Viet Nam's Plantation Timber Supply Chain:

Good Practices to Promote Trade of Legal and Sustainable Timber Products

ITTO Project PP-A/56-342B

"Analysis of Timber Legality Assurance Systems and Good Practices in China and Viet Nam for Sustainable Timber Trade"

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Front-cover photos

All photos by Taiji Fujisaki, IGES

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Acronyms

CoC	Chain of Custody
EU	European Union
FDI	Foreign direct investment
FERC	Forestry Economics Research Centre
FLEGT	Forest Law Enforcement, Governance and Trade
FM	forest management
FSC	Forest Stewardship Council
FPD	Forest Protection Department
HS	Harmonized Commodity Description and Coding Systems
MARD	Ministry of Agriculture and Rural Development
MDF	medium density fiberboard
MLH	Mixed Light Hardwood
PL	packing list
RWE	roundwood equivalent
SFMP	Sustainable forest management plan
TTF-FOSDA	The forest owner association in Thua Thien Hue Province
US	United States of America
USD	United States dollar
VFCO	Vietnam Forest Certification Office
VFCS	Vietnam Forest Certification Schemes
VPA	Voluntary Partnership Agreement

Abstract

Globally, forest plantation has become an important source for timber production and trade, and household tree growers, often smallholders, play a critical role in timber production. In Vietnam, plantations of Acacia spp. have emerged as an important resource for the Vietnamese forestry industry and exports, while supporting the rural economy and generating income for rural households.

As an important feature of Vietnam's timber production, the legal framework does not require household tree growers to obtain a permit from authorities, taking a self-declaration approach to the legality of harvesting and transportation of timber and timber products. Notably, the legality of timber harvesting in Vietnam's plantation forests is considered low risk with regard to origin (APEC-EGILAT, 2022) and species risk (Forest Trends, 2021). Accordingly, the self-declaration approach is likely reasonable and effective in promoting timber production and supporting the livelihoods of forestry households in the Vietnamese context.

On the other hand, timber export from Vietnam includes a large number of small producers and small businesses, which makes the supply chains more complex or layered, and makes it challenging for importers to identify the legal origin of timber products.

Against this backdrop, this report aims to promote legal and sustainable timber trade by identifying good practices of Vietnamese timber producers and companies to support due diligence and by generating recommendations for stakeholders in import countries. In this study, good practices are considered as models/measures that support legal and sustainable timber trade by enhancing transparency of the supply chain, traceability of products, and support a verifiable basis for legal claims.

The study applies a case study approach to discuss good practices. The report discusses mainly acacia plantation and supply chain from stallholders, as it is Vietnam's most important timber source. Qualitative data were obtained from in-depth interviews as well as semi-structured interviews. In total, 22 interviews were undertaken from October 2022 to January 2023.

Based on the interview survey, the report details findings on two forestry cooperatives, one association of forest owners, and five processing companies that have developed/strengthened links with timber producers. Some key findings are:

- The cooperative model has the potential to help ensure and verify the legality of timber production and the supply chain and to contribute to sustainable forest management. Its organizational procedure helps guarantee legal timber production by member households and monitor and report forestry activities of the member households. Also, the cooperatives' operation transforms the supply chain collective and more traceable than the timber supply chain of the individual households-local trader model.
- There are different measures taken by downstream processing companies that enhance the capacity to control the supply chain, support the verification of the legality, and promote sustainable forest management. These include not only the application of forest certification, also strengthened linkage with timber producers and other supply chain actors, checks and control of supply chain documents, and engagement in forest management.

Based on the findings, it is recommended that importers consider the following points to understand what kind of timber sources and supply chains their suppliers in Vietnam have established:

- Types of domestic timber sources
- Relationship with timber sources
- Relationship with supply chain actors

Types of domestic timber sources that should be considered include individual households, households under groups such as forest cooperatives, households using the land of state-owned forest companies, and forest companies themselves. As the survey demonstrates, cooperatives can help ensure and verify the legality of timber production and provide good opportunities for processing companies to invest and obtain legal and certified timber. However, a mechanism is needed to facilitate communication between forestry cooperatives and downstream operators in Vietnam.

It is also critical to consider how importers can work with Vietnamese suppliers to help establish, maintain, or improve supply chains. In our interviews, timber growers and forest cooperatives stressed that sustainable forest plantation management needs stable timber demands and consumption. To that end, the processing companies pointed out that, to

make such approaches effective, it is essential to build sustainable relationships with business partners of importing countries.

1. Introduction

In recent years, the domestic and international socio-political and business environments surrounding the forestry industry and trade have been changing significantly and rapidly. There have been calls to improve both legality and sustainability throughout timber supply chains, to contribute to the achievement of the Sustainable Development Goals.

The policy to prevent trade of illegally harvested timber products was first introduced by the European Union (EU) with the Forest Law Enforcement Governance and Trade (FLEGT) Action Plan in 2003. Then the EU introduced the EU Timber Regulation which was effective since 2013. In other countries, import restriction of illegally harvested timber products was introduced in the USA by the Amended Lacey Act (2008), followed by Australia's Illegal Logging Prohibition Act (effective in 2012). In Asia, Japan enacted the Clean Wood Act in 2017 to encourage importing legally harvested timber products, and the Republic of Korea introduced legislation banning the import of illegally harvested timber in 2018.While the standards and procedures for controlling the legality of timber import vary, the critical common focal point of the global legality frameworks is that importers must evaluate legality risks and be accountable for the legality of imported timber products. Consequently, there is growing attention on timber supply chains to identify and demonstrate the legal origin of timber products and avoid unknown or illegally sourced timber products. In timber producer countries seeking these major export markets, this requires transparency of the supply chain, traceability of products, and a verifiable basis for legal claims, in addition to the traditional perspectives of quality, price, and stable supply in the timber trade.

Globally, forest plantation has become an important source for timber production and trade, and household tree growers, often smallholders, play a critical role in timber production. In Vietnam, plantations of Acacia *spp.*[1] (hereafter Acacia) have emerged as an important resource for the Vietnamese forestry industry and exports, while supporting the rural economy and generating income for rural households. Plantation development rapidly accelerated after 1995, from about 1 million ha in 2000 to 3.6 million ha in 2014 and approximately 4.18 million ha in 2017 (World Bank, 2019). It is estimated that around 1.6 million ha of plantation forests are managed by smallholders contributing to the livelihoods of more than 1.2 million families (Vu et al., 2018). In addition, Vietnam has about 4,500 wood processing enterprises involved in export, 93% of which are small or very

[1] *Acacia mangium* and *Acacia hybrid* have been planted extensively

small, 5.5% are medium, and 1.5% are big (ATIBT, 2023). Accordingly, it is assumed that timber export from Vietnam includes a large number of small producers and small businesses, which makes the supply chains more complex or layered, and makes it challenging to identify the legal origin of timber products.

As an important feature of Vietnam's timber production, the legal framework does not require household tree growers to obtain a permit from authorities, taking a self-declaration approach to the legality of harvesting and transportation of timber and timber products. Notably, the legality of timber harvesting in Vietnam's plantation forests is considered low risk with regard to origin (APEC-EGILAT, 2022) and species risk (Forest Trends, 2021). Accordingly, the self-declaration approach is likely reasonable and effective in promoting timber production and supporting the livelihoods of forestry households in the Vietnamese context. In addition, export-oriented wood processing companies in Vietnam are increasingly entering into legally binding contracts or agreed relationships with household timber producers to produced sustainably-certified quality timber products. In such a linkage model, households often form forestry cooperatives, which have emerged as a key strategy for commercializing their wood products (Hintz et al., 2021).

On the other hand, it should be noted that long/complex supply chain makes traceability impossible in many cases and the self-declaration approach does not guarantee the legitimacy of legal claims. Vietnamese timber products may pose challenges for importers to verify the legal origin of timber products. Some Japanese companies have expressed this concern. Before this study, 14 Japanese businesses that procure timber products made from Vietnamese-planted trees were interviewed to understand their perceptions about the timber legality of Vietnamese products. In the interview, eight companies argued that they could not ensure the legal origin of products since the origin of harvest cannot be identified and documentation to verify legality is not available. The interview results suggest challenges to promoting legal and sustainable timber trade from Vietnam to Japan, as well as other countries seeking verifiable timber legality.

Against this backdrop, focusing on plantation timber, this report aims to promote legal and sustainable timber trade by identifying good practices of Vietnamese companies to support due diligence and by generating recommendations for stakeholders in import countries. With this objective, the report discusses mainly acacia plantation timber produced by

stallholders, as it is Vietnam's most important timber source, and addresses the following questions.

- What are the risks associated with timber legality and challenges to demonstrating the legality of timber products made with Vietnamese plantation timber?
- What supply chain models exist, and what measures have been taken by Vietnamese stakeholders?
- What are the implications of identified models and measures for timber legality, supply chain control?

This report is structured as the following: Section 2 describes the methodology adopted for the study. Section 3 provides a background of Vietnam's timber sector. Section 4 describes the legal frameworks related to the legality of timber from domestic forest plantations. Section 5 describes the overall timber supply chain in Vietnam and highlights some key features. Section 6 discusses challenges to demonstrating the legality of timber products. Section 7 details research findings on forestry cooperatives and an association of forest owners engaged with Forest Stewardship Council (FSC) group certification. Section 7 also describes the results of interview surveys with five processing companies that have developed/strengthened measures and links with timber producers. Section 8 discusses the implications of these models/measures for timber legality and supply chain control that may help to address the challenges identified in previous section 6. Section 9 concludes the report with some recommendations to relevant stakeholders.

2. Methodology

This report focuses on domestic timber production and the timber supply chain in Vietnam. The study applies a case study approach to discuss supply chain models and measures that may support legal and sustainable timber trade from Vietnam. Qualitative data were obtained from in-depth interviews with representatives from the Ministry of Agriculture and Rural Development (MARD) of the Government of Vietnam, FSC Vietnam, the Vietnam Forest Certification Office (VFCO), the Vietnamese Academy of Forest Science, and relevant industry groups. Semi-structured interviews were also conducted with groups of household tree growers and companies involved in the trading and processing of timber products in Vietnam's Binh Dinh, Nghe An, Thua Thien Hue and Yen Bai Provinces. In total, 22 interviews were undertaken from October 2022 to January 2023.

Regarding the Vietnamese legal frameworks relevant to the study, the report focuses on Circular 27/2018/TT BNNPTNT stipulating the management and traceability of forest products (hereafter, Circular 27/2018). Circular 27/2018 regulated the procedures and transactions of the domestic timber supply chain in Vietnam, providing necessary transaction forms for each supply chain step. Circular 27/2018 was recently replaced by Circular 26/2022/TT-BNNPTNT on forest products management and traceability (hereafter, Circular 26/2022) issued on December 30, 2022 and came into force by February 15, 2023. The domestic timber supply chain is currently regulated by Circular 26/2022. However, when the interview survey was conducted in 2022, Circular 27/2018 stipulated the domestic timber supply chain. Accordingly, this report focuses on rules defined by Circular 27/2018. Circular 26/2022 revised some parts of Circular 27/2018, including forms of supply chain documents. However, the principle approach and rules pertaining to the domestic timber supply chain remain the same.

The case study approach has limitations, as the number of interviews conducted in this study was small, and the respondents were not selected randomly. Accordingly, information gathered from these interviews should not be used to generalize about the overall practices of timber producers and downstream processing companies in Vietnam. Despite these limitations, the level of detail shared by the key respondents in the interviews provides comprehensive insights into challenges in demonstrating the legal origin of domestic timber plantations and the emerging supply chain models and measures that help legal and sustainable timber trade.

3. Overview of Vietnam's forestry sector

3.1. Forest categories and types

Vietnam has 14.6 million ha of forest. According to the management objectives stipulated by the 2017 Law on Forestry, the area is divided into three types:

- Production forests intended for production purposes (e.g. timber production): 7.8 million ha (53.4% of the total)
- Protection forest designated for watershed protection: 4.65 million ha (31.8%)
- Special-use forest, mainly national parks and reserves, intended for the conservation of natural forest ecosystems, genetic resources, scientific research, preservation of historical cultural relics, beliefs, or scenic landscapes, and sites for eco-tourism: 2.16 million ha, 14.8%

Regarding forest type, there are 10.3 million ha (70.5% of the total forest area) of natural forest and 4.3 million ha (29.5%) of plantation forest. Table 1 shows Vietnam's forest area by management objective and forest type. Most plantation forest (84.2% of total plantation forests) is found in production forests, followed by protection forests (13.7%). Special-use forests account for the smallest proportion (2.1%).

Table 1 Forest area by management objective and forest type as of December 31st, 2021

Forest categories	Natural forests (ha)	Plantation forests (ha)	Total (ha)
Production forest	4,001,582	3,852,380	7,853,962
Protection forest	4,069,390	626,124	4,695,514
Special-use forest	2,100,785	94,940	2,195,725
Total	10,171,757	4,573,444	14,745,201

Source: Decision 2860/2015/QD-TTg dated July 27th, 2022 (cited APEC-EGILAT 2022)

3.2. Forest ownership

All land in Vietnam is owned by the public and administrated by the State, and the State manages special-use forests and protection forests. However, the land-use tenure of production forests can be distributed to organizations, families/individuals, and local communities (ibid).

Figure 1 illustrates plantation forest area by forest ownership, which include Production, Protection and Special use forests. Accordingly, the plantation forest area assigned to

households/individuals accounts for the largest proportion (40%), followed by Commune People's Committees (28%), protection forest management boards (12%), and economic organizations (12%). It is estimated that around 1.6 million ha of plantation forests are managed by smallholders contributing to the livelihoods of more than 1.2 million families (Vu et al., 2018).

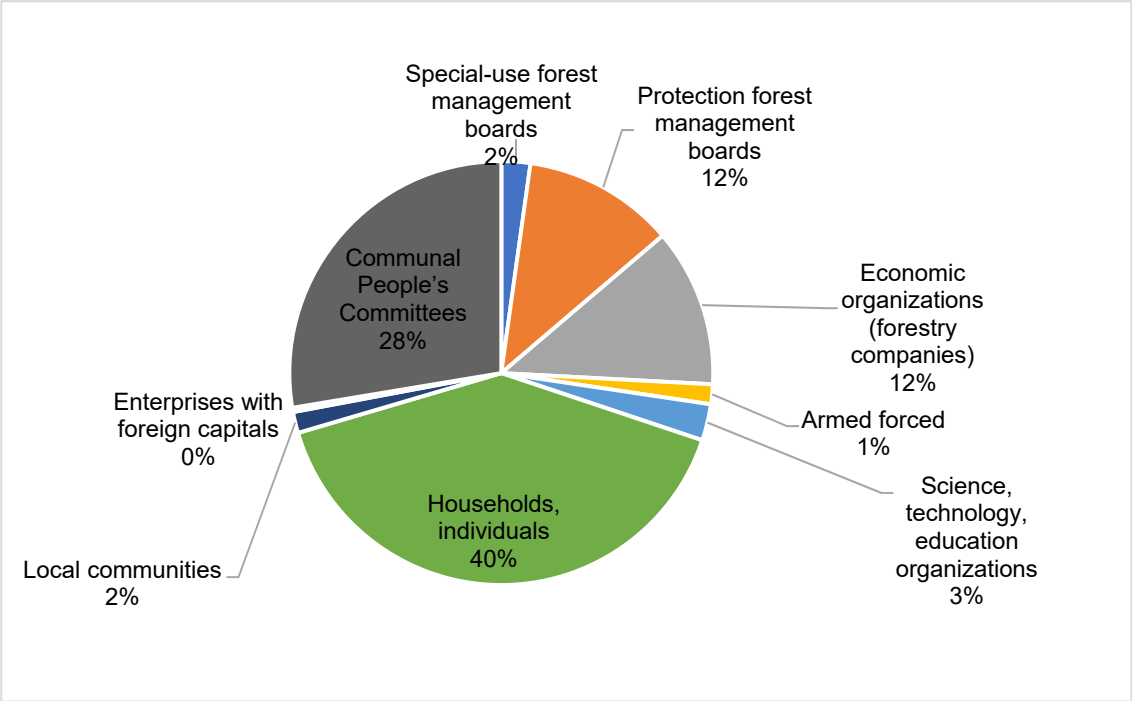

Figure 1 Ownership of plantations in 2020

Source: Hoang (2022)

3.3. Timber sources

In 2016 the Vietnamese government introduced a ban on logging in natural forests. In principle, there should be no timber from Vietnam's natural forest on the market.

According to Hoang (ibid), on average, the total supply of raw timber for processing and trading timber products was 35.6 million cubic meters (m3) per year between 2016 and 2020, of which forest plantations contributed 53.2% of the total supply and imported timber 22.6%. Other timber sources were scattered tree plantings[2] (13.7%) and rubber

[2] Scattered tree plantings are understood as trees outside forests, often found as groups of trees in patches as small as 0.1 ha and rows of trees along field boundaries, canals, roads, and tracks.

plantations (10.4%), which are often large-diameter timber and used for furniture production.

Household/individual tree growers (hereafter households) are the main actors in the supply of domestic planted trees for timber. The interview survey indicates that 50-60% of plantation timber is produced by households, although the accuracy of this figure needs to be verified. Other important suppliers of planted trees are state-owned forest companies. Private companies were granted some land, and they produce timber as well as forest user groups. However, those private companies use a relatively small area of land, and timber from this group is small. Therefore, the report does not discuss this group.

In terms of plantation timber species, MARD (2021) reports that in 2020 acacia plantations were 1.95 million ha, accounting for 56% of the total production plantation forests, followed by pine (0.248 million ha, 7%) and rubber (0.248 million ha, 7%), eucalyptus (0.134 million ha, 3.8%). The remaining 0.955 million ha (26.2%) was indigenous and fruit trees. Plantation area has been expanding, mainly because households, to whom the government granted land under the forestland allocation program, have been growing more trees on their land.

Timber import is also a significant component of the Vietnamese timber industry. Vietnam imports 5-6 million m3 of logs and sawn timber annually, of which temperate species account for 60-70%, and tropical species 30 - 40% (Cao et al., 2021). Vietnam's import of wood-based panels has increased from USD 320 million USD in 2015 to 530 million USD in 2020, which accounts for 27.7% of the total import value of timber products.[3] Tropical species imported into Vietnam are mainly for domestic consumption (To, 2022). The detail of domestic consumption of imported temperate species is not well reported.

3.4 Timber processing industry

Vietnam's timber sector is large and expanding. In 2020 there were 5,840 enterprises operating in the sector, a 70% increase from 2010 (the Government of Vietnam, 2021). Most of these enterprises are small scale. They are distributed across the country's three main geographical regions – South-eastern, Coastal Central Region, and Red River Delta,

[3] Data obtained from Research Trade Earth, available at https://resourcetrade.earth/

with the first region hosting over 40% of the country's total enterprises (ibid.). These enterprises are diverse in their product outputs. Some produce wood chips; others wood pellets and wood-based panels. Furniture manufacture is the largest group, accounting for 80% of the total enterprises in the country. Table 2 presents the number of the enterprise by product areas.

Table 2 Number of enterprises by product group in 2020[4]

Product group	**Number of enterprises**
Furniture	4,674
Wood-based panels	349
Wood pallets	55
Wood pellets	25
Wood chips	188
Others (e.g. logistics, paints, glue, nails)	549
Total	5,840

Source: The Government of Vietnam, 2021

Following the Government of Vietnam (ibid.), among 349 companies producing wood-based panels, 146 companies focused on finger joint products, 132 companies on veneer, 99 on plywood, 45 on particle boards, and 17 on medium density fibreboard (MDF). In addition to these enterprises, the sector includes approximately 340 wood villages with thousands of household-based operators and hundreds of cooperatives who supply a wide range of timber products to the domestic market (To *et al.* 2021a). Unpublished data from the Vietnam Administration of Forestry (VNFOREST) reveals that in 2019 there were 11,270 household wood processors and 140 cooperatives operating outside the 340 wood villages. The number of enterprises, households, and cooperatives engaged in the sector illustrates its substantial scale.

In terms of ownership, there were 721 foreign-owned companies (FDI) (MARD 2021), accounting for 12.3% of all enterprises. The remaining 5,119 enterprises (87.7%) were

[4] These figures are indicative, as the number may change quickly. For example, in their recent report on wood pellets, To and Cao (2021) reported that the number of wood pellets facilities in the country can be as many as 300, 12 times higher than MARD's number. The detail of wood pellets report is found here: https://goviet.org.vn/upload/aceweb/content/Ban%20tin_San%20xuat%20va%20xuat%20khau%20vien%20nen%20cua%20Viet%20Nam%20-%20Thang%2010%20nam2021.pdf.

Vietnamese-owned. In 2020 there were 3,329 enterprises engaged in export, with 653 FDI enterprises (18%) and 2,676 domestic enterprises (82%) (To *et al.*, 2021b).

3.5. Export of timber products

Vietnam exports timber products to 140 countries and territories, accounting for a 6% share of the global market in timber products (MARD 2021). The export of timber products, including wooden furniture, has risen from approximately 8.4 billion United State dollar (USD) in 2018 to 12.0 billion in 2020, a 42% increase. As the import values of timber products have remained relatively stable at around 2.5-2.7 billion USD between 2018 and 2020, production from domestic forest plantations is likely to support the expansion of Vietnamese timber processing and export sectors.

Figure 2 presents the value of major product groups that Vietnam exported to the world in 2018 – 2021. Seat (Harmonized Commodity Description and Coding (HS) 9401), Furniture (HS 9403), and woodchip (HS 4401) are major product groups with high export value.

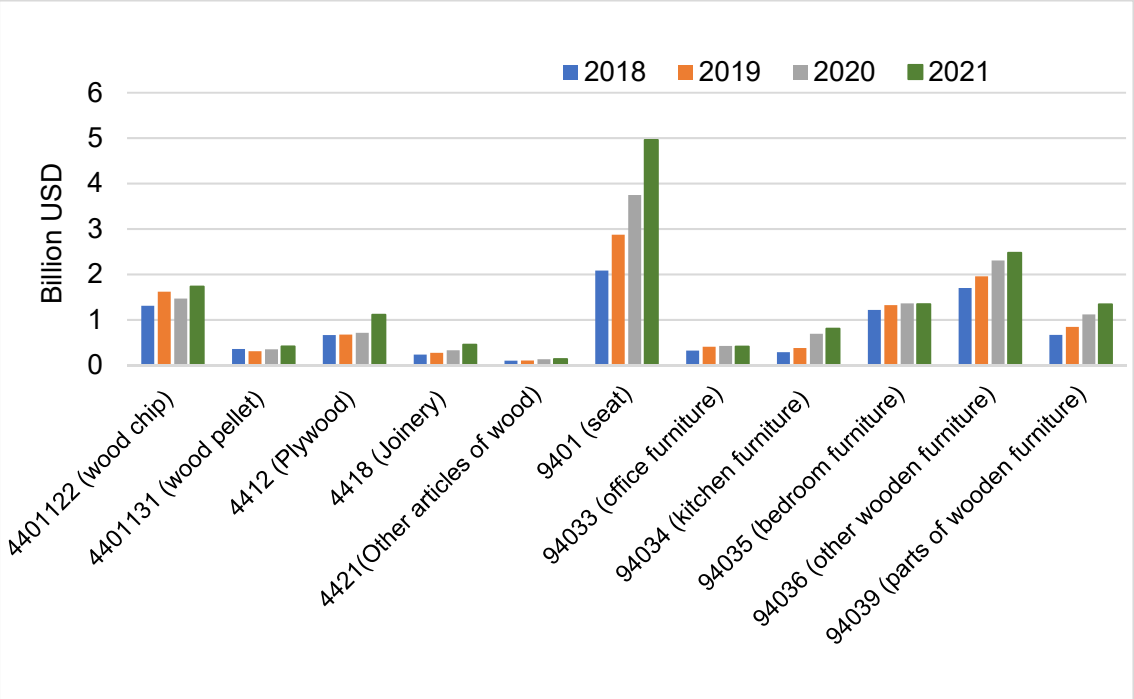

Figure 2 Export values of major timber products from Vietnam to the world, 2018 –2021

Source: UN Comtrade[5]

[5] https://comtrade.un.org/data

Details require further proof such as customs data and other sources, though based on the literature and interviews. Table 3 summarises what timber species are mainly used in the major wood product groups exported from Vietnam.

Table 3 Overview of the main timber species used in key exported timber product groups from Vietnam

Product type	Species and origins of species used
HS 440122 (Wood chip)	Small diameter plantation timber and branches are used. Acacia is commonly used, as well as eucalyptus, and pine from domestic plantations.
HS 440131 (Wood pellets)	Raw materials used to produce wood pellets include sawdust, shavings, twigs, and planted timber. Acacia is commonly used, as well as rubber tree, eucalyptus, and pine.
HS 4412 (Plywood)	Acacia is commonly used, as well as eucalyptus and styrax (*Styrax tonkinesis*) and imported face-veneer
HS 4418 (Joinery)	Various species are used, especially rubber (domestic plantation timber), oak, ash and pine (imported).
HS 4421 (Other articles of wood)	Various species are used. Rubber, styrax and melaleuca are commonly used.
HS 9401 (Seats)	Rubber, acacia, eucalyptus, and imported temperate species such as oak are commonly used.
HS 94033 (Office furniture)	Rubber, pine and imported temperate species are commonly used.
HS 94034 (Kitchen furniture)	Rubber, acacia and pine are commonly used.
HS 94035 (Bedroom furniture)	Rubber, MDF, and pine are commonly used in the product.
HS 94036 (Other wood products)	Rubber, acacia, pine, fruit trees (mango, jack fruit, cashew nut) tree etc.) and imported temperate species are commonly used.

4. Legal frameworks related to the legality of timber from domestic forest plantation

Generally, the Vietnamese legal system is structured in the following order: Law promulgated by the National Assembly, Decree issued by the Government, and Circular issued by the Minister to implement Decree (APEC-EGILAT, 2022).

According to the 2017 Law on Forestry[6] and Decree 102/2020/ND-CP of September 2020 on the Regulation of the Timber Legality Assurance System (hereafter Decree 102), legal timber is defined as "timber or timber products (hereinafter referred to as "timber") that are harvested, imported, confiscated, transported, traded (purchased/sold), processed, exported in accordance with Vietnam's law, relevant regulations of international treaties to which Vietnam is a signatory and relevant laws of the countries which the timber is harvested.

Circular 27/2018 issued in 2018, regulated the procedures and supply chain transactions of timber from, principally, domestic plantations, providing necessary transaction forms for each step of the supply chain. MARD recently replaced it with Circular No. 26 /2022, which entered into force on 15 February 2023. However, as explain in Methodology section, the interview survey with timber producers and processing companies was conducted in October and November 2022, before new Circular No. 26 /2022 was published in December 2022. Accordingly, this report discusses the practice of supply chain actors following Circular 27/2018 rather than Circular No. 26 /2022.

4.1. Legality of harvest in plantation

Regarding domestic plantations, the legality of timber harvesting is built on land use rights. With the 2017 Law on Forestry, "forest owner" is defined as either an organization or a household, an individual or a local community to whom the State allocates or leases forest; land for afforestation, restoration, development of forest by his/her own; who is transferred, donated, inherits a forest following legal provisions. According to the current Land Law 2013[7], several types of legally required documents can be used as evidence for legal harvest in forestry plantations.

[6] Forestry Law, No. 16/2017/QH14 (in English) is found at https://www.fao.org/faolex/results/details/en/c/LEX-FAOC206322
[7] Land Law No. 45/2013/QH13 (in English) is found at https://www.fao.org/faolex/results/details/en/c/LEX-FAOC167592

For smallholders, the primary timber producers in Vietnam, there are a number of evidence/documents to prove land use rights[8] that are recognized and listed in FLEGT-VPA. Among them, the Certificate of Land Use Rights, usually referred to as Red Book introduced by the Land Law of 1993, is mostly mentioned in the interview surveys, as a legal proof of land use rights and, thus serving as a key prerequire for producing the legal timber. It should be noted the land allocation process to smallholders in Vietnam was started in early 1990s, and the issuance process of the Red Book is still ongoing, and not all smallholders have been granted Red Book. Several alternative documents are, therefore, used in practice to demonstrate forest use rights, including Written confirmation from the Commune People's Committee that the land is currently used and is not subject to any dispute and district authority's decision of land allocated to households written confirmation from.

Plantation timber is also harvested under the land allocated to the state and private organizations. It should be noted that before forest land allocation for smallholders started in early 1990, most of forest area in Vietnam was managed by State Forest Enterprises (also referred to as State Forestry Companies) under the State or provincial and district authorities (Le et al., 2012; Bayrak, et al., 2013). And still state-owned companies play key role in timber production like smallholders (yet the survey cannot identify detailed production data from State Forestry Companies).

To harvest forestry plantations under the State and private organizations, forest owners have to develop a Sustainable forest management plan (SFMP) and need approval from Provincial People's Committee, stipulated by Circular 28/2018/TT-BNNPT.[9] SFMP is a long-term forest management plan covering harvesting, monitoring, and other management activities. As stipulated by Circular 27/2018, before harvesting forest owners have to prepare and send a harvesting plan[10] to competent agencies for approval of the fund for afforestation and to the local Forest Protection Department for monitoring during the harvesting process. Notably, SFMP and harvesting plans are not compulsory for households.

[8] These include: Decision on land allocation; Decision on land allocation, forest allocation; Land use right certificate; Decision on land allocation; Decision on land leasing; Decision on forest allocation together with land allocation, land leasing; Decision on forest allocation; Forestry book; One of the types of papers on land use rights as stipulated in Article 100 Land Law 2013; Confirmation of the Commune People's Committee that land is currently used and free to dispute subject to the cases regulated in Article 101 Land Law 2013; and Forest protection contracts with other holders.

[9] Circular 28/2018/TT-BNNPT is found at https://thuvienphapluat.vn/van-ban/Tai-nguyen-Moi-truong/Circular-28-2018-TT-BNNPTNT-sustainable-forest-management-431327.aspx

[10] Circular 27/2018 provides the format of the Harvest plan, which specifies the species, year of planting, and the name of the granting authority for the planting cost, areas and volume of planned harvest, timber removal and transportation routes, forest protection and forest fire prevention measures, and afforestation plan.

When households use and harvest forestry plantations under the lease contract with State-owned forest companies[11], given plantations are covered by SFMP developed by State-owned forest companies.

4.2. Legality in supply chain transaction

The Vietnamese legal framework regulates transactions of timber products along the supply chain. Circular 27/2018 stipulated that a “packing list” of forest products must be prepared by the forest product owner at each stage of the supply chain: after the harvesting and when trading or transporting forest products. It includes the following information:

- Name and contact details of forest product owner
- Business registration certificate/enterprise ID No. (if the forest product owner is an enterprise).
- The origin of forest product (i.e., plantations, natural forests, imported timer)
- Time of transport
- Invoice number (if any)
- Vehicle (license plate/vehicle number)
- Origin and destination
- Detail of forest product (product name, species, quantity, unit)

Following Circular 27/2018, it is understood that "the first owner of Forest product ("Forest product owner 1") prepares a packing list (PL1) when harvesting and keeps the original version of the list. Also, "Forest product owner 1" prepares a packing list 2 (PL2) when trading timber to the next owner ("Forest product owner 2"). "Forest product owner 2" receives and keeps the original PL2, while "Forest product owner 1" keeps the copy. Accordingly, the packing lists are prepared, received, and kept, conveying information about the forest products along the supply chain. As the Vietnamese legal framework takes a self-declaration approach for timber legality, a packing list is critical to demonstrate the legal origin and transaction of products and to identify the product's origin.

[11] Current state policy allows forestry companies to contract out portions of their areas to households living next to these forest areas. This policy is intended to help the enterprise manage and use the forest more efficiently, improve the livelihoods of the contracting households and reduce pressure on forest resources.

The principle approach to and rules on the domestic timber supply chain remain the same under Circular 26/2022. Regarding the packing list, it has revised/added the following points.

Note: Circular No: 26 /2022/TT-BNNPTNT

- Actors who can make a packing list for forest products: under Circular 27/2018, Forest owners have to make a packing list after harvesting (log list). However, Circular No: 26 /2022 allows traders, whom forest owners authorize, to make a log list on behalf of the forest owner.
- Revised format of the packing list: Circular No: 26 /2022 provides a new form for the packing list, which requires further detailed information on buyers. It also requires declaring the number of the list of forest products after harvesting.
- Post-harvest reporting to the local Forest Protection Agency for monitoring and synthesis: Circular No: 26 /2022 requires forest owners/ traders, whom forest owners authorize, to inform the local Forest Protection Agency of exploited forest products, including forest owner information, harvesting location, area and time, species, quantity, etc.

5. Timber supply chain in Vietnam

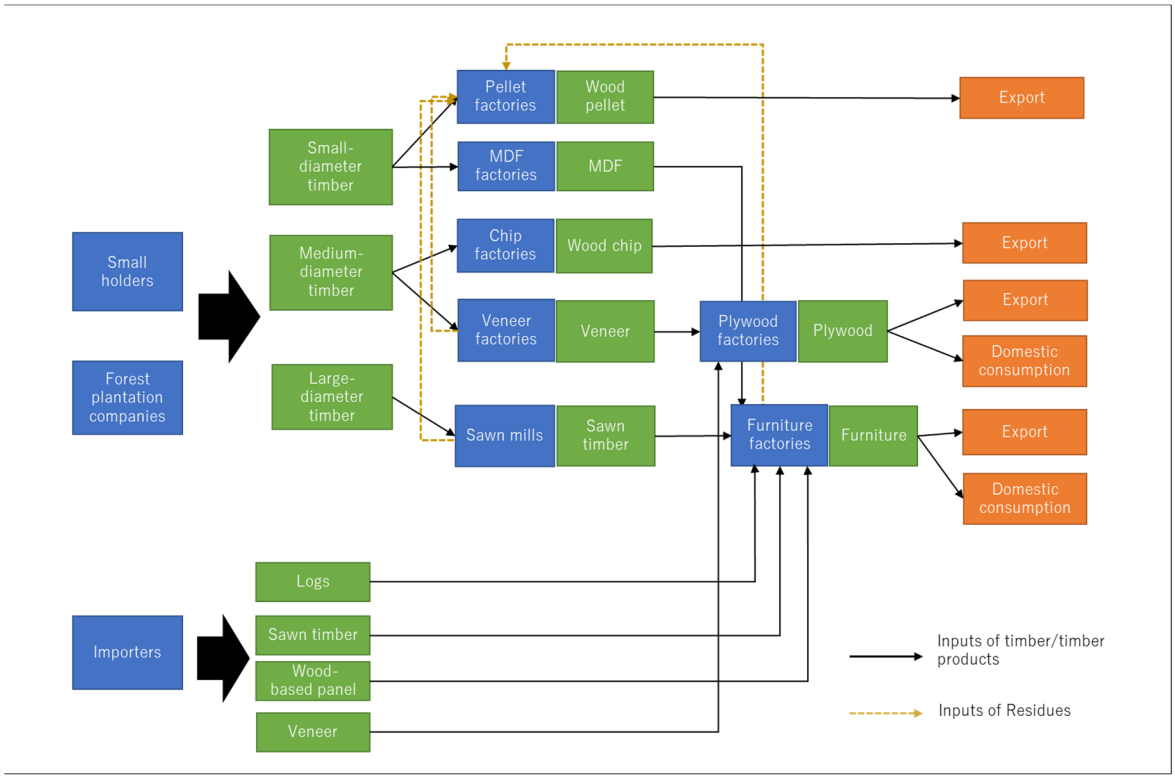

Figure 3 Simplified timber supply chain in Vietnam

Sources: To and Cam (2022) and consultations with supply chain stakeholders in 2022.

Figure 3 illustrates the simplified overall timber supply chain in Vietnam. As discussed previously, timber sourced from Vietnam forests originates mostly from plantations, where households are the main suppliers. State-owned and private forest companies also supply plantation timber for commercial purposes. Characteristics of the timber supply chain in Vietnam vary from region to region depending on local factors, including access to raw timber and other materials for production, existing processing facilities, infrastructure, and market access. For instance, a majority of wood pellets exporters from the south (where domestic plantation timber is scant) use residues from imported timber for export.

Harvested plantation trees enter the supply chains of different product types, usually according to size. In general, smaller logs and small parts of logs are used for wood pellet production, medium-sized ones are for veneer and chip production, and larger ones are traded to saw mills and used for furniture production. Also, smaller logs and parts are used for wood-based panels such as MDF, which is used for furniture products. Veneers and sawn timber are often produced by small and micro-sized processors through a relatively

short supply chain and delivered to downstream processors or timber trading and exporting companies (Hoang and Nguyen, 2022).

There are several ways in which timber from household tree growers enters supply chains:

- Households harvest and bring timber to processors
- Households harvest and sell logs to local traders via collecting points
- Households sell standing trees to local traders, who arrange the harvest, sales, and transportation of logs

Some local traders are only involved in trading activities, while others engage in trading and processing activities, such as veneer production. Also, local traders are dealing not only with logs but also primary-processed wood, such as veneer from veneer processors, and selling to the downstream processors.

Generally, household tree growers, even some state-owned forest companies, do not have the capacity to harvest, trade, and transport logs. For many households, forest plantations may be far from their houses. The same problems apply to small and medium-sized processors, who cannot buy timber directly from plantation owners due to a lack of knowledge of plantations or networks. Accordingly, local traders play a critical role in the timber industry, coordinating the distribution and supply of raw materials and linking supply and demand at the local level. However, our survey could not find public records of the identities and scale of operations of local traders in the timber supply chain in Vietnam.

As figure 3 illustrates, timber in Vietnam is sourced from domestic plantations and timber imports. The ratio of domestic plantation to imported timber differs by product type and market. Generally speaking, imported logs, sawn timber, and wood-base panels supply mainly the furniture sector, and imported face veneer is used for plywood production. In contrast, domestic plantations are used for all product types, mainly wood chips, pellets, and wood-based panels such as plywood. Most timber exported from Vietnam to Japan is from domestic plantation trees and imported temperate tree species (To et al., 2022). Domestic plantation timber accounts for 63 percent of timber exported from Vietnam to EU markets, and imported timber 37% (Nguyen and Tong, 2022).

There are several ways in which timber products are exported from Vietnam, which include:

- Processing companies directly export the products to foreign enterprises
- Vietnamese traders obtain timber products from processing companies and then export
- Overseas companies operating in Vietnam obtain/produce the products, then export

6. Challenges to demonstrate the legality of timber products

Timber harvested from Vietnam's planted forests are considered low risk in terms of origin legality (APEC-EGILAT, 2022) and species risk (Forest Trends, 2021), as also reflected by interviewees in our survey. However, the interview survey indicates possible legality risks and/or challenges in demonstrating the legal origin of domestic timber plantations. The following elaborates on concerns expressed by the interviewees, which may influence the due diligence of importers and commitment to contribute to sustainable forest management.

6.1 Concern about legal rights to harvest

Timber from Vietnam forests mainly originates from plantations managed by households. As mentioned above, the legality of harvest in Vietnam is dependent on forest land tenure and management rights. As discussed above, there are a number of evidence/documents to prove land use rights that are recognized and listed in FLEGT-VPA. Among them, Red Book is mostly mentioned in the interview surveys, as a legal proof of land use rights and, thus serving as a key prerequire for producing the legal timber.

However, the distribution of Red Books is still ongoing, and there are circumstances where household tree growers have not yet been granted a Red Book (Preferred by Nature, 2021). The share of households with Red Books may vary depending on region. The forest owner association in Thua Thien Hue Province (TTF-FOSDA) indicated that roughly 80% of member households have Red Books, and other members are waiting to receive one. According to a pellet factory operating in Nghe An Province, the rate of Red Book issuance in forest areas to date is around 50%. Based on a survey of 280 ethnic minority households, Truong and Ho (2022) report that 63% of surveyed households have a Red Book.

Under such circumstances, households can use other evidence to demonstrate legal land use rights and forest use rights, such as written confirmation from the Commune People's Committee that the land is currently used and is not subject to any dispute. Also, households harvest timber over the land under contracts with landowners such as State-forest companies. In our interview, the Forestry Economics Research Centre (FERC) indicated that, out of 464 households in Yen Son District of Tuyen Quang Province, only two householders failed to provide any proof of land use rights or lease document like those mentioned above. However, interviews with some downstream processors, and the

forest certification bodies, raise the question of the authenticity of the commune's written confirmation or informal lease arrangements with the forest owners.

Furthermore, the interview survey indicates that there are cases of illegal logging by encroaching into forest plantations of other forest owners or forest plantations under the non-production forest, whereby illegally harvested timber can enter the supply chain. However, considering the lower economic values of planted timber species than natural tropical hardwood species, cases of illegal harvesting of plantations are regarded as rare in Vietnam (Nambiear, 2021).

As discussed previously, timber is produced not only from concentrated forest plantations but also from scattered tree planting, which are referred to as trees outside the forest by Nambiar (2021). Midgley et al. (2017) estimated that wood supply from these "hidden assets," probably unaccounted for in official statistics, amounts to about 9 million m3, equivalent to the amount of woodchip from about 600,000 ha of plantations. Our interview survey indicates that householders probably do not bother to prepare packing lists for the harvest of dispersed planted trees and documents to show legal rights to harvest. Also, some interviewees expressed a lack of preparation of packing lists by household tree growers, since local traders do not request them.

Therefore, the challenge associated with domestic plantations is the possibility of undocumented informal timber (Midgley et al., 2017; and Truong and Ho, 2022) and how to prove the legal origin of the products at each stage of the supply chain and meet the requirements of the markets. The self-declaration system does not guarantee the legitimacy of legal claims. A challenge for downstream processors and importers is that there are no accessible public records or databases of land use rights to harvest timber at the national level, even though buyers from other countries may request verification of legal origin.

6.2. Concerns of legal transaction and supply chain documentations

Vietnamese legal frameworks regulate documentation and transactions at each stage of the timber supply chain and transactions, which supports control of the supply chain by downstream supply chain actors and enhances traceability and transparency of the overall timber supply chain. However, scholars such as Hoang and Nguyen (2022) and To and Cao

(2022) note ambiguous processes and informal practices of supply chain transaction among timber proudcers and small and medium -sized enterprises in local contexts. Similarily, Truong and Ho (2022) discuss informal business practices by local traders without having a business license. Our interview survey with forestry cooperatives and timber processing companies indicates that some traders properly use the prescribed documents (packing lists), while others did not. Local traders are critical in the timber supply chain. However, existing informal practices pose challenges for downstream companies to control, verify and demonstrate the legal origin of timber products.

Such a situation implies weakness in the timber supply chain where undocumented timber can enter through informal business practices (Truong and Ho, ibid.) and small and medium-sized enterprises. The three exporting plywood companies that we interviewed, reportedly cannot trace timber products along the supply chain and identify the origins of harvest due to unseen transactions by local traders. They also said that small and medium processing facilities receive logs without documents and do not keep a logbook or other record of their operations. Similarly, one furniture company exporting to EU markets pointed out that the several layers of transactions make supply chain challenging to map. The company also expressed that their suppliers often hesitate to provide any transaction/business documents to show the origin of the harvest as they do not want to show the price of raw materials.

These documentation and transactional challenges may be associated with a legality risk when traders, processors, and exporters buying plantation timber from smallholders avoid government tax requirements and use false invoices to justify their transactions (To and Cam, 2022). This risk can take place as there are many of these actors, and the government authorities have been unable to oversee them. As their operation occurs at a small scale, many are invisible even to local authorities.

6.3. Challenges of sustainable forest management

In other regions like Borneo in Indonesia, forest plantations have driven deforestation by replacing natural forests (Gaveau et al., 2016). However, the development of forest plantations in Vietnam has been focused on degraded lands, where they are viewed as

having the potential to conserve and even increase forest ecosystem services (McNamara et al., 2006; Trieu, 2016).

The most shared comment from interviewees about non-sustainable practices applied to households' plantations is that they often burn the post-harvested area, which may cause soil erosion. They did not consider plantations with forest certification to have this problem.

Another concern expressed by interviewees was the increase in planting density and short-term logging in forest plantations. This phenomenon is seen especially in smallholder plantations due to the economic opportunities derived from the increased demand for wood chips and pellets and the risk aversion of long-term logging, including natural disasters. However, it should be noted that more information is needed to understand what impacts short-term logging practices and high-density plantations have on forest ecosystem services in Vietnam.

Based on a workshop discussion between relevant stakeholders and organizations in Vietnam, Vu et al. (2018) argued the following challenges face households in achieving sustainable forest management:

- Limited availability of high-quality seedlings
- Limited financial investment in forest certification and the high cost of certification
- Limited resources, capacity, and information access

Interestingly, in our interviews, some processing companies said that, in several cases, smallholders do not follow signed contracts, preventing collaboration from being effectively implemented to build sustainable production and supply chains. Vu et al. (ibid.) discuss a similar concern, pointing to a lack of trust between smallholders and business enterprises. Household tree growers might sell timber to any buyers offering better prices without considering agreements with other buyers. From the perspective of household tree growers, a lack of bargaining power reduces benefit from forest plantations, which is critical for them to keep trees on their land. Different traders offer different prices, which makes it difficult to predict income and to manage forest sustainably over the long term.

Regarding the sustainable forest certification, two major global forest certification schemes operate in Vietnam, FSC and the Programme for the Endorsement of Forest Certification (PEFC). The area of plantations in Vietnam certified for sustainable forest management, including smallholders' plantations, is increasing rapidly. Vietnam currently has 226,429

hectares of FSC certified forests and 54,529 hectares of VFCS/PEFC certified forests (as of March 31, 2022), which is below 10% of the total production forest area (To et al., 2022).

7. Case Studies

Export-oriented wood processing companies in Vietnam are increasingly entering into legally binding contracts or agreed relationships with timber producers. One of the well-known linkage models is the partnership between households in Vietnam's mountainous areas and companies that specialize in processing wood products for the IKEA group (Nguyen et al., 2018). In such a linkage model, households often form forestry cooperatives, which have emerged as a key strategy for commercializing their wood products (Hintz et al., 2021). It is widely understood that households can benefit from increased capital, strengthened bargaining power, reduced transaction costs, better market access, and a collective voice to influence policy and other actors by formulation of/participation in cooperatives or associations (Hintz et al., 2021; Le et al., 2021). Also, the form of a cooperative has drawn attention in Vietnam as a way for households to obtain a group certification.[12]

Based on our interview survey, this section details research findings on two forestry cooperatives and one association of forest owners engaged with FSC group certification and participating in the model linking with processing companies. The section also describes the interview survey results with five processing companies that have developed/strengthened links with timber producers. The following Section 8 discusses the implications of these models to timber legality concerning production and control of supply chain that may help to address the challenges mentioned above.

7.1. Group/cooperative/smallholder sustainable timber production

7.1.1. Thanh Thuy Forest Cooperative, Thanh Chuong District in Nghe An Province

1) Overview

Thanh Thuy Forest Cooperative is a cooperative of plantation owners established in 2017 and is the first instance of forest owners in the area uniting. Forest owners decided to establish a cooperative to seek market opportunities. As of November 2022, there are 129 members[13] from three communes with a total plantation area of approximately 1,600 ha.

[12] Group certification is a form for more than one forest operation to be certified under a single FSC certificate. It is developed to help reduce the costs of certification - the cost per group member is significantly lower than if each member applied for an individual certificate https://us.fsc.org/en-us/certification/group-certification

[13] 129 members include official members (57 households) who provide financial contribution to the Cooperative and associated

As a key opportunity, in 2019, BNV Thanh Chuong Joint Stock Company (a pellet company) approached the cooperative, offering financial investment to obtain forest certification. Since 2021, the member households of the cooperative have been covered under FSC Certification, represented by BNV Thanh Chuong Joint Stock Company, with two other forest cooperatives and one forest management board[14].

The cooperative is directed by a steering committee consisting of a chair, director, vice director, and two selected members. Following the Cooperative law[15],, the Thanh Thuey Forest Cooperative has an inspection team that independently monitors the steering committee and finance of the cooperative. In addition, the cooperative has a harvest team, which provides harvesting services, processing facilities, and a nursery for producing seedlings to the members. There is also a purchasing team, and a business performance unit which develops markets, buyers, and partners. In addition, local forest rangers of the Forest Protection Department under MARD are involved as a board member of FSC Group Forest Certification Project.

To join the Thanh Thuey Forest Cooperative, a household has to meet the following conditions:

- Have the plantation more than 1 ha.
- Have a land use rights certificate (Red Book), or a letter from commune authority declaring that the owner used the land before 1993.
- Contribute to finance including 100,000 Vietnamese Dong (equivalent about to 4.2 USD) as initial funding.

2) Forest certification

- Since 2021, being certified as a member of Thanh Chuong SLIMF Forest Certification Group represented by BNV Thanh Chuong Joint Stock Company.

3) Timber supply chain

- The Thanh Thuey Forest Cooperative has a five-year sales contract for FSC-certified timber with the pellet company, which invests in FSC group certification. The member households sell FSC-certified logs to the company directly or via the cooperative. In the former option, households harvest, deliver logs, and inform the

membership (139households who sell logs to the Cooperative

[14] https://app.powerbi.com/view?r=eyJrIjoiN2U3NGMyNWEtZTAxNS00MzVhLWExNmMtOThhZjdiYjQ4MWNkIiwidCI6IjEyNGU2OWRiLWVmNjUtNDk2Yi05NmE5LTVkNTZiZWMxZDI5MSIsImMiOjl9

[15] The Cooperative Law can be downloaded at https://vanbanphapluat.co/cooperative-law-no-23-2012-qh13-of-november-20-2012

cooperative about harvest and sales. Accordingly, all timber businesses of the members are recorded by the cooperative.

- Prior to the operation of the cooperative, there were two options for household tree growers to sell timber: (1) households harvested and delivered logs to log stations owned by the local traders, who operated a veneer factory, and 2) sold standing trees to local traders, who arranged logging and transportation.

4) Legality concerning timber production and supply chain documentation

- The cooperative assesses households before they can become cooperative members, to determine whether they meet the requirements, including land use rights.
- Thanh Hoa Co., Ltd forest management team assesses households before being accepted as group members of Thanh Chuong SLIMF Forest Certification Group.
- Households usually did not prepare packing lists required by the legal framework since the buyers did not demand them. Under the current arrangement, the cooperative prepares packing lists, and households sign them.
- Under the current arrangement, the local forest ranger of FPD verifies the packing lists from the member household, which supports and enhances the validity of legal origin status.

5) Impact on forest management

- Member households stopped burning post-harvest residues to maintain soil nutrients and prevent soil erosion (burning post-harvest material is common practice in the region) to meet the FSC certification requirements.
- The cooperative provides the member households with quality seedlings of acacia at a cheaper price than market prices.[16]
- The cooperative provides technical training, assistance and advice for better forest management.
- The cooperative has a logging team that receives training on low impact logging practice to comply with FSC standards.

6) Socioeconomic impacts

- Pellet companies buy FSC-certified logs at higher prices than the prices local traders used to pay for non-certified logs[17].

7) Challenges of cooperative

- Compliance with the Cooperative Law is challenging, requiring administrative

[16] The Cooperative has nursery and sells to the members with VND 1,200 (but the gov cover half price)

[17] The interview with the Coopetative did not clarify how much the prices are different

capacity and voluntary dedication.

- The success of the cooperative depends heavily on external market opportunities and forest certification. Without market opportunities, there would be no benefits and motivation for a household to participate.
- Compliance with the agreed management practice and procedure of the Forest Certification Group is challenging, including monitoring forestry operations and keeping records on logs harvested from the member.

7.1.2 Thua Thien Hue Forest Owners Sustainable Development Association (TTH-FOSDA) and Sustainable Forestry Cooperatives, Thua Thien Hue Province

1) Overview

TTH-FOSDA is an association representing small forest plantation owners who engage in sustainable forest management in Vietnam's Thua Thien Hue Province. It was established in 2016 under a decision of the Thua Thien Hue Provincial Peoples' Committee. TTH-FOSDA is the first FSC smallholder forest certification association in the province and the second in Vietnam under the support of the WWF-IKEA partnership.

It commits to improving the quality of planted forests, contributing to local economic development. Toward this objective, TTH-FOSDA encourages members to maintain forests with a longer plantation cycle than usual to supply large volumes of timber for building a stable timber value chain for both sawn timber and wood chips.

A household must meet the following conditions to join the association.

- Have a plantation of at least 0.5 ha
- Have a land use rights certificate (Red Book) or, if not available, a letter from the commune authority.
- Commit to sustainable forest management.

TTH-FOSDA has developed Sustainable Forestry Cooperatives in the province, gathering FSC-certified smallholders and exploring market opportunities. TTH-FOSDA has grown into a model of sustainable forestry of smallholders recognized by provincial and national governments.

TTH-FOSDA strives to enhance the communities' awareness of sustainable forest management, strengthen market linkages, strengthen policy advocacy, and support

members in establishing sustainable forestry cooperatives. Key achievements of TTH-FOSDA include:

- Increase in membership and FSC-certified acacia plantations: In 2021, there were 1,100 members in 6 districts/towns with FSC-certified acacia plantations of 6015 ha. Production from these members reached 123,629 tons of FSC-certified timber, worth 5,912,691 USD, in 2019.
- Established 25 sustainable forestry cooperatives, of which 24 are in operation and three have sawmills.
- Signed cooperation agreement with regional and international organizations, including WWF-Vietnam, USAID, Scansia Pacific Co., Ltd.[18], Department of Rural Development of Thua Thien Hue Province, representatives of district peoples committees of 6 districts /towns in the province, and Hue University.

Cooperation with Scansia Pacific is a great opportunity for TTH-FOSDA to expand FSC certification and reach new markets. The company manufactures and exports indoor and outdoor furniture using FSC-certified timber for IKEA and other foreign retailers. To develop a legal and sustainable plantation timber source, in 2016, with WWF-Vietnam's support, Scansia Pacific formed a joint program to provide financial and technical support to smallholders in Thua Thien Hue Province to obtain FSC certification.

2) Forest certification

- TTH-FOSDA represents the FSC group certification. Total certified area is 6,014.76 ha, belonging to 1,110 group members, located in 34 communes under 6 districts of Thua Thien Hue Province.

3) Timber supply chain

- The member smallholders used to sell standing trees to local traders or logs directly to processors or wood-chip and pellet companies.
- Under the collaboration scheme with Scansia Pacific, the member households can choose to whom they sell timber. Nevertheless, normally large diameter timber for furniture production enters the timber supply chain of Scansia Pacific through the company's sawmills or sawmills of sustainable forestry cooperatives. The member smallholders sell smaller logs, often less than 13 cm in diameter at breast height (DBH), to pellet factories that produce FSC-pellets or wood chip factories.
- According to TTH-FOSDA, 30% of the timber produced by members is sold to Scansia Pacific, and the remaining 70% is sold to wood chip or pellet factories. Some

[18] Scansia Pacific Co., Ltd. Is an IKEA supplier specializing in processing furniture fro export markets

members, however, cannot participate in FSC timber supply chains due to remote locations and the cost of transporting timber.

4) Legality concerning timber production and supply chain documentation

- In the region, smallholders usually sell standing trees to local traders or timber directly to processors or wood-chip and pellet companies. According to TTH-FOSDA, most smallholders in the province follow the rules and prepare a log list when selling timber to local traders, as downstream processors require them to submit legally determined documents to plantation owners.
- TTH-FOSDA assesses households to determine whether they meet the requirements to become a group member.
- Subgroups of TTH-FOSDA monitor activities conducted by members including forest protection, silviculture, harvesting and sales.
- TTH-FOSDA has established an identification system that allows sold products to be associated with a record, including traceability information. The information contained in the delivery cum transportation note is: name of forest owner, name of FMU, area; batch code, tree species; certification code; and FSC declaration.
- TTH-FOSDA has data on the members, their plantations and timber production and values, and harvested and replanted areas. In other words, it has a function to oversee the timber production and flow of its members.

5) Impact on forest management

- The member households used to harvest for a short period, usually 4-5 years, as they sold logs to wood chip and pellet factories. They usually burned post-harvest residues.
- Under the TTH-FOSDA scheme, member households have gradually transformed to increase the age of plantations up to 10-12 years, given the opportunity to participate in the timber supply chain of Scansia Pacific Co., Ltd. This is also encouraged by funds of VND 2000,000 / ha provided from IKEA for the member smallholders to conduct thinning to produce large-diameter timber.
- The member households have also changed logging practices to follow the standards set for FSC certification, including low-impact logging and post-harvest practices. Also, the member households must retain trees along river banks, not burn the harvested area, and prevent land erosion.
- THH-FOSDA provides technical support for the logging teams of the sustainable forestry cooperatives.
- THH-FOSDA has developed an overall forest management plan and promotes

biodiversity conservation by afforesting with native species in degraded areas and developing interplanting methods using native species in acacia plantations. To date, FOSDA has established 20 ha of native tree species to recover degraded land. In addition, THH-FOSDA has developed collaborative relationships with local forest rangers for forest fire prevention and pest and disease control to support better forest management and conservation in the province.

6) Socioeconomic impacts

- In the province, many local traders buy timber proposing different prices and seek different volumes. Such business practices make it challenging for smallholders to have sustainable and predictable incomes from forest management.
- Under the arrangement with Scancia Pacific, the timber price is more stable and transparent for members. A member household can receive 2 million VND per ton of FSC-certified timber, which is 10-15% higher than the regular price that local traders may offer.

7) Challenges of cooperative/THH-FOSDA

- Not all members have yet enjoyed the benefits, as the scheme is in an early phase in some areas and/or they failed to produce large-diameter timber.
- Some households prefer to avoid participating in FSC group certification due to the requirements of a longer growing cycle of 8 to 12 years, difficulties in complying with FSC requirements, and uncertainties about whether the higher financial and labor costs required to produce certified timber would be worth the investment.
- Sustainable forest management requires sustainable consumption of timber.

7.1.3 Thuong Nhai Sustainable Forestry Cooperative, Hương Xuan Commune, Nam Dong District in Thua Thien Hue Province

1) Overview

Thuong Nhai Sustainable Forestry Cooperative is a cooperative of plantation owners established in 2019 in Nam Dong District of Thua Thien Hue Province, one of the 25 sustainable forestry cooperatives established under the guidance of TTH-FOSDA. So far, 25 smallholders have joined the cooperative. The cooperative owns and operates a processing facility to produce sawn timber and pallets. It aims to convene smallholders, strengthen their voices and resources, and seek market opportunities for sustainable plantation management.

In addition to the abovementioned membership conditions of TTH-FOSDA, a household

has to donate a young plantation of 0.5 ha to the cooperative as a capital contribution. Timber from the donated plantation belongs to the cooperative, while the land ownership remains with the household.

2) Forest certification

- Most of the members are included under the FSC group certification represented by TTH-FOSDA.
- The cooperative does not hold FSC Chain of Custody (CoC) certification.

3) Timber supply chain

- Before establishing the cooperative, the households delivered logs to collection points in the commune and sold them to local traders. The households did not know where their logs were used.
- Currently, the cooperative operates a processing facility to produce sawn timber and pallets using logs donated and procured from the members. However, the cooperative does not deliver its timber to the Scansia Pacific supply chain, but sells pallets (non-certified) to a brick factory. According to the cooperative, they are located outside the area where Scansia Pacific Co., Ltd. procures timber.

4) Legality concerning timber production and supply chain documentation

Following the cooperative law, the cooperative has an inspection team whose functions include:

- Ensure compliance with the relevant regulations
- Monitor the business of the cooperative and report to the government
- Monitor and check the timber flow (inputs and outputs of the timber) of the cooperative

5) Impacts on forest management

- The cooperative provides the member smallholders with technical assistance, including logging services, which apply low-impact logging practices. Such services were not available in the commune before. In addition, the member households stopped burning post-harvest residues, following the guidance of THH-FOSDA, to meet FSC standards.

6) Socioeconomic changes /impacts

- The cooperative is looking for a long-term contract with a buyer who seeks FSC-certified sawn timber. The cooperative has not brought any increased income to the members. However, the interviewed members said that establishing a cooperative and engaging with FSC attracts political support from local governments. Also, they highlight that having a legally recognized organization improves the social status of

the members, and they explained that the cooperative serves as a basis to accumulate social capital in the commune and strengthen their voices, and provides a place for the members to discuss, find solutions, and support each other.
7) Challenges • The cooperative requires a long-term business agreement/contract with a buyer of FSC-certified timber. • The cooperative is new in the area, and household tree growers in the area are reluctant to join the cooperative. They are observing the activities of the cooperative

7.2. Processing companies

7.2.1 Company A: producer and exporter of wood furniture

1) Type of business, major products and markets • Production and export of wooden indoor and outdoor furniture and plywood products, targeting mainly the USA and EU countries
2) Production capacity • Annual production volume of 60,000m^3 • Exports of more than 200 containers of furniture per month
3) Timber sources and supply chain • 90 % of the total timber the company uses to manufacture furniture originates from domestic plantations, and 10 % from imports. Acacia from domestic plantations accounts for 60 % of the total timber consumption, of which 30 % is FSC-certified. Domestic rubber timber, which is not certified, accounts for 30 % of the timber consumption. In addition, the company uses imported FSC-certified sawn teak and eucalyptus timber, imported mainly from Brazil and occasionally from Uruguay, through a Vietnamese importer with FSC-COC certification. • To maintain a stable timber supply, the company primarily sources domestic timber from contracted state-owned forest companies, which can produce large-diameter timber for furniture production. To meet demand, it also uses logs produced by smallholders. Logs are transported to the 20-25 sawmills contracted by the company and then sent to the company as sawn timber.
4) Forest certification • Company A holds FSC-CoC certification, and uses FSC-certified timber for some furniture production lines to meet the requirements of particular buyers.
5) Involved actors and roles • Company A: produce furniture

- Sawmills: produce and supply sawn timber
- State-owned forest companies: supply raw materials
- Smallholders: supply raw materials
- Local traders: transport raw materials

6) Measures to ensure legality in timber production and the supply chain

- Timber from domestic plantations
  - Do not procure domestic wood materials if its origin is not identified (e.g., state-owned forest companies, smallholders at commune level).
  - Apply FSC certification according to the demands of customers in the EU and USA.
  - Built a stable timber supply chain by contracting with state-owned forest companies and sawmills and avoiding sourcing from intermediaries.
  - If raw materials originate from smallholder plantations, the company asks the suppliers (sawmills) to identify the origin of harvest at the commune level and checks the packing lists provided by the suppliers. The company views domestic plantations as low-risk and does not seek additional information.
- Importer timber
  - Sources only FSC-certified timber via particular importers.

7) Traceability of supply chain

- By contracting state-owned forest companies and sawmills and referring to packing lists, the company is able to trace back to the legal origin of harvest.
- For imported timber, the company traces to the owner of the forest management by procuring FSC certified timber.

8) Implication for forest management

- It is solely a trading relationship, and the company does not invest in the forest management.

7.2.2 Company B: producer and exporter of wood pellets

1) Type of business, major products and markets

- Production and export of wood pellets to Japan

2) Production capacity

- Pellet production of 30,000 metric tonnes/month

3) Timber sources and supply chain

- The company sources acacia and eucalyptus logs from domestic plantations of smallholders through contracted local traders. Smallholders sell standing trees to

local traders, who arrange to harvest, bring logs to warehouses, measure them, and deliver them to the company.

- The company sources wood residues from processing and furniture factories.

4) Use of forest certification

- Holds FSC-CoC certification.
- Holds and represents FSC group certification in which hundreds of smallholders participate.
- Sources wood residues from factories with FSC-CoC certification.

5) Involved actors and roles

- Company B:
  - Develop and maintain FSC group certification.
  - Provide training and financial investment for smallholders to obtain the certification.
  - Maintain the operation of group members.
- Smallholders
  - Comply with technical requirements to ensure certified timber.
  - Preferably sell logs to the company, but can choose whom to sell.
- Local traders:
  - Organize logging activities and transport logs to the company.

6) Measures to ensure legality in timber production and the supply chain

- Timber from domestic plantations
  - The company assesses participant smallholders before being accepted as group members for FSC certification. The assessment includes whether a smallholder has valid land use rights certificates or other documentation on land use right.
  - The company monitors and ensures members' compliance with the requirements of FSC standard and applicable laws.
  - The company ensures that it receives packing lists from group members.
- Wood residues
  - The company purchases the materials from processing factories holding FSC-CoC certification.
  - The company requests processing factories to provide copies of the following documents to processors:
    - Invoice and packing list of imported timber
    - Certificate of origin of imported wood

- FSC forest management (FM) certification of imported timber
- Other necessary documents for timber imports

7) Traceability of supply chain

- Timber from domestic plantations: traceable to plantations
  - Company B sources FSC-certified logs from the member smallholders and receives their packing lists, which indicate the owner of the products (i.e., smallholders), address, trade name of tree species, and volume.
  - The supply chain for pellets is relatively straightforward, from plantation to pellet factory via local traders. Therefore, obtaining packing lists and keeping records with systematic information management allows the company to trace the supply chain.
- Wood residues: traceable wood processing factories
  - Company B sources: traceable until wood residues from particular wood processing factories that use FSC-certified timber and hold CoC certification. While unknown sourced wood materials are not involved, residues are usually derived from different sources and it is challenging to identify their origins.

8) Implication for forest management

- Plantation activities are carried out by group members and hired contractors. However, the plantations of the members are covered by a single management plan developed by the company within the scope of certification. In addition, a harvest plan is developed for every timber harvesting operation, which includes special requirements for the protection of soil and water, haulage routes, and inventory data.
- The company provides training and monitoring of forest management of group members. Monitoring includes land preparation, planting, tending, harvesting, road making, fire control, health and safety, illegal hunting, logging, the protection of stream buffer zones, water quality, etc.

7.2.3 Company C: producer and exporter of wood pellets

1) Type of business, major products and markets

- Production and export of wood pellets to Japan
- FDI company

2) Production capacity

- Annual procurement of logs is 350,000 MT

- Annual pellet production is 160,000 MT

3) Timber sources and supply chain

- Company C sources logs from agreed smallholders (more than 5,000) through contracted transporters (local traders).
- Company C has started a sustainable forest management project in the region, establishing smallholder and transporter groups to develop and expand FSC group certification and procure sustainably produced raw materials.

4) Use of forest certification

- Holds FSC-CoC and Control Wood (CW) certifications
- Holds FSC-FM/PEFC-FM certifications, applying a group certification scheme
- Will hold PEFC (Programme for the Endorsement of Forest Certification)-CoC certification

5) Involved actors and roles

- Company C:
  - Develop and apply FSC group certification.
  - Provide training and financial investment for smallholders to obtain the certification.
  - Establish smallholder group organizations and maintain the operation of group members.
- Smallholders:
  - Supply logs and comply with the technical requirements to ensure certified timber.
  - Appoint the transporter to deliver logs to the factory.
- Local traders:
  - Organise logging activities and transport logs to Company C.
  - Receive the payments from Company C on behalf of smallholders.
- Research organization:
  - Conduct a feasibility study regarding timber procurement in the area .
- International development agency:
  - Provide finance to implement training and investment for smallholders.

6) Measures to ensure legality in timber production and the supply chain

- Develop and apply the scheme of three-parties agreement for log procurement, in which "Company C (buyer)" concludes the contract with "smallholders (seller)," who appoint "transporter" to deliver logs to Company C and receive payments.
- Receive a copy of the Red Book or written confirmation of the Commune People’s

Committee from households, ID information of the forest owner, and packing list from smallholders.

- Monitor and ensure the member smallholders' compliance with the requirements of standard and applicable laws.
- Apply standards and certification schemes, including FSC-Control Wood, Sustainable Biomass Programme (SBP), and Green Gold Label (GGL), as a part of due diligence and to meet buyers' needs.
- Use third-party certification regarding timber source and segregation control of input materials

7) Traceability of supply chain

- Logs from domestic plantations: traceable until plantations
  - The supply chain for pellets is relatively straightforward, from plantation to pellet factory.
  - The scheme of three-parties' agreements and documentation (i.e., ID information, packing lists, input and output record book of the factory) help Company C to trace the supply chain and exclude unknown-sourced materials.

8) Implication for forest management

- Company C has started a sustainable forest management project, covering approximately 2,800 ha and working with smallholders in FSC FM/ PEFC certifications
  - Technical assistance for productivity improvement
  - Provides financial investment to obtain the certification
  - Establish smallholder groups at the village level as a mechanism to manage forest certification and better communication with Company C.

7.2.4 Company D: producer of MDF

1) Type of business, major products and markets

- Production of MDF, finger joint board, sawn board, etc.
- Buyers are furniture companies, mostly for the purpose of export.

2) Production capacity

- MDF: 125,000m^3/year
- Laminated timber: 10,000m^3/year

3) Timber sources and supply chain

- Company D uses logs of acacia, pine, and rubber from domestic plantations.

- Company D sources acacia from the plantations of the subsidiary company (approximately 5,000 ha).
- Company D purchase logs from local traders and directly from smallholders.

4) Use of forest certification

- Holds FSC-CoC certification.
- Subsidiary company will obtain the FSC FM certification.

5) Measures to ensure legality in timber production and the supply chain

- Logs from local traders:
  - Company D requires local traders to provide invoice, packing list and photocopy of land use rights certificate document of plantation owners.
- Logs directly from smallholders:
  - Company D requires smallholders to provide a packing list and copy of one of the following documents: Red Book, lease contract with state forest companies or other forest boards, contract with landowners, or letter issued from commune authority (if a smallholder cannot provide the document, the company does not buy the logs).

6) Involved actors and roles

- Company D: buy raw materials and produce MDF and other products.
- Smallholders: produce and sells raw materials.
- Local traders: procure, transport and sell raw materials.

7) Traceability of supply chain

- Logs from domestic plantations: traceable until plantations
  - Company D sources logs and its supply chains are straightforward.
  - As it sources logs from plantations of its subsidiary company, from smallholders directly or via local traders, requiring photocopies of packing lists and land use rights documents of smallholders, Company D can trace back its materials until the plantation level.

8) Implication for forest management

- Company D has invested in plantations of its subsidiary company to obtain forest certification.

7.2.5 Company E: producer of sawtimber for furniture company

1) Type of business, major products and markets

- Produce and supply FSC-certified wood products such as sawn timber and veneer finger jointed wood made from domestic plantation timber to a furniture

company, which is one of IKEA's largest wood product suppliers in Vietnam.

2) Production capacity

- 96,000m^3 of acacia timber/year
- 60,000m^3 of acacia plywood/year
- 180,000 tons of acacia wood pellets/year

3) Timber sources and supply chain

- Company E sources raw logs from the member households and sawn timber from cooperative's facilities under FSC group certification scheme.
- 70% of logs produced by the member households are processed at the sawmills contracted/owned by Company E, and 30% are processed by the cooperative.

4) Use of forest certification

- Applies and represents the FSC group certification scheme in which more than 100 smallholders participate.
- Holds FSC-CoC certification.

5) Measures to ensure legality of timber production and the supply chain

- Company E has established and operated a closed timber supply chain, sourcing raw logs from member households under its group certification, producing sawn timber and other wood products at the processing facilities with CoC certification invested by the Company, and delivering wood products to IKEA's furniture supplier and wood pellet factories.

6) Involved actors and roles

- Company E:
  - Provide training and financial investment to smallholders to obtain the group certification.
  - Provide financial investment for sawmills of the cooperatives, private sawmills and two processing factories.
  - Control distribution of logs.
- Local authorities
  - Permit Forest Certification Group project
- Smallholders
  - Comply with the technical requirements to ensure certified timber
- Cooperatives
  - Purchase timber from member households and produce sawn timber and sell to the company
- Saw mills:

➢ Following the orders from the company, receive logs, produce sawn timber and deliver it to the company
7) Traceability of supply chain • Traceable at the plantation level ➢ Company E has established and operated a closed vertical timber supply chain, sourcing raw logs from the member households under the group certification, producing sawn timber and other wood products at the processing facilities with CoC certification invested by the Company, and delivering wood products to IKEA's furniture supplier and wood pellet factories.
8) Implication for forest management • Company E has invested in plantations of its subsidiary company to obtain forest certification.
9) Challenges • Company buys 5% higher than market price, but the benefits of forest certification has not well recognised among smallholders in the region. • Large-diameter trees are challenging to obtain, as small households intend to cut and sell the trees at the smaller tree stage. • High cost to maintain forest certification.

8. Implications to timber legality and sustainable forest management

This section discusses the implications of the case studies for timber legality concerning production and control of the supply chain that may help to address the challenges mentioned above.

8.1. Cooperative model

Although the survey interviewed only two forestry cooperatives and one umbrella association of smallholder groups, which cannot represent the overall forestry cooperatives in Vietnam, it demonstrates the potential of the cooperative model to help ensure and verify the legality of timber production and the supply chain and to contribute to sustainable forest management.

8.1.1. The legality of timber production and monitoring of the supply chain

Before becoming a member of the groups, smallholders are assessed to determine whether they meet the requirements, including Red Book or other land use proof, such as written confirmation from the local authority. This organizational procedure helps guarantee legal timber production by member households. In addition, these organizations have a mechanism to monitor and report forestry activities of the member households, such as logging, transportation, and sales, which may help downstream supply chain actors to evaluate and verify legality.

8.1.2. Changes in supply chain and forest management

Our interviews indicated that the cooperatives' operation has gradually transformed forestry practices and the timber supply chain from the traditional individual model associated with local traders. The cooperatives collect logs from the member households through purchase and/or as a membership contribution, process them at a cooperative facility (if available), and sell wood products collectively to buyers agreed on by the cooperatives. Also, the cooperatives offer logging services and transporting of logs for members, preparing the packing lists for them, and keeping records of the input and outputs of their operation. Accordingly, the forestry business of the cooperative model

ensures legal transaction along the timber supply chain. It makes the supply chain collective and more traceable than the timber supply chain of the individual households-local trader model. In addition, the cooperatives provide technical training, assistance, and advice for better forest management and increased productivity of the member households. In the interviews, the cooperatives said that they had promoted low-impact harvest practices, and the member households had stopped burning post-harvest residues, to protect soils.

8.1.3. Linkage with processing companies and forest certification

These functions and advantages of cooperatives are also affected and determined by external factors. In interviews, the cooperatives indicated that engagement with large downstream processing companies, opportunities for forest certification, and market access, are critical for developing, fulfilling, and maintaining the abovementioned functions. Conversely, in Vietnam, cooperatives are expected to facilitate smallholder group certification, linking with companies seeking to provide investment capital, technical capacity, management ability, and a guarantee to buy timber that meets certain conditions such as size and certification.

Table 4 shows the number and area of smallholder group and individual certifications.

Table 4 Certified forest area in Vietnam (updated 9/2021)

Certification type	Certification scheme	No. of certificates	Certified area (ha)
Smallholder group certification	FSC	29	73,827
	PEFC/VFCS	2	1,568
	Sum	**31**	**75,395**
Individual certification	FSC	25	155,230
	PEFC/VFCS	12	54,529
	Sum	**37**	**209.759**
Total		**68**	**285,154**

Source: Tran and Nguyen (n.d)

Counting FSC and PEFC/ Vietnam Forest Certification Schemes (VFCS), smallholder group certification accounts for more than 45% of certificates. However, their certified areas account for yet less than 30% of the total certified area. Vietnam had 1.1 million smallholders, producing more than half of Vietnam's plantation timber. Accordingly,

applying group certification in which groups of smallholders can participate is a crucial strategy to extend areas certified for sustainable forest management in Vietnam. For downstream processing companies seeking qualified timber or certified timber, negotiating with smallholder groups such as cooperatives is more efficient than dealing with hundreds or thousands of smallholders.

Cooperatives can provide good opportunities for smallholders of timber plantations to gather their forest resources and social and financial capital, and develop linkages with external actors. They also provide opportunities for processing companies to invest and obtain legal, and certified timber, and even importers who seek legal origin and legally verifiable supply chains.

8.1.4 Challenges and way forward

According to the Vietnam Cooperative Alliance (VCA)[19], Vietnam has 12,000 agricultural cooperatives with forestry activities and 122 others specializing in forestry, and 176 forestry cooperative groups. Our interviewees emphasized the importance of support from outside organizations to cover financial and technical investments, organizational capacity, benefits for member smallholders, etc., for the success of the cooperative models. However, the existence of many forestry cooperatives implies an opportunity to extend and develop cooperative models to ensure timber legality and certified sustainable areas. On the other hand, the survey cannot identify comprehensive information/websites of forestry cooperatives with their profile information, such forest resources and capacity, forestry activities, and contacts. A mechanism to facilitate communication between forestry cooperatives and downstream operators helps to match wood supply and demand, increase the traceability of the timber supply chain and promote verifiable legal timber production.

8.2 Measures by downstream processing companies

The interview confirms different measures taken by downstream processing companies that enhance the capacity to control the supply chain, support the verification of the legality, and promote sustainable forest management. These include the application of

[19] https://en.vietnamplus.vn/project-to-enhance-capacity-of-cooperatives-in-forestry-development-reviewed/179450.vnp

forest certification, linkage with timber producers, linkage with other supply chain actors, checks and control of supply chain documents, and engagement in forest management (Table 5).

8.2.1 Forest certification

Forest certification is used in all five interviewed companies. They indicated the use of FSC certification as a condition for accessing markets, such as the EU, USA, and Japan, or requirement from downstream companies exporting wood products, such as furniture, to the EU and USA. As shown in Table 4 and the interviews, FSC certification has become more popular among forest owners and timber enterprises than PEFC/VFCS in Vietnam (APEC-EGILA, 2022). This is explained by the fact that FSC has operated in Vietnam since the 2000s, much earlier than PEFC/VFCS, which started in October 2020. However, two interviewed companies involved in the IKEA supply chain pointed to customer's preference for FSC rather than PEFC/VFCS.

There are two types of FM certification used, smallholder group certification and individual enterprise certification. The decision to procure timber from individual or group certification is likely to depend on various factors, including the company's procurement strategy, commitment to smallholders and rural development, and the forest resources and ownership status in and near its location. In the interviews, three companies sourcing timber from group certification are also representatives of group certification. They provide technical and financial investment to the households to obtain and maintain certification.

8.2.2 Linkage with timber sources and supply chain actors

The survey identified different forms of linkages between processing companies and timber sources and supply chain actors, from sole sales relationships to contractual, invested, and membership, which determine whether and to which extent the supply chain is determined and exclusive. From a legality perspective, determined sources, supply chain actors, and their roles enhance traceability from the downstream processing companies to upstream actors while avoiding informal or unknown sourced timber entering the supply chain.

Interviewed companies enhanced the importance of linkage with, and involvement of, local traders in the supply chain to make procurement of timber materials sustainable and effective. As discussed previously, local traders play significant roles in the timber supply chain in Vietnam. At the same time, their networks and practice make it difficult to control and verify the legal origin of downstream supply chain actors. To make the supply chain traceable and verifiable, Companies B and C contract local traders and fix their services and conditions, such as delivering the material with packing lists from households, preparation of invoices, and payment and tax relating to transactions. It is a good opportunity for local traders to contract with large accounts, as it provides a stable business.

8.2.3 Document collection to ensure and verify the legality of timber

Differences were observed in the documents the interviewed companies collected when receiving products to confirm the legality. Some companies said that they require and collect a copy of Red Book or other documents to demonstrate legal rights to harvest. Those companies receiving Red Books or other documents to demonstrate legal rights to harvest have a relatively short supply chain in purchasing logs to produce wood pellets and MDF. Those three companies with the shortest supply chains said that they collect packing lists made by households. The other two companies receive the packing lists of forest products from their direct suppliers, such as sawmills.

Table 5 Summary of case studies: measures taken by processing companies

Company	Main Products	Certification	Domestic timber sources	Linkage with sources	Linkage with other supply chain actors	Supply chain document to ensure the legality	Forest management
Company A	Furniture	FSC-CoC	State-owned forest companies	Contractual relationship	Contractual relationship with sawmills	• Packing list	No direct linkage
			Smallholders	No direct linkage			
Company B	Wood pellet	FSC-CoC FSC-FM Group certification	Smallholders	Contractual and membership relationship	Contractual relationship with local traders	• Copy of Red Books/written confirmation from local authorities • Packing list made by smallholders	Provide technical and financial investment Monitoring
Company C	Wood pellet	FSC-CoC FSC-FM Group certification	Smallholders	Contractual and membership relationship	Contractual relationship with local traders	• Copy of Red Books/written confirmation from local authorities • Packing list made by smallholders • ID information of smallholders and local traders	Provide technical and financial investment Monitoring
Company D	MDF	FSC-CoC FSC-FM	Plantations of the subsidiary company	Owner	-	• Copy of Red Books/written confirmation from local authorities • Packing list made by smallholders	Investment (Plantations of subsidiary company)
			Smallholders	Direct purchase or via local traders	Sales relationship with local traders		
Company E	Sawn timber	FSC-CoC FSC-FM Group certification	Smallholders/cooperatives	Contractual and membership relationship	Invested/contractual relationship with sawmills	• Packing list	Provide technical and financial investment Monitoring

9. Conclusion

As the main timber producers in Vietnam, household tree growers (often smallholders) are an important feature of Vietnam's timber production. The legality of timber harvesting is built on land use rights in the country, and the law does not require household tree growers to obtain a permit from authorities. Rather, they rely on a self-declaration approach to the legality of harvesting and transporting timber and timber products. The legality of timber harvesting in Vietnam's plantation forests is considered low risk with regard to origin (APEC-EGILAT, 2022) and species (Forest Trends, 2021), as expressed by interviewees.

However, the survey identified challenges that hinder due diligence in importing timber from Vietnam. The self-declaration system does not necessarily guarantee the legitimacy of legal claims, and undocumented informal timber may enter the supply chain. Timber trade and supply chains include arduous and ambiguous processes and practices, with the several layers of transactions that make the supply chain difficult to map, and hinder identification of the legal origin of harvest.

Standards and requirements for due diligence regulation vary from one importing country to another. There are no universal rules on whether, and to what extent, importers are required to identify and prove the legal origin of timber products. Instead, standards depend on how importers understand the risks and hold accountability for the legal basis of products. Similarly, for producers of timber and timber products, the potential to participate in expanding regulated markets rests on the ability to demonstrate the legal origin of timber products.

Given this understanding, as discussed in Section 8, our study evaluated how forestry cooperatives and measures by Vietnamese processing companies can address and support the legality of timber products and promote sustainable forest management.

Based on the findings, it is recommended that importers consider the following points to understand what kind of timber sources and supply chains their suppliers in Vietnam have established:

- Types of domestic timber sources
- Relationship with timber sources
- Relationship with supply chain actors

Types of domestic timber sources that should be considered include individual households, households under groups such as forest cooperatives, households using the land of state-owned forest companies, and forest companies themselves. As the survey demonstrates, cooperatives can help ensure and verify the legality of timber production and provide good opportunities for processing companies to invest and obtain legal and certified timber.

However, a mechanism is needed to facilitate communication between forestry cooperatives and downstream operators in Vietnam.

The interviewed companies have selected and fixed timber sources (e.g., contracted household tree growers, cooperatives, or state-owned forest companies). This approach helps to enhance the traceability of the supply chain and avoid informal timber, or timber of unknown origin, from entering the supply chain. Also, some interviewed companies have strengthened business relationships with local traders. In the Vietnamese context, local traders play a significant role in linking the supply and demand of timber. At the same time, their practice makes it difficult to control and verify legal origin. Engagement with local traders helps to manage the supply chain and ensure legal and documented transactions. Therefore, importers could evaluate effectively timber legality and hold imported products accountable, if they understand how suppliers manage their supply chains and what relationships they have with supply chain actors and wood sources.

Finally, it is also critical to consider how importers can work with Vietnamese suppliers to help establish, maintain, or improve supply chains. As the case studies demonstrate, some processing companies in Vietnam not only source timber materials but have also invested in and developed their suppliers' capacity. Also, some companies have facilitated the formulation of smallholder groups and provided technical and financial assistance for better forest management and timber production. Of course, such an approach requires financial, technical, and human capacity. This survey revealed various efforts and measures already in place in Vietnam to achieve legal and sustainable plantation forest management and build a traceable and verifiable supply chain at the level of policy, business, and timber production. In our interviews, timber growers and forest cooperatives stressed that sustainable forest plantation management needs stable timber demands and consumption. To that end, the processing companies pointed out that, to make such approaches effective, it is essential to build sustainable relationships with business partners of importing countries.

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