# README: Data Extraction and Calculation for Ad Valorem Tariffs Rates and Forest Growing Stock and Forest Stock Growth for TiMBA v1.0.1

# Content

# Calculation of Ad Valorem Tariffs Rates

## Overview

The Timber market Model for policy-Based Analysis - TIMBA - is a partial economic equilibrium model for the global forest products market. It simulates production, consumption, and trade of wood-based products across 180 countries.

Trade in TiMBA depends, among others, on the transportation costs. Transportation costs entails commodity-specific freight costs and tariffs. Tariffs are calculated as a percentage of the value of the imported product using ad valorem rates. They are derived from WTO Integrated Database (IDB) [WTO 2024: http://tariffdata.wto.org/Default.aspx?culture=en-US] notifications using 6-digit (subheadings) or 4-digit codes (headings) HS Codes.

This Readme provides a detailed explanation of how the ad valorem rates were extracted and calculated for different wood-based products across different countries. The rates are based on the **Most-Favored-Nation (MFN)** applied tariff, and trade agreements were not considered in the calculations.

This research updates previous data as published with the Forest Sector Model GFPM [Buongiorno 2003; GFPM-base 2021]. The base for the tariff update is the least available HS code version for each country, with updates based on data from **July 2024** sourced from the **World Trade Organization (WTO) Integrated Database (IDB)** Tariff Download Facility (Link: http://tariffdata.wto.org/Default.aspx?culture=en-US).

## 2. Notes on Tariff Data Calculation and Updates

### **HS Code Selection**

The extraction and / or calculation of ad valorem rates is based on the **HS (Harmonized System) codes** for each product. The HS codes provide standardized classifications of goods, used internationally for tariff purposes. The HS classifies products using 6-digit codes that are organized by chapters (2 digits), headings (4 digits), and subheading (6 digits). If applicable, we extract information stated on the **4-digit level**. However, in some cases, a product in the TiMBA model framework is represented by **6-digit HS codes**.

### B**ase for Updates**

The calculation uses the **least available HS version** for a particular country. The rates were carefully checked for accuracy, and changes to earlier entries were marked using **flags** for transparency.

The different **flags** associated to the ad valorem rates in Table 2 carry additional information: **O** indicates that the update are based on a very old HS version, **U** indicates that the updated value differs from a earlier entries, **C s**hows that the value has been checked in the with WTO IDB data from July 2024 and remains unchanged compared to the data provided by GFPM (2021), and **X** means that no information are available for the corresponding product and country. For these countries, we assume an ad valorem rate of zero.

Differences between provided data provided in Table 2 and the information delivered with the GFPM-base (2021) should come from the updates of the values. However, especially when combined HS code combinations are used for product representation, the difference may also arise from the different use of product classifications and assignments in the current work and the GFPM (Buongiorno 2003) (Buongiorno 2015)

### **Ad Valorem Rate Acquisition**

In general, mean ad valorem rates for those specific products are extracted from the WTO IDB. Products represented by more than one HS-code are treated separately for calculating mean ad valorem rates for those specific products. Thus, depending on the number of HS codes digit levels involved, ad valorem rates were either extracted or calculated:

**Where possible, the ad valorem rate for a specific country and product are extracted** directly from the **WTO** **IDB** as (mean) ad valorem rates on the 4-digit or 6-digit code level. Prerequisite for the former case is, that the product representation in TiMBA is congruent with the 4-digit level in the HS system.

Some products are represented by more than one 4-digit and / or 6-digit HS code. When this occurs, the tariffs for these codes are treated separately for the calculation, and the final ad valorem rate reflects the aggregate or a representative value based on the available data. In case that a product in TiMBA is composed of **multiple HS codes (see Table x), the ad valorem rate is calculated** based on the available tariff data for the product and country as the average of ad valorem duties of the respective reporter country and product.

### **List of Products**

Table 1: Products and assignment of HS codes used for the ad valorem rate calculations.

|  |  |
| --- | --- |
| Product | HS codes |
| Fuelwood | 4401 |
| Industrial Roundwood | 4403 |
| Sawnwood Non-coniferous | 440721, 440722, 440723, 440724, 440725, 440726, 440727, 440728, 440729, 440791, 440792, 440793, 440794, 440795, 440796, 440797, 440799 |
| Sawnwood Coniferous | 440710, 440711, 440712, 440713, 440714, 440719 |
| Veneer and Plywood | 4412 |
| Particleboard | 4410 |
| Fibreboard | 4411 |
| Mechanical Pulp | 4701 |
| Chemical and Semi-chemical pulp | 4703, 4704, 4705 |
| Other Fibre Pulp | 4706 |
| Waste Paper | 4707 |
| Newsprint | 480100 |
| PWP | 4802 |
| Paper and Paperboard | 4804, 4805, 480620, 480630, 480640, 4807, 4808, 4810, 4811, 481500, 4819, 4821, 4823 |

# Data Extraction and Calculation for Forest Growing Stock and Forest Stock Growth

## Overview

This dataset contains information on forest growing stock and forest stock growth for 180 countries, as considered in the TiMBA model. While data on forest area and forest growth for the reporting year 2020 is adequately provided by the **FRA 2020** (Forest Resources Assessment), the data on growing stock and stock growth is fragmented and not fully reported for all countries. This README explains the methodology used to extract data as well as fill in the data gaps and provide consistent values for forest growing stock and stock growth across all countries.