

Abstract

The aim of this study is to assess the potential for carbon storage in wood products as a lever for climate change mitigation, and the measures that could be put in place to improve this storage. Harvested wood products have the capacity to sequester the carbon absorbed by the trees from which they are made throughout their life cycle. To address this issue, the case of the Wallonia territory is studied as a reference scenario, and compared to alternative scenarios based on changes in the life cycle of the products (extension of the life cycle, recycling, reuse, influence of wood energy, disposal in landfill) to highlight the most effective practices. The methodology chosen is that of the IPCC (2006 IPCC Guidelines for National Greenhouse Gas Inventories) and considers the harvesting of softwood in Wallonia which will then be transformed in Wallonia or elsewhere. In addition to the carbon stock in harvested wood products, the accumulation of non-degradable carbon permanently sequestered in landfills, the methane flow from the landfill, the fossil emissions from wood processing and the emissions avoided by substitution effect in the case of a comparison of two scenarios are also calculated. The CAT software (Carbon Accounting Tool) allows for a simple modelling of the flow chart of the wood sector of a territory after having collected the data, and provides the results mentioned above.

The results of the current situation in Wallonia show that harvested wood products from softwoods store 48,86 MtCO₂eq at equilibrium, which is equivalent to 1,3 years of Wallonia's territorial emissions. The corresponding fossil emissions are 0,367 MtCO₂eq/year, which represents 1% of Wallonia's annual territorial emissions. Compared to the cement and steel industries, which are much more energy-intensive and emit greenhouse gases, the wood sector has the dual advantage of having a very limited environmental impact and the capacity to store carbon for periods of up to several decades. The sine qua non condition is sustainable forest management. The wood sector's leverage in climate change mitigation is real and non-negligible, and should be improved through the implementation of effective measures. Among these measures, the extension of the life span of products is, according to the conditions studied, the most effective. Increasing recycling and phasing in reuse also improves carbon storage and avoids fossil and methane emissions, but is highly dependent on initial conditions. The use of all harvested wood, as well as that destined for landfill, to make products has a greater substitution effect than its use as wood energy. The latter should be reserved for industrial co-products and end-of-life wood, but this depends on the situation of the territory. This study has shown the very interesting potential of wood products in climate change mitigation, the decision making in the wood sector should be completed by a consequential analysis of future decisions.

Keywords: harvested wood products, carbon storage, carbon sink, fossil emissions, substitution