Working Group LIFE EcoTimberCell Theme 1

lifeecotimbercell.eu

lifeecotimbercell.eu

LIFE
EcoTimberCell

The promotion of timber construction in Spain - lines of action at local and regional level

With the contribution of
the LIFE financial instrument
of the European Union

USC UNIVERSIDADE DE SANTIAGO DE COMPOSTELA
PEMADE PLATAFORMA DE ENXEÑARÍA DA MADEIRA ESTRUTURAL
LIFE Eco Timber Cell
3edata
ITeC
Pelanzos HB
CETEMAS CENTRO TECNOLÓGICO FORESTAL Y DE LA MADERA

Content

Version

- 09/2020

Introduction

LIFE EcoTimberCell project

LIFE EcoTimberCell is a Close to market pilot project within the priority area of the LIFE Climate Change Mitigation Program, funded by the European Union, which aims to reduce greenhouse gas emissions through an innovative building solution, with local wood as a central axis. This project proposes the creation of low-carbon construction elements, which also involve long-term carbon fixation with sustainable materials through EcoTimberCell systems (ETC).

The construction of houses with this system will increase the demand for certified local wood, which will enhance sustainable forest management and the local green jobs creation, fixing the population in the rural environment.

LIFE EcoTimberCell Working Group

The LIFE EcoTimberCell working group is proposed as a tool for the participation of entities associated with the wood and construction sector with this raw material.

This group seeks to promote the collaboration between entities linked to LIFE EcoTimberCell project, such as companies from the wood sector, producers, construction, GFS certification entities, public administrations, research institutions and Universities.

A forum for debate

From LIFE EcoTimberCell is intended to answer or new questions on issues related to sustainable timber production and timber construction, for which it creates a forum for opinion and debate, in which the entities consulted can make their contributions by sending an e-mail directly to life.ecotimbercell@gmail.com, or by requesting telephone conversations, videoconferences, sending documentation, etc.

Subsequently, this debate will be addressed in seminars and round tables organised by the LIFE EcoTimberCell project, in which participants and authorities from the sector will be invited to deepen the results obtained and generate final conclusions.

Consultations associated with the discussion topic

The promotion of timber construction in Spain - action lines at local and regional level

- From the point of view of national, regional and local governance, what instruments and policy initiatives should be enhanced or developed to promote the use of wood in construction?

  Are building regulations in Spain a barrier?

- From the point of view of the market and the promotion of local products suitable for climate action, how can the demand for wood products for construction (new construction - single-family homes and high-rise buildings -, renovation works) be increased? Key actors (public administration, specifiers, construction companies, potential customers) and proposals to be made about them?

Discussion topic

The first topic to be discussed in LIFE EcoTimberCell Working Group is:

The promotion of timber construction in Spain - lines of action at local and regional level

Economic and development context of the sector

Forestry production

According to data (Eurostat 2015), forests in the European Union (EU 28) cover 182 million hectares, and forest cover is 43%, varying by country from 75% in Sweden to 1.1% in Malta. Of this area 134 million hectares (83%) are high production areas, from which 470 million m3 of roundwood are obtained annually.

Spain is among the countries with the largest productive forest area, with 14.7 million hectares, only behind Sweden (19.8), Finland (19.5) and France (16) (Eurostat 2015). In 2014 Spain obtained 15.9 million m3 of roundwood, well below other countries such as Sweden (70.1), Finland (57), Germany (54.3) and France (51.7).

Wood industries and employment

If we focus on the Wood Industries, according to data from the European Confederation of Wood Industries (CEI-BOIS, 2018), in 2017, this industry employed a total of 971,000 people in the European Union, although the figure was probably substantially higher than a million people, since the overall figures tend to underestimate this parameter. Likewise, the sector accounted for 170,000 companies in the European Union, making it the 4th largest in number of companies, of which 96,000 (56.5%) are from the construction products sub-sector.

In the CEI BOIS report (2018), it is indicated that the business volume reached 133,000 million Euros in 2017, increasing with respect to the previous year by 4% and with respect to 2009 by 23%. This is a quite remarkable amount, especially if it is added to the furniture sector, as it would add up to a volume of 243,000 million Euros and 6% of the manufacturing employment in the European Union (CEI BOIS 2019).

As a reference in Europe, the largest wood industries are in Germany, Italy, France, United Kingdom and Sweden (CEI BOIS 2019).

Wooden construction in Europe

Focusing on timber construction (Wooden Structures), at the beginning of the 21st century this use in Europe was estimated to be in the order of 8-10%, in contrast to 90% in North America or 45% in Japan (CEI BOIS 2009). However, the situation in Europe is uneven, in 2009 the data reflects that the Nordic countries are those who used more wood in construction with 80-85% (structure in single-family homes), followed by Scotland (60%) and already much more unmarked UK (20%), Germany (10%), Netherlands (6-7%) and France (4%) (EFI 2014).

Although the above data do not reflect the buildings in height and public, as these data are not available, they do give an indication of which countries would have a greater number of this type of building. For example, the Nordic countries reached 10% of their high-rise buildings with wooden structures in 2009 (Mahapatra & Gustavsson 2009a).

However, despite this, the dynamics of wood use in construction is upward and fast in some countries, pointing to the example of the UK, which in 1998 had a rate of 8% wood frame housing compared to 25% in 2008 (Mahapatra & Gustavsson 2009b).

In Spain, despite the lack of specific data, the percentage of use of wood structures in construction is probably very low. However, little by little, their use is increasing more, with initiatives and demonstrative examples of high-rise buildings with wooden structures throughout the country (Galicia, Asturias, Madrid , País Vasco y Cataluña, Cataluña).

Policy initiatives to promote wood

Given the low level of introduction of wood in the construction sector in Europe, a greater boost is required for these products to be used more widely.

There are many works and reports that analyze policy initiatives for the promotion and development of wood construction in Europe (Manninen 2014, UNECE-FAO 2016, Hildebrandt et al. 2017, EOS 2018, Vihemäki et al 2019), for example, promoting scientific and innovative progress of engineered wood products, which are essential to increase the use of wood in construction with new products and provide added value to improve the competitiveness of the construction sector. Also, the importance of wood for climate action is another factor that has encouraged many governments to promote the use of wood in construction, as this material is considered the main constructive material for a future low-carbon bioeconomy, with an environmental impact in the construction sector to reduce 36% of CO2 emissions, 40% of energy consumption, 50% of material extraction or 21% of total water extracted. (CEI BOIS 2019). On the other hand, exploiting the economic potential of the wood industry in the construction sector is another relevant factor for economic development in regions and countries of Europe, so they are also another reason why policy initiatives have been implemented in this regard.

Finland (cf. Vihemäki et al 2019)

Finland has developed important initiatives for the promotion of wood in building construction. Highlighting in 2012, the goal that this government set for 2020: to reach 10% of all new high-rise buildings with a wooden structure, achieving some success, since in 2017 it had managed to reach 5%.

However, Finland has followed a strategy of promoting wood in construction since 1990, with R&D projects and technology platforms, building 3 pilot buildings in 3 areas of Finland in the 1990s. Also, in 1997 the fire regulations were modified to allow the use of wood in structures of residential and office buildings up to 4 floors (without special permits).

There was also financial support for the wood cluster and the forest industry in the first decade of the 21st century, which involved support for technological development. This was accompanied by a political agenda of change in construction towards wood, associated with action against climate change.

Another relevant milestone in 2011 was that the regulations allowed wooden buildings of up to 8 floors.

Recently, the Ministry of Environment, Housing and Energy coordinated the National Program for Building with Wood as a government priority from 2016, seeking, among other things, to achieve an annual increase of 10% in buildings constructed with wood and to double the export of value-added wood products.

As an initiative to be considered, the government has created the so-called "Six Cities Climate Network", through agreements with major cities in Finland, by which they are committed to increasing the use of wood in construction.

Japan (UNECE-FAO 2016)

In 2013 Japan implemented the Wood Use Point Program, an innovative market-based approach to promote the use of local wood products in buildings, which prioritizes species used in Japan for both new homes and rehabilitation, with the aim of increasing the area of such species in Japan and achieving a relevant ripple effect on the local economy (agriculture, fisheries, forestry).

They invested 400M$ in subsidies of up to 6,000$, in equivalent points for those owners who use more than 50% of the local wood in structural elements and/or the use of wood in other non-structural elements indoors or outdoors. The points are redeemed for local products from the targeted sectors (e.g. wooden windows, wooden furniture), no money is given directly (other species from outside the country are now included, as Japan demands more wood than it produces).

France (Dezeen 2020)

In 2020, France announced the requirement from 2022 through a law, that new public building constructions financed by the state will have to use 50% of wood or other biological materials. These biological materials (bio-based materials) are those derived from living organisms such as hemp or straw.

This measure is part of France's Action Plan for the Development of Wood in the Industrial Construction Sector, Wood Products and Traditional Use of Wood and Innovation Systems.

Galicia

In addition to the initiative from the Council of Lugo discussed in the next section, the Xunta de Galicia has launched a program to promote the construction and development of wood products amounting to 1.7M€, hoping to mobilize a total of 9M€. This program framed within the Plan of Economic Reactivation of Galician administration, are directed to companies, self-employed or individuals, with four lines of development: a) Development of implementation projects of new construction, rehabilitation of buildings and establishment of businesses that use wood with structural elements, b) development and manufacture of containers, packaging or displays in wood; c) drafting of implementation projects of new single-family homes or rehabilitation and reconstruction; d) works of reform or conditioning of commercial premises or business with wood products.

LIFE Initiatives and Horizon 2020

The European LIFE and Horizon 2020 programmes also promote timber construction and the development of new engineering products. Two examples of this are in Lugo. One is the LIFE EcoTimberCell project itself.

The other is the LIFE Lugo+Biodinámico project, through which the Concello de Lugo promotes timber construction with local resources. In this project a unique municipal building will be carried out as a demonstration of the use of wood in high-rise construction. The building is called Impulso Verde and this action is accompanied by measures to disseminate and promote forest production of local species. In this project also participate Diputación de Lugo, Universidad de Santiago de Compostela and Universidad Politécnica de Madrid.

Other LIFE projects associated with wood construction with which LIFE EcoTimberCell collaborates are:

LIFE Renatural NZEB Recycled materials and products to achieve near-zero energy consumption buildings with low carbon footprint.

LIFE My Building is Green Implementation of nature-based solutions in public education buildings and social centers for adaptation to climate change.

Regarding the Horizon 2020 projects, we can highlight the recent Build in Wood project, for the promotion of sustainability in Europe through construction, with wood; as well as the projects which LIFE EcoTimberCell has links with 4RinEU and PlugnHarvest.

Barriers in Spain against wood construction

As indicated in the FSC Spain publication (2018), there is a lack of knowledge in Spain about the use of wood in construction and a series of false myths about the material that are addressed in the publication and described as "the ghosts of wood" (Galván et al. 2018). These "ghosts" or "false myths" are:

Wood rots: durability and maintenance

Conclusion: The construction with wood is not only sustainable by the properties of the material, but, if you choose a wood with an appropriate durability to the use, and always starting from a correct design, you can guarantee the durability of any construction with this material.

Wood burns: reaction and resistance to fire

Conclusion: With a correct design (as in construction with other materials) solutions with wood are generated according to the regulations and in safe conditions for the occupants of a building in case of fire.

Wood is expensive: comparison between wood and other building materials

Conclusion: The economic cost of wood is similar to that of using concrete or steel structures.

Of course, these barriers are transferred to the population and potential users of the houses or buildings, so they can be considered a key factor in the development of a timber construction.

References

CEI-BOIS (2009). Frente al Cambio Climático: Utiliza Madera.

CEI-BOIS (2018). Annual Report of the European Sawmill Industry.

CEI-BOIS (2019). Wood. Building the Bioeconomy

Dezeen (2020). French public buildings to be built with 50 per cent wood. https://www.dezeen.com/2020/02/12/france-public-buildings-sustainability-law-50-per-cent-wood/

EOS (2018). Annual Report of the European Sawmill Industry 2017/2018.

Eurostats (2016). Forestry statistics in detail. Statistics Explained.

FSC España (2018). En Madera, otra forma de construir. El material constructivo sostenible del siglo XXI. Madrid. 248 pp.

Galván, J.; Linres, M.; Gallego, V. & Segura, B. (2018). Eliminar barreras: los fantasmas de la madera. En FSC España. En Madera, otra forma de construir. El material constructivo sostenible del siglo XXI. Madrid. 248 pp.

Vihemäki, H.; Ludvig, A.; Toivonen, R. Toppinen, A. & Weiss, G. (2019) Institutional and policy frameworks shaping the wooden multi-storey construction markets: a comparative case study on Austria and Finland, Wood Material Science & Engineering, 14:5, 312-324, DOI: 10.1080/17480272.2019.1641741

Hildebrandt, J.; Hagemann, N.; Thrän, D. (2014). The contribution of wood-based construction materials for leveraging a low carbon building sector in Europe. Sustain. Cities Soc. 2017, 34, 405–418.

Mahapatra, K. & Gustavsson, L. 2009a. Cost-effectiveness of using wood frames in the production of multi-storey buildings in Sweden. School of Technology and Design Reports, 58. Växjö University. Växjö.

Mahapatra, K. & Gustavsson, L. 2009b. General conditions for construction of multi-storey wooden buildings in Western Europe. School of Technology and Design Reports, 59. Växjö University. Växjö.

Manninen, H. (2014). Long-term outlook for engineered wood products in Europe. European Forest Institute (EFI).

UNECE-FAO (2016). Promoting sustainable building materials and the implications on the use of wood in buildings

Xunta de Galicia (2020). Información aos medios. Consello da Xunta de Galicia de 25/06/2020 https://www.xunta.gal/c/document_library/get_file?folderId=1417257&name=DLFE-37012.pdf