

Project *brief*

Thünen Institute of Forestry

2023/16a

A model to trace the origin of wood contained in finished wood and paper products

 Matthias Bösch¹, Hermann Englert¹, Holger Weimar¹, Matthias Dieter¹

- We developed a novel mathematical model based on trade data.
- The model shows the origin of wood that is contained in finished wood and paper products for more than 200 individual countries and territories worldwide.
- Processing residues and recovered paper are also accounted for.

Background

Globally, trade flows of wood-based products have increased in recent years. While value is generally added along the entire supply chain, certain environmental impacts, such as forest degradation and deforestation, are inherently linked to the location of origin of the roundwood. However, it is not easy to determine the countries of origin of the wood that is contained in finished wood-based products, nor can these countries be directly identified from bilateral trade statistics. This is mainly due to the fact that wood and paper products are often imported as semi-finished or finished products - from countries that had in turn previously imported the roundwood required for these products. For example, wood products imported from China to Germany do not necessarily have to be made from wood that was also originally harvested in China.

Methodology and data base

The study is based on a new mathematical model that links the consumption of finished wood and paper products in a country with the location of origin of the roundwood. All calculations were carried out for the year 2018. The data are mainly from publicly available international databases (FAOSTAT and UN Comtrade). For the modeling of the wood flow, a total of 16 different product categories (such as sawnwood, fiberboard, particleboard, wood pulp, processing residues, recovered paper) were considered. The different units given in the statistics (e.g. m³, tons) were converted into the common unit cubic meter wood fiber equivalent (m³ (f)).

Important results

For important consumer countries such as the USA, China and Germany, there are sometimes considerable differences between the most important import partners for finished wood

products according to official trade statistics and the most important foreign countries of origin determined with our method. For Germany, for example, the method shows that Belarus, Russia and Ukraine play a much larger role as countries of origin than is generally known (Table 1): more than 20% of the foreign wood that was contained in finished wood products consumed in Germany in 2018 originally came from these three Eastern European countries, while according to official trade statistics, only about 8% of German imports of finished wood products came from there.

Tab. 1: Top ten foreign countries of origin for wood contained in consumed finished wood products in Germany in 2018

Rank	Country of origin	Million m ³ (f)	Percent
1	Poland	3.32	17.9
2	Czech Republic	2.42	13.0
3	Belarus	1.69	9.1
4	Russia	1.69	9.1
5	Austria	1.13	6.1
6	France	1.00	5.4
7	Sweden	0.87	4.7
8	Ukraine	0.67	3.6
9	Finland	0.64	3.4
10	Switzerland	0.50	2.7
	Rest of the world	4.66	25.1
	Total	18.59	100.0

Further information

Contact

¹ Thünen Institute of Forestry
 matthias.boesch@thuenen.de
 www.thuenen.de/en/wf

Thünen Centre of Competence on the
 Origin of Timber
 www.thuenen.de/timber

Duration

01.2020-12.2022

Project-ID

2388

Publication

Bösch, M., Englert, H., Weimar, H., Dieter, M. (2023): Where does the wood come from? A physical accounting model to trace the origin of wood-based products. Journal of Cleaner Production 384:135604, DOI:10.1016/j.jclepro.2022.135604

DOI:10.3220/PB1673880300000