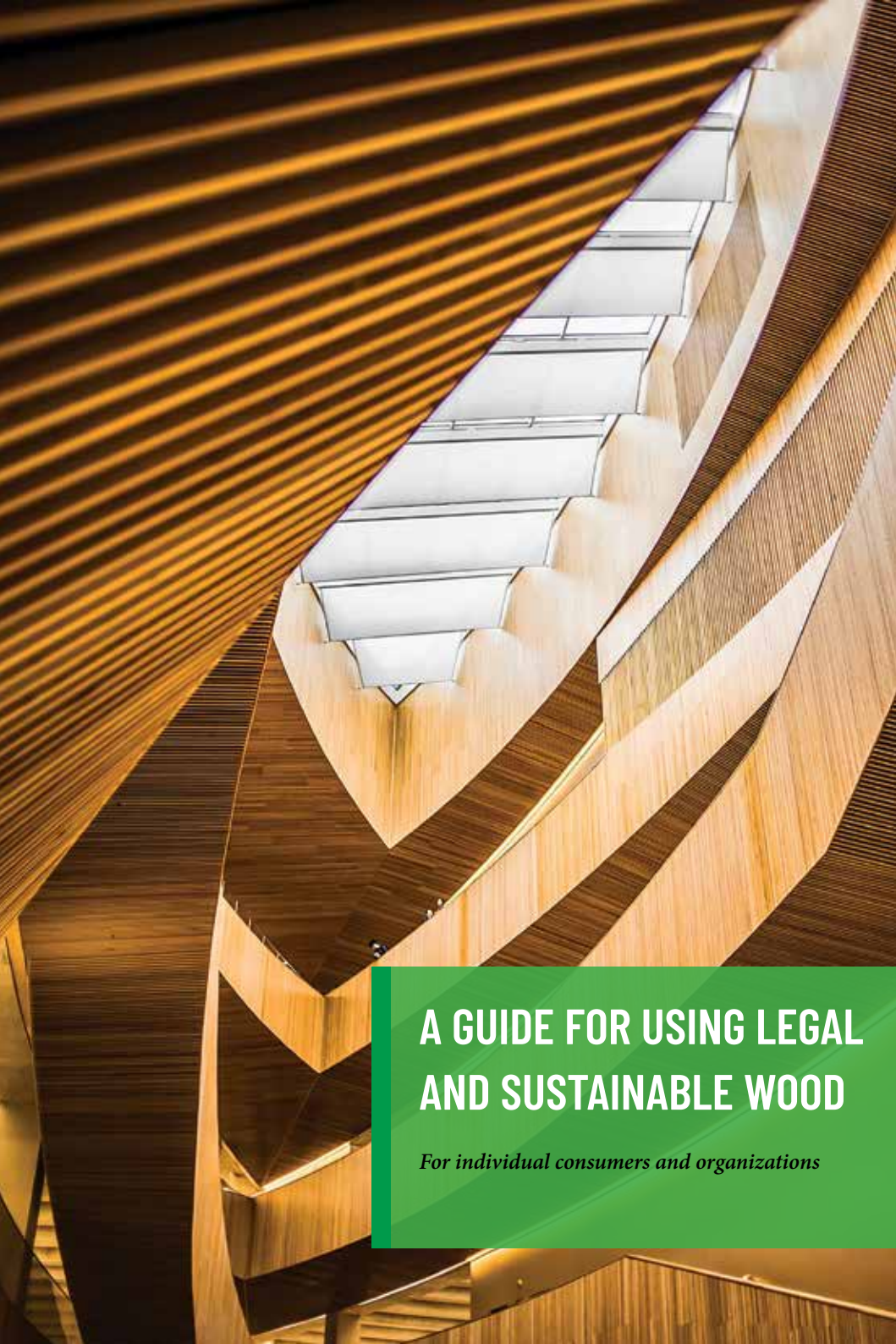

A GUIDE FOR USING LEGAL AND SUSTAINABLE WOOD

For individual consumers and organizations

More information can be found at: htp://en.flegtvpa.com/

FAO-EU FLEGT PROGRAMME

Food and Agriculture Organization of the United Nations

Sweden
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from the British people

USING LEGAL AND SUSTAINABLE TIMBER

For individual consumers and organizations

INDEX

INTRODUCTION

Forests are important. They have the capacity to contribute to climate change mitigation as an integral part in the carbon cycle and contribute to regulating ecosystems, protecting biodiversity, supporting livelihoods and supply goods/services that are important for livelihoods and a green economy.

Increased forest lost in recent years, and its impact on the environment, has cast doubt in peoples' minds about the use of wood and timber products in their daily lives. There is a misconception that timber is scarce, and that the use of wood contributes to deforestation and environmental degradation, which causes many consumers to shy away from the use of wood. If managed sustainably, forests have the capacity to provide renewable resources and ecosystem services to people. Timber is a versatile material that can be used for construction, furniture, paper, firewood and much more. Wood is less energy intensive to produce and has carbon storage capacity, whilst engineered wood is more durable than concrete, steel or plastic.

However, timber can only fulfil its highest potential if it comes from forests that are legally and sustainably managed, and if it is legally and responsibly processed, transported and traded. This document has been created to provide concise and important information to help consumers understand more about the benefits of wood as a renewable and versatile material. This document will provide guidance on how to source and purchase legal wood, how to avoid risks of buying high risk/illegal wood and provide guidance on the benefits and use of wood from plantations in Vietnam for architecture, construction, interior design and much more.

The guide consists of two parts.

Part 1: ***Why should we use legal timber?***

Part 1 aims to define what legal timber is for consumers and organizations, which is contextualised within Vietnamese law. This section goes on to discuss how to avoid buying illegal wood and outlines the most popular certification system for sustainable wood around the world.

Part 2: ***Why wood is good?***

After establishing what legal timber is, part 2 describes the benefits of using wood as a building material. This section details how wood can benefit the user as well as the environment. Part 2 provides the reader with tips to ensure consumers and organization use legal wood/wood products in sustainable ways. This section also introduces some typical projects using legal and sustainable wood materials in Vietnam.

WHY SHOULD WE USE LEGAL TIMBER?

Illegal logging is one of the causes of forest degradation in Vietnam and many countries around the world. In order to prevent illegal timber trade, key importing countries such as the European Union, USA, Australia, Japan and Korea have developed timber regulations that aim to prohibit illegal timber and timber products from entering their boarders.

Similarly to these countries, Vietnam has established regulations to stop illegal timber trade. To do this, Vietnam has signed a Voluntary Partnership Agreement (referred to as VPA) on Forest Law Enforcement, Governance and Trade (referred to as FLEGT) and issued Decree 102 operating the Timber Legality Assurance System (VNTLAS). The VNTLAS ensures that timber and timber products are legally harvested, imported, transported, processed, consumed and exported in Vietnam.

[1] *VPA-FLEGT is a Voluntary Partnership Agreement (VPA) on Forest Law Enforcement, Governance and Trade (FLEGT) signed by the Government of Vietnam with the Union European Union (EU) from October 16, 2018 and comes into force from June 1, 2019.*

1.1 What is legal wood?

What is Legal Wood?

Legal wood means wood or wood products that are harvested, imported, handled, confiscated, transported, traded, processed, and exported in accordance with the provisions of Vietnamese law and relevant provisions of this Article, as well as international conventions to which Vietnam is a member and relevant laws of the country where timber is harvested for export to Vietnam.[2]

In other words, legal timber or timber product is a timber or timber product that fully meets the relevant legal regulations of Vietnam (such as VNTLAS decree). This means that the entire Similarly supply chain, from raw wood to the final finished product and to the consumer, must meet these regulations. As for imported wood products, it is necessary to comply with the laws of the country where the wood is harvested and exported.

Timber and wood products must comply with regulations on harvesting, transporting, processing and exporting timber/wood products to be considered legal *(See figure 1 below)*.

[2] *Article 3, Clause 1, Decree 102/2020/ND-CP dated September 1, 2020 of the Government stipulating the Vietnamese legal timber guarantee system.*

Figure 1. Stipulations on legal timber during supply chain of timber products from harvest, transportation, consumption, processing and exporting.

How is "legal timber" regulated in Vietnamese law?

Regulations related to "legal timber" throughout the supply chain (including regulations on criteria, conditions, proofs, verification procedures, competent authorities, etc.) are captured in the following regulations *(figure 2)*.

Law on Forestry 2017

Legal timber is wood/wood products harvested, traded and manufactured in accordance with the provisions of Vietnamese law (Article 2, Clause 18).

Decree 06/2019/ND-CP dated January 22, 2019 of the Government on the management of endangered, precious and rare forest plants and animals and the implementation of the Convention on International Trade in Fauna and Flora endangered wildlife.

This Decree prescribes the list of endangered, precious and rare species of forest plants and animals; the regime of management, protection, order and procedures for exploitation of endangered, precious and rare species of forest plants and animals; raising common forest animals; and implementation of the Convention on International Trade in Endangered Species of Wild Fauna and Flora in Vietnam.

Decree 102/2020/ND-CP dated September 1, 2020 of the Government regulating Vietnam's legal timber assurance system.

Legal timber means timber or timber products that are harvested, imported, confiscated, transported, traded, processed and exported in accordance with Vietnamese laws and regulations, and also relevant provisions of international treaties to which Vietnam is a contracting party and relevant laws of the country where timber is harvested for export to Vietnam (Article 3, Clause 1).

Circular 27/2018/TT-BNNPTNT dated November 16, 2018 of the Minister of Agriculture and Rural Development providing for the management and traceability of forest products.

In this Circular, there are regulations on the types of documents proving the legal origin of forest products, specifically in Chapter III, Section I: Documentation of forest product origin. These are documents that the buyer can request from the place of purchase.

Decision 4832/QD-BNN-TCLN dated November 27, 2020 of the Minister of Agriculture and Rural Development announcing the List of timber species imported into Vietnam and the List of geographical areas actively exporting timber into Vietnam.

This decision includes two appendices:

Appendix I. List of types of wood imported into Vietnam.

Appendix II. List of geographical regions actively exporting timber to Vietnam.

Figure 2. Legal framework on timber legality.

1.2 What is sustainable wood?

Sustainable wood is wood harvested from sustainably managed forests. Sustainable forest management must keep a balance of three criteria (ecological/environment, social and economic issues), whilst also ensuring that exploitation does not exceed growth and protects biodiversity. In sustainably managed forests, trees are harvested properly so the extraction does not affect its own biodiversity balance.

While compliance with legal requirements is mandatory, moving from legal to sustainable is voluntary. Sustainable forestry, however, provides added benefits in terms of market acceptance and environmental and social benefits. Consumers can move towards the use of sustainable wood by utilising timber/timber products that have been certified as sustainable. Currently Vietnam does not have a label for legal timber and timber products, so using certified sustainable timber is a responsible choice. There are a number of internationally recognised standards in the forestry sector for sustainability that can be adopted to ensured that all wood that are being used are certified.

In the table (page 19) is some notable certification scheme in the word and in some countries, including Vietnam, which indicate that the timber/timber product has come from a sustainable source.

Wood cannot be environmentally friendly if it does not come from well-governed forests. If not well managed, the shift to timber will lead to illegal logging and destruction of natural forests. Therefore, it is necessary to ensure that the wood that is put into use is at least legal and requires more than that to be sustainable wood.

FSC[3] Certification	PEFC[4] Certification	Vietnam Forest Certification System[5]	US farm system ATFS[6]	Malaysian wood certification system MTCS[7]
FSC (Forest Stewardship Council) is a global voluntary certification system to certify responsible forest management and forest products. The FSC certificate is to be recognized in the international market.	PEFC forest certification is a certification system established by PEFC (The Program for the Endorsement of Forest Certification) to promote forest governance and to ensure that timber and forest products adhere to the highest ecological, social and ethical standards.	Vietnam Forest Certification System (VFCS) is managed and provided by Vietnam Forest Certification Office - Vietnam Administration of Forestry, Ministry of Natural Resources and Environment.	The American Tree Farm System (ATFS) is a program of the American Forest and Family Forest Foundation.	The Malaysian timber certification system established by the Malaysian Timber Certification Council (MTCC) uses a piecemeal approach to deal with the increasingly complex challenges of rainforest management.
Established in October, 1993. So far certified 228,375,913 hectares of forest. 1,165 international members in 89 countries. There are about 250 thousand hectacres of forest and close to 1,000 companies have been certified by the FSC for FM and CoC.	Established in 1999. Over 330 million hectares of certified forest. (815 million acres) 75% of the world's certified forests are PEFC certified.	Established in 2019. 11/2020, Vietnam Forest Certifiction System has been agreed by PEFC. Currently, there are 12,000 hectares of acacia and rubber plantations in Vietnam that are VFCS certified.	Established in 1941. Up to 91,000 households are committed to the sustainable management of watershed forests and animal habitats by the private sector. To date about 10,530,000 hectares of forest have been certified under this system.	Established in 1998. Recognized by PEFC, the world's largest certification system since 2009. MTCS certified a total of 5,272,734 hectares.

[3] https://fsc.org/en/facts-figures
[4] https://pefc.org/discover-pefc/facts-and-figures
[5] http://vfcs.vnforest.gov.vn/
[6] https://www.treefarmsystem.org/celebrate-75
[6] https://mtcc.com.my/wp-content/uploads/2021/07/MTCC_040_21_Corporate-Brochure_V4.pdf

1.3 How to reduce risks of purchasing illegal wood

Currently in the domestic market, most wood products are not labelled so consumers cannot easily recognise what is legal nor can consumers identify the source of timber. Often what matters to the consumer is not the legality of the wood but rather the quality, design, price and species Listed below are four quick tips for consumers to look out for when purchasing timber / wood to reduce the risk of including illegal timber in designs or projects, especially relating to those in the construction, architecture and interior design sector.

Tip 1: Check the species

Species: Ensure that the wood/ timber is not in the list of species banned for commercial exploitation, such as mahogany or green cypress (see the list at *here*). Plantation species such as pine, acacia, are more likely to be legal. See the list of domestic plantation species *here*.

Tip 2: Check the Origin

Timber that is sourced from high risk countries may violate regulations prohibiting or restricting harvesting. High risk countries are those countries/ regions that have lax legislation and/or enforcement on forest governance, and have large numbers of timber species that are prohibited from being harvesting or exporting (especially timber and tropical hardwoods) in circulation. If buying imported wood/wood products, choose wood products from low risk areas or regions, or timber from FSC-certified plantations, or other sustainably managed forest certifications. See the list of low risk countries or regions exporting to Vietnam *here*.

Tip 3: Sources to avoid

Timber belonging to high-risk species or from high-risk geographic areas or countries is not always illegal (e.g., hard wood from natural forests that is harvested according to Vietnamese laws or before the date of ban in logging from natural forests; timber from a high-risk source but with evidence of legal exploitation, transportation, or processing). Even so, for timber that falls under the following circumstances, there is a very high risk of illegality, and these should be avoided at all cost. These circumstances include:

- Wood of the species listed in the Appendix to the Convention on International Trade in Endangered Species of Wild Fauna and Flora (referred to as group 1 and 2 timber); or

- Timber that is threatened with extinction in the country where it is illegally harvested or traded; or

- The wood belongs to the type of wood imported into Vietnam for the first time, which means that the wood is not on the List of Types of Wood Ever Imported into Vietnam published by the Ministry of Agriculture and Rural Development[8].

Tip 4: Look for a label

- Source and purchase wood, wood products with trusted labels that can provide assurance that a product is legal and / or sustainable.

- Each label provides information about the origin of the materials used to make the finished and labelled product. All the materials used bearing this label are sourced from forests and processing facilities that have been audited by an independent third party to confirm they are managed according to rigorous social and environmental standards.

- The current internationally recognized sustainability labels include: FSC, PEFC, SFI, ATFS, VFCS and MTCC.

1.4. Carry Out Due Diligence

When there is a need to buy wood, please refer to the internet or refer to friends and relatives about reputable shops/businesses that can guarantee the legal origin. Businesses that are committed to using 100% timber from plantations, wood from regenerated forests, and certified timber are businesses you can trust.

In addition to this, consumers should carry out due diligence when purchasing timber/timber products. To do this, suppliers can be asked to provide documents to provide that the wood is legal. When buying large amount of

[8] At the time of publishing this document, the list has been issued according to the decision numbered 4832/QĐ-BNN-TCLN dated 27/11/2020 of the Ministry of Agriculture and Rural Development (MARD) on announcing the list of timbers imported to Vietnam and the list of positive geographical areas that Vietnam import timbers from.

timber products (for organizations, companies, or building projects), ask sellers to provide documents proving the legal origin. Please ask for the following documents:

- For wood of domestic origin: Consumers can ask agents/supermarkets/ stores to provide a list of forest products:

    - According to Form 01 - List of forest products applicable to logs, sawn timber and timber; or

    - Form 02 – List of forest products applicable to wood products

These form tables are included in the Appendix issued together with the Minister of Agriculture's Circular No. 27/2018/TT-BNNPTNT dated November 16, 2018 and Rural Development on management and traceability of forest products.

- For imported timber: consumers can ask agents/supermarkets/stores to provide a list of imported wood/wood products

    - According to form 01 – List of imported timber; or form 02 – List of imported wood products; and

    - Form 03 – Declaration of imported timber origin certified by the customs office at the border gate where customs clearance is granted

These forms are included in the Appendix issued together with Decree No. 102/2020/ND-CP dated September 1, 2020 of the Government on regulations on the Vietnam Legal Timber Assurance System.

PART 2: WHY WOOD IS GOOD?

With modern technology and development today, wood can be engineered to have the same durability and versatility as concrete but as a greener, more sustainable, and more environmentally friendly option. A 2014 study in the Journal of Sustainable Forestry found that the supply of sustainable timber is sufficient to meet the needs of infrastructure, roads, and buildings worldwide. If part of these infrastructures were made from wood, it could reduce annual CO2 emissions by 14-31% and reduce fossil fuel (FF)[9] consumption by 12-19%. More recently, in 2019, a study conducted by the Journal of Building Engineering concluded that a building made from cross-laminated timber could result in an average 26.5% reduction in "global warming potential" when compared with a concrete building of a similar size.

Wood is also the only material that is abundant and renewable to meet the growing demand for houses, furniture and appliances in Vietnam. Therefore, compared to other materials, wood is the optimal choice.

If wood and wood products used are legally harvested from sustainably managed forests, there will be no harm on the environment. If the demand for wood & wood products increases, it will stimulate businesses by creating jobs for people to plant more plantations & expand the areas where trees are planted.

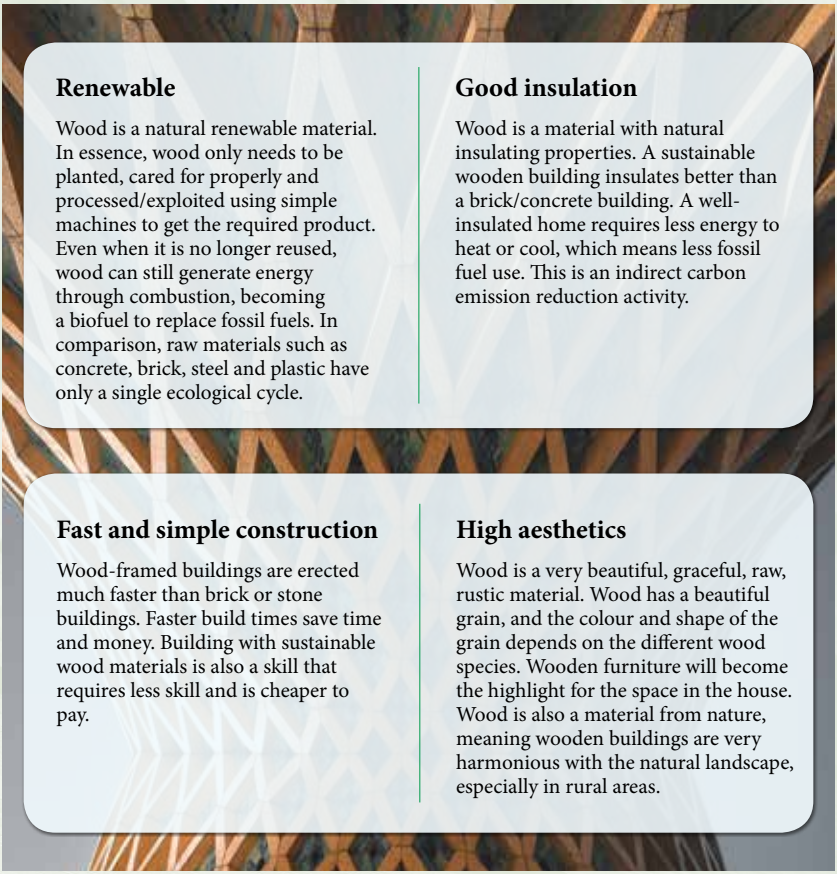
[9] *Chadwick Dearing Oliuver, Carbon, Fossil Fuel, and Biodiversity Mitigation With Wood and Forests, published online on 28/03/2014*

2.1 Benefits of wood material

Many studies have shown the environmental benefits of wood materials used in construction, architecture and interior design. These benefits include:

- The significant reduction in greenhouse gas emissions caused by construction activities, as the wood material itself still stores carbon after being put into use.
- A reduction in waste, pollution and construction related costs.

Timber also has the following benefits:



Renewable

Wood is a natural renewable material. In essence, wood only needs to be planted, cared for properly and processed/exploited using simple machines to get the required product. Even when it is no longer reused, wood can still generate energy through combustion, becoming a biofuel to replace fossil fuels. In comparison, raw materials such as concrete, brick, steel and plastic have only a single ecological cycle.

Good insulation

Wood is a material with natural insulating properties. A sustainable wooden building insulates better than a brick/concrete building. A well-insulated home requires less energy to heat or cool, which means less fossil fuel use. This is an indirect carbon emission reduction activity.

Fast and simple construction

Wood-framed buildings are erected much faster than brick or stone buildings. Faster build times save time and money. Building with sustainable wood materials is also a skill that requires less skill and is cheaper to pay.

High aesthetics

Wood is a very beautiful, graceful, raw, rustic material. Wood has a beautiful grain, and the colour and shape of the grain depends on the different wood species. Wooden furniture will become the highlight for the space in the house. Wood is also a material from nature, meaning wooden buildings are very harmonious with the natural landscape, especially in rural areas.

Durable and easy to maintain

Sustainable wood is a highly durable material. Well-built structures of wood can last for centuries, for example the timber frames of many Tudor buildings. Wood is easy to replace and maintain at a low cost when compared to other materials. When wood burns, it is possible to predict the direction and time of fire more easily than steel and concrete, thereby giving early and appropriate firefighting plans. Even in the event of a fire, the structure of wood is still difficult to completely collapse when compared to steel or concrete materials.

Creates a good living space for physical and mental health

Wood belongs to carpentry, and is one of the five elements that make up the earth, creating tranquillity and relaxation. Wood can give the user a very warm feeling, helping people feel as peaceful as being immersed in nature, reducing stress and fatigue. With good insulation, ventilation, and good CO2 absorption even after being manufactured into wood products, wood materials will be good for user's health.

Very versatile and flexible to use

In addition to its natural beauty, wood is also very versatile, with each different tree species producing different types of wood with different qualities, structures and functions. Wood is a material that can be used in all stages of construction and architecture from structural framing to floors, roofing, exterior cladding and from decorative finishes to interior and exterior furniture. Wood can be used in spaces that come in a variety of shapes and styles, both modern and traditional.

Competitive prices

As governments encourage their citizens to use timber from plantations by reducing taxes for wood products whilst simultaneously increasing taxes for materials that are not environmentally friendly, timber & timber products prices may become competitive with other materials. When demands are increased, people will invest more in plantations therefore increasing supply & causing prices to become competitive. As a result, other unrenewable materials will become more scarce and costly. In addition, thanks to modern technologies, small and soft wood can be processed to make high quality timber materials and allow prices to be competitive as rotation is short.

[10] Phong cách kiến trúc Tudor là sự phát triển cuối cùng của kiến trúc thời Trung cổ ở Anh (từ năm 1485 đến năm 1603). Ra đời trong thời kỳ Tudor. Đồng thời trong đó cũng có sự pha trộn của kiến trúc Phục Hưng vào những năm 1500.

2.2 Why use legal wood?[11]

Sustainable wood has benefits for our local environment

In natural forests, when a forest is responsibly managed, the number of new trees planted is always equal to or greater than the number of trees harvested. If the tree is exploited in accordance with sustainable management procedures, after felling, the amount of CO2 is still stored in the trunk. Each cubic meter of wood stores about 1 ton of CO2. Plants absorb CO2 quickly when they are growing, and more slowly as they age. If old trees are not exploited, they will die and form decay, and this process will emit more CO2 than it absorbs during growth. Therefore, a responsibly managed forest, where new trees are planted to replace age-appropriately harvested trees, will become even better CO2 stores than an intact forest without logging[12].

Wood harvested from plantations can also help the local environment. The Australian Government have noted that wood plantations that have been strategically planted have improved soil quality, water quality and salinity mitigation, and had carbon and biodiversity benefits[13]. This means that the use of plantations can really help our local environment to flourish.

Sustainable wood consumes less energy

Sustainable wood takes less energy to harvest and process than other materials, as well as compared to wood harvested from unsustainably managed forests. Sustainable wood is usually wood that is harvested at the right age and size, so it is of better quality, with high uniformity and requires less preliminary processing. The processing also emits less SO2, CO2, VOCs[14] than other competing materials. Producing wood products does not require much energy from other materials but can use wood itself to generate energy.

Sustainable wood is sustainable, economical and has less impact on the environment than other materials

According to a 2013 report by consulting firm Ecofys, iron and steel account for nearly 5% of global greenhouse gas emissions, and other materials in

[11] *http://www.koruarchitects.co.uk/choose-sustainable-timber/*
[12] *http://www.koruarchitects.co.uk/choose-sustainable-timber/*
[13] *https://www.vox.com/energy-and-environment/2020/1/15/21058051/climate-change-building-materials-mass-timber-cross-laminated-clt*
[14] *VOCs: Volatile organic compounds - dust particles and volatile organic substances*

the construction process such as concrete account for 6%. In other words, reinforced concrete constructions contribute to climate change just as much as emissions from vehicles on the streets.

Michael Green, an architect who supports the trend of building wooden houses, put forward the math: if a 20-story building was built out of wood instead of cement and concrete, the emissions reduction would be 4,300 tons. This would be the equivalent of taking 900 cars off the road every year. Building wooden structures is also sustainable, economical and has less impact on the environment than reinforced concrete.

The most popular and effective CO2 removal tool, which is always available, is trees. According to Inhabitat, if built, the wooden structure of the Oakwood Tower project in London could absorb 50,000 tons of carbon a year, equivalent to the amount of gas emitted by 5,000 people.

2.3. Note when using wood materials

When you have a need to buy wood/wood products, consider the factors below to buy legal wood/wood products and save your wallet!

Carefully consider the needs, purposes, and rational use of wood products before buying, replacing or disposing of them

- **Repair and recycle:** When products are damaged, do not rush to throw them away but try to repair or consider using the old product for another purpose.

- **Rethink:** When thinking about buying a new product, ask yourself: Do I really need this new product? If you're a designer, ask yourself, can I come up with a new design that uses less energy and costs less to produce? If you are a fan of tropical hardwoods, consider using alternative woods, reducing the risk of illegal timber imports. See a list of American hardwoods replacing tropical hardwoods *here*.

Wood needs to be reused

If wood is sustainably sourced, using wood can have a positive impact on the environment. Trees absorb CO2 through photosynthesis and convert it to carbon, thus removing this toxic gas from the atmosphere. This phenomenon is called sequestration and can be reconciled with the energy required to process and transport wood products. Therefore, wood is considered a negative carbon (reducing carbon) material. However, the sequestered carbon will be released at the end of the wood product's life, unless it is reused or recycled into a new product[15]. Therefore, it is not recommended to dispose of wood/wood products into the environment because the process of decomposing wood will generate huge emissions.

Emissions over the life cycle of a building with a CLT frame (excluding carbon storage) are 30-50% lower than a concrete building of the same size if it is 100% solid wood, and if the materials are not discarded when the building is no longer in use. If the wood is brought to the landfill, analysis shows that the total emissions of a CLT frame building when decomposed will still exceed the total emissions of a concrete frame building. When wood decomposes, it releases at least 60% of the carbon it used to store in the air in the form of methane gas. This gas is even 25 times more harmful than CO2 in terms of its impact on global warming[16].

→These are also factors to keep in mind when using wood materials to ensure that they will not cause problems for future generations

Resell or give away: "One person's trash is another person's resource." If your product is still good enough, you can give it away or resell it to interested people or sell it to a second-hand store.

[15] *https://www.designingbuildings.co.uk/wiki/Sustainable_Timber_in_Construction*
[16] *https://www.designingbuildings.co.uk/wiki/Sustainable_Timber_in_Construction*

2.4. Projects that used timber from plantations and recycled timber in Vietnam

Timber from plantations provides timber that is less risky, with diverse supply that can meet different technical requirements of timbers used in constructions, architecture and interior designs. Moreover, promoting timber use from plantations in the country will promote planting more trees in plantations and forests, bring back stable incomes for peoples whose livelihoods are dependent on forests and plantations, especially in remote areas.

In construction and architecture, timber have been used in following objectives: i) Conservation of architectural heritages or projects (replacing damages parts) ; ii) New construction projects (either framework or cover of the construction projects); and iii) interior design and furniture.

Nowadays, the modern timber processing technology can overcome the weakness of timber and make it more efficient, ensure it can be applied widely in the architecture and construction projects. Below are some projects that have used timber from plantations both from Vietnam and imported, as well as regenerated timber and recycled timbers in Vietnam.

The project: Teak House (Vĩnh Phúc province)
Timber and interior design contractor: 282 Design
Construction contractor: Best Design

Materials: Timber, Concrete, steel, iron. Timber is the major material used in the ceiling, walls (inside and outside), floors, and interiors.

Timber is from teak trees from plantations. However, this project did not use solid wood but used small wood and pallets to take full advantage of timber. In addition, the timber has been treated by special oils from fauna to protect wood whilst ensuring it is environmental friendly and safe for human health.

Sources: 282design.com

The project: Lam café (Khánh Hòa province)
Design and implementation: A21 Studio
Materials: Acacia and coconut tree

The major material for the house is acacia (walls) with roofs from coconut leaves that make its architecture simple, but with a flexible and open space. All materials used for this project are local materials with the majority having been recycled.

Sources: A21studio.com.vn

The project: An Lâm Retreats (Khánh Hòa province)
Design and implementation: Trần Đức Homes
Materials: Pine wood imported from New Zealand

The retreat includes resorts and Hoa Sen restaurant. Timber is the major material for construction of this complex.

Timber used in this and other projects from Tran Duc Homes are from plantations and have sustainable certificates imported from U.S. Europe and New Zealand.

This project use Glulam structure instead of concrete and has proved to be relevant for tropical weather which is hot and humid.

Sources: tranduchomes.com

AN LÂM RETREATS (KHÁNH HÒA PROVINCE)

CONCLUSION

If the 19th century and the 20th century was the era of reinforced concrete (as iron and steel were the leading construction materials), then the leading material of the 21st century is wood. The world of science and architecture is promoting a new trend: the "wooden age," with skyscrapers that have been and are being built entirely out of wood in the world. Therefore, using wood materials in architecture, construction and interior design is an inevitable trend of the 21st century.

The population of Vietnam and the world is increasing day by day, leading to an increasing demand for housing and infrastructure. If all urban houses were built of steel and concrete, climate change would happen faster. Therefore, the world needs a more sustainable alternative. Wood is the only material abundant and renewable to meet this need. If the demand for wood and wood products increases, it will force us to plant more forests and utilise available space to meet the demand. If wood is used in construction, then it must be reused to ensure it remains carbon neutral.

It is important for consumers to ensure that the wood/wood products they purchase/use are legal, and is harvested from sustainably managed forests, to reduce pressure on the environment and protect what remains of natural forest.

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