

International Standards on Sustainability in Building Construction

➔ ISO TC59 / SC17

- ➔ General Principles, Terminology & Sustainability Indicators
 - ➔ full scope of sustainability
- ➔ Declaration and Assessment
 - ➔ Scope on environmental aspects

➔ ISO TC59 / SC14

- ➔ Design Life, Service Life, Life Cycle Costing, Link of environmental assessment to Service Life
 - ➔ Links performance-based building and life performance to sustainable building concerns

➔ CEN TC350

- ➔ Takes ISO SC17 & SC14 standards to European context
 - ➔ Elaborates on three spheres of sustainability

Core Sentence ISO 15392 and derived Core Concept

- ➔ Sustainable development of buildings brings about the required performance with minimum adverse environmental impact, while encouraging improvements in economic, social (and cultural) aspects at local, regional and global levels.
- ➔ Economic, environmental and social aspects embedded in performance context
- ➔ Parallel consideration of environmental, economic and social aspects at hand of functionality & performance

Methodologies, Standards, Labeling Schemes

- **Methodologies** are flexible to adapt to decision making context
- **Standards** define the methodologies, not the detailed scenarios, nor the target values or benchmarks
- **Labeling schemes** need further conventions, as goal to:
 - Compare and communicate simplified information
 - Assess different buildings on common scale
 - Common set of parameters regardless target audience
 - Highly standardized detailed approach to ensure comparability
- **Important: Add-on to standards, without conflict!**

Environmental Assessment Sustainability Assessment

- ➔ Origin of Sustainability Assessment often in environmental assessment
- ➔ Need to bring other criteria to equal-base consideration

- ➔ Sustainability aspects addressed?
Remind ISO 15392:
 - ➔ Holistic approach = “all relevant issues covered”
 - ➔ Long term concern = “Life cycle thinking”
 - ➔ Transparency = “open presentation of all procedures”

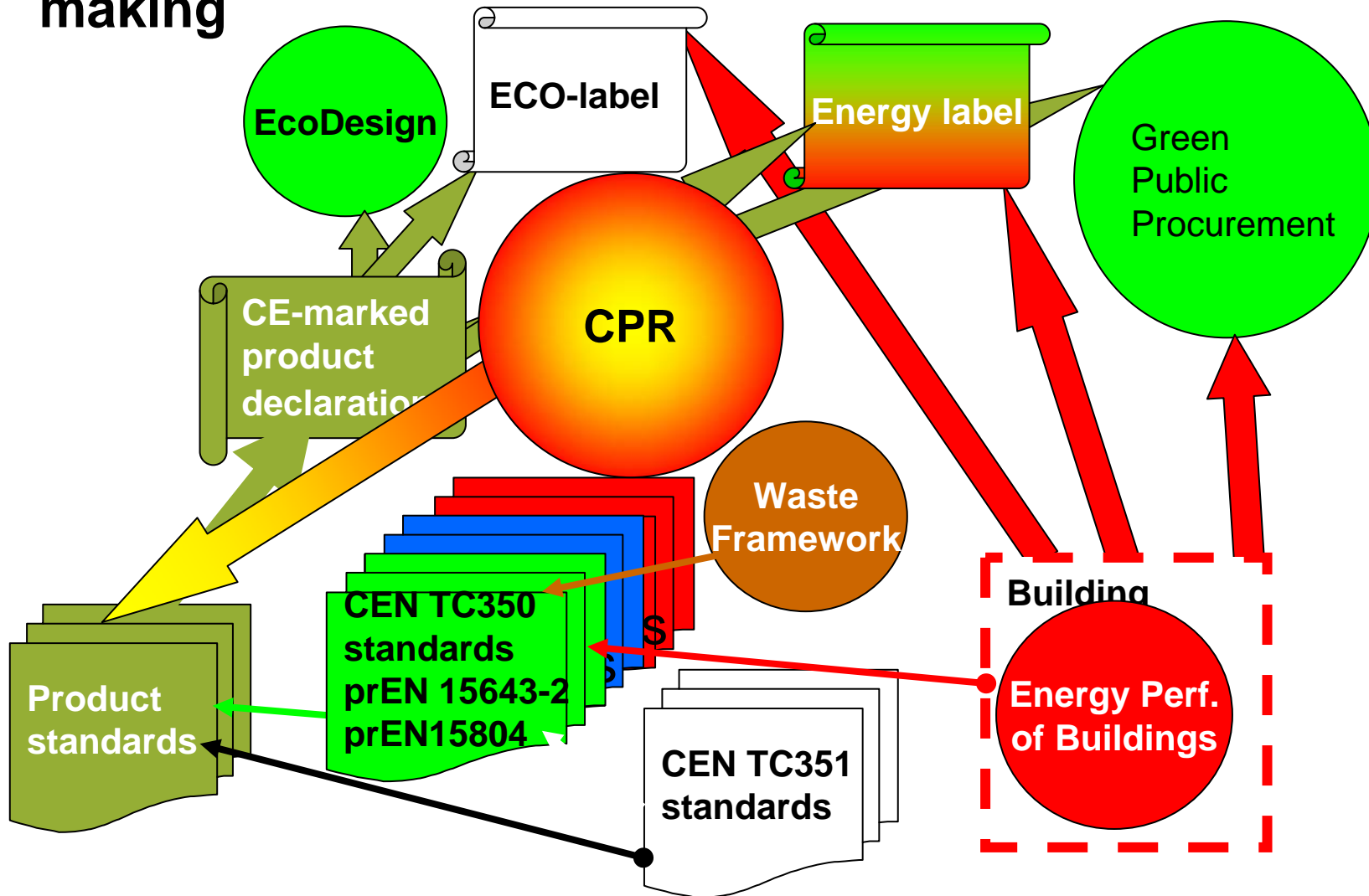
- ➔ “Sustainability” – claim or fact?

CEN/TC350 – Sustainability of Construction Works



- European horizontal standards for the sustainability assessment of buildings -> One system in Europe
- Sustainability assessment with the performance based approach in terms of:
 - Environmental performance (Mandate M/350)
 - Social performance
 - Economic performance
- Life cycle approach with the quantitative indicators
- Taking into account also the wishes/needs of the relevant policies of the EC & EP related to the Construction products (Construction Products Regulation, Eco-design, Greening Public Procurement, Energy-label, Eco-label, Energy Performance of Buildings, Lead Market Initiative on Sustainable Construction, European Platform on LCA)
- Prevention of potential technical trade barriers, internal and international market (= linking harmonized EPD to the CE-marking)

Prevention of potential technical trade barriers in EU: CEN/TC350 is providing indicators, methods and communication provisions; no policy making



Standards of CEN/TC350 and related horizontal ISO and CEN standards



Framework level	prEN 15643-1 Sustainability Assessment of Buildings - General Framework				
	prEN 15643-2 Framework for Environmental Performance	prEN 15643-3 Framework for Social Performance (WG5)	prEN 15643-4 Framework for Economic Performance	Technical Characteristics	Functionality
	Framework for Methods of Assessment of Environmental Performance (ISO/CDIS 21931-1)			Service Life Planning – General Principles (ISO 15686-1)	
Building level	prEN 15978 Assessment of Environmental Performance	Assessment of Social Performance	Assessment of Economic Performance	CEN Standards on Energy Performance of Buildings Directive (EPBD)	
	WI 3 Use of EPDs		Life Cycle Costing (ISO 15686-5)		
Product level	prEN 15804 Environmental Product Declarations	(see Note below)	(see Note below)	Service Life Prediction (ISO 15686-2), Feedback from Practice (ISO 15686-7), Reference Service Life (ISO 15686-8)	
	EPD of Build. Products (ISO 21930)				
	prEN 15942 Comm. Format B-to-B				
	prCEN/TR 15941				

Note: At present, technical information related to some aspects of social and economic performance are included under the provisions of prEN 15804 to form part of EPD

BWR7 (*Sustainable use of natural resources*) and the needs for horizontal approach in its fulfilment



BWR = Basic Works Requirements
#7: Sustainable use of natural resources:

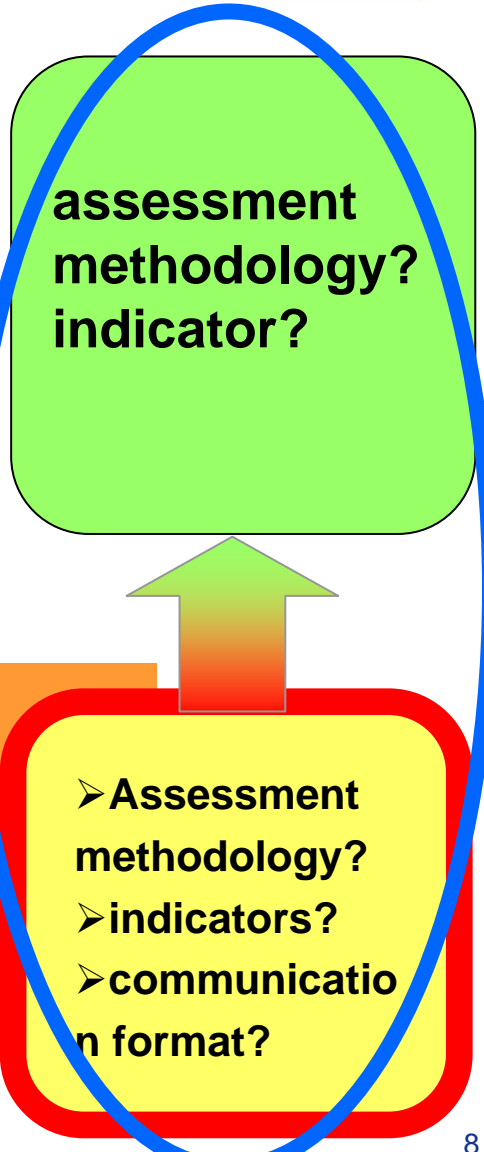
#7a: recyclability of works

#7b: durability of works

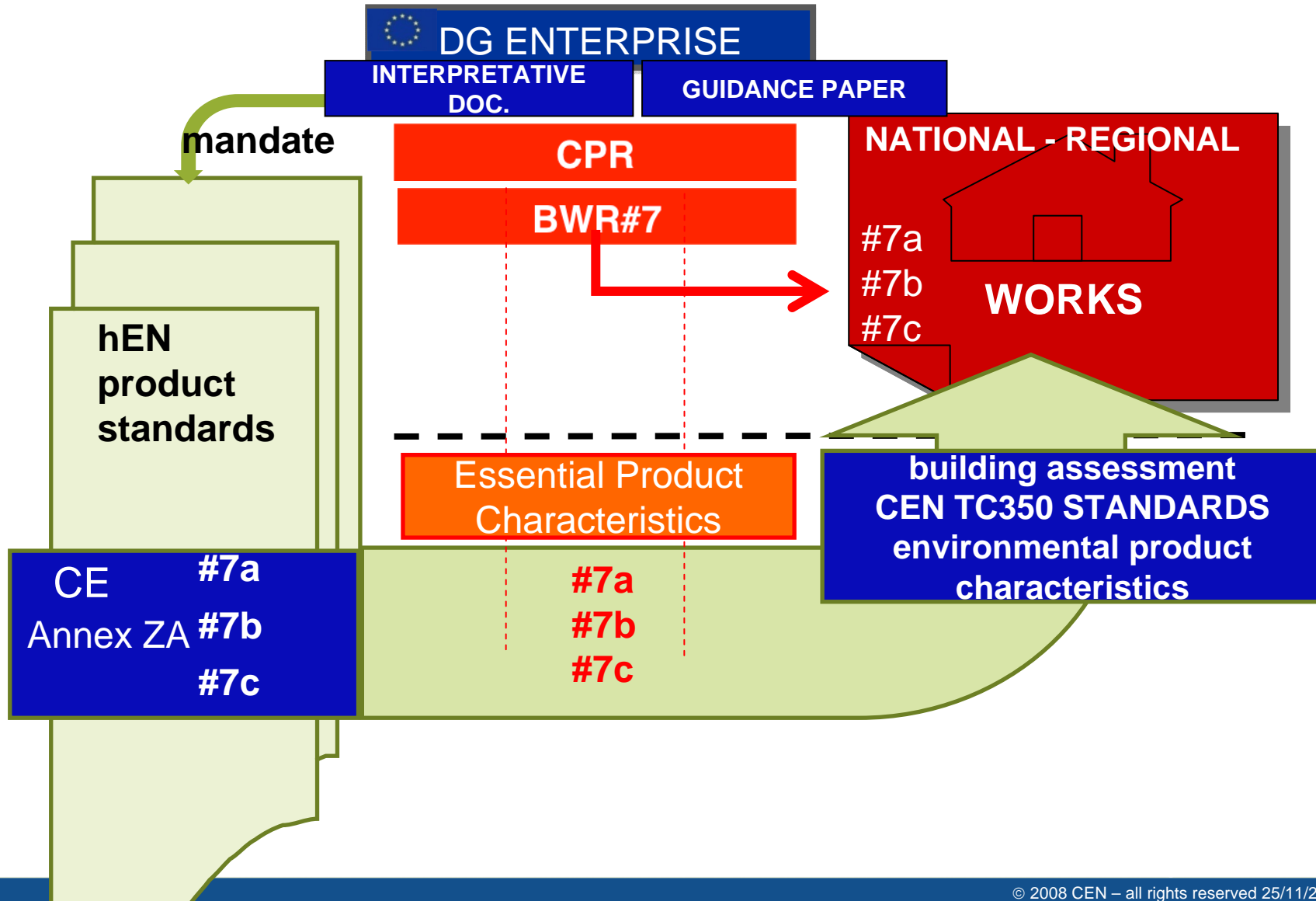
#7c: use of environmentally compatible raw and secondary materials in works

Member states set performance requirements for works covering 7a, 7b and 7c

EPC = Essential Product Characteristics



Road map to cover BWR7 in the harmonized product standards with the horizontal and performance based approach





Environmental indicators in CEN/TC350

1) Output indicators for environmental impacts:

- Climate change
 - Destruction of the stratospheric ozone layer
 - Acidification of land and water resources
 - Eutrophication
 - Formation of ground level ozone
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2) Input indicators for use of resources (materials and energy)

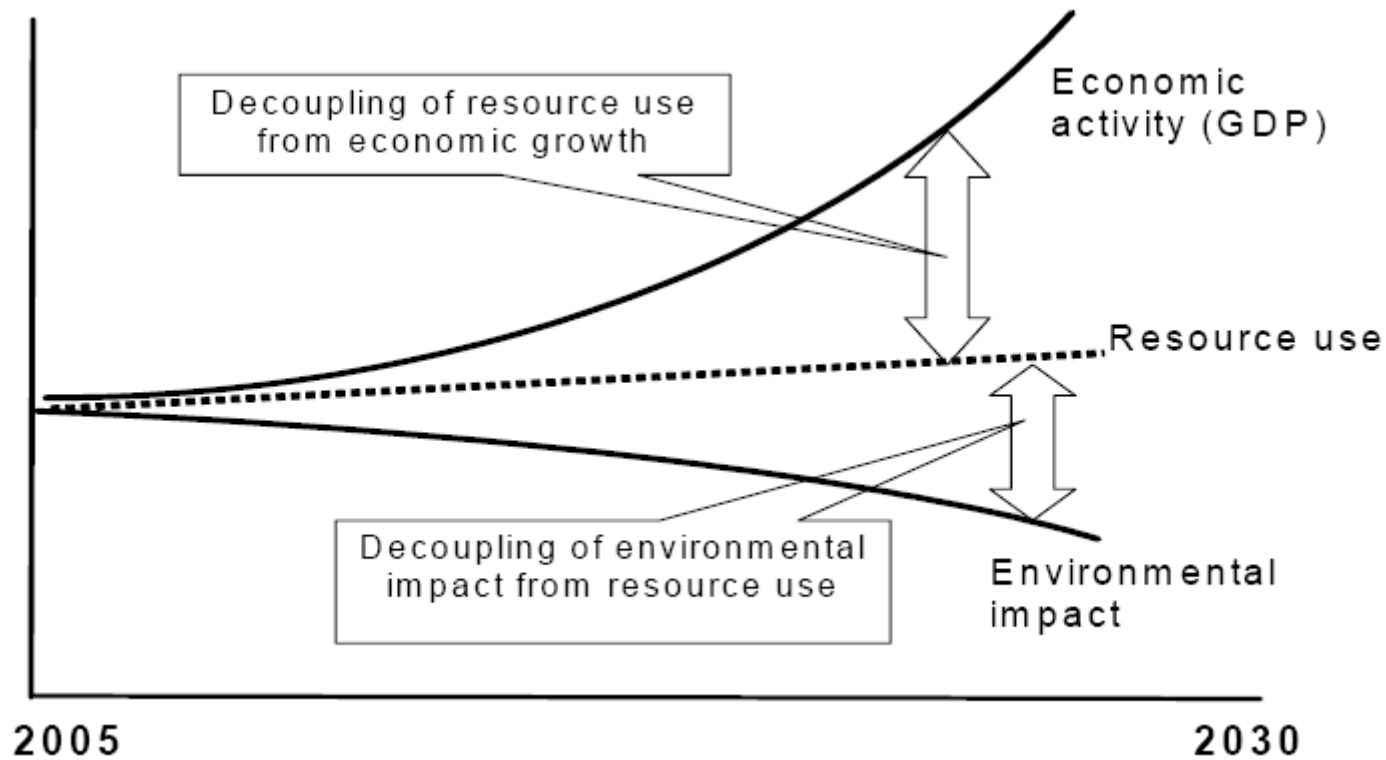
- Use of non-renewable material resources
 - Use of renewable material resources
 - Use of secondary materials
 - Use of non-renewable primary energy
 - Use of renewable primary energy
 - Use of freshwater resources
-

3) Output indicators for waste:

- Components for re-use
- Waste materials for recycling
- Waste materials for energy recovery
- Non-hazardous waste to disposal
- Hazardous waste to disposal
- Radioactive waste to disposal



EU Thematic Strategy on the "Sustainable Use of Natural Resources": Decoupling environmental impacts from the use of natural resources as EU is targeting for a growing economy



Fulfilment of the CPR BWR7 – “Sustainable Use of Natural Resources”



a) “Recyclability of the construction works, their materials and parts after demolition”

- **Fulfilment of the recyclability aspect: To set requirements for Environmental Indicators: “Materials for Recycling” and “Materials for Energy Recovery” (relevant recycling operations according to the Waste Framework Directive)**

Fulfilment of the CPR BWR7 – “Sustainable Use of Natural Resources”



b) “Durability of the construction works”

- **Not an environmental indicator, but a technical characteristic of the building with environmental and economic consequences**
- **In order to cover the whole life cycle, durability information is already required in the assessment of environmental performance**
- **Fulfilment of the durability aspect: To set requirement for “Required Service Life” (Design Life) of the building and the fulfilment of this requirement through Service Life Planning**

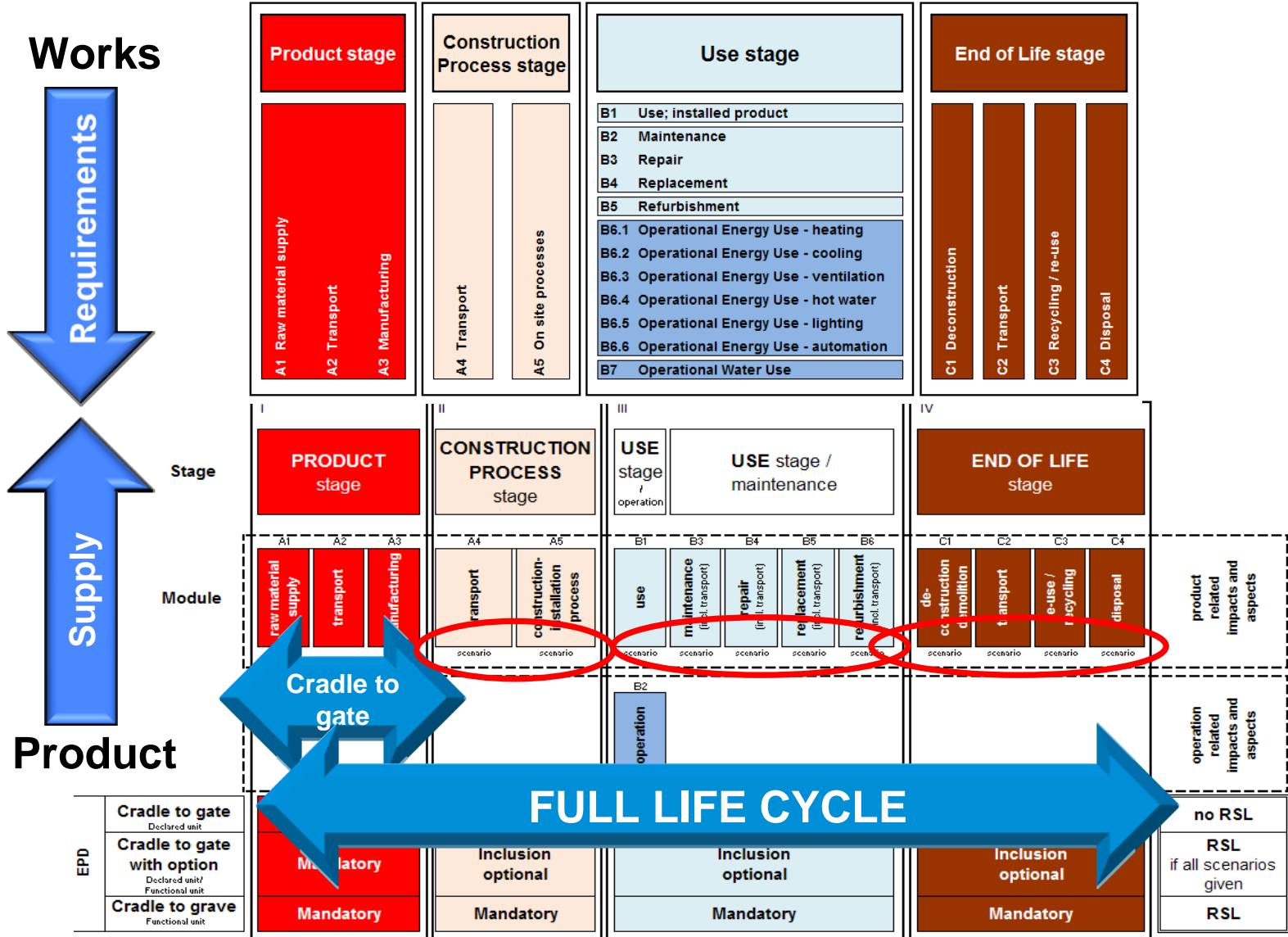
Fulfilment of the CPR BWR7 – “Sustainable Use of Natural Resources”



c) “Use of environmentally compatible raw and secondary materials in the construction works”

- The quantity of used raw and secondary materials (input) and the resulted environmental impacts (output: emissions and waste)**
- Fulfilment of this requirement: To set requirements for the level of decoupling between the used natural resources (input) and the resulted environmental impacts (output) and waste (output) during the life cycle**

Modular information on the products during the works life cycle



Points to be clarified in CPR in a relation to BWR7 – Recital 11a)



To reinforce the link between CEN/TC350 standards and the fulfilment of BWR7:

Recital 11a) in the EP amendment: *”For the assessment of the sustainable use of **natural** resources and of the impact of building works on the environment, **European standardized Environmental Product Declarations (EPD)** should be used. **To follow the main goal of EU Thematic Strategy on the Sustainable Use of Natural Resources, COM 2005/670, EPD should give, at least, the following environmental information:***

- *use of resources (non-renewable and renewable materials and energy),*
- *resulted environmental impacts, and*
- *generated waste.”*



Points to be clarified in CPR in a relation to BWR7 – Annex I – Basic Works Requirement 7 – Sustainable use of natural resources

“The construction works must be designed, built and demolished in such a way that use of natural resources is sustainable *during its life cycle* and ensure, at least, the following:

- a) Recyclability of the construction works, their materials and parts after demolition
- b) Durability of the construction works
- c) Use of environmentally compatible raw and secondary materials in the construction works”

Environmental information from construction products should include, at least, the following:

- *use of natural resources (non-renewable and renewable materials and energy),*
- *resulted environmental impacts, and*
- *generated waste.”*