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Wood is much more than just carbon

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The way infrastructures are built and used has a greater environmental impact than any other human activity. Globally, the construction sector is estimated to be responsible for 36% of energy consumption, 39% of greenhouse gas emissions, 40% of waste generation, 45% of biodiversity loss, and 50% of natural resource use. Regardless of potential uncertainties in these estimates, it is evident that no other sector has a similarly significant environmental footprint. Consequently, actions that reduce the construction sector's environmental impact are among the most effective nature protection measures available globally.

Societies will inevitably produce the infrastructure needed for growing and urbanizing populations. Thus, adhering to the principle of minimizing harm is the minimum requirement regarding the resulting environmental impacts. Renewable materials offer the construction sector an opportunity to make sustainability improvements right now – if this is accepted as a goal. Continuing the linear use of non-renewable materials does not meet the definition of sustainable development, as these materials are permanently removed from future generations. Therefore, wood use is one of the few viable levers in our endeavour for a more sustainable future. According to current understanding, wood can help decrease all the troubling percentages mentioned above.

Recent research has significantly improved our knowledge of the climate effects of construction activities. However, public discussion and policymaking should not overlook the other environmental and societal consequences of material choices. Here is a challenge to research, too.

Building, insulating, and furnishing with wood are undoubtedly climate-smart practices. This is not only due to the long-term carbon storage created but also because of the substitution effects: renewables help preserve at least some fossil carbon where it belongs. Forest ecosystems serve as major biogenic carbon storages, but they have their limits. In contrast, the technosystem – our built environment – is not limited even by the sky. The technosystem can store tens of thousands of cubic metres of wood per hectare, potentially tenfold or even a hundredfold the volume that forests can achieve. Furthermore, unlike ecosystem storage, the risks threatening the carbon storage in the technosystem are always local and manageable. With sustainable forest management practices in place, trees can sequester CO₂ efficiently and at low cost, allowing for endless expansion of carbon storage from ecosystems to technosystems.

As we increasingly produce buildings and infrastructure to meet our needs, why not minimize environmental impacts through smart material use? Proposals to leave trees in forests or to store them as inactive carbon reserves in soil or oceans have been suggested as climate actions. However, these approaches commit us to partial optimization and miss the opportunity to harness

most of the extensive environmental and societal benefits that wood use can offer. There is a well-functioning and expectedly growing market for carbon dioxide sequestered from the atmosphere by trees. Nevertheless, climate is not the only aspect of environment that benefits from sustainable wood use. The diverse applications of wood provide far-reaching and multifaceted environmental benefits compared to setting it aside to serve only selected goals.

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