

BOOK OF ABSTRACTS

FORESTS & SOCIETY
TOWARDS 2050



STOCKHOLM 2024
WORLD CONGRESS
26th **IUFRO**
FORESTS & SOCIETY TOWARDS 2050

Stockholm, Sweden
23–29 June 2024

Armington models within the framework of a partial equilibrium model for forest products markets

T2.1 Accounting for risks and uncertainties in forest-based businesses, sectoral projections, and policy design

Christian Morland¹

¹ Johann Heinrich von Thünen Institute

Abstract: Trade plays an important role in the explanation of economic development, wealth, and intercultural exchange. Therefore, bilateral forest products trade is one key factor in the analysis of national and international policies and political strategies. In this context, side effects caused by shifting trade patterns, like leakage or changing production and trade structures, could undermine efforts for, e.g., climate protection or the preservation of biodiversity. The aim of this study is to analyse bilateral trade patterns in forest product markets and adapt them for scenario-based policy impact assessments within a global partial equilibrium model, namely the global forest products market model (GFPM). Currently, the model framework builds on the basic assumption of perfect competition and homogeneity of wood-based products across the world. Trade within such frameworks is only driven by prices and transport costs. However, this so-called "law of one price" (LOP) has a major disadvantage: if trade barriers or consumer preferences exist, the response of such a model may become unrealistic. Hence, we adopt and implement an alternative modelling approach, named the Armington model. The main assumptions within this framework are that (I) each country produces a certain type of good and that (II) consumers, depending on individual consumer preferences, want to purchase products from each country to a certain degree. This approach mirrors the idea of imperfect substitution between products of different origins. The key parameters in the framework are Armington-elasticities. They can be described as elasticities of substitution between domestic and foreign goods. Implemented in a partial equilibrium framework, it is assumed that these parameters will help to model more realistic response patterns for bilateral trade than market models based on the assumption of product homogeneity would. This study will outline how Armington-elasticities can be estimated for different wood-based products traded in international forest products markets, and it will be shown how these parameters can be implemented in the GFPM for scenario-based policy impact assessments.