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Policy recommendations to encourage nature-based materials like wood in construction and renovation of the built environment

The *Wood4Bauhaus Alliance* is convinced that a **refurbished and energy efficient EU building stock has a key role to play in the post Covid-19 recovery** and will pave the way for the decarbonisation of one of Europe's largest energy consuming sectors¹. The transformation of the building sector to a truly sustainable sector must be a top priority of the European Commission because it will leverage decisive opportunities to create more green jobs, and spur regenerative growth, inclusion and sustainable development (ecological, economic, social) in both urban centres and rural areas.

Nature-based materials, and especially wood-based products, offer green building solutions that are renewable, recyclable and have far better environmental performance (lower carbon footprint) during their life cycle(s) than other conventional materials. Prefabricated solutions using wood also offer modular possibilities to redesign and modernise buildings in a non-invasive and more flexible way (i.e., additional storeys, roof extensions, interior refurbishment), limiting the need for demolition to a last resort. Nature-based solutions are at the heart of the *Circular Economy* and will, with the right policy support, drive the transformation of Europe towards the goals of the *Green Deal*.

The **New European Bauhaus** has unleashed a genuine opportunity to enable the transformation of the construction ecosystem. We need to rethink our relationship with nature and turn the built environment into a carbon sink, especially by using more nature-based materials, such as wood, in construction and renovation. In the words of Prof John Schellnhuber, we need to "*Reforest the Planet and Retimber the City*", for Europe to become the first carbon neutral continent by 2050. An integrated systems approach encompassing the whole value chain from forest resources to harvested wood products and final engineered products in the built environment is needed to make the "forest-building-pump" work. The key will be a **co-creation movement of all involved actors developing and rolling out an array of more Sustainable, Affordable and Beautiful solutions** for the well-being of Europe's natural environment and all its citizens.

Fully in line with the objectives of the Bioeconomy Strategy, the upcoming post-2020 Forest Strategy, and the New Circular Economy Action Plan, the Wood4Bauhaus Alliance emphasises the importance of the overarching principles of *Circularity* and *Resource Efficiency* for all raw material-dependent sectors.

¹ Buildings are accountable for more than one third (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.



The Alliance welcomes the enhancement of the sustainability criteria under the revision of the Renewable Energy Directive as part of the ‘Fit for 55’ legislative package. We wish to underline that the **material use of wood** should be preferred over early energy recovery, where economically and logistically viable, to stimulate industrial symbiosis within the forest-based sector and to **sequester more carbon and substitute fossil-fuel intensive materials**.

The Wood4Bauhaus Alliance recommends that the upcoming *Communication on the New European Bauhaus* should encourage nature-based materials, epitomised by wood, and underline their notable double benefit of a) carbon storage in the EU building stock and b) energy-intensive material substitution. The Regulatory framework for the certification of carbon removals expected in 2023, including the pending revision of the *Land use, land-use change, and forestry regulation* (LULUCF), will be key to providing sound carbon accounting methods and rewarding carbon storage through industrial activities. In this respect, the *Wood4Bauhaus Alliance* proposes the following policy recommendations to the European Commission for their consideration:

1. **Upscale the rate of renovation and new build, especially for social housing.** There is a need for affordable homes all over Europe and wood construction can decisively contribute to the *Renovation Wave* and *Affordable Housing Initiative*. Up-scaling must be done in a cost and climate effective way, fostering off-site, industrial prefabrication based on light, high quality, easy to transport, and sustainable nature-based solutions. This will allow for less intrusion, reduced waste, improved modularity, and increased affordability.
2. **The carbon removal, carbon storage and substitution benefits of renewable, nature-based solutions** at the product level and throughout the whole building lifecycle should be quantified and incentivised by using the right tools. *Environmental Performance Declarations* (EPD) for construction products are preferred, but enhanced *Product Environmental Footprints* (PEF) could also be used. Declarations² that reflect the full carbon benefit should be established as the harmonised reference tool for assessing the environmental footprint of construction products and buildings within the revision of the *Construction Products Regulation* and the revised LULUCF legislation. The whole lifecycle of buildings needs to be taken into account, moving beyond only energy performance metrics. The revision of the *Energy Performance of Buildings Directive* (EPBD) should introduce requirements to report and reduce the emissions of a building over the entire lifecycle, including manufacture, transport, construction, use and demolition phases.
3. **Digital tools for wood construction and smart manufacturing** must be established and widely adopted by key actors, such as architects, engineers and end users. Incentivising *Digital Design, Building Information Modelling* (BIM) and the *Digital Product Passport* should make it possible to calculate the climate benefit and show architects and consumers the climate impact of long-life wood use and eco-designing for re-use and recycling. Wood products need to be incorporated explicitly into the *Sustainable Products Initiative*. There is a need to convince new users and professionals of nature-based solutions with wood and to empower consumers to make the right

² EPDs show quantity of carbon stored but not the benefits of longer storage, while PEF and LEVEL(s) fail to sufficiently address the benefit of stored carbon in a full life cycle perspective.



sustainable choices. This will lead the transformation of the construction sector towards an attractive, affordable, circular bioeconomy that fully embraces digitalisation.

4. **Raise the awareness of consumers, stakeholders, local and regional authorities** about benefits of sustainable forest management and long-lived harvested wood products (i.e., sequestration, storage and substitution)³. Showcase best practices and innovations in construction and renovation, lifecycle thinking and circular design for resource efficiency and material recovery in the building sector and facilitate access to information for customers and decision makers, e.g. via public campaigns, educational initiatives and online data sharing and stakeholder platforms.
5. **Implement a carbon credit system that rewards the long-life material use of nature-based materials** as an extension of the carbon sink in harvested wood products, for example by using long-lived wood or wood-based materials in construction and furniture. This requires a full supply chain and full lifecycle view and accounting system. **Green Public Procurement** should integrate circularity and resource efficiency as main principles to systematically reflect the environmental and energy performance of products and identify the most climate-friendly solutions for construction and renovation of the building stock.
6. **Enhance wood recycling, especially collection and sorting in municipalities, and develop measures to gain access to post-consumer wood, a vast and undervalued resource.** Currently, particleboard manufacture is the only large-scale, commercially viable method of recycling wood in Europe. Yet most countries today burn post-consumer wood waste for energy recovery. Converting more recovered wood into products like laminated wood for furniture or non-load bearing construction would prolong carbon storage and maintain availability of resources for a third life cycle. Applied R&D into waste streams, recycling technologies, business models for recovery, collection and distribution schemes and incentives to encourage more recycling must be a main priority.
7. **Secure the supply for wooden raw materials** and guarantee a level playing field by avoiding any kind of market distortion. Supply chains should be incentivised for an optimal resource and energy efficiency in terms of carbon storage, regional economies and environmental benefits. To respond to the changes in forests caused by the effect of climate change and natural disturbances, an important goal is to grow the existing stock by enabling dynamic, sustainable forest management and to increase schemes for reforestation and afforestation, including plantations and agroforestry / wood from farms. This is a win-win to expand available wood sources, increase circularity through cascading use, when economically and regionally possible, reuse and/or recycling, safeguard biodiversity and ecosystem functions/services, and revitalize rural economies. A key element is to create an EU-wide forest resource monitoring system that provides real-time information and forecasts of forests, markets, climate change impacts, and natural disturbances.
8. **Strengthen European co-creation alliances and networks linking relevant sectors and scientific communities.** The relevant industrial sectors, education and scientific communities (wood science and technology, forest sciences, architecture, civil engineering, urban planning, creative

³ Already today Europe's forest-based industries represent a positive climate contribution (-806 Mt CO₂ e/yr) equal to 20% of current EU fossil emissions.



industries, cultural heritage, health, landscape ecology, sustainability) need to build stronger links and integrated, interdisciplinary programmes to share knowledge and stimulate innovative collaborations to ensure that beautiful solutions are effective, efficient and adopted, and can support industrial transformation. Nature-based materials like wood should be recognized by all relevant disciplines and become part of education, design paradigms, like biophilic and circular design, seeking to bring scalability, affordability, and the beauty and health benefits of nature to buildings and indoor environments where people spend most of their time.

9. **Create new jobs and increase training and upskilling of workers** for the *Circular Bioeconomy*. Without a well-trained, skilled workforce, the *Renovation Wave* cannot happen and wood industries cannot develop their operations further. New areas such as modern renovation and prefabrication require different skillsets and know-how. Both traditional and innovative VET and higher education opportunities for the manufacturing sector need to be integrated and made fit for the future (e.g., dual learning, life-long learning, industry 4.0 curricula, university-industry collaboration, virtual campus, Living Labs, communities of practice). Enhancing training and education is essential to a) create more sustainable, green jobs, b) develop the new skills in nature-based solutions, and c) improve the traditional manufacturing in wood industries. This must consider gender-balanced opportunities and fair Europe-wide participation to overcome regional disparities. One focus must be on rural and remote areas, where the bioeconomy can play a special role in counterbalancing the rural exodus and brain drain. The sector deserves a comprehensive, overarching skills agenda and roadmap, covering all stages from vocational training until retirement, addressing equally VET centres, higher education institutions and special schools.
10. **Ensure well-functioning internal EU markets that support building products, nature-based solutions and secondary raw materials** by harmonising product standards, markets and legislation to increase the demand for and rapid growth of green building and renovation with nature-based materials such as wood. This must ensure better implementation and synergies of EU and national regulations while enhancing cooperation between regional, national and European levels to ensure proper implementation of the *Renovation Wave* in the context of the *EU Green Deal*.

Research & Innovation. The *Wood4Bauhaus Alliance* underlines the need for dedicated support of R&I actions that are aligned with our policy recommendations. These have been summarized in the separate document “Research needs and priorities supporting Sustainable Construction with Nature-based Materials under the European Green Deal”.

In conclusion, nature-based materials, mainly those that can be manufactured into long-life products for the built environment, must be adopted more widely and utilised more efficiently in the European construction sector. **The potential climate impacts of using more nature-based materials, such as wood, are immense: they offer solutions based on available technology which simultaneously store carbon and substitute fossil resources, and thus can drastically diminish the CO₂ emissions of the building stock in Europe.** The *Wood4Bauhaus Alliance* is confident the *New European Bauhaus* initiative can drive this change in the construction sector, support the cocreation of relevant innovative solutions and help to make the transition towards nature-based solutions a widespread, powerful movement.



Background information

The [European Commission's New European Bauhaus](#) calls for a creative, interdisciplinary, novel movement embedded in society to imagine a **sustainable** future together and to engage on a transformative path towards **affordable** and **beautiful** living spaces in urban and rural environments. A key step is the transformation of the building sector into a circular model that can also counteract the escalating climate crisis. This transformation requires prioritised research in the use of organic materials in buildings.

The Wood4Bauhaus Alliance's main objective is to shape a better and sustainable future with beautiful, healthy and inclusive living, working, and learning spaces as part of a sustainable, low carbon-built environment. Our platform shall foster an open, long-term dialogue with all interested stakeholders and help share good practices related to the Circular Economy and Green Buildings. Our goal is to inspire as many actors as possible to co-create and develop contributions to the New European Bauhaus from European to regional and local level, all in the common interest to advance and exploit as much as possible nature-based materials, innovative building systems and smart solutions to mitigate climate harm and benefit European citizens. The Alliance will therefore:

- Encourage research and innovation for novel and innovative uses of wood in the built environment,
- Foster new collaborations and co-creation between different stakeholders across disciplines, sectors, and society, and
- Facilitate knowledge sharing and skills development especially towards future generations.

The Alliance confirming these policy recommendations comprises the following partners:

[InnovaWood](#) is the European network for wood science, research, innovation and education with 60+ member organisations in 28 countries, including RTOs, universities, VET centres and cluster organisations.

The [European Confederation of Woodworking Industries \(CEI-Bois\)](#) is an umbrella organisation of 21 European and national organisations from 15 countries backing the interests of the whole wood sector.

The [European Panel Federation \(EPF\)](#) represents 100,000 direct jobs and counts more than 5,000 wood-based panel manufacturing and furniture companies in 25 countries.

The [European Organisation of the Sawmill Industry \(EOS\)](#) represents 35,000 sawmills in 12 countries.

The [European Federation of Building and Woodworkers \(EFBWW\)](#) is the European Trade Union Federation grouping 76 national free trade unions from 34 countries with members in the building, building materials, woodworking, forestry and allied industries and trades.

The [InnoRenew CoE](#) is a new research centre in Slovenia focused on sustainable construction with renewable materials. It was founded with support from Horizon 2020 Widespread-2-Teaming grant no. 739574.

[BASAJAUN](#) and [WoodCircus](#) are R&D project consortia fostering sustainable wood supply chains from forest harvesting to final buildings and Circular Economy solutions in the sector. They have received funding from the EU Horizon 2020 research and innovation programme under grant agreements no. 820892 and 862942.

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