



informa

SCIENCE-BASED INTEGRATED
FOREST MANAGEMENT
FOR CLIMATE MITIGATION

D3.4a Reorienting wood uses to meet climate targets

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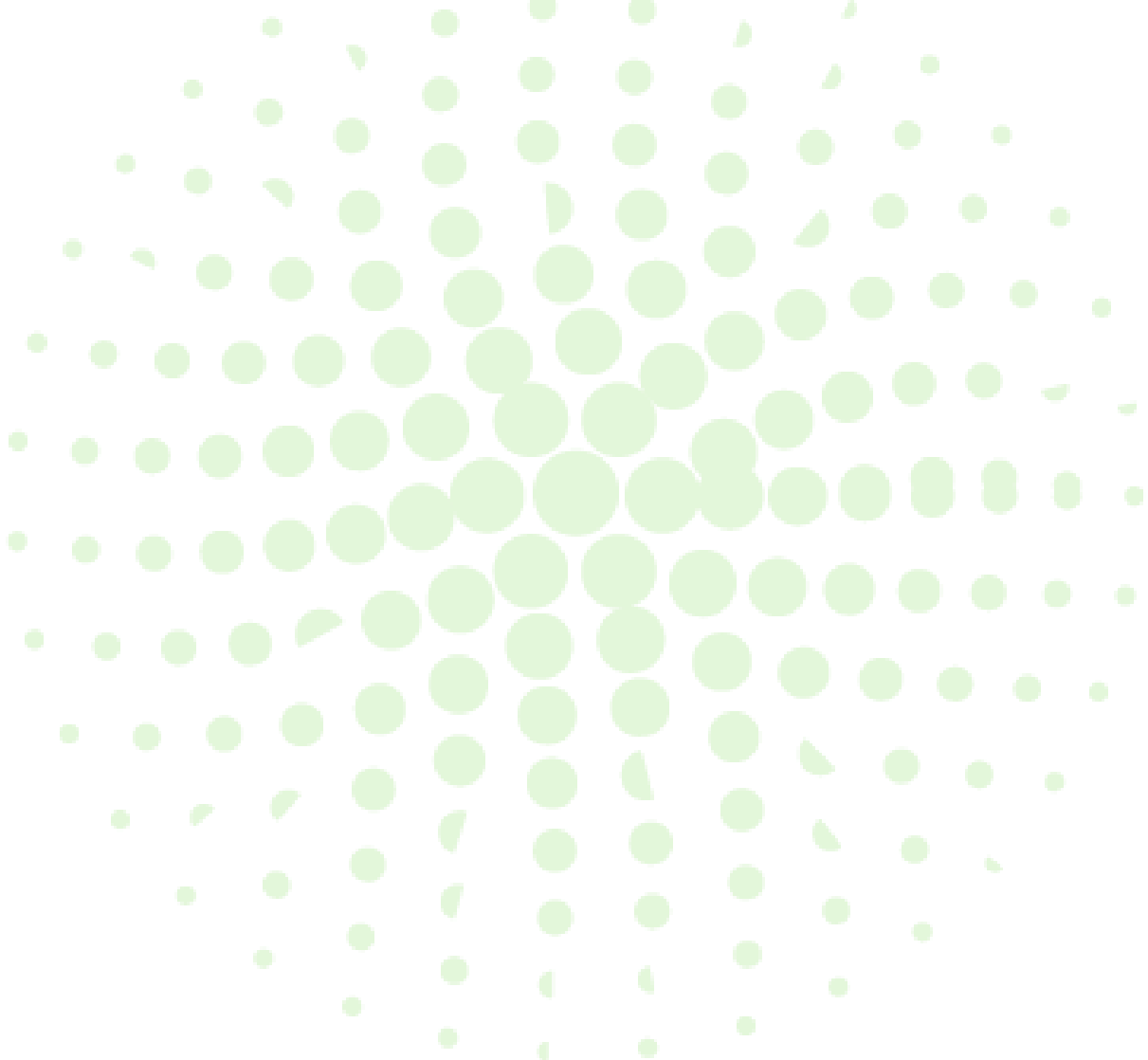


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1 Executive Summary

The deliverable describes the importance of increasing the share of wood allocated to the longest wood products and uses to meet carbon neutrality objectives. In other terms, this increase is reflected in the reorientation of part of the resources currently allocated to shorter uses such as paper and energy. The assessment of the technical feasibility of a reorientation of wood uses policy in France reveals that no technical constraints related to the wood products could prevent the policy from being feasible, although manufacturing processes need adjustments in order to aim for a large scale reorientation of wood uses. It also reveals that the most promising products at short term would be wood-based panels and insulating materials produced from pulpwood and secondary resources (wood processing by-products, recycled wood); and that at longer term, the reorientation could also involve sawnwood and engineered wood products if major efforts are made in research and development. But technical feasibility is not everything: production capacities need to be upscaled to transform the reoriented resources, and economic and regulatory incentives should be implemented to expand the market opportunities of long-lived wood products and stimulate the demand for these. An ongoing comparative case study of wood uses in several European countries should provide the first avenues of 'good practices' that could help develop the wood industries relevant to the reorientation of wood uses in France.



2 Introduction

Initially the task 3.4 was supposed to result in a deliverable of a comparative case study of wood uses in France and several other European countries. However, due to internal administrative and funding adjustments, I4CE has submitted a new workplan that has been supervised by UPV and approved by the Project Officer. The task 3.4 is now divided into two subtasks, each of which will result in a deliverable:

- Task 3.4a, first deliverable – 31st March 2023: the current document which presents provides an introduction to I4CE's work on long-lived harvested wood products and the first elements of results obtained from the aforementioned comparative case study. Further results of the study will offer insights into good practices that are favourable to the development of the long-lived wood products industries. These results may be used in the forthcoming tasks of WP3 (tasks 3.4b, 3.5).
- Task 3.4b, second deliverable – 1st Trimester 2024: the deliverable will provide an analysis of public policies (like recovery plans at EU and France level especially) to analyze if those policies and funding are actually aligned with the climate target of developing long-lived wood products, or if it feeds the current imbalance towards energy wood.

As this work on harvested wood products is rather specific within the INFORMA project, I4CE does not expect any relevant impact on the other WPs and tasks of the project. The main impact would be on task 3.5, as this new-shaping will support starting the drivers and opportunities analysis to improve harvest allocation in France. This change will be moderate, as the core of task 3.5 will not change.

3 Improving the industrial use of wood to meet climate targets

Wood products have a role to play in meeting the European climate objectives. On one hand, they can extend the storage of carbon captured by forests and, on the other hand, they can replace more carbon-intensive materials. France shows very high ambitions for their development, aiming for a tenfold increase in the carbon sink in long-lived products by 2050. This objective is based on two strong actions: harvesting more wood and, more importantly dedicating an increasing share of the harvest to long-lived wood products. While these two measures both contribute to increasing the carbon stored in wood products, they do not affect the forest carbon sink in the same way. Indeed, producing more wood products is not necessarily good for the climate if it is only achieved through increased fellings. An increase in fellings induces a decrease in the carbon sequestration capacity of forests, as well as a decrease in the forest carbon sink in the short and medium term. In order to increase the carbon storage in wood products while limiting the impact on the forest sink, action towards a better use of the harvested wood has to be taken. This objective entails that a greater part of the harvested wood, but also of wood processing by-products and recycled wood, are used



for long-lived products (sawn timber, panels and wood-based insulating materials) and that energy production is done preferably from wood at the end of its life cycle and from resources that it is technically not possible to use otherwise.

However, although the French objectives are ambitious, their concrete implementation in terms of the development needs of the industries, and the associated public policies, are not completely defined: which products should be targeted, which constraints are linked to the resource, what are the demand and markets' development objectives? In other words: how much can we improve the industrial use of wood, and how can we do it? In order to contribute to the debate on these issues, and to the design of the new French long-term strategy (LTS) for carbon neutrality (the *Stratégie nationale bas carbone*), I4CE has evaluated the technical feasibility of a reorientation of wood resources towards long-lived uses, by identifying the most promising products with regard to their technical production constraints and their potential market opportunities (I4CE, 2022).

This evaluation was undertaken in three steps, for which different materials and methods were involved. The first step overviewed the main wood uses in France, from the harvest to the wood products and their final uses. It connects various data, including from the national forest inventory (NFI), the national annual survey of the forestry and sawmill industries, environmental production declarations (DEDs) for building materials, and from the French Economic Watch of the Forestry and Wood sector¹.

The second step assessed the potential volumes of wood resources that could technically be reoriented towards longer-lasting uses. To determine whether there are any technical constraints that might prevent certain types of resources from being reoriented to other uses, interviews were carried out with various experts and stakeholders of the French forestry and wood sector (such as the national wood technical centre, industrial unions, the Ministry of Agriculture and Food...) and were completed with information from grey literature.

The last step evaluated the maximum potential opportunities in the construction and renovation markets for the wood products assessed as the most promising for the reorientation of wood uses. Volumes of wood products were calculated on the basis of the areas that will be built and renovated in the future according to two scenarios (business as usual and aligned with French LTS), and the amount of wood that can be put into the buildings. The scenarios and the technical coefficients were extracted from a study conducted by the national wood technical centre (FCBA) and a strategy consulting firm (BIPE) about the evolution of the demand for construction wood products (BIPE FCBA, 2019). In I4CE's study a very strong assumption is made about the market share of wood products in the construction market by assuming that it was maximum, i.e. that consumers always favour these products when it is possible to use them in their building. These calculations give a rough and quite unrealistic estimate, yet useful to see where the national targets for wood products growth

¹ Known as "Veille économique mutualisée de la filière forêt-bois", or for short "VEM" or "VEM-FB". The managers of the VEM compile in yearly input-output tables data mainly from official statistics and from statistics provided by professional organisations. These tables depict the economic and material flows of the French forestry and wood sector.



stand in relation to it and where the greatest potential lies between construction and renovation, and between the different building sectors.

4 Reorienting wood uses: the most promising resources and products

Based on the overview of material flows within the French forestry and wood sector and the current uses of wood, I4CE has analysed long-lived wood products regarding the constraints associated with their production processes. There are 1) products dependent on technical constraints and that cannot be involved in the reorientation, 2) products that are dependent on technical constraints but that could nevertheless be involved in the reorientation through more or less easy adjustments to the manufacturing processes, and finally 3) products that are not technically constrained and that could therefore be fully involved in the reorientation.

In terms of resource types, two main leverages can be deployed:

- a) Improving the share of timber quality resources that are effectively used in long-lived wood products, e.g. by improving our capacity to process hardwoods, small-diameter and low-quality wood. Engineered products, for example, can help to achieve this.
- b) Improving the share of lower quality resources (wood processing by-products, smaller diameters, etc.) used in long-lived wood products, such as panels and insulating materials.

It appears that in the short term, the most promising industries for the reorientation of wood uses are those of panels (more particularly construction panels) and insulating materials. Some of the roundwood, by-products and recycled wood that they use is actually of the same kind to what is used by the paper and cardboard and energy industries. Hence few strong technical constraints in their production processes would prevent a reorientation of these resources from short to longer uses. Moreover, wood-based insulation has a strong potential for expansion in view of the French and European energy renovation targets for 2050. Coniferous roundwood and by-products (with some exceptions for the latter) as well as recycled wood could be reoriented without technical difficulty as they are the preferred resources of the panel and insulation industries. Non-coniferous roundwood and by-products could also be used by these sectors, but a large-scale reorientation would imply adjusting the manufacturing processes: non-coniferous resources currently account for only a small proportion of the supply of panel producers, especially for hardwoods. The main barriers to the development of these industries appear to be economic rather than strictly technical, including the need to reinforce production capacities (French sawmills are close to 100% of their production capacity) as well as to ensure a market with sufficient demand to sell the additional volumes produced. This last point is particularly important for the panel industry whose continuous production flows implies appropriate stock management to avoid factory overcrowding.



In the longer term, there are also opportunities to reorient resources that have so far been little used by the timber industry, whose preferred resource is medium-diameter softwood timber. The main opportunities would be to level down the timber quality qualification criteria and to develop economic opportunities for hardwoods, small-diameter and low-quality wood, in particular with the diversification of raw materials used by engineering products (e.g. glued laminated timber, finger-jointed solid timber, LVL, etc.). It could thus be possible to increase the share of timber dedicated to industrial use in the harvest, provided that R&D efforts are maintained and even upscaled, and that major investments are made in the industrial base to expand production capacities. These measures can only be implemented over time, which moderates the potential for a reorientation towards this type of wood uses in the immediate future, but it could be achieved in the medium term.

The reorientation of wood uses is therefore a credible policy from a technical point of view. However, it requires the implementation of an industrial policy to develop production capacity and the identification of the most suitable economic and regulatory incentives to expand the economic opportunities for the most promising products and stimulate the demand for these.

5 Draw inspiration from possible 'good practices' in European wood sectors to reorient wood uses in France

Now that the barriers increase the share of the harvest allocated to long-lasting uses and the most promising sectors have been identified, it is time to determine the relevant economic and financial leverages to improve the industrial use of wood with long-lived products. To initiate this new stage in the reflection on the implementation of a reorientation of wood uses policy, a comparative study of the structure of the wood industry in several countries has been undertaken, particularly those where the wood industry is well developed and has a higher rate of industrial use from its harvest than the French industry. The objective is to compare the different types of distribution of the wood harvested, and to clarify the reasons for this apparent better use of wood in these countries, in order to deduce possible "good practices" that could help to reorient wood uses in France if they were applied there. The factors explaining the differences in the development of the sectors may be technical (type of resources available, industrial base, etc.), economic (more dynamic market, greater initiatives by private actors in R&D, etc.) or political (regulations or incentives favouring the use of wood in construction, energy, etc.).

Based on the data on wood harvests and products provided to Eurostat by the countries, I4CE selected countries that seemed to perform better than France in terms of:

- the industrial use of hardwoods, small-diameter and low-quality wood,



- and long-lasting uses of pulpwood and fuelwood.

The three countries selected are:

- Germany, which has extremely well-developed wood industries and of which most of its harvest qualifies as industrial wood. It also has the largest panel industry in Europe, although the volumes of pulpwood harvested are almost identical to that of France.
- Romania, whose harvest is mostly composed of non-coniferous wood and has a higher rate of industrial use than in France.
- Sweden, which is one of the largest European industries and allocates almost all its harvest to industrial uses, including its small hardwood harvest.

The analysis of wood uses in Germany was useful to identify elements of industrial organisation and policy measures that have contributed to the development of the German wood sector, and more particularly the panel and wood insulation sector. Examples include the large subsidies introduced to promote the development of the industry and the introduction of state aid for bio-based insulation to boost its competitiveness by covering part of the extra cost compared to traditional insulating materials. These are the types of measures that have had positive effects on the dynamics of the German sector and on the share of the harvest allocated to long-lasting uses that I4CE would like to review in Romania and Sweden.

6 References

BIPE FCBA. 2019. Étude prospective : Évolution de la demande finale du bois dans la construction, la rénovation et l'aménagement des bâtiments. *(available in French)*

I4CE. 2022. Réorienter les usages du bois pour améliorer le puits de carbone : sur quels produits miser en priorité ? *(available in French, soon in English)*