

# Exporting cross laminated timber (CLT) to Western Europe

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This fact sheet provides an overview of the rapidly growing European market for Cross Laminated Timber products (CLT). Demand for CLT products depends heavily on residential and non-residential building construction such as schools, restaurants, stores and warehouses. After the economic recession, the European market for CLT products increased rapidly. The potential for tropical hardwood species to be used in CLT products is substantial, as this type of product does not yet exist.

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## 1. Product description

Engineered Wood Products (EWP) are made from lumber, veneers, strands of wood, or from other small wood elements that are bound together with structural glues to form lumber-like structural products. They are designed for use as construction timber. These products allow production of large lumber substitutes from small lower-grade logs.

In the EWP product group, several products are found: laminated veneer lumber (LVL), laminated strand lumber (LSL), parallel strand lumber (PSL), I-beams, glue-laminated timber (glulam), finger-jointed structural sawnwood and Cross Laminated Timber (CLT). This document is about Cross Laminated Timber (CLT) only.

Figure 1: Examples of Engineered Wood Products (EWP) 

CLT panels consist of several layers of structural lumber boards stacked crosswise (typically at 90 degrees) and glued together on their wide faces and, sometimes, on the narrow faces as well. The result is a light but very strong panel product that can be made off-site and erected quickly to form structural walls, floors and ceilings. CLT is used in a wide range of applications in single-family houses, multi-story towers, public buildings and speciality construction.

For classification of CLT in the European Union, the Harmonised System (HS) is used. However, based on the

statistics, it is not possible to identify CLT directly (there is no such HS code). Therefore, data are used from a somewhat larger group. The following HS code is taken into account: 44189010 Builders' joinery and carpentry, of glue-laminated timber.

Almost all CLT is traded under this number. There are no Eurostat Prodcom codes either (to measure production). Nevertheless, figures are available (see statistics below).

## Main species in the market

CLT is usually constructed from softwood species such as spruce, although it can be manufactured from larch, fir, douglas fir, pine or other timbers. Around the world, tests are carried out with other species (bamboo, iroko). Lumber is visually graded or machine stress rated and is kiln dried to 12%.

While C24-grade timber is often used, there has been an increase in the use of C16 timber. C16/C24 is the strength grade of the timber, which can be graded visually by a registered and qualified grader or by machine. Graders evaluate the timbers characteristics, taking into account any knots, fissures and the slope of the grain to determine its strength class.

## Colours

As this material is for construction purposes only – at least for the moment – and it is mainly used inside walls and ceilings, colours are not important.

## Dimensions

The thickness of individual lumber pieces typically varies from 16 mm to 51 mm and width varies from 60 mm to 240 mm. Panel sizes vary by manufacturer; typical widths are 0.6 m, 1.2 m and 3 m, while length can be up to 18 m and thickness up to 508 mm. In special constructions, longer lengths are even possible.

### Tips:

- Much more detail on the manufacturing and technology involved can be found in the study 'Production and Technology of Cross Laminated Timber (CLT): A state-of-the-art Report' (source: Institute of Timber Engineering and Wood Technology, Graz University).
- The publication by the 2016 Joint Conference on 'Cross Laminated Timber: a competitive wood product for visionary and fire safe buildings' is also a useful source to learn more.

## Glues

Mostly formaldehyde-free interior/exterior polyurethane (PUR) structural adhesives are used. When tropical timber species have to be glued, different adhesives need to be used, as these species are often more difficult to glue. Some exporters are doing tests with species and glues, but this is often for the local markets.

## Types of packaging

Orders are usually transported by truck in Europe or by container when exported overseas. Dry Cargo Containers defined as 20'GP (general container) are usually used for shipment. The precise packaging used in the containers fully depends on the dimension of the product.

## 2. What makes western Europe an interesting market for Cross Laminated Timber products?

About 90% (675 thousand m3) of the global cross laminated timber (CLT) was produced in Europe in 2015. This number is forecast to increase to 1 million m3 in 2016. The figures below are also a good indication of the

worldwide trade (and therefore not only Europe).

Figure 2: Bergen, Norway, highest building constructed with CLT 

The DACH countries (Germany (D), Austria (A), Switzerland (CH)) have been the driving force in CLT development, not only as the originators of CLT products but also as the leading CLT producers. Austria has seven CLT production facilities, Germany three and Switzerland two. Minor production sites exist in Finland, Italy, Norway, Spain and Sweden, while more CLT factories are under construction in Finland, France, Sweden and the UK.

Earthquake-prone countries such as Japan have shown a keen interest in increasing the use of CLT, and Japan has published a roadmap to pave the way for CLT in the Japanese building market. The use of CLT does make it possible to construct tall wooden buildings. The current record-holder is a 14-storey residential high-rise in Bergen, Norway, while an 18-storey wooden building is planned in Vancouver, Canada.

The global distribution of CLT production is likely to change, however, with new planned capacity in Japan and North America, for example. The national CLT production volume is not necessarily proportional to national consumption – the central European timber industry is strongly export oriented, supplying other parts of Europe as well as overseas markets.

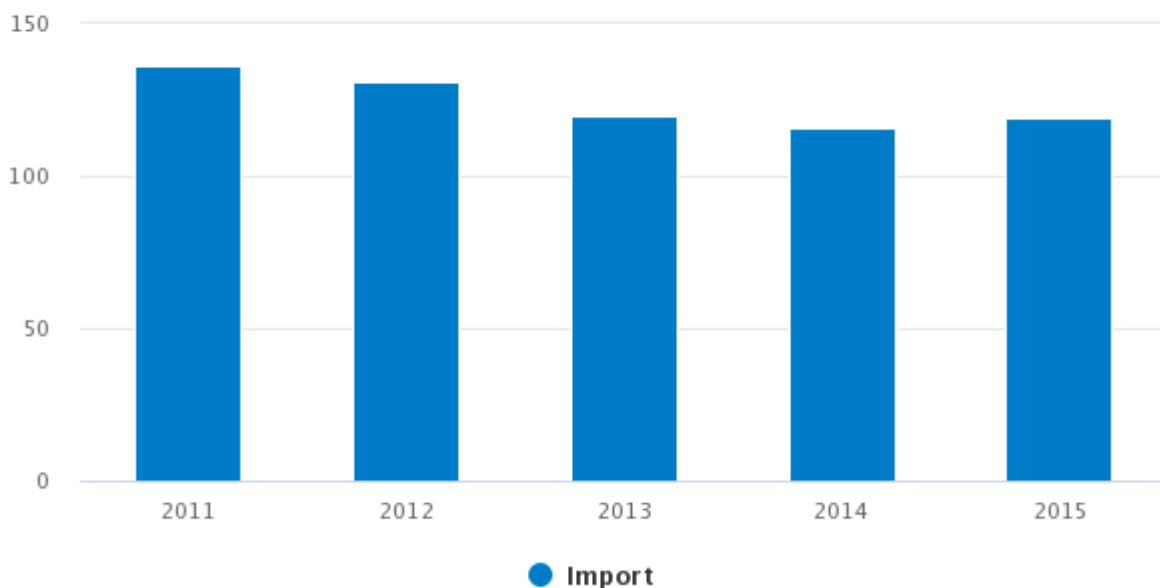
The section below provides you with statistics on the trade and consumption of CLT in the western European countries (Austria, Germany, the Netherlands, Sweden, Belgium, Finland, France and the United Kingdom). Some caution is required, as figures include intra-European Union trade.[\[1\]](#)

[\[1\]](#)For intra-EU trade, figures are only compulsory for exporting and importing firms whose trade exceeds a certain value. The threshold varies from country to country and is typically about €100,000. Intra-EU trade is often underestimated by 3-6%.

## Import: decrease

Figure 3: Imports of CLT 2011–2015

in € million



Source: Eurostat 2016.

Import from the major producing countries in western Europe (Germany, Austria, Finland and Sweden) to the largest trading countries in western Europe (Belgium, Germany, France, the Netherlands, Austria, United Kingdom, Finland and Sweden).

As CLT is only produced in Europe, the import figures show intra-European trade only. During the period between 2011 and 2015 (economic recession), imports decreased to an amount of € 116 million in 2014. Evidence of economic recovery has translated into a growth pattern for 2015, while further improvements can be expected (see below). The largest importers are currently Germany (€ 53 million), France (€ 31 million), Austria (€ 17 million) and the UK (€ 12 million).

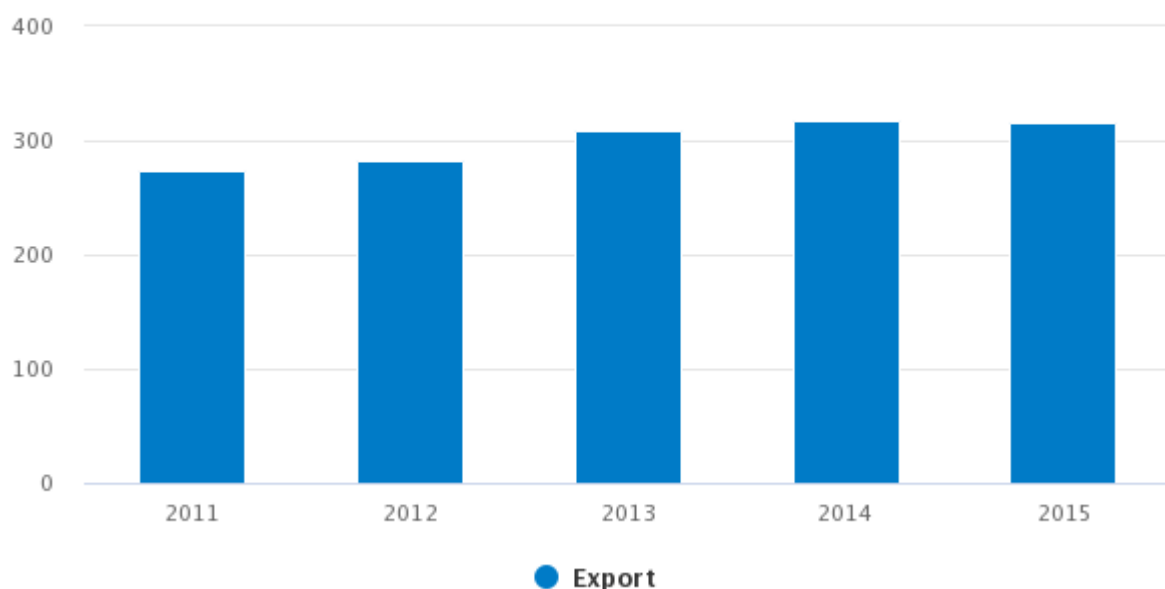
### Tip:

- As CLT is not yet available from tropical wood species or for exterior use, there is a good possibility to introduce a new product on the European market: CLT with high durability (hardwood species) and for exterior use.

## Exports: stable growth

Figure 4: Export of CLT 2011-2015

in € million



Source: Eurostat 2016

Export from the major producing and trading countries in western Europe (see above for countries).

The export statistics show a stable growth at first and stabilisation over the last year, amounting to € 316 million in 2015. This development is mainly caused by increased consumption; less CLT is available for export. The export to non-European Union countries was stable. The largest exporters are Austria (€ 137 million) and Germany (€ 115 million). After that, other important players are the Netherlands (€ 19 million, trade only), Sweden (€ 16 million) and Belgium (€ 13 million, trade only).

### Tip:

- Since some European Union countries such as Belgium and the Netherlands are real trading hubs, you

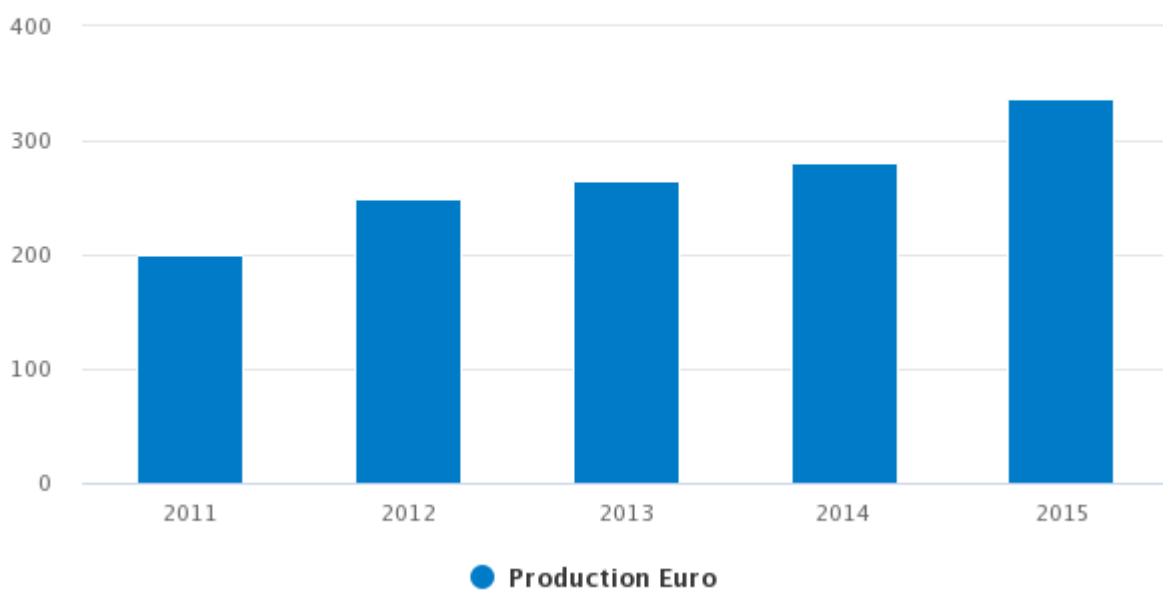
can also design a strategy to use them as an entry point in order to access other European countries.

## Production: clear increase

Official production figures are not available for Europe. However, the United Nations Food and Agriculture Organization did carry out some research in cooperation with the Institute of Timber Engineering and Wood Technology in Graz, and produced some production figures. This information is presented in Figure 5 below. Figure 6 was constructed by dividing the number of m3 by an average sales price of € 500/m3 CLT. This is an average price, based on several sources (see price section below).

**Figure 5: Production of CLT 2011–2015**

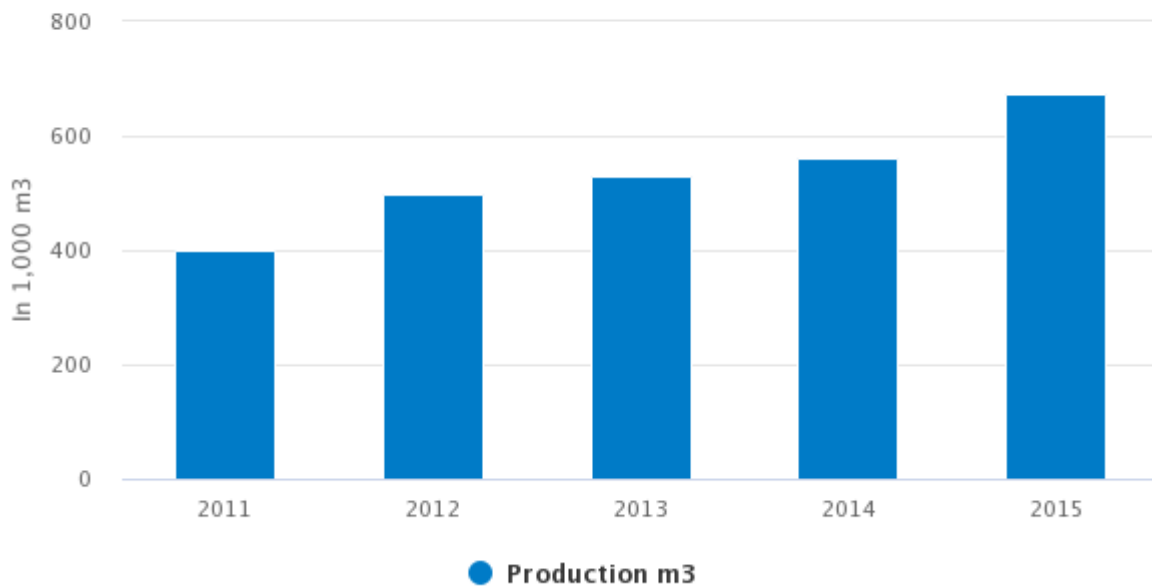
in € million



Source: United Nations Food and Agriculture Organization, Forest Products Annual Market Review 2015–2016 (2016)

**Figure 6: Production of CLT 2011–2015**

in 1,000 m<sup>3</sup>

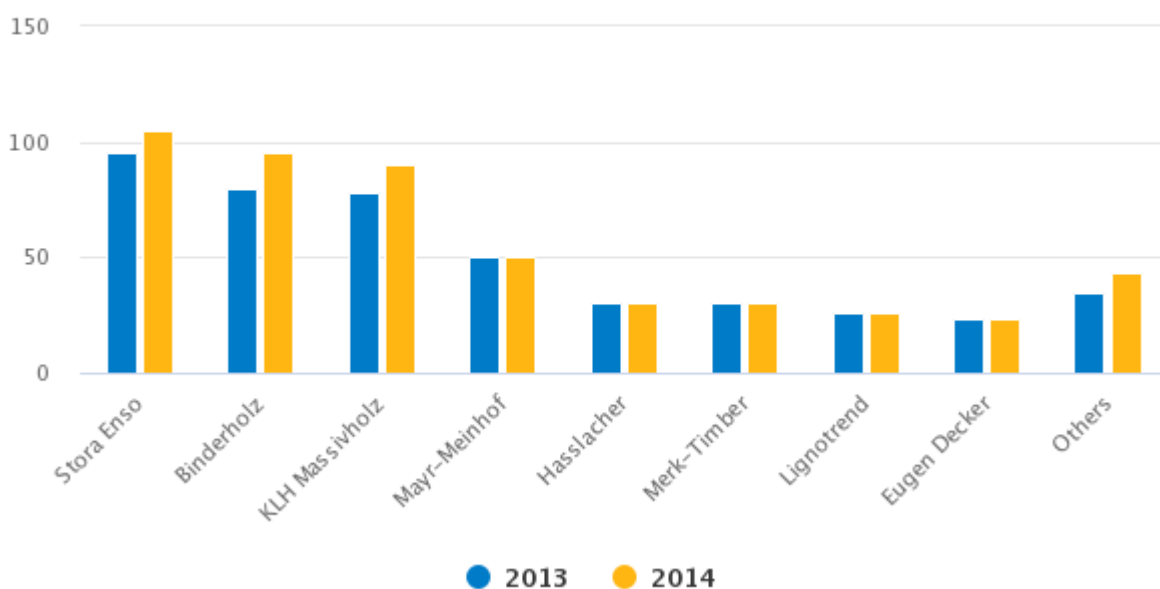


Source: United Nations Food and Agriculture Organization, Forest Products Annual Market Review 2015–2016 (2016)

Production increased as CLT becomes more popular in the world, reaching a level of € 338 million in 2015. It is estimated that the market will have grown to 1 million m<sup>3</sup> in 2016 (€ 500 million). The largest producers can be found in Figure 7 below.

**Figure 7: Largest producers 2013–2014**

in 1,000 m<sup>3</sup>



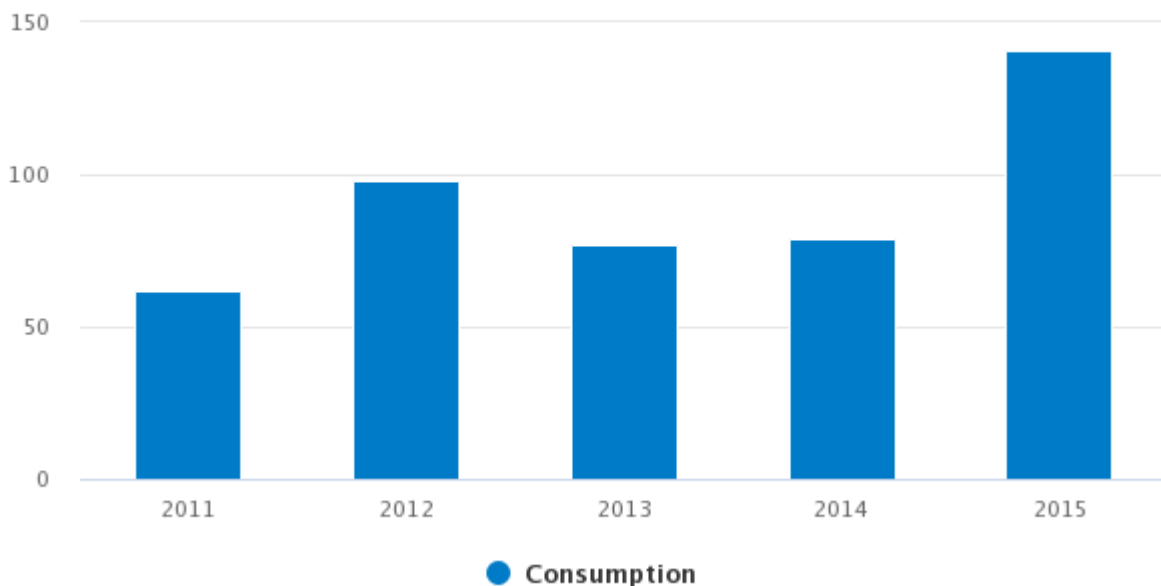
Source: UNECE/FAO 2014 and University of Helsinki presentation, 2015

It is expected that the figures for 2016 will not change much, although new investments in Finland, Japan, Latvia and the USA will be coming online.

## Consumption: clear increase

Figure 8: Consumption of CLT 2011–2015

in € million



Source: FSG 2016

Consumption is calculated as Imports + Production – Exports. The consumption of CLT in the western European countries has clearly increased, amounting to almost € 141 million in 2015. With the building sector gradually picking up speed again, the forecast for 2016 remains positive.

### 3. Which trends offer opportunities on the western European market for Cross Laminated Timber?

The [CBI Tropical Timber Trend](#) document provides you with detailed trends on the European market for sustainable tropical timber and timber products. The section below gives a short summary of the most important developments and trends on the European Union market.

Workforce demographics stimulate outsourcing; production is slowly moving to eastern European and developing countries

Consumers are slowly returning to construction. The period of economic recession took the European construction market into a downturn, since fewer parties were constructing new homes. Nevertheless, the market for renovations remained .

Consumer awareness about deforestation and climate change increases. In most of the important importing countries of tropical timber in Europe, sustainability is high on the agenda of the consumers and thus also of governmental agencies, timber trade federations and large retailers. Traceability systems are gaining importance too.

Substitution by soft and temperate wood species and non-timber alternatives grows. The increased availability of thermally and chemically treated softwoods and temperate hardwood means that tropical timber is increasingly being

More efficient processing, value addition and innovation are on the rise. To increase efficiency, there is a move towards processing techniques that enable the use of timber waste which would otherwise be discarded (for

instance, finger jointing, lamination).

The Gross Domestic Product (GDP) in the European Union is expected to grow by 1.8% in 2016 and by 1.6% in 2017 (EU/EFTA Forecast, 2015). The growth for 2017 was tempered in the last part of 2016 because of Brexit, the United Kingdom's withdrawal from the European Union.

The rise of demand in emerging economies continues. The rapid development of emerging economies is fuelling the demand for tropical timber and timber products.

The pressure on price premiums mounts. The price premiums for certified tropical timber and timber products are under pressure because certification becomes “business as usual”.

Lesser-known species are in demand. An important part of sustainable forest management schemes is the promotion of lesser-known species. The scarcity of well-known/popular tropical timber species offers opportunities for new species.

The European Union Timber Regulation (EUTR) is meeting expectations only partly. The implementation of the EUTR is still in its infancy. In many European Union Member States, the monitoring of illegal timber trade is still insufficient.

The euro has appreciated against the US dollar, from a low of 0.72 euro/US dollar in April 2014 to a high of 0.84 in September 2017. This fact means that the euro is relatively weak, which has influenced prices and price competitiveness. A stronger euro means that European buyers pay relatively lower prices for timber from many Asian and other countries that maintain timber prices in US dollars or have currencies linked to the US dollar.

CLT is becoming more popular. Dutch importers [Woodteq houtconstructies](#) and [Korlam](#) stated that many small construction companies prefer working with CLT instead of regular sawn timber because there is no need to ‘grade’ and check the timber for strengths and weaknesses, as CLT is of a uniform quality. Besides that, it is easy to work with, easy on the machinery and it weighs less than concrete. All importers state a growing demand (Source: FSG).

## **4. Which requirements should Cross Laminated Timber comply with to be allowed on the European market?**

This buyer requirement section is separated into three parts: requirements that you *must* meet to be able to export, additional requirements that you *may* meet and niche requirements that you *can* meet. Below, you will find a summary only. For additional information, please read the more detailed CBI document on “[Requirements with which your product should comply](#)”. You can also check the International Trade Centre’s [Standards Map](#), an online tool providing information on over 130 standards and other similar initiatives.

## **5. Which requirements must you comply with?**

The European Union Timber Regulation (EUTR) is the most important requirement that you must meet. There is also the European Union General Product Safety Directive, however, which applies to all consumer products. Products that are permanently incorporated into construction works also have to comply with the Conformité Européenne (CE) requirements.

In addition, there is the Convention on International Trade in Endangered Species of Wild Fauna and Flora (CITES) to comply with and the European “Registration, Evaluation, Authorisation and Restriction of Chemicals” (REACH) to take into account. For packaging material, you have to comply with the International Standards For Phytosanitary Measures (ISPM).



## 6. Which additional requirements do buyers often have?

Sustainable forest management is especially relevant to tropical timber, due to concerns about deforestation and global warming. Moreover, importing companies often need to address other issues than the origin of wood. European buyers (especially those in western and northern European countries) pay more and more attention to their corporate responsibilities regarding the social and environmental impact of their business. This aspect also affects traders and processors.

## 7. Which are the requirements for niche markets?

Ecolabels may be important. These labels do not only focus on sustainable sourcing but also on other aspects of the products: processing (for instance, energy consumption, waste management), packaging and the use of chemicals. Smallholders and communities often face tough competition on the global timber market. The Forest Stewardship Council (FSC) has developed a “dual certification of FSC and Fair Trade” that has been tested and is available.

### Complying with CLT product standards

There are several product standards and norms in place that can be used: European product standard [EN 16351](#); European design standard [EN 1995-1-1](#); American National Standards Association approved [ANSI/APA PRG 320-2012](#). Standard for Performance-Rated Cross Laminated Timber.

CLT is also included in the 2015 US [International Building Code](#) (IBC). Worth mentioning is also the open source CLT software package [CLTdesigner](#). This is used by many producers to make calculations and designs of CLT products. In some CLT-producing countries, local standards are made on the basis of the EN norms.

## 8. What competition do you face on the western European market for Cross Laminated Timber?

For a complete and detailed overview of your competition on the European market, you can read our “[Competition in the timber sector](#)” document. With regard to CLT, take the following into account:

### Your competition is working on legality and traceability

Legality and traceability requirements are considered major barriers for exporters in developing countries. This fact is because of the potential problems with illegal timber. Nevertheless, products with less detailed specifications and a less sophisticated design, such as decking boards, will enter the European market more easily compared to other timber products such as garden furniture. As to CLT, the demands for legality and traceability will be moderate because these products are mainly sold to construction companies or importers. For these companies, their “environmentally friendly” image will be important.

#### Tips:

- Keep up to date with market access requirements and trends, following details of developments provided by CBI.
- Make sure that you work on the legality and traceability of your raw material.

### Your competition is there - make sure that you stand out

Market rivalry depends on the availability of the various timber species, quality, design and prices. Tropical timber is sometimes used to make a design statement within companies, public institutions or private homes. In such cases, sustainability and design are often important, with the product ordered as a single item, in a specific, unique size and at a higher price than for standard-sized and conventional designs.

### Tips:

- Make sure that you add value to your product by improving its durability, quality and design (colour of the timber) through the use of tropical hardwood species with a higher density which can be used for exterior purposes.
- Timber prices can change daily, so you depend on your buyers to stay informed of the price developments. For more general information on prices, check the [bi-monthly ITTO tropical timber market reports](#) (International Tropical Timber Organization) and the [FORDAQ](#) website.
- As many retailers display their products online, verify whether your styles and price ranges match theirs. Be innovative in proposing new products.
- Smaller, specialist suppliers, building companies and architects are potential buyers and can be targeted by exporters of high-quality, innovative and contemporary products. Exporters that can provide technical specifications and offer guarantees may have a competitive advantage.

## 9. Through which channels can you get Cross Laminated Timber on the western European market?

For more general information about market segments and channels, you can have a look at the [Market Channel and Segment document](#) available on the CBI market intelligence platform.

Exporters of CLT products mostly sell their products to importers, wholesalers/distributors or directly to construction companies or project developers (the role of the agent as an intermediary is decreasing). In turn, importers and wholesalers/distributors sell to construction companies and project developers.

Figure 9: Trade structure for CLT



Source: Forestry Service Group

## 10. What are the end-market prices for Cross Laminated Timber?

As CLT is not yet imported from overseas, price development and factors that influence the price are strictly bound to Europe. Prices are also based on European sawn timber softwood prices.

If you decide to produce your own CLT and start exporting, the following factors will influence your price: availability of species, humidity levels (12%), durability class (density of the timber), quality (occurrence of stains, knots, end shakes, mould, warped boards, insect holes, breaks, repairs) and sustainability certification. If you start exporting from a developing country, the following price breakdown will be applicable.

Figure 10: Price breakdown of imported wood products to the European Union (excluding VAT, average 20%)



**Source: FSG**

Market prices for CLT vary according to the dimensions of the product, but an average price of € 500/m<sup>3</sup> is used by the larger producers. This is the price that these producers are selling it for to the wholesalers, importers or construction companies (Source: 1. [Fachhochschule Salzburg](#), 2013; 2. Potential opportunities for [Cross Laminated Timber](#) in South Korean residential building market; 3. University of Helsinki [presentation](#), 2015; 4. Meetings with CLT importers in the Netherlands).

CLT construction is currently about 10–15% more expensive than masonry and cement construction. A reduction in CLT costs would enable the sector to take full advantage of the benefits of the material, such as the speed and efficiency of installation, design versatility, reduced waste, lighter weight (compared with concrete) and energy efficiency (Source: UNECE [market report, 2016](#), Chapter 10.3 (United Nations Economic Commission for Europe)).

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## Common market prices


Some of the larger producers, and some importers, are listed in the table below with their website.

Table 1: Important market players


Company	Country	Type
<a href="#">StoraEnso</a>	Finland (and many other countries)	Producer
<a href="#">Mayr Melnhof Holz</a>	Austria	Producer
<a href="#">Binderholz</a>	Austria	Producer
<a href="#">KLH Massivholz</a>	Austria	Producer
<a href="#">Hasslacher</a>	Austria	Producer
<a href="#">Woodteq houtconstructies</a>	Netherlands	Importer
<a href="#">Korlam</a>	Netherlands/Belgium	Importer/Producer
<a href="#">Ramboll</a>	UK	Designer/Project developer

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