

## Developing Long-life Wood Uses to Improve Carbon Storage: Where Are We in Europe?

To achieve carbon neutrality in 2050 and mitigate climate change, forests play an important role in balancing emissions that other sectors (transport, agriculture, industry, etc) won't be able to suppress. This is thanks to their carbon sinks, held both in forest ecosystems and wood products. In a context where ecosystems are already affected by climate change, resulting in higher tree mortality, preserving this sink and developing carbon storage in wood products must be a major concern of climate policies.

One of the main alternatives for maximising the sink is to optimise wood usage by directing more wood towards material uses and long-life products (including recovered wood). This strategy allows an increase in the carbon sink of harvested products without impacting the forest sink with additional harvests. To achieve this, some products like panels and insulation materials are very promising: they can be made from low-quality or small-diameter wood, which is currently mainly used for short-life applications such as energy generation. One strategy for improving carbon stored in harvested wood products would therefore be to ensure the development of those products, through new market opportunities and enhanced production capacity. Public policies have a role to play in facilitating market development. This is why we looked at different wood sectors in various European countries and highlighted the role public policies played or not in these sectors' development. This factsheet summarises three lessons learned from comparing four very different European wood sectors.

### Comparing France, Germany, Romania and Sweden in search of good practices

France was the starting point of the analysis, as it has a national climate policy relying on the increase of long-term carbon storage in wood products to achieve carbon neutrality. However, despite this national target, most of the harvest is allocated to energy production, and wood uses have changed very little in recent years. We therefore identified other European

countries which might manage to dedicate a bigger part of their harvest to long-life uses, to see if there were good practices to highlight. More specifically: how is the harvest actually allocated in those countries, and what are the main reasons for this allocation? And mostly: are there specific policies that helped support this allocation?

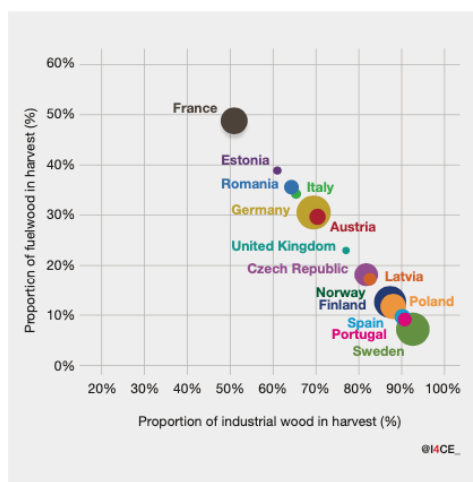


Figure 1: Proportion of industrial wood and fuelwood in the largest European harvests in 2019

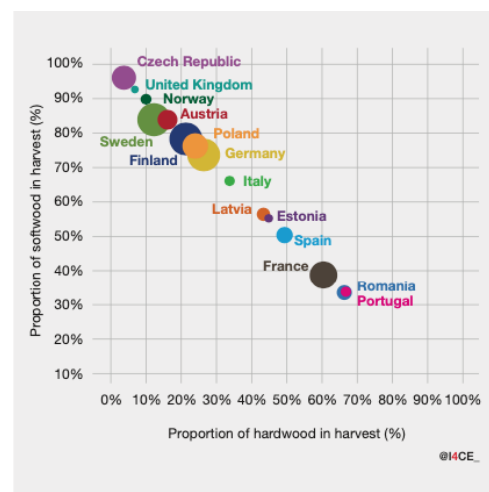


Figure 2: Species distribution in the 2019 harvest

Only countries with a total timber harvest of over 10 Mm<sup>3</sup> are shown. This figure is based on data supplied by countries to Eurostat. These data should be handled with caution: there may be discrepancies both in the volumes harvested and their uses, with the result that fuelwood is frequently underestimated. Only Finland and France have updated their data to correct this, by accounting for the fuelwood self consumed by households in the case of France.

Source: I4CE, based on Eurostat (2023)

Three other countries were selected for the analysis, based on their harvest allocation and the diversity of their forest resources: Germany, Romania and Sweden. They were particularly interesting because each seemed to have addressed at least one of the challenges the French forestry and wood sector is facing. The main motive for selecting Germany was that, more so than France, its wood harvest is used more as a material than as an energy source (Figure 1), and it has a very high level of wood-based panel production (Figure 3). We especially wanted to see if this performance was only due to its coniferous forests, particularly adapted to long-life wood products production, or if other factors or policies could explain it. Romania was chosen because of the proportion of harvested wood used as a material (Figure 1) despite the high proportion of hardwood in its harvest (Figure 2), unlike France where deciduous trees are abundant but fuelwood accounts for the majority share. As for Sweden, its ability to use almost all its harvest for material uses rather than energy, as well as the significance of timber-framed buildings further supports its selection (Figure 1).

### Main lessons to develop long-life wood uses

#### 1. Subsidizing long-life uses can help boost demand and production

Public policies can help make key wood products more competitive than other construction materials. Germany, for example, subsidized bio-based insulation (including wood fibre insulation) to cover half of the additional cost of the original product. It obtained a derogation from the European Commission to grant this state aid, on the grounds that it was environmentally beneficial. In the twenty years since the subsidy was introduced, the volume of bio-based insulation products entering the German market has seen a fifty-fold increase. Moreover, the cost to the public purse has remained moderate: the economies of scale achieved by bio-based insulation manufacturers have enabled subsidies to be discontinued while maintaining production.

Public subsidies also played a role in Sweden, despite a cultural context already very favourable to wood.

The average Swede uses 360% more sawn wood than their French counterpart. This difference is mainly due to the renovation and extension of buildings.

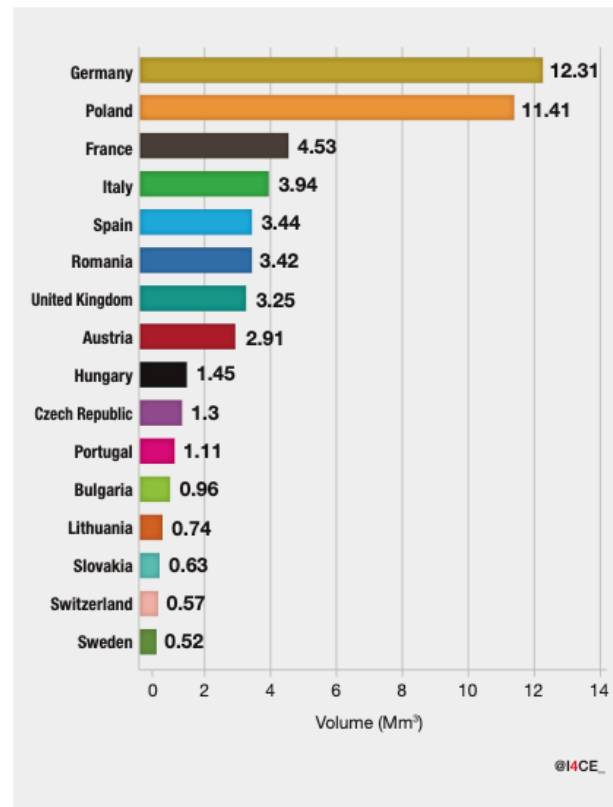


Figure 3: European production of wood-based panels in 2019 (Mm<sup>3</sup>).

NB: only countries that produced over 0.5 Mm<sup>3</sup> of panels are shown. Source: I4CE, based on Eurostat (2023)

New construction is also a major driver, due to the fairly widespread use of timber frames for single-family homes, as well as for 20% of multifamily homes. For medium and high-rise buildings, fire regulations are slightly more favourable in Sweden than in France, and an ad hoc national strategy relying partly on public subsidies has been implemented to support the expansion of the market, which began in the 1990s. However, this striking feature does not offer any obvious lessons to France or Europe in general. Firstly, because the greater use of timber frames seems to be mainly cultural. Secondly, because this practice is based on an adapted and abundant coniferous resource, a factor that would be difficult to replicate in France in the short term (I4CE, 2022). Moreover, if this Swedish strategy seems to be paying off, given the current market share of wood in this type of building, we would point out that even in this favourable environment, the Swedish market has been slow to evolve.

#### 2. Ensuring public policies set priorities among wood uses to achieve specific targets

It is possible to reduce the pressure from other wood

<sup>1</sup> As shown in Figure 3, Portugal also has a very high proportion of hardwoods. However, Romania was chosen because the species it harvests (mainly beech and oak) are similar to those harvested in France, while the main hardwoods harvested in Portugal are eucalyptus and cork oak.

uses, such as energy or paper, that compete for the same resources as certain long-life wood products. At a constant level of harvesting, growth in one of these sectors or in the panels sector will be detrimental to the others by creating tension in the wood supply. In Romania, there is no paper industry while the panels sector is important. In Sweden, the efficiency of heating networks reduces the energy use of harvested wood, although this actually benefits paper rather than panels. In Germany, energy companies use recovered wood and panel manufacturers use wood raw material, whereas in France it is the energy companies that can afford wood raw material, while panel manufacturers have turned to cheaper recovered wood. Beyond the type of resource used, this last case shows the impact of different policy choices, one directed towards industry which has encouraged the development of panel production, and the other geared towards energy. These three examples illustrate the just-in-time relationship between these uses that compete for the same resource: even partial monopolization of the resource by one of these uses has an impact on the others.

Supporting these three sectors is possible by increasing harvest while reducing the forest carbon sink. In France, the strategy is to increase the level of harvesting while reducing the proportion of wood dedicated to the shortest uses. However, France's policy of heavily subsidizing energy use, including from primary resources, places it in a rather difficult situation in terms of the availability

of small-diameter and low-quality wood for long-term uses. While our study was unable to identify effective prioritisation policies, the three examples above illustrate the need to establish trade-offs and prioritise certain uses.

### 3. Developing the furniture sector to boost the supply of semi-finished products

The existence of outlets is clearly a structuring factor. As far as the panel industry is concerned, maintaining its production rate depends on the ability to sell its stock. The lack of outlets for panels can limit the smooth running of factories; securing suitable outlets is therefore imperative if we are to increase production significantly. For example, a lack of outlets for engineered hardwood products in Germany proved to be a limiting factor for Pollmeier sawmill's development of this semi-finished product. Here again, our study was not able to identify any effective policies for creating such outlets, apart from the German subsidy (see point 1). However, we note that the furniture industry relies on panels in Germany and Romania, and on engineered wood in Romania. The French furniture industry also consumes panels, but some of the furniture and panels used in production are imported. Although furniture does not store carbon for as long as construction and renovation materials, it can help to scale up the production of these products, which can also be used in construction.

#### Changing Wood Uses to Improve Carbon Storage: Which Products Should Be the Short-Term Focus?

Wood-based panels and insulation materials: these products are made from low-quality wood resources which are currently mainly used for applications with a short lifespan, such as energy and paper pulp. They are the most promising products to direct more wood towards long-life uses in the short term without increasing harvest, as few technical production constraints are restraining a partial redirection of resources allocated to shorter uses. Panels (e.g. chipboards, OSB...) can be used in many ways, some of them allowing us to stock carbon for decades, especially in the building sector. Insulation materials are promising for the same reasons but also because of their market potential associated with energy efficiency retrofitting.

Other engineered wood products (e.g. glued laminated timber or glulam, cross-laminated timber or CLT...): these construction materials can be made from hardwoods (e.g. beech, oak...), and from lower quality and smaller diameter wood than the type of wood usually preferred for this kind of application. They are promising in the longer term compared to wood-based panels and insulation materials: they also are a means of increasing the share of wood used in long-life applications, but today they are still rarely produced and used. More research and development are required for these products to be marketed on a large scale.

For more information on wood types and their main uses in France, please consult I4CE's report "[Changing Wood Use to Improve Carbon Storage: Which Products Should Be the Short-Term Focus?](#)" (2022).

## Conclusion

The research conducted within the INFORMA project identified several inspiring factors in the German, Romanian and Swedish wood sectors for designing a wood sector policy oriented towards long-life uses. For example, the study of Germany and Romania revealed industrial models that differ from the French one, and that makes them more competitive. Similarly, the development of engineered wood for furniture in Romania is a promising trend, with no equivalent movement in France presently. The next steps would be to make sure that the latest policies, recently implemented or currently being discussed, are actually aligned with the climate targets and the goal of developing the share of harvest dedicated to long-life products.



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