

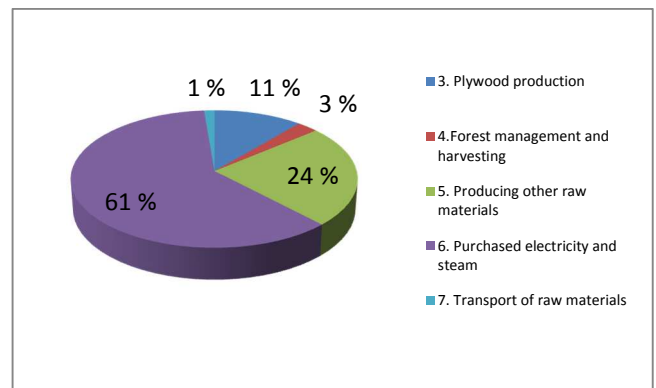
CARBON FOOTPRINT

Company	UPM Plywood Oy, www.wisaplywood.com
Sites	Joensuu, Jyväskylä, Otepää and Savonlinna plywood mills
Products	WISA®- Birch products

Information gathered from 1.1. 2016 to 31.12.2016

Carbon Footprint

- UPM calculates the Carbon Footprint of its plywood products on the basis of the 10 elements of the Carbon Footprint Framework for Paper and Board Products developed by CEPI (the Confederation of European Paper Industries). Detailed information on the CEPI Framework can be found at www.cepi.org.
- The data used in the calculation are based on annual averages for a mill.
- GHG = greenhouse gas. UPM figures refer only to emissions of fossil CO₂.
- Information is calculated as weighted average in relation to the production volumes for the various mills.



Note that wood products are biogenic CO₂ stores and can replace fossil fuels in energy production at the end of their life cycle.

1 m³ of this product contains 286 kg of carbon, equivalent to 1 050 kg of CO₂. Therefore, if this product remains in use or is stored for 100 years, this is equivalent to locking away and storing 1 050 kg CO₂. Equivalent figures for applications with a life span of less than 100 years are available on request.

Ten elements of the CEPI Framework (See next page for remarks and explanations)	Fossil CO ₂ (kg/m ³ of plywood)	Biogenic CO ₂ kg/m ³ of plywood)
1. Carbon sequestration in the forest		0
2. Carbon stored in the product		1 050
Net sequestration of biomass carbon		1 050
3. GHG emissions from plywood production	30	
4. GHG emissions associated with producing wood material	10	
5. GHG emissions associated with producing other raw materials	50	
6. GHG emissions associated with purchased electricity and steam	140	
7. Transport-related GHG emissions (excl. delivery to customer)	10	
Total fossil CO₂ emissions	240	
8. GHG emissions attributable to product use	-	
9. GHG emissions attributable to end-of-life-management of products	-	
10. Avoided emissions	-	

Remarks and explanations to the ten elements of CEPI Framework

1. Carbon sequestration in the forest

- In line with the CEPI Framework, carbon sequestration is currently not included in product level carbon footprint calculations.
- For UPM, forest certification and traceability of wood raw material supply using certified Chain of Custodies ensures the sustainable management of forests, and the long-term sequestration of carbon in them via the process of photosynthesis.

2. Carbon stored in the product

- Biogenic carbon is stored in products produced from wood. The IPCC (International Panel on Climate Change) formula is used to determine the amount of CO₂ that is stored in the plywood.

3. GHG emissions from plywood production

- UPM includes data on fossil CO₂ emissions from combustion of fossil fuels at plywood manufacturing facilities. In addition fossil fuels used in forklifts in plywood manufacturing are included.

4. GHG emissions associated with generating the supply of wood

- Includes fossil CO₂ emissions from forest management and harvesting activities.

5. GHG emissions associated with producing other raw materials

- Includes fossil CO₂ emissions generated during the manufacturing of non-wood-based raw materials (e.g. coatings and chemicals which are used in an amount above 1 % per m³ of plywood) and fuels used at mill site.

6. GHG emissions associated with purchased electricity and steam

- Includes fossil CO₂ emissions associated with purchased electricity, steam and heat used for plywood production.
- Due to differences in fuel mix used to produce electricity there are significant differences in the emission factors used to convert grid electricity to its equivalent CO₂. UPM uses source and country specific emission conversion factors

7. Transport-related GHG emissions

- Includes fossil CO₂ emissions associated with inbound transports of raw materials and final products from the plywood mill, along the value chain.
- At UPM, this figure includes the transportation of wood, coatings, chemicals and fuels to UPM mills. CO₂ emissions from wood transports are allocated mass based among products and by-products.
- CO₂ emissions from transportation of plywood to the customer are not included since this depends on the transportation modes used and distances to specific customer locations. This part of the element can be calculated for a specific case on request.

8. GHG emissions attributable to product use

- This element is not included within UPM's scope as a plywood manufacturer.

9. GHG emissions attributable to end-of-life-management of products

- This element is not included within UPM's scope as a plywood manufacturer.

10. Avoided emissions (e.g. superior energy efficiency or carbon offsetting measures)

- This element is not currently included in UPM's scope.