

Wood Products Carbon (WPsc) Tracker

User Guidance

<https://wpsctracker.org/>

Table of Contents

1. Overview and Structure 3

2. Module 1: Industrial Logs..... 4

 2.1 Input Parameters 4

 2.2 Product Categories 4

 2.3 Outputs..... 4

3. Module 2: Sawn Products 4

 3.1 Product Type..... 5

 3.2 Physical Parameters 5

 3.3 End-Use Category..... 5

 3.4 Step-by-Step Workflow 6

 3.5 Outputs..... 6

4. Module 3: End-use Products..... 7

 4.1 Input Data..... 7

 4.2 Parameters..... 8

 4.3 Step-by-Step Workflow 10

5. Module 4: Global WPs Carbon..... 11

 5.1 Data Processing Steps..... 11

 5.2 Estimation Parameters 12

6. Carbon Flow Equations..... 13

7. Questions..... 14

8. Citation and License 15

1. Overview and Structure

Timber harvesting transfers carbon from living forest biomass into durable wood products. Accurate accounting of these carbon pools is essential for national greenhouse gas inventories, forest carbon budget analyses, and climate mitigation policy. The Wood Products Carbon Tracker (WPsc Tracker) is a web-based application that quantifies the carbon stored in wood products over time.

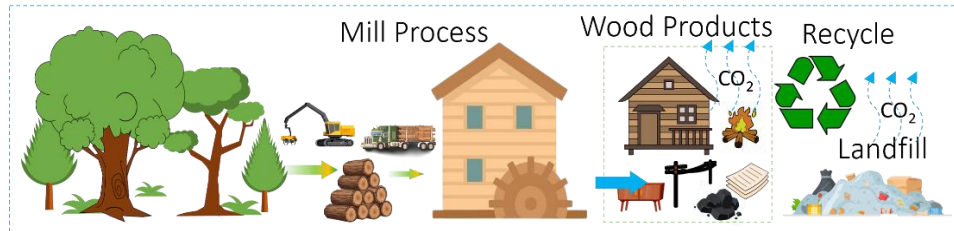


Figure 1. Wood products carbon flow.

WPsc Tracker runs entirely in the browser using PyScript and Pyodide (Python 3.11 compiled to WebAssembly). No server, no installation, and no data leaves your computer. Plotly.js renders all charts interactively. The computational backend is developed in Python 3 and executed in the browser through PyScript and the Pyodide runtime. The user interface is built with HTML5, Tailwind CSS, and JavaScript, and interactive figures are rendered with Plotly.js.

Due to current limitations in **Safari** support for WebAssembly, the application is recommended to be executed in Chromium-based browsers (Google Chrome, Microsoft Edge) or Mozilla Firefox.

Three Carbon Sub-pools Tracked

- End-use products: carbon remaining in in-use construction, furniture, and paper products.
- Landfill: carbon in disposed wood materials undergoing slow decomposition.
- Biochar: recalcitrant carbon from biofuel combustion and biochar production.

Table 1. WPsc Tracker module overview.

Module	Icon	Function
Industrial Logs		Track single-log carbon.
Sawn Products		Track carbon for lumber, panels, and engineered wood.
End-use Products		Full carbon life-cycle tracker (main module). Requires more data and parameters input.
Global WPs Carbon		Provide annual data on carbon stocks, fluxes, and emissions for individual countries, regions, continents, or the globe using FAO FAOSTAT-based input files.

2. Module 1: Industrial Logs

The Industrial Logs module tracks carbon flows from harvested industrial logs, using basic field measurements of log size to trace carbon flows to end-use wood products and landfill. Users need to provide wood type (i.e., softwood or hardwood), log dimensions, wood density, carbon fraction, end-use production type, and the log-to-product conversion efficiency. Four volume estimation methods are available: a cylinder approximation based on mean diameter, the Huber formula based on the mid-diameter, which is generally preferred for irregular stems, the Smalian formula based on the cross-sectional areas at the small and large ends of the log, and the Newton formula, which combines the cross-sectional areas at the small end, mid-point, and large end to provide a more accurate estimate when log taper is pronounced. The estimated log volume (m^3) is converted to carbon mass (kgC) using species-specific wood density and a carbon fraction parameter. These inputs can then be passed directly to the End-use Products module to track carbon fluxes and storage in different carbon pools over time.

2.1 Input Parameters

- Log length (m or ft): the merchantable length of the log
- Small-end diameter and large-end diameter (cm or in)
- Wood type: Softwood or Hardwood (determines default density and carbon fraction)
- Wood density (kg/m^3 , optional override): defaults: softwood 450, hardwood 600 kg/m^3
- Carbon fraction (dimensionless, optional override): default 0.50 (50% of dry mass is carbon)

2.2 Product Categories

- 🏠 Construction: Dimension lumber, OSB, plywood used in building framing and sheathing
- 🏗️ Exterior: Pressure-treated lumber, railway ties, wood decking, dock materials
- 🪑 Furniture: Hardwood lumber, engineered flooring, millwork, furniture components
- 📄 Graphic Paper: Printing & writing paper, newsprint
- 🧻 Household Paper: Tissue, toweling, sanitary and hygienic paper
- 📁 Other Paper: Packaging, corrugated cardboard, industrial paperboard

2.3 Outputs

- Log volume: calculated using taper formulas
- Dry biomass (mass units consistent with the chosen density input)
- Carbon content (mass of C, in the same units)
- CO₂ equivalent: using molecular weight ratio $44/12 \approx 3.667$

3. Module 2: Sawn Products

The Sawn Products module tracks carbon flow and storage from sawn products such as lumber and panels. Users provide dimensional information for the sawn products, product quantity, wood type, wood density, carbon fraction, end-use production type, and processing efficiency from sawn

products to end-use products. The estimated product volume (m³) is converted to carbon mass (kgC) and then passed directly to the End-use Products module to track carbon flux and storage in different carbon pools over time.

3.1 Product Type

Table 2. Product categories and required dimension inputs for Module 2 Sawn Products.

Product Category	Sub-types	Dimension Inputs
Lumber / Timber	Dimensional lumber (2×4, 2×6, glulam beams, framing, decking)	Thickness (mm), Width (mm), Length (m), Quantity (pieces). Nominal 2" = 38 mm; 12 ft = 3.66 m.
Panel / Board	Plywood, OSB, MDF, particleboard (sheet goods)	Thickness (mm), Width (m), Length (m), Quantity (sheets). Standard sheet: 1.22 × 2.44 m; Plywood/OSB: 12-19 mm.
Engineered Wood	Glulam, CLT, LVL, PSL, LSL, I-Joist (structural composites)	Sub-type (dropdown), Depth/Height (mm), Width (mm), Length (m), Quantity (pieces).
Other Solid Wood	Pallets, railway ties, round posts, and other custom products	Total serviceable volume (m ³) entered directly.

3.2 Physical Parameters

Density and carbon fraction can be manually overridden for species not listed above. Typical carbon fraction range for wood: 0.47-0.51.

Table 3. Default oven-dry density and carbon fraction by wood species type.

Species / Type	Examples	Oven-dry density (kg/m ³)	Carbon fraction
Softwood	Pine, Spruce, Fir, Cedar	420	0.50
Hardwood	Oak, Maple, Birch, Ash	580	0.49
Tropical Hardwood	Teak, Meranti, Ipe	680	0.48

3.3 End-Use Category

Select the end-use category that best describes how the product will be used in service. The selection determines the disposal and landfill decay parameters applied to that product pool. A processing efficiency factor (0-1) accounts for trim, kerf, and manufacturing waste that does not enter service.

Table 4. End-use categories with typical service lives and default processing efficiency values.

End-Use Category	Service Life	Processing Efficiency	Notes
Construction	80 years	0.90	Framing, sheathing, structural panels. Suggested for Lumber and Engineered Wood.
Exterior	25 years	0.88	Pressure-treated lumber, railway ties, decking, dock materials.
Household	30 years	0.85	Furniture, flooring, millwork. Suggested for Lumber and Panels.
Graphic Paper	6 years	0.80	Printing and writing paper, newsprint.
Household Paper	0.5 years	0.80	Tissue, toweling, sanitary paper. No recycling pathway.
Other Paper	1 year	0.82	Packaging, cardboard, corrugated containers.

3.4 Step-by-Step Workflow

1. Select a product category (Lumber, Panel, Engineered Wood, or Other Solid Wood) and enter the dimensions or volume.
2. Choose the wood species type (Softwood, Hardwood, or Tropical Hardwood). Oven-dry density and carbon fraction are set automatically. Override if needed.
3. Set the tracking horizon in years (default: 100 years, range: 10-500 years).
4. Select an end-use category (Step 3 in the interface). The processing efficiency is updated to the category default; adjust if needed.
5. Click Run Tracker. Python initializes automatically on first run (30-60 seconds). Subsequent runs within the same session are instant.
6. Review the summary badges and the Carbon Retained Over Time chart. Download the results as a CSV file for external analysis.

3.5 Outputs

After running the tracker, the following results are displayed:

- Total product carbon (kg C): $\text{product volume} \times \text{oven-dry density} \times \text{carbon fraction}$
- Serviceable carbon (kg C): $\text{total product carbon} \times \text{processing efficiency}$ (carbon entering service)
- Carbon retained at year N: sum of in-use pool and landfill pool at the end of the tracking horizon
- Cumulative carbon released at year N: carbon returned to the atmosphere through disposal and decay
- Interactive chart: four time series plotted over the tracking horizon: In-use Pool, Landfill Pool, Total Retained, and Cumulative Released

- Results table: annual values for years 1-20, then every 5 years thereafter
- Download CSV

4. Module 3: End-use Products

This is the core module. It tracks seven categories of wood products through disposal, recycling, landfill, and bioenergy pathways over a multi-decadal time series.

4.1 Input Data

The input data file is a comma-separated values (.csv) file with the following structure:

Required: Input Data File

- First column: Year (integer, e.g. 1961, 1962 ... 2020)
- Remaining columns: one per wood product category, in mass-of-carbon per year
- Column header names must match exactly (case-sensitive)
- Missing product columns are allowed, that product is simply excluded
- Values can be supplied in any consistent mass unit (kg, lb, t, Mt, Tg, ...). Select the matching unit in the interface; the model converts internally and reports outputs in the same units.

Table 5. Required column headers for the End-use Products input file.

Column Name	Product Pool	Description
Year	—	Calendar year (integer). Required.
Biofuel	Bioenergy	Annual biofuel combustion (mass of C per year). Includes industrial + residential fuel wood.
Biochar	Charcoal	Non-energy use biochar production (mass of C per year).
Construction	End-use	Wood products in building construction: sawnwood, structural panels.
Exterior	End-use	Exterior-use products: railway ties, wood decking, dock materials.
Household	End-use	Home application products: furniture, flooring, interior millwork.
Graphic Paper	End-use	Newspaper, printing, writing paper.
Other Paper	End-use	Packaging, cardboard, packing paper.
Household Paper	End-use	Tissue, toweling, sanitary paper. No recycling pathway.

Table 6. Example input data. Values shown in kg C per year for the Maine, USA case study and any consistent mass unit (kg, lb, t, Mt, Tg, ...) may be used as long as the unit selector matches.

Year	Biofuel	Biochar	Construction	Exterior	Household	Graphic Paper	Other Paper	Household Paper
1961	285763275	12447848	179817095	74300620	194099473	173635256	264196012	59754273
1962	282588127	12004344	188776252	99492208	170293682	169884777	270564088	56458287
1963	293701143	17763045	189602353	71383467	163003331	179487717	297712001	55771351

System Boundary Options

- Production approach: all carbon in wood products made from timber harvested in the study region, regardless of where the products are ultimately used. (Used in the Maine case study.)
- Stock-change approach: carbon in wood products physically consumed and stored within the study area, including imports but excluding exports. (Used in the US case study.)
- Select the approach that matches your data source. Both use the same input format.

4.2 Parameters

The parameters file controls the rates for disposal, recycling, and landfill decomposition for each product type. The default parameters are suitable for United States data. For other regions, parameters can be calibrated from published life cycle inventories or expert surveys. For Modules 1 and 2, if users would like to customize these parameters, please upload the parameter file here.

Required: Parameters File

- Three columns exactly: Product, Variable, Parameter
- Product names must match the input data column names
- Variable names must match exactly as shown in the table below
- Parameter values are dimensionless fractions, rates, or years as documented







Table 7. Full reference for the default (developed) parameter set. Variable names listed here match the Variable column in the parameters file (See Section 6. Carbon Flow Equations, for the corresponding equations).

Product	Variable	Default Value	Description
Biofuel	efficiency	1.0	Combustion efficiency (fraction 0-1). Remainder becomes charcoal.

Biochar	decay_1	0.007	Basic annual charcoal loss rate τ (Eq. 1). Baseline decay + reburn rate.
Biochar	decay_2	0.0003	Pool-size related charcoal loss rate σ (Eq. 1). Scales with $\ln(\text{pool size})$.
Construction	disposal_1	0.133	Disposal rate coefficient α (Eq. 2). Amplitude of the Gaussian disposal curve.
Construction	disposal_2	0.028	Disposal rate coefficient β (Eq. 2). Controls the width of the disposal curve.
Construction	disposal_3	80	Service life γ (years) (Eq. 2).
Construction	recycle_1	0.085	Initial recycling rate λ (fraction) at year 1 (Eq. 3).
Construction	recycle_2	0.015	Recycling advancement rate μ (Eq. 3). Accounts for improving recycling technology.
Exterior	disposal_1	0.326	Disposal rate coefficient α .
Exterior	disposal_2	0.041	Disposal rate coefficient β .
Exterior	disposal_3	25	Service life γ (years). No recycling pathway.
Household	disposal_1	0.265	Disposal rate coefficient α , household furniture.
Household	disposal_2	0.031	Disposal rate coefficient β , household.
Household	disposal_3	30	Service life γ (years).
Household	recycle_1	0.085	Initial recycling rate λ (fraction) at year 1.
Household	recycle_2	0.015	Recycling advancement rate μ .
Graphic Paper	disposal_1	1.006	Disposal rate coefficient α , graphic/printing paper.
Graphic Paper	disposal_2	0.0925	Disposal rate coefficient β , calibrated so the disposal integral equals 1.0 at $\gamma = 6$ yr.
Graphic Paper	disposal_3	6	Service life γ (years).
Graphic Paper	recycle_1	0.225	Initial paper recycling rate $\lambda = 22.5\%$ (1961 EPA baseline).
Graphic Paper	recycle_2	0.027	Paper recycling advancement rate μ .
Other Paper	disposal_1	6.036	Disposal rate coefficient α , packing/cardboard paper (fast turnover).
Other Paper	disposal_2	0.555	Disposal rate coefficient β , calibrated so the disposal integral equals 1.0 at $\gamma = 1$ yr.
Other Paper	disposal_3	1	Service life γ (years).
Other Paper	recycle_1	0.225	Same recycling model as graphic paper.
Other Paper	recycle_2	0.027	Same recycling advancement as graphic paper.
Household Paper	disposal_1	12.036	Disposal rate α , tissue/sanitary paper (single-use).

Household Paper	disposal_2	1.1008	Disposal rate β , calibrated so the disposal integral equals 1.0 at $\gamma = 0.5$ yr.
Household Paper	disposal_3	0.5	Service half-life $\gamma = 0.5$ years. No recycling pathway.
Landfill	con_decay1	0.997	Landfill basic decay rate ξ for construction waste (Eq. 4).
Landfill	con_decay2	30	Landfill turnover time ω (years) for construction waste (Eq. 4).
Landfill	ext_decay1	1.178	Landfill basic decay rate ξ for exterior-use waste.
Landfill	ext_decay2	20	Landfill turnover time ω (years) for exterior-use waste.
Landfill	hou_decay1	1.329	Landfill basic decay rate ξ for household wood waste.
Landfill	hou_decay2	15	Landfill turnover time ω (years) for household waste.
Landfill	pap_decay1	0.821	Landfill basic decay rate ξ for paper products.
Landfill	pap_decay2	5	Landfill turnover time ω (years) for paper in landfill.

4.3 Step-by-Step Workflow

1. Open the tracker in your browser. An internet connection is required on first load to download the Python runtime (~50 MB). Subsequent uses can be offline.
2. Click the  End-use Products tab.
3. **Step 1:** Data Source: Select one of the built-in example datasets (Maine, USA or United States), or upload your own production data file. See Section 4.1 for format details and select the matching input units (kg, lb, t, Mt, Tg, ...).
4. **Step 2:** Model Parameters: Use the default parameters for US-based studies. For other regions, upload a custom parameters file (Section 4.2).
5. **Step 3:** Initialize Python: Click  Initialize Python. The first initialization downloads and compiles Pyodide (~30-60 seconds). Subsequent initializations within the same browser session are instant.
6. Run Carbon Tracker: Click  Run Carbon Tracker to execute the model. Results appear in the table, and the Download button becomes active.
7. Plot Input Data: Click  Input Data to visualize the annual production time series for all product categories.
8. Plot Storage Results: Click  Carbon Stock to plot the accumulated carbon storage in each pool over time. Summary badges show the latest-year totals.
9. Download Results: Click  Download Results to save the full model output (all pools, all years) for external analysis.

Tips for Custom Data

1. Pick the input unit that matches your spreadsheet (kg, lb, metric tonne t, Mt, or Tg of carbon). The model converts internally and reports outputs in the unit you selected.
2. If your data is in dry biomass mass rather than carbon mass, multiply by 0.5 (wood carbon fraction $\approx 50\%$) before uploading.
3. Ensure the Year column contains only integer years with no gaps.
4. If a product type is not applicable to your region, simply omit that column.
5. For best results, include at least 30 years of historical data to allow the model to build up realistic initial pool sizes (spin-up period).

5. Module 4: Global WPs Carbon

The Global WPs Carbon module provides annual data on carbon stocks, fluxes, and emissions for individual countries, regions, continents, or the globe using FAO FAOSTAT-based input files.

Data source: Global wood products production and consumption statistics from FAO (FAOSTAT, <https://www.fao.org/faostat/en/#data/FO>). The current dataset spans 1961 to 2024 and tracks carbon across eight end-use categories and the landfill carbon pool.

It has annual stock and flux trajectories for individual pools, aggregated totals, and interactive graphics for exploration at the country and pool levels. Users can directly download the results. Note that fuel and biochar data are not available for all years and countries from the FAO data, and no interpolation was performed for missing data in the current version.

To develop the global wood products carbon flow and storage database, FAO data were preprocessed using the consumption boundary approach, where consumption for a given wood product equals total production plus imports minus exports. All volumes were then converted to carbon mass using product-specific density values and a carbon fraction of 50% dry biomass. The converted quantities were subsequently allocated to eight end-use categories using country-group-specific allocation fractions (see Section 4.3). Country totals were then compared with FAO regional totals for selected product categories, and discrepancies greater than 10% were flagged in a diagnostic report.

WPsC Tracker implements five parameter sets representing broad country groups (Developed Temperate, Transition Economies, Developing Asian, Developing Tropical, and Developing Other) that differ in typical product service life, recycling behavior, and landfill decay characteristics.

5.1 Data Processing Steps

1. Load FAO data: the FAOSTAT file is read and columns are normalized. The script accepts both old-format and new-format FAOSTAT column headers.
2. Compute apparent consumption: for each country and each FAO item, apparent consumption is calculated as Production + Imports – Exports. Negative values are clamped to zero.

3. Convert to carbon mass: FAO values (in 1000 m³ or 1000 tonnes) are converted to kgC using product-specific density and carbon fraction factors. Wood products use kgC per m³ densities; paper and charcoal use kgC per tonne.
4. Allocate to end-use categories: carbon values are allocated to the eight tracker categories (Biofuel, Biochar, Construction, Exterior, Household, Graphic Paper, Other Paper, Household Paper) using country-group-specific allocation fractions.
5. Regional consistency check: country-level sums are compared against FAO regional aggregates. Discrepancies greater than 10% are logged. When country sums differ significantly from reported regional totals, the script uses country-sum values to recompute the region.
6. Save output: one file per country/region is written to the output directory, ready for use with the WPsC Tracker.

5.2 Estimation Parameters

Table 8. Carbon density values used by the FAO preprocessing pipeline for volume-based wood products.

Product	Density (kg/m ³)	Carbon Fraction	kgC/m ³
Sawnwood (coniferous)	500	0.50	250
Sawnwood (non-coniferous)	600	0.47	282
Plywood	540	0.45	243
Particleboard	650	0.44	286
Fibreboard	760	0.43	327
Fuelwood	450	0.47	212
Industrial roundwood	450	0.50	225

Table 9. Carbon content per tonne for mass-based products.

Product	Carbon Fraction	kgC/tonne
Charcoal	0.88	880
Paper	0.44	440
Wood pulp	0.45	450

Table 10. Key parameter values used for the five country groups implemented in WPsC Tracker. Parameters describe differences among country groups in product service life, recycling behavior, and decay dynamics used to track wood product carbon flow and storage.

Parameter	Developed Temperate	Transition Economies	Developing Asian	Developing Tropical	Developing Other
Construction service life (yr)	80	65	50	35	55
Exterior product service life (yr)	25	20	20	12	18
Household product service life (yr)	30	25	20	15	22
Graphic paper service life (yr)	6	5	5	4	5

Recycling base rate (%/yr)	0.085	0.065	0.055	0.025	0.05
Biochar decay base rate (%/yr)	0.007	0.008	0.009	0.012	0.01
Landfill decay base rate (%/yr)	0.997	0.95	0.88	0.7	0.85
Landfill turnover time (yr)	30	28	25	20	25

6. Carbon Flow Equations

The biochar carbon pool decays at a rate that depends on the current pool size, capturing the empirical observation that biochar decomposition slows as labile fractions are progressively exhausted.

$$\rho_c = \tau + \sigma \times \ln(C_c) \quad \text{Equation 1}$$

where ρ_c is the annual charcoal decay rate (fraction of the pool), τ is the basic loss rate, σ is the pool-size dependent loss rate, and C_c is the charcoal carbon pool size. Units are the same as those of the input data (e.g., kg, Tg, or Pg).

For each end-use product category (i.e., construction materials, household products, exterior applications, graphic paper, household paper, and other paper products), carbon retained in active service is tracked as the total carbon stock minus the disposed products. Product disposal is represented using a disposal distribution function that describes the annual probability of a product being removed from service as a function of service age (years) after production follows a Gaussian bell-curve formulation.

$$C_r = C_w - \int_0^{j-i} \frac{\alpha}{e\sqrt{2\pi}} \times e^{\frac{-\beta \times (t_w - \gamma)^2}{\delta}} d_{t_w} \quad \text{Equation 2}$$

where C_r represents the remaining carbon in the wood products pool produced in year i and remaining in year j , and C_w is the total carbon in the wood products produced in year i . α and β are fitted coefficients (unitless), γ is the service half-life (years) of the product type, and t_w is the time since production (years). Units are the same as those of the input data (e.g., kg, Tg, or Pg).

A portion of material leaving the in use pool is recycled into new products or redirected to biofuel, while the remainder is disposed to landfills. Recycling behaviour depends partly on technological development in the wood products sector; therefore, WPsC Tracker represents recycling with a time-dependent function.

$$r = \lambda + \mu \times \ln(k) \quad \text{Equation 3}$$

where r is the recycling rate for a type of recyclable wood products, λ is the recycling rate in the first year (initial year), μ represents the effect of industrial advancement on wood products recycling, and k is the order of year or the year since the initial year (i.e., 0, 1, 2 ... k).

The decay rate of waste wood in landfill depends on product characteristics and decomposition environment. The annual decay rate is modelled as a function of time since disposal and turnover time using a log-normal regression model

$$\rho_l = \xi \times \frac{\ln(t_l)}{\omega \times \sqrt{2\pi}} \quad \text{Equation 4}$$

where ρ_l is the annual decay rate (fraction of pool) for a type of waste wood products in the landfill, t_l is the time (year) since disposition (i.e., 0, 1, 2 ... ω), ξ is the basic decay rate, and ω is the turnover time (year). Units are the same as those of the input data (e.g., kg, Tg, or Pg).

Unit Convention

- Input data may be provided in any consistent mass-of-carbon unit: kg, lb, metric tonne (t), Mt, or Tg.
- The unit selector in the interface tells the model how to interpret the values; outputs are reported in the same unit.
- To convert from dry biomass to carbon: multiply by 0.50 (± 0.02 for most wood species).
- 1 Tg = 10^{12} g = 1 Mt = 1 million metric tonnes (also written MMT C).
- To convert from mass of C to CO₂ equivalent: multiply by 3.667 (44/12 g/mol).

7. Questions

Q: How long does initialization take?

The first initialization in a new browser session downloads Pyodide (~50 MB) and compiles the Python packages. This takes 30-90 seconds depending on your internet connection. Subsequent initializations within the same session are near-instant. The page must remain open during initialization.

Q: Does my data leave my computer?

No. All computation runs entirely within your browser using WebAssembly. No data is transmitted to any server. The uploaded files are only accessible to the Python runtime running locally in your browser tab.

Q: My input file gives an error. What should I check?

- Column headers are case-sensitive. ‘Construction’ works; ‘construction’ does not.
- All values must be numeric. Remove commas used as thousands separators.
- The Year column must be integers with no missing years.
- The file must use comma separation, not semicolons (common in European Excel exports).
- Save from Excel as ‘CSV UTF-8 (Comma delimited)’ format.

Q: Can I use units other than kg C?

Yes, select the matching Input Units control before running. Supported units include kg, lb, metric tonne (t), Mt, and Tg of carbon. The model converts internally; outputs are plotted and downloaded in the unit you selected.

Q: How do I convert dry biomass weight to carbon mass?

Multiply dry biomass by 0.50 (the default carbon fraction for most wood species). For example, 1,000 kg dry wood \approx 500 kg C. You can also use the Industrial Logs tab to estimate the carbon content of individual log dimensions.

Q: How do I parameterize the model for a region outside the US?

Prepare a custom parameters file (Section 4.2) with region-appropriate values for service lives, recycling rates, and landfill decay rates. Parameters can be obtained from national life cycle inventory databases, industry surveys, or by calibrating against observed carbon stock data.

Q: How are countries assigned to parameter groups in the Global module?

Countries are assigned to one of five groups based on an internal lookup table covering approximately 150 countries. Countries not explicitly listed default to the developed set. The assignment reflects typical product use patterns, recycling infrastructure, and climate-related decay characteristics.

8. Citation and License

- Zhao, J., Wei, X., Hayes, D., Daigneault, A., Woodall, C., Poulter, B., Weiskittel, A. WPsC Tracker: An Interactive Web-Based Tool for Wood Products Carbon Tracking.
- Wei, X., Zhao, J., Hayes, D., Daigneault, A. & Zhu, H. (2023). A life cycle and product type based estimator for quantifying the carbon stored in wood products. Carbon Balance and Management. 18, 1. [10.1186/s13021-022-00220-y](https://doi.org/10.1186/s13021-022-00220-y)

License

This web application is released under the MIT License.