon emissions and sequestration associated with certified forest products in trade. The key impact is determined by what happens in the forest.

Further refining carbon estimates

While this analysis gives some idea of the scale of emissions reductions due to avoided forest degradation and deforestation associated with certification, the actual numbers cannot be relied on for accuracy at this stage. Ultimately, any more far-reaching attempt to allocate credits for avoided deforestation and forest degradation should be based on more detailed data at a national and (where necessary) sub-national level in tropical countries relating to:

- The specific types of forest that are certified
- The impact of different rotations and harvesting intensities on both production volume and carbon emissions
- The emissions from both above-ground biomass and soils associated with forest degradation and deforestation
- The level of risk of such degradation and/or deforestation in the absence of certification
- The percentage of land converted to different uses and the emissions
- The direction of trade of the products from certified forests

The certification frameworks themselves could play a significant role in improving data quality in this area if they established specific requirements for low carbon impact forestry and explicitly required regular monitoring of changes in the carbon stock of certified forest areas as part of the auditing process.

While probably of lesser significance, we also believe there is a need to apply a single harmonized Life Cycle Analyses (LCA) methodology to assess the carbon footprint of the full range of certified wood products imported from the tropics. This level of analysis would spur market development and provide a mechanism for conveying robust carbon footprint data to EU consumers.

Note: More detailed discussions on carbon footprint can be found in a separate working paper <Calculating the carbon footprint of Europe's imports certified tropical timber imports> published by IDH.

5 Individual countries

Besides presenting the overall picture of the EU28, we analyze each of the seven main primary tropical timber importing EU28 countries individually. In the sections below, each country is assessed across tropical timber markets, tropical timber imports, and market share exposed to certification.

Photo Mark van Benthem, Probos

5.1 Belgium

- Country imports of tropical primary wood: **339,000 tonnes**
- Exposed to certification: **25%-30%; 84,500 – 101,500 tonnes**
- FLEGT Licensed exposed: **7%; 22,500 tonnes**

In 2011, the Belgian Federation of Textile, Wood, and Furniture Industries (Fedustria) signed the "Wood Sectoral Agreement" with other forest-based industry and the Federal Minister of Climate and Energy. The first of its kind in Europe it committed the different forest-based industries to extending their supply of environmentally friendly products and to make customers aware of the importance of sustainable timber.[29] The forest-based industries committed themselves to exclusively using timber from legal origins and to extending their supply of timber products from sustainably managed forests. By 2018, the target was for a portion of primary wood products (defined as sawn wood and board material) to rise from 15% to at least 35% sourced from SFM.

The main elements of the "Wood Sectoral Agreement" included:

- **Communication** and sensitization.
- **Promotion of legal sourcing** and CITES timber.
- **Targets for certified timber** with a schedule for at least 35% originating from sustainably managed forests by the end of 2018.
- **Verification** including a market survey financed by the Federal State.
- **Reporting** of promotion of sustainable forest certification and supply chain verification.

The second market survey for 2016[30] was completed in April 2018. It showed that in 2016, the share of all certified timber products on the Belgian market had increased to 59.5%. The share of certified tropical sawn wood was estimated at 25.6%. 2018 also saw a great deal of discussion as the signatory associations and the Ministry tried to reach agreement on a new sectoral agreement (*Sectoral agreement to increase the supply of certified wood products from sustainably managed forests 2019-2024*[31]). The process to form a new agreement for post-2019 is near its end – the draft agreement available for public consultation (as of April 2019[32]).

Table 7 Belgium's direct import of primary tropical timber products in 2018

Product group	Primary tropical timber product import (in Metric Tonnes)	Percentage of total EU28 import
Sawnwood	282,000	31.50%
Veneer	4,500	3.40%
Plywood	21,500	16.50%
Roundwood	31,000	30.40%
Total	**339,000**	**26.90%**

Tropical timber market

Belgium, in line with the trend observed in Europe as a whole, has experienced decreasing tropical timber imports since the economic recession starting in 2008. However, the Belgian market for tropical timber products seems to be recovering gradually in recent years. This is especially the case for sawnwood.[33] This recovery is most likely explained by the fact that the construction sector has shown strong growth recently.

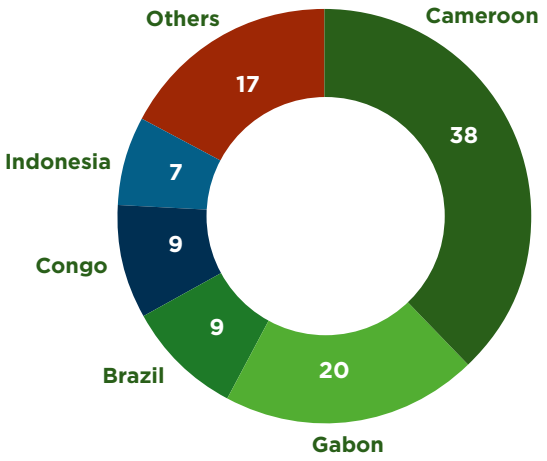
Traditionally Belgium is one of the main consumers of tropical timber in Europe. The construction and outdoor and garden sector are the two main markets for tropical timber. Each sector covers approximately 30%-40% of the market. The remainder of the market is covered by the interior design sector and smaller sectors such as trailer flooring, and yacht and shipbuilding.

Tropical timber import

With a total of 339,000 tonnes Belgium was by far the largest direct importer of tropical timber products within the EU28 in 2018. However, it is important to keep in mind that the numbers presented in the table and figure above represent imports as where they first enter the EU28. The harbor of Antwerp serves as a large transport hub. Hence, a substantial part of the import will be distributed to other European countries and thus not be consumed in Belgium (and it should be noted this analysis does not consider EU intra-trade due to the complexity and inaccuracy of such analysis).

With 282,000 tonnes, Belgium is the largest importer of tropical sawnwood, covering 31.5% of the total EU28 tropical sawnwood imports. Besides sawnwood, Belgium also imports a relatively large quantity of tropical roundwood. With 31,000 tonnes Belgium is a close second after France, accounting for over 30% of the total EU28 tropical roundwood imports. Plywood and veneer are substantially less represented in the import of Belgium.

Figure 9 Countries of origin of Belgium's direct imports of primary tropical timber products in 2018, in %.



As to be seen in figure 9 Belgium imports almost 60% of all its primary tropical timber products from Cameroon and Gabon.

Exposure to certification

Belgium, along with the Netherlands, is one of the few countries where the overall market share of verified sustainable timber products is monitored. It is estimated that Belgium's primary tropical timber market is 25% - 30% exposed to certification. This corresponds with 84,500-101,500 tonnes of primary tropical timber products. Based on these quantities, Belgium represents approximately 24% of the total primary tropical timber product imports exposed to certification in the EU28.

FLEGT Licensing

Belgium imported approximately 22,500 tonnes of primary tropical timber products with a FLEGT-license.[34] This represents roughly 7% of Belgium's total import of primary tropical timber products.[35]

5.2 France

- Country imports of tropical primary wood: **215,000 tonnes**
- Exposed to certification: **10%-15%; 21,500-32,000 tonnes**
- FLEGT Licensed exposed: **1%; 2,500 tonnes**

France as the second largest importer and biggest consumer of primary tropical timber in Europe has outsize influence over the sustainable timber market. The International Tropical Timber Technical Association (Association Technique Internationale des Bois Tropicaux, ATIBT) plays a key role in promoting sustainability and responsibility in the tropical timber industry. ATIBT has more than 100 members that include producers, suppliers, traders, service providers, NGOs, research institutes, unions, and associations across producer and consumer countries. ATIBT established a market program called "Fair & Precious" in 2015 to advocate sustainable African timber in Congo Basin in parallel to their work on legality and certifications.

ATIBT often works in close collaboration with the France's timber industry association Le Commerce du Bois (LCB). LCB has 125 members including importers, planed product manufacturers, timber merchants, and agents along the timber supply chain from raw material to processed products. In addition to growing the market and expanding the use of timber and wood products as environmentally friendly building materials, LCB also promotes responsible procurement policies and sustainable forest certification throughout the French industry.

At a national level, the French government adopted a National Strategy to Combat Imported Deforestation (SNDI) in 2018. It aims to end deforestation caused by importing unsustainable forest and agricultural products (including wood and its by-products) by 2030. This overarching national strategy impacts multiple tropical deforestation associated commodities. It is not yet clear how various commodity sectors will be coordinated to achieve its goal.

Table 8 France's direct import of primary tropical timber products in 2018

Product group	**Primary tropical timber product import** (in Tonnes)	**Percentage of total EU28 import**
Sawnwood	129,500	14.5%
Veneer	49,000	37.2%
Plywood	4,500	3.3%
Roundwood	32,000	31.5%
Total	**215,000**	**17.1%**

Tropical timber market

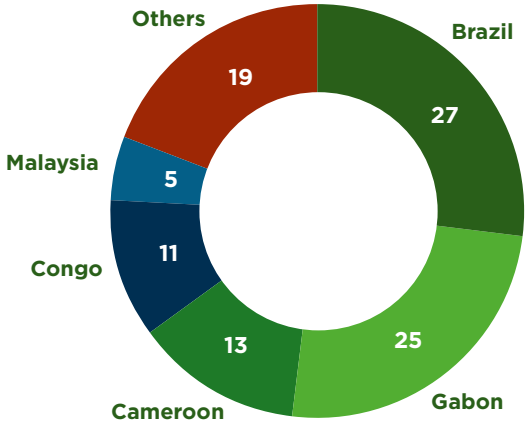
Similar Europe as a whole, tropical timber imports in France have been declining over the last decade. Imports of roundwood and sawnwood have fallen more precipitously than other categories. The decline in roundwood is a consequence of export bans on tropical roundwood in a large number of producer countries. Historically France was a significant producer of *Okoume* plywood and imported large quantities of *Okoume* roundwood for this purpose, but the sector is now much reduced. The market for veneer has remained relatively stable throughout the past 15 years.

The outdoor and garden sector is the largest market for tropical timber in France. The construction sector (especially decking and joinery products such as windows and door frames) is the second largest market. The use of tropical plywood and high-end tropical timber in the car industry and yacht and ship building is another important market. Interior design and the DIY sector also use tropical timber in France. According to the interviewee (Le Commerce du Bois, French timber trade federation) public procurement plays a minor role in the market for tropical timber in France – just 5%-10% in the construction sector, 5% in the outdoor and garden sector, and 5% in interior design.

Tropical timber import

With imports of 215,000 tonnes, France was the second largest importer of primary tropical timber products in 2018. This quantity represents 17.1% of total EU28 imports. As in all of the seven main European importing countries, sawnwood was the largest category of imported tropical timber – a total of 129,500 tonnes makes France the third largest importer of sawnwood. France leads veneer (37.2% of total EU28 veneer imports) and roundwood (31.5% of total EU28 roundwood imports) imports within the EU28.

Figure 10 France's direct import of primary tropical timber products by country of origin in 2018, in %.



Over half of the direct imports of primary tropical timber products of France originate from Brazil and Gabon.

Exposure to certification

It is estimated that 10%-15% (21,500-32,000 tonnes) of the primary tropical timber products on the French market are exposed to certification, leaving France responsible for approximately 6% of the total EU28 import of primary tropical timber products exposed to certification.

FLEGT Licensing

Approximately 2,500 tonnes of France's import of primary tropical timber products could be accompanied by a FLEGT-license. This represents just over 1% of France's total imports of primary tropical timber products.

5.3 The Netherlands

- Country imports of tropical primary wood: **189,500 tonnes**
- Exposed to certification: **65%-70%; 123,000-132,500 tonnes**
- FLEGT Licensed exposed: **22%; 41,000 tonnes**

The Dutch market currently has the highest market share of sustainably sourced timber worldwide, which can be attributed to cooperation and joint efforts by NGOs, government, certification schemes, and the forest and timber industry. The Dutch federal government has been committed to 100% sustainable procurement since 2010. The Netherlands has enacted a public procurement policy called The Procurement Criteria for Timber that promotes wood products that are sustainable and legal (the latter is mandatory). The policy aims to reach 100% sustainable timber at every level of government. The Timber Procurement Assessment System (TPAS) was established to help implement this policy. Policy coupled with pressure from NGOs, awareness raising campaigns, and multiple policy plans from the Netherlands Timber Trade Association (Vereniging Van Nederlandse Houtondernemingen, VVNH) have all contributed to the high rate of certification. The VVNH membership's timber imports account for approximately 65%-70% of the Netherlands' total imports, and it aims to achieve 65% sustainable tropical hardwood by 2020.

Tropical timber market

From 2004 to 2013 Dutch imports of tropical timber products decreased drastically. This was mostly likely due to the economic recession and is most apparent in sawnwood. However, since 2014 Dutch imports of primary tropical timber products have stabilized. Moreover, in recent years a gradual increasing trend can be detected.

In the Netherlands civil engineering and waterworks and the joinery industry are the largest tropical timber consuming sectors - both having a market share of more than 30%. The

Table 9 *The Netherlands' direct import of primary tropical timber products in 2018*

Product group	Primary tropical timber product import (in Tonnes)	Percentage of total EU28 import
Sawnwood	164,500	18.40%
Veneer	3,000	2.20%
Plywood	20,000	15.40%
Roundwood	2,000	1.90%
Total	**189,500**	**15.00%**

construction, Do-It-Yourself (DIY), and outdoor and garden sectors follow with market shares of 11% – 13%. The remainder of the market is covered by smaller industries such as yacht and ship interiors. Public procurement plays an important role in the civil engineering and waterworks sector. Government buyers also play a lesser role in the construction sector and the linked joinery industry.

Tropical timber import

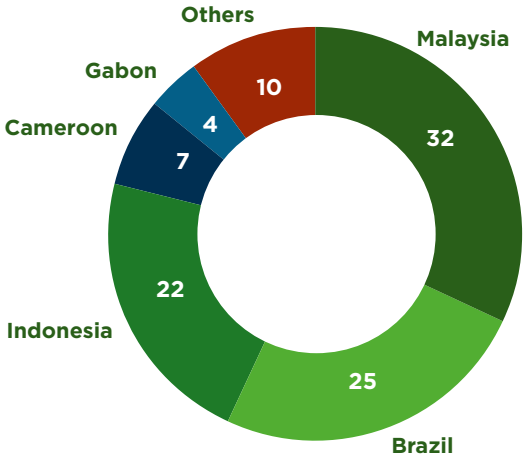
The Netherlands imported a total of 189,500 tonnes of primary tropical timber products in 2018. More than 85% of this quantity consisted of sawnwood (164,500 tonnes), covering 18.4% of the EU28 imports. Just over 10% of the Dutch direct import of primary tropical timber products is represented by plywood, totaling 15.4% of the EU28 imports. Veneer and roundwood round out the remainder, though they are rather insignificant as a percentage of EU28 imports (2.2% and 1.9% respectively). The Netherlands, like Belgium, serves as an entry point for tropical timber due to its large harbor and its experience in waterworks production. Through intra-European trade a certain share of the import quantity of the Netherlands is likely to be exported without further processing. Hence, Dutch consumption of tropical timber products is lower than the calculated import quantities.

As figure 11 shows, the Netherlands imports roughly 55% of its primary tropical timber products from Malaysia and Indonesia. Brazil was an important country of origin in 2018 as well, but this was mainly to a delay in shipments that occurred in 2017.

Exposure to certification

The Netherlands, along with Belgium, is one of the few countries where the overall market share of verified sustainable timber products is monitored by Probos. Probos has concluded its sixth and most recent study on the 2017 market and calculated 67% certification for tropical timber. The exposure to certification of the Netherlands is confidently set between 65%-70% (123,000-132,500 tonnes). At this rate of import/certification, the Netherlands is by far the largest import of certified primary tropical timber products in the EU, responsible for 35% of the total EU 28 certified imports.

Figure 11 Netherlands' direct import of primary tropical timber products by country of origin in 2018, in %.



FLEGT Licensing

An estimated 41,000 tonnes of primary tropical timber products is FLEGT-licensed. This represents roughly 22% of total primary tropical timber imports in the Netherlands.

5.4 Italy

- Country imports of tropical primary wood: **134,500 tonnes**
- Exposed to certification: **5%-10%; 6,500-13,500 tonnes**
- FLEGT Licensed exposed: **5%; 6,500 tonnes**

Italy is the fourth largest primary tropical timber importer in EU, however sustainability is not a major priority for tropical timber imports. Timber related sustainability discussions are mostly focused on European Union Timber Regulation. Italy has a public procurement policy for paper and furniture, but the level of enforcement is unclear. Italy's trade association for the paper industry representing pulp, paper, and board manufacturing companies (Assocarta) and the Italian Federation of Wood Furniture, Cork, and Furnishing Industries (Federlegno-Arredo) both promote the use of legal timber. Awareness around sustainable tropical timber is limited.

Tropical timber market

Between 2007 and 2018, Italy's tropical roundwood and sawnwood imports decreased by 70% and by 55% respectively. However, since 2015 the Italian market for primary tropical timber products seems to be stabilizing, and even shows signs of recovering with minor increases in import figures. This increase is mainly driven by growing imports from Cameroon and Indonesia.

The fastest growing and most important market for primary tropical timber products in Italy is the outdoor and garden sector. Interior design is the second largest market, and the remaining market consists of a combination of smaller markets such as yacht and ship building and water works. The construction sector is not specifically mentioned as an important sector for tropical timber in Italy and its market share is decreasing.

Tropical timber import

With a total direct import of 134,500 tonnes of primary tropical timber products, Italy accounts for over 10% of total EU28 direct

Table 10 Italy's direct import of primary tropical timber products in 2018

Product group	Primary tropical timber product import (in Tonnes)	Percentage of total EU28 import
Sawnwood	78,500	8.80%
Veneer	32,500	24.80%
Plywood	13,500	10.40%
Roundwood	10,000	9.70%
Total	**134,500**	**10.70%**

imports. Although sawnwood represents the largest product group in absolute numbers, veneer stands out – the 32,500 tonnes imported represent approximately 25% of the total EU28 direct imports of tropical veneer products. Other product groups imported by Italy are substantially less significant on an EU28 scale, covering roughly 10% of the EU28 market each.

Figure 12 indicates that Italy imports its primary tropical timber products mainly from African countries such as Cameroon, Gabon, and Côte d'Ivoire. However, since the recovery of the market in 2015, a gradual shift towards Asian countries such as Indonesia and Malaysia is evident.

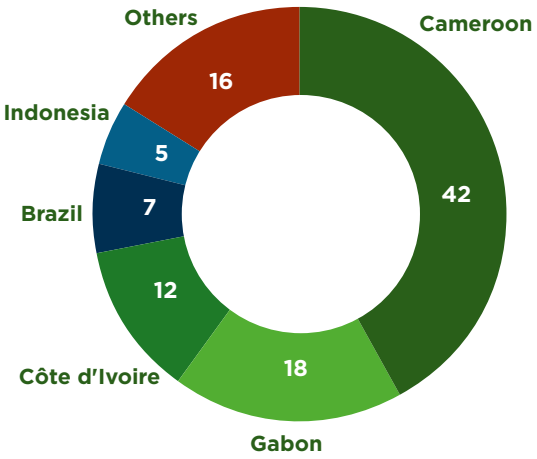
Exposure to certification

Given that demand for certified tropical timber in Italy is known to be low and public procurement plays just a small role in demand, it is no surprise that the market share exposed to certification of Italy's primary tropical timber products is relatively low with a share between 5%-10%. This results in an import quantity exposed to certification ranging from 6,500-13,500 tonnes. This equals approximately 2% of the total import quantity exposed to certification in the EU28 as a whole.

FLEGT Licensing

Currently Italy imports approximately 6,500 tonnes of FLEGT-licensed timber. This represents roughly 5% of Italy's total import of primary tropical timber products.

Figure 12 Italy's direct import of primary tropical timber products by country of origin in 2018, in %.



5.5 United Kingdom

- Country imports of tropical primary wood: **106,500 tonnes**
- Exposed to certification: **40%-45%; 42,500-48,000 tonnes**
- FLEGT Licensed exposed: **37%; 39,000 tonnes**

The UK was the second largest net importer of forest products in 2017, behind China.[36] Imports accounted for 82% of the timber products consumed in the UK in 2015.[37] The UK Timber Trade Federation (TTF) is the foremost membership body for the timber supply chain. Members constitute timber importers, merchants, agents, and manufacturers and account for around two-thirds of the UK timber industry. TTF has established the Responsible Purchasing Policy (RPP), a mandatory requirement for membership in the TTF. It places due diligence, sustainable sourcing, and supply chain management at the core of member's activities.

All central government departments, their executive agencies, executive non-departmental public bodies, non-ministerial government departments in England, and their suppliers must comply with the Timber Procurement Policy (TPP). The policy states that the specified public sector procurers must buy all timber and wood-derived products from only independently verifiable legal and sustainable sources, including Forest Law Enforcement, Governance and Trade (FLEGT) licenses,[38] for use on the government estate. The Timber Procurement Advice Note (TPAN)[39] and associated documents set out the requirements of the UK government's Timber Procurement Policy (TPP). The UK has a developed market for verified sustainable timber. Buy-in from specifiers and consumers around sustainability and the scale of the UK market suggest there is much room to grow UK's market share of sustainable tropical timber and create significant impacts.

Tropical timber market

As in all European countries, import of primary tropical timber products in the United Kingdom suffered in the wake of the global economic recession. However, since 2013 the United Kingdom seems to be recovering remarkably fast in comparison to its fellow

Table 11 The United Kingdom's direct import of primary tropical timber products in 2018

Product group	Primary tropical timber product import (in Tonnes)	Percentage of total EU28 import
Sawnwood	60,500	6.8%
Veneer	50	0.0%
Plywood	43,500	33.3%
Roundwood	2,500	2.3%
Total	**106,500**	**8.5%**

European countries. This recovery is mainly seen in plywood products. Although imports of sawnwood products are also recovering, this is happening at a lower rate relative to plywood.

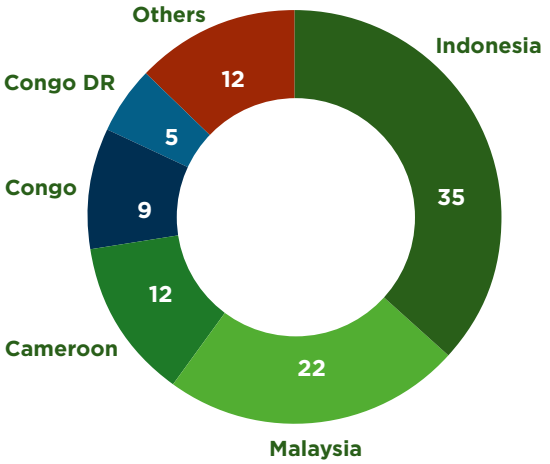
The outdoor and decking sectors are the two main markets for tropical primary timber products in the United Kingdom. Interior design also consumes tropical timber products, though to a far lesser extent. There are a number of smaller sectors consuming tropical timber products such as waterworks, ship and yacht building, and car interiors.

According a study[40] by the FLEGT Independent Market Monitoring (IMM), public procurement accounts for 20%-50% of the total purchase of tropical timber products in the United Kingdom.

Tropical timber import

United Kingdom is well known for its flourishing plywood market. This is also reflected in the import of primary tropical timber products. Over 40% of the United Kingdom's total import of primary tropical timber products consists of plywood (43,500 tonnes). The United Kingdom imports one third of all tropical plywood products coming to the EU28 through direct imports from producer countries, and is by far the biggest importer of tropical plywood. Besides plywood, the United Kingdom imports mainly sawnwood (60,500 tonnes). Although in absolute numbers sawnwood imports are larger than plywood, as a share of EU28 imports they cover just 6.8% of the total EU28 direct imports of sawnwood. With very small direct imports of roundwood (2,500 tonnes) and veneer (50 tonnes), the total import of the United Kingdom's primary tropical timber products is 106,500 tonnes. This equals roughly 8.5% of the total direct import of primary tropical timber products by the EU28.

Figure 13 The UK's direct import of primary tropical timber products by the country of origin in 2018, in %.



Almost 60% of the imports by the United Kingdom originate from Indonesia and Malaysia.

Exposure to certification

With an estimated 40%-45% of the market exposed to certification, the United Kingdom has a relatively large share of primary tropical timber products exposed to certification (42,500-48,000 tonnes). As a result the United Kingdom accounts for roughly 12% of the total EU28 direct imports of primary tropical timber product exposed to certification. This makes the United Kingdom the third largest importer of primary tropical timber products exposed to certification in the EU28.

FLEGT Licensing

With Indonesia as the largest source UK imports, the quantity of timber with a FLEGT-license is relatively high, estimated at 39,000 tonnes. This represents roughly 37% of the total import of primary tropical timber products of the United Kingdom.

5.6 Germany

- Country imports of tropical primary wood: **89,000 tonnes**
- Exposed to certification: **30%-35%; 26,500-31,000 tonnes**
- FLEGT Licensed exposed: **50%; 44,500 tonnes**

Since 2008, tropical timber imports have dropped to 7 percent of all German timber imports.[41] The German Timber Trade Federation (GD Holz) consists of 900 member companies from wholesaling, retailing, foreign trade, round timber trade, and veneer business sectors. It promotes FSC and PEFC certified timber.

Tropical timber market

The market for tropical timber in Germany has been decreasing for more than a decade. Consumer opinion is the leading reason for this downward trend. Tropical timber is associated with deforestation and the assumption is that it should not be used for that reason. Although the general market is shrinking there are some markets that show positive trends. Imports from countries in Southeast-Asia have increased, a reflection of a relatively large increase in direct imports of plywood. Import of tropical roundwood shows a rapid decrease over the past few years, a trend shared in the entire EU28 due to the export bans on tropical roundwood in the majority of producer countries.

In Germany the main tropical timber market is the outdoor and garden sector. A combination of smaller sectors such as yacht, ship, and car interiors, transport trailer production and furniture come in second place. Interior design comes in third place and the construction sector is the smallest market for tropical timber products in Germany. Public procurement plays a role in approximately 10% of the timber sales to the outdoor and garden sector and in 20% of the sales to the construction sector.

Table 12 Germany's direct import of primary tropical timber products in 2018

Product group	Primary tropical timber product import (in Tonnes)	Percentage of total EU28 import
Sawnwood	63,000	7.0%
Veneer		2.4%
Plywood	22,500	17.0%
Roundwood	500	0.6%
Total	**89,000**	**7.1%**

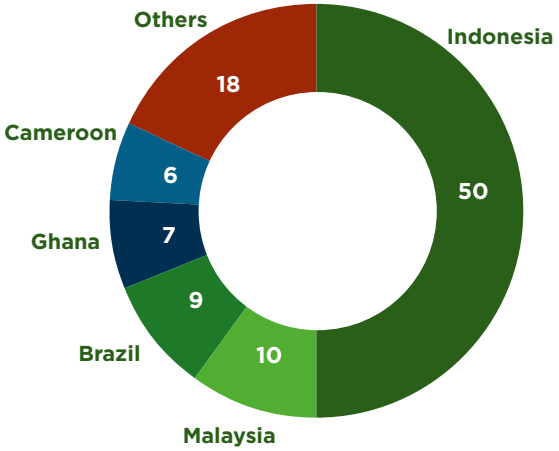
Tropical timber import

Germany imported a total of 89,000 tonnes of primary tropical timber products directly from tropical producer countries in 2018. Put into EU28 perspective, Germany accounts for roughly 7% of the total direct import of primary tropical timber products. With 63,000 tonnes, sawnwood is the most abundant product group imported, followed by plywood (22,500 tonnes), veneer (3,000 tonnes) and roundwood (500 tonnes). When related to the total EU28 import of primary tropical timber products, plywood is the most significant product group imported by Germany with 17% of the total EU28 direct imports of tropical plywood. The German direct import of sawnwood only accounts for 7% of the EU28 total, and veneer and roundwood are even less substantial with 2.4% and 0.6% respectively.

These numbers seem quite small for a country the size of Germany, and it is likely that Germany imports a substantial amount of its primary tropical timber products through intra-European trade flows (via Netherlands & Belgium for example). Due to the nature of this study, the intra-European trade flows have not been accounted for. Therefore, the import numbers of Germany presented in table 10 are most likely an underestimation of the total imports. Interviews suggested that the EU-intra trade has increased after the introduction and enforcement of the EU Timber Regulation. Interviews also suggest that substitution by other materials (wood and non-wood) have also contributed to a decline in the share of tropical wood in the market.

Indonesia and Malaysia account for 60% of the total German direct import of primary tropical timber.

Figure 14 Germany's direct import of primary tropical timber products by country of origin in 2018, in %.



Exposure to certification

Germany has an estimated market share exposed to certification of 30%-35%, corresponding to a total certified tropical timber quantity of 26,500-31,000 tonnes. This quantity represents 7.5% of the total direct import of certified primary tropical timber of the EU28.

FLEGT Licensing

In 2018 Germany imported an estimated 44,500 tonnes of primary tropical timber products with a FLEGT-license. This represents roughly 50% of Germany's total import of primary tropical timber products.

5.7 Spain

- Country imports of tropical primary wood: **61,000 tonnes**
- Exposed to certification: **2.5%-7.5%; 1,500-4,500 tonnes**
- FLEGT Licensed exposed: **100 tonnes**

Spain's tropical timber imports peaked in 2008 and never recovered – largely due to substitution by European timber species. The Plan for Ecological Public Procurement[42] established in February 2019 makes direct reference to timber and wood products. In green public procurement, several municipalities, most prominently Madrid and Barcelona, and regional governments are frontrunners. The Spanish Timber Trade Federation (AEIM) promotes the use of sustainably sourced tropical timber and also offers a due diligence tool for timber buyers to enable EUTR compliance. Besides AEIM, the Trade for Development (COPADE) Foundation also works on the fair and sustainable consumption of timber products. COPADE established the Spanish fair timber certification system, Madera Justa.[43] They also partner up with large Spanish and multinational companies like Leroy Merlin, one of the first companies to sell Madera Justa certified timber.

Tropical timber market

The Spanish tropical timber sector is still recovering from the economic recession, and a combination EUTR risk aversion and consumer opinion have resulted in a weak market position for tropical timber.

Interior design, especially interior flooring, is an important market sector for tropical timber in Spain. Joinery products for interior uses are another important market segment. The outdoor and garden sector is a growing market in Spain, especially decking. The construction sector is recovering from the recession and as a consequence the demand for tropical timber is slowly picking up.

Tropical timber import

With a total of 61,000 tonnes, Spain is the smallest direct importer of the seven main

Table 13 Spain's direct import of primary tropical timber products in 2018

Product group	Primary tropical timber product import (in Tonnes)	Percentage of total EU28 import
Sawnwood	39,000	4.4%
Veneer	19,500	15.0%
Plywood	500	0.2%
Roundwood	2,000	2.1%
Total	**61,000**	**4.9%**

importing countries of primary tropical timber products in the EU28, accounting for just under 5%. Sawnwood and veneer are the main product groups imported by Spain with 64% and 32% of the total Spanish primary tropical timber product import respectively. Roundwood and plywood form the remaining 4% of the import. Spain imports 15% of the EU28 total tropical veneer products, making it the third largest importer of tropical veneer behind France and Italy. Other product groups are less significant when compared to EU28 totals, ranging from 4.4% (sawnwood) to 0.2% (plywood).

The fact that Spain imports substantial amounts of primary tropical timber products from countries with a very low certified productive natural and semi-natural forest area (Brazil, Côte d'Ivoire, and Ghana) explains the low certified market share.

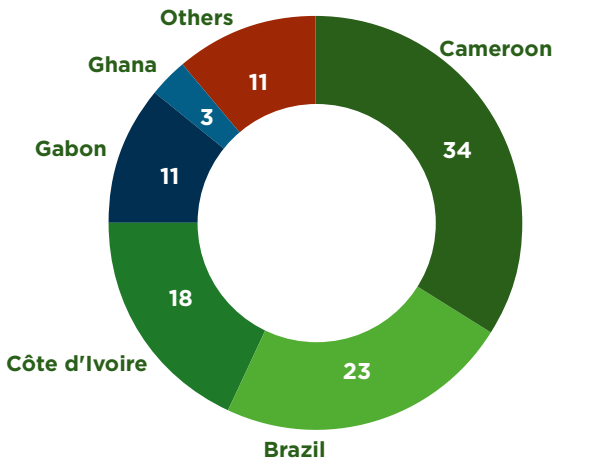
Exposure to certification

Spain has an estimated market share exposed to certification of 2.5%-7.5% (1,500-4,500 tonnes), the lowest of the seven main tropical timber importing countries of the EU28. This is just 0.4% of the total imported primary tropical timber products exposed to certification in the EU28.

FLEGT Licensing

Spain imports a very small amount of primary tropical timber products from Indonesia – hence only 100 tonnes of primary tropical timber products is estimated to enter the Spanish market with a FLEGT-License.

Figure 15 Spain's direct import of primary tropical timber products by country of origin in 2018, in %.



6 Recommendations

In 2018, between 25% and 32% of the primary tropical timber imported into the EU28 was exposed to sustainable timber certification. This number is far below the STTC goal of 50% certification by 2020 and demands decisive action by all industry stakeholders. The seven main importing countries (Belgium, France, the Netherlands, Italy, the United Kingdom, Germany and Spain) together account for approximately 90% of total EU28 imports. The concentration of imports in these seven countries provides a strong lever for change. A rapid shift towards sustainable timber could have wide-ranging consequences for the world's tropical forests – if the EU28 sourced 100% verified sustainable, it could positively impact an additional 11.7 to 13.4 million hectares of tropical forest.

The benefits of investing in sustainable timber are self-evident. We know that sustainably managed forests have the potential to change local livelihoods, conserve crucial ecosystems, and combat climate change. Sustainably managed forests prevent deforestation and mitigate greenhouse gas emissions. They maintain ecosystems for at risk species and lead to increased rights for those individuals who most depend on them. And importantly, better conserved forest and habitats plus more efficient land-use has the potential to deliver up to 30% of the climate solutions needed by 2030,[44] greatly supporting the Paris Climate Treaty.

Sustainable forest management in the tropics faces many challenges, but one of the critical concerns is the insufficient market demand demonstrated in this report. Impacted by a range of factors from consumer impressions of tropical timber to fierce competition from other building materials like composite, we need a fundamental shift in market demand within EU28 and beyond to drive conversion to sustainable forest management practices.[45]

Beyond demand, efforts to improve governance in developing countries, and increased climate funding for forest management projects – forests and land-oriented climate solutions receive only 3% of climate funding[44] – are key challenges to the growth of SFM.

In order to achieve the full potential of sustainable forest management, governments, NGOs, and the private sector in EU timber importing countries must recommit to 100% sourcing of verified sustainable tropical timber, and make concerted annual efforts to increase sustainable imports. Every sector involved in tropical timber has a role to play – from import or procurement policies to promoting the use of sustainable tropical timber as a sustainable material.

Civil society and knowledge institutions

Tropical timber has a persistent negative image despite it's potential to play an important role in reducing deforestation and forest degradation through sustainable forest management. These essential positive aspects need to be highlighted – we must change public opinion on sustainable tropical timber.

We especially call upon civil society in countries with low sustainable sourcing rates to support the private sector in increasing these rates. Tropical timber must be promoted as a sustainable building material. The development of a harmonized Life Cycle Analysis (LCA) methodology can contribute to promoting the use of certified tropical timber by demonstrating the carbon mitigation benefits of timber.

Increasing synergies between EUTR/FLEGT license and forest certifications is also an important area for growth. One system is not a substitute for the other – FLEGT is essential in improving the baseline in producing countries and should be recognized as such – and

Photo Mark van Benthem, Probos

increasing feedback from both systems to power a growth in SFM is essential.

Private sector

While it is clear that lack of supply may be contributing to low adoption in some parts of the EU, the fact that responsible uptake sits at just 28.5% after two decades of debate suggests there is also a huge lack of demand.

To the trade associations, you are an important facilitator in this process. While in many countries great progress has been made, we call upon you to continue supporting your members towards increasing purchases of sustainable tropical timber.

We call upon the buyers in Europe to purchase more verified sustainable tropical timber, to promote it to your customers, and to ensure your sales staff knows why this is important. Chain of Custody and brand certified products with certifier logos must be promoted – growth in sales of these products will significantly impact the world.

Construction and building sectors must counter the decreasing use of sustainable timber in construction by educating customers on its value as a uniquely beautiful and sustainable building material.

Prescribers should specify timber quality and requirements rather than species, which can encourage the use of Lesser Known Timber Species.

Government

Governments, the private sector alone cannot make this transition. As major procurers, enforcers of legislation, and facilitators of international relations, governments have a major role to play in growing sustainable timber.

While tropical timber procurement policies are advanced in many countries, implementation of these programs must be strengthened. The lack of monitoring and the voluntary nature of procurement at a local level are key issues to be addressed. In many cases central and local governments have patchy policies on timber product procurement that leave large loopholes. The timber procurement policy should be consolidated and clarified across governmental levels. We need to ensure that large public or semi-public building works are done sustainably. As a large buyer and important supply chain player, practice should match theory for public procurement of sustainable tropical timber – governments must play an important role in increasing demand for sustainable tropical timber.

Sustainable tropical timber is predicated on successful implementation of legal frameworks around timber. As a result, EUTR enforcement is key to the growth of sustainable tropical timber. A few European ports are known for imports of illegal tropical timber, creating an uneven playing field. Improvement of EUTR implementation is a key point in the recent EU Communication on Deforestation, containing various analyses on how individual countries can improve.[46]

In already existing partnerships with producing and manufacturing countries, governments should discuss how sustainable production of tropical timber can be supported. Additionally, imports of secondary tropical timber products are increasing, mandating dialogue with countries such as China and Vietnam that are importing and re-exporting timber in various forms.

All Stakeholders

To all stakeholders in the timber sector, data and transparency help us understand where to provide support. Your collaboration is essential to enable transparency and monitoring of sustainable tropical timber. This monitoring report is the first of its kind in the sector and relies on many of you to provide input. The aim is to jointly improve our data collection through cooperation across various institutions. We thank those that have worked with us and call on all to support this process.

Market demand for sustainable tropical timber needs to become mainstream. Through intensified European ambition and joint public-private actions we have the chance to protect the world's tropical forests.

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Photo Mark van Benthem, Probos

Annex 1

Detail of the steps to calculate an estimate of exposure to certification and recommendations for methodology improvement

Step 1: Calculating EU28 tropical timber product import

Comext import data are combined with Internal Probos data on Tropical Countries and Tropical Timber Products in order to generate an overview of trade flows exclusively of primary Tropical Timber products. The Comext data contains both intra- and extra-EU28 trade flows, therefore a selection was made to detect only imports of tropical timber products from outside EU28 countries.

This means EU member state *intra-trade is excluded* from the analysis. It should be noted that indirect imports are significant for specific products and some EU countries, for example tropical hardwood plywood imported into the UK, a large proportion of which is manufactured in China.

Since the exposure to certification method *can only be used for direct trade relations*, imports of tropical timber via third countries, for example China, are *outside the scope*. As direct imports cover 85% of all imports of primary tropical timber products by the EU28, the consequences of the absence of the indirect trade are considered to be limited.

In further stages of the calculation Comext data are combined with Global export data of Tropical Timber Products of the ITTO. Hence, tropical timber products import of EU28 is calculated solely for ITTO producer countries.

Step 2: Determining productive forest area in tropical countries

The focus of the study is solely on natural and semi-natural tropical forests (we have actively sought to exclude material from plantations). In order to determine the productive area of natural and semi-natural tropical in the ITTO tropical timber producing countries, several data sources have been used. The main source is FAO data on *Industrial Concessions Areas*. If available from this source, it is assumed these areas represent the productive forest area within a specific country. Where not available, FAO 'production forest area' (as stated in FRA 2015) as "productive forest" was used.

To further refine the overall area of production forests, the areas of productive forest have been further adjusted. The published area for natural or semi-natural tropical forests contain significant areas within them that are not being exploited or allocated to concessions or other forest management units, and these also include significant areas that are not in production (such as riparian zones, high conservation value zones (HCV's), roads, villages, rivers, protected areas, buffer zones etc.). Therefore it is assumed that a modest correction of -20% would reduce the overestimation of the productive forest area. Specifically, 20% of the productive area figure is deducted to generate a more realistic productive area that is actually available for wood supply.

Step 3: Determining certified forest area in tropical countries

The data available on the FSC and PEFC websites (facts and figures sections, gathered in May 2019), is used to determine the certified area of natural and semi-natural forests within all tropical countries. A distinction has been made between FSC only, PEFC only and Dual certified areas, to avoid double counting. Given the focus of the study, FSC and PEFC certified plantation areas have been deducted from certified forest areas. The analysis of product scope (for example where pine or eucalyptus are the primary species) plus

a review of audit reports has allowed the deduction process to be conducted. The division of ITTO producer countries into continental regions is presented in Annex 2.

Step 4: Share of forest area certified in tropical countries

Dividing the certified natural and semi-natural forest area with the total productive forest area, results in the % of the total productive forest area that is FSC and/or PEFC certified per country.

Step 5: Calculate total export of tropical Countries exposed to certification

Using the ITTO export data for tropical timber products (converted to tonnes), the total export per tropical ITTO Producer country can be calculated. Subsequently, this quantity is multiplied with the % of the total productive forest area which is FSC and/or PEFC certified. This calculation results in a total export quantity of tropical timber products exposed to certification per country.

Step 6: Calculate export to EU28 exposed to certification

Backed by (limited) data from various sources, and GTF expert knowledge and field experience, it is assumed that between 50 to 80% of all certified tropical timber is destined for Europe, fitting existing trade flows. This assumes that European markets are the most demanding of certified products and that tropical producers who are certified tend to be looking to and be led by their European customers. It is appreciated that this is not the case in all tropical producer countries, but there is some evidence, especially from the Congo Basin and South East Asia, that suggests that this is the case.

Multiplying the total export of tropical timber products per tropical country with 50% or 80%, the lower- and upper boundary of the export quantity to the EU28 exposed to certification is determined. Comparison of this '*EU28 exposed to certification export quantity'* figure to the `*Total export to EU28 per tropical country'*, an exposure to certification figure is generated for each tropical country specifically for exports to EU28.

However, in some cases the total export pool exposed to certification of a certain tropical country exceeded the total EU28 import from that country. In this case, it is assumed that 50-90% of the *EU IMPORT* from that country is certified.

Step 7: Validating the outcome for EU28 and 7 main tropical timber importing countries

Interviews with some of the main actors in main EU tropical timber consuming countries, (limited) existing data and GTF and Probos internal knowledge, helped validate the outcome of the exposure method.

The range of certified tropical timber imports is estimated for the 7 main EU28 tropical timber importing countries via Comext import data. The 7 main importing EU countries represent over 90% of the total primary tropical timber imports of the total EU28 region. Multiplying the share of certified tropical timber import of these 7 EU28 member states with their total tropical timber imports from ITTO producer countries provides an estimation of certification exposure, not source-based but receiver-based.

Step 8: Determining the additional |required forest area to be certified to sustain 100% certified EU28 demand of tropical primary timber products

Comext import data are used to determine the total (current) demand for primary tropical timber by the EU28. These data are expressed in metric tonnes and are recalculated

into roundwood-equivalents (RWE) using international conversion factors in order to make it possible to relate the import figures to the harvested quantities within the producer countries.

Subsequently, for each continental region the total import quantity and share of certified quantity is calculated. The share of certified quantity for each region is calculated with the use of the exposure to certification figures per country. The individual country figures were used to generate a result that best reflects the actual tropical timber trade flows between the EU28 and tropical timber producer countries. Shares of certified and non-certified quantities have been calculated for both the lower (50%) and upper (80%) boundaries of exposure to certification (see step 6).

The average yield per hectare of certified sustainable forest management is needed for each of the identified continental regions to be able to calculate the forest area needed to supply the total EU28 demand. An estimate of this yield for each region has been calculated within this project. For this calculation (limited) available data on harvest levels in certified concessions in tropical producer countries are used. These data were derived from certification audit reports, questionnaires amongst concessionaires, and regional and national offices of the FSC and the PEFC. Based on these data, a weighted average harvest level (based on the actual harvest volume within the total certified forest area in a year) in certified forest concessions per region is calculated, taking into account rotation cycles. This resulted in the following average yields: Africa: 0.27 m^3/ha/yr; Latin America: 0.40 m^3/ha/yr; Asia: 0.56 m^3/ha/yr.

To account for the fact that not the entire harvested volume is of export quality it is assumed that 75% of the yield meets these exports requirements.[47] The average yields for each region are adjusted accordingly and have subsequently been used to calculate the additional forest area to meet 100% of the 2018 demand of certified primary tropical timber products of the EU28. A similar analysis has been performed for the 7 main EU tropical timber importing countries.

Note: The results differ significantly from estimates made in the paper '*How sustainable are Europe's imports*'[48] due to a number of reasons. Firstly, the total EU28 tropical timber product import volumes have increased between 2016 and 2018. Furthermore, this study allowed for more research on *actual* harvest levels in certified concessions in the different continental regions. Finally, due to the elaborate analysis performed we were able to map country specific trade flows of tropical timber products alongside country-specific exposure to certification data of tropical countries for export to the EU28. It is concluded that the results obtained are more comprehensive than previous estimates with a broader range of inputs combined with the exposure methodology. 'Ground truthing' of the raw trade data adds considerably to the accuracy whilst the exposure method allows wider coverage of data.

Annex 1

Recommendations for improving methodology and data collection

- In order to improve the methodology, improving data availability and transparency is required. This concerns both data providers such as FAO and the ITTO, but also FSC and PEFC international. The main focus should be placed on:
  - Productive area in tropical countries: where commercial harvesting does actually take place
  - Certified tropical forest area distinction between (semi)natural forests and plantations
  - Harvesting yields in certified and non-certified tropical forests
  - Detailed information on most important markets and principal buyers of tropical timber
  - Quantitative monitoring on shares of certified material within trade flows to EU companies.
- **Collaboration** between all actors is essential to increasing understanding of markets. International organizations such as ITTO and FAO, certification schemes like FSC and PEFC international (including national offices), initiatives such as the STTC and ATIBT, and trade associations such as the European Timber Trade Federation (ETTF) and national timber trade associations must work together to create a more comprehensive market snapshot. This will not only result in capacity building and a better estimation of the market share of certified sustainable timber, but in better data concerning the production of tropical timber and trade in related products as well.
- **National timber trade associations** within EU28 countries are advised to structurally gather data on tropical timber imports, primary consumer sectors and buyers, and market shares of certified timber. The latter at least for the largest importers. These data are needed to focus the efforts to stimulate demand of certified tropical timber on those markets and buyers that lag behind.
- **Repeating this study** on a regular basis using a similar approach to identify scope for action. Increasing participation rates and data quality will build on currently established momentum and will support the collaboration mentioned above.
- Import statistics show that EU28 import of **secondary tropical timber products** is increasing. It is therefore recommended to expand the scope of the study and also include these secondary tropical timber products. However, since these secondary products are often manufactured in different countries than where the timber is harvested, the exposure to certification method might not be the most suitable methodology for estimating the market share within these product groups.
- **Expand the scope of the study** to include intra-European trade and transit trade to Europe.
- Closer analysis (building on the work with ATIBT) should be undertaken in other key producer countries to identify data on export markets. This data will allow us to refine the accuracy of assumptions.
- For the **carbon impact** the certification frameworks themselves could also play a significant role to improve data quality in this area if they established specific requirements for low carbon impact forestry and explicitly required, as part of the auditing process, regular monitoring of changes in the carbon stock of certified forest areas.
- There is a need to apply a **single harmonized Life Cycle Analysis** (LCA) methodology to assess the carbon footprint of the full range of certified wood products imported from the tropics.
- Any such analysis should seek to assess

the **carbon footprint of a representative sample** of certified suppliers, both with respect to regions of origin and product coverage.

- Any such analysis should also include a detailed commentary, using best available data, on the extent to which, and the methodologies by which, a specific forest carbon debt or credit may be allocated to certified forest products on a unit volume or tonnage basis.
- A robust assessment of carbon impacts would also require **more comprehensive data** than currently available on the volume, species range, moisture content, and size specification of the certified tropical hardwoods imported into the EU. Any far-reaching attempt to allocate credits for avoided deforestation and forest degradation should be based on more detailed data at national, and where necessary sub-national level, in tropical countries relating to:
  - **o** the specific types of forest that are certified;
  - **o** the impact of different rotations and harvesting intensities on both production volume and carbon emissions;
  - **o** the emissions from both above-ground biomass and soils associated with forest degradation and deforestation;
  - **o** the level of risk of such degradation and/or deforestation in the absence of certification;
  - **o** the percentage of land converted to different uses and the emissions;
  - **o** and the direction of trade of the products from certified forests.

Annex 2

Product coverage of primary tropical timber products

Product group	Veneer	Sawnwood		Roundwood	Plywood
HS-Code	44089015*	44092200	44072960	44039900*	44123290
	44089035*	44092910*	44072983	44039995*	44129410*
	44089085*	44092991*	44072985	44034100	44129930*
	44089095*	44092999*	44072995	44034910	44129950
	44083111	44079927*	44072996	44034935	44123110
	44083121	44079940*	44072997	44034985	44123190
	44083125	44079990*	44072998	44034995	
	44083130	44079996	44072710	44042000*	
	44083915	44079998*	44072791		
	44083921	44072810	44072799		
	44083930	44072891	44072210		
	44083955	44072899	44072291		
	44083970	44072110	44072299		
	44083985	44072191	44072610		
	44083995	44072199	44072630		
		44072510	44072650		
		44072530	44072690		
		44072550	44069200*		
		44072590	44061000*		
		44072915	44069000*		
		44072920	44061000*		
		44072925	44069000*		
		44072945			

* These products have only been included when directly imported from Tropical timber producing countries. This has been done due to the fact that these products consist of unspecified (non-coniferous) timber.

Annex 3

Division of ITTO producer countries in continental regions

Region	Africa	Asia	Latin America
Country	Benin	Cambodia	Brazil
	Cameroon	Indonesia	Colombia
	Central African Republic	India	Costa Rica
	Congo	Malaysia	Ecuador
	Côte d'Ivoire	Myanmar	Guatemala
	Democratic Republic of the Congo	Papua New Guinea	Guyana
	Gabon	Philippines	Honduras
	Ghana	Thailand	Mexico
	Liberia	Viet Nam	Panama
	Madagascar	Bolivia (Plurinational State of)	Peru
	Mozambique		Suriname
	Nigeria		Trinidad and Tobago
	Togo		Venezuela (Bolivarian Republic of)

Annex 4

Conversion factors

Product Group	Tonne to m^3 product	m^3 product to m^3 RWE
Veneer	2.23	1.8
Sawnwood	1.46	2.21
Roundwood	1.11	1
Plywood	1.93	2.3

Footnotes

1 Participation does not necessarily imply endorsement of the results of this study by the listed organisations

2 http://probos.nl/images/pdf/rapporten/EU_market_share_of_verified_sustainable_tropical_timber_IDH_STTC_Probos_report_June_2018.pdf

3 International Tropical Timber Organisation (2018) *Biennial review and assessment of the world timber situation 2015-2016*. ITTO, Yokohama, Japan. ISBN 978-4-86507-035-4

4 Data from FLEGT Independent Market Monitor. www.flegtimm.eu/index.php/eu-market-oveview

5 Data from FLEGT Independent Market Monitor. www.flegtimm.eu/images/annual_reports/VPA-Partners-in-EU-Timber-Trade-2017-1.pdf

6 Data from FLEGT Independent Market Monitor. Download of `EU member imports of all wood products in HS 44 from VPA partner countries: quantity in metric tonnes'. http://www.stats.flegtimm.eu/

7 https://www.wri.org/blog/2019/04/world-lost-belgium-sized-area-primary-rainforests-last-year

8 For example:
Miteva DA, Loucks CJ, Pattanayak SK (2015) *Social and Environmental Impacts of Forest Management Certification in Indonesia*. PLoS ONE 10(7):e0129675.https://doi.org/10.1371/journal.pone.0129675
Putz *et al* (2012) *Sustaining conservation values in selectively logged tropical forests: the attained and the attainable* Conservation Letters 0 (2012) 1–8
Agus *et al* (2018) *Effects of logging on wildlife communities in certified tropical rainforests in East Kalimantan, Indonesia*. https://doi.org/10.1016/j.foreco.2018.05.054
Panlasiguia *et al* (2018), *Impacts of certification, uncertified concessions, and protected areas on forest loss in Cameroon, 2000 to 2013*. https://doi.org/10.1016/j.biocon.2018.09.013

9 The TOR also stated a need to: "*Develop and test the methodology for gathering data on secondary or processed tropical timber flow to the European market, mainly from Asia*". This was not considered due to budget imitations.

10 EU Communicatoon on `Stepping up EU Action to Protect and Restore the World's Forests` July 2019. https://ec.europa.eu/environment/forests/eu_comm_2019.htm

11 FAO (2004) *Reduced impact logging in tropical forests: literature synthesis, analysis and prototype*

12 Burivalova, Z. Hua, F. Koh, L. Garcia, C. & Putz, F (2016) *A Critical Comparison of Conventional, Certified, and Community Management of Tropical Forests for Timber in Terms of Environmental, Economic, and Social Variables*. Conservation Letters

13 Spilsbury, M.J. (2005): The sustainability of forest management: assessing the impact of CIFOR criteria and indicators research. Impact Assessment Papers no. 4. Bogor, Indonesia: CIFOR.

14 Cerutti P.O, Lescuyer G, Tsanga R, Kassa S.N, Mapangou P.R, Mendoula, E.E, Missamba-Lola, A.P, Nasi R, Eckebil P.P.T and Yembe R.Y. 2014. *Social impacts of the Forest Stewardship Council certification: An assessment in the Congo basin*. Occasional Paper 103. CIFOR, Bogor, Indonesia.

15 http://www.europeansttc.com/tropicaltimber/

16 The consortium is led by the Global Timber Forum (GTF), with partners chosen to enhance links to other complementary initiatives addressing similar challenges as well as providing a team with a wide range of skills, networks, and expertise.

17 Comext is Eurostat's reference database for detailed statistics on international trade in goods.

18 Chapter 44 from the Harmonised System (HS) an international nomenclature for the classification of products.

19 FLEGT Independent Market Monitoring (IMM)

20 www.probos.nl/images/pdf/rapporten/Duurzaam_geproduceerd_hout_op_de_Nederlandse_markt_in_2015_Stichting_Probos_EINDRAPPORT.pdf

21 http://probos.nl/images/pdf/rapporten/Rap2018_Gecertificeerd_hout_op_de_Belgische_markt_in_2016.pdf

22 For example the value of tropical wood products imports to the EU decreased from $ 6.5 billion in 2004 to less than $4 billion in 2014. Source: ITTO (2015). *Europe's changing tropical timber trade. Baseline report of the Independent Market Monitoring initiative.* http://www.flegtimm.eu/images/baseline_report/TS45%20Summary%20web%20[en].pdf.

23 http://flegtimm.eu/index.php/newsletter/imm-surveys-interviews/109-imm-survey-substitution-economic-crisis-and-diversion-of-supply-main-drivers-of-eu-timber-market-decline

24 http://flegtimm.eu/index.php/20-news/project-news/143-dutch-and-belgian-trade-comment-on-drivers-of-tropical-timber-demand

25 See IMM Special Studies – www.flegtimm.eu/index.php/reports/special-studies/141-flegt-s-profile-in-promotion-and-marketing-is-low-relative-to-certification
www.flegtimm.eu/index.php/reports/special-studies/105-eu-private-sector-timber-procurement-imm-study-identifies-attitudes-and-priorities
http://www.flegtimm.eu/index.php/reports/special-studies/76-imm-eu-furniture-sector-scoping-study-flegt-can-impact-european-furniture-market-2

26 www.euflegt.efi.int/es/eutr

27 The International Tropical Timber Organization (ITTO) is an intergovernmental organization promoting the sustainable tropical forests management and conservation and the international trade in legal and sustainable tropical timber. The Organization collects, analyzes and disseminates data on the production and trade of tropical timber and its products from the members. ITTO currently has 36 producer country members and 38 consumer country members. This membership represents around 90% of the global tropical timber trade. Countries that are not members of ITTO are not included in its database.

28 Sasaki N, Asner GP, Pan Y, Knorr W,Durst PB, Ma HO, Abe I, Lowe AJ,Koh LP and Putz FE, 2016, Sustainable Management of Tropical Forests Can Reduce Carbon Emissions and Stabilize Timber Production, Production. Front. Environ. Sci. 4:50., https://doi.org/10.3389/fenvs.2016.00050

29 www.health.belgium.be/en/sector-agreement-increase-supply-timber-products-sustainably-managed-forests

30 Van der Heyden, D. *et al*. (2018) *Bois certifiésur le marché belge en 2016 Etude de marché, perspectives et recommandations pour une révision de l'Accord Sectoriel*. BOS+ Vlaanderen vzw.

31 Belgium Federal Ministry of Energy, Environment and Sustainable Development (2019) *Accord sectoriel visant à augmenter l'offre de produits à base de bois certifié provenant de forêts exploitées durablement 2019-2024* – Notification draft.

32 https://immospector.kluwer.be/NewsView.aspx?contentdomains=OR(IMMOPRO,IMMORES,IMMONEW,IMMOMOD)&id=kl2305098&lang=fr

33 According to IMM statistics.

34 Since Indonesia is currently the only country with an operational FLEGT licensing system, it is assumed import from Indonesia equals the import of primary timber products with a FLEGT-license.

35 There is an overlap between the FSC certified and FLEGT-licenced volume within the imports from Indonesia

36 https://www.forestresearch.gov.uk/tools-and-resources/statistics/forestry-statistics/

37 Forestry Commission, 2016.

38 https://www.gov.uk/timber-procurement-policy-tpp-prove-legality-and-sustainablity

39 https://www.gov.uk/government/collections/timber-procurement-policy-tpp-guidance-and-support

40 Publication pending

41 Weimar, Holger. 2014. Tropenholz im deutschen Markt: Herkunft, Handel und Verwendung. Thünen-Institut für Internationale Waldwirtschaft und Forstökonomie, Hamburg

42 BOE 30, Section I, 04/02/2019, pp. 9572

43 www.maderajusta.org

44 https://www.worldwildlife.org/press-releases/global-business-government-and-agricultural-leaders-announce-land-focused-commitments-to-mitigate-climate-change

45 For example in the large domestic demand in producing countries and south-south trade

46 See https://ec.europa.eu/environment/forests/eutr_report.htm for example.

47 www.probos.nl/images/pdf/rapporten/EU_market_share_of_verified_sustainable_tropical_timber_IDH_STTC_Probos_report_June_2018.pdf

48 http://probos.nl/images/pdf/rapporten/EU_market_share_of_verified_sustainable_tropical_timber_IDH_STTC_Probos_report_June_2018.pdf

49 IDH Position Paper: *Mainstreaming Sustainability in Tropical – Timber Legality, sustainability, and the business case for frontrunner collaboration*. https://www.idhsustainabletrade.com/uploaded/2016/07/Mainstreaming-Sustainability-in-Tropical-Timber.pdf

50 Di Girolami, E. & Arts, B. (2018) *Qualitative Literature Review of Scientific Research on the Environmental Impacts of the Forest Stewardship Council (FSC) Certification Scheme and the Programme for the Endorsement of Forest Certification (PEFC) in the Boreal, Temperate and Tropical Biomes*. Forest and Nature Conservation Policy Group Wageningen University. https://library.wur.nl/WebQuery/wurpubs/fulltext/464632

51 A m^3 roundwood equivalent expresses the amount of roundwood needed to produce a certain volume of product. For instance to produce 1 m^3 of tropical sawn wood in general 2.21 m^3 of tropical roundwood is needed (annex 4). This measuring unit can for this reason be used to calculate volumes of products back to the hectares of forests needed to produce these products when combined with the harvest level per hectare.

the sustainable
trade initiative