

Around 50 million tons of lignin are generated per year as a by-product in the paper and pulp industry. In 2021, the industry produced greenhouse gases with a global warming potential equivalent to 190 million tons of carbon dioxide, a figure that is projected to increase in the next decades. In addition, almost 1.7 billion tons of feedstocks and reagents were used to produce around 820 million metric tons of final chemical products in 2015, while also producing around the same quantity of chemical waste. These statistics reveal resource and process inefficiencies that have resulted in substantial chemical releases to environmental compartments, including the atmosphere, soil, water, and animal and plant life.

*An extract from Science magazine, July 14, 2023 p. 124, entitled Genetic Editing of Wood for Sustainability by Vânia G. Zuin Zeidler. See the original for references for these estimates.*