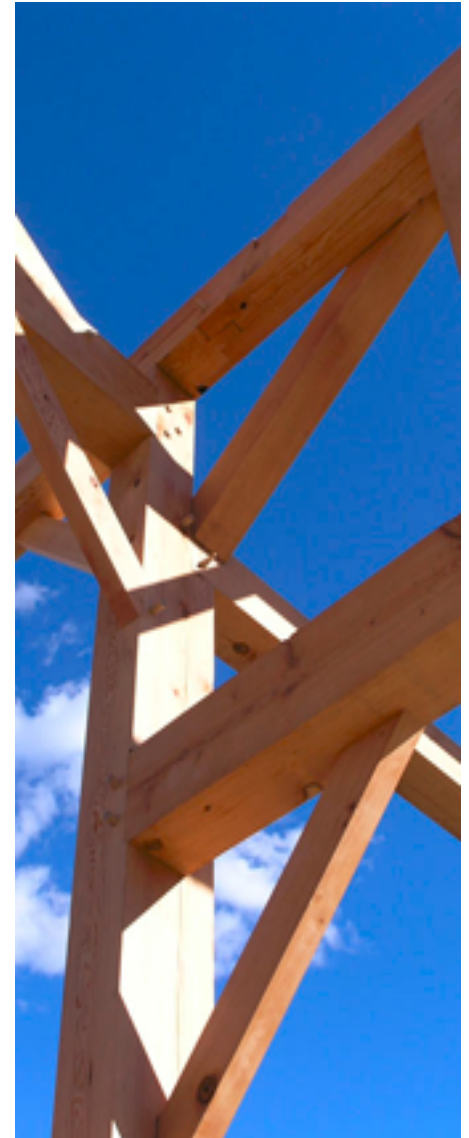


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Frank Werner

# PCR development and EPD (for wood products)

## The European context



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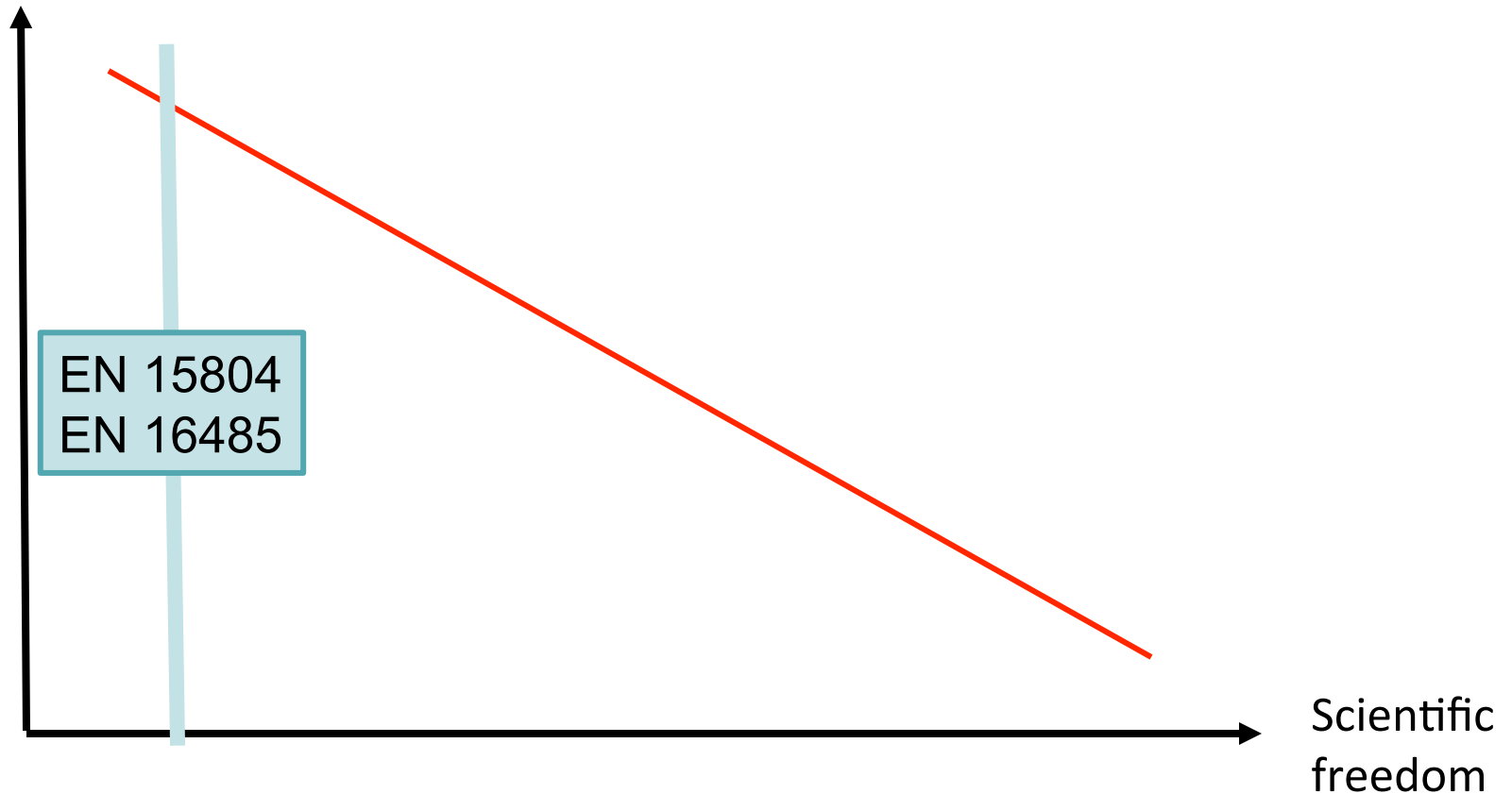
Scientific freedom and practical relevance / key questions

# INTRODUCTION

# EPD and PCR - scientific freedom and practical relevance

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Practical  
relevance



# EPD and PCR – key questions

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- Why would/could companies producing modified timber want an environmental product declaration?
- What is the usefulness of “free-floating” product category rules?

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Complex context of construction products / EPD vs. labels / EPDs and linkage to building assessments / EPD and databases / national contexts / reasons to generate EPDs

# CONTEXT OF EPD DEVELOPMENT

# Complex environmental assessment of construction products

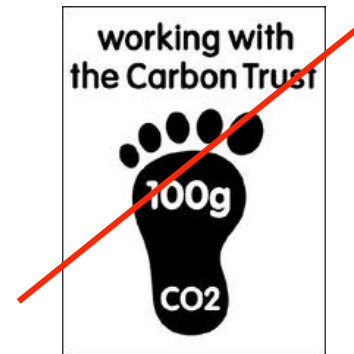
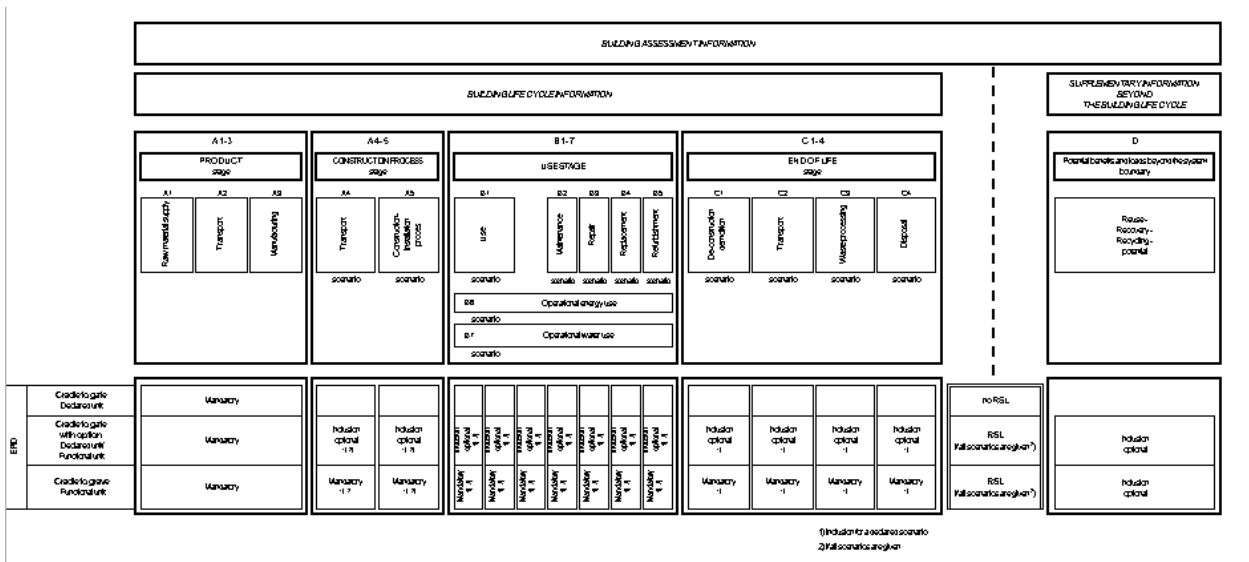
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- Building products are intermediate products
- Purchasing decision made mostly by professionals
- Environmental relevance depends on building context
- Comparison of environmental performance on product level hardly ever useful

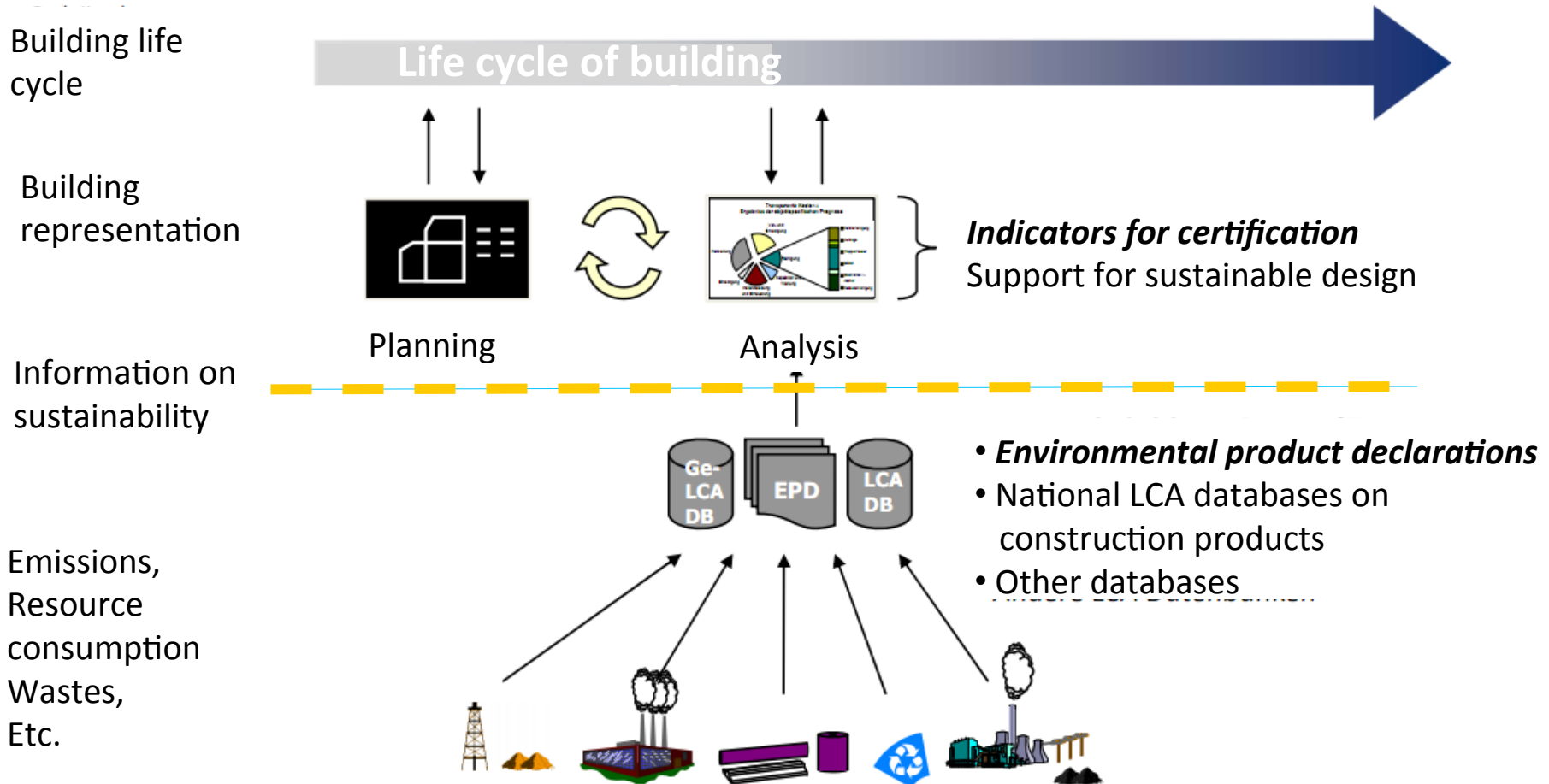


# EPD = information carrier on environmental performance

- A comparison on product level is possible only under considerable restrictions, particularly across materials

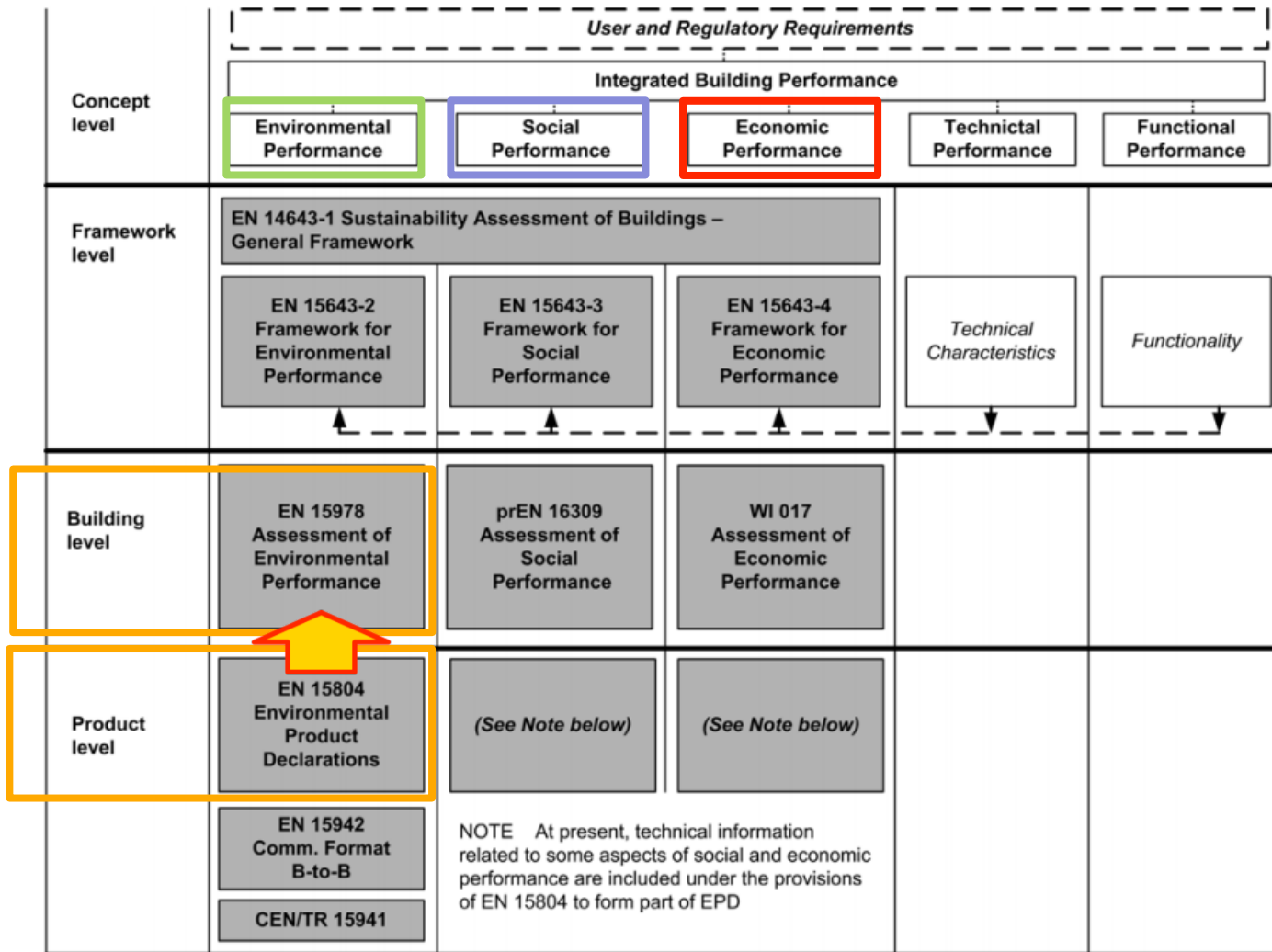


# Assessment of construction products in the building context





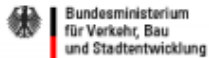
# Work program and structure of CEN TC 350



plus  
«guidance  
document»

# Databases for product specific environmental information

Bundesministeriums für Verkehr, Bau und Stadtentwicklung (BMVBS): ökobau.dat



Startseite > Baustoff- und Gebäudedaten

## Baustoff- und Gebäudedaten

Technische Bezeichnung	Geographische Region	Hersteller	Name	Bezeichnung
WECOBIS	DE	2008	WECOBIS	WECOBIS

WECOBIS

Name

- 3.1.1\_Schnittholz\_Zeder\_(12%\_Feuchte\_10,7%\_H2O)
- 3.1.2\_Konstruktionsvollholz
- 3.1.3\_Balkenschichtholz\_Nadelholz
- 3.1.4\_Brettschichtholz\_Nadelholz
- 3.2.1\_Drei-Schichtholzplatte
- 3.2.1\_Fuenf-Schichtholzplatte
- 3.2.2\_Sperrholzplatte
- 3.2.3\_Furnierschichtholz
- 3.2.4\_OSB\_(Durchschnitt)
- 3.2.4\_OSB\_Eurostrand\_-\_Egger
- 3.2.6\_Leichtbauplatte\_Eurolight\_-\_Egger
- 3.2.6\_Spanplatte\_(Durchschnitt)
- 3.2.6\_Spanplatte\_Eurospan\_-\_Egger
- 3.2.6\_Spanplatte\_Living\_board\_-\_Pfleiderer
- 3.2.7\_HDF\_-\_Egger
- 3.2.7\_MDF\_-\_Egger
- 3.2.8\_Holzzementplatte\_Duripanel\_(beschichtet)\_-\_E
- 3.2.8\_Holzzementplatte\_Duripanel\_-\_Eternit
- 3.3.1\_Laminat\_-\_Egger
- 3.3.2\_Mehrschichtparkett
- 3.3.2\_Stabparkett
- 3.3.5\_Korkplatten\_(2008)\_1m2,\_4\_mm
- 3.3.5\_Korkplatten\_(2008)\_1m2,\_6\_mm
- 3.3.5\_Korkplatten\_(2008)\_1m2,\_8\_mm
- 3.4\_FOI\_HDF - Ffner

Bauen vor

Tiefensee: Energieausweis

# National context, e.g.

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## Germany

- EPD according to EN 15804 bring advantages in DGNB-/BNB-building certification

## France

- From 2014/2017 onward, claims on the environmental performance of construction products have to be based on a registered EPD according to French complement to EN 15804

## Belgium

From 2014/2017 onward, claims on the environmental performance of construction products have to be based on a registered EPD according to Belgian Royal Decree based on EN 15804

....

# Why should companies generate EPDs

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- EPD are «fashionable» and «good for marketing purposes» (...)
  - EPD give credit points in the LEED certification scheme
- 
- EPD are legally required to communicate on environmental performance of products  
=> PCR with **legal status**
  - EPD are information carriers for the appropriate consideration of construction products in environmental building assessments  
=> PCR from program **with linkage to EPD database**
  - (EPD can be used – under certain circumstances – for the comparison/benchmarking of products)  
=> PCR with **consistent rules beyond core rules of EN 15804**
-

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Program specific vs. legal guidance / role and activities of CEN product TC /  
role of CEN TC WG 3 for product TC / EPD and Construction Products  
Regulation

# CONTEXT OF PCR DEVELOPMENT

# Large variety of EPD programs

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1. Environdec System (Sweden)
2. EPD Norge (Norway)
3. IBU (Germany)
4. BRE Global (UK)
5. INIES (France)
6. MRPI (Netherlands)
7. ITB (Poland)
8. DAPc (CATEEB, Spain)
9. Global EPD (AENOR , Spain)
10. DAP Habitat (CentroHabitat, Portugal)
11. ZAG EPD (Slovenia)



# Program-specific guidance

Private initiatives, e.g.



Legal initiatives, e.g.

French Standardization
XP P 01-064
Classification index: P 01-064
ICS:
T1 Sustainability of construction works
<b>T2 Environmental product declarations - Core rules for the product category of construction products</b>
<b>T3 National supplement to NF EN 15804+A1</b>
D: Nachhaltigkeit von Bauwerken — Umweltproduktdeklaration - Grundregeln für die Produktkategorie Bauprodukte — Nationale Ergänzung zu NF EN 15804+A1
F: Contribution des ouvrages de construction au développement durable — Déclarations environnementales les produits - Règles régissant les catégories de produits de construction — Complément national à la NF 15804+A1
<b>Experimental standard</b> published by AFNOR.
Comments relative to this experimental standard shall be sent to AFNOR before.
Correspondence
[This document is equivalent (statut, indice:année) with some editorial modifications. [This document is equivalent (statut, indice:année) with some minor technical modifications.] [This document is not equivalent (statut, indice:année) dealing with the same subject.] [At the date of publication of this document, there exists a (filère) draft dealing with the same subject.] [At the date of publication of this document, there does not exist any (filère) work dealing with the same subject.]
Summary
Descriptors
<b>International Technical Thesaurus:</b>
Changes
Corrections
XP_P_01-064_(E).docx

# Role of product TCs in interpreting EN 15804

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From a letter by Mr Moore, CEN construction rapporteur (27-4-2012) to product TCs:

Dear Colleagues

(1) EN 15804:2012 "*Sustainability of construction works — Environmental product declarations — Core rules for the product category of construction products*" is now available and it is timely for TCs to consider the introduction of relevant provisions in their standards.

(2) The main requirement is the provision of the appropriate PCR (Product Category Rules) in accordance with the horizontal rules in EN 15804. TCs should consider the advantages of implementing EN 15804 in their standards and of developing their own additional rules without further delay, as opposed to relying on those prepared in the market, over which they would have less control.

(3) The benefit of early implementation of EN 15804 in product standards is to ensure that they can meet market requirements as the need for EPDs becomes more widespread.

(4) The method of implementation in a standard could be through normative or informative provisions, either in the main body of the standard or as an Annex.

(5) CSNPE held a first workshop on the 6th of March, with a few CEN/TCs that were already working on the implementation of EN 15804. CSNPE will be holding a further workshop on 11 June 2012 to assist TCs in this work and to determine the needs for more detailed guidance for TCs. Assistance is also available from TC 350. Contact addresses are below.



# Status of work by product TCs in interpreting EN 15804

CEN/TC 175  
Date: 2013-06

FprEN 16485:2013

CEN/TC 175  
Secretariat: AFNOR

**Round and sawn timber — Environmental Product Declarations — Product category rules for wood and wood-based products for use in construction**

*Rund- und Schnittholz — Produkt-Kategorie-Regeln für Holz und Holz-Werkstoffe zur Umwelt-Produkt-Deklaration*

*Bois ronds bois sciés — Déclarations environnementales de produits — Règles de définition des catégories de produits en bois et à base de bois pour l'utilisation en construction*

ICS:

Descriptors:

Document type: European Standard  
Document subtype:  
Document stage: Formal Vote  
Document language: E

I:\normecan-iso\2013\CEN TC 175 Round and sawn timber\2 PROJETS\EN 16485\6- Envoi au FV\VI 00175150 - EN 16485 (E) - FV.doc STD Version 2.5a

## Overview of PCR documents from product TCs

CEN/TC	WG	WI	EN reference/track	Title
134	WG 10	134230	prEN 16810	Sustainability of construction work - Environmental product declarations - Product category rules for resilient, textile and laminate floor coverings
88	WG 2	88334	prEN 16783	Thermal insulation products - Product category rules (PCR) for factory made and in-situ formed products for preparing environmental product
163	WG 3	163097	prEN 16578	Sustainability assessment - Ceramics sanitary appliances
229	WG 4	229134	prEN 16757	Sustainability of construction works - Environmental product declarations - Product Category Rules for precast concrete products
104	SC 1	104354	EN/ENQ+FV	Sustainability of construction works - Environmental product declarations - Core rules for concrete and concrete products
155	WG 27	155821	EN/ENQ+FV	Plastics Piping Systems - Environmental Product Declarations - Product Category Rules (PCR) for plastics piping systems inside buildings (pressure and non-pressure)
155	WG 27	155820	EN/ENQ+FV	Plastics Piping Systems - Environmental Product Declarations - Product Category Rules (PCR) for buried plastics piping systems (pressure and non-pressure)
129	WG 17	129211	EN/ENQ+FV	Product Category Rules for Environmental Product Declarations for flat glass products used in buildings and other construction works (Flat Glass PCR)
175	WG 1	175150	EN 16485:2014	Round and sawn timber - Environmental Product Declarations - Product category rules for wood and wood-based products for use in construction
51	WG 6	None	--	Cement and building lime - Environmental product declarations - Product Category Rules complementary to EN 15804
165	WG 1	165270	TR/TCA	Guidance for the implementation of environmental aspects in product standards and system standards in the field of wastewater engineering
226	WG 6	226215	EN/ENQ+FV	Road traffic noise reducing devices - Procedures for sustainability assessments
289	WG 4	289162	EN/ENQ+FV	Leather - Product Category Rules (PCR) for Environmental Impact Assessment
33	?			will be activated in April
125				PCR for clay construction materials
128				PCR for clay construction materials
67				PCR for ceramic tiles

# Framework: Resolution 147/2011 by TC 350 plenary

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## **Resolution 147/2011 taken by CEN/TC 350 on 2011-11-25**

**Subject:** Technical implementation of EN 15804

CEN/TC 350 requests WG3 to prepare guidance for product Technical Committees for the incorporation of the requirements of EN 15804 into their product standards.

CEN/TC 350 requests :

- that WG3 becomes the advisory group for implementation of EN 15804 in product TC
  - CCMC to investigate a way to inform CEN/TC 350 WG3 at the CEN Enquiry step (at the latest) if product standards are implementing EN 15804,
  - to use CEN/TC 350 website to centralize feedback and question from TC product,
- The resolution was approved by unanimity***

# Why could this matter beyond EPD

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From the **Construction Products Regulation (CPR)**:

(56) For the assessment of the sustainable use of resources and of the impact of construction works on the environment Environmental Product Declarations should be used when available.

i.e. related to **Basic Work Requirements**:

No.3: Hygiene, health and the environment

No.7: Sustainable use of resources

This means that the work of **CEN TC 350** will become relevant for:

- CE-marking of construction products
- Sustainability assessment of construction works (?)

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Pre-defined guidance in EN 15804 / relevant aspects for wood / issues to be addressed in «wood PCR»

# WOOD AND STANDARD EN 15804

# LCA-related issues that are pre-defined in EN 15804

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- system boundary, modularity of life cycle and content of module  
=> „End-of-waste“-status sets the system boundary at in-/output side  
=> Benefits and burdens beyond the product system in „module D“
- allocation rules for cradle-to-gate analysis (modules A1-A3)  
=> economic allocation of (joint) co-production processes  
=> no system expansion/crediting in A1-A3
- allocation rules of reuse, recycling, energy recovery  
=> quantification of substitution of net flows only!  
=> benefits and burdens beyond the product system in „module D“
- carbon content and feedstock energy are material-inherent properties
- criteria and indicators for the inventory and environmental impact analysis  
=> identical for building assessment!
- cut-off rules, calculation procedures, data quality requirements, etc.

# Horizontal rules in EN 15804

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- „core“ product category rules for construction products
- non-material specific LCA rules
- important for wood, among others:
  - biogenic carbon and primary energy are considered material inherent properties, e.g. for allocation
  - substitution effects of wood, e.g. for energy recovery in cascade use, can be displayed
  - use of primary energy is declared separately as renewable/ non renewable and used as material/energy carrier
  - declaration of use of total renewable plus non-renewable primary energy is not in conformity with EN 15804 (on building level also not the total for PE ren and PE non ren.)



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Relevant standards/ methodological aspects / biogenic carbon and GWP  
conclusions

# **TC 175 STANDARDS RELATED TO EN 15804**



# TC 175 standards in the context of LCA, EPD und CO<sub>2</sub>

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EN 16449 Wood and wood-based products - Calculation of sequestration of atmospheric carbon dioxide

EN 16485 Round and sawn timber - Environmental Product Declarations - Product category rules for wood and wood-based products for use in construction

# Content of EN 16485 (I)

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## Rules on:

- definition of functional/declared unit
- system boundary nature/product system:
  - modelling of biogenic carbon flows
  - consideration of forest carbon pools (3 cases)
- temporary carbon storage as scenario information/additional environmental information (e.g. according to PAS 2050).
- definition of default „end-of-waste“ states and thus default attribution of end-of-life processes to modules, depending on scenario

# Content of EN 16485 (II)

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## Rules on:

- quantification of net flows for the quantification of burdens and benefits in module D, depending on EoL scenario
- co-product allocation illustrated based on examples
- definition of default processes to be substituted in module (dried chips from forest/natural gas)

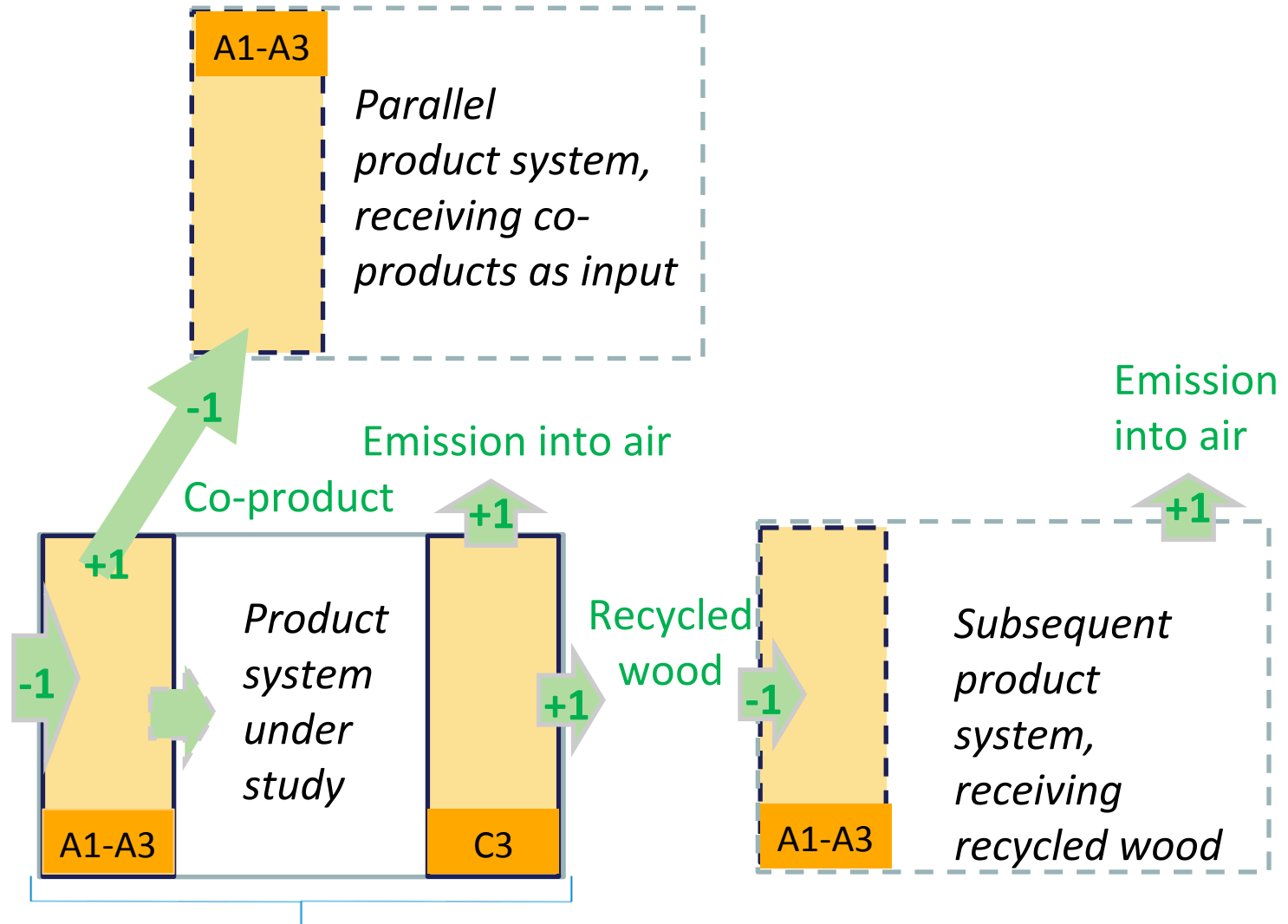
# Biogenic carbon flows

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EN 15804, clause 6.4.3.2:

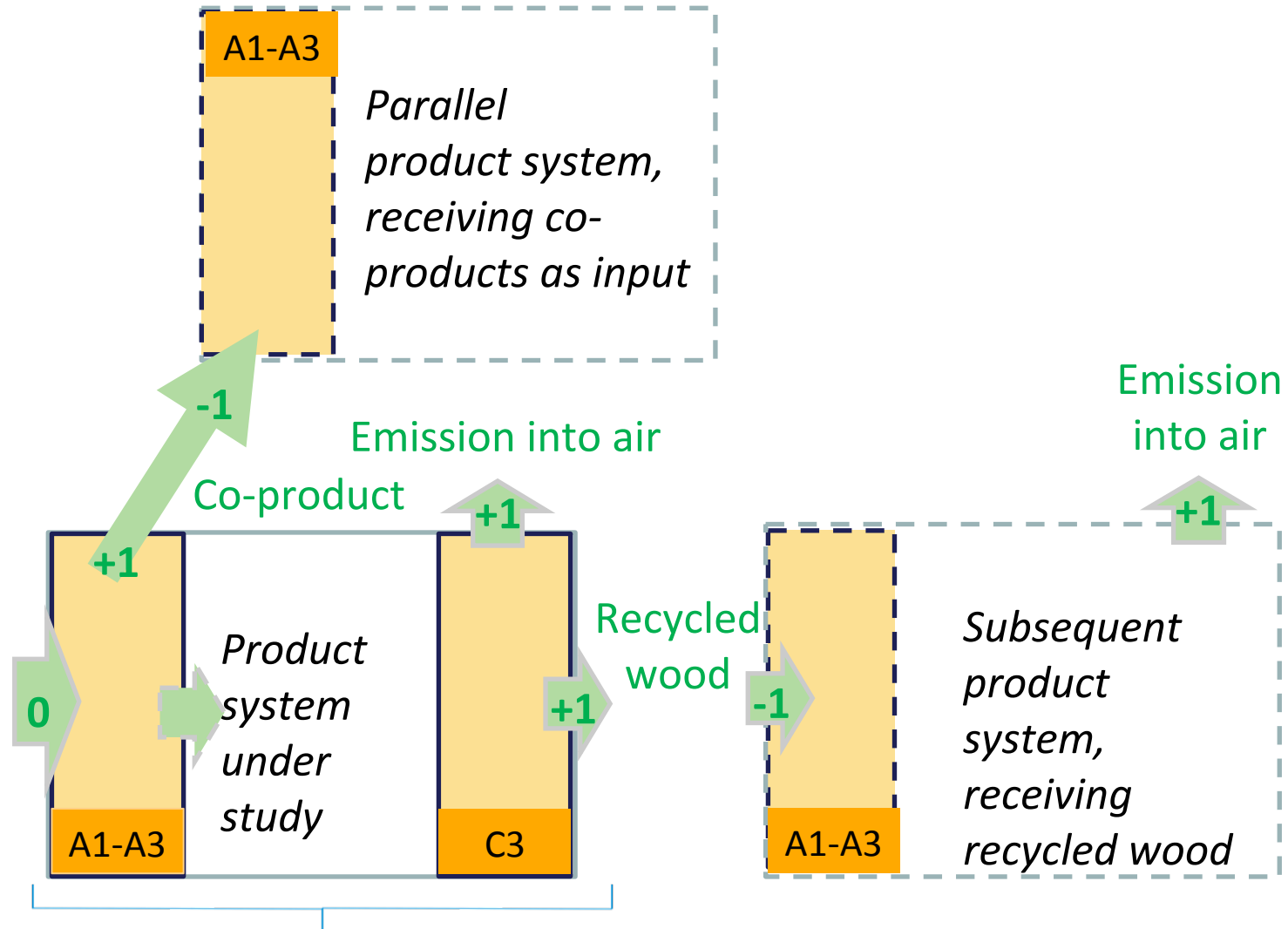
- Material flows carrying specific inherent properties, e.g. energy content, elementary composition (e.g. biogenic carbon content), shall always be allocated reflecting the physical flows, irrespective of the allocation chosen for the process.

# Characterisation of biogenic carbon flows: sustainable sourcing



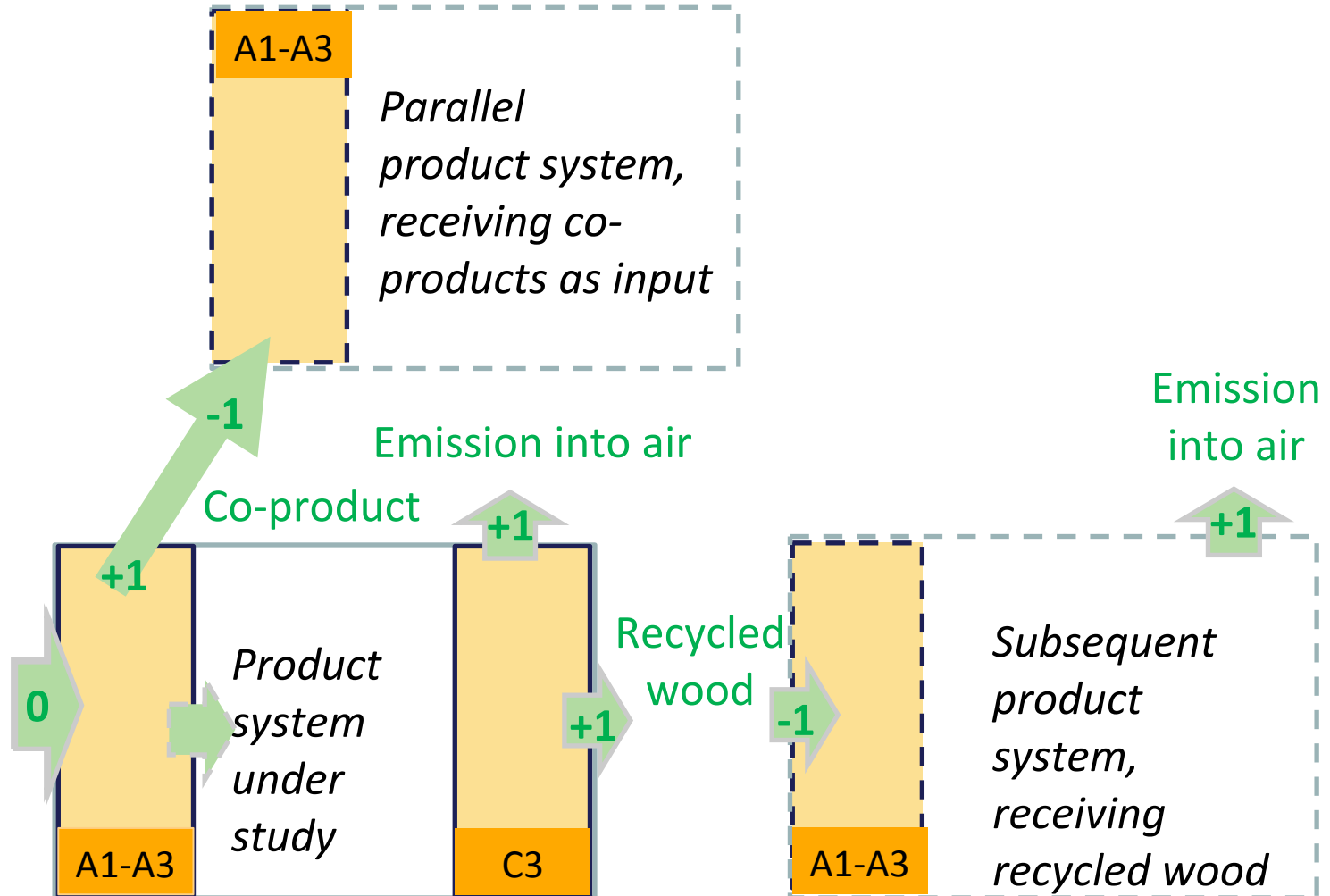
Biogenic carbon balance over life cycle = 0; GWP of biogenic CO<sub>2</sub> ≈ 0

# Characterisation of biogenic carbon flows: unspecified sourcing



Biogenic carbon balance over life cycle = 0; GWP of biogenic CO<sub>2</sub> > 0

# Characterisation of biogenic carbon flows: deforestation



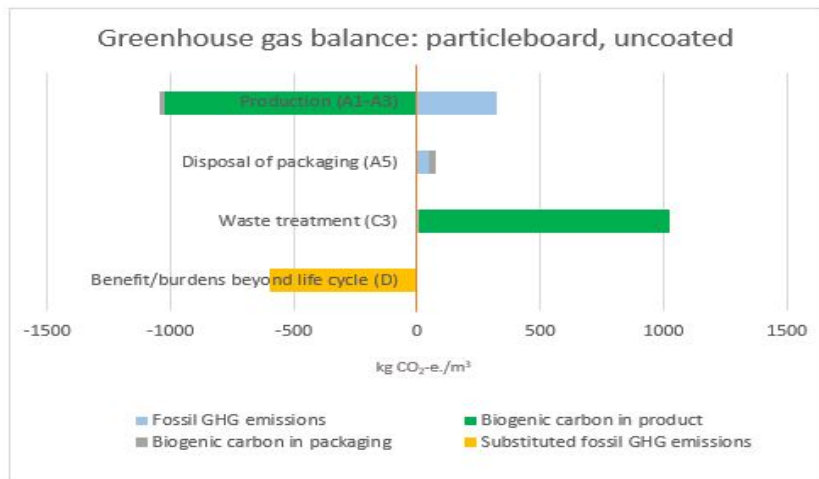
**+ emissions from dLUC**

# Communication in EPDs

DESCRIPTION OF THE SYSTEM BOUNDARY (X = INCLUDED IN LCA; MND = MODULE NOT DECLARED)																
PRODUCT STAGE			CONSTRUCTION PROCESS STAGE		USE STAGE							END OF LIFE STAGE				BENEFITS AND LOADS BEYOND THE SYSTEM BOUNDARIES
Raw material supply	Transport	Manufacturing	Transport from the gate to the site	Assembly	Use	Maintenance	Repair	Replacement <sup>1)</sup>	Refurbishment <sup>1)</sup>	Operational energy use	Operational water use	De-construction demolition	Transport	Waste processing	Disposal	Reuse-Recovery-Recycling-potential
A1	A2	A3	A4	A5	B1	B2	B3	B4	B5	B6	B7	C1	C2	C3	C4	D
X	X	X	MND	X	MND	MND	MND	MND	MND	MND	MND	MND	MND	X	MND	X

## RESULTS OF THE LCA - ENVIRONMENTAL IMPACT: Particleboard, uncoated, per m<sup>3</sup>

Parameter	Unit	A1-A3	A5	C3	D
Global warming potential	[kg CO <sub>2</sub> -Eq]	-717.58	25.11	1027.24	-595.52
Depletion potential of the stratospheric ozone layer	[kg CFC11 Eq]	1.70E-5	3.01E-8	2.02E-7	6.02E-5





# Concluding remarks

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- In EN 16485 the most relevant methodological aspects for EPD of wood products have been specified based on EN 15804
- EN 16485 has been found to be compliant with EN 15804 by CEN TC 350 WG 3
- The topic «reference service life» remains open
- Personal remarks and suggestions
  - develop «your» PCRs in the context of existing EPD programs (or in the appropriate CEN product TC),
  - avoid «free-floating» PCRs and EPDs
  - Good luck!