Timber in Construction Roadmap Industry Net Zero Actions

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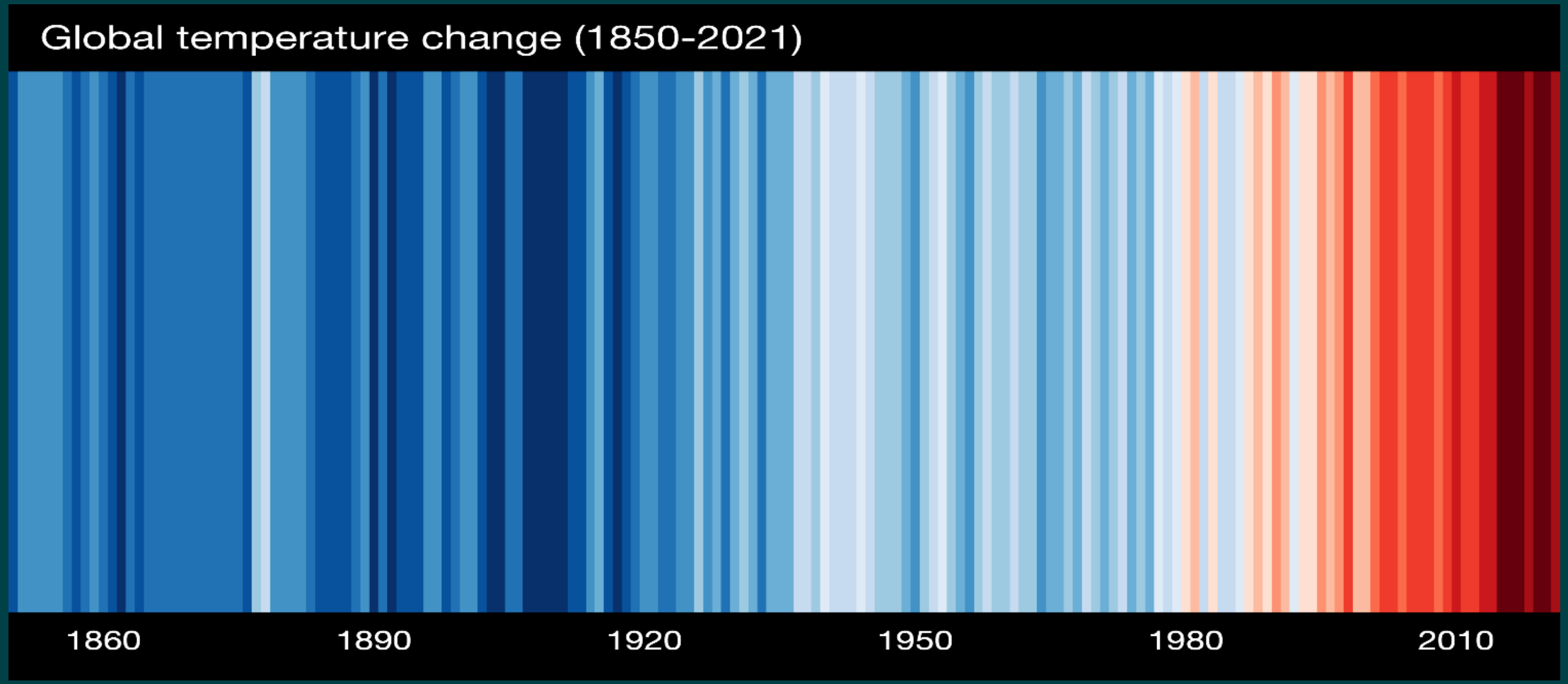

Drivers for Net-Zero Carbon

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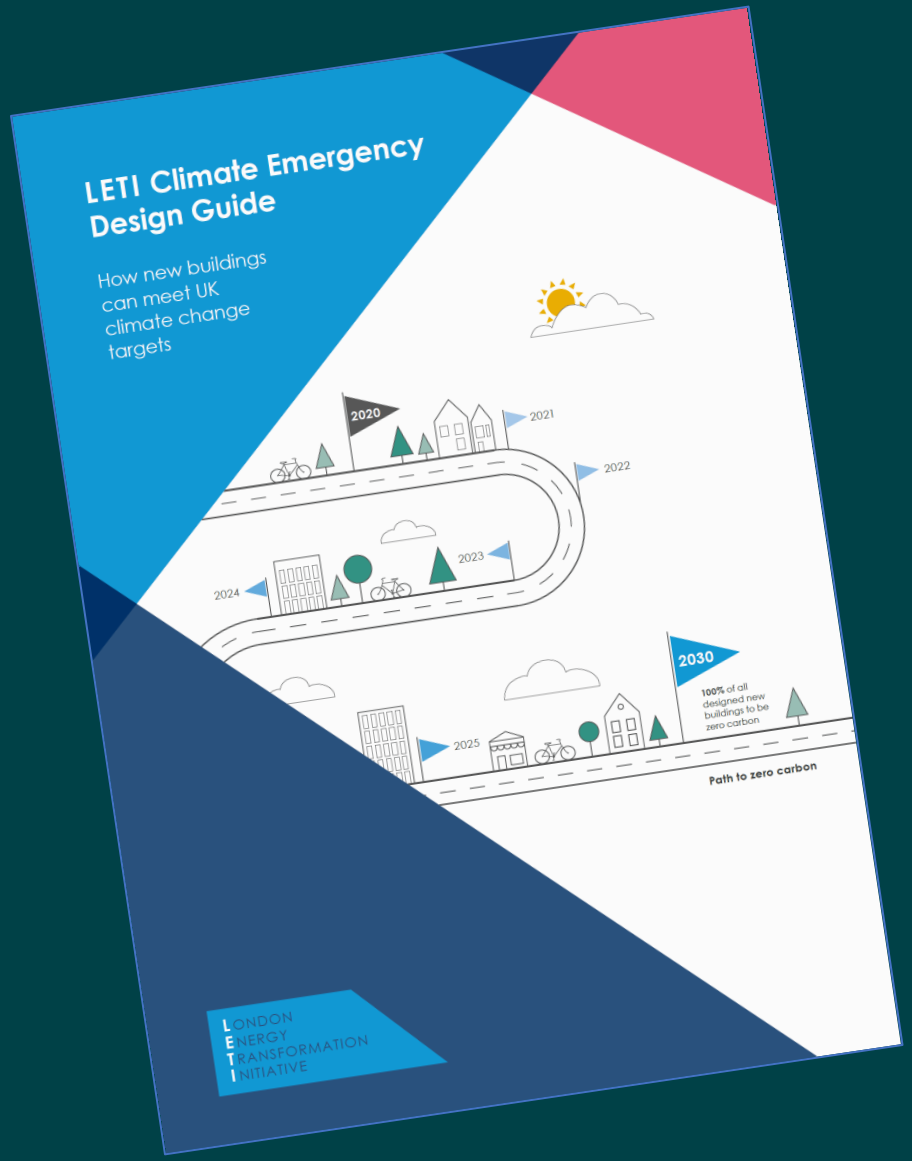
- The need to limit global warming to well below 2°C, preferably to 1.5°C, compared to pre-industrial levels as agreed at COP 21 in Paris (Dec 2015).
- 2023 hottest year on record with average temps 1.48°C above pre-industrial levels.
- UK Government legal target to reach Net-Zero by 2050 (June 2019), with interim target of 78% reduction by 2035 compared to 1990 levels (April 2021).
- Targets from various organisations within our value chain, including the Construction Leadership Council, World & UK Green Building Councils, Manufacturers and Merchants.

Why Measure Carbon?



LETI* Climate Emergency Design Guide – Jan 2020

Foreword:

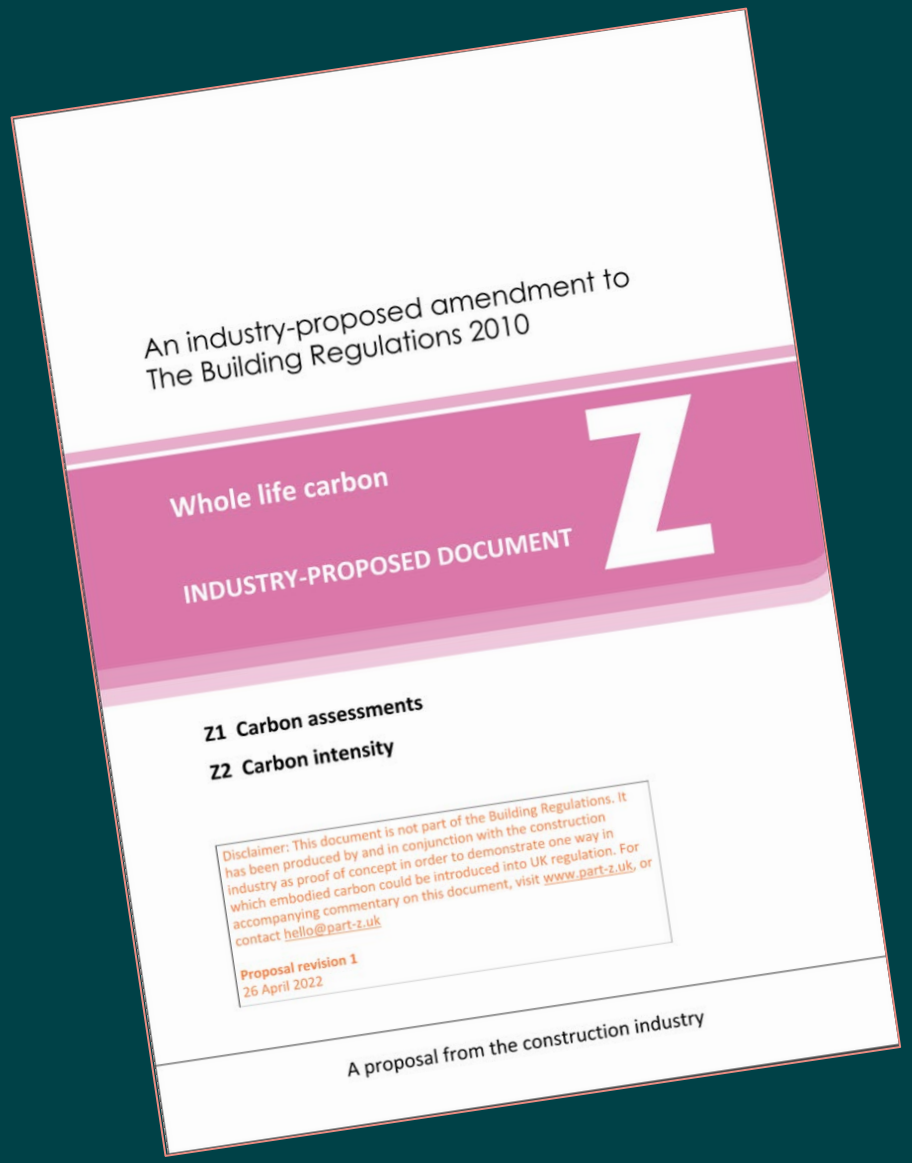
"Leading scientists now say that unless we change course drastically, within the lifetime of people alive today, we are heading for a world which can support only 0.5 to 1 billion people. Such is the climate and ecological emergency."

Pooran Desai OBE Hon FRIBA

Co-founder, Bioregional

*Low Energy Transformation Initiative

Why Measure Carbon?



Part Z – March 2022

Industry proposed amendment to the Building Regulations which outlines requirements on the assessment of whole life carbon emissions, and limiting of embodied carbon emissions, for all major building projects.

Timber in Construction Roadmap – Dec 2023

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- “Utilising timber in the built environment will support progress towards the Net Zero Target. The built environment is responsible for approximately 25% of UK emissions.”
- “Timber in construction can reduce the Whole Life Carbon, the full carbon impact, of our built environment.”
- “Where timber has been harvested from sustainably managed forests, timber products also act as a carbon store, locking away carbon for the duration of that product’s life, (and the life of any recycled wood products made from the original product).”

Industry will:

- Continue voluntary work to measure and reduce embodied carbon through the Future Homes Hub Delivery Plan and Built Environment Carbon Database.
- Encourage the inclusion of data on projects that use timber in BECD.
- Improve the quality of timber EPDs by 2028, including creation of free to use timber EPD database being developed by Timber Development UK.

TDUK Net-Zero Target

Timber Development UK signed up to SME Climate Hub Commitment Jan 2022:

“Timber Development UK, recognising that climate change poses a threat to the economy, nature and society at large, commits to take action immediately in order to:

- *Support our members in halving greenhouse gas emissions intensity before 2030*
- *Achieve net-zero emissions before 2050*
- *Disclose our progress on a yearly basis*

In doing so, we are proud to be recognised by the United Nations Race to Zero campaign, and join governments, businesses, cities, regions, and universities around the world with the same mission.”

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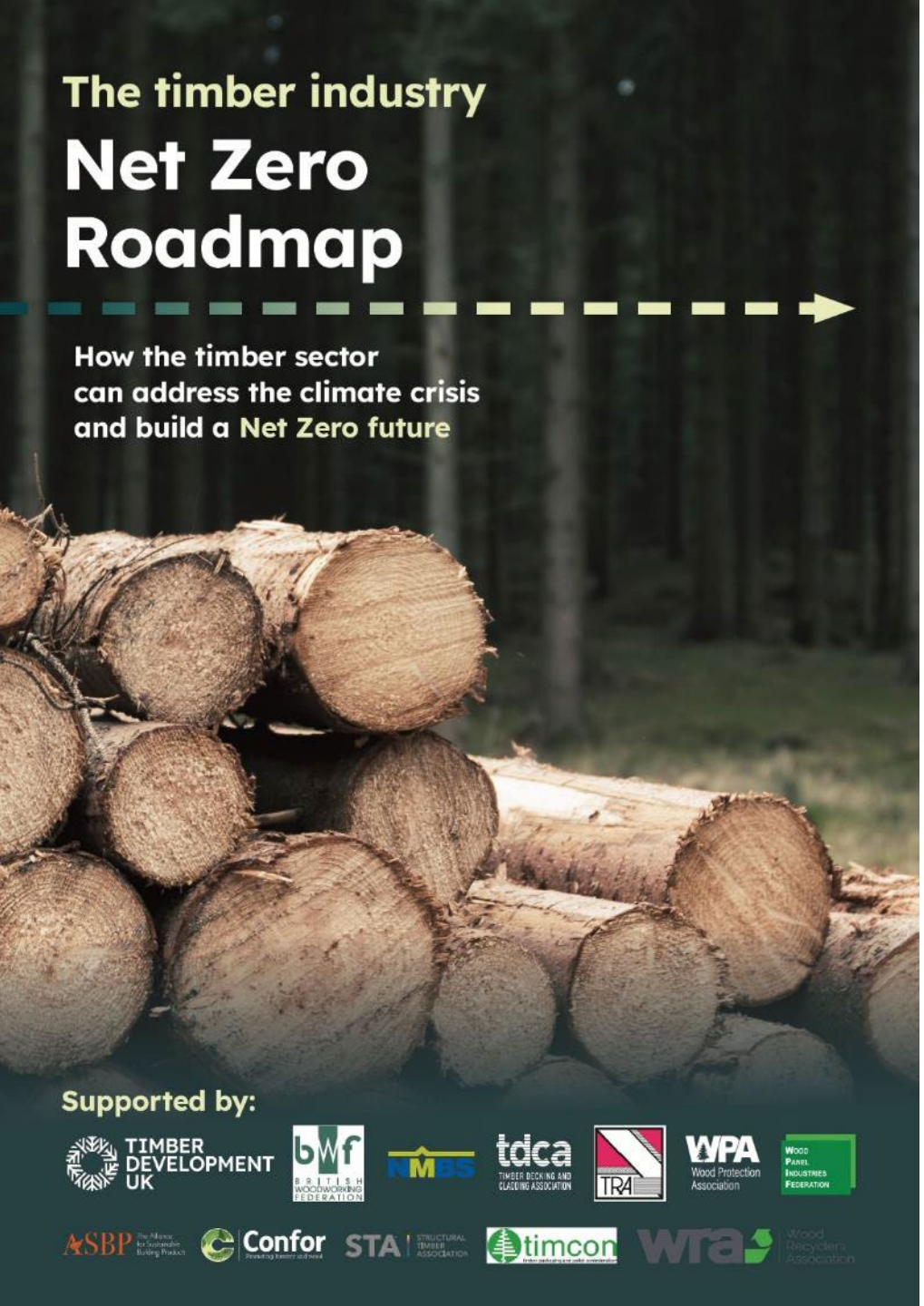
Timber Industry Net Zero Roadmap

Supporting Associations



Energise

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Sector Net Zero roadmap, sector standards / guidance and toolkit (opportunity checklist, action plan template, communications template)

Carbon calculator for ongoing use (Excel or option to subscribe to Net Zero Club online tool)

High-level policy costs for implementing emissions reduction projects (Scope 1 & 2)

Understanding of suitable offset options

Industry Material Flows

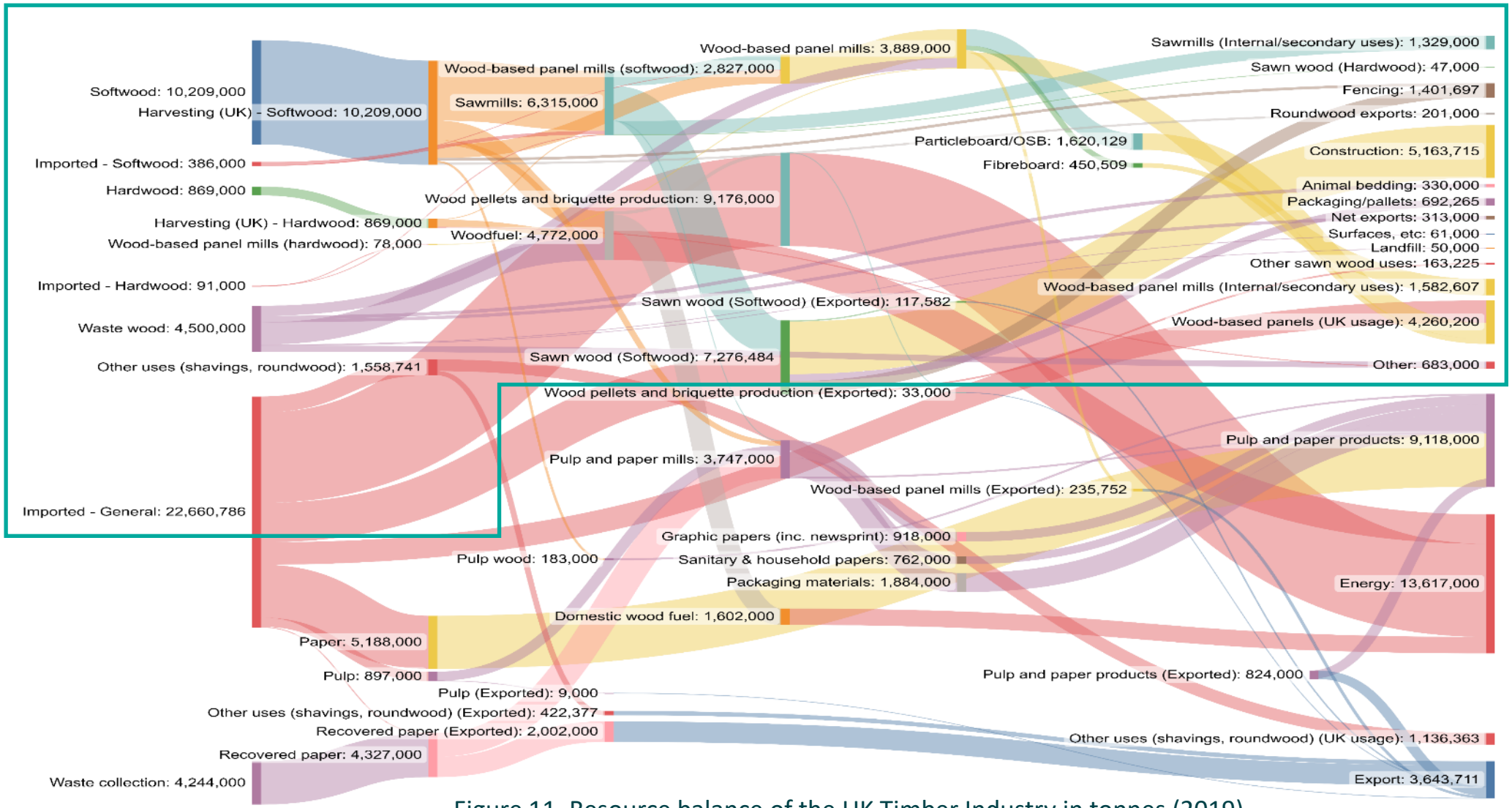

Figure 11. Resource balance of the UK Timber Industry in tonnes (2019)

Timber Industry Emissions Footprint

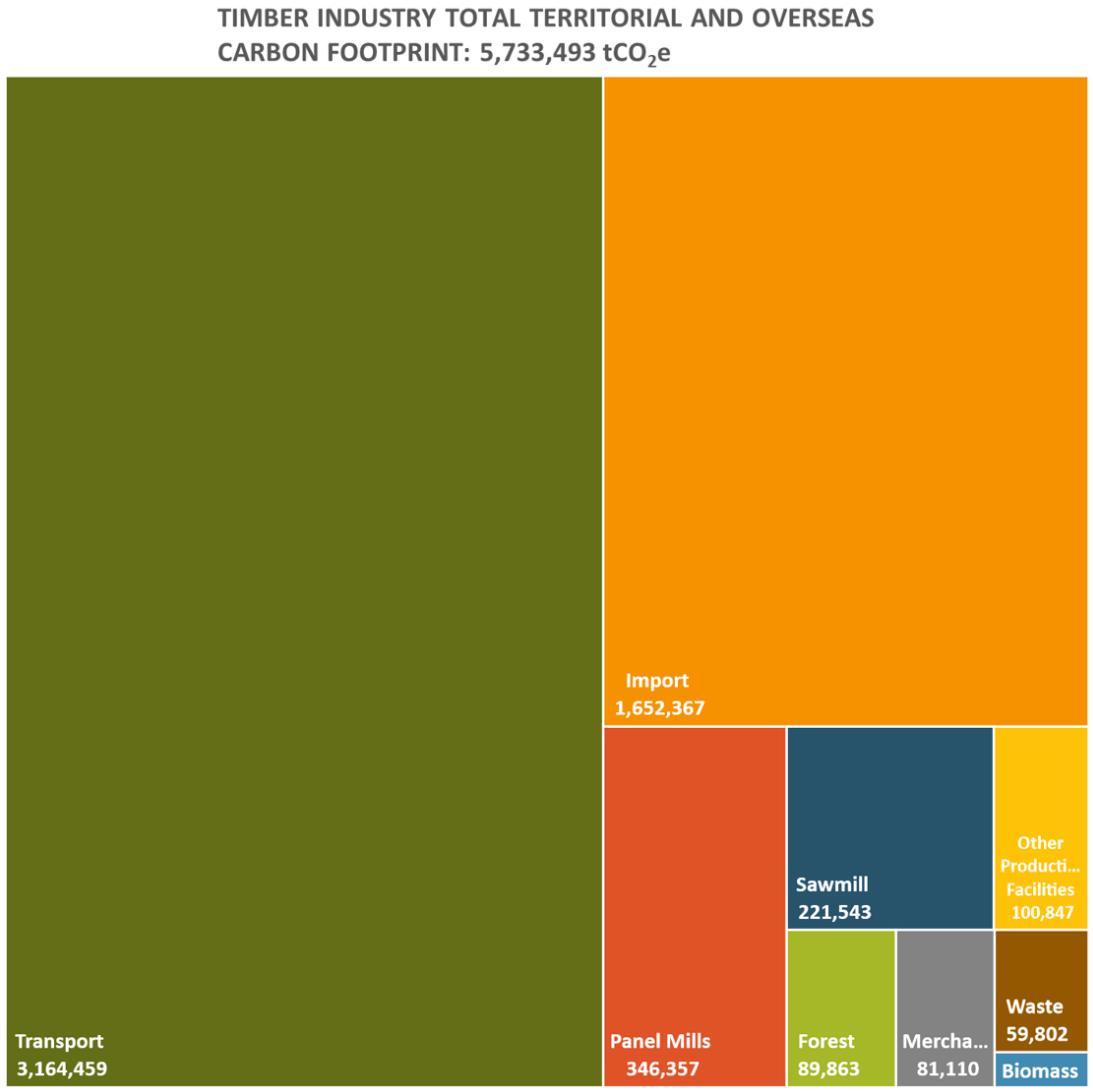

Figure 12. Emissions footprint of the Timber Industry (territorial & overseas)*

- Timber related industries in the UK* responsible for **1,575,356 tCO_2e** territorial emissions (0.35% of UK).
- Very low compared to other industries:
  - Steel: **12 million tCO_2e** (2.7% UK)
  - Concrete: **7.3 million tCO_2e** (1.5% UK)
- Timber industry also responsible for 4,158,137 tCO_2e of imported embodied emissions, which if added to the above, total consumption emissions still only 0.75% of total UK emissions.

*Excludes paper, cardboard, pulp, and imported biomass for the energy industry.

Timber Industry Emissions Footprint

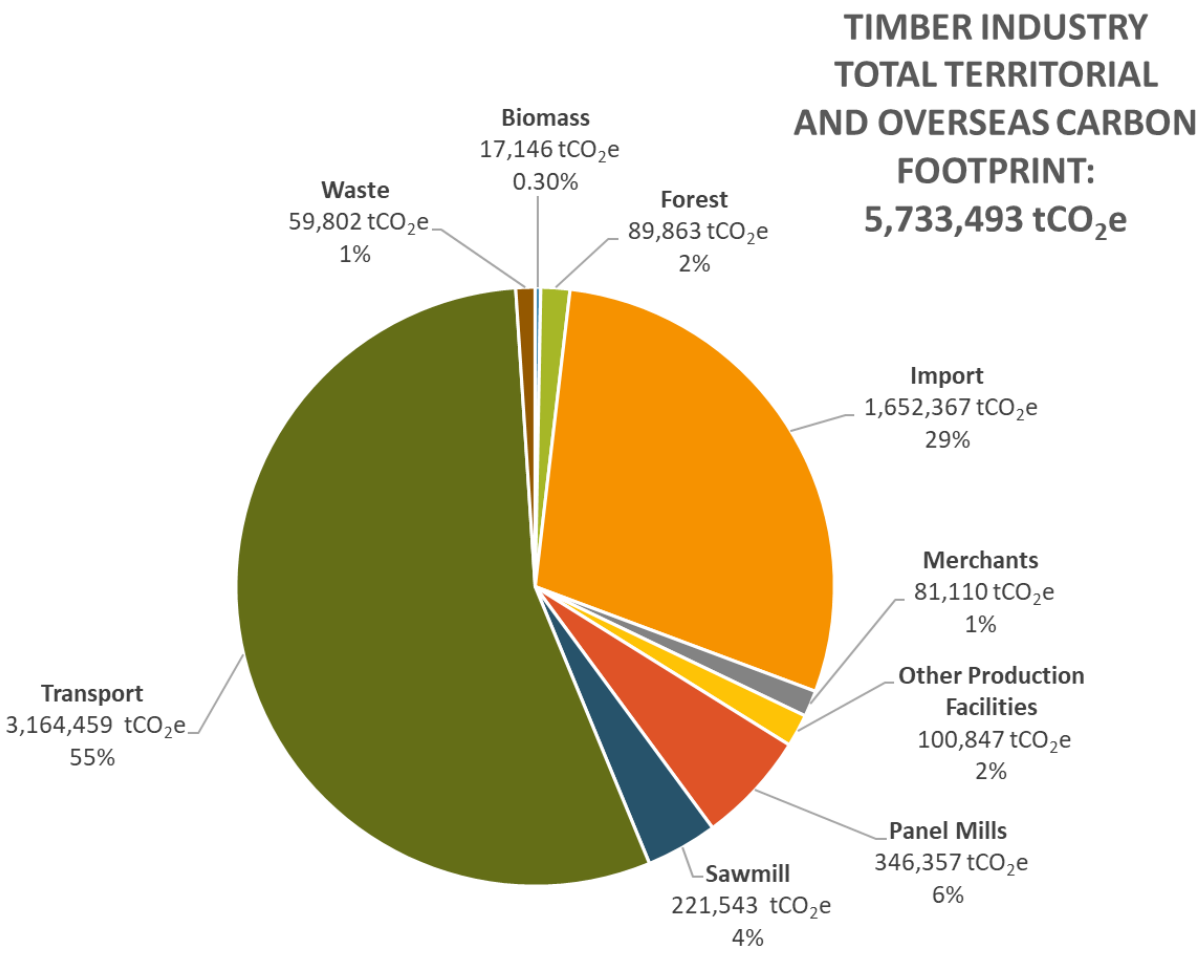

Figure 13. Emissions footprint of the Timber Industry (territorial & overseas)*

Based on total consumption emissions:

- 55% Transportation of timber products
  (inc. transport of wood products from country of origin)
- 29% Imported embodied emissions
  (processing of wood products in country of origin)
- 13% UK production facilities & merchants
- 2% Forest activities
- 1% Waste

*Excludes paper, cardboard, pulp, and imported biomass for the energy industry.

Timber Industry Net Zero Transition

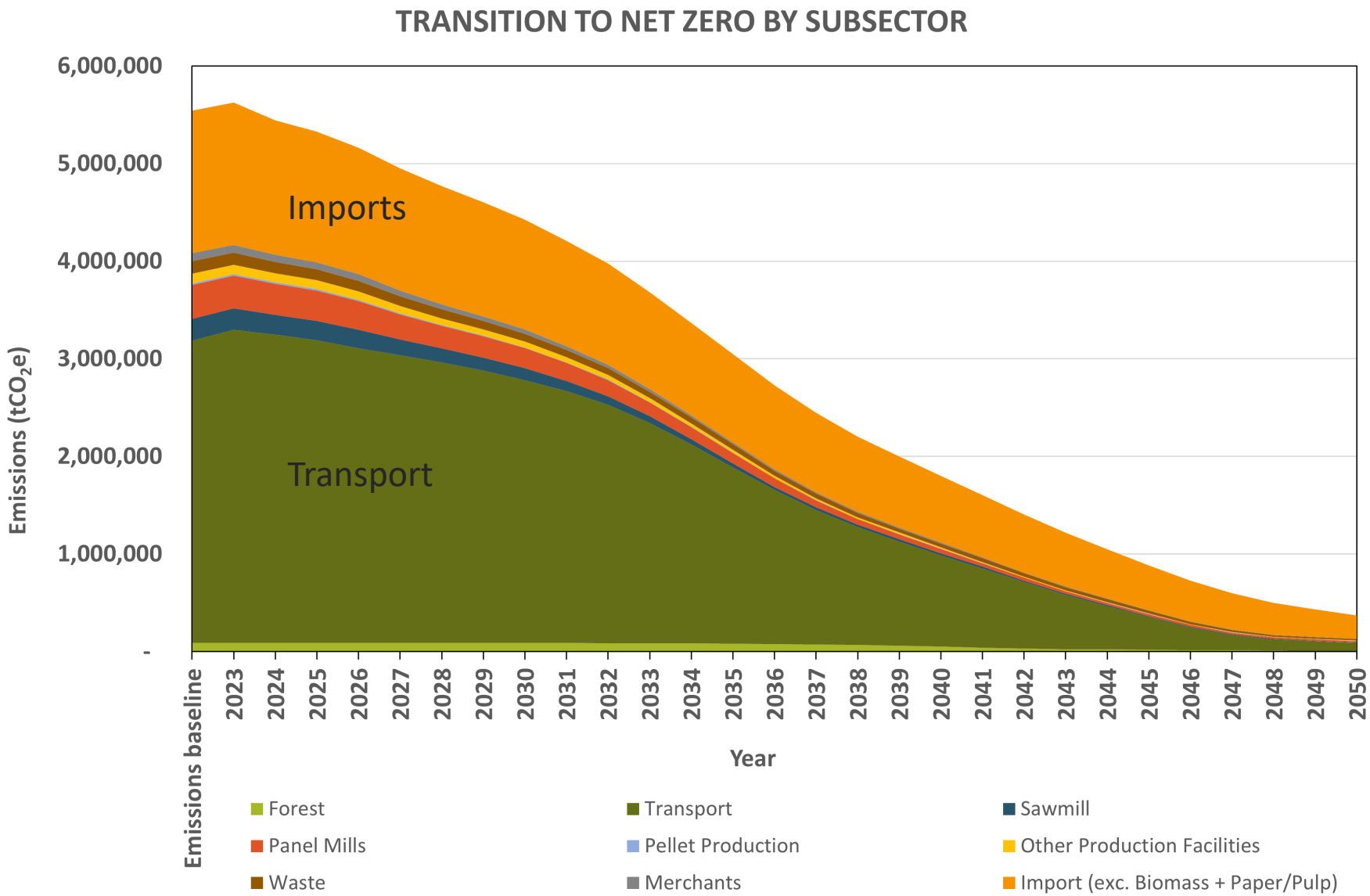

Figure 34. Transition to Net Zero for the UK Timber Industry

Policy Recommendations

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1. Industry should align to GHG protocol to report Scope 1 & Scope 2 emissions by all non-SME operators by 2023.
2. Set industry standard to compile full scope carbon footprints (inc. Scope 3) by 2025.
3. Reduce road going transport emissions intensity by 25% by 2030, and 50% by 2035.
4. Reduce processing/manufacturing emissions intensity by 50% by 2030.
5. Reduce forestry emissions intensity by 50% by 2040.
6. Reduce Scope 1 & 2 carbon intensity of the industry by 90% by 2045.
7. Reduce Scope 3 carbon intensity of the industry by 90% by 2050.
8. The industry will develop a specific circularity/resource efficiency roadmap by 2024 to accelerate the activity in this key area.
9. Nature-based solutions (combined with the above reductions) focused on permanent carbon removals to be used for offsetting.
10. The industry will support targets/initiatives to increase domestic production and expansion of the domestic woodland stock.

Emission Scopes and Data

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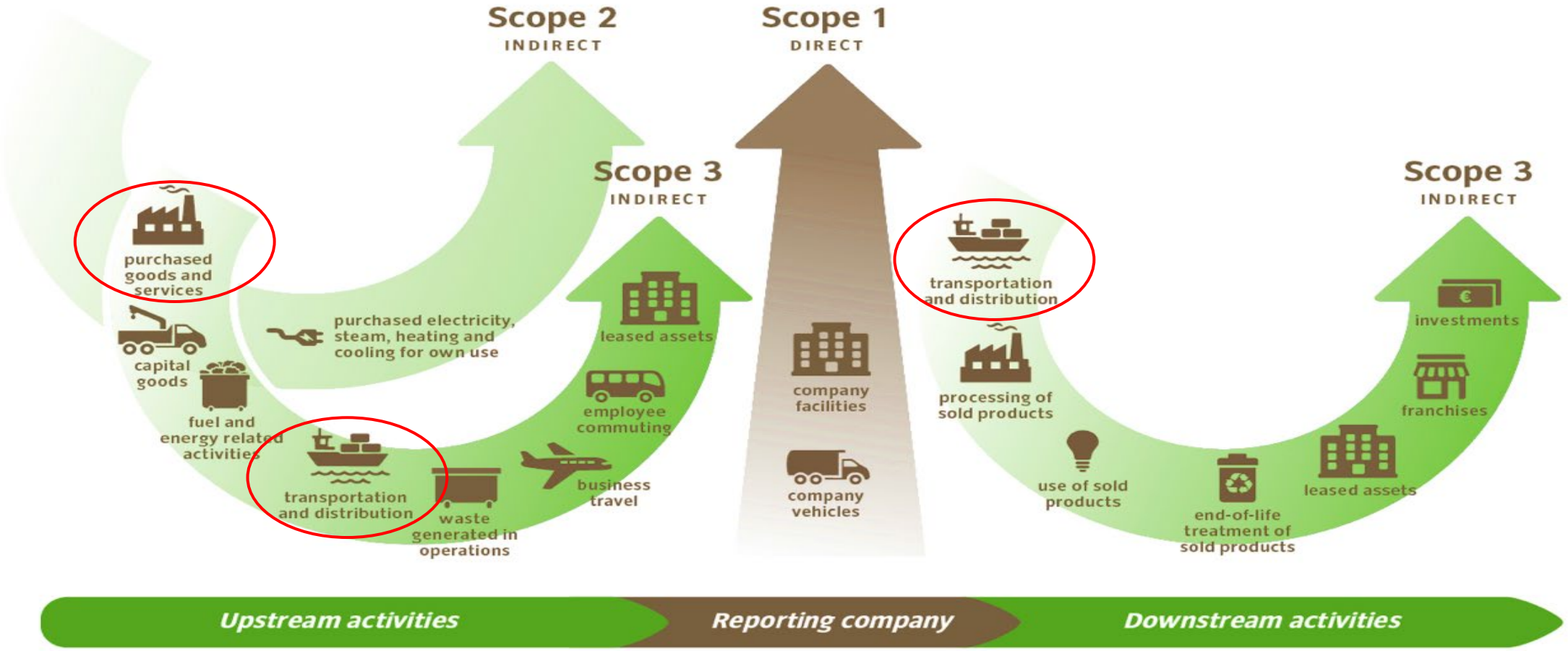
CO_2 CH_4 N_2O HFCs PFCs SF_6 NF_3



Source – Greenhouse Gas Protocol

Transport Emission Reductions - Now

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3. Reduce road going transport emissions intensity by 25% by 2030, and 50% by 2035.
6. Reduce Scope 1 & 2 carbon intensity of the industry by 90% by 2045.
7. Reduce Scope 3 carbon intensity of the industry by 90% by 2050.

Typical Energy Savings (as a % of total usage)	Cars	Truck
Tyre Replacement to A class	1.67%	2.65%
Tyre optimal inflation pressure	3%-5%	3%-5%
Driver style (training)	5-10%	5-10%
Reduce idle time	2%	2%
Aerodynamics (Cab roof deflectors, air dams, cab sun visors, cab side-edge turning vanes)		5%-10%
Wheel alignment	2.00%	4.50%
Turn off air conditioning	1%-10%	1%-10%

Table 3. Operational savings in an HGV

Up to 30% reductions with efficiency improvements and route optimisation.

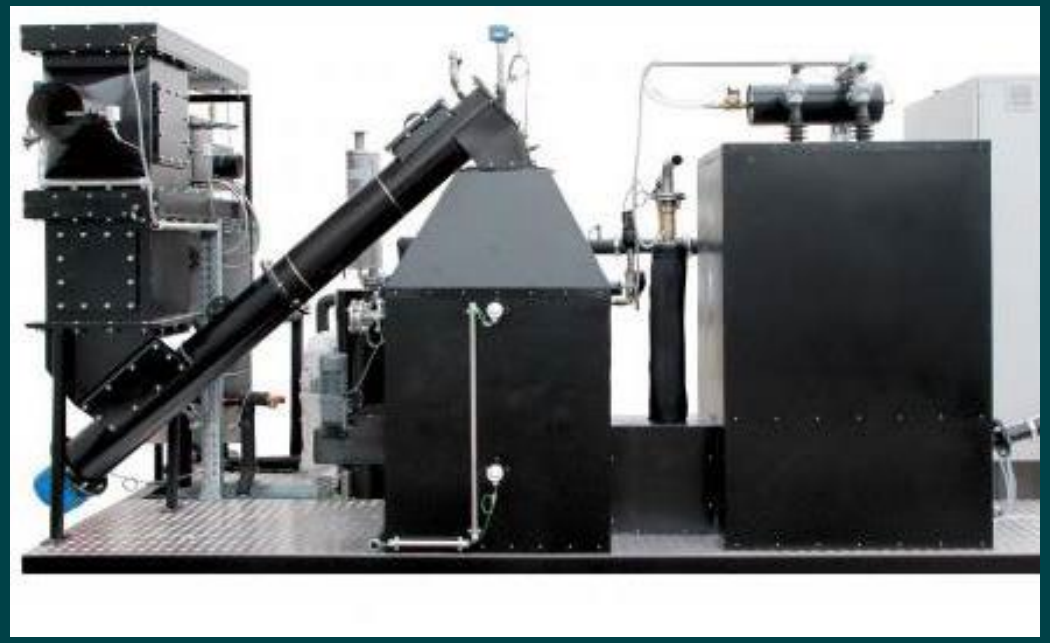
Transport Emission Reductions - Future

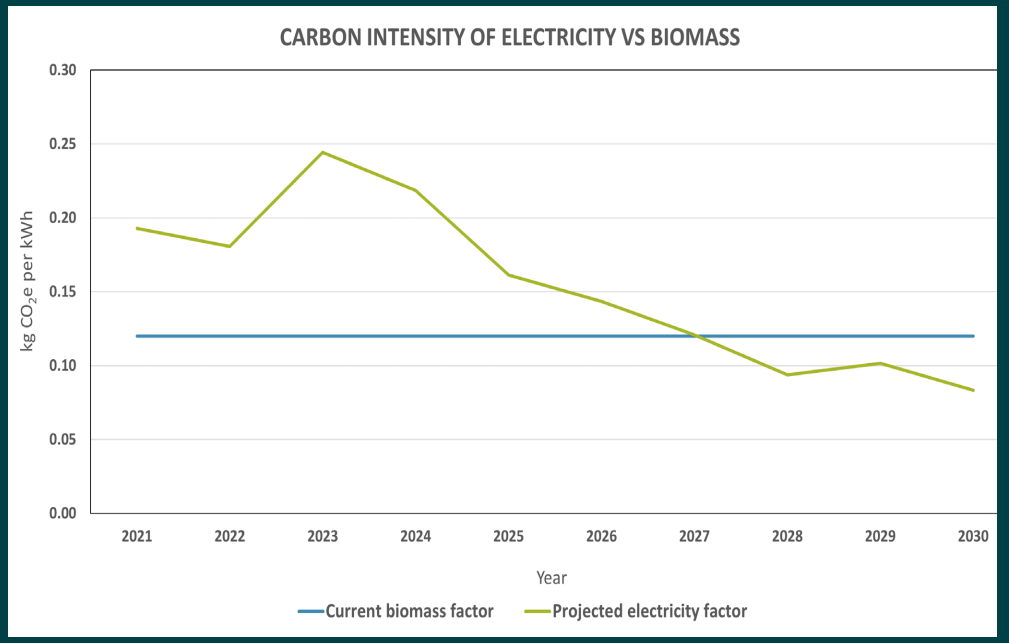
3. Reduce road going transport emissions intensity by 25% by 2030, and 50% by 2035.
6. Reduce Scope 1 & 2 carbon intensity of the industry by 90% by 2045.
7. Reduce Scope 3 carbon intensity of the industry by 90% by 2050.

Zero emission Electric (or hydrogen?) powered trucks by 2030

Processing Emission Reductions

4. Reduce processing/manufacturing emissions intensity by 50% by 2030.
6. Reduce Scope 1 & 2 carbon intensity of the industry by 90% by 2045.
7. Reduce Scope 3 carbon intensity of the industry by 90% by 2050.





Energy efficiency improvements along with transition away from natural gas to biomass and/or electric for heat (drying and space heating).

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Whole Life Carbon Assessments

Industry Approach to Carbon Measurement

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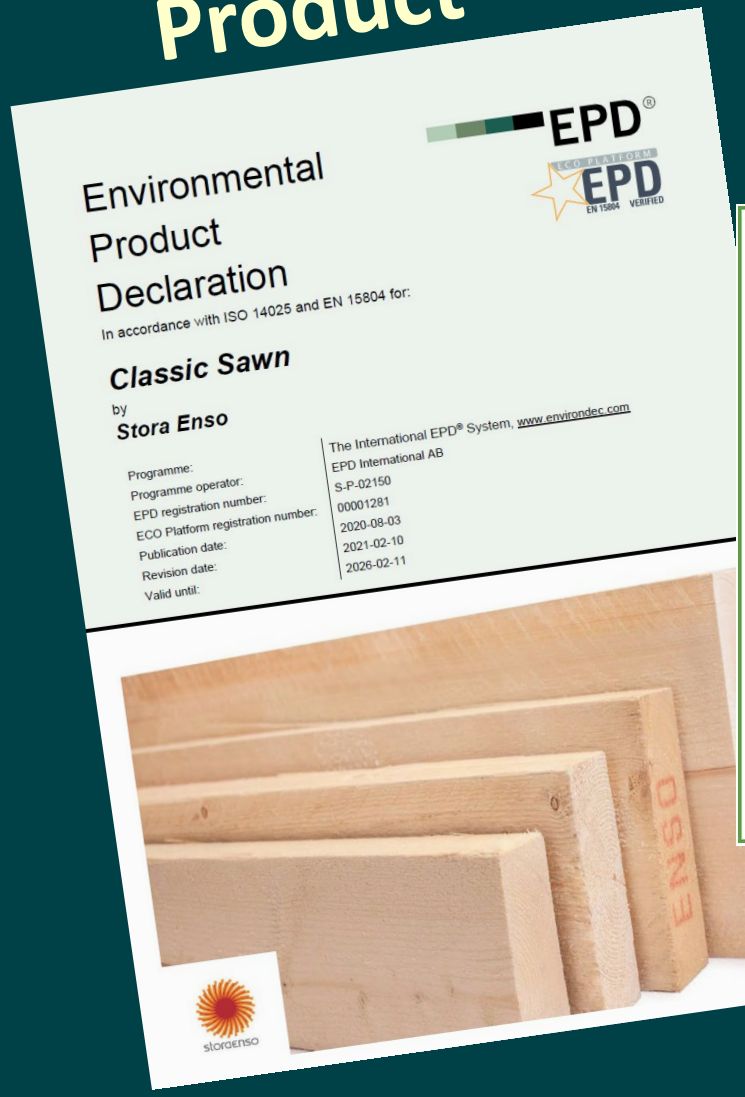
Product



Assemblies & Sub-Assemblies

AECB Carbon Calculator

Building

TDUK Technical Papers on Measuring Carbon

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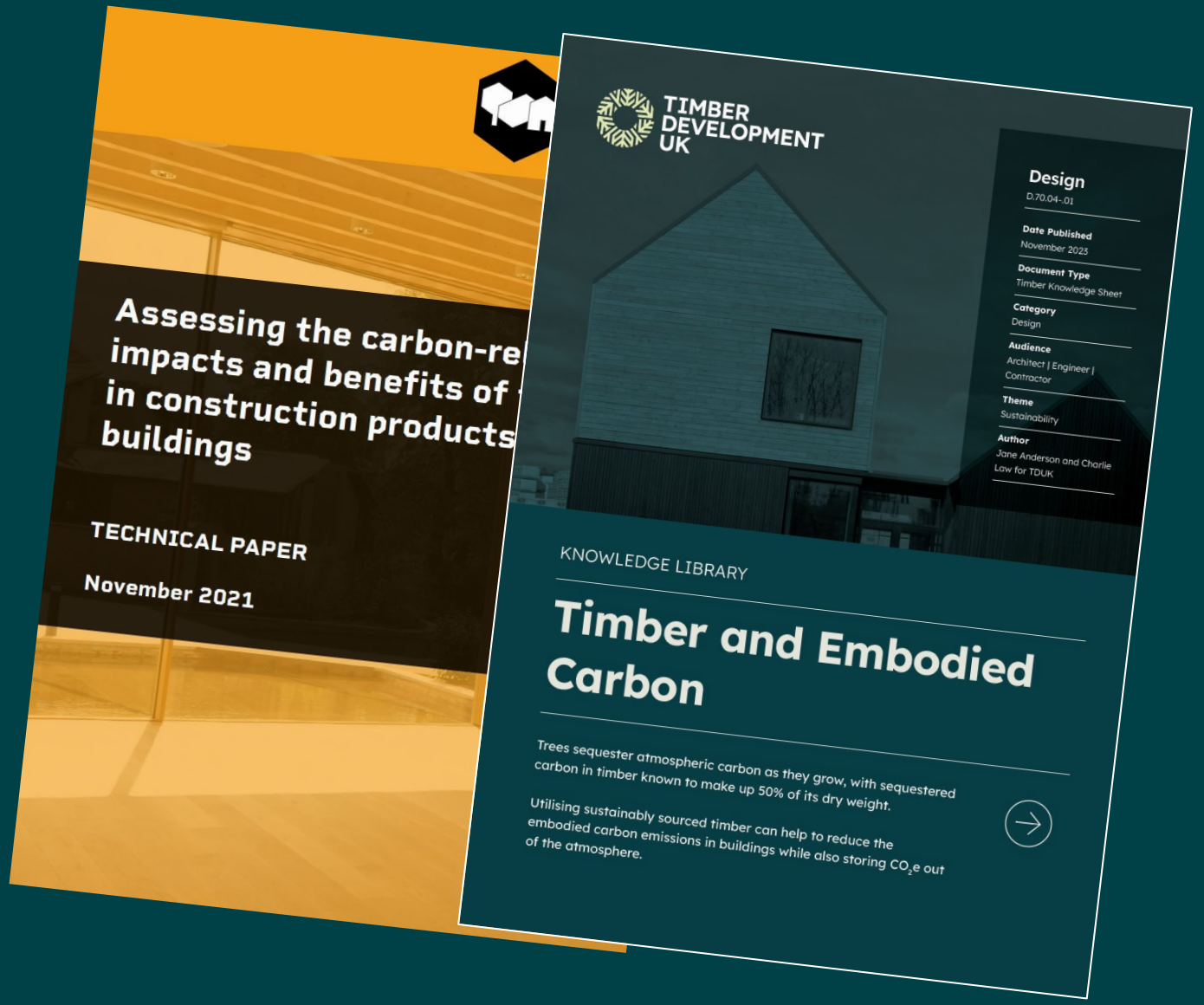
Three key sections:

- Carbon related impacts of timber
- Timber Environmental Product Declarations (EPD)
- Assessing timber in a Whole Life Carbon building level assessment

Timber and Embodied Carbon Summary paper also available



Author:
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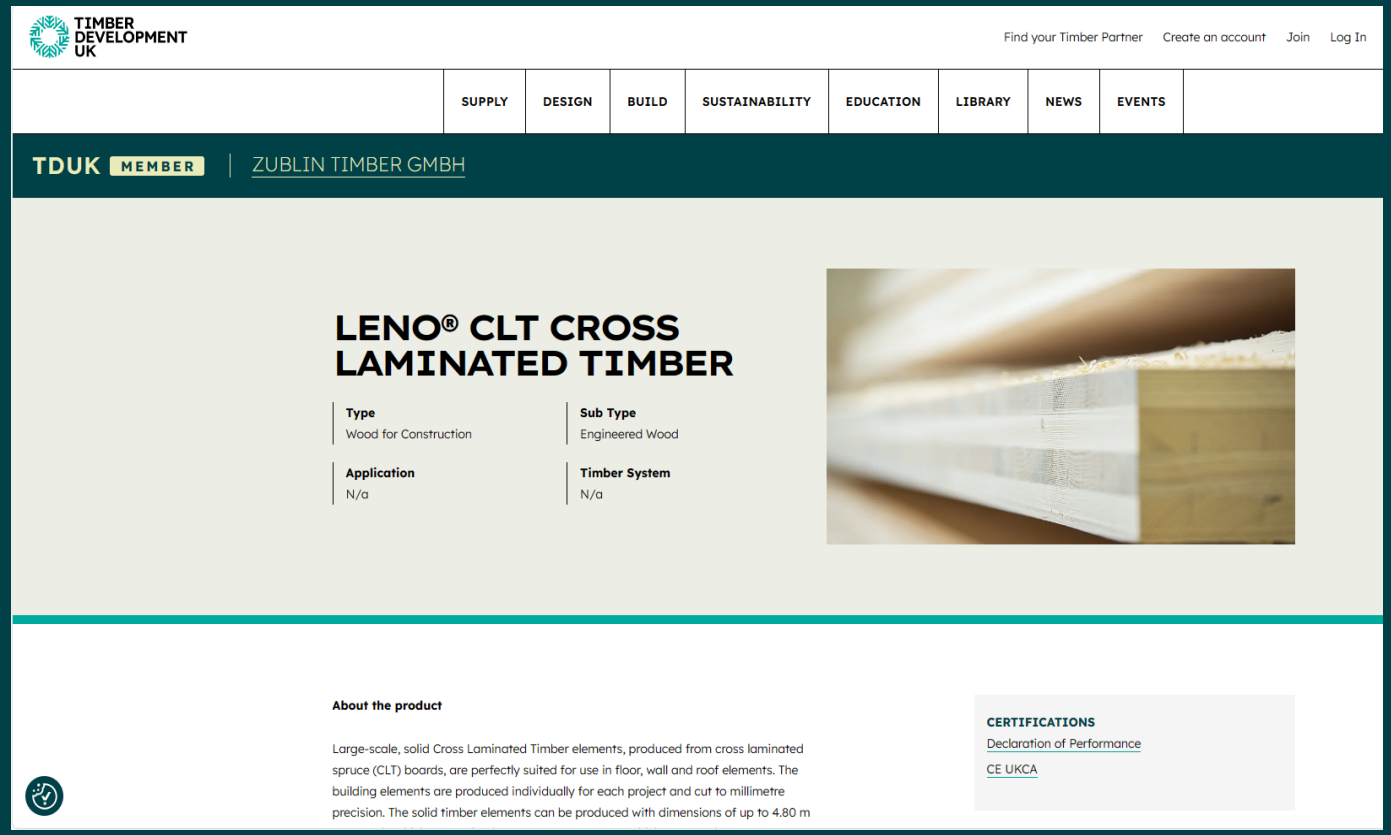
Founder & Director
Construction LCA

EPD Database Project

- Database created of all available EPDs for timber products used in the UK
- Weighted average A1-A4 embodied carbon figures calculated
- Weighted average A1-A4 embodied carbon data verified and published for use by industry
- Will be updated annually with latest EPD data



EPD Database Project

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	Number of EPD Data Points	Declared Unit	UK Average				Import Weighted Average				UK/Import Weighted Average			
			A1-A3 Biogenic Carbon Content $kgCO_2e$/units	A1-A3 Total Exc. Biogenic $kgCO_2e$/unit	A1-A3 Total inc. Biogenic $kgCO_2e$/unit	A4 Transport $kgCO_2e$/unit	A1-A3 Biogenic Carbon Content $kgCO_2e$/unit	A1-A3 Total Exc. Biogenic $kgCO_2e$/unit	A1-A3 Total inc. Biogenic $kgCO_2e$/unit	A4 Transport $kgCO_2e$/unit	A1-A3 Biogenic Carbon Content $kgCO_2e$/unit	A1-A3 Total Exc. Biogenic $kgCO_2e$/unit	A1-A3 Total inc. Biogenic $kgCO_2e$/unit	A4 Transport $kgCO_2e$/unit
Sawn Softwoods	19	m^3	-764	107	-657	38	-742	56	-690	56	-750	74	-679	50
Cross Laminated Timber (CLT)	12	m^3	N/A	N/A	N/A	N/A	-758	102	-655	83	-758	102	-655	83
Glue Laminated Timber (Glulam)	14	m^3	N/A	N/A	N/A	N/A	-762	132	-630	69	-762	132	-630	69
Laminated Veneer Lumber (LVL)	3	m^3	N/A	N/A	N/A	N/A	-782	273	-509	76	-782	273	-509	76
I-Joists	5	lm	-6.12	1.94	-4.18	0.28	-9.58	6.56	-3.02	0.59	-7.85	4.25	-3.60	0.43
Softwood Plywood	7	m^3	N/A	N/A	N/A	N/A	-768	235	-561	168	-768	235	-561	168
Hardwood Plywood	5	m^3	N/A	N/A	N/A	N/A	-871	596	-426	242	-871	596	-426	242
Orientated Strand Board (OSB)	6	m^3	-973	112	-861	27	-1,025	217	-808	108	-989	143	-845	51
Medium Density Fibreboard (MDF)	4	m^3	-965	258	-707	34	-1,069	432	-636	122	-1,020	350	-669	80
Chipboard	7	m^3	-1,010	320	-690	23	-1,008	238	-770	81	-1,009	295	-714	40

EPD Database Project

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Future Homes Hub

ARCHITYPE

ARUP

BUROHAPPOLD ENGINEERING

whitby wood

The Institution of StructuralEngineers

B&K HYBRID SOLUTIONS

Call to Action

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- Adopt the Timber Industry Net Zero Roadmap and act on the recommendations.
- Timber industry members to improve reporting of Scope 1 & 2 emissions by end of 2023, and Scope 3 by end of 2025 (Recommendations 1-2).
- Implement relevant emission reduction opportunities identified in the Roadmap. These will save carbon and reduce cost over time (Recommendations 3-7).
- Incorporate Circular Economy design principles to ensure optimum resource efficiency, long life, and end of life reuse (Recommendations 8).
- Support targets and initiatives to increase domestic production, e.g. UK tree planting schemes to offset residual carbon emissions (Recommendations 9-10).
- Insist on EPDs from your supply chain, and upload these to the TDUK industry database, alongside developing Whole Life Carbon data / EPDs for your own products.

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Thank You