

# Fact sheet: the Global Forest Trade Model (GFTM) in the Bioeconomy modelling framework



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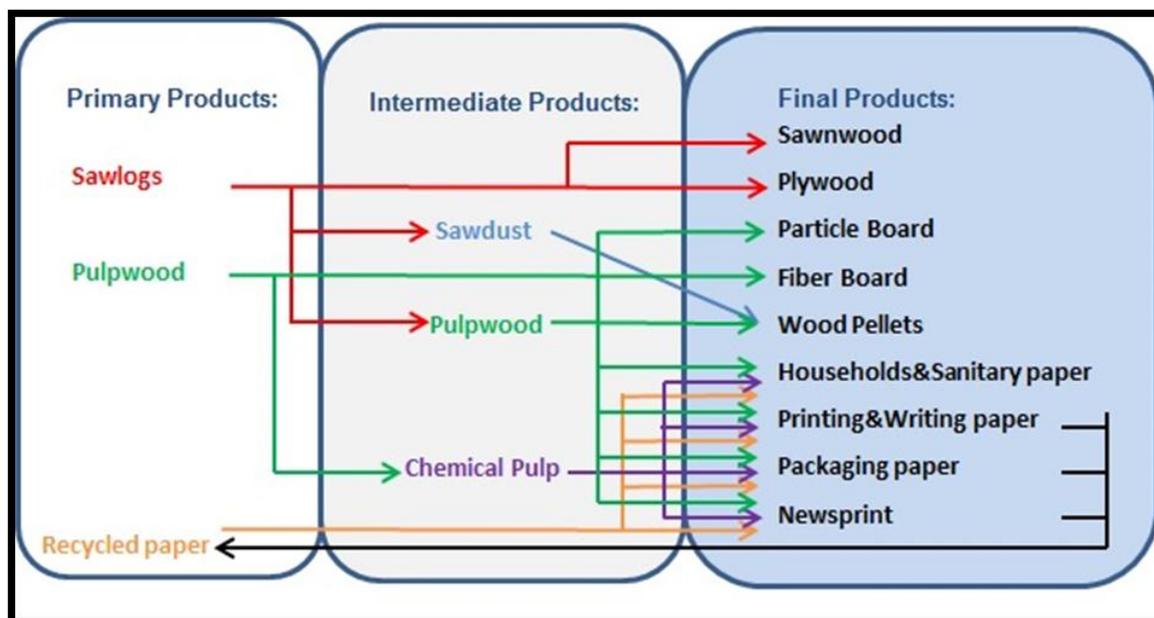
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## **Abstract**

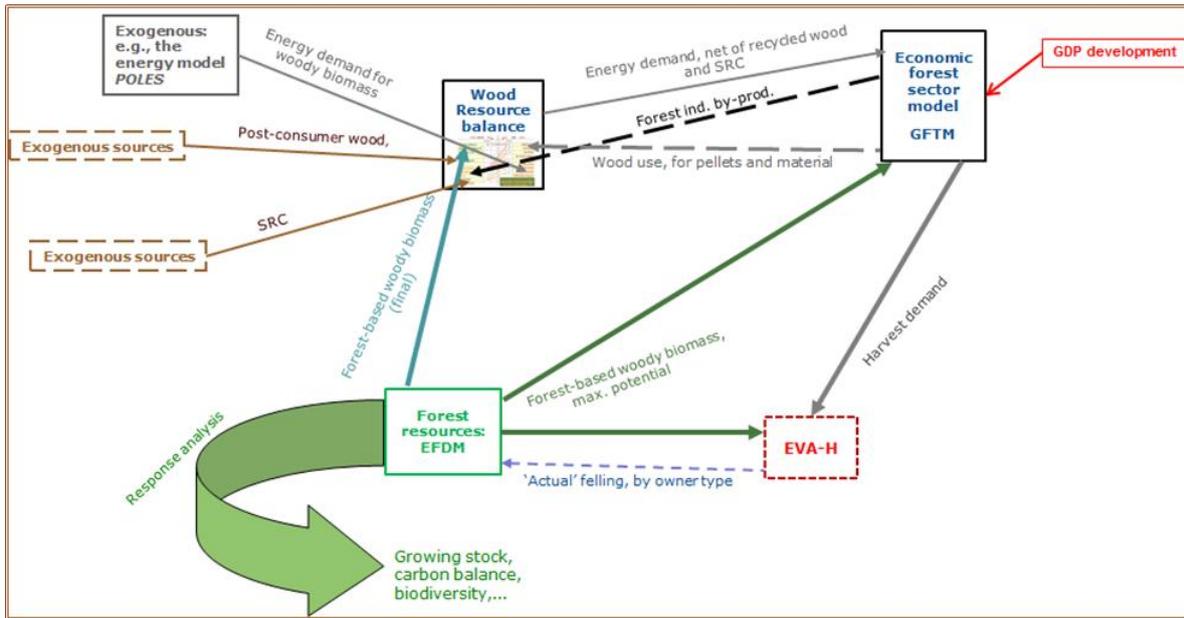
The Global Forest Trade Model (GFTM) is a partial equilibrium model of the global forest sector, with a European focus. GFTM shares the classical economic-mathematical formulation used by similar models, such as (most notably) the Global Forest Products Model and the Global Trade Model. GFTM is a stand-alone model, but designed to be fully integrated into a modelling framework for the Bioeconomy module of FISE. In particular, the GFTM will work in close cooperation with a forest resource assessment model, the European Forestry Dynamics Model (EFDM), both receiving inputs from and providing outputs to it. GFTM provides projections of consumption, production, and international trade of wood-based products (sawlogs, pulpwood, sawnwood, wood-based panels, pulp, paper, and wood pellets) for 48 countries and global sub-regions.

The Global Forest Trade Model (Jonsson *et al.* 2015) is a partial equilibrium model of the global forest sector. GFTM shares the classical economic-mathematical formulation used by similar models, such as (most notably) the Global Forest Products Model (Buongiorno *et al.* 2003) and the Global Trade Model (Kallio *et al.* 1987).

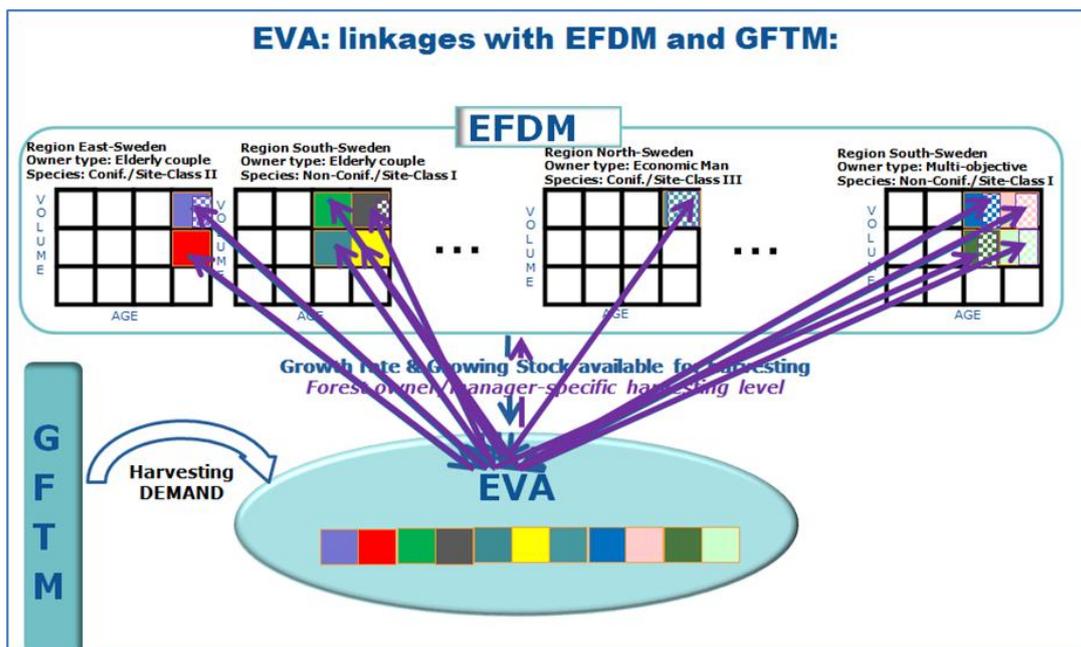
GFTM is a stand-alone model, but designed to be fully integrated into a modelling framework for the Bioeconomy module of the Forest Information System for Europe (FISE) of the JRC. In particular, the GFTM will work in close cooperation with a forest resource assessment model, the European Forestry Dynamics Model (Packalen *et al.* 2014), both receiving inputs and providing outputs. GFTM provides projections of consumption, production, and international trade of wood-based products (sawlogs, pulpwood, sawnwood, wood-based panels, pulp, paper, and wood pellets) for 48 countries and global sub-regions.



The feedback from one model to the other works as follows: EFDM provides as input to the GFTM the maximum sustainable supply of woody biomass for a given European country, accounting for legal restrictions and other bounds. This information is in turn used in GFTM as a constraint on the equilibrium supply of raw materials. Then GFTM derives equilibrium quantities of produced wood-based products in the country in question, and sends back to EFDM information concerning the amount needed to be harvested. Given this information, EFDM then updates the potential timber supply. This is a novelty compared to existing European modelling frameworks that so far have neglected the full loop from the economic model to the forest resource assessment model, with consequent propagation over time of systematic estimation errors.



The content of the information sent back to EFDM can, subject to the detail as regards forest land ownership in the data used by EFDM, be enriched by means of an external stand-alone model, the Expected Value Asymmetries (Rinaldi & Jonsson 2013; 2014). This latter model has a strong focus on forest owner characterization. Thus, EVA considers different categories of forest owners, characterized according to their preferences and objectives, and derives the preference-based optimal harvest level in order to satisfy the wood demand provided by GFTM. This is essential, since forest owner heterogeneity makes the distribution of forestland on owner types non-trivial, affecting the intensity as well as the allocation on forest age classes of harvesting activity, with an ensuing owner-type specific impact on forest development (Rinaldi *et al.* 2015).



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