

ICABE 2016 London

**18th International Conference on
Architecture and Built Environment**

Climate Change Impact Due to Timber Product Imports in the UK

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17th October 2016



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Buildings consume between 40-50% of energy in the world
(different authors referring to different countries and regions)

The building sector has the most potential for delivering significant and cost-effective GHG emission reductions
(UNEP SBCI)

The energy consumption assessment should be made through a life cycle approach
(UNEP SBCI)



INTRODUCTION

PRODUCTION



TRANSPORT



EXTRACTION



CONSTRUCTION



BUILDING LIFE CYCLE

USE



DEMOLITION



DUMPING





TIMBER INDUSTRY IN THE UK

Between 2002 and 2014, construction has regularly consumed 60% or more of all sawn softwood used.
(Forestry Commission)

The UK is one of the world's largest importers of Wood and Wood products.

Nearly 80% of sawn softwood used in UK construction is imported.
(The Structural Engineer)

Sawn Wood is one of the top-5 imported construction materials in the UK
(National Statistics)



AIM AND OBJECTIVES



TIMBER



CONSTRUCTION



IMPORTS



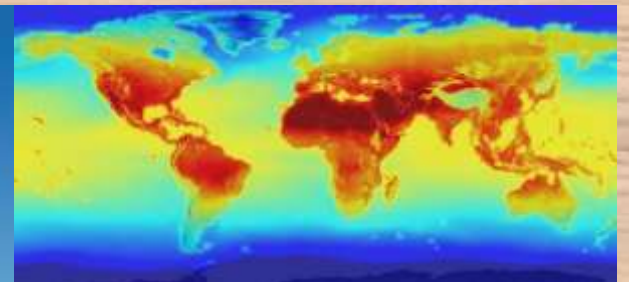
TRANSPORT



CO₂ EMISSIONS



CLIMATE CHANGE





AIM

Analyze climate change impact due to transport of timber products consumed in the UK.

OBJECTIVES

Estimation of carbon footprint of timber product imports in the UK.

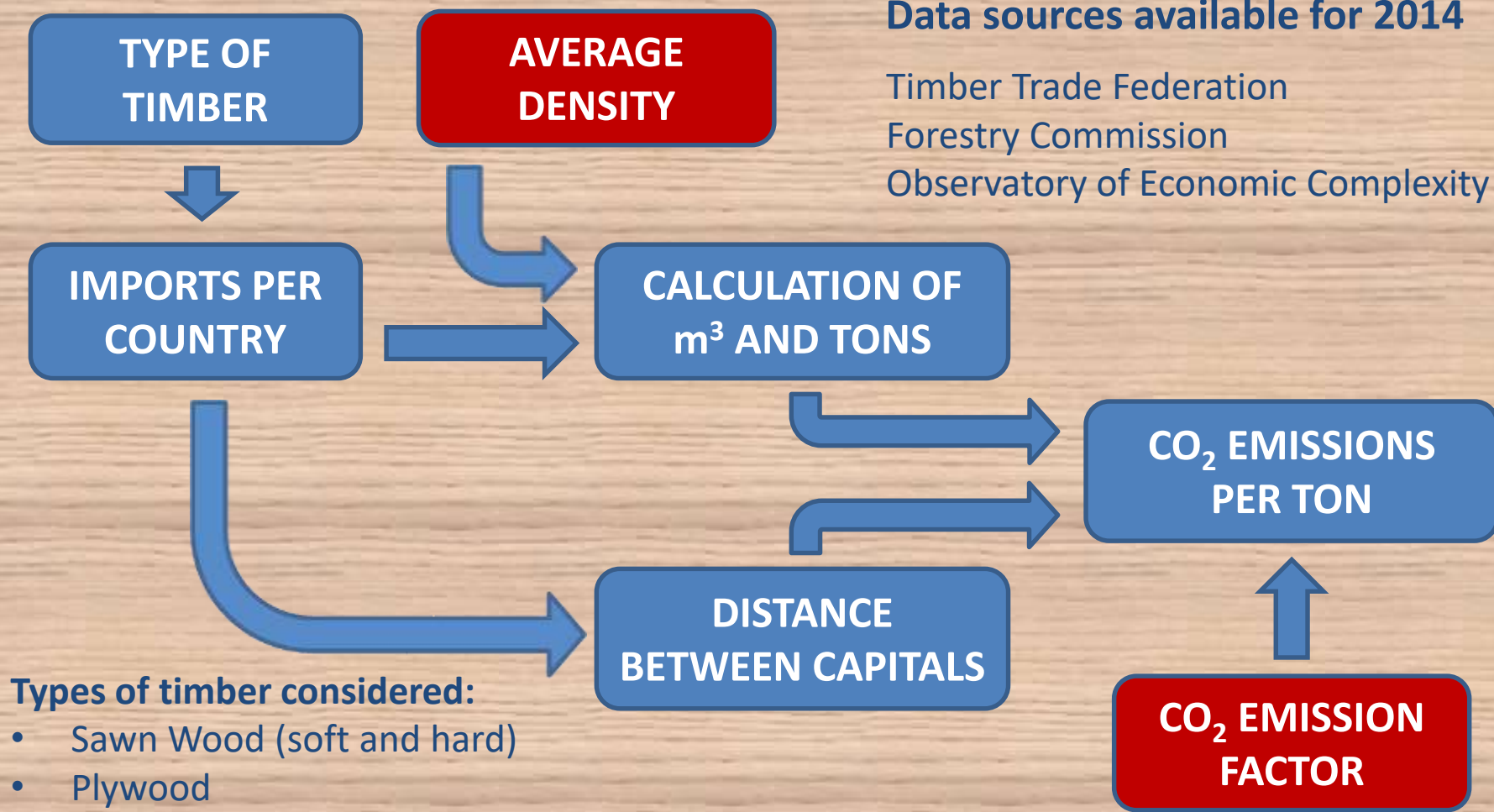
- Establishment of methodology
- Consideration of different timber products
- Calculation of carbón factor due to transport



METHODOLOGY

Data sources available for 2014

Timber Trade Federation
Forestry Commission
Observatory of Economic Complexity



Criteria established to obtain conservative results

AVERAGE DENSITY

Consideration of different product densities in each type
(TRADA, TFF)

Calculation of average density

CO₂ EMISSION FACTOR

Consideration of different means of transport
Weighting according to volume of goods transported
(Eurostat)

Use of CO₂ emissions per ton kilometre
(European Forest Institute)

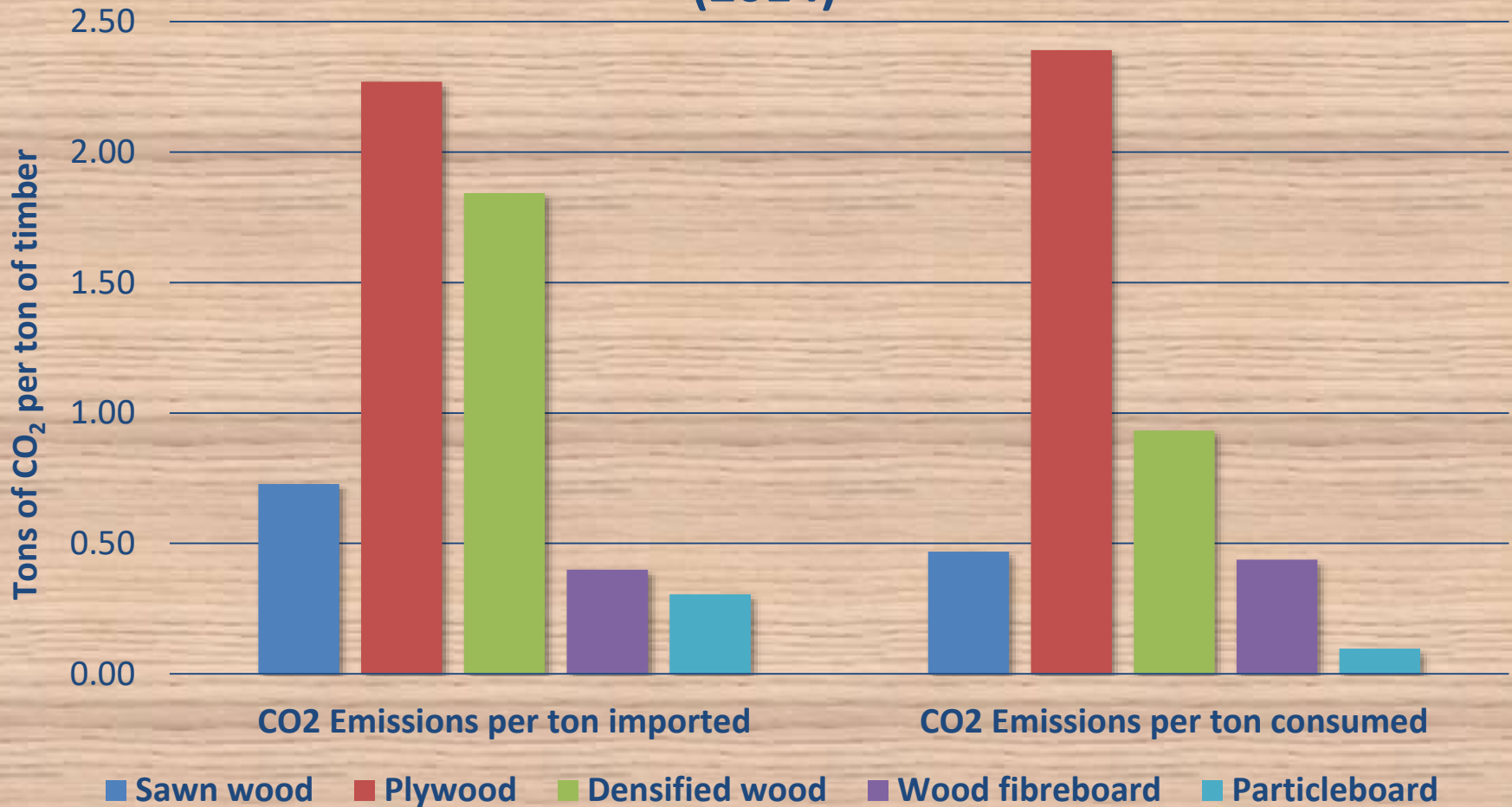


CO₂ EMISSIONS PRODUCED DUE TO TRANSPORT (2014)

TYPE	CONSUMPTION	IMPORTS	PERCENTAGE	CO ₂ Emissions per ton imported	CO ₂ Emissions per ton consumed
Sawn wood	9,968,000	6,425,000	64%	0.73	0.47
Plywood	1,328,000	1,399,000	105%	2.27	2.39
Densified wood	1,322,000	669,000	51%	1.84	0.93
Wood fibreboard	171,000	187,000	109%	0.40	0.44
Particleboard	3,081,000	980,000	32%	0.31	0.10



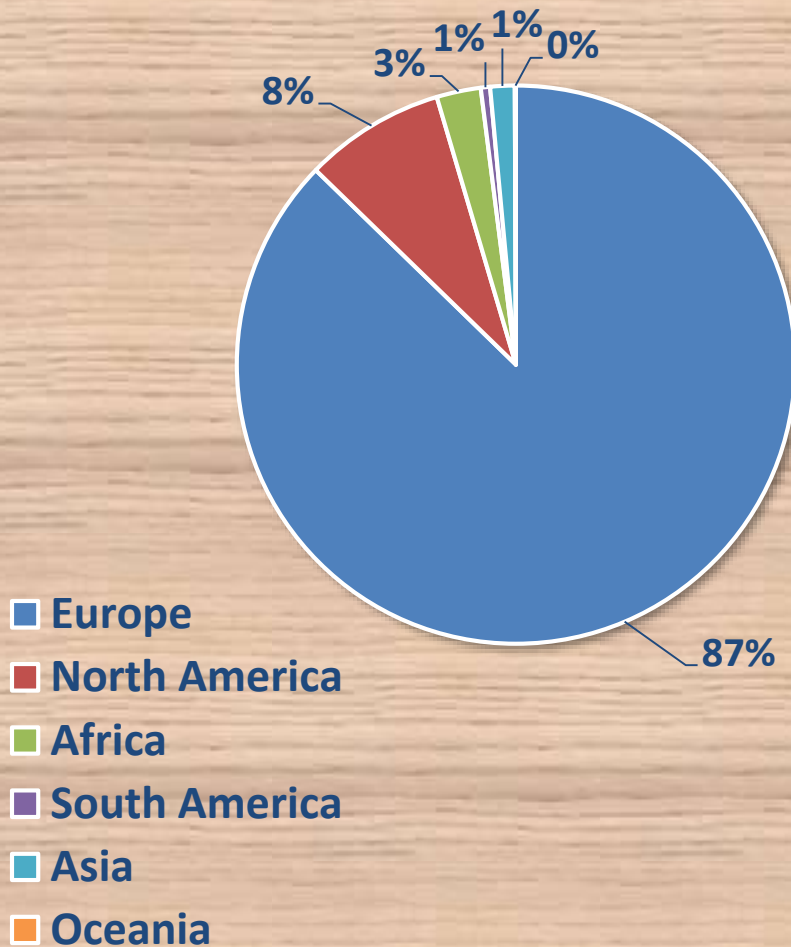
CO₂ EMISSIONS PRODUCED DUE TO TRANSPORT (2014)



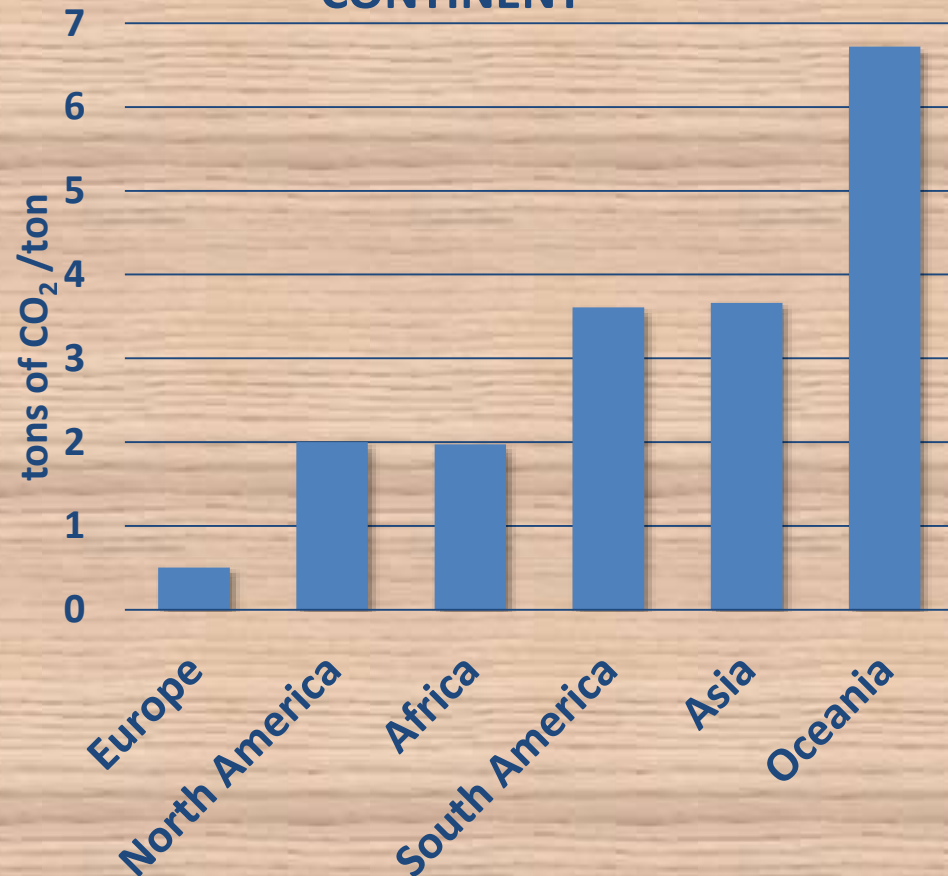


RESULTS AND ANALYSIS

UK SAWNWOOD IMPORTS PERCENTAGE PER CONTINENT (2014)



CO₂ EMISSIONS/TON OF UK SAWNWOOD IMPORTS PER CONTINENT





COMPARING TO OTHER STAGES IN THE LIFE CYCLE

TYPE		CRADLE TO GATE (ICE – SERT – University of Bath)	TRANSPORT (per kg imported)
Sawn wood	Hardwood	$0.24_{\text{fos}} + 0.63_{\text{bio}}$	0.47 kg CO ₂ /kg
	Softwood	$0.20_{\text{fos}} + 0.39_{\text{bio}}$	
Plywood		$0.45_{\text{fos}} + 0.65_{\text{bio}}$	2.39 kg CO ₂ /kg
Densified wood (HB)		$0.58_{\text{fos}} + 0.51_{\text{bio}}$	0.93 kg CO ₂ /kg
Wood fibreboard (MDF)		$0.39_{\text{fos}} + 0.35_{\text{bio}}$	0.44 kg CO ₂ /kg
Particleboard		$0.54_{\text{fos}} + 0.32_{\text{bio}}$	0.10 kg CO ₂ /kg
Oriented Strand Board		$0.45_{\text{fos}} + 0.54_{\text{bio}}$	



CONCLUSIONS

Timber is a good environment material due to its low carbon footprint.

- Low manufacturing
- Carbon storage
- Importance of sustainable production

Timber transport in the UK has much higher impact in climate change than production.

- Very high volume of imports

Accountings for this impact have not still been considered in the life cycle of timber properly.

- Not reflected in databases



CONCLUSSIONS

This impact must be considered and reduced if we want to fight against climate change. Some recommendations can be as follows:

- Reducing volume of imports
- Improving local timber production and timber industry
- Sustainable production
- Recycling
- Innovation (new products)

A first approach has been developed for this carbon accountings in timber imports.

- Basis for further research
 - To go deeper in the methodology applied
 - To analyse this impact and reduce it



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**Thank you
For your attention**

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