Interreg Sudoe

EUROPEAN UNION

IMIP_
Innovative Eco-Construction System Based on Interlocking Modular Insulation Wood & Cork-Based Panels

European Regional Development Fund

# D1.2.1 Integrated forest harvesting systems and certification of traceability in the forest-industry harvest chain

IMIP-SOE3/P3/E0963

Project funded by the Interreg Sudoe programme through the European Regional Development Funds (ERDF)

## PROJECT CONTEXT

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| **Project acronym** | IMIP |
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| **Summary** | Document with information compiled from Integrated Forest Harvest Systems and traceability certification in the forest-industry harvest chain. The report briefly describes traceability and chain of custody requirements that apply to all elements of the sustainable materials supply chain that must be covered by a certification cation (FSC and PEFC certification schemes) and provides information of actual Forest Certification in the Sudoe area. |
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| **Main authors** | Gominho, J.[1]; Miranda, I.[1]; Solange Araújo[1] |
| **Contributing authors** | Brunet-Navarro, P.[2]; Lanvin, J.D.[3]; Luengo, E.[4]; Sánchez-González, M.[5]; |
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[1] Instituto Superior de Agronomía (ISA)

[2] Universitat Politècnica de València (UPV), ITACA Institute

[3] Institut Technologique Forêt Cellulose Bois-construction Ameublement (FCBA)

[4] Asociación de Investigación Técnica de las Industrias de la Madera (AITIM)

[5] Instituto Nacional de Investigación y Tecnología Agraria y Alimentaria (INIA)



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## *PARTNERS*

Universitat Politècnica de València

Instituto Universitario de las Tecnologías de la Información y Comunicaciones

Information and Communications Technologies versus Climate Change

Instituto Nacional de Investigación y Tecnología Agraria y Alimentaria, O.A., M.P - Centro de Investigación FORestal - Departamento de Dinámica y Gestión Forestal (INIA-CIFOR)

Institut Technologique Forêt Cellulose Bois-construction Ameublement (FCBA)

Asociación Clúster de la Construcción Sostenible de Andalucía (ClusterCSA)

Asociación de Investigación Técnica de las Industrias de la Madera (AITIM)

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Instituto Superior de Agronomia (ISA)

Pôle de Compétitivité XYLOFUTUR XYLOFUTUR PROD MAT FORETS CULTIVEES (Xylofutur)

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## *ASSOCIATED PARTNERS*

ESPADAN CORKS SLU (EC)

Comité de Développement Forêt Bois Aquitaine (CODEFA)

Observatòri de la Sostenibilitat d'Andorra (OSA)



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# CONTENT

# SUMMARY

Forest management certification intends to assure that forests are sustainably and responsibly managed. In Spain, Portugal and France two operating international schemes provide Forest management certification: The Forest Stewardship Council (FSC) and the Program for the Endorsement of Forest Certification (PEFC). The FSC's international standard for forest management is adapted to national conditions through Working Groups coordinated by the National Initiative. The PEFC endorsement works differently, since it's based on a "bottom-up" and mutual recognition approach. Both systems certify for Forest Management (FM) and Chain-of-Custody (CoC) procedures.

**Spain** has 2.3 million ha of certified forest, representing around 12 % of the forest area in the country (1.9 million ha are PEFC certified (Figure 1) and 0.3 million ha are FSC certified). 1,542 companies are PEFC certified in Chain of Custody and 1,099 companies are FSC certified in Chain of Custody.

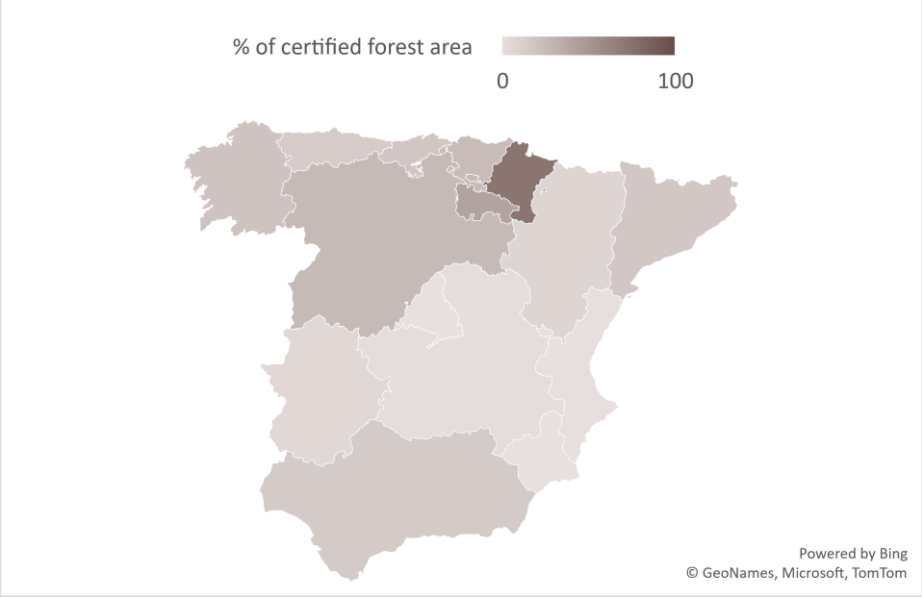


Figure 1. Regional distribution of percentage of certified forests in Spain.

**Portugal** has more than 0.8 million ha of certified forest, representing around 15.5 % of the forest area in the country (0.3 million ha are PEFC certified (Figure

2) and 0.5 million ha are FSC certified). 1,886 companies are PEFC certified in Chain of Custody and 375 companies are FSC certified in Chain of Custody.

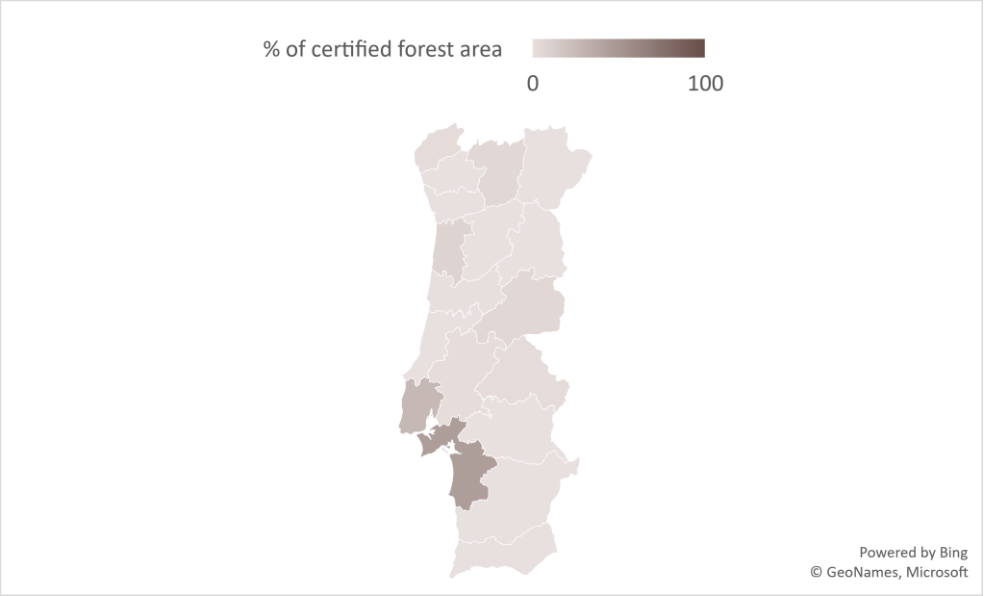


Figure 2. Regional distribution of percentage of certified forests in Portugal.

**France** has 8.2 million ha of certified forest, representing around 50 % of the forest area in the country (8.2 million ha are PEFC certified and 0.04 ha are FSC certified). 1,396 companies are PEFC certified in Chain of Custody and 118 companies are FSC certified in Chain of Custody.

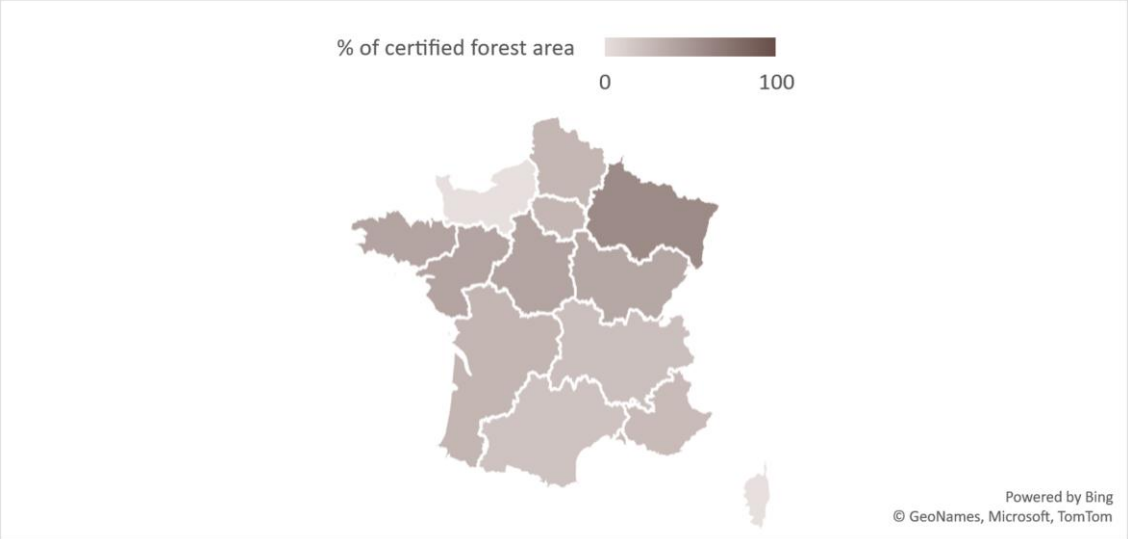


Figure 3. Regional distribution of percentage of certified forests in France.

# INTRODUCTION

Forest certification is a voluntary process whereby an independent third party (the "certifier") assesses the quality of forest management and production against a set of requirements ("standards") predetermined by a public or private certification organization. Forest certification, and associated labelling, is a way of informing consumers about the sustainability of the forests from which wood and other forest products were produced.

There are two types of forest certification:

- certification of forest management, which assesses whether forests are being managed according to a specified set of standards.
- certification of the chain of custody (sometimes referred to as CoC certification), which verifies that certified material is identified or kept separate from non-certified or non-controlled material through the production process, from the forest to the final consumer.

To label an end-product as certified, both forest management certification and chain-of-custody certification are required.

Most forest management certification standards address a wide range of economic, social, environmental and technical aspects of forest management, including the well-being of workers and of families living in and around the forest area subject to certification.

The major drivers for wood and cork traceability remain primarily related to industry certification and legislative compliance. However, there is some evidence of consumer pull arising from greater awareness of certification schemas such as FSC - *Forest Stewardship Council* and PEFC - *Programme for the Endorsement of Forest Certification*, the main certification frameworks worldwide.

# OBJECTIVE

The aim of this report is to study the emerging certifications used in the wood trade sector and present the current trends and the future perspectives. Current

methods to verify the origin of wood and the traceability are presented. Some of the methods are delayed because of the cost limits throughout the supply chain, while traditional methods are widely used.

# METHODOLOGY

This study was performed analysing the published information about the two main certification frameworks (FSC and PEFC). Data from certified forest area was collected from FSC (http://info.fsc.org/) and PEFC (http://www.pefc.org/) online databases.

# RESULTS

## Forest certification

Forest certification is a market mechanism to promote the sustainable use and management of forests and to identify "sustainably produced" products for the consumer. The aim is to reward forest managers who pursue sustainable forest practices rather than practices with the potential to cause negative economic, social and environmental impacts. A certification label on a forest product informs potential buyers that the product was produced in a well-managed forest in accordance with a given set of standards. Consumers concerned about social and environmental issues are expected to give preference to products carrying such a label, and they may also be prepared to pay higher prices for them. Forest managers may be motivated to pursue certification for various reasons, ultimately leading to improvements in the quality of forest management and an increase in the extent of well-managed forests.

In a forestry context, the wood supply chain may be regarded as a series of handling and processing stages that start with forest management operations and end with final wood product production (Figure 4). The European Union (EU) regulates the wood supply into the EU market through the Regulation (EU) No 995/2010 (on the obligations of operators who place timber and timber products on the market), which aims to avoid illegally harvested

timber to enter on the EU market and sets out preconditions for the marketing of timber and timber products in the EU.

According to the International Organization for Standardization (ISO 9000-2015) the term 'traceability' describes the ability to identify and trace the origin, distribution, location and application of products and materials through supply chains. '*Chain of custody*' is a general term for making a connection between sustainability information or claims regarding raw materials, intermediate and final products. Different methods of chain of custody are available for the handling of sustainable materials along the supply chain.

The combination of both the traceability and chain of custody requirements ensure that the physical flow of materials can be traced back and forth throughout the supply chain, which guarantees the integrity of sustainability statements. This also ensures that sustainability characteristics can be assigned to individual consignments of material, and that the amount of sustainable material withdrawn at any stage of the supply chain does not exceed the amount of sustainable material supplied.

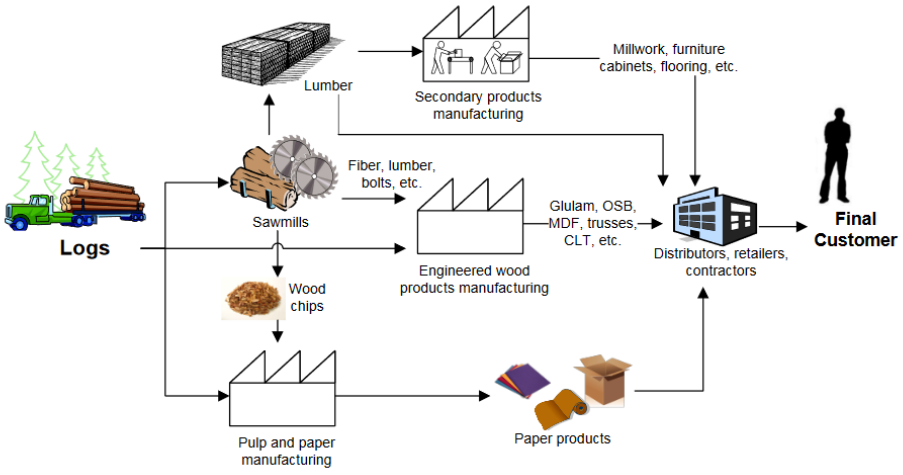


Figure 4. Typical forestry supply chain (Source Espinoza and Smith, 2015)

The fundamental characteristics of traceability systems are:

- identification of units/batches of all inputs (Product traceability information),
- identification of processed product (Production records and batch labelling),
- information on when and where they are moved and/or transformed (Documentation),
- a system linking this data (Reconciles product to documentation).

## Benefits of forest certification

In many cases, the most immediate benefit of certification for forest managers is the streamlining of forest operations due to improvements in efficiency and greater control of production processes. Although experience has shown that certified forest products do not always obtain higher prices compared with uncertified products, certification may be essential for maintaining access to some markets. Certification has been shown to be a valuable tool for positioning products in the marketplace and in certain sectors: in the paper and packaging sector, for example, certification is the norm rather than the exception in many major markets. Certification can also provide confirmation that a product fulfils legal requirements – such as those established by laws aimed at preventing the trade of illegal timber products – and may help producers and traders in fulfilling administrative obligations. Forest certification may help bring about improvements in the working conditions and safety and health of forest workers, lead to improved forest conservation outcomes, and encourage sustainable forest use. Forest certification can help boost the public image of companies – both those that pursue certification in their own forest operations, and those that purchase only certified products.

## Costs of forest certification

Forest managers incur both direct and indirect costs in pursuing certification. Direct costs include those associated with the certification process – such as the fees paid to certifiers to conduct initial assessments and subsequent audits, hold

stakeholder consultations and prepare reports. Achieving certification may also require investments in machinery, staff training, infrastructure and logistics to improve forest management in compliance with the certification standards; these indirect costs could be much higher than direct costs, depending on the gap between the existing quality of management and that required to meet the certification standards. Because the direct costs of certification are relatively fixed, they usually decrease per unit of wood production or forest area – in other words, they decline, in relative terms, the larger the forest operation. Indirect costs, on the other hand, increase as operations increase in size because of the need to improve practices across larger areas.

## Principles, criteria, indicators and standards

In most forest certification schemes, the specific requirements for good forest management are presented in a hierarchical system of principles, criteria and indicators. Principles provide an overall framework and set out a vision of sustainable forest management. Criteria are categories of conditions or processes by which sustainable forest management can be assessed, and each criterion is characterized by a set of indicators that can be monitored to assess change over time.

The process by which certification bodies have developed their principles, criteria and indicators has varied. In 1994, the Forest Stewardship Council (FSC) defined ten global principles and associated criteria that set the framework within which national groups could develop indicators and verifiers specifying national and subnational standards through multi-stakeholder processes.

The PEFC adopted a definition of sustainable forest management that was developed by the Ministerial Conference on the Protection of Forests in Europe in 1993 (and later adopted by FAO). The Programme for the Endorsement of Forest Certification (PEFC) supplements its principles, criteria and indicators derived from globally recognized intergovernmental processes with additional requirements in national schemes prepared with the involvement of key stakeholders – including forest owners and managers – and endorsed by the PEFC Council.

Certification standards are generally developed, reviewed and revised in consultation with stakeholders. Global standards may be adapted to suit national conditions; for example, the FSC adapts its global standards through a network of national working groups.

Despite many differences in scope, content and procedures, all credible forest certification programs require compliance with existing laws and regulations; the protection of biodiversity, endangered species and wildlife habitats; sustainable harvesting levels; the protection of water quality; respect for the rights of local people and employees; economic viability in forest operations; an adequate management plan; and the monitoring of operations. In addition, certifiers are required to make audit summaries available to the public and to establish mechanisms for complaints and appeals. The FSC and the PEFC have differing approaches. The FSC employs a system for accrediting certifiers, who are responsible for auditing forest operations, assessing compliance with FSC standards (developed at a national or subnational level), and issuing FSC certificates. Forest enterprises and groups of forest management units certified in this way are permitted to use the FSC label on their products. In contrast, the PEFC endorses national certification systems (*e.g.,* the Australian Forestry Standard and the Brazilian Forest Certification Program), which develop their own certification standards and accredit certifiers. Forest operations certified in this way are permitted to use the PEFC label on their products.

The accreditation process employed by the FSC and by national certification systems involves a combination of field and office audits and is designed to ensure that certifiers comply with the stipulated rules and procedures and work to uniformly high standards. All national systems wishing to be PEFC-recognized undergo an independent assessment to ensure compliance with the PEFC's sustainability benchmarks. Although they take different approaches, both the FSC and the PEFC are umbrella organizations designed to ensure uniform certification standards.

## Certification process

Achieving forest certification can be either a quick or a lengthy process, depending on the pre-certification quality of forest management, administration and documentation systems, and on the capacity of the applicant to make the required adjustments. Basic certification requirements include:

- Compliance with the law,
- Well-written and coherent forest management plans,
- The implementation and monitoring of operations to reduce forest damage,
- Adequate working conditions,
- Good relations with people living in and around the forest subject to the certification process.

The certification process requires that applicants take a number of steps to demonstrate full compliance with the standards. A certificate valid for a specified number of years is issued when compliance has been achieved. Applicants must take the following steps to demonstrate full compliance with the specified forest management certification standards, although the sequence and intensity of these steps may vary between schemes and operations:

- Preparation. The forest manager ("operator") gathers information on certification by talking to relevant people and from other sources (e.g. online).
- Making contact. The operator makes contact with potential certifiers, who provide information about the requirements and details of the certification process and – based on information supplied by the operator – estimate their costs in certifying the operation.
- Decision. The operator determines the overall investment needed to fulfil the requirements of certification and the benefits that might be expected. On this basis, it decides whether certification is in its interests, and, if so, which certification scheme and certifier would be most appropriate.

- Contract. The operator and the selected certifier enter into a formal contract.
- Preliminary audit. Once contracted, the certifier checks relevant documentation to ensure that the documentation requirements of the certification standard are met.
- On-site assessment. A team of experts selected by the certifier undertakes a detailed on-site assessment, checking forest operations and consulting with relevant stakeholders, including employees and local people. The team produces a report on the performance of the operator according to the relevant standards.
- Adjustments. Depending on the findings of the team of experts, the operator may need to adjust its operation to ensure that it meets the certification standards; these adjustments are often referred to as “major corrective actions”. The team of experts may also recommend other actions to improve performance that should be taken during the certification period, often called “minor corrective actions”.
- Issuance of certification. When the major corrective actions have been taken to the satisfaction of the certifier, the operator is issued with a forest management certificate. Normally, such certificates are valid for several years.
- Verification audits. To ensure compliance with the standard over the validation period of the certificate and to guarantee that any specified minor corrective actions are taken, most certification schemes require an annual verification audit, which may include inspection visits by the certifier and may result in new recommendations for corrective actions. In the case of non-compliance with requirements, certification may be suspended.
- Renewal. To renew certification on expiry, a new audit is undertaken.

## Chain-of-custody certification

Chain-of-custody certification ensures that wood, wood fibre or non-wood forest products contained in an item or product line originates in certified forests. It allows companies to label their products, which in turn enables consumers to identify and choose products that support responsible forest management. In the PEFC system, chain-of-custody certification is rolled into the forest management certificate; under the FSC, the two certificate types have separate standards but can be combined in a joint certificate where applicable (e.g., when an operator is vertically integrated).

There are two mechanisms for tracing the origin of forest-based products. One involves the strict separation of certified and non-certified raw materials in all phases of the production process. In the other, certifiers allow the mixing of certified and non-certified raw materials or reclaimed forest-based materials under controlled procedures to avoid incorporating material from illegal harvesting. Chain-of-custody certification can be obtained by an individual company, a group of operations composed of several smaller enterprises, and larger companies operating at multiple locations. For a product to qualify for chain-of-custody certification, all entities along the supply chain must possess a certificate. All chain-of-custody certification procedures require common, centrally administered and monitored control and reporting systems that allow certifiers to evaluate participating operations or sites using a sampling approach.

## Forms of traceability

Several technologies have been used for tracking wood. Tracking systems can be a simple database recording paint marking and represented in an excel spread sheet, or custom-built software simulating complex international flows of timber, based on electronic or DNA sampling. In either case, a key function of tracking systems is to link the physical timber or timber products to the database model.

## *Physical product identification methods*

Physical tracking is usually carried out with large sized timber items such as roundwood and usually ends at the first industrial processing facility (Table 1).

Table 1. Forms of traceability (Source Tzoulis and Andreopoulou, 2013)

| Technology | Year | Cost | Efficiency | Sector of Use | Features |
|---|---|---|---|---|---|
| Punching | **1896** | Low cost, possible increase | Now less efficient | logs | Symbols and marks detected by a camera, |
| Paint | 1930 *Originates from long path** | Low cost | Simple Difficult to fake | logs | Fluid marking with paint |
| Barcode | 1952 | Low cost | Now less Efficient | fresh products, cars, objects, | Plastic étiquettes |
| QR Code | 2002 | Low cost | Fairly efficient in all sectors | Track vehicle parts, environment & agriculture | Simple with the use of smart phones-devices |
| Micro Wave Sensor | 2004 | Experimental | Not yet fully developed | logs | Intrinsic signature of the wood |
| RFID | 2009 | Potential for low price, expected to decrease | Fairly efficient in all sectors | mobile phones, wood products, etc. | Wireless data transmission |
| DNA Fingerprinting | 2010 | experimental | reliable verification tool | Every kind of wood-log, environment-fauna | reference database of samples |

The following methods are available where physical tracking is achieved by marking all timber items individually:

### ***Paint markings***

Paint markings are the mostly commonly used identification technique because of its low cost, easy application and durability. This typically uses a serial number hand painted or stamped onto individual logs and timbers. These systems are increasingly being used in collaboration with electronic systems.

Figure 5. Paint markings in the logs (Source Tracking sustainability, 2012)

### *Plastic tags*

Plastic tags are cheap and easy to apply to timber and have advantages compared to paint markings. Each plastic tag is printed with its own unique identification number which increases legibility and avoids duplication in issuance of identification numbers. Despite the unique identification numbers, plastic tags are still prone to forgery and lack the durability of paint markings where they can become damaged or detach from the timber.


Figure 6. Example of a plastic tags (Source Tracking sustainability, 2012).

### *Barcoding*

Barcodes are fixed to the timber or timber products and provide a scannable identification number where the readings can be readily transferred electronically to the timber-tracking database. The system requires trained staff to operate the readers and often connection to the internet or mobile phone networks. They offer a relatively low-cost mechanism which is difficult to forge.

However, the barcodes often become detached from the product that they are meant to identify.


Figure 7. Example of bar codes (Source Tracking sustainability, 2012).

#### *Radio Frequency Identification (RFID)*

Similar to barcoding RFID systems offer a way of providing uniquely referenced timber products where the ID number and other product data is wirelessly transmitted between the tag and the RFID reader. The mechanism is resistant to forgery. However, it is relatively expensive and requires trained staff and often connection to the internet or mobile phone networks.

### *Chemical identification methods*

#### **DNA sampling**

DNA sampling unlike other product identification methods does not require direct physical tagging of the timber product, but rather uses DNA samples which can be taken at any stage in the supply chain. The DNA sample is compared with geographic maps in order to establish the material's area of origin. The technique is very resistant to forgery and is not affected by the inherent problems associated with tagging. However, DNA sampling is relatively expensive and data intensive, requiring samples to be taken of the product in order to build established geographic maps and databases for all species of interest.

#### **Isotopic sampling**

Just like DNA sampling isotopic sampling does not require physical marking of timber products. Isotopes found in the soil are analysed to identify an isotope profile for a geographic area. Samples taken from timber products can then be traced to the location by analysing the isotope profile.

## Forest Certification Schemes

Forest certification systems emerged following the United Nations Conference on Environment and Development (UNCED or "Earth Summit") held in Rio de Janeiro, Brazil in 1992 and, in particular, the Non-Legally Binding Authoritative Statement of Principles for a Global Consensus on the Management, Conservation and Sustainable Development of All Types of Forests that recognized the importance of the conservation, management and sustainable development of forests. It is a well-recognized, voluntary, market-based tool to promote sustainable forest management. Today, there are more than 50 certification schemes addressing a wide variety of forest types, tenure and management regimes, but the most common are the *Forest Stewardship Council* (FSC) (Figure 8) and the *Programme for the Endorsement of Forest Certification* (PEFC) Figure 9).


Figure 8 Forest Stewardship Council logotype.


Figure 9. Programme for the Endorsement of Forest Certification logotype.

In Europe, an estimated 60 percent of forests are certified via either the FSC or the PEFC, or both. These two certifications comply with the forest management requirements of the Sustainable Biomass Partnership (SBP) certification for biomass.

### *The Forest Stewardship Council (FSC)*

The FSC, established in 1993, is an independent non-profit, international standards and accreditation organization comprising a wide range of stakeholders including industry, government and environmental groups. The 10 principles and 56 criteria outlined by the FSC cover the economic, social and environmental management of the world's forests. Accreditation is conferred upon independent certification bodies to certify forest management operations at the forest–management–unit level when a company is operating in line with environmental and social objectives.

The FSC certification process means that wood products displaying the FSC trademark logo can be tracked through a chain of custody process, from point of purchase back to a FSC certified forest. Throughout the forest-products commodity chain, certified timber must be kept separate from noncertified timber. If the commodity chain process is in conformance with FSC standards, the product is marketed as certified wood and displays the FSC trademark label. Compliance with chain of custody provisions ensures no substitution has occurred. FSC uses the following ten principles:

1. **Compliance with laws**. The Organization shall comply with all applicable laws, regulations and nationally ratified international treaties, conventions and agreements.
2. **Workers' rights and employment conditions**. The Organization shall maintain or enhance the social and economic well-being of workers.
3. **Indigenous peoples' rights**. The Organization shall identify and uphold indigenous peoples' legal and customary rights of ownership, use and management of land, territories and resources affected by management activities.
4. **Community relations**. The Organization shall contribute to maintaining or enhancing the social and economic well-being of local communities.
5. **Benefits from the forest**. The Organization shall efficiently manage the range of multiple products and services of the Management Unit to maintain or enhance long term economic viability and the range of environmental and social benefits
6. **Environmental values and impact**. The Organization shall maintain, conserve and/or restore ecosystem services and environmental values of the Management Unit, and shall avoid, repair or mitigate negative environmental impacts.
7. **Management planning**. The Organization shall have a management plan consistent with its policies and objectives and proportionate to scale, intensity and risks of its management activities. The management plan shall be implemented and kept up to date based on monitoring information in order to promote adaptive management. The associated planning and procedural documentation shall be sufficient to guide staff, inform affected stakeholders and interested stakeholders and to justify management decisions.

8. **Monitoring and assessment**. The Organization shall demonstrate that progress towards achieving the management objectives, the impacts of management activities and the condition of the Management Unit, are monitored and evaluated proportionate to the scale, intensity and risk of management activities, in order to implement adaptive management.
9. **High conservation values**. The Organization shall maintain and/or enhance the high conservation values in the Management Unit through applying the precautionary approach.
10. **Implementation of management activities**. Management activities conducted by or for the Organization for the Management Unit shall be selected and implemented consistent with the Organization's economic, environmental and social policies and objectives, and in compliance with the Principles and Criteria collectively.

### *The Program for the Endorsement of Forest Certification (PEFC)*

PEFC was established in 1999 by several national forest interest groups within Europe as an alternative to FSC in response to concerns around the needs of, and costs of implementing certification for, small-scale forest owners. PEFC is an umbrella scheme which endorses national schemes which meet 'specified requirements related to standard setting, third party auditing, certification procedures, and accreditation'. PEFC uses the following six criteria:

1. Maintenance and appropriate enhancement of forest resources and their contribution of the global carbon cycle
2. Maintenance of forest ecosystem health and vitality
3. Maintenance and encouragement of productive functions of forest (wood and non-wood)
4. Maintenance conservation and appropriate enhancement of biological diversity in forest ecosystems
5. Maintenance and appropriate enhancement of protective functions in forest management (notably solid soil and water)

6. Maintenance of other socio-economic functions and conditions

## *Comparison between FSC and PEFC*

PEFC differs from FSC at the forest management level, but the chains of custody are similar. All parties in the supply chain who take legal custody of the timber or timber products are required to hold PEFC certification in order to sell products as PEFC certified and use the logo or trademarks. The certification includes requirements for traceability and handling of PEFC certified timber. A product carrying the PEFC label means it has originated from a forest certified by a PEFC endorsed scheme and has been handled by PEFC certified organisations.

Table 2. Basic comparison of FSC and PEFC Forest/Chain of Custody (CoC) certication systems (adapated Albrecht 2010).

| | **FSC** | **PEFC** |
|---|---|---|
| **Established** | 1993 Bonn, Germany | 1999 Geneva, Switzerland |
| **Standards** | · International forest standards, 10 principles & 56 criteria; national standard development is based on them.<br><br>· Use of generic standard in countries prior to own standard.<br><br>· Chain of Custody of full supply chain.<br><br>· Third-party assessment. | · National forest standards are endorsed by adherence to PEFC Council Technical Document describing criteria and standards.<br><br>· Umbrella system also endorsing independent national standards.<br><br>· Chain of Custody of full supply chain.<br><br>· Third-party assessment. |
| **Certificates/area (February 2020)** | FSC- Certified forest: area 204,376,134 h; 82 countries and 1,683 certificates<br><br>FSC Chain of Custody:<br>127 Countries; 41,005 certificates | 315 million hectares certified forest and 20,000 CoC certificates. |
| **Supporters** | · Major NGOs, especially WWF as founding member, | · Forest owners.<br><br>· Governments and Industry1 |

| | | |
|---|---|---|
| | • Selected companies/forest owners. | |
| **Criticism** | • Breaches of certification criteria in local cases.<br><br>• Monopoly claims to SFM.<br><br>• Neglect of private forest owner interests; NGO-dominated. | • Less stringent protective criteria.<br><br>• Less stringent control criteria lead to more breaches.<br><br>• Favouring industry interests. |

SFM - Sustainable Forest Management

FSC and PEFC - global forest certification systems to provide a guarantee that forest products come from responsibly managed sources. The system has two key components:

- Forest Management (FM) certification shows that forest managers or owners are managing their forests in a responsible way. Forest management certification guarantees the processes and operations meet FSC standards.
- Chain of Custody (CoC) certification guarantees the production and source of FSC-certified products. It is aimed for businesses manufacturing or trading forest products. Chain of Custody certification verifies that products are handled correctly at every stage of production – from forest to shelf.



Figure 10. Some examples of wood products and certifications labels

Since the 1990's, forest certification has been increasingly applied also in private forestry and has had a positive impact on sustainable forest management in private forests. How accessible and applicable these tools are for forest owners, who are responsible to implement certification standards, is a highly relevant topic for Europe's family forest owners.

Various foresters in different parts of the world have chosen to use both FSC and PEFC certification for their forest management units to provide evidence for their sustainable forest management practices. PEFC and FSC decided in 2016 to provide mutually agreed estimates for the total global certified area. Estimates are published annually since that year. The overview below (Figure 8 and 9) reflects the situation as of mid-2019.

In terms of total global certified forest area, 430 million ha were certified in mid-2019 – versus 424 by mid-2018. By mid-2019 FSC reported a total certified area of 200 million ha and PEFC of 325 million ha.

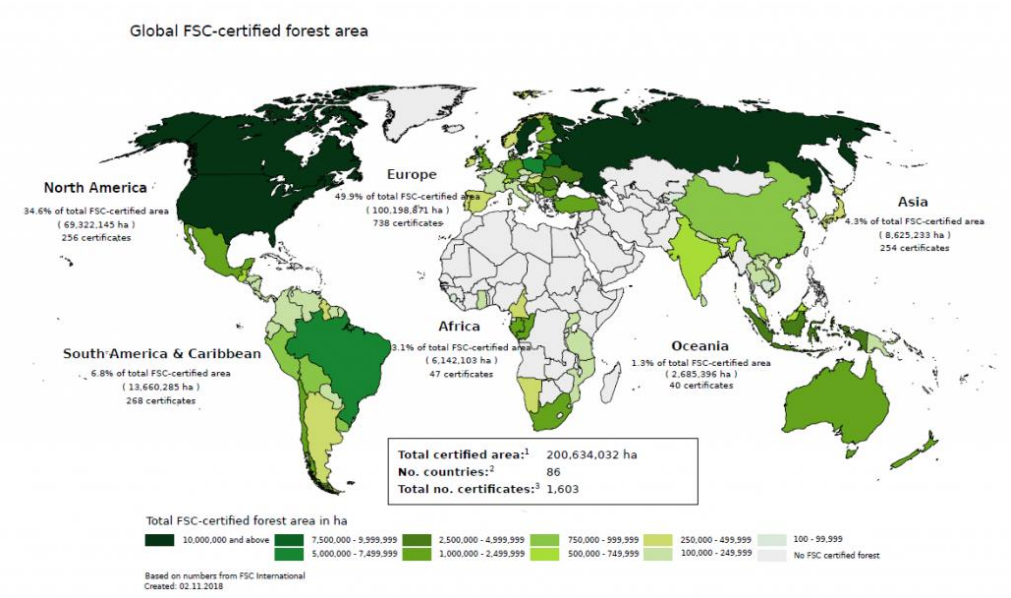


Figure 11. Global certification map by FSC (Source FSC 2019).

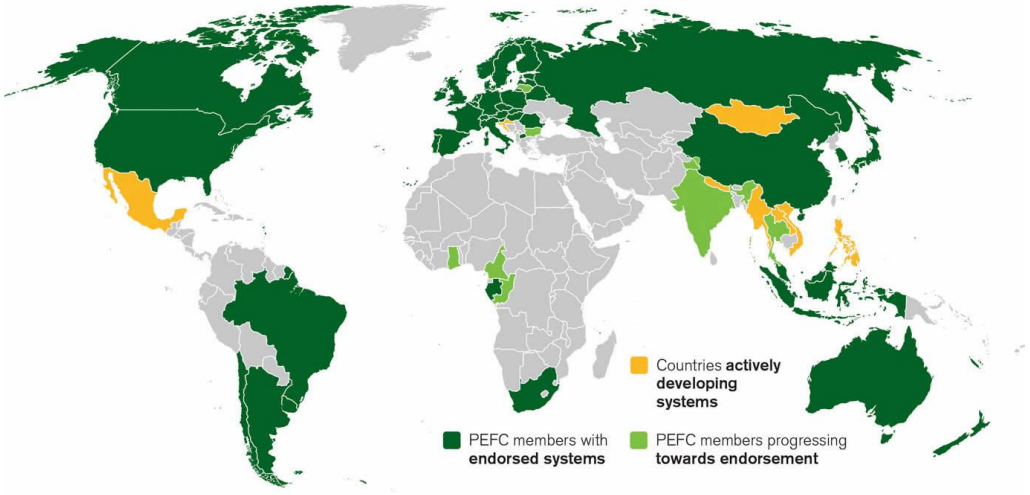


Figure 12. Global certification map by PEFC (Source PEFC 2014).

European FSC certified forest area in 2018 was about 101.6 million hectares. Further, PEFC certified forest area in 2018 was about 83.2 million hectares.

## Forest Certification in the Sudoe area

### *France*

France has more than 7,949,000 ha of certified forest, representing around 50 % of the forest area in the country.

Table 3. French Regional distribution of PEFC certified forests.

| | PEFC certified forest area (ha) | % of national forest area | % of certified forest in the area |
|---|---|---|---|
| **Auvergne Rhône Alpes** | 553,418 | 15% | 21% |
| **Bourgogne Franche Comté** | 656,872 | 10% | 38% |
| **Grand Est** | 1 114,855 | 12% | 57% |
| **Haut de France** | 188,731 | 3% | 41% |
| **Nouvelle Aquitaine** | 799,994 | 17% | 28% |
| **Occitanie** | 497,056 | 15% | 20% |
| **Ouest (Br, PL, CO)** | 723,323 | 11% | 40% |
| **PACA** | 404,852 | 10% | 25% |

Table 4. Identification (forest area) of PEFC & FSC certified forests according to a standardised approach.

| | Total forest area (ha) | Certified forest area PEFC (ha) | Certified forest area FSC (ha) |
|---|---|---|---|
| **France** | 15,894,000 | 8,211,435 | 43,423 |
| **Nouvelle Aquitaine** | 2,828,000 | 996,378 | 29,683 |
| **Aquitaine** | 1,836,000 | 930,620 | 13,869 |
| **Massif Landes de Gascogne** | 987,950 | 770,833 | 13,869 |
| **Gironde** | 494,000 | 330,184 | 11,603 |

In parallel with the macroscopic approach (forest area), FCBA has listed the companies certified on the following typology:

- forestry and harvesting enterprise
- 1st transformation enterprise (sawmill, drying, ...)
- 2nd transformation (GLT, window frame, parquet, decking, panelling, ...)

Table 5. Number of forestry enterprises

| | PEFC | FSC | Total |
|---|---|---|---|
| **France** | 292 | 3 | 295 |
| **Nouvelle Aquitaine** | 105 | 0 | 105 |
| **Aquitaine** | 24 | 0 | 24 |
| **Gironde** | 10 | 0 | 10 |
| **TOTAL** | **431** | **3** | **434** |

Table 6. Number of companies' 1st transformation (sawmill - drying)

| | PEFC | FSC | Total |
|---|---|---|---|
| **France** | 792 | 22 | 814 |
| **Nouvelle Aquitaine** | 174 | 7 | 181 |
| **Aquitaine** | 76 | 5 | 81 |
| **Gironde** | 44 | 2 | 46 |
| **TOTAL** | **1,086** | **36** | **1** |

Table 7: Number of 2nd transformation companies

| | PEFC | FSC | Total |
|---|---|---|---|
| **France** | 604 | 96 | 700 |
| **Nouvelle Aquitaine** | 110 | 22 | 132 |
| **Aquitaine** | 34 | 10 | 44 |
| **Gironde** | 4 | 2 | 6 |
| **TOTAL** | **752** | **36** | **1** |

## *Spain*

Spain has 2,331,529ha of certified forest, representing around 12 % of the forest area in the country. PEFC Spain is formed by forest owners and industries associations, public governments, technology centres, universities and other social groups. Currently, more than 1,542 companies are PEFC certified in Chain of Custody and 1,9 million forest hectares and 19,500 owners and managers are PEFC certified in Spain.

Table 8. Regional distribution of PEFC certified forests.

| | PEFC certified forest area (ha) | % of national forest area | % of certified forest in the area |
|---|---|---|---|
| **Castilla and Leon** | 757,254 | 32.48 | 25.71 |
| **Navarra** | 301,727 | 12.94 | 69.36 |
| **Andalusia** | 276,657 | 11.87 | 9.47 |
| **Catalonia** | 272,793 | 11.70 | 16.98 |
| **Galicia** | 197,594 | 5.47 | 13.59 |
| **Aragon** | 116,762 | 5.01 | 7.56 |
| **Extremadura** | 104,844 | 4.50 | 5.53 |
| **Euskadi** | 98,159 | 4.21 | 24.74 |
| **Rioja** | 72,808 | 3.12 | 41.17 |
| **Castilla la Mancha** | 51,444 | 2.21 | 1.90 |
| **Asturias** | 44,540 | 1.91 | 9.82 |
| **Cantabria** | 35,736 | 1.53 | 16.93 |
| **Valencian Community** | 1,212 | 0.05 | 0.16 |
| **TOTAL** | **2,331,529** | **97.0** | |

Table 9. Regional distribution of PEFC certified industries.

| | Certificates | Installations | Percentage (%) |
|---|---|---|---|
| **Galicia** | 233 | 459 | 29.8 |
| **Catalonia** | 174 | 234 | 15.2 |
| **Euskadi** | 63 | 129 | 8.4 |
| **Madrid** | 100 | 123 | 8.0 |
| **Castilla and Leon** | 40 | 96 | 6.2 |
| **Valencian Community** | 87 | 107 | 6.9 |
| **Andalusia** | 69 | 89 | 5.8 |
| **Navarro** | 55 | 71 | 4.6 |
| **Asturias** | 15 | 52 | 3.4 |
| **Castilla la Mancha** | 48 | 54 | 3.5 |
| **Aragon** | 24 | 38 | 2.5 |
| **Rioja** | 25 | 31 | 2.0 |
| **Cantabria** | 22 | 26 | 1.7 |
| **Murcia** | 17 | 18 | 1.2 |
| **Extremadura** | 6 | 8 | 0.5 |

| | | | |
|---|---|---|---|
| **Balearic Island** | 2 | 4 | 0.3 |
| **Canarias** | 2 | 3 | 0.2 |
| **Several regions** | 18 | | |
| **TOTAL** | **1,000** | **1542** | **100.0** |

Table 10. Sectorial distribution of PEFC certified industries.

| | N° certificates | % certificates | N° companies / Installations | % Companies / Installations |
|---|---|---|---|---|
| **Sawmills and bidders** | 245 | 24.5 | 530 | 34.4 |
| **Wood and construction** | 362 | 36.2 | 497 | 32.2 |
| **Graphic** | 194 | 19.4 | 231 | 15.0 |
| **Pulp and paper** | 95 | 9.5 | 146 | 9.5 |
| **Fabric** | 7 | 0.7 | 9 | 0.6 |
| **Storekeeper** | 51 | 5.1 | 64 | 4.2 |
| **Energy** | 36 | 3.6 | 54 | 3.5 |
| **Non wood products** | 4 | 0.4 | 5 | 0.3 |
| **Cork** | 3 | 0.3 | 3 | 0.2 |
| **Resins** | 3 | 0.3 | 3 | 0.2 |
| **TOTAL** | **1,000** | **100.0** | **1542** | **100.0** |

Table 11. Regional distribution of FSC certified forests.

| | Certified area (ha) | Percentage (%) |
|---|---|---|
| **Andalucía** | 168,663.37 | 50.39 |
| **Aragon** | 535.28 | 0.16 |
| **Canarias** | 17,030.77 | 5.09 |
| **Cantabria** | 1,714.18 | 0.51 |
| **Castilla la Mancha** | 4,703.00 | 1.40 |
| **Castilla and Leon** | 11,726.57 | 3.50 |
| **Catalonia** | 3,911.10 | 1.17 |
| **Madrid** | | 0.00 |
| **Navarra** | 14,622.99 | 4.37 |
| **Valencian Community** | 3,354.60 | 1.00 |
| **Extremadura** | 1,032.27 | 0.31 |
| **Galicia** | 86,110.48 | 25.73 |

| | | |
|---|---|---|
| **Balearic Islands** | | 0.00 |
| **Rioja** | 152.66 | 0.05 |
| **Euskadi** | 1,603.51 | 0.48 |
| **Asturias** | 19,573.63 | 5.85 |
| **Murcia** | | 0.00 |
| **TOTAL** | **334,734.42** | **100.00** |

Table 12. Regional distribution of FSC certified Chain of Custody.

| | Number of holders | Percentage (%) |
|---|---|---|
| **Andalucía** | 52 | 4.73 |
| **Aragon** | 22 | 2.00 |
| **Canarias** | 4 | 0.36 |
| **Cantabria** | 17 | 1.55 |
| **Castilla la Mancha** | 46 | 4.19 |
| **Castilla and Leon** | 25 | 2.27 |
| **Catalonia** | 255 | 23.20 |
| **Navarro** | 23 | 2.09 |
| **Valencian Community** | 168 | 15.29 |
| **Extremadura** | 8 | 0.73 |
| **Galicia** | 192 | 17.47 |
| **Balearic Islands** | 5 | 0.45 |
| **Rioja** | 17 | 1.55 |
| **Madrid** | 174 | 15.83 |
| **Euskadi** | 56 | 5.10 |
| **Asturias** | 25 | 2.27 |
| **Murcia** | 10 | 0.91 |
| **Melilla** | | 0.00 |
| **TOTAL** | **1,099** | **100.00** |

Table 13. Sectorial distribution of FSC certified Chain of Custody

| | Number of holders | Percentage (%) |
|---|---|---|
| **Forest use, round wood, and biomass** | 156 | 14.19 |

| | | |
|---|---|---|
| **Graphic arts, printed materials, and stationery** | 246 | 22.38 |
| **Charcoal and other wood products** | 9 | 0.82 |
| **Cork and derived products** | 6 | 0.55 |
| **Containers and packaging** | 166 | 15.10 |
| **Wood products for furniture and / or construction** | 134 | 12.19 |
| **Other forest products** | 3 | 0.27 |
| **Pulp, paper, and cardboard** | 188 | 17.11 |
| **Boards and other processed wood products** | 191 | 17.38 |
| **TOTAL** | **1,099** | **100.00** |

## *Portugal*

The Forest Stewardship Council (FSC) and the Program for Endorsement of Forest Certification (PEFC) schemes have been implemented in Portugal since 2003. Portugal has more than 500,000 ha of certified forest, representing around 15.5 % of the forest area in the country. However, it is known that there are a high percentage of areas with double certification.

Table 14. Regional distribution of PEFC certified forests.

| | PEFC certified forest area (ha) | % of national forest area | Number of holders | Percentage (%) | Forest Management (FM) | Chain of Custody (CoC) |
|---|---|---|---|---|---|---|
| **Viana do Castelo** | 7,401 | 2.5 | 122 | 5.6 | 2 | 7 |
| **Braga** | 0 | 0.0 | 0 | 0.0 | 0 | 27 |
| **Vila Real** | 16,625 | 5.6 | 323 | 14.8 | 1 | 1 |
| **Bragança** | 0 | 0.0 | 0 | 0.0 | 0 | 1 |
| **Porto** | 0 | 0.0 | 0 | 0.0 | 0 | 57 |
| **Aveiro** | 26,024 | 8.8 | 1324 | 60.5 | 2 | 36 |
| **Viseu** | 0 | 0.0 | 0 | 0.0 | 0 | 7 |
| **Guarda** | 0 | 0.0 | 0 | 0.0 | 0 | 3 |
| **Coimbra** | 2,048 | 0.7 | 78 | 3.6 | 1 | 10 |
| **Castelo Branco** | 16,254 | 5.5 | 30 | 1.4 | 2 | 4 |
| **Leiria** | 0 | 0.0 | 0 | 0.0 | 0 | 12 |
| **Lisboa** | 81,033 | 27.4 | 169 | 7.7 | 2 | 17 |
| **Santarém** | 5,388 | 1.8 | 1 | 0.0 | 1 | 5 |
| **Portalegre** | 7,116 | 2.4 | 98 | 4.5 | 2 | 0 |

| | | | | | | |
|---|---|---|---|---|---|---|
| **Setúbal** | 133,620 | 45.2 | 44 | 2.0 | 3 | 7 |
| **Évora** | 0 | 0.0 | 0 | 0.0 | 0 | 0 |
| **Beja** | 0 | 0.0 | 0 | 0.0 | 0 | 0 |
| **Faro** | 0 | 0.0 | 0 | 0.0 | 0 | 0 |
| **TOTAL** | **295,509** | **100.0** | **2,189** | **100** | **16** | **194** |

Table 15. Regional distribution of FSC certified forests.

| | Certified area (ha) | Percentage (%) |
|---|---|---|
| **Alentejo** | 257,563.27 | 56.27 |
| **Algarve** | 15,401.86 | 3.37 |
| **Centro** | 138,656.08 | 30.29 |
| **Ilhas** | 3,736.55 | 0.82 |
| **Lisboa Vale do Tejo** | 10,646.77 | 2.33 |
| **Norte** | 31,702.93 | 6.93 |
| **TOTAL** | **457707.47** | **100.00** |

Table 16 Supplier list for forestry-based products in Portugal certified by FSC.

| Supplier Name | Country of origin | Type | Category | Name | Species | Products not certified Sold | Certification code | Certificate validity | Date of validity verification |
|---|---|---|---|---|---|---|---|---|---|
| **Madeiras Afonso** | Portugal | W1.1 Roundwood | FSC100% | Scots pine | Pinus Sylvestris | Scots pine; pine | TT-COC-004361 | 4/12/2022 | 18/01/2018 |
| **Madeca** | Portugal | W1.1 Roundwood | FSC Controlled wood; FSC Mix | Maritime pine or cluster pine | Pinus Pinaster | Maritime pine or cluster pine | TT-COC-004102 | 10/04/2022 | 18/01/2018 |
| **Madeca** | Portugal | W3.1 Wood chips | FSC Controlled wood; FSC Mix | Maritime pine or cluster pine | Pinus Pinaster | Maritime pine or cluster pine | TT-COC-004102 | 10/04/2022 | 18/01/2018 |
| **Pinhoser** | Portugal | W3.1 Wood chips | FSC Mix | Maritime pine or cluster pine | Pinus Pinaster | Maritime pine or cluster pine | APCER-COC-150030 (old certificate SQS-COC-100647) | 06/07/2021 | 18/01/2018 |
| **Unimadeiras** | Portugal | W1.1 Roundwood | FSC 100% | Maritime pine or cluster pine | Pinus Pinaster | Maritime pine or cluster pine | APCER-COC-150294 (old certificate SQS-COC-100832) | 10/07/2022 | 18/01/2018 |
| **Pedrosa e Irmãos** | Portugal | W1.1 Roundwood | FSC 100% | Maritime pine or cluster pine | Pinus Pinaster | Maritime pine or cluster pine | TT-COC-004888 | 03/03/2019 | 20/01/2017 |
| **Pedrosa e Irmãos** | Portugal | W3.1 Wood chips | FSC Mix; FSC 100% | Maritime pine or cluster pine | Pinus Pinaster | Maritime pine or cluster pine | TT-COC-004888 | 03/03/2019 | 20/01/2017 |
| **Apolinario da Cruz Gomes & Filha Lda** | Portugal | W1.1 Roundwood, W3.1 Wood chips | FSC 100% | Pinus | Pinus spp | Pinus | TT-COC-005396 | 13/05/2020 | 18/01/2018 |

| Supplier Name | Country of origin | Type | Category | Name | Species | Products not certified Sold | Certification code | Certificate validity | Date of validity verification |
|---|---|---|---|---|---|---|---|---|---|
| **Paurui-Madeiras e Lenhas** | Portugal | W1.1 Roundwood, W3.1 Wood chips | FSC 100% | Monterrey pine, insignis pine or radiate pine, other species | Pinus Radiata, other species | Monterrey pine, insignis pine, radiate pine, outher species | Apcer-COC-150353 | 06/04/2021 | 18/01/2018 |
| **Valbopan – Fibras de madeiras SA** | Portugal | W1.1 Roundwood, W3.1 Wood chips | FSC 100% | Maritime pine or cluster pine | Pinus Pinaster | ----- | SA-FM/COC004943 | 12/01/2021 | 18/01/2018 |
| **Luis Sousa Gago & Filhos** | Portugal | | FSC 100% | Maritime pine or cluster pine, Insignis pine or radiata pine, Scots pine | *Pinus pinaster; Pinus pinea; Pinus radiata; Pinus sylvestris* | | SA-FM/COC-002295 | 19/04/2019 | 19/01/2018 |
| **Luis Sousa Gago & Filhos** | Portugal | | FSC 100% | Maritime pine or cluster pine, Insignis pine or radiata pine, Scots pine | *Pinus pinaster; Pinus pinea; Pinus radiata; Pinus sylvestris* | | SA-COC-002296 | 15/09/2019 | 19/01/2018 |

Table 17. Supplier list for forestry-based products in Portugal certified by PEFC.

| Supplier Name | Country of Origin | Type | Name | Species | Products sold not certified | Certification code | Certificate validity | Date of validity verification |
|---|---|---|---|---|---|---|---|---|
| **Madeca** | Portugal | 01000 Roundwood<br>01030 Chips and particles | Maritime pine or cluster pine | Pinus Pinaster | Pinho Bravo | BMT-PEFC-1153 | 10/04/2017<br>Withdrawn | 27/03/2017 |
| **Pinhoser** | Portugal | 03000 Sawn wood and sleepers<br>01000 Roundwood<br>01030 Chips and particles | Maritime pine or cluster pine | Pinus Pinaster | Pinho Bravo | APCER/2011/CDR.0027 | 10/07/2021 | 27/03/2017 |
| **Unimadeiras** | Portugal | 01000 Roundwood<br>01010 Sawlogs and veneer logs<br>02010 fuelwood (include chips, residues, pellets, briquettes, etc) | Maritime pine or cluster pine | Pinus Pinaster | Pinho Bravo | APCER/2012/GFS.0005 | 30/12/2018 | 27/03/2017 |
| **Pedreosa & Irmãos (Integrado em Unimadeiras** | Portugal | 01000 Roundwood<br>01010 Sawlogs and veneer logs<br>02010 fuelwood (include chips, residues, pellets, briquettes, etc) | Maritime pine or cluster pine | Pinus Pinaster | Pinho Bravo | APCER/2012/CDR.0037 | 19/06/2017<br>Withdrawn | 27/03/2017 |
| **Vaolbopan-Fibras de Madeira SA** | Portugal | 01000 Roundwood | Maritime pine or cluster pine | Pinus Pinaster | ---------- | SATIVA-2015/GFS006 | 3/12/2018 | 27/03/2017 |

## Cork oak forest

The majority of today's global natural cork production is based in the Mediterranean region, principally in southern Portugal, Spain, France, Italy and North Africa. Some twelve billion natural cork stoppers are produced each year. In the Mediterranean region certified cork oak forests covers about 517,000 ha (the 21% of the worldwide cork oak forests).

FSC certification for cork oak forest management is currently adopted in Portugal, Spain and Italy with 357,386, 159,695 and 66 certified hectares, respectively (Pollastrini et al. 2018).

Today the cork oak PEFC certified forests count of 96,000 ha in Spain and Portugal out of 2,6 Million hectares; Portugal is the first cork-producing country (54%), followed by Spain (26%) and other countries (Italy has 3% share) (Brunori et al. 2017).

To ensure compliance with all applicable FSC and PEFC requirements, Company Ltd has compiled a Chain of Custody (CoC) manual for the wood (Figure 10) and cork sector (Figure 11). The manuals are based on the FSC Chain of Custody standard FSC-STD-40-004 version 3-0 and the PEFC PEFC ST 2002: 2013 standard, second edition, and addresses all applicable requirements of these standards.


Figure 13. Manual of chain of custody (CoC) manual for the wood


Figure 14. Manual of chain of custody (CoC) manual for the cork

## Certification of IMIP raw materials

The certificates of the wood and cork we will use to produce the IMIP panels:

- Gascogne:
  - PEFC™ (10-32-58 FCBA/03-00121)
  - FSC® (C120097IMO-COC-185369)

- Maderas Ojea (http://maderasojea.com/?page_id=1474)
    - PEFC/14-38-00004-05
- Amorim:
    - FSC®- C022338

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## PARTNERS

## ASSOCIATED PARTNERS


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