SYNTHESIS

LIFE CYCLE IMPACT ASSESSEMENT (LCIA)

HIGH DENSITY LOGS (MORE THAN 720 KG/M^3)

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GENERAL INFORMATION

In 2022, ATIBT carried out 12 life cycle inventories (LCI) for the main wood products from the Congo Basin manufactured by its members managing certified forests

This document provides a simplified reading of the results of the Life Cycle Assessment (LCA) of certified wood logs of high density (from 720 to 1060 kg/m^3) from the Congo Basin available in a port on the West African coast with 2 key indicators: the Climate Change indicator and the Quantity of Biogenic Carbon Stored.

The results of the life cycle inventories were obtained from data collected over 3 years (2018 - 2019 - 2020) at 4 ATIBT member companies:

- INTERHOLCO (Republic of Congo)
- PALLISCO CIFM (Cameroon)
- PRECIOUS WOOD (Gabon)
- ROUGIER (Gabon)

AIM OF THE STUDY

This study was executed according to ISO 14 040/44 and NF EN 15 804+A2 and was critically reviewed by an external independent reviewer.

The present LCIA has been established in a specific context, aiming to come as close as possible to compliance with the NF EN 15804+A2 standard, but within a partial perimeter: from the forestry operation to the shipping port. This LCIA is a preparatory and essential work for the realization of future FDES / EPD of exotic wood products. These will incorporate modules C and D and will therefore be irreproachable.

This LCI is not intended to be published under any particular program (INIES, IBU...).

You can download the LCI directly from the ATIBT website: **https://www.atibt.org/fr**

LCIA – HIGH DENSITY LOGS

FURTHER INFORMATION

DECLARED UNIT: "To produce 1 m^3 of packaged logs available in a port on the West African coast".

RIGHTS HOLDERS: All ATIBT member companies that manufacture tropical wood logs from sustainably managed forests (certified wood). Customers of ATIBT members will be able to use these LCIA to make their environmental declaration (EPD / FDES or other LCA).

VERIFICATION DATE OF THE LCIA: June 2022 **VALIDITY DATE:** June 2032

MAIN RESULTS:

CLIMATE CHANGE	BIOGENIC CARBON STORED
-1328 (kg eq. CO_2/m^3)	**397 (kg of C/m^3)**

COMMONLY USED TREE SPECIES: Okan, Azobé, Eyoum and Tali

VALIDITY FRAME:

The validity framework for using the LCIA for high density logs is detailed below:

Parameter	Range of variation covered
Certification	Wood coming from forests applying sustainable management production schemes at 100% (FSC, PEFC…)
Density	Up to 1060 kg/m3
Distance to the harbour	Lower than 1 000 km by truck and 1 300 km all transportation types included.
Diesel consumption during the skidding	Lower than 12 L/m3

WARNING AND COMPARABILITY

LCIA may not be comparable if they do not comply with EN 15804+A2, are not established on the same harmonised scientific basis and do not concern the same functional units.

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WOOD FROM SUSTAINABLY MANAGED FORESTS

Using FSC or PEFC certified wood means:

- ensure that the wood comes from sustainably managed forests: https://www.atibt.org/
- refuse to participate in the artificialisation of land
- harvesting trees responsibly so as not to disrupt the ecosystem

How are the benefits of sustainably managed forests taken into account in LCA-type environmental calculations?

Wood is a material that captures carbon when it grows. In LCA, when a biobased resource is managed sustainably, the CO_2 capture is considered a negative emission that lowers the environmental impacts. Wood from non-sustainably managed forests does not benefit from this negative emission.

MORE DEMAND FOR EPD

To date, manufacturers are not obliged (mandatory by law) to provide EPDs. Though, the market increasingly for proof of the environmental impact through type III environmental declaration, therefore EPDs. From EU regulations which intends to increase the need of environmental value for each build products, to label schemes such as BREEAM, LEED or HQE, EPDs aim to help the manufacturers to prove their environmental claims. Also, it has become a real need to access to the market in such countries as France or Belgium.

Exotic woods tend to be woods with high densities. The higher the density of a wood, the more biogenic carbon it stores. This biogenic carbon storage is beneficial to biobased products and results in negative impacts on the climate change indicator.

For example, 1 m^3 of standing Okan is equivalent to a capture of 1490 kg eq. CO_2 (calculation carried out according to the NF EN 16485 standard). At the end of its life, only 57% will be considered as re-emitted according to the dynamic calculation. In total, 1 m^3 of Okan therefore represents -629 kg eq. CO_2 on the french environmental regulation (RE2020) threshold indicator, excluding the production and transport stages.

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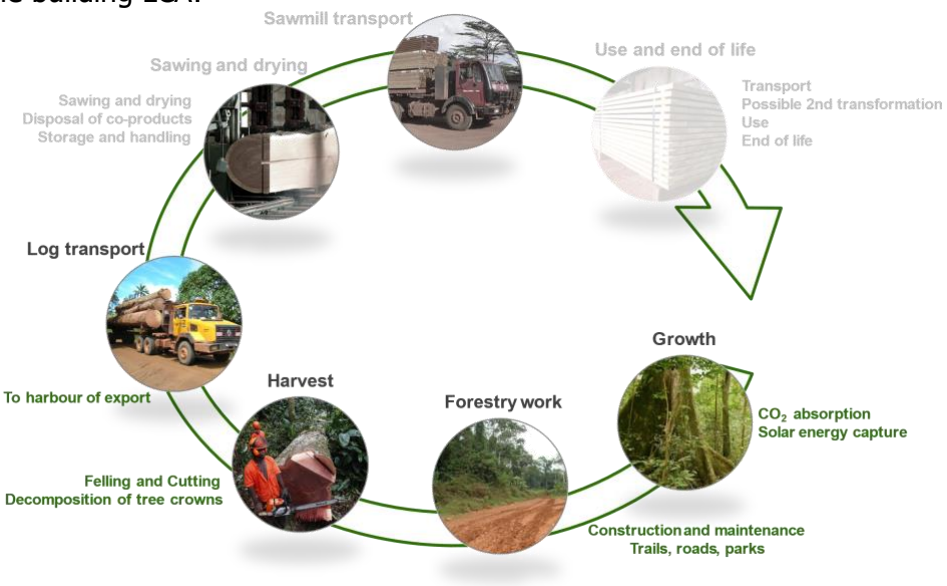
LIFE CYCLE STAGES COVERED

The following stages are covered by the impact of the LCA, those in transparency have to be added for integration into the building LCA:



SYNTHETIC RESULTS

ENVIRONNEMENTAL IMPACTS		
Climate change - total	kg of CO_2 eq..	-1,33E+03
Climate change - fossil	kg of CO_2 eq..	1,28E+02
Climate change - biogenic	kg of CO_2 eq..	-1,46E+03
Climate change -land use and land use change	kg of CO_2 eq..	1,32E-01
Ozone layer depletion	kg of CFC-11 eq..	2,79E-05
Acidification potential	mole of H^+ eq..	7,25E-01
Eutrophication (aquatic freshwater)	kg of PO_4^{3-} eq..	9,88E-03
Eutrophication (aquatic marine)	kg of N eq..	2,62E-01
Eutrophication (terrestrial)	mol of N eq..	2,86E+00
Photochemical ozone creation potential	kg of NMVOC eq..	8,54E-01
Depletion of abiotic resources - elements, ultimate reserves	kg of Sb eq..	3,49E-04
Depletion of abiotic resources - fossil fuels	MJ	1,86E+03
Water use	m3 of privation eq.	9,26E+00
Potential incidence of disease due to PM emissions	Disease incidence	1,27E-05
Potential Human exposure efficiency relative to U235	kBq of U235 eq..	9,52E+00
Potential comparative toxic unit for ecosystems	CTUe	1,56E+03
Potential comparative toxic unit for humans - cancerogenic	CTUh	6,07E-08
Potential comparative toxic unit for humans - not cancerogenic	CTUh	1,49E-06
Potential soil quality index	dimensionless	3,59E+05

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ENERGY AND MATERIAL INDICATORS		
Renewable primary energy as energy carrier	MJ	2,88E+01
Renewable primary energy resources as material utilisation	MJ	1,45E+04
Total renewable primary energy use	MJ	1,45E+04
Non-renewable primary energy as energy carrier	MJ	1,86E+03
Non-renewable primary energy resources as material utilisation	MJ	0,00E+00
Total non-renewable primary energy use	MJ	1,86E+03
Use of secondary material	kg	8,56E-01
Use of renewable secondary fuels	MJ	5,05E-03
Use of non-renewable secondary fuels	MJ	0,00E+00
Net use of fresh water	m3	2,51E-01
WASTE INDICATORS		
Hazardous waste disposed	kg	3,42E+00
Non-hazardous waste disposed	kg	4,36E+01
Radioactive waste disposed	kg	1,26E-02
FLUX SORTANTS		
Components for re-use	kg	0,00E+00
Materials for recycling	kg	1,17E-02
Materials for energy recovery	kg	6,81E-05
Exported energy, heat	MJ	3,85E+00
Exported energy, electricity	MJ	6,67E-01
Exported energy, gaz	MJ	0,00E+00
Exported energy	MJ	4,51E+00
Recovered energy	MJ	0,00E+00