

Report of the Club du Bois Meeting, Thursday 27th May 2021

"What is the potential of the Renovation Wave to store carbon via the use of sustainable wood products?"

Opening of the meeting – *Clive Pinnington*, Managing Director (EPF)

Our theme today is wood in renovation. We have long wanted to quantify the potential climate contribution of renovating the aging building stock in EU with wood and wood-based products, including panels, and have now done so. Andrew Norton has assessed this and he will present the results together with Paul Brannen in a presentation followed by a Q&A session. This will be followed by policy recommendations with some time for questions. We will start with some opening words (pre-recorded) from our Chair MEP Simona Bonafè.

A Renovation Wave for Europe

greening our buildings, creating jobs, improving lives



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Introduction by *Simona Bonafè*, MEP and Chair of the Club du Bois (video)

To meet the international climate objectives a profound energy transition in buildings is urgently needed at EU level. We have recently approved the Climate Law with its Co2 reduction of target at 55% for 2030 and the goal to become a climate neutral continent by 2050. Buildings are accountable for 36% of the total CO2 emissions in the EU. Half of the final energy consumption in the Union is attributable to heating and cooling of which 80% in buildings. In other words, there is lot to be gained in the building sector.



Like the majority of my fellow Members of the European Parliament, I warmly welcomed the Commission proposal to launch a Renovation Wave for Europe's buildings. In its Communication launched in October, the Commission launched an encompassing and integrated strategy involving a wide range of sectors and actors. It identified as a key principle the need to minimizing the footprint of buildings which requires resource efficiency and circularity combined with turning parts of the construction sector into a carbon sink for example through promoting green infrastructure and the use of organic building materials that can store carbon such as sustainable sourced wood.

Indeed, the wooden construction materials can provide renewable alternatives to fossil-based and carbon intensive materials while replanting and sustainable forest management ensures that forests resources are not depleted. In this way constructions in timber are a key building block of the European circular bioeconomy bringing sustainable jobs in both urban and rural areas and reducing the carbon footprint of the buildings.

At the same time, it has become increasingly clear that renovation also has the potential to store carbon and today's workshop explores exactly the wood benefits to achieve this aim. This a good opportunity to discuss why the renovation wave should recognise the potential of the existing European housing stock and why the building stock can become a new carbon sink. It is important to keep in mind the potential of renewable construction materials such as wood with a specific intention of achieving this goal.

I am sure today's discussion will give us a clear framework based on scientific proofs over the potential of renewable construction materials such as wood to the specific intention of helping Europe achieve the decarbonisation objective.

Presentation: "What is the potential of The Renovation Wave to store carbon via the use of sustainable wood products?" – Paul Brannen, Public Affairs Director (CEI-Bois and EOS) and Andrew Norton, Technical Expert (CEI-Bois and EOS)

The European Union has about 260 million building units out of which 75% can be currently considered as energy inefficient. Hence, 195 million need renovating by 2050. In its first phase until 2030, the Renovation Wave Strategy aims at refurbishing 35 million building units. Those will be deep energy renovations.



If we are truly willing to make our buildings more energy-efficient and drastically reduce carbon emissions, the use of organic building materials that can store carbon, such as sustainably sourced wood, holds great potential. Nevertheless, so far, no attempt has been made to quantify this potential to store carbon in the built environment.


"And we know that the construction sector can even be turned from a carbon source into a carbon sink, if organic building materials like wood [...] are applied."



This call for using organic building materials that can store carbon echoes the work of Prof Schellnhuber of the Potsdam Institute for Climate Impact Research who inspired President von der Leyen herself to launch the New European Bauhaus and to reforest our planet and retimber our cities.

Renovation to extend the building's life means:

- Prolonging the carbon storage in the current building stock
- The demand is up to 2-6 t CO₂ eq stored per dwelling, depending on the wood products used for renovation while reducing emissions from functionally equivalent materials



Wood can sequester carbon through photosynthesis, store carbon throughout the whole life cycle of the long-lived harvested wood products and substitute other carbon intensive materials. A Study on "[Climate effects of the forest-based sector in the European Union](#)" has shown that storage & substitution of carbon in harvested wood

products can together offset 20% of Europe's annual CO₂ emissions.

Therefore, the renovation and extension of existing buildings with wood construction can contribute significantly to sustainable urban redevelopment. The advantages of specific wooden constructions can

be related to many different aspects, such as construction type and material properties, building execution, design, logistic and sustainability.

At the moment, about 1.8 giga ton of CO₂ is already stored in our current building stock which corresponds to more than half the above ground CO₂ equivalent stored in the Swedish forests.

Prolonging the life of harvested wood products

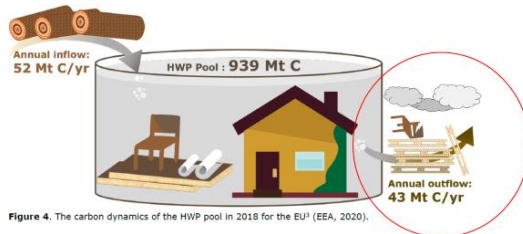


Figure 4. The carbon dynamics of the HWP pool in 2018 for the EU³ (EEA, 2020).

Source: Grassi et al., *Brief on the role of the forest-based bioeconomy in mitigating climate change through carbon storage and material substitution*, European Commission, 2021



Among the solutions that the wood sector could immediately implement is not only store carbon in harvested wood products for construction and renovation but to incentivise it by enhancing longer life cycles and less production of waste. We therefore need to renovate to extend the building's life cycle and use demolition only as a last resort. We indeed ought to prolong the carbon storage in the current building stock. We estimated

that the demand can be up to 2-6 t CO₂ equivalent stored per dwelling, depending on the wood products used for renovation while drastically reducing emissions from functionally equivalent materials.

There are many examples of wood-based product that can be used in a renovation. Insulation with wood fibres for example has a lot of benefits: it saves energy, while at the same times improves acoustic insulation. Moreover, the wood fibre regulates relative humidity, making a more comfortable environment, and can be made out of waste wood. Renovation might also mean repurposing of existing building envelopes – reconfiguring old and obsolete house layouts opening to fit our modern needs with partition walls. Wood partition walls have good sound insulation properties and replace more impacting materials such as popular steel. Another good example is the window frames: as we put in more efficient glazing, we see that the choice of frame used can have big impact as well in terms of global warming potential.

Moreover, wood can be turned into a product, reused, and at the end of its life it can be recycled into something else, notably in wood-based panels. Circular renovation with wood-based panels allow to keep wood in circulation for as long as possible and therefore can help reduce CO₂ emissions and continue to store carbon longer. Indeed, by processing wood residues/waste into high-quality panels, the wood industries contribute to reducing CO₂ emissions.

To conclude, our final message is that we need to account for carbon storage at both product level and at building level. Such accounting ought to reflect the substitution effect in renovation and, finally, we need to prolong the carbon storage by increasing the lifetime of wood products through reuse and recycling.

Questions & Answers I

That the EU built environment has the same carbon storage effect as half of the Swedish forest is fantastic. It really shows the benefits of building with wood.

The tallest wooden building in the world is in Norway 85 meters but we could go taller but in terms of storing carbon int is in ordinary houses where the big potential is. In Scotland more than 75% are built from timber yet in England it 25%. We ought to do more in the future.

There is a risk that wood is mainly considered as carbon sink in forests. We need to consider ways to account for wood products along side forests as a means of increasing the forest sink. The 'fit for 55' package could be a game changer.



Incentivising storage is important. DG CLIMA is exactly studying this with Trinomics since December last year. They will present their findings in June. We look forward for the Commission's proposal to implement harmonised incentives through an EU wide carbon credit system.

The Union as a whole should start sustainably using recycled materials as carbon sink just like in Italy where not only OSB, but also new technology is being applied for using recycled wood in the production of MDF panels.

There is an illusion in EU policy that when you harvest a tree you have a carbon debt. That illusion is detrimental for the renovation wave and for the whole forest value chain. We all embrace the need to put trees to good use to further increase the carbon sink.

Policy recommendations by *Margherita Miceli*, Sustainability Policy Adviser (CEI-Bois)

Some specific recommendations were finally put forward by the industry:

1. **Acknowledge the benefit of stored carbon at product level:** such benefit should be quantified and incentivised by using the right tools such as Environmental Performance Declarations for construction products. EPDs should be established as the harmonised reference tool for assessing the environmental footprint of construction product within the revision of the Construction Products Regulation.
2. **Acknowledge the climate benefit of wood at a building level:** there is a need to move beyond the energy performance metrics. The revision of the Energy Performance of Buildings Directive (EPBD) offers the opportunity to introduce requirements to report and reduce the emissions of a building over the entire lifecycle, including manufacture, transport, construction, use and demolition.
3. **Develop appropriate digital tools for carbon accounting:** there is a need to empower consumers and professionals to make the right sustainable choices in construction and renovation through digitalisation. Incentivising Digital Design and Building Information Modelling (BIM) will make it possible to calculate the climate benefit and show architects and consumers the climate impact of longer life and designing for re-use and recycling.

Questions & Answers II

We need the proper standards for sound carbon quantification both at building and product level. Given the climate urgency, we need to act now and educate the users by presenting them accurate carbon accounting and show the benefits of carbon stored in wood.

As the renovation wave takes off, we should not underestimate how much wood can go into new built and renovation. We want both to deliver as much as possible to store carbon and to substitute other carbon intensive materials.

Closing of the meeting - *Clive Pinnington*, Managing Director (EPF)

We wanted to look at the potential contribution of wood in the renovation wave. We have confirmed that. We need now to explain it to decision-makers and then we need to find the right way to encourage it. As Club du Bois, we shall keep advocating for that. Thank you all for your kind attendance and input.

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