



environmental
investigation
agency

THE LIE BEHIND THE PLY

How European and Chinese
businesses traded 100,000 tons
of problematic plywood



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ABOUT EIA

We investigate and campaign against environmental crime and abuse. Our undercover investigations expose transnational wildlife crime, with a focus on elephants and tigers, and forest crimes such as illegal logging and deforestation for cash crops like palm oil. We work to safeguard global marine ecosystems by addressing the threats posed by plastic pollution, bycatch and commercial exploitation of whales, dolphins and porpoises. Finally, we reduce the impact of climate change by campaigning to eliminate powerful refrigerant greenhouse gases, exposing related illicit trade and improving energy efficiency in the cooling sector.

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EXECUTIVE SUMMARY

A seven-year investigation by the Environmental Investigation Agency (EIA)—revealing one of the largest violations of the European Union Timber Regulation (EUTR) ever reported—exposes a tainted supply chain connecting the threatened tropical forests of Oceania to manufacturing hubs in China and to consumers in Europe. EIA’s investigation shows that European companies may have imported thousands of tons of tropical-faced Chinese-made plywood with a high risk of being illegal, in apparent breach of their due diligence obligation under EUTR. An opaque supply chain enabled this multi-year violation of the EUTR. The manufacturer of the tropical-faced high risk plywood in this investigation, Jiangsu High Hope Arser Co. Ltd. (“Arser”), is the largest exporter of plywood in China and a state-owned foreign trade enterprise. EIA’s findings indicate that Arser appears to have lied about the origin of the tropical timber used in the plywood exported to Europe and appears to have falsely claimed it was certified by the Forest Stewardship Council (FSC), for several years.

EIA’s research indicates that Arser’s seemingly false claim, which some European importers appeared to know and may have covered for, applied between 2016 and 2018 to an estimated 100,000 tons of plywood imported directly into Belgium, Germany, Netherlands, and the United Kingdom (UK). But the problem is likely much bigger. According to EIA’s investigation, Arser began selling this tropical face plywood product to Europe at least as early as 2014. Moreover, the number of countries and consumers affected is greater, since Arser’s importers are large distributors who sell to several European countries, including France and Ireland. As of February 2021, Arser’s tropical face plywood may still be sold in Europe under such brands as Starplex. European and Chinese authorities must join forces in order to stop their consumers and industries from driving the plunder of some of the last tropical forests in Papua New Guinea (PNG) and Solomon Islands. EIA uncovered systemic problems of opacity, likely fraud and cover-up in the tropical-faced plywood manufacturing sector in China, and its connections to European markets.

The global market for plywood is projected to reach 223.4 million cubic meters annually by 2022, driven by recovering construction activity worldwide. This is partly due to the rise in high-value, high-rise construction projects; and a reliance on plywood in interior design, especially of floors, ceilings, and walls.¹

European countries import enormous quantities of plywood products from around the world. Plywood was the fifth largest type of timber product imported into Europe (including the UK) by value between 2015 and 2019.² In 2018 alone, European Union (EU) countries imported US\$4.7 billion worth of plywood, of which 12 percent - the largest share - came from China.³ This trade is also significant for China: for the past decade, plywood has been China’s second largest wood product export to Europe, just after wooden furniture.⁴ EIA’s investigation has focused on products commonly referred to as “red-faced” plywood, which use a “red” veneer traditionally made of tropical trees for their

exterior face. Pencil cedar (*Palaquium spp.*)-faced plywood in particular has been widespread in many European markets.

For years, Arser has been China’s largest single exporter of plywood to the world, as well as to Europe. A manager for Arser told EIA investigators in 2018 that his company exports nearly half of its 600,000 cubic meters of plywood production to Europe, equivalent to approximately 500-600 containers per year.⁵ Arser has supplied many kinds of plywood to its European customers. EIA’s investigation focuses on one of its signature products: a panel allegedly made with face and back veneers of FSC-certified pencil cedar. According to Arser’s claim, 100 percent of the pencil cedar on this product and sold to European importers has been made from FSC-certified pencil cedar logs originating from one of the only FSC-certified concessions in Oceania: the Kolombangara Forest concession in Solomon Islands.

Through multiple discussions with Arser’s employees, including corporate representatives and salespeople and Arser factory managers, and other industry sources, EIA concludes that the volume of FSC-certified pencil-cedar plywood sold by Arser to its European customers was at least 20 times higher than the quantity of plywood that can be manufactured from the limited volume of pencil cedar logs produced and exported out of the Kolombangara Forest concession. These findings suggest that over 95 percent of the volume imported by Arser’s European customers between 2016 and 2018 did not come from the Kolombangara island concession as claimed, but from other logging areas, most likely PNG or Solomon Islands, and possibly including United Nations Educational, Scientific and Cultural Organization (UNESCO) World Heritage protected areas—all of which are considered high risk under the EUTR.

EIA’s investigation further shows that several major European importers, including Altripan NV (Belgium), Meyer Timber Ltd. (UK), International Plywood (UK), and Sakol BV (Netherlands) appeared to be aware that their supply chain carried unmitigated risks under EUTR. In their statements to EIA investigators, these importers expressed doubts regarding their products’ claimed origin, legality, opaque supply chain, and about the documents provided to them by Arser. Still, while acknowledging they had identified risks that were unmitigated, the companies continued to import the tropical-faced plywood from Arser.

When contacted by EIA, Altripan NV, International Plywood, and Meyer denied placing this product on the market with known, unmitigated risks. Altripan stated “Altripan purchased the pencil cedar plywood in the belief that the risks had been mitigated by the FSC certification process, with the EUTR requirements being met by the additional due diligence assessments.” Meyer stated “There was not any indication that the company’s approach to due diligence was not in complete compliance with the EUTR.” International Plywood stated, “We as a company do everything that is practically possible to confirm the source of every product that we import.” Sakol did not respond to an opportunity to comment. A representative from Arser informed EIA that the company ceased to import the pencil cedar logs from the certified Kolombangara concession in February 2020.^o

The particular supply chain presented in this report provides a glimpse into the current risks associated with the tropical-faced plywood global supply chains. In recent years, while direct log export to Europe from high-risk countries has diminished, indirect routes via manufacturing hubs such as China, Vietnam and Cambodia have proliferated, making illegal and high-risk timber flows increasingly opaque and often impossible to trace. In order to rise to the challenge, authorities from China, the EU and UK must combine stronger law enforcement with adopting effective systems for transparency and traceability.

EIA recommends:

To regulators in the EU and UK*

- Investigate and, as appropriate, prosecute under the EUTR and UKTR the European companies that have imported high risk pencil cedar-faced plywood without adequately mitigating identified risks.
- Recognize the high risks associated with the import of plywood made in China using imported tropical timber and increase the controls on imports of these products.
- Increase EUTR enforcement with the issuance of adequate penalties in order to effectively deter illegal imports.

To regulators in China

- Expand administrative and law enforcement efforts related to the plywood industry and its supply chains to address legality issues, such as document fraud.
- Leverage the drafting phase of the Forest Code implementing regulation to establish mechanisms that will protect China’s plywood industry from the import of illegal timber.
- As proposed in Article 65 of the revised Forest Code, establish an effective ledger system in order to hold every entity along the supply chain accountable.

To regulators in China, the EU, and UK

- Use existing platforms, including the EU-China Bilateral Coordination Mechanism, to develop a pilot project focused on enhancing tropical-faced plywood trade legality, transparency and traceability.
- Increase trilateral coordination regarding the control and regulation of China–EU and China–UK plywood supply chains containing imported and tropical wood.

To timber industry actors in the EU and UK

- Consider all tropical-faced plywood manufactured in China to have unmitigatable risks and do not import it until China implements a robust transparency mechanism that makes it possible to trace timber materials from source to product.

To FSC

- Implement immediate actions to stop systematic fraud among FSC-certified companies in the Chinese plywood manufacturing sector, focusing on supply chains that involve tropical timber and global manufacturers.
- Require transparent digital tracking and reporting of all sales of FSC-certified wood products to prevent double-counting, from the stump to the final consumer.

* As of January 1, 2021, as a consequence of Brexit, Great Britain (England, Scotland, and Wales) is no longer subject to the EUTR. The regulation in force for Great Britain is the United Kingdom Timber Regulation (UKTR). Businesses in Great Britain importing timber from outside of the UK must carry out due diligence according to the same principles as laid out in EUTR (see Box 5, the Due Diligence Process). Source: Forestry Update UK Timber Regulations. Accessed April 15, 2021. <https://www.sgs.co.uk/en-gb/our-company/about-sgs/sgs-in-brief/sgs-in-united-kingdom/sgs-services-and-brexit/forestry-update-uk-timber-regulations>.

ARSER'S EMERGENCE AS A TOP INTERNATIONAL PLYWOOD BRAND

In the space of two decades, China has transformed from one of the largest importers of plywood in the world to its largest manufacturer and exporter. This achievement has relied on many factors, including the emergence of plywood supplier brand names, like "Arser," which offered European clients the promise of more reliable, simple and direct supply chains. EIA's investigation reveals that despite Arser's claims, the company's plywood supply chain remains largely opaque and untraceable. Over the course of its investigation, EIA found that many of the problems uncovered in Arser's supply chain are present throughout the industry.

1.1 Transformation of China's Plywood Industry

Until the mid-1980s, Chinese plywood was produced by state enterprises in forested regions using locally felled wood, and consumed mainly in Beijing, Shanghai, and Tianjin. Following new restrictions on domestic logging in the 1990s, plywood production shifted to coastal cities located near plantations.⁷ From the 1990s to the mid-2000s, supported by export-oriented incentives from the central government and growing demand at home and overseas, the industry experienced very rapid growth.⁸ China became the largest wood-based panel producing country in the world, surpassing Indonesia in 2000 and the United States (US) in 2003 (Figure 1). Between 2003 and 2015, China's wood-based panel production

continued to multiply, increasing from 21 million to 113 million cubic meters, an average annual growth rate of 34 percent. In 2016, China alone represented nearly 75 percent of the global production of wood based panels.⁹ Plywood is now China's second most important value-added wood product export (by value) after furniture.¹⁰

As Chinese production boomed, the international plywood production centers migrated primarily from North America and Southeast Asia to four Chinese provinces: Hebei, Shandong, Jiangsu and Zhejiang.^{12,13,14} China flipped from being a wood-based panels importer to becoming the largest exporter in the world in less than a decade (Figure 2).^{15,16} The US and Europe quickly became the two largest markets for Chinese plywood (Figure 3).

The first Chinese timber production facilities were state-owned, the operation of which relied heavily on state resources.¹⁷ Beginning in the 1980s and through the 1990s, many sectors of China's economy, including the timber industry, were liberalized and privatized.¹⁸ Previously state-run, integrated supply chains became more fragmented, dispersed, and informal.¹⁹ As plywood factories grew and developed, so did many small, often family-run mills to supply them with veneers, forming clusters in Jiashan County (Zhejiang province), Wen'an (Hebei province), Linyi (Shandong province), and Pizhou (Jiangsu province).²⁰ These industry clusters facilitated "continuous plywood production lines, obtaining

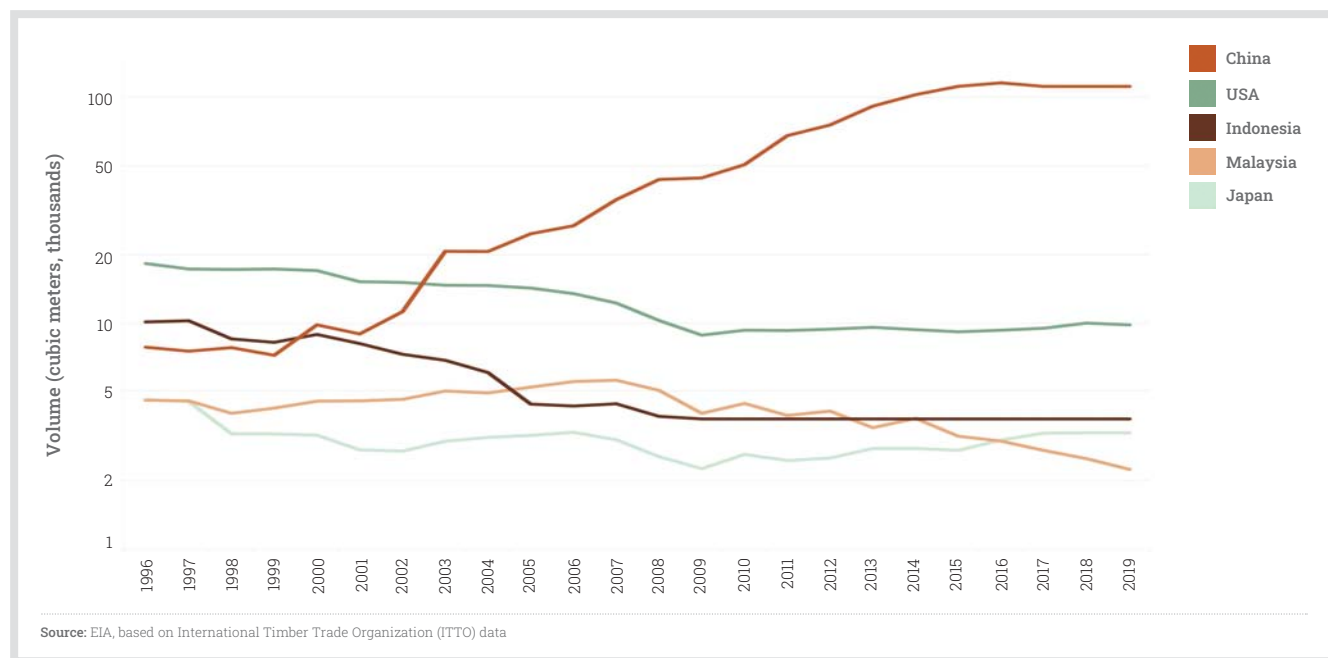


Figure 1
Evolution of the production of wood-based panels by the top five producer countries, in volume¹¹

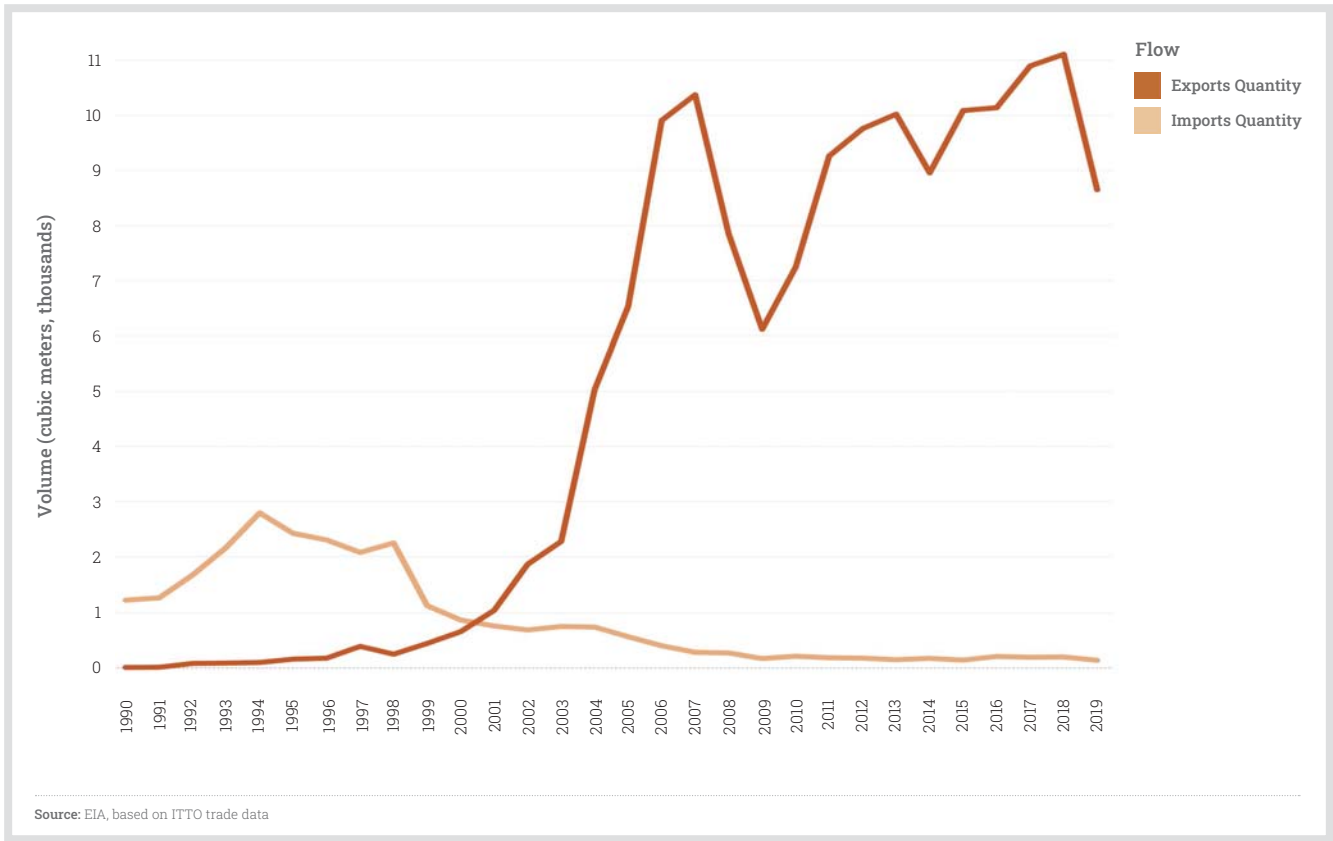


Figure 2
 Import versus export of plywood in China, by volume

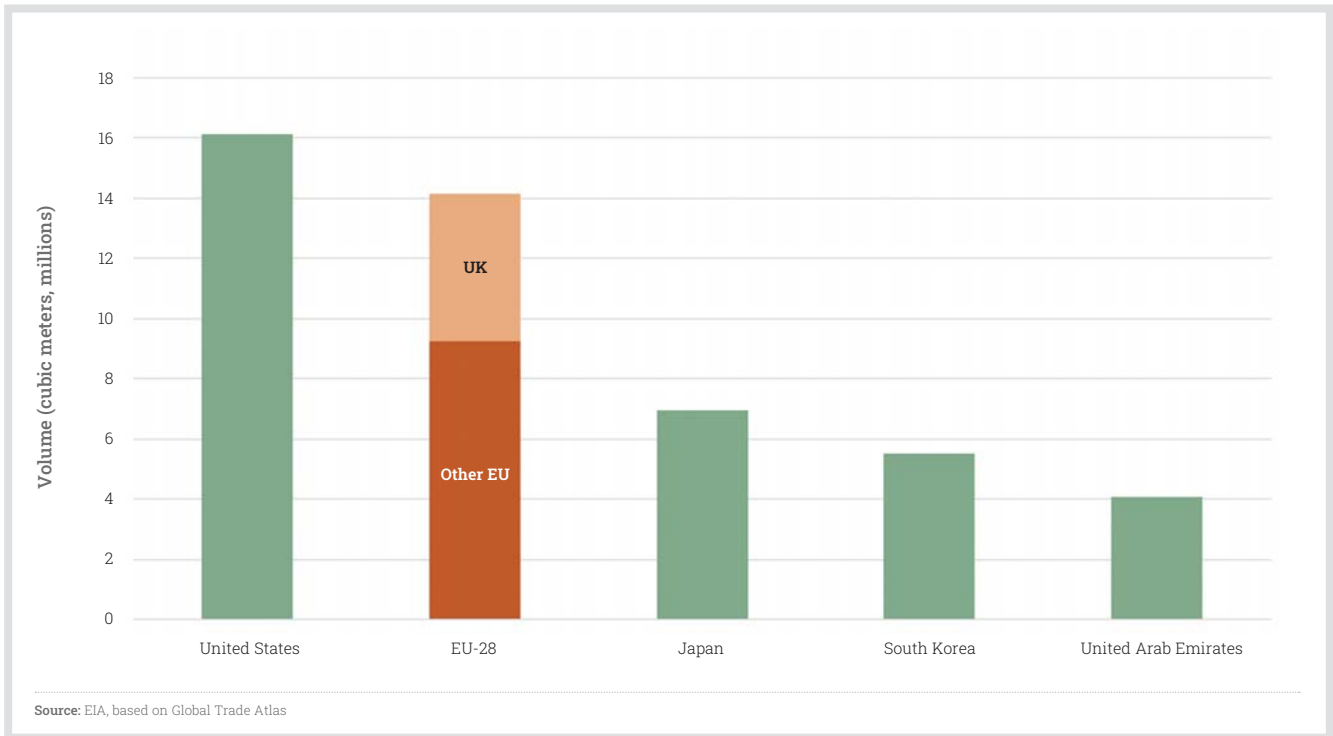


Figure 3
 Main importers of Chinese made plywood, by volume (2000-2013)

financial investment, achieving wood-use and operational efficiency,” as well as economies of scale.²¹ By 2013, there were an estimated 3,000 mills equipped with a plywood production line and tens of thousands of veneer-peeling mills in China.²² Throughout the course of its multi-year investigation, EIA investigators observed the highly fragmented industry in the Chinese plywood sector (Figure 6).

1.2 From a Tropical Logs Deficit to the Emergence of a Global Supply Chain

The rapid expansion of China’s plywood industry in the early 2000s relied on the parallel development of its “fast-growing, high-yield” tree plantations. To ensure a supply of raw material for the industry, the Chinese government created 13.3 million hectares of plantations - especially poplar (*Populus spp.*) and eucalyptus (*Eucalyptus spp.*).²³ These domestic plantations proved adequate for the production of the core layers of the plywood products (see Box 1 for a description of a typical plywood product structure). However these plantation species were not suitable for use as visible veneers applied to the face and back of the plywood panels. To meet that need, the industry would require other species, including imported tropical hardwood.²⁴

Over time, Chinese companies became increasingly reliant on imported timber. The 1998 Natural Forest Protection Program restricted logging of domestic forests

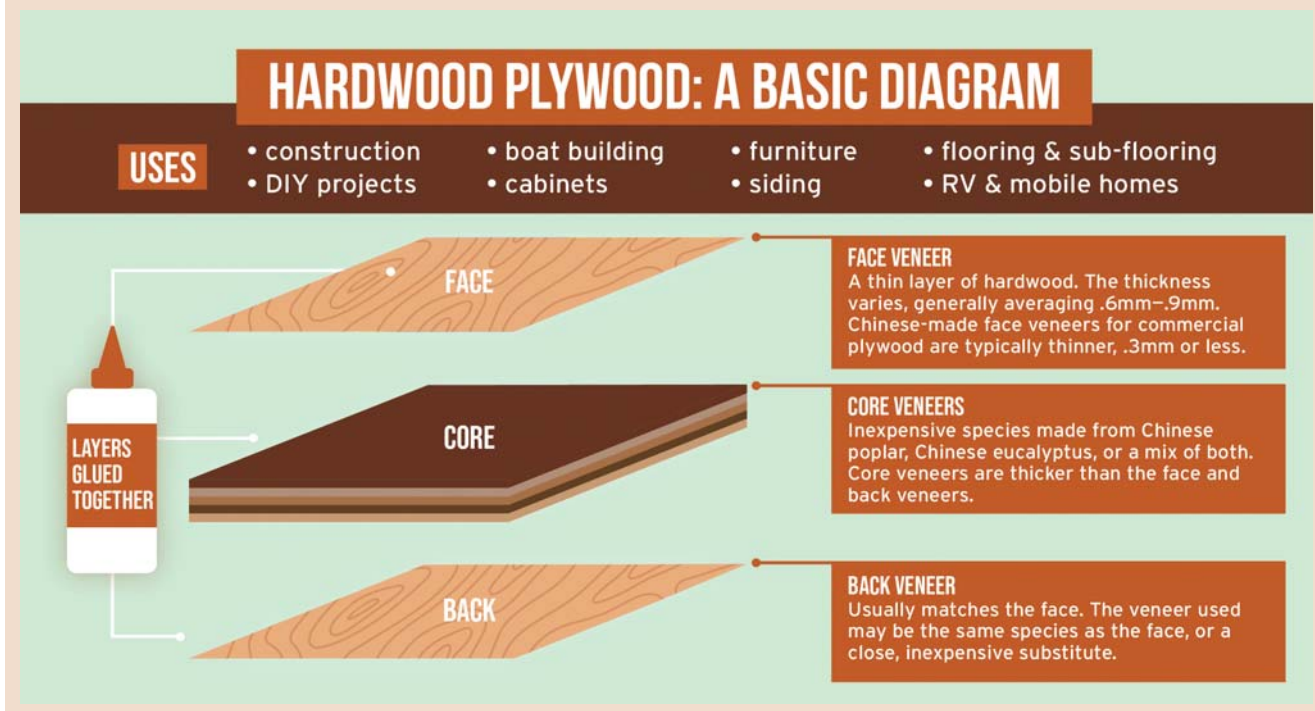
in large parts of the country.²⁷ Government incentives including tax rebates for processed wood exports such as plywood and zero tariffs on log imports further promoted the timber export industry.²⁸ The growing export-oriented plywood industry faced a widening deficit of raw material.²⁹ In order to fill the gap, the Chinese plywood industry turned toward the import of tropical roundwood from overseas.^{30,31,32}

As shown in Figure 4, Chinese companies have imported ever-growing volumes of tropical hardwood logs in the past two decades. This trend will likely increase in order to fuel the projected increases in production by 34 million cubic meters of plywood and hardwood sawnwood by 2030.³³

Responding to growing demand and economic incentives, a global supply chain spanning multiple continents emerged. This chain begins with harvesting hardwood trees and exporting the logs from tropical countries to China, processing those logs along with domestic plantation trees into plywood in China, and exporting the finished plywood products to European, US, and other global markets.³⁵ The source and species of tropical timbers used by the Chinese plywood industry has shifted in response to availability of raw materials as well as market barriers. Popular species have ranged from Southeast Asian lauan (*Shorea spp.*) in the 1980s³⁶ to West African okoume (*Aucoumea klaineana*) in the 1990s³⁷, sapele (*Entandrophragma cylindricum*), and a variety of species from Oceania including bintangor (*Calophyllum spp.*) and pencil cedar.^{38,39,40,41,42}

BOX 1.

PLYWOOD ANATOMY^{25,26}



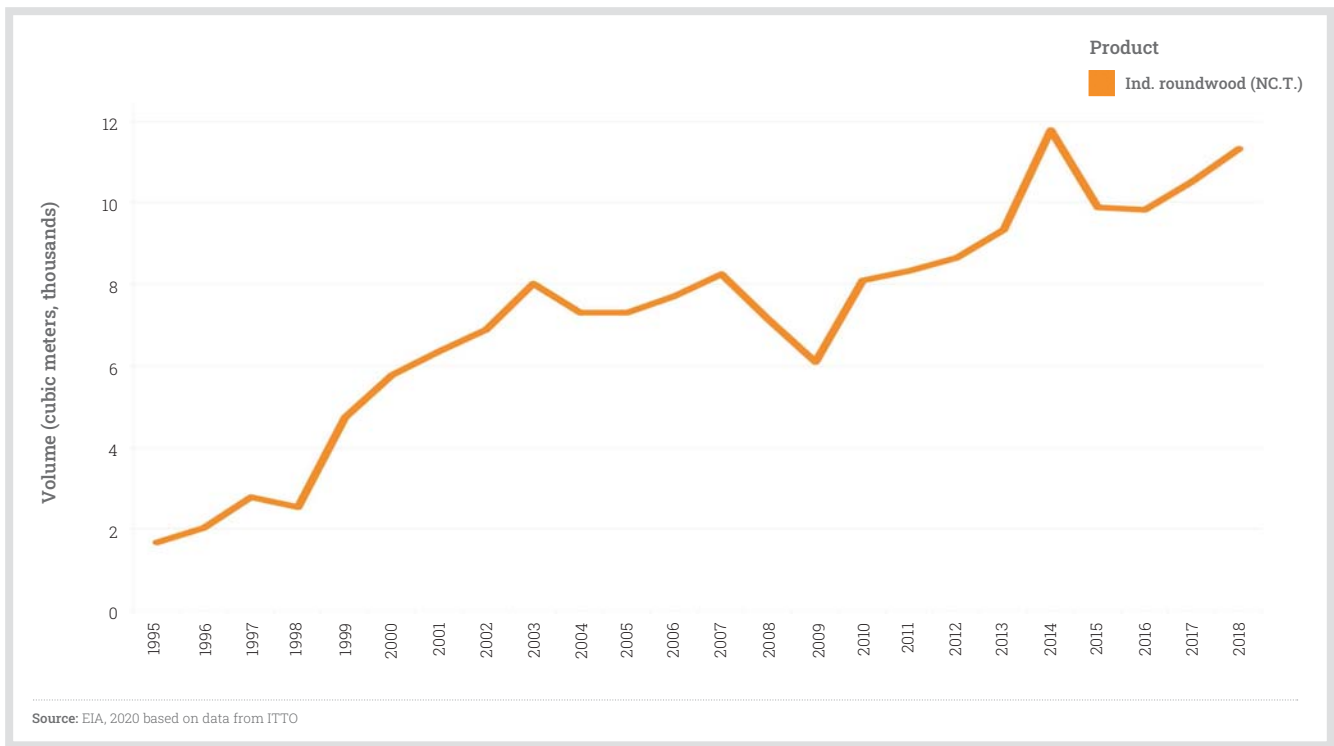


Figure 4
China's tropical log imports³⁴

1.3 Business Consolidation and the Birth of Arser as a Top International Brand Name

Scarce domestic timber resources, rising labor costs, and increased environmental regulation put pressure on the Chinese plywood sector in the mid-2000s.⁴³ Amidst a global debt crisis, European and North American consumers, on which the Chinese plywood market was still heavily dependent, were unwilling to absorb higher prices. Chinese manufacturing inputs were squeezed from both ends. As an employee from the British plywood importer Meyer explained to EIA undercover investigators, European importers played a key role in pressuring their suppliers to produce goods at the absolute cheapest price:

Meyer: "We all want it cheap because otherwise we cannot sell it. But we have created our own problem because we have reduced the quality of everything. And some of our competitors don't necessarily care, but we have a big brand in the UK and we have to make the right choices. [...] The UK market is pretty simple: because it is cheap. [...] I think the UK just wants it cheap. And because we want it cheap, the manufacturers have to make quality less because that is the only way that they can go."

As average production prices increased but export prices varied little, Chinese plywood manufacturers and veneer makers saw profit margins hover around two to three

percent per year, according to Chinese factory workers who spoke to EIA investigators.⁴⁴ These industry sources also explained that because these small, often family-run businesses have little capital with which to operate on credit, their business model is entirely dependent on fast cash flow turnover. To compete, they had to cut costs and cut corners. This took a variety of forms, including that they might hire migrant or local village labor, assemble the panels with inexpensive, potentially harmful glue, and/or purchase cheap tropical logs from unknown origins as raw material (Figure 5).^{45,46,47}

The vast majority of China's plywood products are made by small enterprises, which produce low-end products, using simple technology, and compete on price.⁴⁸ Their supply chains are diffuse and fragmented, involving numerous actors. The factories making plywood are not vertically integrated and rely on buying veneers, often indirectly, through middlemen, from numerous small veneer producers (Figure 6). From plantation to finished plywood "this network can involve up to eight separate movements or trades and a number of middlemen."⁴⁹ For imported logs, the process involves a network of middlemen including customs clearance agents, wholesalers, and log brokers at the port.⁵⁰ EIA investigators found that poor documentation combined with this complex chain of custody make it all but impossible to verify the end product's origin and legality.

EIA investigators found that it is extremely challenging to trace the chain of custody from the finished tropical-

faced plywood back to the log imported in China. Several aspects explain the opacity of the sector. First, multiple trading layers and middlemen often separate the importers of tropical logs from the veneer mills that will peel them. The majority of the peeling mills which supply the veneers to plywood manufacturers are small, often family-owned enterprises. It is common, EIA learned during its investigation, for these small mills not to be officially registered and for their role in the manufacturing process to remain undocumented. Moreover, plywood factories often outsource orders, further adding to the complexity of the trade flows. One plywood factory manager told EIA investigators that his factory outsources to any of 40-50 other factories; according to EIA's investigation, this is common practice.^{51,52}

Whenever EIA investigators raised the question of traceability, they were told that accurate information



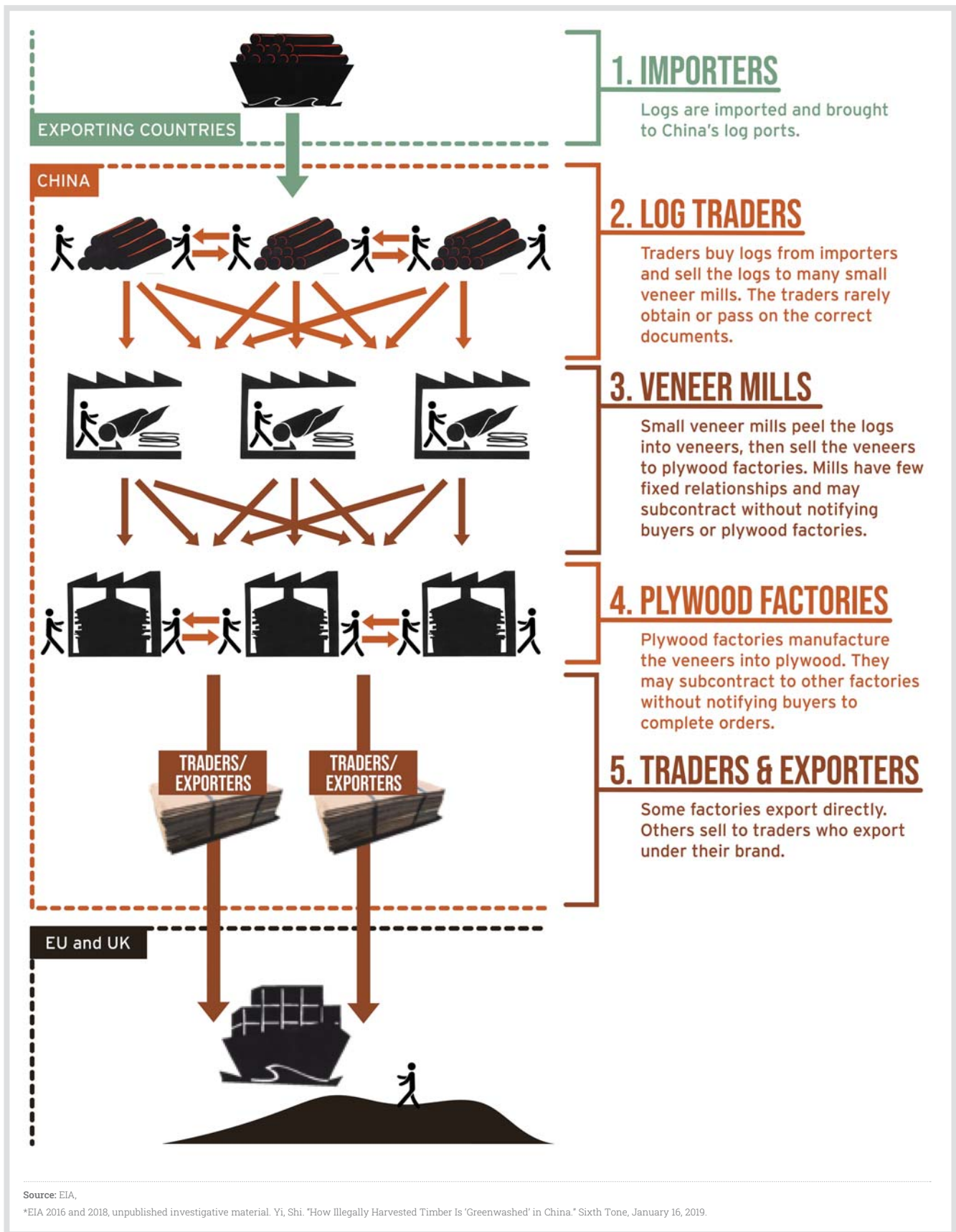
Figure 5
Examples of typical small-scale veneer mills and plywood manufacturers in China

about a log's origins is often lost early in the process of plywood manufacturing. In most cases, when logs are purchased at the port by traders or veneer mill agents, they do not come with concession of harvest documents or logging authorizations, or other such documents serving as evidence of their point of origin. One plywood factory employee explained to investigators that although he had made special efforts to collect documents about the origin of the tropical logs used in his factory's products—in order to satisfy European clients' requests—he had been unable to obtain them.⁵³

Multiple sources in veneer mills and plywood factories explained to EIA investigators that the falsification of documents is common in the plywood sector. This applies to at least two types of documents. One type are the documents certifying the origin of the timber used in the finished plywood products. Another type are the documents used to prove that the finished plywood product was made of certified timber. Multiple sources in different companies told EIA investigators that their plywood manufacturing company commonly prints fake FSC labels, uses fake FSC documentation, or provides clients with expired FSC certificates.⁵⁴

Between late 2000s and late 2010s, the plywood industry in China experienced shake-ups and consolidation, triggered by both international events and domestic factors.⁵⁵ The plywood industry, like much of the Chinese economy, suffered from the global financial-economic crisis in 2008.⁵⁶ In 2013 and 2014, the Chinese government revised its Environmental Protection Law and enacted a series of laws and regulations to combat many kinds of pollution.⁵⁷ These efforts focused on eliminating outdated and heavy polluting factories, eventually impacting timber processing mills (see Box 2 for further details). Thousands of wood processing factories closed, many of which were the smaller veneer mills and plywood factories that were the least able to meet new requirements. Larger, consolidated companies could better afford the capital upgrades.^{58,59}

In addition, timber-specific policies and regulations were enacted in the main foreign markets for Chinese plywood industry's products. In fact, as the largely inflexible demand from the EU and the US was pushing China's plywood industry in a race to the bottom, new laws were adopted in these two markets to protect them against the import of illegal timber. The US Lacey Act was amended in 2008 to include wood products, and the European Timber Regulation (EUTR) came into force in 2013. Under these new laws the concept of due diligence became central to the placement of imported timber into the EU and US markets (see Box 4 for details in the EU context). Under the EUTR, European importers are required to identify, assess and mitigate the risk of importing wood products that were illegally harvested or traded - a task made more difficult when the supply chain is long, complex and opaque.^{69,70,71} Faced with these obligations, some European importers likely sought simpler supply chains involving fewer intermediaries. In China, the suppliers of plywood who could offer



Source: EIA,

*EIA 2016 and 2018, unpublished investigative material. Yi, Shi. "How Illegally Harvested Timber Is 'Greenwashed' in China." Sixth Tone, January 16, 2019.

Figure 6
The complex supply chain in China - simplified graphic

“BLUE SKIES,” PAINFUL FOR FACTORIES

In 2013, China’s government enacted the “Air Pollution and Control Action Plan,” requiring significant improvements of air quality and reductions of Particulate Matter (PM) 2.5 for key regions between 2013 and 2017, such as 15 percent in Pearl River Delta and 25 percent in Beijing.⁶⁰ The following March at the twelfth National Peoples’ Congress, Premier Li Keqiang trumpeted the law and a related series of pollution controls as the beginning of a “War on Pollution.”⁶¹ Emissions- and energy-intensive factories across many sectors, including plywood factories, were required to shut down or reorganize in order to meet the new PM 2.5 target.⁶² The national Environmental Protection Law was also revised in 2014, leading to additional series of policies and emissions standards aimed at curbing all sorts of pollution across China, including water pollution, solid waste, and air particulates.⁶³

These new requirements noticeably impacted plywood production and imports from China from 2015 to 2017. Many veneer and plywood mills were forced to

temporarily or permanently shut down until they could replace their equipment and meet new emissions standards.⁶⁴ As of 2017, some 11,700 plywood production enterprises in the country’s major plywood manufacturing zones were shut down at least temporarily, including nearly half of the 5,800 plywood factories in Shandong Province (where Linyi is located).⁶⁵ The shutdown of factories in Linyi, a major manufacturing hub for plywood as well as other heavy industries, met with strong resistance.⁶⁶

The Air Quality Act has come to be considered one of China’s most influential environmental policies, and the original air pollution action plan.⁶⁷ It has significantly improved air quality in China. China’s three largest city clusters, Beijing-Tianjin-Hebei, Pearl River Delta and Yangtze River Delta, reached their targets by the end of 2017.⁶⁸ This success demonstrated the Chinese government’s ability to weather short-term economic challenges and overcome resistance in the pursuit of positive long-term environmental and social goals.



Figure 7
Example of Arser’s carefully crafted public image⁷²

vertical integration probably became more appealing, as their more direct supply chain would make quality control and due diligence requirements easier.

According to EIA’s investigation, Jiangsu High Hope Arser Co. Ltd. (“Arser”) has been one of the prominent plywood manufacturers and suppliers that distinguished itself for its ability to navigate the changing economic landscape globally and adapt to foreign regulatory requirements. The company has presented itself as the sourcing solution for foreign demand, building a well-crafted image around concepts like “specialization”, “well-controlled product quality,” “stable supply,” and “honesty” (Figure 7).

According to Arser’s website, the company started its plywood export business in the 1990s under the name

“Yafei”, renamed “Arser” in 2005. In 2007, the company formed a joint venture with Jiangsu Skyrun Group, and in 2012 Skyrun Group reorganized with Jiangsu High Hope International Group Corporation (江苏汇鸿国际集团股份有限公司, “Jiangsu High Hope”), founding the company Jiangsu High Hope Arser Co, Ltd. A state-owned enterprise, Jiangsu High Hope is involved in many sectors including trading, real estate, and logistics services.⁷³ The group has consistently ranked among the top 500 Chinese enterprises since at least 2014.^{74,75,76,77,78} Arser, one of Jiangsu High Hope’s many subsidiaries, specializes in the import of logs and timber into China and the export of processed wood products.⁷⁹ According to Chinese customs data, in the period 2015-2017, Arser exported 815,000 tons of plywood to 61 countries, representing approximately five percent of all Chinese plywood global exports.⁸⁰

As stated on its website and catalogue, Arser jointly owns five factories in China: Pizhou Arser Merry, Linyi Arser Haode Wood, Huai’an Arser Wood, Pizhou Arser Wood, and Shuyang Arser Tonda Wood.^{81,82} Altogether, Arser lists 30 branded products and brand affiliations including Xtraplex (an International Plywood product), Meyer, Arser Wood, Arserplex, Yafei, Europly, Arserplus, Pukkyply, Q-Ply, Betoplex, Europlex, and Diamondplus.⁸³

1.4 Europeans Buy from Arser

European countries import considerable quantities of plywood from around the world, and China is its second largest source.⁸⁴ Between 2000 and 2015, plywood moved up from third to second largest timber product imported into the EU-28 in volume, averaging 8 million cubic

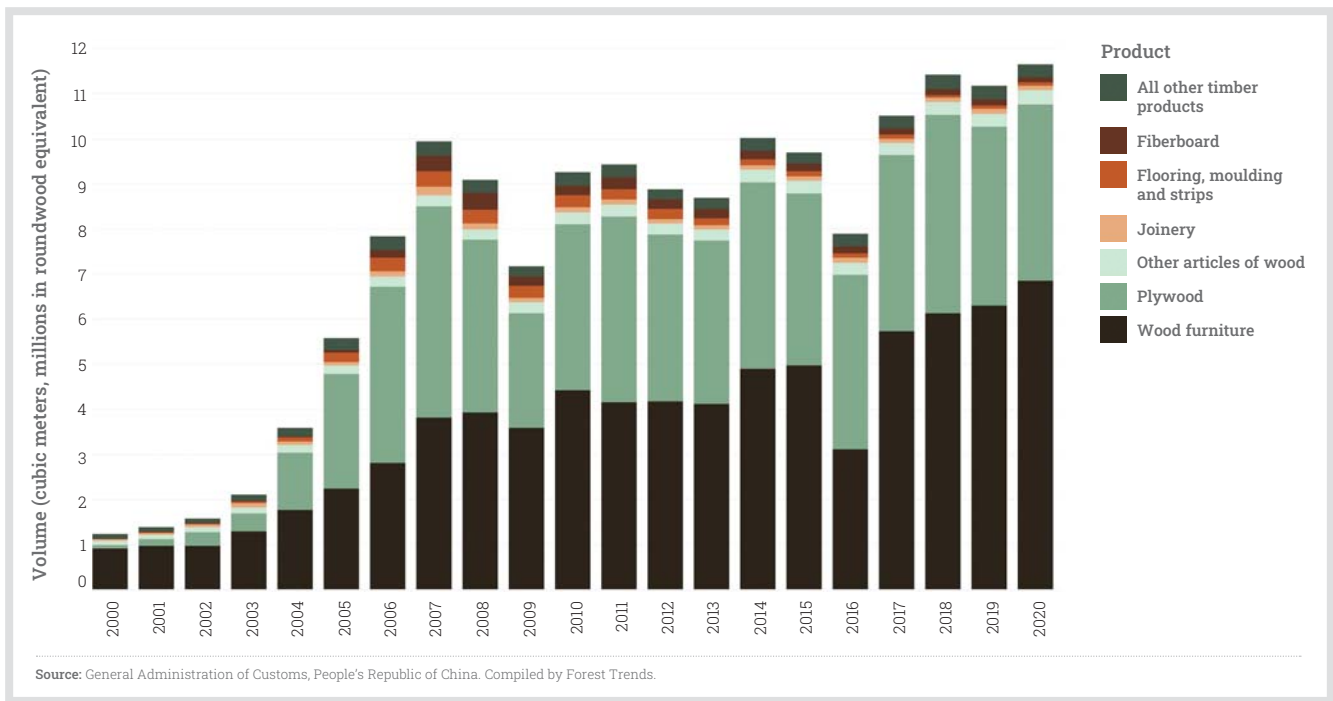


Figure 8
China's exports of timber products to EU-28 countries from 2000 to 2020 in roundwood equivalent (RWE) volume.⁹⁰

meters per year, valued at USD \$1.67 billion.⁸⁵ Since 2015, the average volume supplied by China has stayed roughly stable around 3.9 million cubic meters per year,⁸⁶ valued at USD 490 million.⁸⁷ This trade and market is also very significant for China. Europe is China's second largest timber market after the United States, and for the past decade, plywood has been China's second largest timber export to Europe by value and volume, after wooden furniture.^{88,89}

Arser is China's largest single exporter of plywood to the world and by far the largest single exporter to Europe (Figure 9). An Arser manager told EIA investigators that the company exports approximately 600,000 cubic meters of plywood annually, equivalent to 1,200 containers per month, of which almost half is exported to Europe.⁹¹ Trade data seems to confirm this estimate. Between 2015 and 2017, Chinese customs data show that Arser exported plywood to most European countries, namely Belgium, Bulgaria, Denmark, France, Finland, Germany, Greece, Italy, Netherlands, Poland, Portugal, Romania, Slovenia, Spain, Sweden, and the United Kingdom. Together they accounted for 327,000 tons of imported plywood or 40 percent of Arser's global exports (by weight).⁹²

Arser is also one of the main sources of plywood for European countries. From 2015 to 2017, based on Chinese customs data, Arser contributed 25 percent of the UK's plywood imports from China, 10 percent of Belgium's, and was ranked in the top six sources of Chinese plywood to Poland, Spain, and Netherlands (Figure 10).⁹⁴ Arser's plywood products were thus sold across the European market.

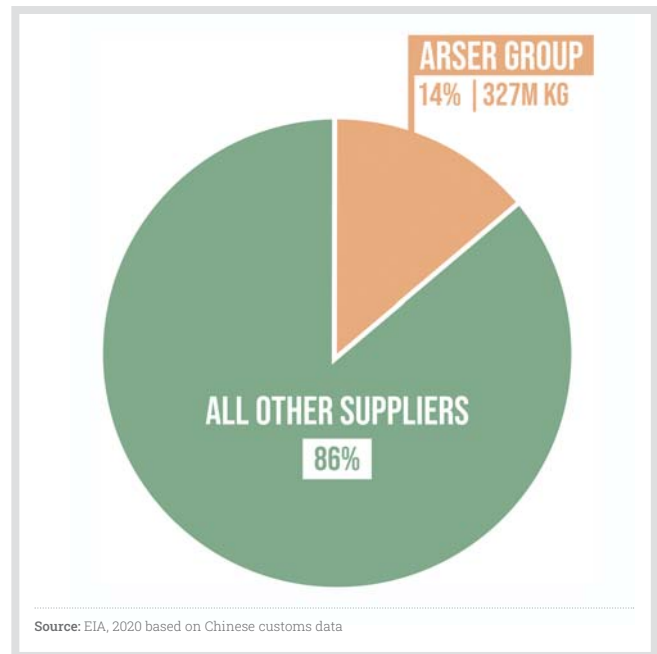
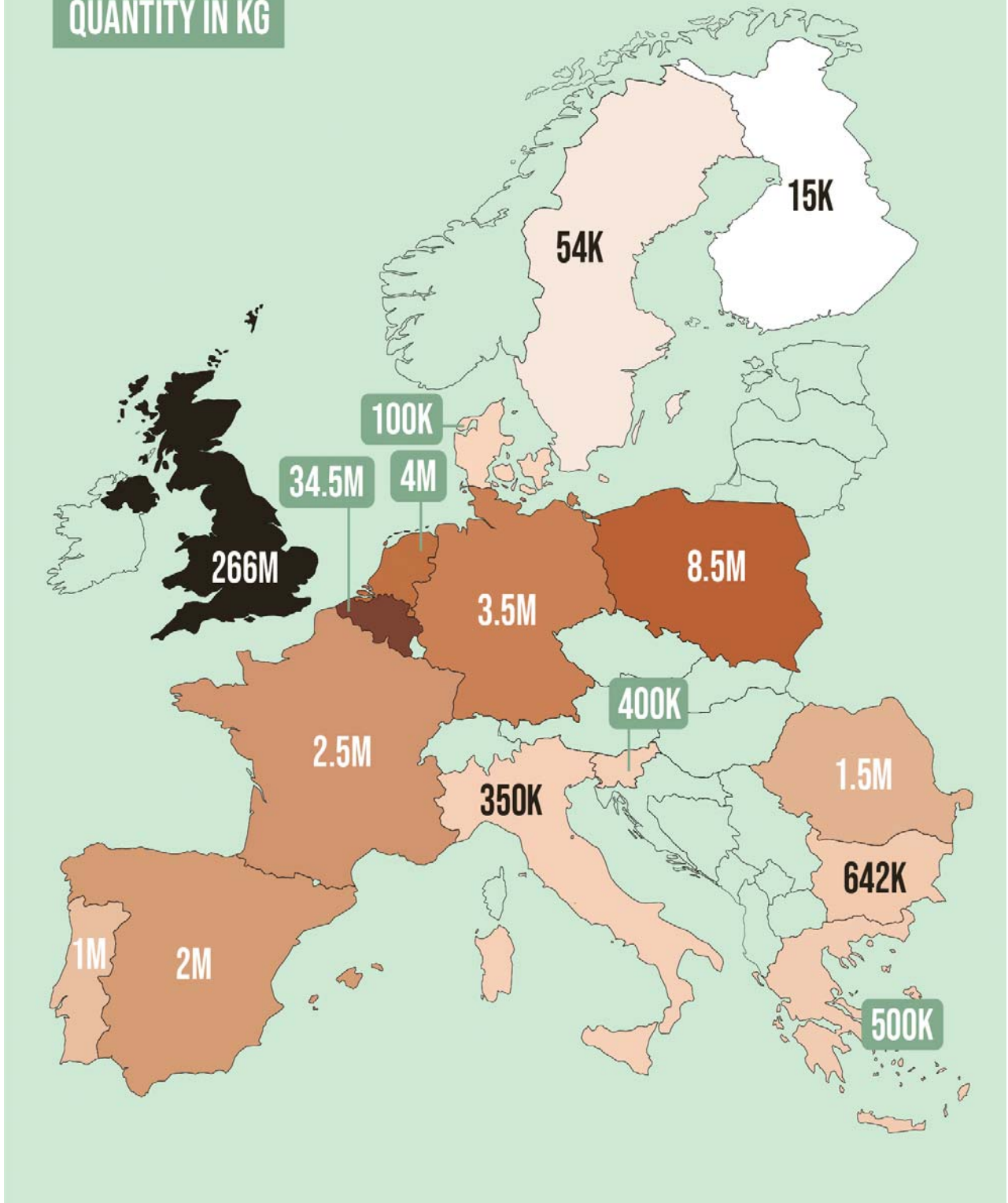


Figure 9
Arser's share of Chinese exports of plywood to Europe (right), by weight, from 2015 to 2017⁹³

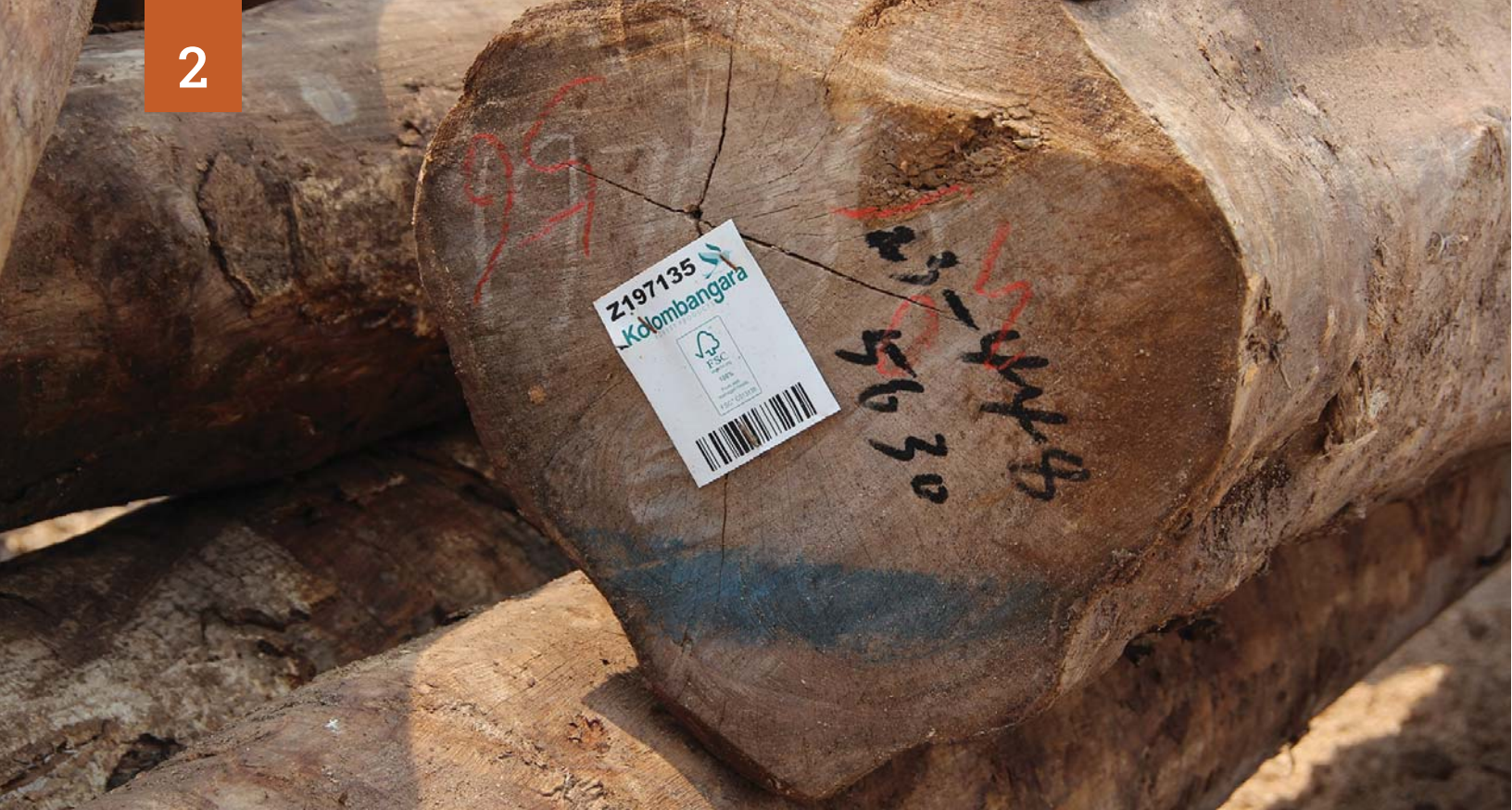
As presented in the following sections, EIA's investigators have found that one particular group of products made by Arser, pencil cedar-faced plywood, has been placed on European markets for years in apparent breach of the EUTR.

QUANTITY IN KG



Source: EIA, 2020 based on Chinese customs data for years 2015-2017

Figure 10
European countries that import Arser plywood



KOLOMBANGARA COVER AND APPARENT FSC FRAUD

In order to fully understand the apparent breach of the due diligence requirements by European companies who have placed Arser's pencil cedar-faced plywood on the European markets, one must first focus on Arser's claims regarding this product and its supplier. Doing so, EIA's investigators found that between 2016 and 2018 Arser sold at the very least twenty times more cedar-faced plywood from an FSC-certified source than this certified concession produced. The considerable mass balance gap found by EIA is consistent with the recent investigation by FSC that concluded that Arser fraudulently inflated the volumes of certified timber sold to its clients.⁹⁵

According to EIA research, the supply chain behind the apparent fraud starts frequently with illegal logging operations in PNG and Solomon Islands, continues with the manufacturing of pencil cedar veneers in China, and ends with the import of the high risk pencil cedar-faced plywood by multiple European countries (Figure 11).

Based on statements made to EIA investigators in 2018 by factory managers at three Arser supplier factories (Arser Haode, Pizhou Arser Wood, and a factory not owned by Arser named Xuzhou Zhongtong), EIA estimates that Arser sold at least 1,366 containers of pencil cedar-faced plywood to European companies each year from 2016 to 2018; these managers likewise confirmed the source was from Solomon Islands. (See Annex II for detailed breakdown of EIA's estimate.) EIA has not uncovered evidence that these supplier factories were aware of potential wrongdoing.

2.1 Arser's Claim

Arser produces several plywood products for the European market, including what is commonly referred to as "red-faced" plywood, in which at least one of the two visible faces consists of a red-looking veneer usually made of bintangor (*Calophyllum spp.*), sapele (*Entandrophragma cylindricum*), kosipo (*Entandrophragma candollei*), or pencil cedar (*Palaquium spp.*) Workers at Arser supplier factories as well as a representative for a large company competing with Arser told EIA investigators that over the years, Arser gained a reputation for its specialization in the production of pencil cedar-faced plywood.⁹⁶

Multiple Arser employees told EIA investigators in 2018 that, when it comes to providing pencil cedar plywood for Europe, no matter whether the order is for 100 percent FSC-certified plywood or not, the pencil cedar veneers come exclusively from a unique certified source: a managed forest certified by FSC (FSC-FM) called the Kolombangara Forest concession, operated by the company Kolombangara Forest Products Limited (KFPL), located in Solomon Islands.⁹⁷ In 2020, an Arser representative stated in an email to EIA that the company had ceased importing tropical logs as of February 2020. This email was accompanied by a declaration (Figure 12)⁹⁸ in which Arser claims that "All the faces on plywood exported to Europe by Arser were

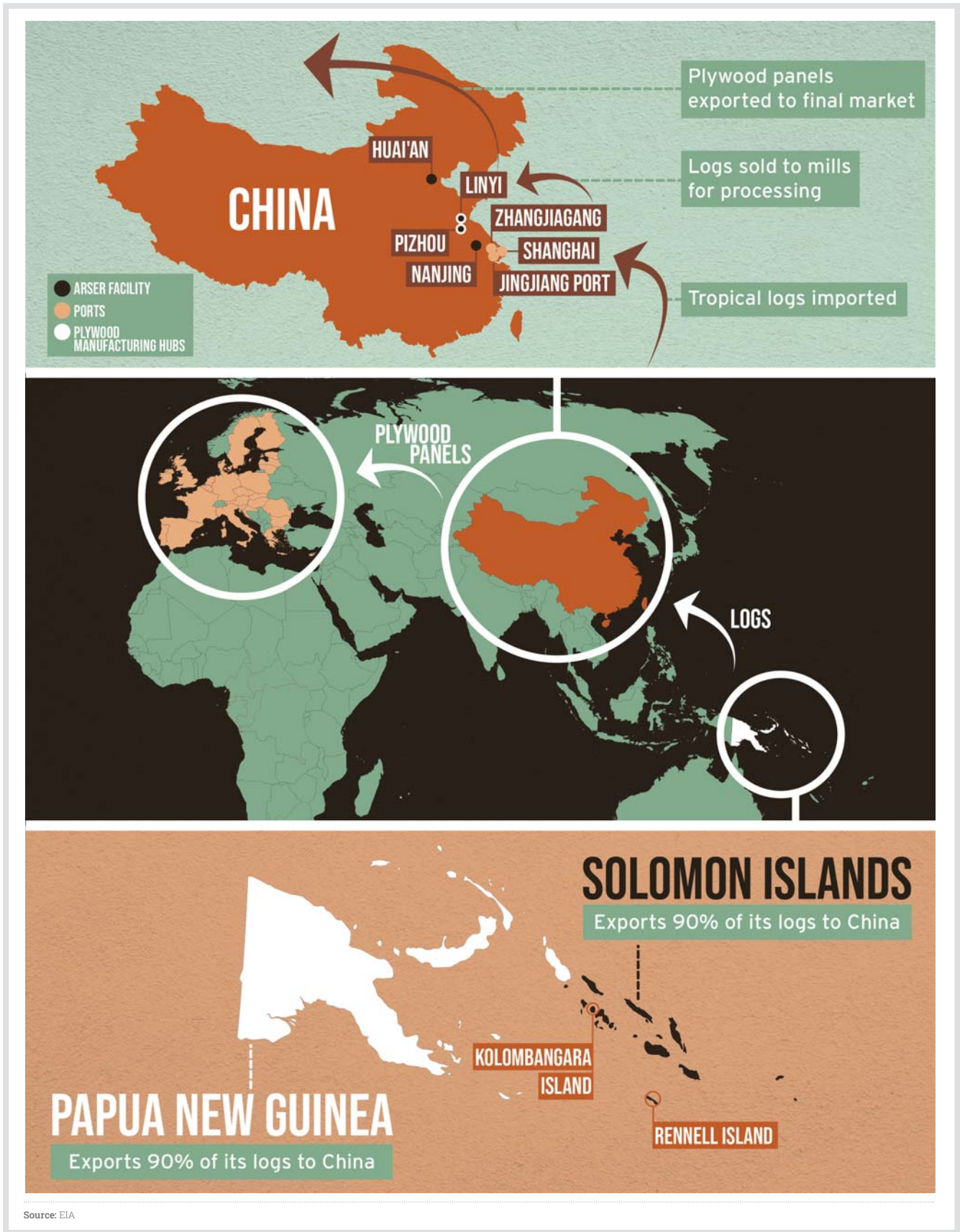


Figure 11
 The pencil cedar supply chain from high risk tropical areas through China to Europe

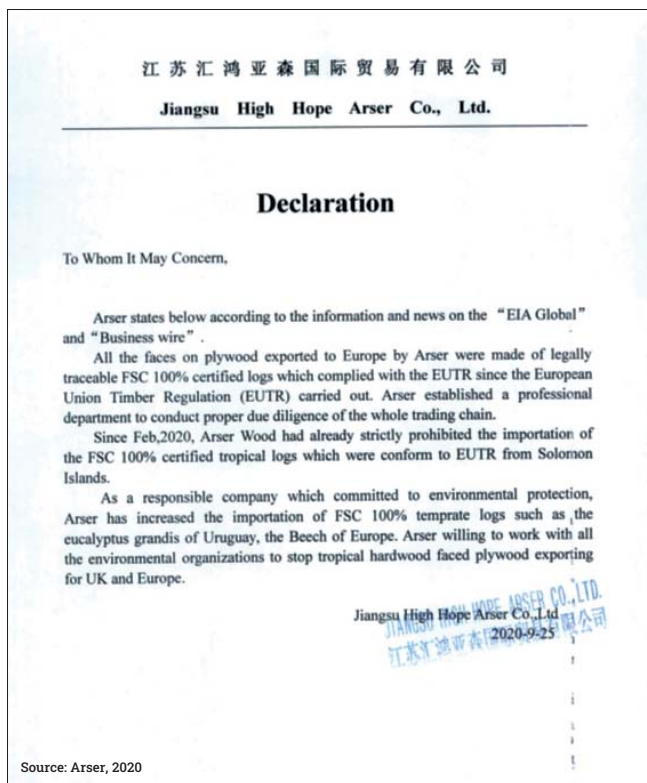


Figure 12
Declaration to EIA from Arser

made of legally traceable FSC 100% certified logs” dating back to the implementation of EUTR in 2013. This statement is consistent with what Arser employees had told EIA investigators.

Arser employees explained on multiple occasions to EIA investigators that the company purchases the entire pencil cedar production from KFPL, the only FSC-FM certified forest concession that produces pencil cedar in Oceania. According to these claims, this would make Arser the only Chinese plywood producer able to sell FSC-certified pencil cedar plywood to the European market.⁹⁹ This argument is graphically presented in the chart that Arser employees shared with EIA investigators in 2018 (Figure 13) (See Annex I for the complete supply chain document shared with investigators), which presents a fully integrated supply chain in China that connects European importers to one single forest of harvest managed by KFPL.

Kolombangara is a small, cone-shaped volcanic island of approximately 15 kilometers in diameter extending from sea level to an altitude of approximately 1,600 meters at its center, located in Western Province of Solomon Islands.¹⁰¹ KFPL is responsible for the management of the Kolombangara Forest concession, which covers a large portion of the island of Kolombangara (Figure 14). Prior to KFPL, the Levers Pacific Timber company intensively logged and degraded much of the lowland and mid-altitude forests, legally, up until 1986. In these zones, the natural forests – where pencil cedar grows - were almost entirely eliminated and replaced by plantations. As a

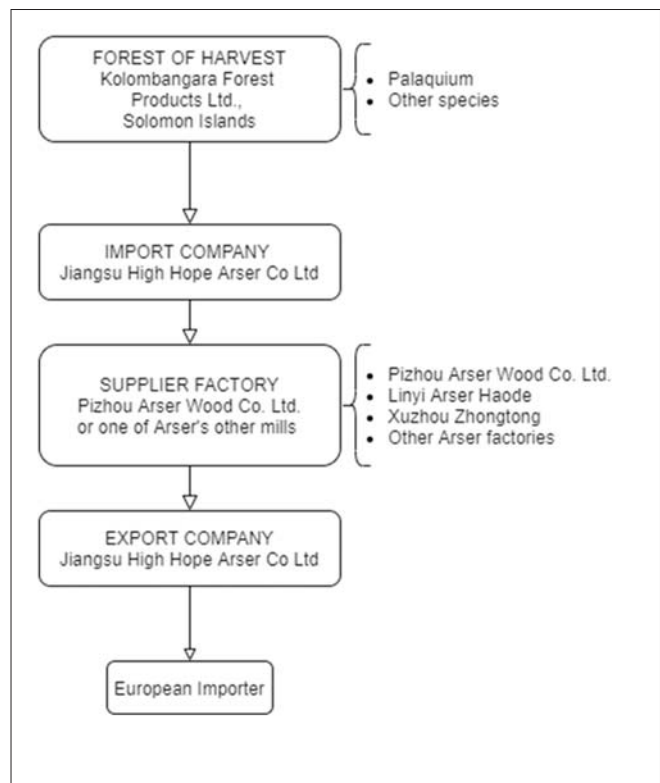
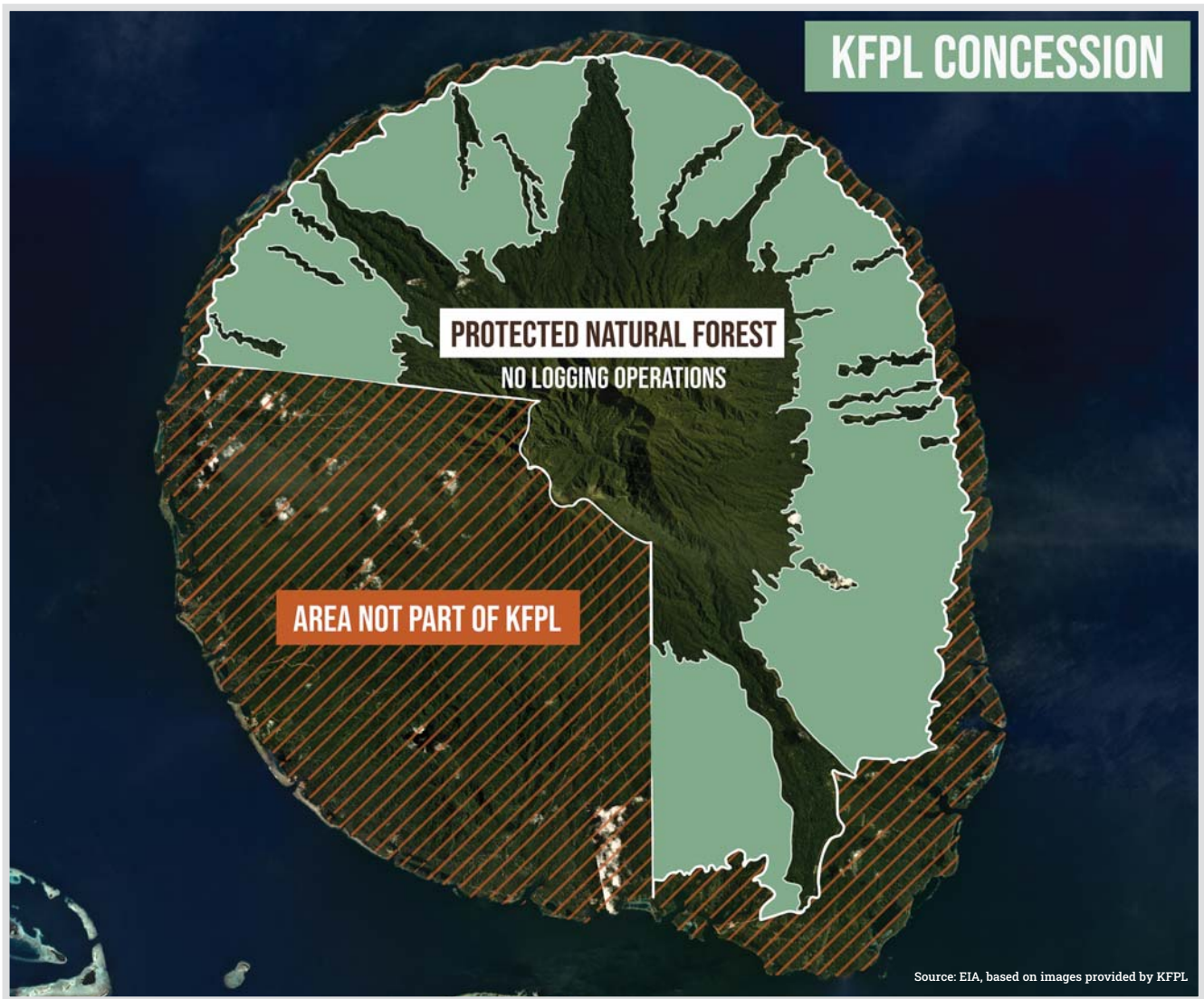


Figure 13
The pencil cedar-faced supply chain as presented by Arser¹⁰⁰

forest expert described it: “Kolombangara was subjected to probably the most intense logging of any island in the Solomons” prior to KFPL operations.¹⁰²

Today the lower slopes of KFPL’s forest concession are covered by an unusual mix of exotic and local tree species coexisting in a secondary forest that includes acacia (*Acacia mangium*), balsa (*Orchroma lagopus*), eucalyptus (*Eucalyptus deglupta*), mahogany (*Swietenia macrophylla*), teak (*Tectona grandis*), as well as species from earlier plantings like cedar (*Cedrela odorata*).¹⁰³ Only limited areas of natural forest cover have survived and it is only there that some pencil cedar grows on the KFPL concession.¹⁰⁴ Over 99 percent of the volume of wood produced and exported by KFPL comes from its plantations, not from the rare patches of natural forests (Figures 15 and 16).¹⁰⁵ According to EIA’s investigation, the pencil cedar produced by KFPL has been minimal, peaking at 260 cubic meters in 2016 and not exceeding 140 cubic meters per year since then.

Despite the very limited amount of pencil cedar produced each year, KFPL was seemingly being used by Arser as a cover, and according to EIA’s investigation, the KFPL management was not aware of this (see Box 3). When contacted by EIA, Arser stated that “from 2014 to 2019, JHHA [Arser] imported 270,000m3 of FSC logs from KFPL (including a small amount of certified non-FSC logs) ,of course Pencil cedar also included in this quantity,” and also stated that in 2020 it suspended the import of FSC logs from KFPL.



Source: EIA, based on images provided by KFPL

Figure 14
Kolombangara Island and the Kolombangara Forest Products Limited (KFPL) forest concession

KFPL is the only company to hold a valid FSC-FM certificate in Solomon Islands.^{106,107} KFPL conducts logging operations on approximately 14,000 hectares of the estate and manages a forest reserve area nearly twice as large, approximately 25,000 hectares. According to the KFPL general manager, the company has struggled to keep illegal loggers out of their forests.

As explained in the following section, the volume of pencil-cedar faced plywood that can be manufactured from the quantity of pencil cedar produced by KFPL represents a small fraction of the overall volume of pencil-cedar faced plywood exported by Arser to its European clients.

2.2 Mass Balance Gap

EIA determined that the log volume Arser obtained from KFPL falls short of the amount that would have been necessary to produce the quantity of pencil cedar-faced plywood that Arser exported to Europe, by nearly 20-fold. As explained above, the general manager of KFPL told



Figure 15
Export of KFPL's logs in bulk from Solomon Islands to China

MEET THE MANAGER OF KOLOMBANGARA FOREST PRODUCTS, THE “COVER” FOREST

The following paragraphs summarize a Q&A that took place over Dec 2020-Jan 2021 between EIA investigators and Dan Raymond, general manager of Kolombangara Forest Products Limited (KFPL), Solomon Islands.

EIA: Were you aware your concession was used as a cover by Jiangsu High Hope Arser to launder wood?

Dan Raymond (DR): No.

EIA: No idea at all?

DR: No.

EIA: What volumes have you sold to Arser over the years? In particular pencil cedar?

DR: From our records the maximum volume of pencil cedar Kolombangara Forest Products Limited (KFPL) sold to High Hope Arser during one year was about 260 cubic meters in 2016. Most years we actually sold much less pencil cedar to them, usually less than 140 cubic meters per year. But High Hope Arser has purchased a lot of other timber species from us, in much bigger volume. Until they stopped purchasing from us by the end of 2019, they were our biggest buyer, purchasing around 40,000 cubic meters of timber annually. They bought mostly FSC logs of eucalyptus, gmelina, acacia, camptosperma, terminalia, pometia pinnata [taun], calophyllum [bintangor] and other mixed species. KFPL sells some non-FSC wood as part of our community program on behalf of local people in the community who grow plantations on their own land. The money raised goes to local farmers to support them and their families. Arser supported this program, buying a few thousand meters of community-grown non-FSC wood a year.

EIA: What are some possible other sources of pencil cedar?

DR: Pencil cedar as a group of species mostly grows at very low density through the natural forests of Solomon Islands. The exception is the island of Rennell which has been heavily logged over the last few years. In my opinion, any large volumes of pencil cedar from Solomon Islands have most likely originated from Rennell Island.

It is also worth mentioning that few people are capable of identifying processed timber, so it could be that other species were being used and identified as Palaquium species.

EIA: Based on our research and field work, we see high levels of illegality in the logging sector of the Solomon Islands. What is your personal experience in this domain?

DR: Sadly this is true. For instance, I have been approached a number of times in my role at KFPL to provide fabricated documentation for wood in exchange for payment. The 26,000 hectare reserve we work hard to protect has been entered and illegally logged five times in the last five years. We currently have four separate court actions underway to stop and apply penalties to companies that have illegally come into our protected area. Even if we win these actions, justice will likely not be served because the companies evaporate, their directors are never called to account, and fines are hardly ever paid. In my previous role working within the Ministry of Forestry for five years I saw the power of the timber industry over politicians to get licenses issued when they were clearly illegal, and a range of other corrupt practices. The timber industry is the single biggest source of money in Solomon Islands so it has the ability to influence outcomes and most politicians are involved in some way with forestry companies. The good news is the current leadership within the Ministry is genuinely working to fight this corruption.

EIA: Has KFPL been impacted by the overall environment of unsustainability and corruption?

DR: Yes, absolutely. Around the world countries are moving to prevent wood products that originated in the Solomon Islands from entering their supply chains. This is being done in response to the publicly available information on poor forest management in this region. Because KFPL operates in Solomon Islands we have been caught by these blanket bans and buyers have deserted us despite our FSC license and the large areas of tropical forest we protect. The negative impacts have been felt by our workforce, the greater community of Kolombangara, and has made it harder for us financially to stop an illegal logging operation from entering the reserve through the courts.

EIA: Who or what is harmed by using KFPL as a cover?

DR: As a direct result of illegal and poor practices, wood has continued to pour out of the Solomons while prices have dropped. For KFPL this has meant it is harder to remain viable while natural rainforest extraction operations continue. It hurts even more when wood



Figure 16
Natural forest remnant in the Kolombangara Forest concession

from those operations claims to be sourced from KFPL. The extra costs KFPL carry include re-establishing and managing our plantations, supporting the Kolombangara community, providing housing, power and water for our workforce as well as supporting education, health and police service provision. If KFPL stops its operations the impact on the communities around us will be disastrous. Having operated for 32 years now, KFPL does not just run a community program but is part of the community of Kolombangara.

We provide training and work opportunities for the people of the island. Our workforce can reach 2,000 people making us the third biggest employer in the country. We support government clinics, schools and police services, and support almost every other aspect of life in Solomons. KFPL is unique in the Solomon Islands and across the Pacific and shows a model that, with political will, could be replicated instead of choosing to simply extract natural rainforest resources as fast as possible.



Source: EIA

Figure 17
The mass balance analysis gap

EIA investigators that KFPL has produced only small amounts of pencil cedar, usually no more than 140 cubic meters per year. The most that was harvested and sold in recent years was 260 cubic meters in 2016. If those 260 cubic meters of pencil cedar logs were used to produce 0.25 mm-thick veneers - a common thickness for face veneers in Chinese plywood - and applied as the face and back veneers to a plywood core, becoming a common 15 mm-thick commercial plywood panel - they would yield approximately 87,000 plywood panels (Figure 17), which would fill approximately 81 forty-foot (40ft) high cube (HC) containers (see Annex II for complete details and assumptions of the mass balance analysis).

According to EIA's findings, the volume of pencil cedar-faced plywood imported by European companies is far greater than 81 40-ft containers per year. EIA's very conservative estimate, based on multiple discussions with Arser factory workers, European importers, and trade data analysis, indicates that between 2016 and 2018 Arser exported at the very least 1,366 40-ft containers of pencil cedar-faced plywood to European companies each year. In other words, for that period, European companies appear to have imported almost 20 times more pencil cedar-faced plywood than Arser can produce from the limited volume of FSC-certified pencil cedar logs exported from the Kolombangara Forest concession. Of the at least 4,098 40-ft containers of pencil cedar plywood exported in total from 2016 to 2018, approximately 95 percent—3,855 containers—likely did not originate where Arser claimed they did, and were likely placed on the European markets with a misdeclared origin. When contacted by EIA, an Arser representative stated that "During 2016-2018, [Arser] exported some volume of Pencil cedar-faced plywood, but far less than 1000 containers / year."

2.3 Inconvenient Origin

The exact origin of the pencil cedar used in the thousands of plywood containers exported by Arser to European clients is unknown. As shown in the following paragraphs, EIA concludes that there is a high likelihood, and certainly

a non-negligible risk, that this timber was illegal. Timber sector workers in China told EIA investigators that at their level, there is no visible distinction between a species that comes from PNG or Solomon Islands, and therefore the timbers from the two different countries are used interchangeably.¹⁰⁸ Pencil cedar grows naturally in the forests of Southeast Asia and Oceania.¹⁰⁹ According to EIA's investigation, the production of pencil cedar-faced plywood in China relies on the peeling of pencil cedar logs imported primarily from PNG, Solomon Islands and certain Malaysian regions.¹¹⁰ Indonesia, with a long-standing and reportedly well-enforced log export ban,¹¹¹ is unlikely to be the origin of the pencil cedar logs manufactured by Arser. Log export bans are also in effect in two of Malaysia's three regions, and very limited amounts of logs are permitted for export from the third, making Malaysia an unlikely origin for the pencil cedar used by Arser for the manufacturing of pencil cedar-faced plywood exported to its European clients.¹¹² PNG and Solomon Islands are China's largest sources of tropical roundwood, and Arser Group companies have previously imported large quantities of logs from PNG.¹¹³ EIA believes that PNG and Solomon Islands are the likeliest sources of the pencil cedar used by Arser.

PNG has the third largest forest in the world and is known as one of the "megadiverse" countries in the world, containing over seven percent of the world biodiversity.¹¹⁴ PNG is also China's single largest source of tropical roundwood and China is the destination for 85-90% of the logs harvested in PNG.^{115,116} Pencil cedar is one of the key species of timber PNG sells to China.^{117,118} The country is one of the most biodiverse places on earth, home to tens of thousands of plant species.¹¹⁹ Of the over 100 timber species harvested and traded, around 20 are well known¹²⁰ and pencil cedar is among the most valuable. According to available data for 2017-2019, PNG has exported large and increasing quantities of pencil cedar logs, from 100,000 cubic meters in 2017 to 137,000 cubic meters in 2019. Pencil cedar saw and veneer-grade logs were in the top five most valuable species sold in those years.^{121,122,123}



Figure 18
Typical uncontrolled logging and forest clearing operations in PNG (left) and Solomon Island (right)

Illegal logging is pervasive in PNG. Estimates for the percentage of logs obtained from PNG at risk of having been illegally sourced range from 70 to 80 percent.^{124,125} PNG's logging sector is beset with rampant corruption and illegal practices, mismanagement, lack of law enforcement and systemic failure to protect communities' interests and indigenous land rights (Figure 20).^{126,127} The country ranks 138th in Transparency International's 2018 Corruption Perceptions Index, out of 180 countries assessed.¹²⁸ There is no FSC-certified forest in PNG.

Most logging operations in PNG involve violations of laws and regulations according to independent assessments.^{129,130} Between 2012 and 2016, around a third of PNG's log exports originated from forest clearance operations nearly all of which were illegally licensed, in violation of indigenous communities' land rights, according to an independent PNG government inquiry, government officials and, in some cases, court decisions. In this period a holding company for Arser's parent company, Jiangsu High Hope International Group,¹³¹ imported over 125,000 cubic meters from one of these controversial operations.^{132,133}

Solomon Islands, like PNG, is home to remarkably biodiverse rainforests, with some sources estimating 4,500 different plant species.¹³⁴ A small set of these species, perhaps 30 to 40, are commercially harvested, and pencil cedar is among the most important and high-value.¹³⁵ As is the case for PNG, the risk that exported timber is the product of illegal logging is very high in Solomon Islands, upwards of 80 percent according to some estimates.¹³⁶ Numerous causes contribute to serious and widespread illegal logging in Solomon Islands, including lack of capacity to enforce forest laws, poor protection of land rights, collusion between logging companies and government officials, and other forms of corruption.¹³⁷ Recent reporting has highlighted the issue of illegal logging and recurrent conflict with communities in Solomon Islands.^{138,139}

According to the International Monetary Fund, "attempts to reduce uncontrolled logging have been unsuccessful. Regulatory enforcement is currently lax, and the industry is largely controlled by foreign companies."¹⁴⁰ Common types of illegalities in Solomon Islands include: logging without permission of the landowner, logging outside concession boundaries or in excess of allowed number of trees, logging in prohibited places and logging of protected species, logging without conducting environmental impact assessments, and non-compliance with legal requirements for providing detailed logging maps.¹⁴¹ An industry source in Solomon Islands told EIA investigators that he believes the export of pencil cedar from Solomon Islands to China in recent years relied on clear cutting of forests located on Rennell Island, home to the UNESCO first natural World Heritage site and its buffer zone (see Box 4).

The pencil cedar imported by European companies that was not coming from the Kolombangara Forest concession is at high risk of being illegal. It also appears

BOX 4.

PENCIL CEDAR: A THREAT TO THE RENNELL ISLAND WORLD HERITAGE SITE

Just 80 kilometers long and 14 kilometers wide, Rennell Island is the southernmost island of the Solomon Islands. The eastern part of the island is the world's largest raised coral atoll, rich in biodiversity and endemic species, and was designated a UNESCO World Heritage site in 1998 (Figure 19).¹⁴² East Rennell was the first natural site under customary law to be inscribed on UNESCO's World Heritage List.



Figure 19
East Rennell Forest¹⁴³

The island is also highly coveted for its numerous bauxite reserves which lie beneath a forest that contains an unusually high density of pencil cedar.^{144,145,146} Some reports state that Rennell Island is the country's "only island" to have pencil cedar as the common tree.¹⁴⁷ For years, foreign logging and mining companies have exploited the western part of the island, often illegally clearing the pencil cedar-rich forests before exporting the logs out of the island.¹⁴⁸ This clear cutting and uncontrolled logging happening on the west of the island has directly impacted the East Rennell UNESCO World Heritage site, including the fauna populations including endemic birds.¹⁴⁹

The uncontrolled exploitation on western Rennell Island has repeatedly encroached on East Rennell in spite of its World Heritage protection status.¹⁵⁰ Recognizing the threat, UNESCO included East Rennell to the List of World Heritage Sites in Danger in 2013.¹⁵¹

Yet the threats have only grown in recent years. Asia Pacific Investment Development (APID), an Australian owned company, repeatedly ignored orders to cease logging and exports of logs, even after the government revoked its mining license in 2015.¹⁵² APID was found guilty of illegal logging in a 2015 High Court case.¹⁵³ The same year, Samlisan, another foreign mining company, was found to be illegally harvesting outside its concession and offshoring enormous volumes of logs. The company harvested and exported 50,000 cubic meters of timber, exceeding the maximum allowable amount per year in a matter of months.¹⁵⁴

that it cannot be FSC-certified. FSC's database shows only three certified forest concessions harvesting pencil cedar outside of Indonesia – where a long-standing and well-enforced log export ban is in effect.¹⁵⁵ The first such concession is located in Peninsular Malaysia, where a log export ban has been in place since 1985.¹⁵⁶ The second is located in Sabah, Malaysia, where a log export ban has been in place since 2018.¹⁵⁷ The last one is the Kolombangara Forest concession located in Solomon Islands.¹⁵⁸

2.4 Inflated Volumes and Potential Fraud in FSC

EIA's investigation finds that, contrary to Arser's claim, it appears that over 90 percent of the pencil cedar-faced plywood exported to Europe by Arser included timber with a high risk of being illegal, most likely originating from PNG and Solomon Islands, and possibly derived from the destruction of an East Rennell UNESCO World Heritage Site. EIA's findings regarding Arser's apparently deceptive use of the FSC-certified Kolombangara Forest concession coincide with the results of an investigation by FSC. In January 2021, FSC announced the conclusion of an internal investigation focused on the transactions conducted by Arser during the first half of 2019 (Figure 20):

"The Jiangsu High Hope Arser group of companies and the group's processing manufacturers had inflated volumes of certified wood and were selling it as FSC-certified into the European market. Two of these certificates have now been suspended pending further investigation, and four have been terminated. Further investigations involving other companies are still ongoing and may lead to additional suspensions or terminations."¹⁵⁹

The FSC investigation focused on plywood made with face veneers of tropical timber species commonly known as bintangor (*Calophyllum spp.*), and came to a conclusion very similar to EIA's: Arser potentially committed large scale fraud, inflated volumes of certified timber and sold uncertified timber as certified. To EIA's knowledge, Arser has not responded to FSC's findings. According to its statement, FSC broadly identifies plywood manufactured in China as "posing a risk of false FSC claims."¹⁶¹ It is also worth noting that as of June 2020 the FSC certificates website lists some 6,500 Chinese companies whose certificates have expired or been terminated, and a further 300 currently suspended.¹⁶² Considering that European buyers for years viewed Arser as one of the best plywood manufacturers in China, it is essential that FSC investigate major Chinese plywood brands claiming to sell certified timber products. It is also essential that European importers take appropriate due diligence actions to mitigate risk associated with imports from the above mentioned list

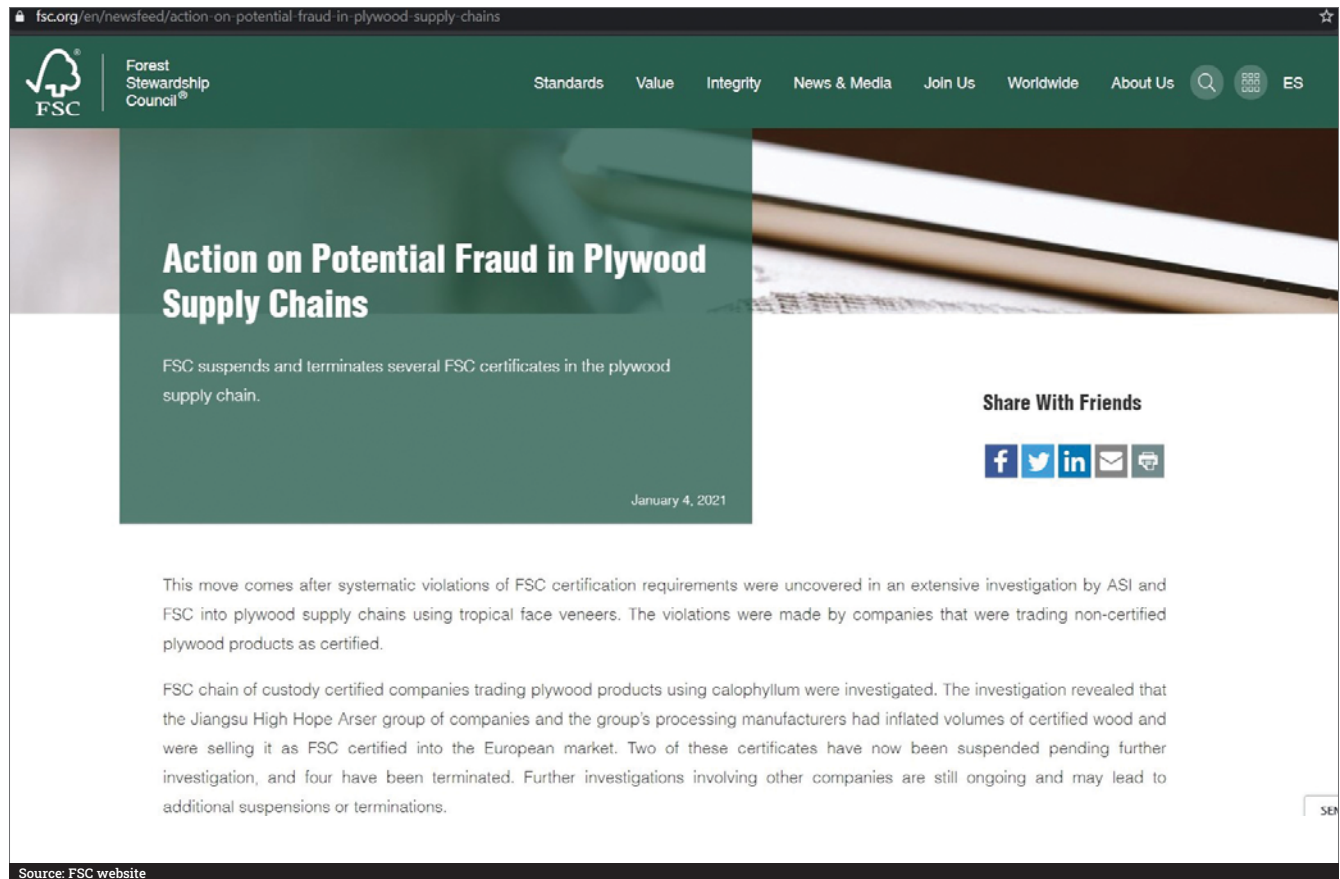


Figure 20
FSC's statement on suspension and termination of Arser's group entities¹⁶⁰



ARSER WOOD



AlphaPly outside the Arser factory

DILIGENT FAILURE: THE ROLE OF THE EUROPEAN COMPANIES

According to EIA's findings, between 2016 and 2018, a minimum of 3,855 containers of pencil cedar-faced plywood containing tropical timber of high risk, unknown origin have been imported into and presumably placed on the European markets.¹⁶³ Based on EIA research, the origin of all the pencil cedar can not be KFPL as claimed by Arser, and it appears that contrary to Arser's repeated statements, the pencil cedar was likely not coming from an FSC-FM certified source.

EIA investigators found that several European importers of Arser plywood were to certain degrees aware of the scheme developed by Arser. They expressed to EIA their doubts about the legality of the timber, their suspicions about the mass balance gap, their distrust towards official documents presented by the company, and their knowledge of the likely FSC fraud that at least one of the European companies may have helped to cover up. Despite this knowledge, European importers have continued to import the pencil cedar-faced plywood

from Arser and place it on European markets. In certain cases, it appears they went further. One Arser sales employee explained to EIA investigators the collaborative business relationship and the type of special requests sometimes made by their clients, like Altripan, one of the largest plywood importers in Europe regarding their branded pencil cedar-faced AlphaPly plywood product (Figure 21):

“EIA: The AlphaPly plywood we saw in the factory we visited, it's saying on the package 'one hundred percent poplar,' but it's actually pencil cedar and poplar.[...] Why do you do that?

Arser: The customer requires to brand it. Maybe the customer likes it. But yes the face and back are pencil cedar. Just the core is poplar.

EIA: But you put 'one hundred percent poplar' so maybe customs is not suspicious? Or it's easier to pass?

Arser: Maybe.”

EIA: It's interesting. Do you have other customers in



Figure 21
Alpha Ply, an Altripan pencil cedar-faced plywood product, inside an Arser factory, and circled detail showing handwritten text: “100% poplar”.

Belgium?

Arser: Altripan.

EIA: Only Altripan?

Arser: Yes. [...]

EIA: And in the Netherlands?

Arser: Sakol.

In a statement to EIA, Altripan’s CEO stated “we did not ask to mark pencil cedar faced poplar core as ‘100% poplar,’” and said he “could not find any instruction nor any photo of plywood from Arser marked as ‘100% poplar’ with Pencil Cedar faces.”

3.1 Chinese Plywood on the Radar

Based upon more than five years of investigation and indications of likely EUTR violations, in 2019 and 2020 EIA filed a series of Substantiated Concerns (SC) with European authorities, focusing on the import of Arser’s pencil cedar-faced plywood by International Plywood (UK), Sakol (Netherlands), and Altripan (Belgium). Dutch and Belgian competent authorities conducted investigations into these SCs and agreed that Sakol and

Altripan NV had breached EUTR, and according to preliminary information received by EIA, both companies received warnings to cease the violating actions or be fined.¹⁶⁴ At the time of writing, no Competent Authorities have made their investigation outcomes public. The cases brought by EIA regarding European companies’ apparent violation of their due diligence obligation under EUTR when they imported Arser’s products provided unprecedented detail about the opacity of the plywood industry in China and the seeming complicity of European importers.

The EUTR took effect in 2013; it places two compliance obligations on the entities (typically the importers) who first place timber on the EU market. First, they must not place illegally harvested timber on the EU market. Second, they must exert due diligence in order to minimize the risk that they are placing illegally harvested timber on the EU market. The purpose of the due diligence obligation is to reduce the risk that illegal timber be placed on the EU market to a close to zero risk level also called “negligible” risk level in the regulation (see Box 5 for details on the due diligence obligation).¹⁶⁵

The non-negligible risks of import of illegal timber on the EU and UK markets posed by the import of Chinese plywood into Europe have been on European authorities radar for years. In 2015, the UK National Measurement Office released the results of a study focused on plywood manufactured in China and placed on the market in the UK. Of the 13 plywood samples tested with complete results, only three contained the actual species that the importing company had claimed them to be. The importer claims were incorrect for five of the 13 tested face veneers, and for eight of the 13 core veneers. Some of the species that were found were likely of tropical origin, such as palaquium (pencil cedar), sapeli, bintangor, red meranti, medang, and kedondong.¹⁷²

The findings by the UK EUTR Competent Authority (CA) were unambiguous:

“Of these, 14 companies submitted due diligence systems that were insufficient when compared to Article 6 of the European Timber Regulation (EUTR) No 995/2010, which outlines an Operator’s obligation to implement a due diligence system. The common thread running through these failures was a lack of narrative explaining how the combination of document gathering, risk assessment and mitigation (where necessary) enable the company to reach a conclusion of negligible risk that the timber in the product was sourced illegally.”¹⁷³

These results and their consequences for the industry were widely reported across Europe.^{174,175,176} A year later, the German authorities in turn focused their attention on Chinese-made plywood. As an outcome of the controls and testing they carried out, German authorities came to the conclusion that misdeclaration of species should

BOX 5.

THE DUE DILIGENCE PROCESS

The EUTR places two types of obligations on those who first place timber on the EU market, referred to as the “operator.” The first one is fact-focused: illegal timber must not be placed on the EU market. The second obligation, referred to as the “due diligence” obligation, is process-focused and is designed to minimize the risk that the operator places illegally harvested timber on the EU market.¹⁶⁶ In carrying out due diligence, the operator must follow a three-step process: access to information, risk assessment, and, when necessary, risk mitigation.

Timber products can be placed on the EU market if the risk evaluation concludes that the risk is close to zero or “negligible” according to the EU regulation.¹⁶⁷ If the detected risk is greater than negligible, a mitigation step must be carried out. It must consist of a set of “measures and procedures” that are “adequate and proportionate to minimise effectively that risk”.¹⁶⁸ Risk mitigation steps often involve obtaining additional information or documents, and/or requiring third party verification. By nature, the due diligence obligations are not one-size-fits-all and thus vary depending on the operator’s particular products and supply chains. The mitigation should be proportionate to the risk associated with the origin and supply chain. Of particular note is the fact that purchasing third-party verified timber, such as FSC-certified products, does not replace the operator’s due diligence obligation and does not guarantee that one has complied with the legal process; the operator must be able to demonstrate the source of the timber.¹⁶⁹

After these mitigation steps, if the risk of illegality remains greater than negligible, the timber should not be placed on the EU market. If it is, it represents a violation of the EUTR by the individual/company who placed the timber on the EU market.¹⁷⁰ According to the EUTR, if an operator does not satisfy the due diligence obligation, it has breached the provisions of the European regulation, even if the timber in question is legally harvested.

Criteria for the risk assessment could include, inter alia, the prevalence of illegal harvesting in the country or region of harvest, complexity of the supply chain, and existing assurance of compliance with applicable legislation or third-party verified schemes (e.g. FSC).¹⁷¹

According to these criteria, the general risks associated with the pencil cedar-faced plywood supply chain are high due to the origin of the timber, the forest governance issues in PNG and Solomon Islands, and the complexity of the supply chain.

ultimately be interpreted as a sign that the due diligence system put in place by the importer is not working. A representative from the German CA further explained that their effort should be particularly focused “on the element of the German EUTR law which enables the CA to order an Operator to send timber back if they cannot prove that it is legal.”¹⁷⁷

European timber federations have also regularly invited their members to pay close attention to the import of Chinese-made plywood, especially when it contains tropical species.^{178,179} In particular in the UK, tropical plywood from China is still considered high risk according to the Timber Trade Federation (TTF). According to the TTF, “These products are accompanied by low scores on the Corruption Perception Index (CPI) in both the country of harvest and processing, an abundance of illegal logging reports, and a high likelihood of mixing (with non-declared species or species of different origins) within the supply chain.”¹⁸⁰ TTF’s latest warning openly points to multiple mythical claims related to the import of tropical plywood from China (Figure 22).

MYTH	REALITY
I have gathered logging permits, invoices and other paperwork from my supplier. This is my due diligence.	Paperwork is not the ultimate evidence of due diligence: it is your assessment and processing of them and how you have reached a 'negligible' risk conclusions that count.
My Plywood is FSC (or PEFC) certified. I have invoices and CoC certificate to prove the validity of this claim. So I am compliant.	Certification is a very useful tool, but it does not equate to 'due diligence'. You will still need put this information (e.g. the FSC claim) and the evidence obtained (e.g. Invoice and CoC certificate) into your due diligence system (i.e. risk assessment criteria and mitigation process) to see if they can derive a low risk conclusion. Take special note if the certification took place in regions with high-profile reports over certification credibility issues.
We only use one plantation species from China in our plywood, therefore they are low risk.	It can be common for species to get mixed in the factories due to poor segregation and record control on site, resulting in species mis-declaration. How do you avoid this?
Though our face veneer is made of species from a high-risk tropical country, but we only use FSC certified species from this country.	It is also still a norm for wrong or falsified documents to be used as proof of legal harvesting for plantation species in China. How do you ensure all the documents are legitimate?
	There are instances where logs of different origin (non-certified) can enter the supply chain. For example, this could be when sawmilling carried out by third party suppliers. How do you ensure materials used in your product really come from the declared FSC sources? How do you avoid this risk?

Source: TTF's website

Figure 22
Tropical plywood made in China: the risks identified by the industry¹⁸¹

But the efforts of competent authorities and timber federations were not enough. Multiple importers of Arser plywood told EIA investigators that they were aware of risks in their supply chain, did not fully mitigate them, and continued to import Arser's pencil cedar-faced plywood. As presented in the following section, importers addressed their recurrent quality problems with their supplier, but did not fix legality and origin problems. Consistent with this analysis, EIA has filed several legal complaints with the Belgium, Dutch and British EUTR CAs. To date, no CA investigative findings have been made public.

3.2 Yes We Can: Address Quality Control Issues

According to EIA's investigation, several European companies built a long-standing relationship with Arser

that allowed them to address quality issues one after another—yet they left origin, legality, and paperwork authenticity issues unsolved.

Some European companies who spoke with EIA investigators have imported pencil cedar-faced plywood from Arser for many years. A manager from the Dutch company Sakol told EIA investigators that his company has been importing pencil cedar from Arser for seven years.¹⁸² Arser also held a longstanding relationship with its largest European client, the British company International Plywood (IP). IP was a corporate sponsor for Arser employees' football team (Figure 23).

In order to build their relationship, European importers or their third-party representatives may make frequent trips to China to visit their plywood supplier. For example, in January 2018, an Arser sales employee explained to EIA investigators:



Source: Screen capture from Arser's website

Figure 23
Arser employees' football team with International Plywood's logo on their shirt¹⁸³

“Arser: Every year each customer from Europe, they come to us at least three times.

EIA: So Altripan for example they come three times, to visit you?

Arser: Yes, last year, they came to us four times. So next time, yesterday the owner from Altripan just told me, he will come back again in March, in the middle of March after Chinese New Year.

EIA: Do they discuss about EUTR requirements?

Arser: No need, EUTR because we do very good job on EUTR, so the customers they never talk about the EUTR, they like to talk about the price and the quality. But EUTR we just, our office just, the EUTR is the paperwork, the working is just [done] by our office and connecting with their office.”¹⁸⁴

The years of collaboration have allowed Arser and its European customers to solve the recurrent issues regarding quality control. Recurrent testing has been put in place in China and in Europe in order to guarantee that the plywood imported by European companies respects the EU regulations for performance standards, in particular regarding glue toxicity, veneer grade and timber species identification. As a representative from the UK-based company Meyer explained to investigators:

“Meyer: Yes, so we are testing our plywood regularly to make sure that it reaches the grade that we have purchased and it fails regularly. But it is not just our company, it is across the whole of the industry. [...] So there is a big problem with the industry with that at the moment.”¹⁸⁵

The need for increased quality control and responsiveness has created a niche for third-party companies, hired by European importers to verify quality in China, before containers are loaded and shipped to Europe. Some of these companies have also taken responsibility for the export of the plywood and the import to Europe. An employee from one such company, which works with Meyer and B&Q in the UK, among other European timber importers and distributors, explained to EIA investigators:

“Importer: We have our own two inspectors in China. We have a policy: we don't ship anything until it has actually been inspected and also we go to the factory ourselves and make sure the quality is good before we place any orders as well. Even then it cannot be guaranteed to get good quality [...] But we do our very best.”¹⁸⁶

In response to the quality control protocols established over the years, most European importers who spoke to EIA investigators mentioned substantial progress in the quality of the plywood products they have been importing from China. However, this attention has prioritized addressing quality problems and collecting paperwork, rather than critically assessing the legality and origin of the timber.

3.3 Yes We Can: Ignore Legality Risks

On the one hand, Arser's European customers told EIA investigators that they have managed to resolve quality control issues. On the other hand, they explained that they have identified risks regarding the unknown origin of the timber and have not mitigated them.

European importers told EIA investigators they were aware of the mass balance gap—the gap between what the certified Solomon Islands forest could produce and what Arser was selling (see Section 2.2). Therefore they were aware that they could not know the true origin of the timber they were importing into the EU. A high-level manager from the Belgian company Altripan explained:

“Altripan: You have 1,000 cubic meters FSC [timber] from Solomon Islands, [and of that] there's only 20 cubic meters pencil cedar... So again this is a species that is kind of tricky for the long term.”¹⁸⁷

A senior manager for IP told investigators in 2018:

“IP: So I agree with you, I don't quite think that the figures stack up quite as well as they should be. And it has been [mentioned] to us before just recently that they are bringing in so many logs and producing this amount. It would have to be like a 100 percent yield from a log. And you know that if you get 30 percent for face and back that's good. It's more likely to be 20 percent.[...]”
EIA: But that means that 80 percent of the face you don't know where it comes from?

IP: Yeah. Perhaps...Perhaps... To be honest we are thinking of alternatives... That's why we have moved a lot of stuff onto eucalyptus, beech. More temperate hardwoods rather than tropical hardwoods. I think tropical hardwood is always going to be difficult. The greens are never going to be happy.”¹⁸⁸

When contacted by EIA, IP stated that “International Plywood have not been informed by any credible organisation or body that [Arser] have been supplying more Tropical Faced Plywood including pencil cedar-faced plywood that they claim to be made with 100% FSC material than was possible using timber only originating in KFPL.”

A representative for a large European importer explained the gap between the certified supply and the amount of product produced by Arser, and summarized to EIA investigators the resulting risk of importing illegal timber:

“Importer: I mean everyone knows how the business works. You have like logs and how many pieces of the veneers do you get out of the logs? Not 100 percent but in the end most Chinese producers will end up with 100 percent of veneers out of one single piece of log. It's just not possible.[...] I have even seen this in Chinese factories. It is too dangerous.”

A manager from Sakol explained to EIA investigators the lack of transparency in the supply chain:

“EIA: In your company are you aware of the issues in China and have you tried to solve it with your supplier? Or already thinking that ‘we need something else?’ I want to see where you are in this path of transparency. How are you?”

Sakol: It's a difficult question, we are still working on it. I think we are on a better way for that but we don't have a solution.

EIA: So you have still a problem there?

Sakol: Yes. [...]

EIA: You know this supply chain is completely untransparent?

Sakol: Yeah.

EIA: And cannot be followed?

Sakol: Yeah.

EIA: And cannot be trusted?

Sakol: Yeah.”



Figure 24
Boxes of Meyer plywood labeled palaquium (pencil cedar) in an Arser factory

A manager at Meyer expressed doubts about the claimed origin of the product hidden behind an opaque and untrustworthy supply chain. He told investigators in 2018 that the legality of timber products they import from China is “questionable” and explained:

“Meyer: No, it's difficult because if you think of Arser, maybe they've got five Arser mills. Maybe they deal with 40 Arser mills, so they have five of their own but they bought business elsewhere and that's a problem to us. They tell us they do not put our business anywhere but the five mills, but sometimes we can't trust it. But you can only go on the paperwork, you can only do the visits, you can only go to see them and we are a long way away. Many miles...”¹⁸⁹

Yet the same year, a supplier factory for Arser produced boxes of pencil cedar-faced plywood for Meyer. (Figure 24)

When contacted for comment, a spokesperson for Meyer stated “As a company we have visited every part of the plywood supply chain in China,” “Meyer has always classified Chinese plywood as non negligible risk,” and “We have removed the purchasing of tropical logs from unknown supply chains within China.”

A manager from the UK subsidiary of the Belgian company Altripan explained to EIA investigators that given the risks associated with pencil cedar-faced plywood, his company decided to stop importing it into the UK market. He explained that this decision was taken because of the different level of enforcement of EUTR between the UK and other parts of Europe where Altripan sells its products, such as France, Italy, Benelux, Netherlands, and Poland.¹⁹⁰ Meanwhile, Altripan continued to import this product from Arser via the the port of Antwerp in Belgium and sell it in different countries across Europe, EIA investigators learned in meetings with Arser representatives.¹⁹¹ Altripan did not respond to inquiries on this matter when contacted by EIA.

3.4 Yes We Can: Accept Untrustworthy Documents

Many of Arser's European clients told EIA investigators they doubted the validity of the documents they received from their Chinese business partner. A manager for the Dutch company Sakol explained:

“EIA: You said your documents, they are from China right? The documents you receive that prove the origin, they come from China?”

Sakol: Right, yes.

EIA: You don't have from the country of origin?

Sakol: It is from China. We are doing business in China.

That is the chain. [...] It is only China paperwork.[...]

EIA: Do you trust 100 percent these documents you receive from China? Do you think that it is always...

Sakol: No, I don't.”¹⁹²

A Meyer manager expressed similar doubts about the documents they received from their Chinese suppliers:

“EIA: How many percent do you trust the document you receive now, 70 percent or...

Meyer: I would say we don't. No, I wouldn't say that much. You have to trust it because you have to prove what you have done: what is the country like, is there any corruption in the country, is the company corrupt, is the company trustworthy, is all the paperwork there, do we believe it? So yes, we have to say we trust it, but we can't say 100 percent because the countries are corrupt and the government's are corrupt and trade is corrupt, even in the UK.”^{#193}

When contacted for comment, a representative for Meyer responded: “From 2014 to 2018, not a single report became available that would oppose the use of FSC certification as risk mitigation in the procurement of plywood utilising face material from Solomon Islands. However, following on from the publication of NGO reports in the autumn of 2018 in relation to the Solomon Islands, Meyer Timber stopped the purchasing of any plywood from [Arser] that incorporated any component that originated in the Solomon Islands.”

The senior manager for International Plywood (IP) explained how in his experience, IP's Chinese suppliers would not provide accurate information about the species supplied for the plywood:

“IP: And all these names, palaquium, that everyone was coming up with these names but it was all virtually the same. They would bring in these logs and they would be like an assortment but the only ones that they could actually peel and make plywood from was probably the pencil cedar. The rest of it, they might put it on the shipping documents and say it was that... But fuck it. We've been in this game too long...”^{#194}

When contacted for comment, the CEO of IP responded “We as a company do everything that is practically possible to confirm the source of every product that we import.”

3.5 Yes We Can: Cover Up Potential Fraud

“There are rumors circulating that the people in China are actually selling more FSC veneer, bintangor or pencil cedar veneer, than the people in the Solomon Islands can actually ship.” This is how a manager from a plywood importer for the UK, described to EIA investigators the issue of suspected FSC fraud related to the export of pencil cedar-faced plywood to Europe. The same importer went on, “In China you can buy an FSC certificate if you know the right people. You can buy an FSC certificate without any audit being done.”^{#195}

Alleged FSC fraud schemes related to the Chinese plywood sector have been widely reported. As an

investigative journalist described in 2018 in an article for the Chinese news outlet Sixth Tone: “in China, the [FSC] logo has become less a symbol of sustainability and more a tool for ‘greenwashing’ – allowing illegally harvested timber to avoid scrutiny and enter global markets.” This journalist posed as an importer to Europe, visiting nine different Chinese enterprises of varying sizes. Seven of the nine spoke openly about using FSC logos and certification despite not meeting the standards. For the companies, the risk of being caught by European authorities is negligible, as neither regulators nor buyers bothered to adequately check the authenticity of the certification they provide. According to company employees quoted in that article, “European importers are aware of and even encourage such fraud.” China's FSC representative confirmed the abuse of the logo.^{#196}

A senior manager for a European company importing plywood and other wood products described to EIA the casual abuse of FSC's system occurring in China:

“EIA: But how do they do FSC in China?

Importer: It's fake. It's fake. Just... You know FSC... There are maybe 20 guys in China... You know, bribes, it's just a joke. But it's like that: there's an invoice, it's written FSC, there's a number, that's it. [...] ‘My company is PEFC or FSC,’ all these things, I think it's bullshit, but I need it. So from China we bought some FSC, I knew it wasn't real. We stopped, because we said we didn't like it, and a few more things... But there's a big guy here that's doing it. He's taking the risk. That's it.”^{#197}

A senior manager for IP told EIA investigators that IP had discovered and covered up instances of Arser violating FSC requirements in its supply chain. He referenced timber originating from Solomon Islands and appeared to reference KFPL, the Kolombangara forest, in particular:

“EIA: So you are still in the middle of a black box?

International Plywood: On some of the other ones yeah, but the guys that actually import the logs themselves, I can't remember the name of the company... Kolimgari? ... In the Solomon Islands. So they were bringing all of the logs in for them, buying a variety of things and then they were going and peel themselves. Even then when they were still doing that, first of all, they were getting them peeled at not their factories, but outside factories. So the chain of custody was then lost. So we couldn't say: ‘Well hang on a sec.’ We were not going to say anything to FSC because we have been selling this as FSC, but you know at the end of the day it's not right, you need to have full control. So when those logs arrive, it's got to go to the peeling factory, then the veneer and then the factory.”^{#198}

When contacted for comment, the CEO of IP responded: “International plywood has a state of the art computer system which monitors all chain of custody data and is 100% accurate. We are able to substantiate every pack of plywood we deliver [...] every delivery to every customer is 100% accurate in its product description and certification status.”

CONCLUSION AND RECOMMENDATIONS

Between 2016 and 2018, EIA estimates that nearly 4,000 containers of high risk tropical face plywood of unknown origin were imported into the EU. According to EIA's investigation, many European importers were aware of significant risks, yet continued importing. This multi-country scheme represents one of the largest reported violations of the EUTR since it came into force in 2013.

Arser, the largest Chinese plywood manufacturer and exporter to the world, appears to be at the heart of the problem. Contrary to the company's claim, it appears that over 95 percent of the pencil cedar-faced plywood exported to the EU between 2016 and 2018 were coming from areas with very high risk of illegal logging and likely laundered into the market through fraudulent FSC certification claims. To cover over an opaque supply chain in China and facilitating due diligence failures in Europe, Arser may have taken advantage of weaknesses in the FSC chain of custody system as part of the alleged major FSC fraud scheme.

According to EIA's long-term investigation, Arser's operation and alleged fraud illustrate the systemic problems of opacity, fraud, and cover up observed in multiple occasions throughout the tropical-faced plywood sector in China.

EIA's investigation reveals the risks directly associated with complex and globalized supply chains. In order to make the EUTR more effective against these apparently illegal timber flows, both Chinese and European regulators must rise to the challenge, combining stronger enforcement with adopting effective systems for transparency and traceability.

EIA recommends:

To regulators in the EU and UK

- Investigate and, as appropriate, prosecute under the EUTR and UKTR the European companies that have imported high risk pencil cedar-faced plywood without adequately mitigating identified risks.
- Recognize the high risks associated with the import of plywood made in China using imported tropical timber and increase the controls on imports of these products.
- Increase EUTR enforcement with the issuance of adequate penalties in order to effectively deter illegal imports.

To regulators in China

- Expand administrative and law enforcement efforts related to the plywood industry and its supply chains to address legality issues, such as document fraud.
- Leverage the drafting phase of the Forest Code implementing regulation to establish mechanisms that will protect China's plywood industry from the import of illegal timber.
- As proposed in Article 65 of the revised Forest Code, establish an effective ledger system in order to hold every entity along the supply chain accountable.

To regulators in China, the EU, and UK

- Use existing platforms, including the EU-China Bilateral Coordination Mechanism, to develop a pilot project focused on enhancing tropical-faced plywood trade legality, transparency and traceability.
- Increase trilateral coordination regarding the control and regulation of China–EU and China–UK plywood supply chains containing imported and tropical wood.

To timber industry actors in the EU and UK

- Consider all tropical-faced plywood manufactured in China to have unmitigatable risks and do not import it until China implements a robust transparency mechanism that makes it possible to trace timber materials from source to product.

To FSC

- Implement immediate actions to stop systematic fraud among FSC-certified companies in the Chinese plywood manufacturing sector, focusing on supply chains that involve tropical timber and global manufacturers.
- Require transparent digital tracking and reporting of all sales of FSC-certified wood products to prevent double-counting, from the stump to the final consumer.

ACRONYMS

CA	Competent Authority
CPI	Association Baka Bantou pour le Développement Durable de Ndjibot et de Ngoulminanga
CA	Competent Authority
CPI	Corruption Perceptions Index
EIA	Environmental Investigation Agency
EU	European Union
EUTR	European Timber Regulation
FSC	Forest Stewardship Council
FSC-FM	Forest Stewardship Council
IP	International Plywood
ITTO	International Timber Trade Organization
KFPL	Kolombangara Forest Products Limited
PNG	Papua New Guinea
RWE	Roundwood Equivalent
SC	Substantiated Concern
TTF	Timber Trade Federation
UK	United Kingdom
UNESCO	United Nations Educational, Scientific and Cultural Organization

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ANNEXES

Annex I: The pencil cedar-faced supply chain from KFPL through Arser

STEP 1.

Species: PALAQUIUM, CAMPNOSPERMA, TERMINALIA, CALOPHYLLIUM SPP, Pometia spp;

Country of Harvest: Solomon Islands

STEP 2. Forest of harvest

Name: KOLOMBANGARA FOREST

Address: Ringgi Cove, Kolombangara, Solomon Islands

FM/COC Number: SA-FM/COC-001070

STEP 4. Import Company

Name: Jiangsu High Hope Arser Co Ltd.

Address: 18F,#98,Jianye Road,Nanjing,China

COC NO.: SCS - COC - 005079 (*Brokers without Physical possession*)

STEP 6. Your supplier

Name: Pizhou Arser wood Co.,Ltd

Address: Fumin Road,Paoche Town,PizhouCity,jiangsu, P.R.China

COC NO.: SCS-COC-003910 (*Primary Processor*)

STEP 8.

Name: Jiangsu High Hope Arser Co Ltd.

Address: 18F,#98,Jianye Road,Nanjing,China

COC NO.: SCS - COC - 005079 (*Brokers without Physical possession*)

STEP 10. Altripan

Brand names: FSC PREMIUM ALPHAPLY

Supporting Documentation Required for;

STEP 2A. CHECKED AND VERIFIED ON FSC WEBSITE - 15/08/2016

Doc no: SA-FM/COC-001070

Valid from: 20/06/2015

Valid until: 20/06/2020

Issued to: Kolombangara Forest Products Ltd.

Stamped by: Soil Association

Species: Acacia mangium; Aglaia spp.; Anthocephalus chinensis Rich.; Calophyllum spp.; Camptosperma spp.; Cedrela odorata; Cordia alliodora (Ruiz & Pavon) Oken; Cryptocarya spp. Tropical Asia; Dillenia spp.; Endospermum spp.; Eucalyptus deglupta Blume; Eucalyptus grandis; Eucalyptus tereticornis; Eucalyptus urophylla; Gmelina arborea Roxb.; Gonystylus spp.; Myristica spp.; Ochroma lagopus Sw. (Balsa); Octomeles sumatrana Miq. (Binuang); Palaquium spp.; Paraserianthes falcataria (L.) Nielsen; Pinus caribaea; Pinus kesiya; Pometia spp; Prunus sp. (Yvaro); Pterocarpus indicus; Swietenia macrophylla; Tectona grandis; Triplochiton scleroxylon K. Schum.; Vitex spp.

Volume: N/A

Supplied as: FSC Certified

STEP 3. DOC 3 - UPDATED BL.PDF Bill Of Lading

Document Ref. No.: KFPL/201609

Date: 20/09/2016

From: KOLOMBANGARA FOREST PRODUCT LTD

To: Jiangsu High Hope Arser Co Ltd.

Species: Plantation export round logs

Volume: 9,880 pieces/9125.094 m³

Supplied as: FSC 100% Certified

STEP 3B. Felling Licence

Document Ref. No.: TIM 2/74

From: 10/02/1995

Until: 31/01/2065

Valid for: Kolombanga Forest Products

Species: N/A

Volume: 250,000 m³ per annum

TRG: This felling licence is too vague to be of much value on its own but is being used in conjunction with other documents.

STEP 5. DOC 5 - LOGS INVOICE(JHHA-PIZHOU ARSER)-1).PDF Commercial Invoices

Document Ref. No.: 37205272

Date: 23/12/2016

From: Jiangsu High Hope Arser Co Ltd.

To: Pizhou Arser Wood Co Ltd.

Species: PALAQUIUM, CAMPNOSPERMA, TERMINALIA, CALOPHYLLIUM SPP, Pometia spp;

Volume/Quantity: 833.092

Stamped by: State Administration of Taxation

Supplied as: FSC 100% Certified

ANNEXES

Annex II: EIA calculations and assumptions for mass balance analysis and for estimate of Arser’s exports of pencil cedar-faced plywood to Europe

1. Mass balance analysis

Assumption	Source or references
<p>STEP 1. A maximum of 260 cubic meters of pencil cedar logs are produced by KFPL...</p> <p>...and sold exclusively to Arser</p>	<p>EIA Source: Dan Raymond, the general manager of the FSC Kolombangara forest.</p> <p>Additional reference: According to the FSC Certification Assessment Reports for the certified Kolombangara forest, there is little to no pencil cedar harvested there. Palaquium (pencil cedar) does not appear on the list of the 10 species listed as being either the “main” or “additional” plantation species harvested at Kolombangara on any of the audit reports. Moreover, the audit reports repeatedly rule out that much if any harvesting could take place in the natural forest portion of the certified range. The 2015, 2016, and 2017 audit reports all state that “natural forest management (NFM) is not occurring at present,” and “none planned until about 2019/20.”</p> <p>FSC audit reports are here: https://info.fsc.org/details.php?id=a0240000005sTgVAAU&type=certificate</p> <p>EIA source: Undercover meetings with Arser company and factory managers and communication with the general manager of KFPL.</p>
<p>STEP 2. Assuming a peeling efficiency of 50 percent, the amount of usable material is 130 cubic meters.</p>	<p>EIA source: The director for International Plywood told EIA that 30% is a realistic figure for peeling efficiency of pencil cedar logs in Chinese mills.</p> <p>Additional references: A survey of eucalyptus peeling mills across China found a recovery rate ranging between 28% and 50%.¹⁹⁹</p>
<p>STEP 3. Peeling the usable material into face and back veneers at a thickness of 0.25 millimeters,...</p> <p>...for 4x8 (feet) sheets of plywood, the maximum number of veneer sheets produced from 130 cubic meters is 174,684.132.</p>	<p>Reference: Testimony submitted to the United States International Trade Commission states that most Chinese manufacturers cut their veneers to .3mm or thinner.²⁰⁰ Choosing the thinner end of the range is mathematically more generous to Arser.</p> <p>Reference: Dimensions of 4 x 8 feet (equivalent to 1220 mm x 2440mm) are the most common for a sheet of commercial plywood.²⁰¹ Almost any commercial plywood catalogue will offer panels of this size, for example pages 6-11 of the catalogue for International Plywood UK.²⁰²</p>
<p>STEP 4. Veneer sheets are applied to the face and back of plywood cores, yielding a maximum of 87,342 plywood panels.</p>	
<p>STEP 5. Assume a plywood panel thickness of 15 millimeters.</p>	<p>Commercial plywood panels come in a variety of thicknesses, ranging widely between 5mm-40mm, though 5-25 is most common. 15mm is in the middle of the range.</p> <p>Reference: Pages 6-11 of International Plywood UK catalogue.²⁰³</p>

Assumption

Source or references

STEP 6.

Given that a shipping container pallet can be stacked to a standard height of 900mm,...

References: The same International Plywood catalogue provides the number of panels per pallet corresponding to panel dimensions, to the right of the dimensions in parentheses. The number of panels measuring 2440x1220x15mm that fit on a pallet is given at 60.²⁰⁴

A Chinese plywood supplier website provides an additional supporting reference below:²⁰⁵

DESCRIPTION	SIZE (MM)	Unit price (\$/m3)			QTY /40HC		
		FOB Qingdao	CIF Valencia	CIF Marseilles	pcs	pallets	CBM
Commercial plywood, bintangor BB/CC, Poplar core, E1 glue	1220x2500x12	358	385	393	1422	18	52.05
	1220x2500x15	337	365	372	1134	18	51.88
	1220x2500x18	325	353	360	936	18	51.39
Commercial plywood, Okoume BB/CC, Poplar core, E1 glue (sapeli--same prices)	1220x2500x12	366	394	401	1422	18	52.05
	1220x2500x15	343	370	378	1134	18	51.88
	1220x2500x18	330	358	365	936	18	51.39
Commercial plywood, bintangor BB/CC, Poplar core, E1 glue	1220x2440x12	343	371	378	1440	18	51.44
	1220x2440x15	332	360	367	1170	18	52.24
	1220x2440x18	325	353	360	972	18	52.08
Commercial plywood, Okoume BB/CC, Poplar core, E1 glue (sapeli--same prices)	1220x2440x12	351	379	386	1440	18	51.44
	1220x2440x15	343	370	378	1170	18	52.24
	1220x2440x18	330	358	365	972	18	52.08

Source: EIA, 2017. Investigative material.

...and given that a standard 40-foot shipping container holds about 18 pallets,...

References: technical specifications from plywood manufacturers (including the one appended below). References generally state that a 40-foot "high-cube" (HC) container, the type commonly used for shipping plywood, holds 18-22 pallets.^{206,207} Choosing 18 is more generous to Arser because the smaller number of pallets per container mathematically yields a larger number of containers produced from the KFPL logs.

STEP 7.

Then each pallet holds $(900/15=60)$ 60 panels, and a container filled with 18 pallets holds $(60*18=1080)$ 1080 panels.

Therefore the 87,342 plywood panels with face and back pencil cedar veneer will be shipped in $(87,342 \text{ panels} / 60 = 80.9) = \mathbf{81 \text{ containers}}$

ANNEXES

Annex II: EIA calculations and assumptions for mass balance analysis and for estimate of Arser’s exports of pencil cedar-faced plywood to Europe

2. Explanation of how EIA estimated Arser’s exports of pencil cedar-faced plywood to Europe

Information given to EIA	Source	Calculation	Conclusion
<p>Factory A, which is an Arser supplier, produces approximately 70 containers of plywood per month. Approximately 80 to 85% of the plywood produced is for Arser, all of which is exported to European clients. Most of the plywood produced in this factory, and all the products seen in the factory for Arser is pencil cedar-faced plywood.</p>	<p>Meeting with Factory A manager</p>	<p>70 containers/ month = 840 containers/year $*0.8 - *0.85$ (percent of production for Arser) = 672 – 714 containers.</p>	<p>Factory A produces an estimated 700 containers of pencil cedar-faced plywood for Arser’s European clients</p>
<p>Factory B, which is an Arser supplier, produces about 70,000 cubic meters of plywood per year. The entire production is for export, and approximately 90% is supplied to Arser. Most of Arser’s clients are in Europe, and most of the factory’s production for Europe is plywood with a pencil cedar face.</p>	<p>Meeting with Factory B manager</p>	<p>70,000 cubic meters of standard panels (1.22m x 2.44m equivalent to 4-ft by 8-ft) stacked to 0.9m would fill approximately 26,129 pallets.</p> <p>18 pallets fit in a 40-foot high cube container.</p> <p>26,129 pallets /18 = 2,460 containers *0 .9 (percent supplied to Arser’s European clients) = 1,306.5 containers.</p> <p>A majority have faces of pencil cedar. Assume the most conservative majority of 51%.</p> <p>1,306*.51= 666 containers</p>	<p>Factory B produces at least 666 containers of pencil cedar-faced plywood for Arser’s European clients</p>
<p>Factory C, an Arser supplier, produces pencil cedar-faced plywood, including Starplex-branded panels produced for Sakol.</p>	<p>Meeting with Factory C manager</p>	<p>No figures</p>	<p>Additional unknown quantity of pencil cedar-faced plywood for Arser’s European clients</p>

REFERENCES

1. Karl D. Forth, "Construction, China Demand to Drive Global Plywood Growth to 2022 | Woodworking Network," Woodworking Network, October 24, 2016, <https://www.woodworkingnetwork.com/news/woodworking-industry-news/construction-china-demand-drive-global-plywood-growth-2022>.
2. EIA, based on data from Eurostat. "Eurostat - Data Explorer," accessed January 8, 2021, <https://appsso.eurostat.ec.europa.eu/nui/show.do>.
3. Ibid.
4. EU FLEGT Facility and Forest Trends, "Analysis of China's Trade with the EU and VPA Countries 2010-2019," government, EU Flegt, June 2020, <https://www.euflegt.efi.int/es/publications/analysis-of-china-s-trade-with-the-eu-and-vpa-countries-2010-2019>.
5. EIA, 2018. Unpublished investigative material.
6. September 25, 2020. Email correspondence.
7. SFA (State Forestry Administration), "Case Study on the Plywood Industry in China," China Forestry Development 2004. Beijing: China Forestry Publishing House, 2004.
8. Xiufang Sun, Liqun Wang, and Zhenbin Gu, "China's Timber Market System: An Overview" (Forest Trends, 2005), https://www.forest-trends.org/wp-content/uploads/imported/china_timber_market_system_final-5-31-05-pdf.pdf.
9. Analysis from EIA based on ITTO trade data.
10. ARNOLD, R.J., Y.J. XIE, S.J. MIDGLEY, J.Z. LUO, and X.F. CHEN. "Emergence and Rise of Eucalypt Veneer Production in China." *The International Forestry Review* 15, no. 1 (2013): 33–47.
11. "Biennial Review Statistics," ITTO International Tropical Timber Organization, accessed January 8, 2021, https://www.itto.int/biennial_review/.
12. SFA (State Forestry Administration). 2004. China forestry development 2004. Beijing: China Forestry Publishing House.
13. "China's Plywood Is Still Booming," WBPI Online, March 21, 2005, <https://www.wbpionline.com/features/china-plywood-is-still-booming>.
14. EIA, 2020, based on FAOSTAT database.
15. "China's Timber Market System" (Forest Trends, n.d.), https://www.forest-trends.org/wp-content/uploads/imported/china_timber_market_system_final-5-31-05-pdf.pdf.
16. Xiufang Sun and Kerstin Canby, "China: Overview of Forest Governance, Markets, and Trade," FLEGT Asia Regional Programme (Forest Trends, November 2010), https://www.forest-trends.org/wp-content/uploads/imported/china_timber_market_system_final-5-31-05-pdf.pdf.
17. "China's Timber Market System."
18. Yanjie Hu, "China Plies Its Trade," *Tropical Forest Update*, 2018.
19. Xiufang Sun, Liqun Wang, and Zhenbin Gu, "China's Timber Market System: An Overview" (Forest Trends, 2005), https://www.forest-trends.org/wp-content/uploads/imported/china_timber_market_system_final-5-31-05-pdf.pdf.
20. Xiufang Sun and Kerstin Canby, "China: Overview of Forest Governance, Markets, and Trade," FLEGT Asia Regional Programme (Forest Trends, November 2010), p.29.
21. Yanjie Hu, "China Plies Its Trade," *Tropical Forest Update*, 2018, pp 11-12.
22. SFA (State Forestry Administration), "Case Study on the Plywood Industry in China."
23. Xiufang Sun, "Forest Products Trade between China and Africa: An Analysis of Import and Export Statistics," April 2014, https://www.forest-trends.org/wp-content/uploads/imported/china-and-africa-report-letter_6-17-14pdf-pdf.pdf.
24. SFA (State Forestry Administration), "Case Study on the Plywood Industry in China."
25. Robert W. Lang, "Choose the Right Plywood," *Popular Woodworking Magazine* (website), January 25, 2019, https://www.popularwoodworking.com/wood/choose_the_right_plywood/.
26. "What You Need to Know About Hardwood Plywood," *Hardwood Distributors Association* (website), accessed April 15, 2021, <http://www.hardwooddistributors.org/postings/what-you-need-to-know-about-hardwood-plywood>.
27. Kun Zhang, Wenming Lu, and Hashiramoto Osamu, "Demand and Supply of Wood Products in China," *Forest Products Working Paper 1* (Rome: Food and Agriculture Organization of the United Nations, 2007), <http://www.fao.org/tempref/docrep/fao/010/k1978e/k1978e00.pdf>.
28. Zhang, Lu, and Osamu, "Demand and Supply of Wood Products in China."
29. Sun, "Forest Products Trade between China and Africa: An Analysis of Import and Export Statistics."
30. Yang Hua, "China's Natural Forest Protection Program: Progress and Impacts," *The Forestry Chronicle* 93, no. 2 (2017): 113–17.
31. "Demand and Supply of Tropical Wood Products in China Towards 2020" (Beijing, China: Research Institute of Forestry Information and Policy, Chinese Academy of Forestry (CAF), May 20, 2012).
32. Sun and Canby, "China: Overview of Forest Governance, Markets, and Trade."
33. Maarit Kallio et al., "China-Europe Forest Bioeconomy: Assessment and Outlook," *From Science to Policy, From Science to Policy* (European Forest Institute, December 2020), <https://doi.org/10.36333/fs11>.
34. "Biennial Review Statistics."
35. "A Lawless State: Europe's Borders Must Close to Trade in Illegal Timber" (Greenpeace, October 2006), <https://archivo-es.greenpeace.org/espana/PageFiles/182922/lawless-illegal-timber.pdf>.
36. Jessica Lawrence, Noriko Toyoda, and Helvi Lystiani, "Importing Destruction" (Rainforest Action Network, 2003), https://www.salvaforeste.it/documentazione/RAN_ImportingDestruction.pdf.
37. Zhang, Lu, and Osamu.
38. Wenbin Huang and Xiufang Sun, "Tropical Hardwood Flows in China: Case Studies of Rosewood and Okoumé" (Forest Trends, 2013), https://www.forest-trends.org/wp-content/uploads/imported/tropical-hardwood-flows-in-china-v12_12_3_2013-pdf.pdf.
39. "China's High Risk Timber Trade: Lessons from Papua New Guinea" (Global Witness, November 2017), <https://www.globalwitness.org/en/reports/chinas-high-risk-timber-trade-lessons-papua-new-guinea-en/>.
40. Evan Osnos, "China Feeds U.S. Demand for Wood as Forests Suffer," *Chicago Tribune*, December 18, 2006, <https://www.chicagotribune.com/news/ct-xpm-2006-12-18-0612180154-story.html>.
41. "China's Plywood Is Still Booming," WBPI Online, March 21, 2005, <https://www.wbpionline.com/features/china-plywood-is-still-booming>.
42. EIA, 2015 and 2016, undisclosed investigative materials.
43. Arnold et al.
44. Paul Fattig, "Wyden to Press China over Unfair Trade," *Mail Tribune*, May 21, 2007, <https://mailtribune.com/archive/wyden-to-press-china-over-unfair-trade>.
45. "China's Plywood Is Still Booming."
46. Yanjie Hu, "China Plies Its Trade."
47. R.J. Arnold et al., "Emergence and Rise of Eucalypt Veneer Production in China," *The International Forestry Review* 15, no. 1 (2013): 33–47.
48. "Tropical Hardwood Flows in China: Case Studies of Rosewood and Okoumé."
49. EIA, 2013, 2016, 2018. Unpublished investigative materials.
50. Yi, Shi. "How Illegally Harvested Timber Is 'Greenwashed' in China." *Sixth Tone*, January 16, 2019.
51. EIA, 2016 and 2018. Unpublished investigative materials.
52. Ibid.
53. "All Change in China? - Wood Based Panels," accessed January 13, 2021, <https://www.wbpionline.com/features/all-change-in-china/>.
54. Ibid.
55. Zhongmei Lu and Yiran Wu, "Seventy Years of China's Environmental Rule of Law: From History to the Future," *China Environment Network*, November 1, 2019, https://www.cenews.com.cn/opinion/201911/t20191101_915229.html.
56. "Massive Restructuring Effort in China to Eliminate Outdated and Polluting Wood Processing Mills," *Panels Furniture Asia*, October 18, 2018, <http://webcache.googleusercontent.com/search?q=cache:A19VyDKmtpJ:www.panelsfurnitureasia.com/en/news-archive/massive-restructuring-effort-in-china-to-eliminate-outdated-and-polluting-wood-processing-mills/2581+&cd=1&hl=en&ct=clnk&gl=be>.
57. "Current Trends in the Chinese Plywood Market - Global Wood Markets Info," *Global Wood Markets Info*, December 11, 2018,

REFERENCES

- <https://webcache.googleusercontent.com/search?q=cache:pkAbHuMhQkJhttps://www.globalwoodmarketsinfo.com/current-trends-chinese-plywood-market/+&cd=1&hl=en&ct=clnk&gl=be>.
58. "国务院关于印发大气污染防治行动计划的通知 (Notice of the State Council on Issuing the Air Pollution Prevention and Control Action Plan)," Pub. L. No. 2013 law, Number 37 (2013), http://www.gov.cn/zw/gk/2013-09/12/content_2486773.htm.
59. Keqiang Li, "李克强: 要像对贫困宣战一样 坚决向污染宣战_中华人民共和国中央人民政府门户网站," Central Government Portal, March 6, 2014, http://www.gov.cn/zhuanti/2014-03/06/content_2631811.htm.
60. "报道称山东临沂治污致6万人失业 官方回应-新华网," Chinese news website, Xinhuanet, July 3, 2015, http://www.xinhuanet.com/politics/2015-07/03/c_127979116.htm.
61. "Seventy Years of China's Environmental Rule of Law: From History to the Future."
62. "山东临沂被环保约谈后'休克式'治霾 关57家企业6万人失业," Guancha, July 2, 2015, https://www.guancha.cn/economy/2015_07_02_325383.shtml.
63. "Plywood Industry Accelerates the Elimination of Outdated Production Capacity," Chinese news website, Sohu, September 29, 2017, https://www.sohu.com/a/195503145_120702.
64. "山东临沂回应关停治污企业后数万人失业/治污/关停企业/债务危机_新浪新闻," Sina News Center, July 2, 2015, <http://news.sina.com.cn/c/2015-07-02/235432063872.shtml>.
65. Hao Feng, "China Releases 2020 Action Plan for Air Pollution," China Dialogue, July 6, 2018, <https://chinadialogue.net/en/pollution/10711-china-releases-2-2-action-plan-for-air-pollution/>.
66. Reuters Staff, "中国环保: 去年京津冀散乱污企业整治对PM2.5下降贡献30%, 将推广全国," Reuters, February 28, 2018, <https://reut.rs/3rkYkSR>.
67. "A Guide to the European Union Timber Regulation" (British Contract Furnishing Association, September 2017), https://www.thebcfa.com/sites/default/files/uploads/bcfa_-_a_guide_to_european_union_timber_regulations_19_10_2017.pdf.
68. "Guide to the EUTR: European Union Timber Regulation," n.d., https://www.importpromotiondesk.com/fileadmin/user_upload/Publikationen/andere/IPD_Guide_EUTR_E.pdf.
69. "Issues Relating to the EU Timber Regulation Legal Framework for Which Guidance Should Be Developed," February 2013, https://ec.europa.eu/environment/forests/pdf/guidance_document.pdf.
70. Available at: <http://www.arserwood.com/?back=main&lang=eng>
71. "Introduction - Introduction - 江苏汇鸿亚森国际贸易有限公司," accessed January 19, 2021, <http://www.arserwood.com/?CateID=10000116&lang=eng>.
72. "2018年中国500强排行榜 - 财富中文网," accessed January 20, 2021, http://www.fortunechina.com/fortune500/c/2018-07/10/content_309961.htm.
73. "2017年中国500强排行榜 - 财富中文网," accessed January 20, 2021, http://www.fortunechina.com/fortune500/c/2017-07/31/content_287415.htm.
74. "2016年中国500强排行榜 (公司名单) - 财富中文网," accessed January 20, 2021, http://www.fortunechina.com/fortune500/c/2016-07/13/content_266415.htm.
75. "2015年中国500强排行榜 (公司名单) - 财富中文网," accessed January 20, 2021, http://www.fortunechina.com/fortune500/c/2015-07/08/content_242835.htm.
76. "2014年中国500强排行榜 (公司名单) - 财富中文网," accessed January 20, 2021, https://www.fortunechina.com/fortune500/c/2014-07/14/content_212975.htm.
77. Introduction - Introduction - 江苏汇鸿亚森国际贸易有限公司." 78 EIA analysis of Chinese customs data
79. "汇鸿国际集团 High Hope International Group: Our Members," accessed January 19, 2021, <http://www.highhope.com/html/OurMembers/3375.html>.
80. "Jiangsu High Hope Arser Co. Ltd: Exceed Your Expectation" (Jiangsu High Hope International Group, n.d.).
81. "Our Brand - Our Brand - 江苏汇鸿亚森国际贸易有限公司," accessed January 20, 2021, <http://www.arserwood.com/?CateID=10000213&lang=eng>.
82. EIA, using Eurostat data. "Eurostat - Data Explorer," accessed January 8, 2021, <https://appsso.eurostat.ec.europa.eu/nui/show.do>. China is second to Russia in weight (kg) and value.
83. Courtesy of the independent website "FLEGT Action Plan Including VPAs, the EUTR and Licensing," EU-Products.xls. and ChinaCharts.xls. Accessed February 17, 2021, <http://flegtactionplan.info/monthlyeuimports.htm>.
84. General administration of customs, People's Republic of China. Compiled by Forest Trends.
85. "Eurostat - Data Explorer."
86. EU FLEGT Facility and Forest Trends, "Analysis of China's Trade with the EU and VPA Countries 2010-2019," government, EU Flegt, June 2020, <https://www.euflegt.efi.int/es/publications/analysis-of-china-s-trade-with-the-eu-and-vpa-countries-2010-2019>.
87. General administration of customs, People's Republic of China. Compiled by Forest Trends.
88. "Analysis of China's Trade with the EU and VPA Countries 2010-2019"
89. EIA, 2018, undisclosed investigative materials.
90. EIA analysis, based on Chinese customs data.
91. Ibid
92. Ibid.
93. Action on Potential Fraud in Plywood Supply Chains," Forest Stewardship Council, January 4, 2021, <https://fsc.org/en/newsfeed/action-on-potential-fraud-in-plywood-supply-chains>.
94. EIA, 2018. Unpublished investigative material.
95. Ibid.
96. September 25, 2020. Email correspondence.
97. Ibid.
98. EIA, simplified from the diagram provided by Arser (see Annex 1).
99. T.C. Whitmore, "Changes Over Twenty-One Years in the Kolombangara Rain Forests," *Journal of Ecology* 77, no. 2 (June 1989): 469-83.
100. "Woodmark Forest Certification Public Report," Certification Report, June 2015, <https://info.fsc.org/details.php?id=a024000005sTgVAAU&type=certificate>. 5.2.3 Land use history.
101. "Woodmark Forest Certification Public Report." 5.1 General Background of the Operation
102. Interview with General Manager of KFPL, 2020.
103. "Woodmark Forest Certification Public Report."
104. "Development of a Market System for Solomon Islands Timbers," Facilitating Agricultural Commodities Trade Project (Salwood Asia Pacific Pty Ltd, March 2009), https://lrd.spc.int/fact-publications-and-reports/doc_download/50-development-of-market-information-for-solomon-island-timbers.
105. "FSC Public Search," accessed January 20, 2021, <https://info.fsc.org/index.php>.
106. EIA, 2016. Unpublished investigative material.
107. J Kartasubrata, "Palaquium (PROSEA Timbers)," PlantNet, accessed January 22, 2021, [https://uses.plantnet-project.org/en/Palaquium_\(PROSEA_Timbers\)](https://uses.plantnet-project.org/en/Palaquium_(PROSEA_Timbers)).
108. EIA Field work 2018
109. Agung Prasetyo, James Hewitt, and Hin Keong Chen, "Indonesia: Scoping Baseline Information for Forest Law Enforcement, Governance and Trade" (Kuala Lumpur: EU FLEGT Facility, January 2012), <https://www.euflegt.efi.int/documents/10180/23308/Baseline+Study+7%2C%20Indonesia+-+Overview+of+Forest+Law+Enforcement%2C%20Governance+and+Trade/fbbe7de-ead6-4238-b28b-7a3c57fb7979>.
110. "Logging and Export Bans."
111. "Stained Trade: How U.S. Imports of Exotic Flooring from China Risk Driving the Theft of Indigenous Land and Deforestation in Papua New Guinea" (Global Witness, August 2017), <https://www.globalwitness.org/en/campaigns/forests/stained-trade/>.
112. "GEF Quarterly Operational Report - Q1/2014: Conservation and Resource Management Project Papua New Guinea" (United Nations Development Program, Q1 2014), https://info.undp.org/docs/pdc/Documents/PNG/2014%20Q1_Q2%20Quarterly%20Operational%20Progress%20Report_CbFCCRM%20Project.pdf.
113. "A Major Liability: Illegal Logging in Papua New Guinea Threatens China's Timber Sector and Global Reputation" (Global Witness, August 2018), <https://www.globalwitness.org/en/campaigns/forests/major-liability-illegal-logging-papua-new-guinea-threatens-chinas-timber>

sector-and-global-reputation/.

114. "Stained Trade: How U.S. Imports of Exotic Flooring from China Risk Driving the Theft of Indigenous Land and Deforestation in Papua New Guinea."

115. "UN Comtrade Database," accessed February 24, 2021, <https://comtrade.un.org/data/>.

116. "浅谈巴布亚新几内亚材树种资源概况-财经频道-手机搜狐," Chinese news website, Sohu, estimate 2016, <https://m.sohu.com/n/475127032/>.

117. Rodrigo Cámara-Leret et al., "New Guinea Has the World's Richest Island Flora," *Nature* 584, no. 7822 (August 27, 2020): 579–83, <https://doi.org/10.1038/s41586-020-2549-5>.

118. P.J. Eddows, "The Utilization of Papua New Guinea Timbers" (Papua New Guinea Forest Industries Association (Inc.), unknown), https://www.fiapng.com/UTILIZATION_TIMBER.pdf.

119. "SGS Log Export Monthly Monitoring Report for December 2017 to the Papua New Guinea Forest Authority" (Port Moresby: SGS PNG Ltd, March 2018), https://pngforests.files.wordpress.com/2019/05/sgs_dec_2017.pdf.

120. "SGS Log Export Monthly Monitoring Report for December 2018 to the Papua New Guinea Forest Authority" (Port Moresby: SGS PNG Ltd, March 2018), https://pngforests.files.wordpress.com/2019/05/sgs_dec_2018.pdf.

121. "SGS Log Export Monthly Monitoring Report for December 2019 to the Papua New Guinea Forest Authority" (Port Moresby: SGS PNG Ltd, March 2019), https://pngforests.files.wordpress.com/2020/05/sgs_dec_2019.pdf.

122. Sam Lawson, "Illegal Logging in Papua New Guinea," *Energy, Environment and Resources* (London: Chatham House, April 2014), https://www.chathamhouse.org/sites/default/files/home/chatham/public_html/sites/default/files/20140400LoggingPapuaNewGuineaLawson.pdf.

123. Alison Hoare, "Methodology for Estimating Levels of Illegal Timber-and Paper-Sector Imports: Estimates for China, France, Japan, the Netherlands, the UK, the US and Vietnam" (London: Chatham House, November 2014), https://www.chathamhouse.org/sites/default/files/field/field_document/20141125IllegalLoggingMethodologyAppendixHoareUpdate.pdf.

124. Lawson, "Illegal Logging in Papua New Guinea."

125. "Timber Legality Risk Assessment: Papua New Guinea" (NEPCon, August 2017), <https://preferredbynature.org/sites/default/files/library/2017-08/NEPCon-TIMBER-PapuaNewGuinea-Risk-Assessment-EN-V1.1.pdf>.

126. "Corruption Perceptions Index," *Transparency.org*, 2018, <https://www.transparency.org/en/cpi/2018>.

127. Lawson, "Illegal Logging in Papua New Guinea."

128. "Timber Legality Risk Assessment: Papua New Guinea"

129. "汇鸿国际集团 High Hope International Group: About Us," accessed January 19, 2021, <http://www.highhope.com/html/AboutUs/3363.html>.

130. "A Major Liability: Illegal Logging in Papua New Guinea Threatens China's Timber Sector and Global Reputation."

131. "Stained Trade: How U.S. Imports of Exotic Flooring from China Risk Driving the Theft of Indigenous Land and Deforestation in Papua New Guinea."

132. "Biodiversity and Ecosystem," Solomon Islands Government, Ministry of Forestry and Research, accessed February 19, 2021, <https://mofr.gov.sb/en/forestinfo/forest-forestry/biodiversity>.

133. "Development of a Market System for Solomon Islands Timbers."

134. Jade Saunders and Marigold Newman, "Regulating the Trade in Illegal Timber: Republic of Korea Update" (*Forest Trends*, October 2018), <https://www.forest-trends.org/wp-content/uploads/2019/01/Forest-Trends-Korea-Brief-Final-2019.pdf>.

135. "Paradise Lost: How China Can Help the Solomon Islands Protect Its Forests" (*Global Witness*, October 2018), <https://www.globalwitness.org/en/campaigns/forests/paradise-lost/>.

136. Louise Hunt, "Solomon Islanders Imprisoned for Trying to Stop the Logging of Their Forests," *News, Mongabay Environmental News*, May 17, 2019, <https://news.mongabay.com/2019/05/solomon-islanders-tried-to-stop-the-logging-of-their-forest-and-may-pay-the-price/>.

137. Louise Hunt, "A New Election Brings Little Hope for Solomon Islands' Vanishing Forests," *Mongabay Environmental News*, May 17, 2019, <https://news.mongabay.com/2019/05/a-new-election-brings-little-hope-for-solomon-islands-vanishing-forests/>.

138. "Solomon Islands: 2018 Article IV Consultation—Press Release; Staff Report; and Statement by the Executive Director for the Solomon Islands,"

vol. 2018 (International Monetary Fund (IMF), Asia and Pacific Department, November 8, 2018), <https://doi.org/10.5089/9781484383797.002.A001>.

139. "Paradise Lost: How China Can Help the Solomon Islands Protect Its Forests."

140. <https://whc.unesco.org/en/list/854>

141. "East Rennell (Solomon Islands)," UNESCO World Heritage Centre, accessed January 21, 2021, <https://whc.unesco.org/en/documents/175064/>.

142. "Mission Report: East Rennell (Solomon Islands) (854), 10-21 May 2019" (United Nations Educational, Scientific and Cultural Organization, Convention Concerning the Protection of the World Cultural and Natural Heritage, World Heritage Committee, June 25, 2019), <https://whc.unesco.org/document/175219>.

143. John Aatai, "Logging Illegal, Says Renbel Man," *Solomon Star News*, August 16, 2015, <https://www.solomonstarnews.com/index.php/news/national/item/15959-logging-illegal-says-renbel-man>.

144. Munch-Petersen N.F. (2011) *An Island Saved, At Least for Some Time? The Advent of Tourism to Rennell, Solomon Islands*. In: Baldacchino G., Niles D. (eds) *Island Futures*. *Global Environmental Studies*. Springer, Tokyo. https://doi.org/10.1007/978-4-431-53989-6_13

145. "Push for Logging Ban in Western Solomons," *Pacific Islands Report*, February 5, 2010, <http://www.pireport.org/articles/2010/02/05/push-logging-ban-western-solomons>.

146. Ednal Palmer, "Solomons Logging Company Defies Seizure Order," *Pacific Islands Report*, September 2014, <http://www.pireport.org/articles/2014/09/29/solomons-logging-company-defies-seizure-order>.

147. Report of the joint World Heritage Centre /IUCN Reactive Monitoring mission to the East Rennell, 25 June 2019, <https://whc.unesco.org/document/175219> Accessed October 9 2020.

148. "Solomon Islands Paradise Destroyed by Plunder," *PNGi Central*, April 9, 2019, <http://pngicentral.org/reports/solomon-islands-paradise-destroyed-by-plunder/>.

149. "Mission Report: East Rennell (Solomon Islands) (854), 10-21 May 2019."

150. Palmer, "Solomons Logging Company Defies Seizure Order."

151. "Solomon Islands Government Seizes Apid's Controversial Log Shipment," *Papua New Guinea Mine Watch* (blog), July 31, 2015, <https://ramumine.wordpress.com/2015/07/31/solomon-islands-government-seizes-apid-controversial-log-shipment/>.

152. "Solomons Logging Company Defies Seizure Order."

153. "Logging and Export Bans," *Forest Legality Initiative*, accessed January 29, 2021, <https://forestlegality.org/content/logging-and-export-bans>.

154. Certificate Code: SCS-FM/COC-004167, License Code: FSC-C110572. This certificate was suspended in February 2020. "FSC Public Search," accessed January 21, 2021, <https://info.fsc.org/details.php?id=a0240000008shksAAA&type=certificate#result>.

155. Certificate Code: SGS-FM/COC-000065, License Code: FSC-C009139; this certificate was terminated in October 2019. "FSC Public Search," accessed January 21, 2021, <https://info.fsc.org/details.php?id=a0240000005sSe0AAE&type=certificate#result>.

156. Certificate Code: SA-FM/COC-001070, License Code: FSC-C013138. "FSC Public Search (KFPL)," accessed January 21, 2021, <https://info.fsc.org/details.php?id=a0240000005sTgVAAU&type=certificate#result>.

157. "Action on Potential Fraud in Plywood Supply Chains," *Forest Stewardship Council*, January 4, 2021, <https://fsc.org/en/newsfeed/action-on-potential-fraud-in-plywood-supply-chains>.

158. *Ibid.*

159. *Ibid.*

160. "Flat-Packed Forests: Ikea's Illegal Timber Problem and the Flawed Green Label behind It" (*Earthsight*, June 2020), <https://www.earthsight.org.uk/media/download/912>.

161. Representing the difference between the 1,366 containers Arser exported to Europe annually in that three-year period and the 81 containers maximum that could have originated from KFPL.

REFERENCES

162. Unpublished correspondence with Dutch Competent Authorities dated September 3, 2020. Published reference to the decision available here: <https://eia-global.org/press-releases/20200923-dutch-authorities-stop-chinese-plywood-import>.
163. "Regulation (EU) No 995/2010 of the European Parliament and of the Council of 20 October 2010 Laying down the Obligations of Operators Who Place Timber and Timber Products on the Market," Pub. L. No. 32010R0995, 295 OJ L (2010), <http://data.europa.eu/eli/reg/2010/995/oj/eng>.
164. "Timber Regulation," European Commission, Environment, Forests, accessed January 21, 2021, https://ec.europa.eu/environment/forests/timber_regulation.htm.
165. Regulation (EU) No 995/2010 of the European Parliament and of the Council of 20 October 2010 laying down the obligations of operators who place timber and timber products on the market.
166. "What Does the Exercise of Due Diligence under the Timber Regulation Require?" (Client Earth, October 2011), <https://www.documents.clientearth.org/wp-content/uploads/library/2011-10-01-what-does-the-exercise-of-due-diligence-under-the-timber-regulation-require-ce-en.pdf>.
167. "Announcement on EUTR Prosecution against Hardwood Dimensions Holdings Ltd," Timber Trade Federation (blog), March 5, 2018, <https://ttf.co.uk/announcement-eutr-prosecution-hardwood-dimensions-holdings-ltd/>.
168. "What Does the Exercise of Due Diligence under the Timber Regulation Require?"
169. "Issues Relating to the EU Timber Regulation Legal Framework for Which Guidance Should Be Developed."
170. Nicolas Pillet and Michael Sawyer, "EUTR: Plywood Imported from China" (National Measurement Office, February 2015), https://assets.publishing.service.gov.uk/government/uploads/system/uploads/attachment_data/file/402325/Chinese_Plywood_Research_Report.pdf.
171. Pillet and Sawyer.
172. "British NMO Discovers Problems with Chinese Plywood | EUWID Wood Products and Panels," accessed January 21, 2021, <https://www.euwid-wood-products.com/news/wood-based-panels/single/Artikel/british-nmo-discovers-problems-with-chinese-plywood.html>.
173. Preferred by Nature, "Investigation Finds Major EUTR Risk Issues with Chinese Plywood Imports to the UK," Preferred by Nature (Preferred by Nature, February 23, 2015), <https://preferredbynature.org/newsroom/investigation-finds-major-eutr-risk-issues-chinese-plywood-imports-uk>.
174. "Government Investigation Confirms Fears about Chinese Plywood – Track Record Global," accessed January 21, 2021, <https://www.trackrecordglobal.com/government-investigation-confirms-fears-about-chinese-plywood/>.
175. "Meeting Summary: Timber Regulation Enforcement Exchange." (Rome, Italy: Forest Trends, April 5, 2017), https://www.forest-trends.org/wp-content/uploads/2016/10/doc_5583.pdf.
176. "Vigilance vis-à-vis des contreplaqués chinois," ATIBT, October 23, 2020, <https://www.atibt.org/fr/news/12872/vigilance-vis-a-vis-des-contreplaques-chinois>.
177. "China sigue siendo el principal problema para el cumplimiento del EUTR," Madera sostenible es un periódico digital para la industria española de la madera y el mueble, July 17, 2018, <https://madera-sostenible.com/madera/china-sigue-siendo-el-principal-problema-para-el-cumplimiento-del-eutr/>.
178. "Sourcing Plywood from China Responsibly," Timber Trade Federation (blog), October 21, 2020, <https://ttf.co.uk/sourcing-plywood-from-china-responsibly/>.
179. Ibid.
180. EIA, 2018. Unpublished investigative materials.
181. "Jiangsu High Hope Arser Co., Ltd Held a Ceremony of Showing New Football Uniform Which Sponsored by IP Company - Corporate News - 江苏鸿亚森国际贸易有限公司," accessed January 21, 2021, <http://www.arserwood.com/?CatelD=10000154&ContentID=10000775&lang=eng>.
182. EIA, 2018. Unpublished investigative material.
183. Ibid.
184. EIA, 2018. Unpublished investigative material.
185. Ibid.
186. Ibid.
187. EIA, 2018. Unpublished investigative material.
188. Ibid.
189. Ibid.
190. EIA, 2018. Unpublished investigative material.
191. Ibid.
192. Ibid.
193. Ibid.
194. Sixth Tone, "How Illegally Harvested Timber Is 'Greenwashed' in China," News, Sixth Tone, January 16, 2019, <https://www.sixthtone.com/news/1003369/how-illegally-harvested-timber-is-greenwashed-in-china>.
195. EIA, 2018. Unpublished investigative material.
196. Ibid.
197. Jianzhong Luo et al., "Veneer Grades, Recoveries, and Values from 5-Year-Old Eucalypt Clones," *Annals of Forest Science* 70, no. 4 (2013): 417–28, <https://doi.org/10.1007/s13595-013-0268-x>.
198. "Hardwood Plywood from China: Investigation Nos. 701-TA-565 AND 731-TA-1341 (Final)," Pub. L. No. 4747, § United States International Trade Commission, 272 (2017), https://www.usitc.gov/publications/701_731/pub4747.pdf.
199. "Panel Guide. Version 4. Annex 2D: Plywood." Wood Panel Industries Federation, National Panel Products Division, TRADA Technology Ltd., 2014. https://wpif.org.uk/uploads/PanelGuide/PanelGuide_2014_Annex2D.pdf.
200. "Product Catalogue" (International Plywood: World-wide Traders in Plywood and Wood Based Panel Products, 2018), <http://www.plywooduk.com/wp-content/uploads/2018/03/NEW-Plywood-catalogue-for-websites-2018-updated.pdf>.
201. Ibid.
202. Ibid.
203. "Know-How – Standard Packing Methods Of Plywood Loaded Into Containers," China Emburg Co. Ltd, accessed February 23, 2021, <https://www.plywood.cc/know-how-standard-packing-methods-of-plywood-loaded-into-containers/>.
204. "Know-How – Standard Packing Methods Of Plywood Loaded Into Containers."
205. "We can offer much of the Plywood Products in demand nowadays.," Welcome to Global Holz GmbH Online -Willkommen bei Global Holz GmbH Online, accessed February 23, 2021, <http://www.globalholz.de/english/products/plywood/>.
206. "Know-How – Standard Packing Methods Of Plywood Loaded Into Containers."
207. "We can offer much of the Plywood Products in demand nowadays.," Welcome to Global Holz GmbH Online -Willkommen bei Global Holz GmbH Online, accessed February 23, 2021, <http://www.globalholz.de/english/products/plywood/>.



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