



# **Sustainability assessment of construction works and consequences for environmental product information**

**A science based contribution to ongoing discussions**

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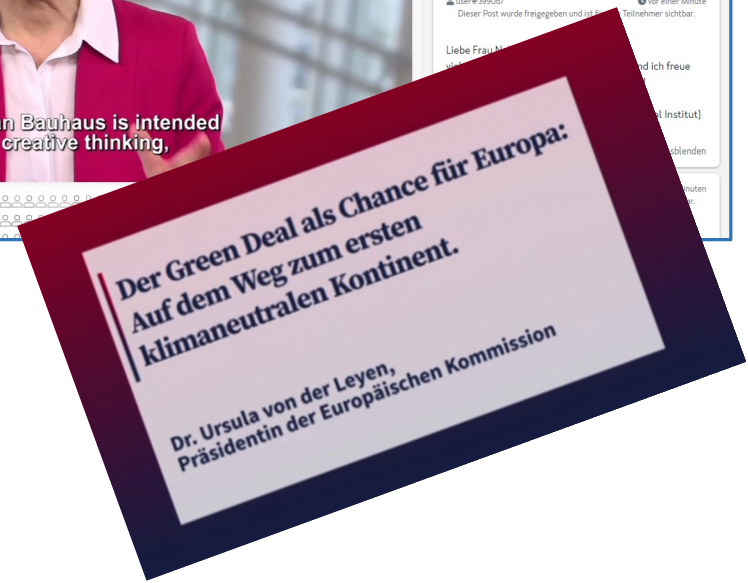
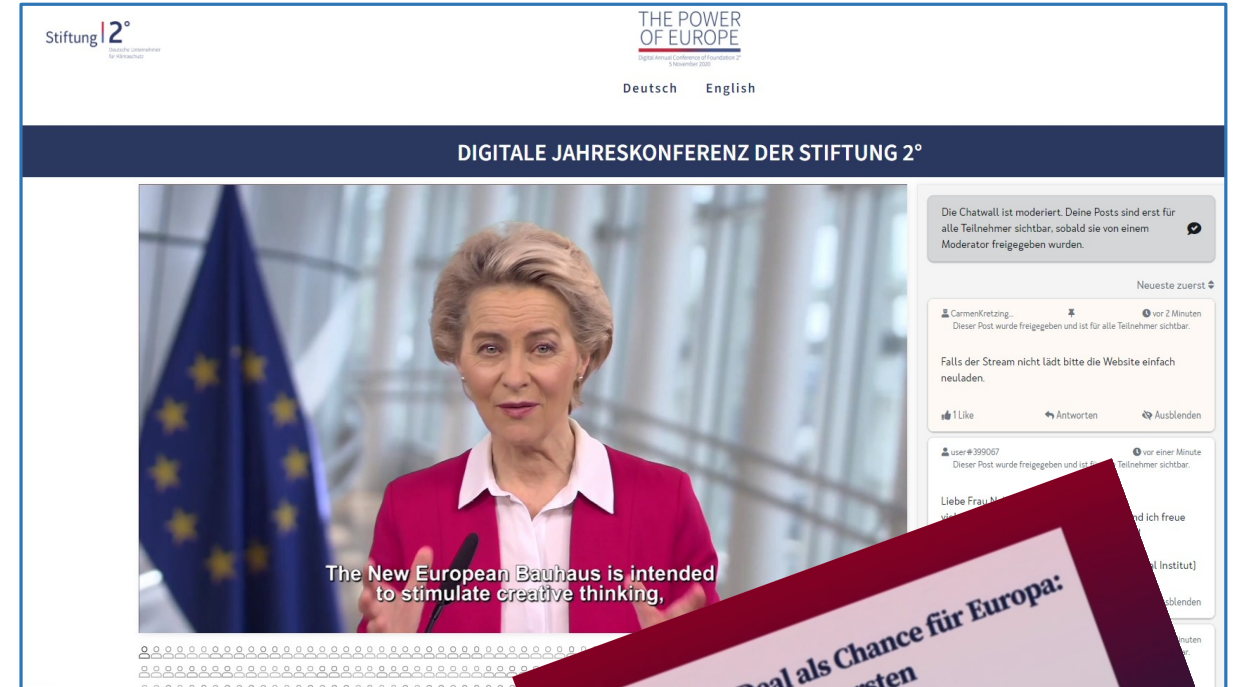
Graz Declaration for Climate Protection in the Built Environment - Initiator



# Context ...

*The EU building sector is the largest single energy consumer in Europe responsible for **approximately 40% of EU energy consumption and for 36% of the EU greenhouse gas emissions**. At the same time, some 75% of existing buildings is energy inefficient (and were constructed before legislation on building performance was in place). Boosting energy performance of buildings to roll out energy efficiency and renewables at a much higher pace is a priority, especially given that 80% of today's buildings will still be in use by 2050 and that only 1% (on average) of buildings currently undergo renovations each year. This rate will need at least to double to reach the EU's energy efficiency, renewables and climate objectives.*

[https://ec.europa.eu/info/news/preparing-future-renovation-wave-initiative-have-your-say-2020-jun-12\\_en](https://ec.europa.eu/info/news/preparing-future-renovation-wave-initiative-have-your-say-2020-jun-12_en)



## Context ...

Speech by Christine Lagarde, President of the ECB, at the launch of the COP 26 Private Finance Agenda:

“The European Union also launched a comprehensive action plan in 2018 to promote sustainable finance. That plan is already bearing fruit, including the recent agreement on the **taxonomy framework for assessing the sustainability of economic activities**. The taxonomy represents an important step towards **categorising green investments** on a sound and consistent basis and will help underpin further market developments in **green finance**.”

<https://www.finextra.com/pressarticle/81627/christine-lagarde-climate-change-and-the-financial-sector>

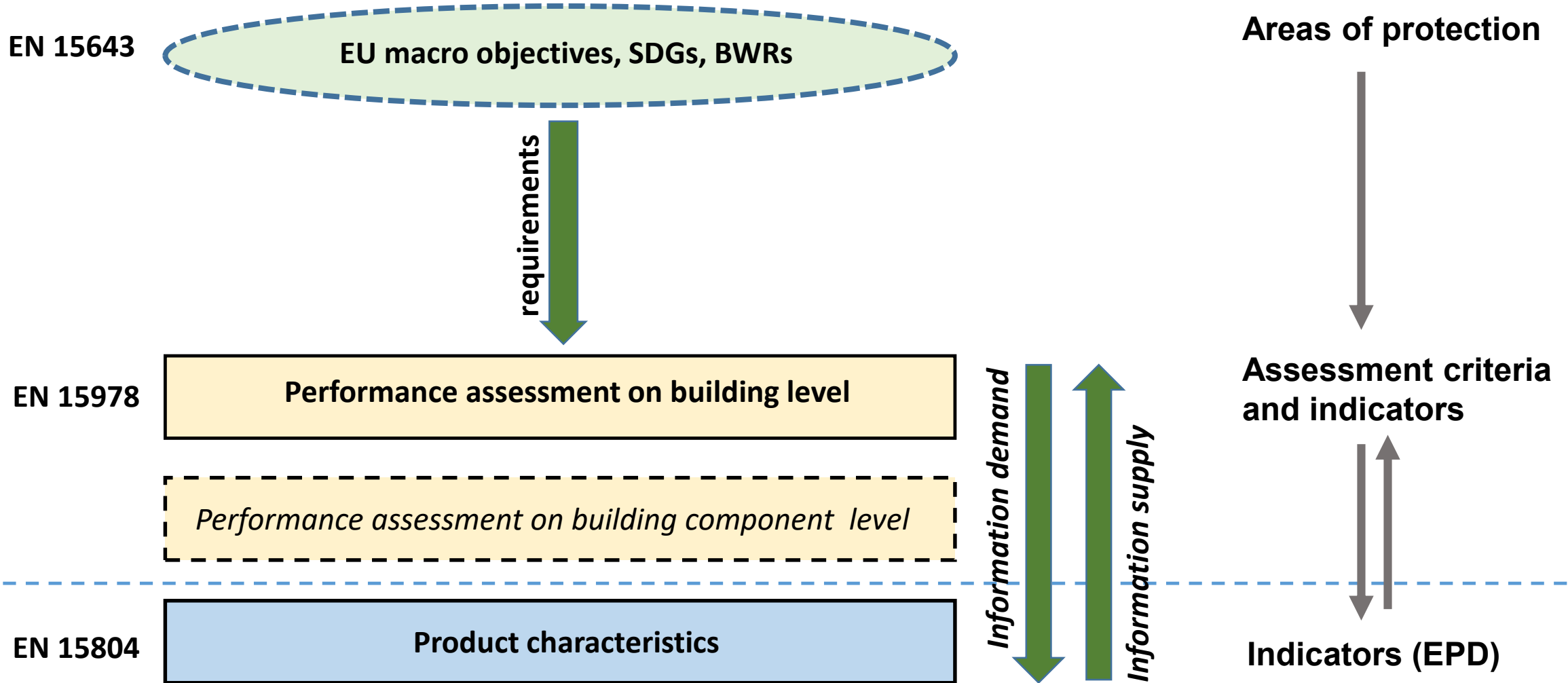


## Main questions ...

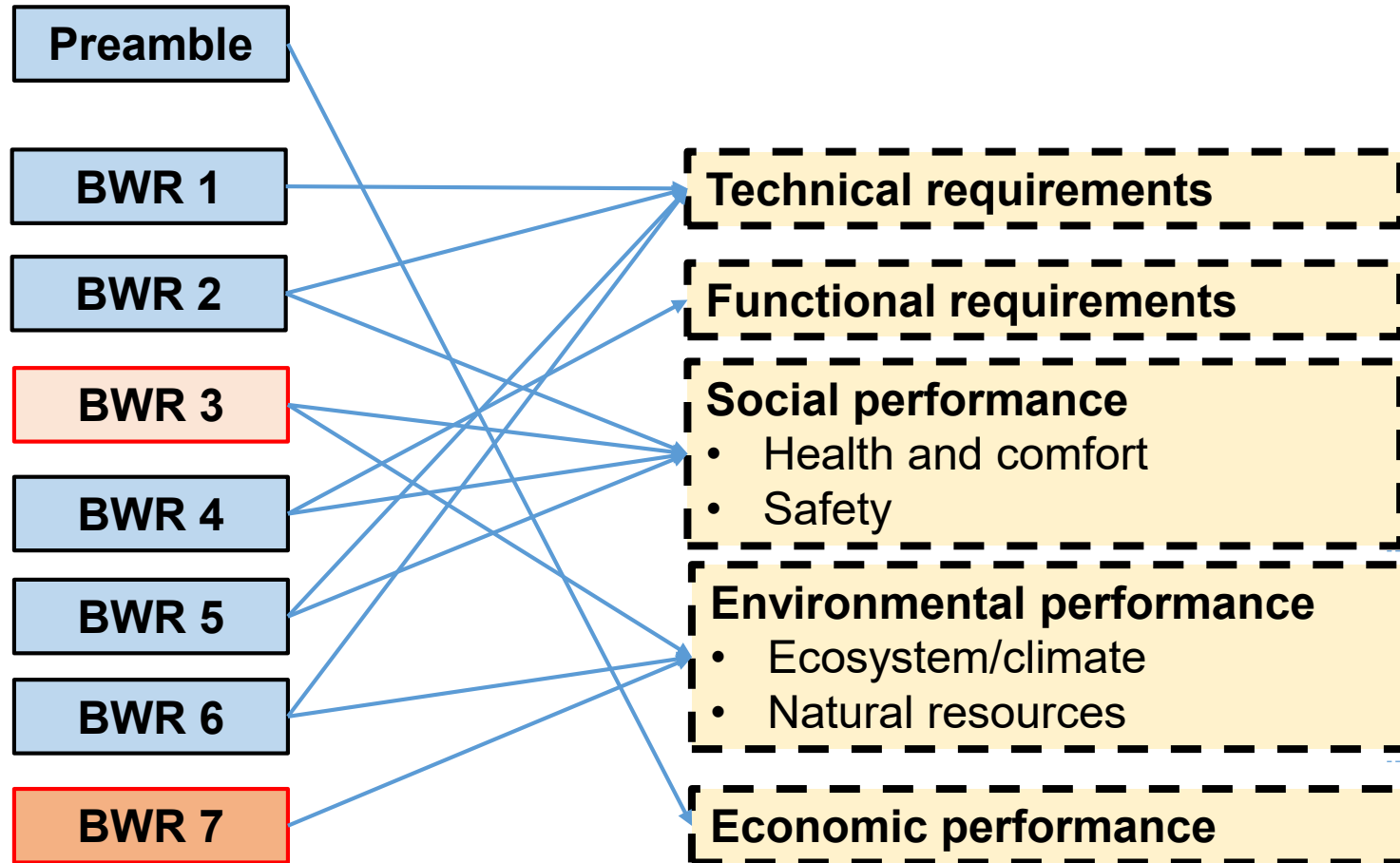
- (1) How can the information flows between a **sustainability assessment of buildings** and **the provision of environment- and health-related information on building products** be designed?
- (2) How can the special requirements for buildings be **restructured**?  
Where the interest and responsibility of treating the individual topics lie?
- (3) How can a **job sharing between EPD and PEF** in **B2B and B2C** communication of product information be achieved?
- (4) How do **Construction Product Regulation (CPR)** and **Basic Requirements for Construction Works (BWRs)** relate to one another?



# Exchange of information between building and product level ...



# Re-structuring the BWRs? Based on examples only!



In the interest/responsibility of ...

Client	Member state	EC
XX	XXX	X
XXX	XX	X
XXX	XXX	XXX
XX	XXX	XXXX
XXX	XX	XX

**Building level !**

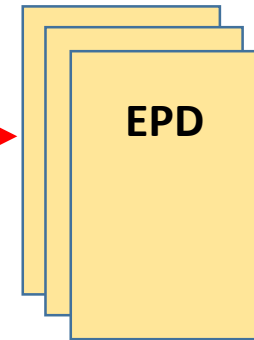


# Environmental communication ... (Type I / Type III and B2B / B2C)

**B2B communication, using type III information**

*un-assessed and dis-aggregated*

**Perspective: CP as intermediate product**



DESCRIPTION OF THE SYSTEM BOUNDARY [X = INCLUDED IN LCA; MND = MODULE NOT DECLARATED]

PRODUCT STAGE	CONSTRUCTIVE PROCESS		USE STAGE											END OF LIFE STAGE		BENEFITS AND LOADS BEYOND THE SYSTEM BOUNDARY				
	Raw material supply	Transport from the gate to the site	A1	A2	A3	A4	A5	B1	B2	B3	B4	B5	B6	B7	C1		C2	C3	C4	D
Raw material supply	X	X																		
Transport from the gate to the site		X																		
Manufacturing			X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X
Assembly																				
Use																				
Maintenance																				
Repair																				
Replacement <sup>1)</sup>																				
Refurbishment <sup>1)</sup>																				
Operational energy use																				
Operational water use																				
Deconstruction																				
Demolition																				
Transport																				
Waste processing																				
Disposal																				
Reuse																				
Recycling-potential																				

RESULTS OF THE LCA - ENVIRONMENTAL IMPACTS [mPt/functional unit]

Parameter	Unit	A1A2	A3	A4	A5	B1	B2	B3	B4	B5	B6	B7	C1	C2	C3	C4	D
CO <sub>2</sub> e	kg CO <sub>2</sub> e	0.78	0.09	1.48	0.08	0.32	0.01	0.00	0.00	0.00	4.95	3.90	0.00	0.10	0.90	0.29	
CO <sub>2</sub> e	kg CO <sub>2</sub> e	1.67E-6	4.93E-6	2.79E-6	0.00E+0	6.60E-6	2.93E-6	0.00E+0	9.93E-6	4.93E-6	2.20E-6	0.00E+0	0.48E-6	6.33E-6	4.63E-6	1.11E-6	
AP	kg SO <sub>2</sub> e	1.89E-2	2.17E-2	3.39E-2	0.00E+0	1.02E-2	2.23E-2	0.00E+0	0.00E+0	0.00E+0	0.00E+0	0.00E+0	0.00E+0	0.00E+0	0.00E+0	0.00E+0	
EP	kg PO <sub>4</sub> e	1.99E-2	1.54E-2	0.79E-2	0.00E+0	2.78E-2	6.42E-2	0.00E+0	0.00E+0	0.00E+0	0.00E+0	0.00E+0	0.00E+0	0.00E+0	0.00E+0	0.00E+0	
POCP	kg Pb-e	5.11E-3	1.14E-2	4.82E-2	1.11E-2	7.43E-2	6.42E-2	0.00E+0	0.00E+0	0.00E+0	0.00E+0	0.00E+0	0.00E+0	0.00E+0	0.00E+0	0.00E+0	
ADPE	kg Sb-e	3.04E-4	3.41E-4	2.81E-4	0.00E+0	8.06E-4	1.90E-4	0.00E+0	0.00E+0	0.00E+0	2.07E-4	2.33E-4	1.98E-4	1.89E-4	1.45E-4	1.19E-4	
ADPF	kg F-e	2.02E-3	1.24E-3	2.63E-3	0.00E+0	7.79E-3	0.97E-3	0.00E+0	0.00E+0	0.00E+0	0.17E-2	1.97E-2	0.39E-2	0.38E-2	0.27E-2	0.47E-2	

Legend: CO<sub>2</sub>e = Global warming potential; EP = Eutrophication potential; POCP = Formation potential of tropospheric ozone photochemical oxidant; ADPE = Abiotic depletion potential for non-fossil resources; ADPF = Abiotic depletion potential for fossil resources.

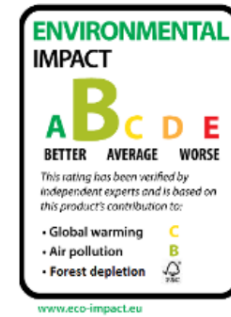
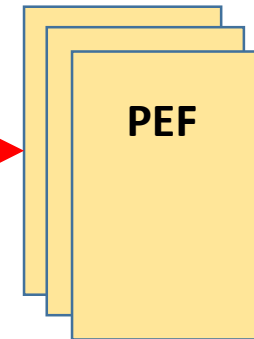
Target group: LCA-specialist

Environment and health related construction product information, based on **one harmonized method**

**B2C communication, using type I information**

*assessed and (semi-)aggregated*

**Perspective: CP as end use product**



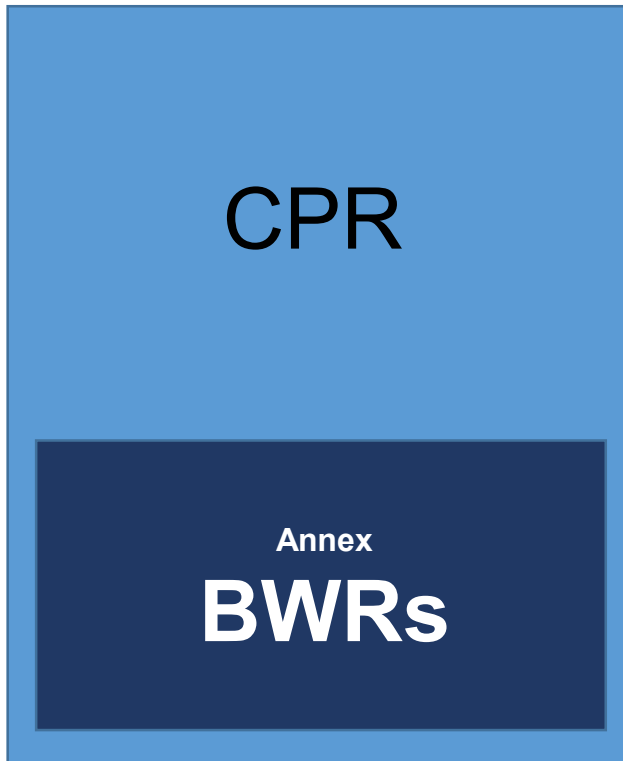
Target group: Consumer

See: Standards by ISO/TC 207/SC 3 - Environmental labelling, <https://www.iso.org/committee/54836/x/catalogue/>

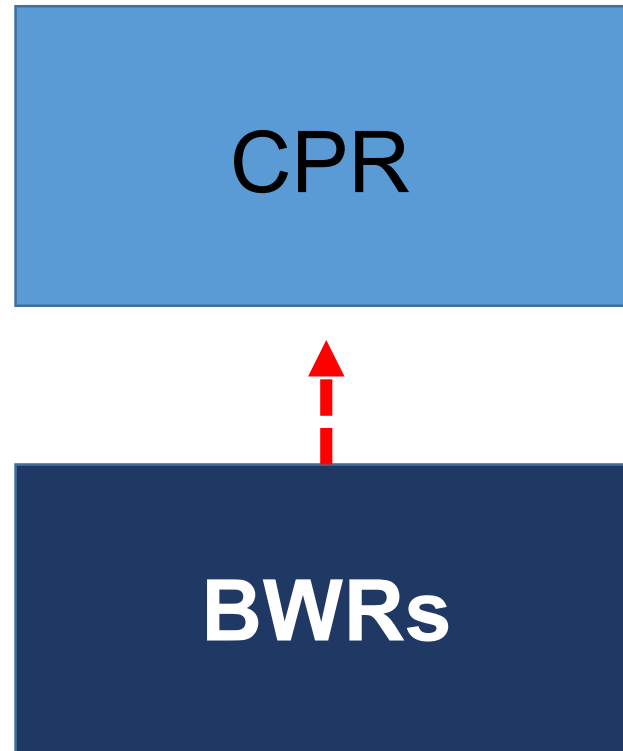
**Product level!**

# Construction Product Regulation (CPR) & Basic Works Requirements (BWR) \*

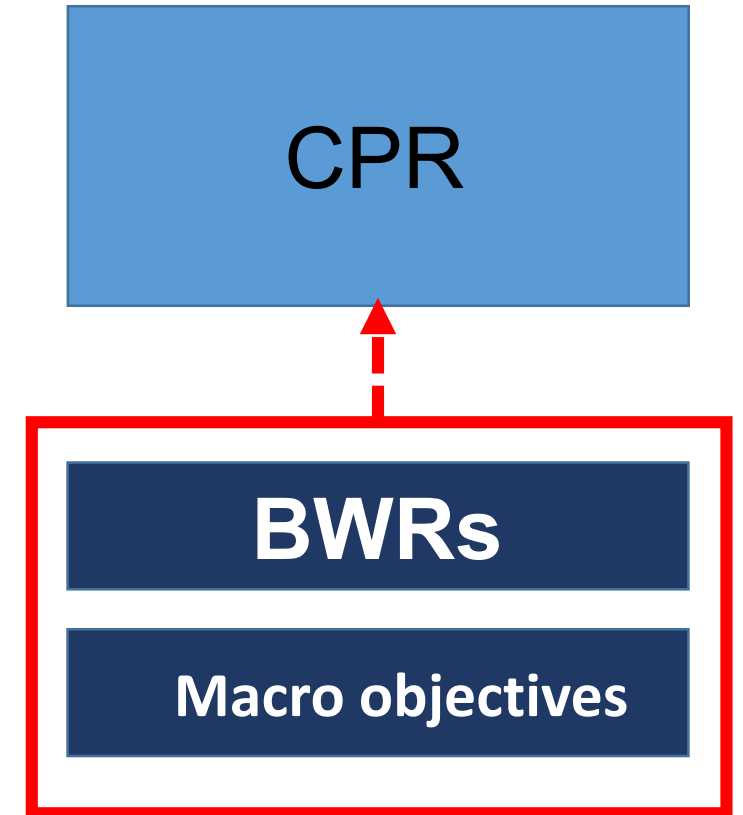
Option A  
(now)



Option B.1



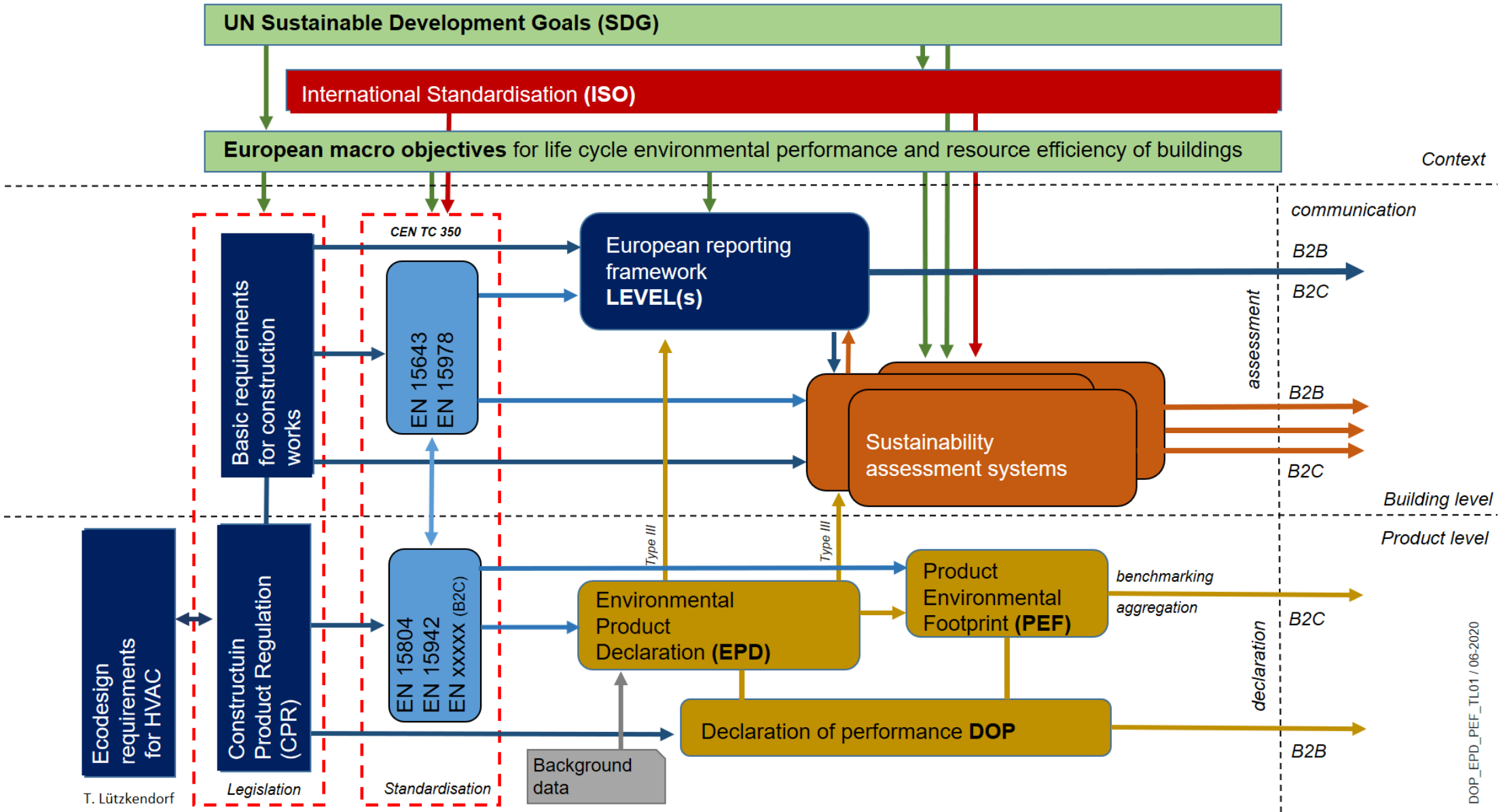
Option B.2



\* *Basic requirements for construction works*



# The full picture ...



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## Recommendations and next steps ...

Resolution of the complex topic in sub-questions:

- ✓ Clarification of the role of BWRs
- ✓ Restructuring of BWRs
- ✓ Specification of the BWRs (including BWR 3 and BWR 7)
- ✓ Deriving requirements for building products / building product information
- ✓ Use of one single method for the LCA of construction products
- ✓ Inclusion of the HVAC systems as building components
- ✓ Use of EPD and PEF as communication formats for B2B and B2C
- ✓ Job sharing between legislation and standardization

