



LCA of treated timber: methodological aspects and first results

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- **Context and objectives of the project**
- **Methodological aspects**
- **First results**



Context

- **Development of sustainable building**
 - Need of environmental information on construction products (french standard, european standard in preparation)
- **« Grenelle de l'environnement » in France**
 - Labelling of household products and construction products made mandatory
- **CTB P+ and CTB B+ labels committees commissioned FCBA -> LCA of French labelled treated timber according to ISO 14040**
- **Objective of the project : to publish environmental product declarations according to the French standard**
NF P01-010



Methodological aspects

- **Functional unit/ reference flow**

- **No functional unit defined in the study : a reference flow is defined: all inputs and outputs have been calculated for 1 cubic meter of treated sawn timber sold in France.**
- **Three different types of treatment studied:**
 - anti-sapstain treatment by dipping for green sawn timber,
 - treatment by dipping for use class 2
 - pressure treatment for use class 4
- **For each type, 2 to 3 lead products on the market have been studied to produce mean values**

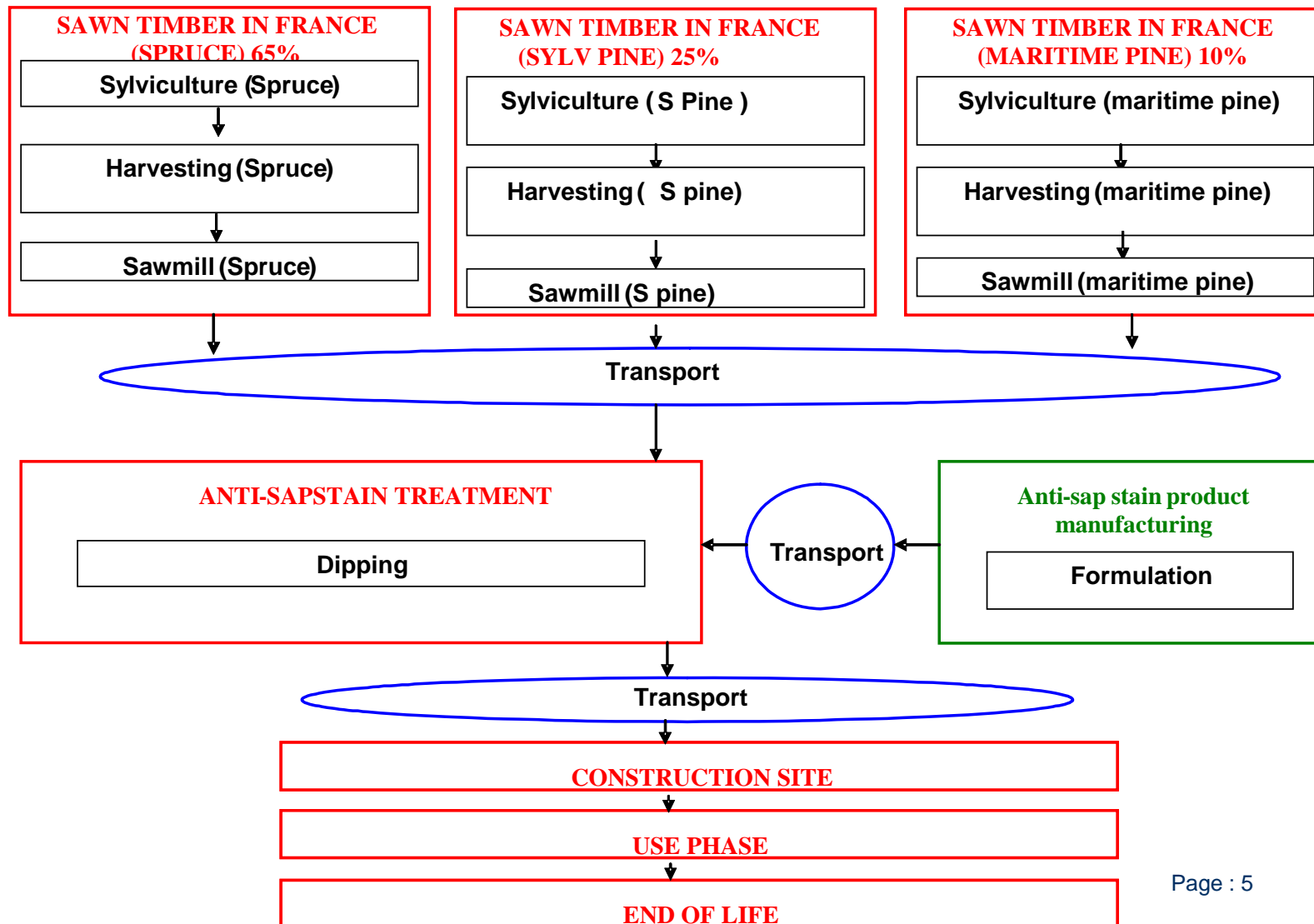


Co-products and allocations

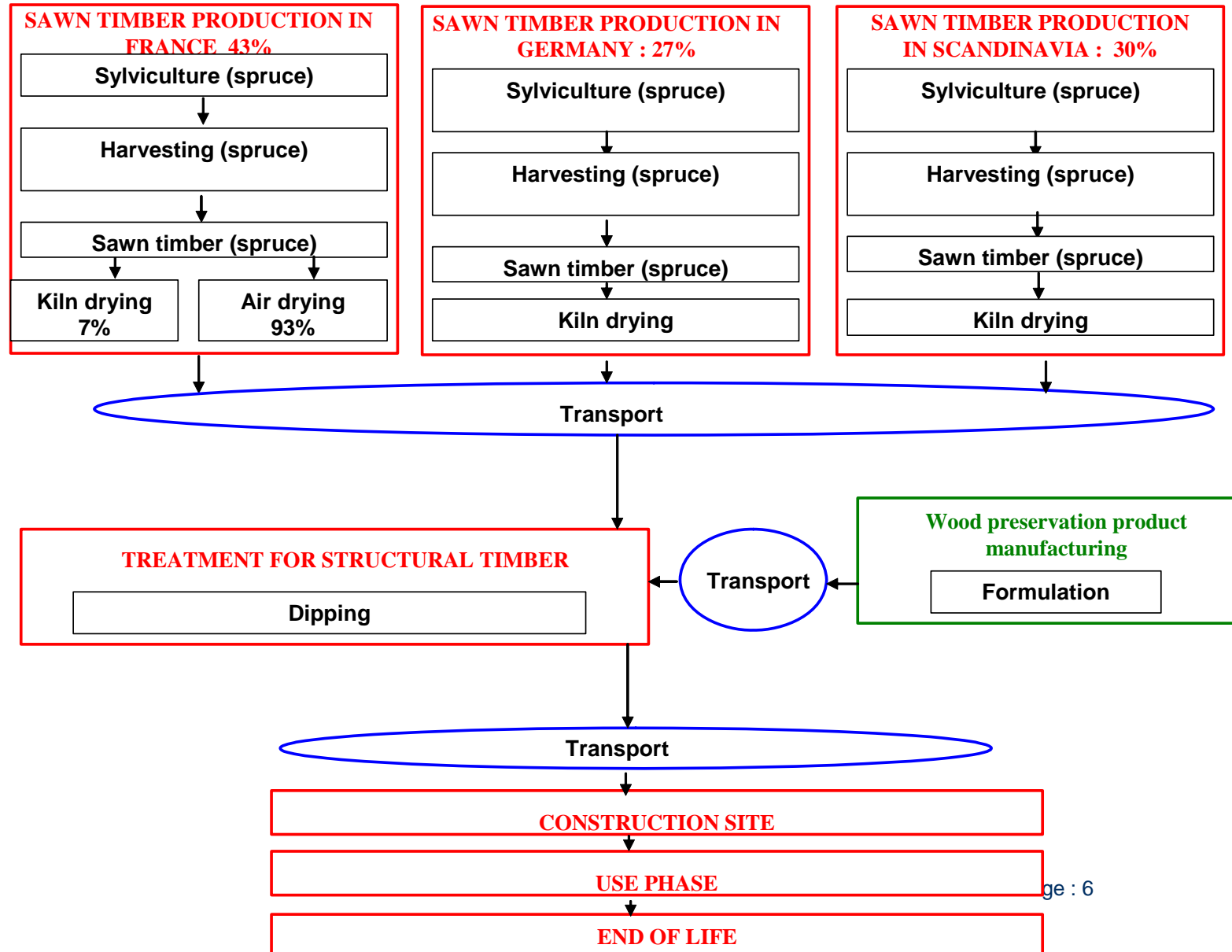
- **Off-site use of co-products : excluded and no allocation to co-products**
- **On-site energy recovery fluxes are included**



System boundaries: anti-sapstain treated timber

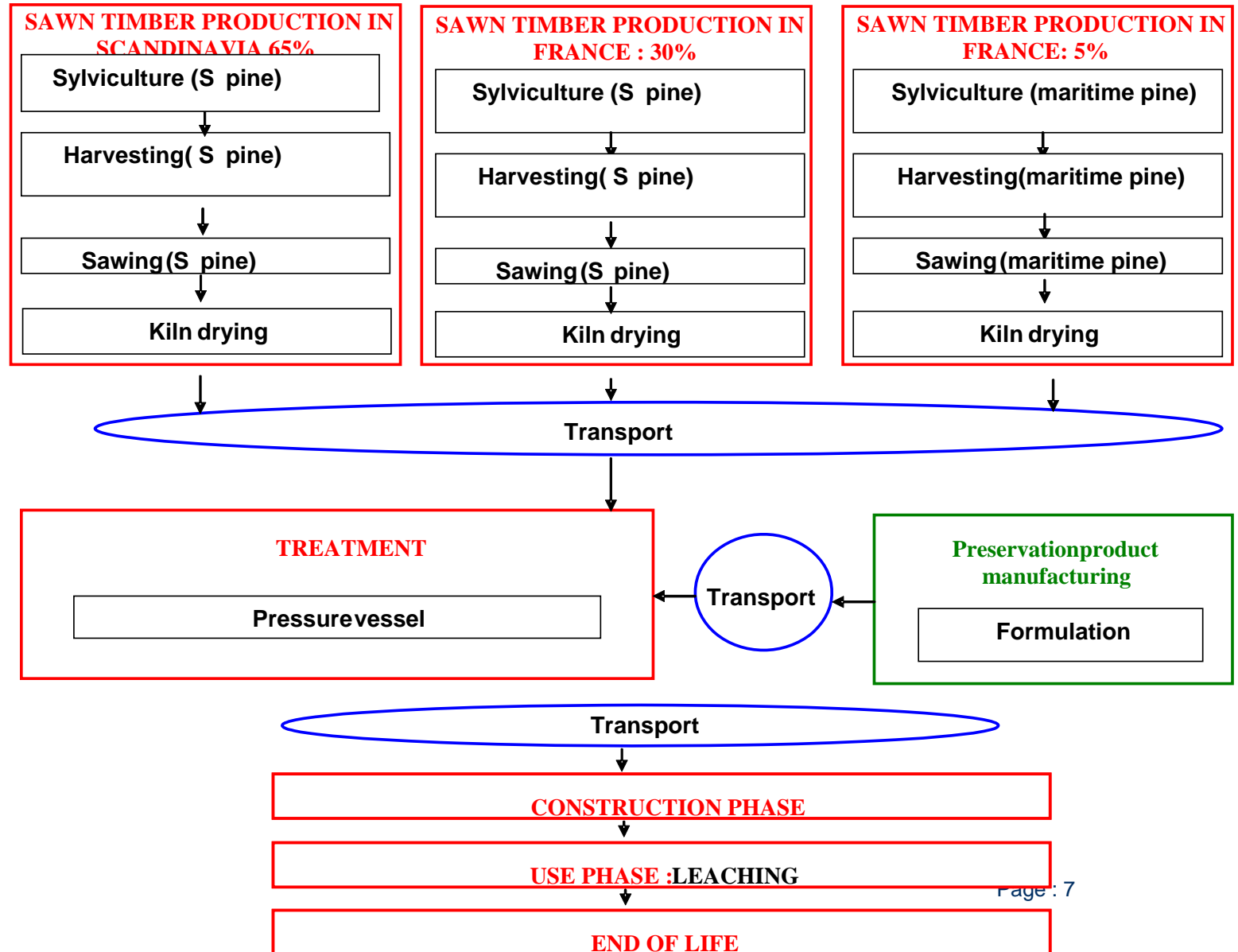


System boundaries for class 2 treated timber





System boundaries for class 4 treated timber





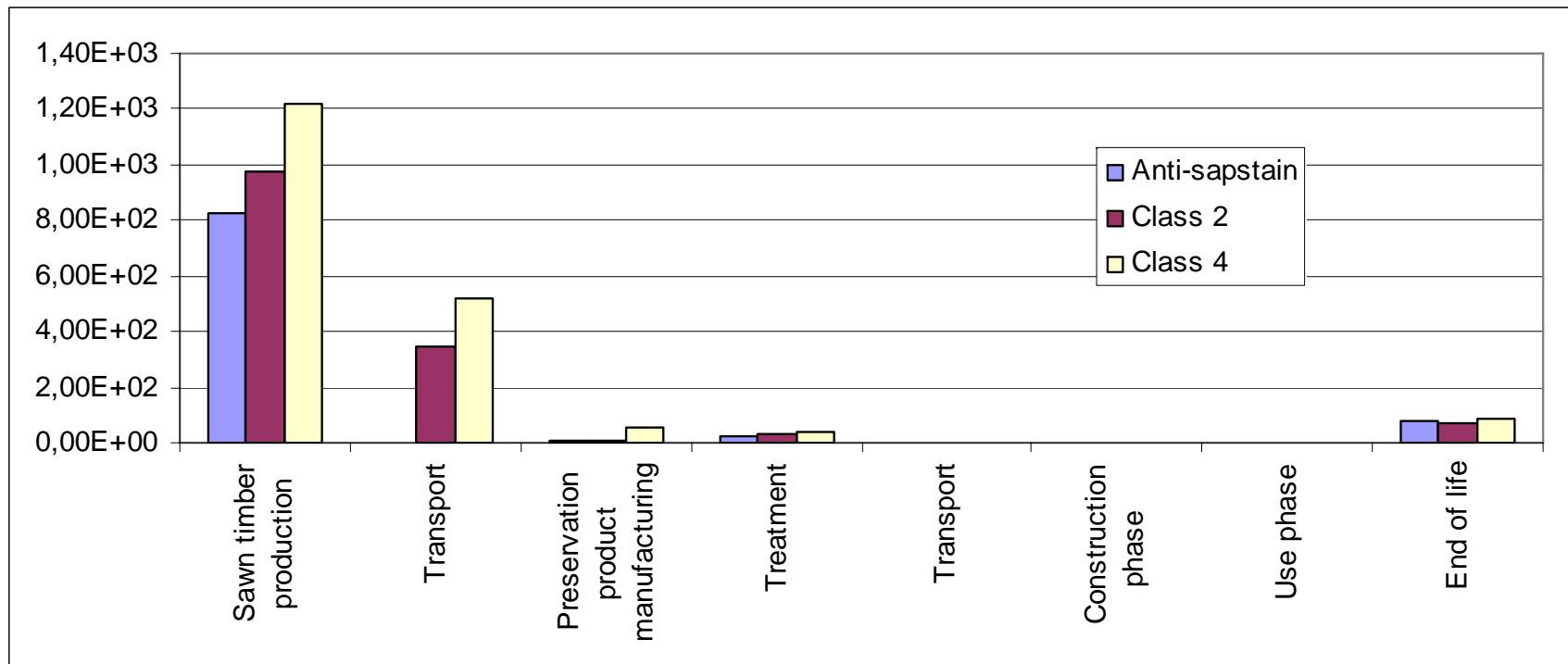
Data collection

Life cycle step	Data sources
Sawn timber production in France	FCBA study “ICV sciages”
Sawn timber production in Scandinavia	Ecoinvent
Sawn timber production in Germany	Ecoinvent
Transport models	DEAM database
Transport distances	FCBA assumptions
Dipping process	FCBA study “ICV sciages”
Pressure vessel process	FCBA study “ICV sciages”
Anti-sapstain product manufacturing	Data collected from 2 manufacturing companies
Class 2 preservation product manufacturing	Data collected from 3 manufacturing companies
Class 4 preservation product manufacturing	Data collected from 2 manufacturing companies
Active substances manufacturing	No data could be obtained.
Construction phase	No impact
Use phase	No impact for antisap stain and class 2 treated wood For classe 4 treated wood: Leaching data taken from “Product-category rules (PCR) for preparing an environmental product declaration (EPD) Building products quality controlled treated timber”, IVL 2005
End of life	Landfilling: Ecobilan’s data on wood landfilling not specific for treated wood



First results on energy

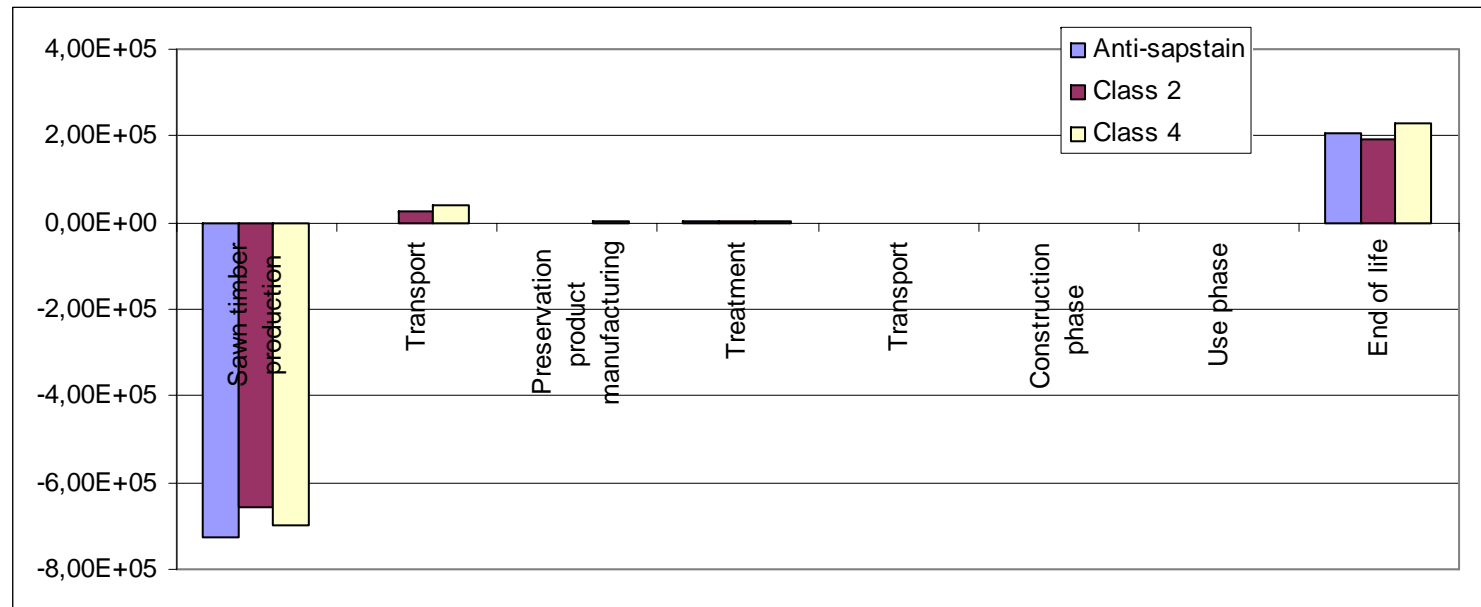
- MJ non renewable energy per cubic meter of treated wood





First results on greenhouse gas effect

- g eq. CO₂ per cubic meter of treated wood





End of life: landfilling

- **Wood contains lignin that does not degrade in anaerobic conditions. Hemicellulosis and cellulosis do not degrade easily due to the lignin matrice**

Degradation percentage	Type of experimentation	Type of waste	Primary source	Database or software in which this value is implemented
0% à 3.2%	Laboratory test	Mix of packaging waste and demolition waste	[Micales et Skog, 1997]	Ecoinvent
12 -15%	Laboratory test	Branches	[Ecobalance 1999] based on [Eleazer et al. 1997]	Wisard™
27.8%	Laboratory test	Branches	[Barlaz 1998]	
11%	Laboratory test	Demolition waste	[Pueboobpaphan, Toshihiko, 2007]	



First conclusions

- **Energy spent for treatment and wood preservative manufacturing is negligible compared to other life cycle steps.**
 - This could be linked to the fact that the manufacturing of active substances has been neglected due to lack of data. However a simulation was made using data available from the Ecoinvent database for 1 active substance and this result is still true.
- **No result has been issued on toxicity and ecotoxicity indicators yet as the use of the leaching coefficient taken from the PCR for treated wood is not definitive.**
 - New data will be collected based on industry tests linked with the biocide directive.



Next work and remaining questions

- Integrate specific data for leaching
- Produce EPDs for defined end-use products
- Consider other end-of-life scenarios ?

Then :

- fair competition possible on sustainable building projects
- anticipation of regulation requirement for environmental information
- possibility of comparative LCAs with untreated wood (question of service life duration will be essential), with competing materials