European Horizontal Standardized Methods for the Assessment of the Sustainability Aspects of Construction Works

Ari Ilomaki and Thomas Lützkendorf

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Introduction & background

- Needs for setting requirements in regulations for different sustainability aspects is growing

- Common standardized assessment rules to prevent formation of technical trade barriers

- European standardization organization CEN Technical Committee, CEN/TC350, by the request of European Commission

Structure and targets

- CEN/TC 350 standards enable sustainability aspects to be taken into account in the decision making without creating trade barriers

- Main conditions: assessment with the
  - LIFE CYCLE APPROACH
  - PERFORMANCE BASED APPROACH

- Assessment and target setting in a transparent and equal way for all three pillars of sustainability

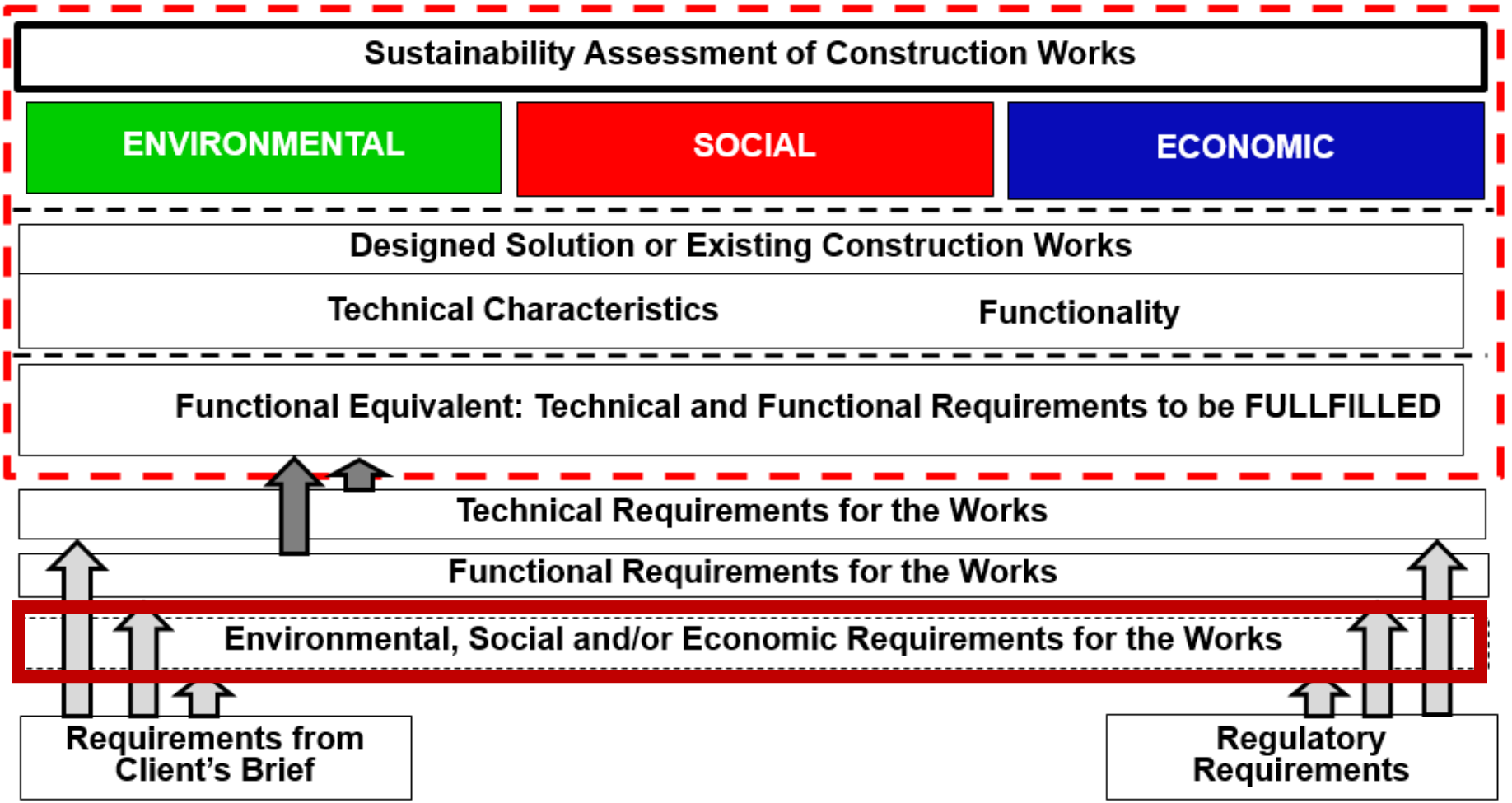
https://pixabay.com/de/dart-spiel-bull-s-eye-ziel-155726/

Structure of CEN TC 350

Framework level	**EN 15643-1 Sustainability Assessment of Buildings - General Framework [1]**			*Technical Characteristics*	*Functionality*
	EN 15643-2 Framework for Environmental Performance of Buildings [2]	**EN 15643-3 Framework for Social Performance of Buildings [3]**	**EN 15643-4 Framework for Economic Performance of Buildings [4]**	***Service Life Planning – General Principles (ISO 15686-1)* [15]**	
	prEN 15643-5 Framework for Sustainability Assessment of Civil Engineering Works [5]				
Works level	**EN 15978 Environmental Performance of Buildings [6]**	**EN 16309 Social Performance of Buildings [7]**	**EN 16627 Economic Performance of Buildings [8]**	***EN ISO 52000 Standard Series on Energy Performance of Buildings* [16]**	
	prWI028 Sustainability Assessment of Civil Engineering Works [9]				
Product level	**EN 15804 Environmental Product Declarations [10]**	***(see Note below)***	***(see Note below)***	***Service Life Prediction (ISO 15686-2)* [17], *Feedback from Practice (ISO 15686-7)* [18], *Reference Service Life (ISO 15686-8)* [19]**	
	CEN/TR 16790 Guid. to EN 15804 [11]				
	EN 15942 Comm. Form. B-to-B [12]				
	CEN/TR 15941 [13]				
	CEN/TR 17005 [14]				

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

Integration of additional requirements

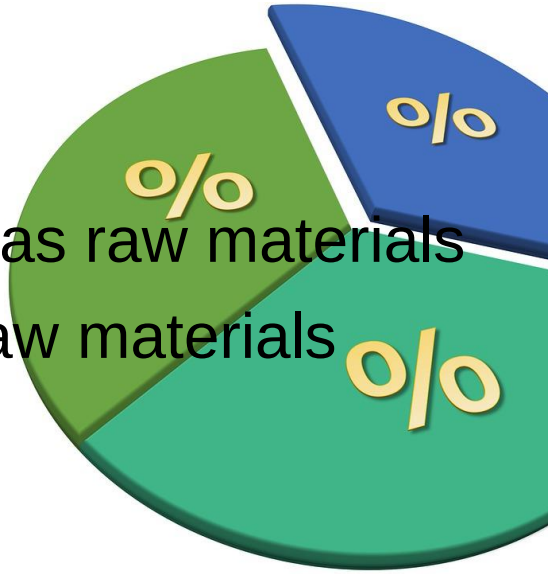


Indicators for environmental impacts

- Global warming potential
- Destruction of stratospheric ozone layer
- Acidification of land and water resources
- Eutrophication
- Formation of ground level ozone
- Abiotic depletion potential (fossil fuels)
- Abiotic depletion potential (elements)

Indicators for use of resources

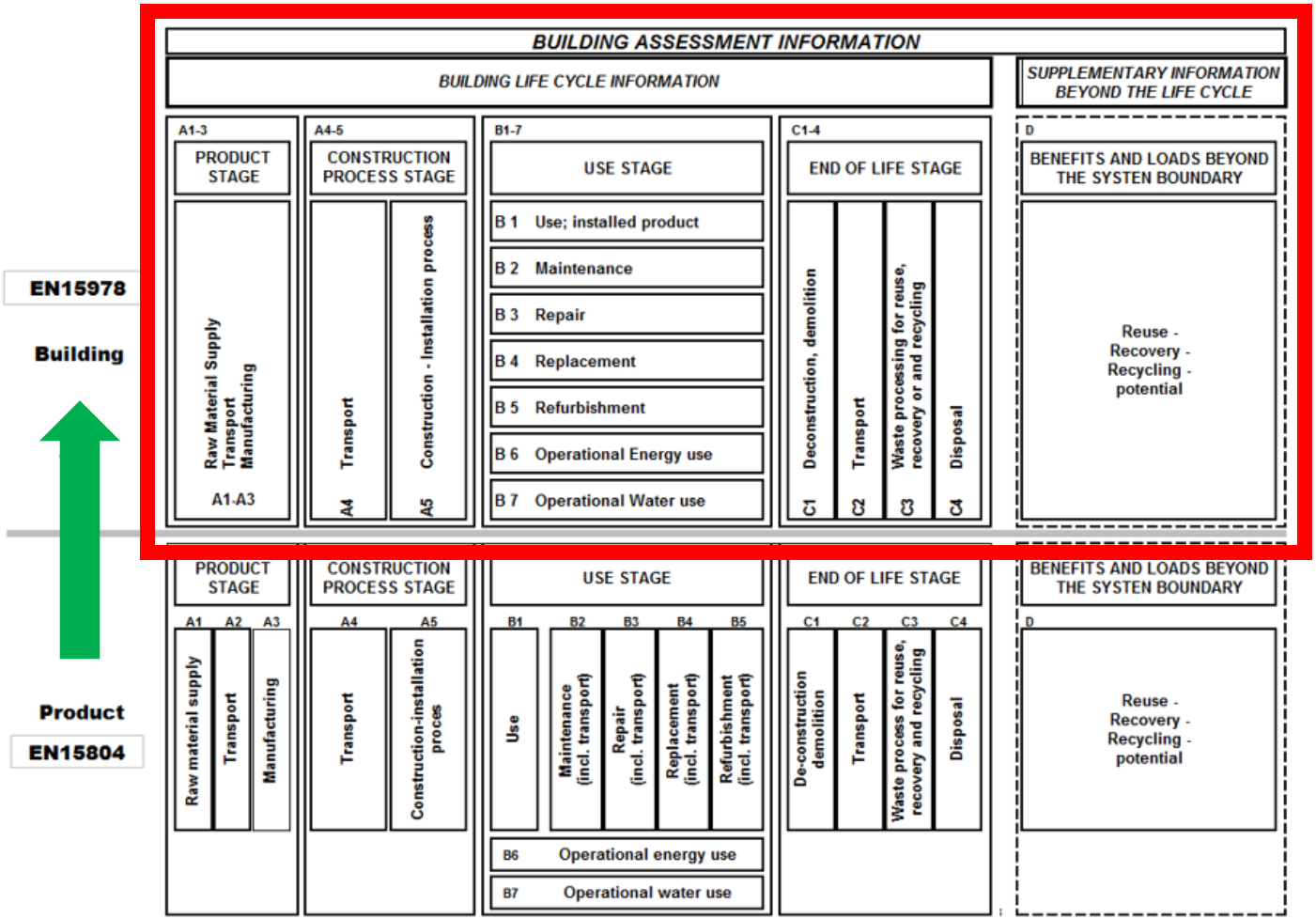
- Use of non-renewable primary energy
- Use of renewable primary energy
- Use of non-ren. prim.energy resources used as raw materials
- Use of ren. prim.energy resources used as raw materials
- Use of secondary materials
- Use of non-renewable secondary fuels
- Use of renewable secondary fuels
- Net use of freshwater resources



Indicators for other envir. information

- Components for re-use
- Materials for recycling
- Materials for energy recovery
- Non-hazardous waste to disposal
- Hazardous waste to disposal
- Radioactive waste to disposal
- Exported energy

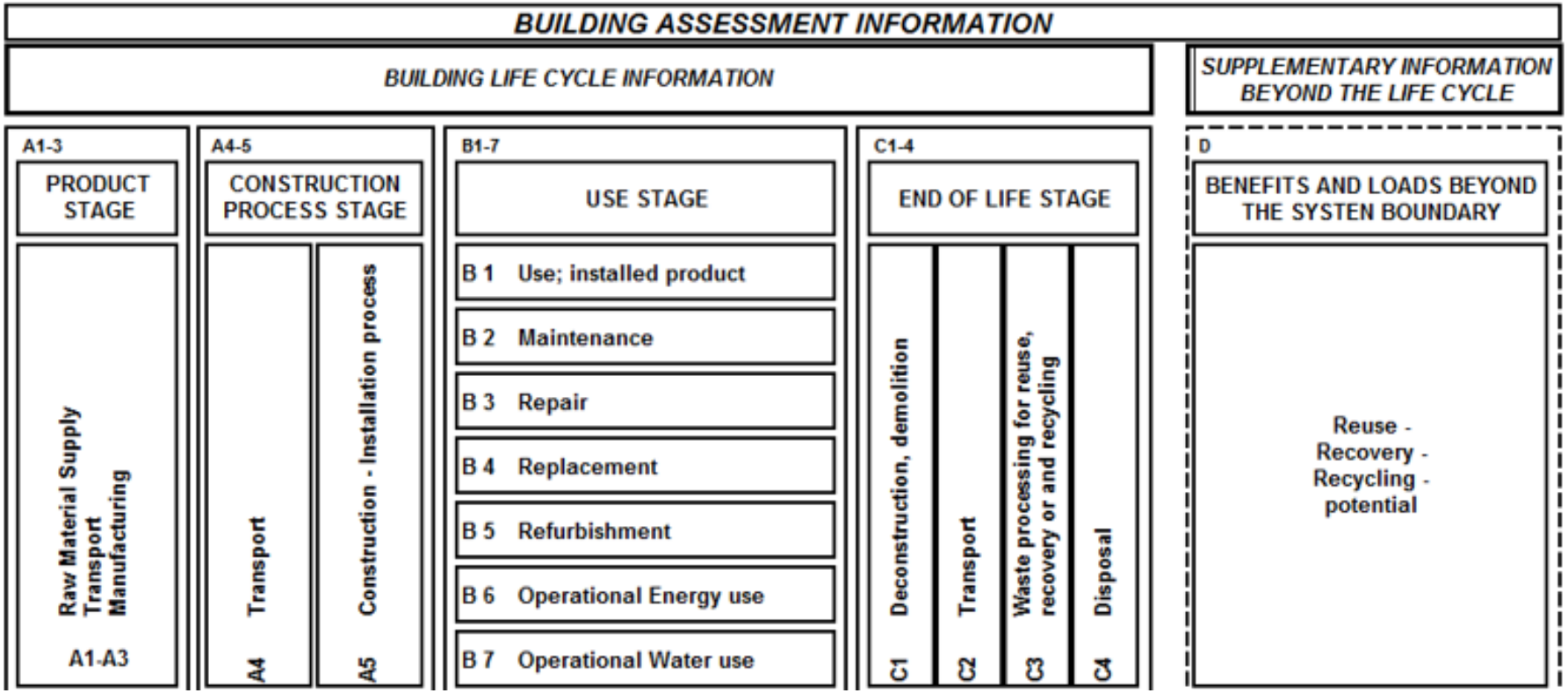
Building and product level



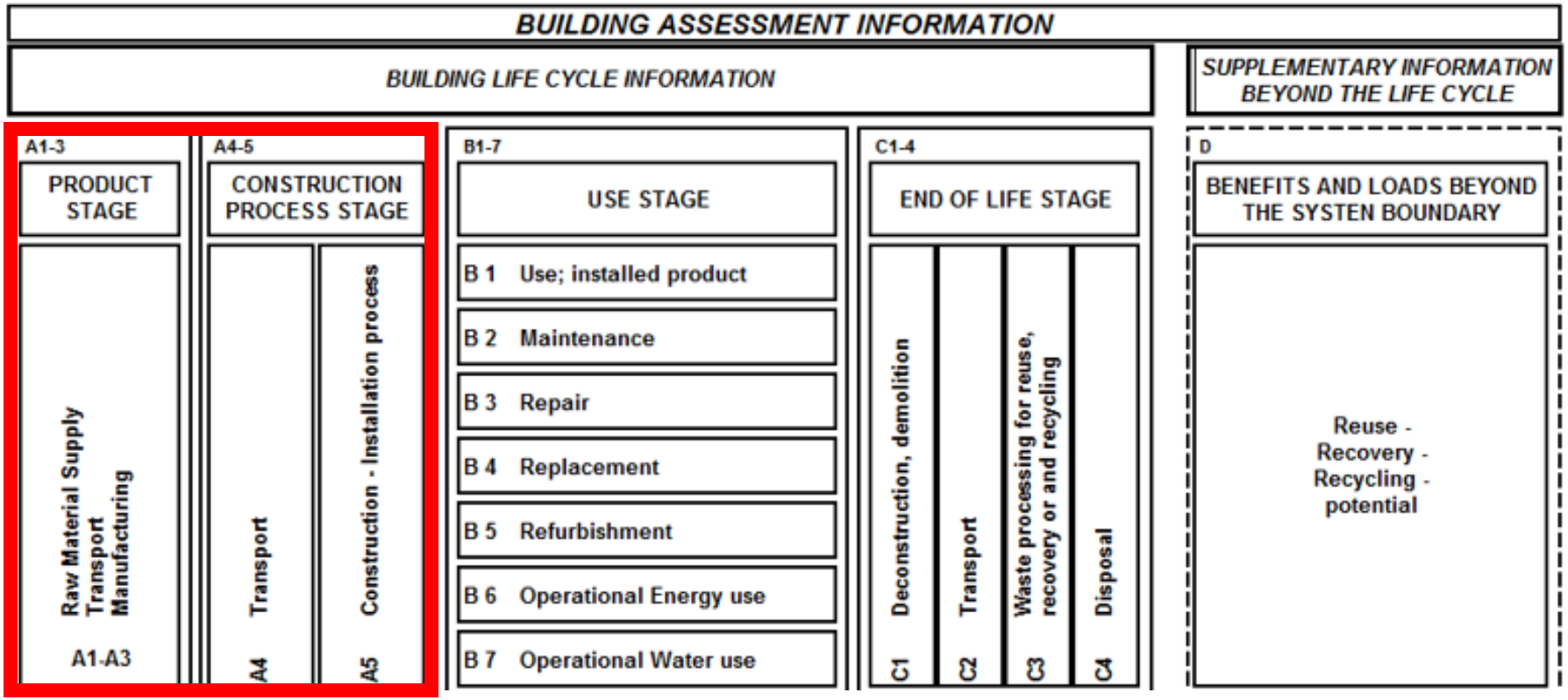
Building level

Product level

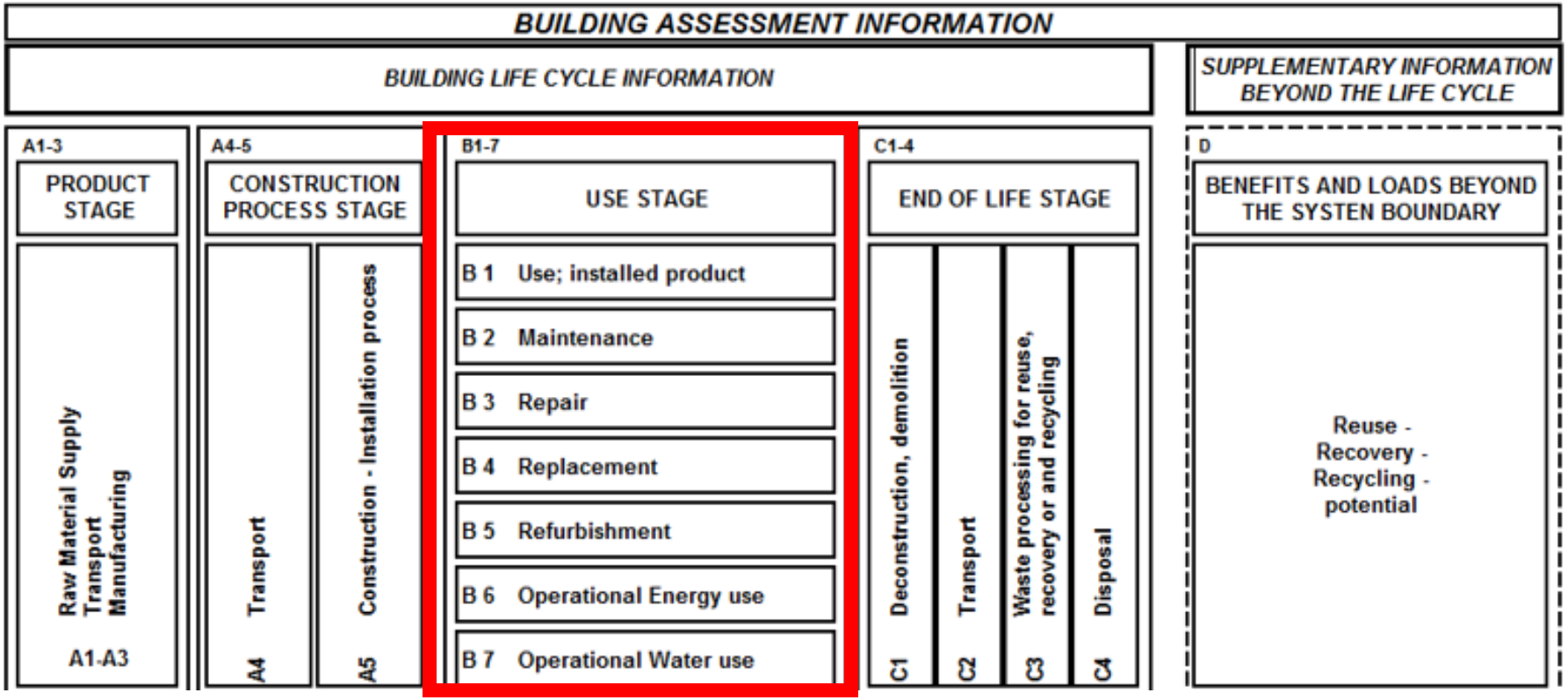
Building level – the modules



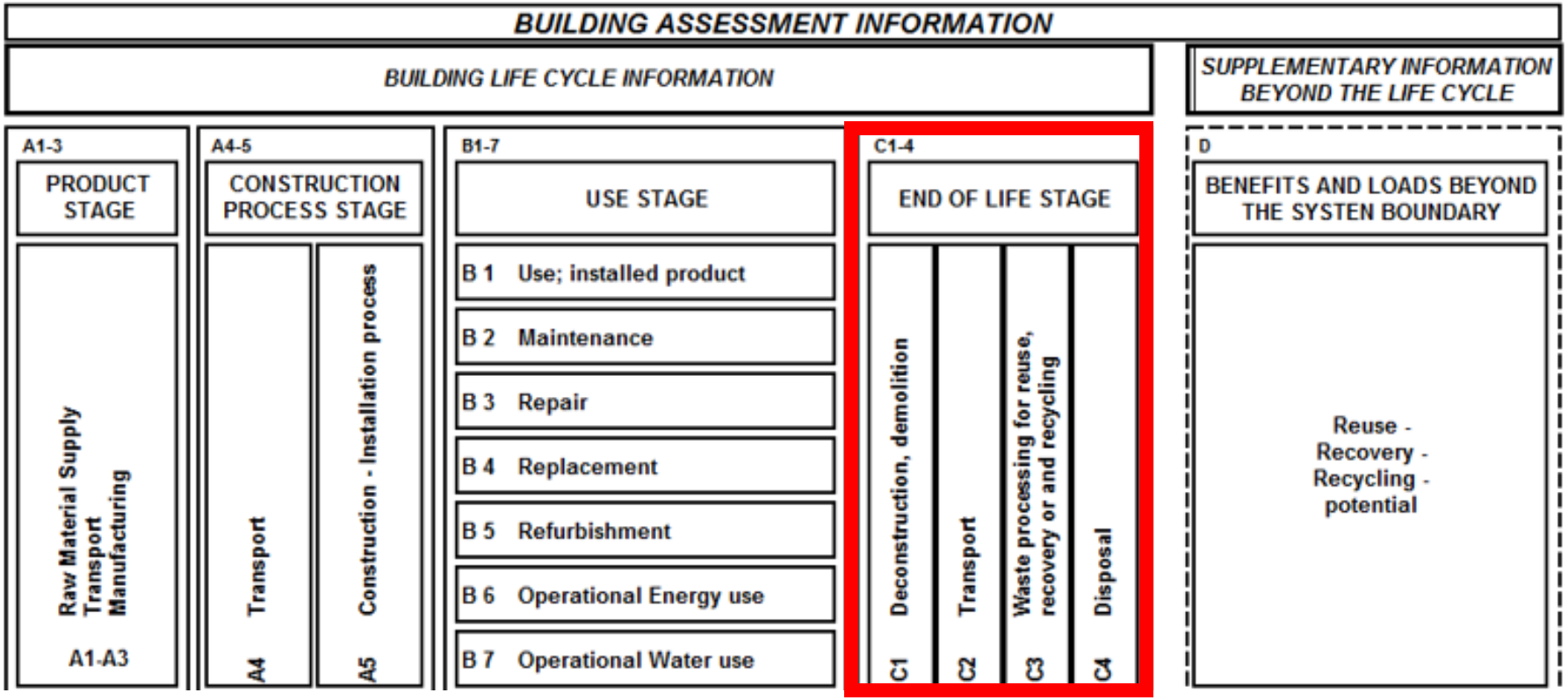
Building level – module A



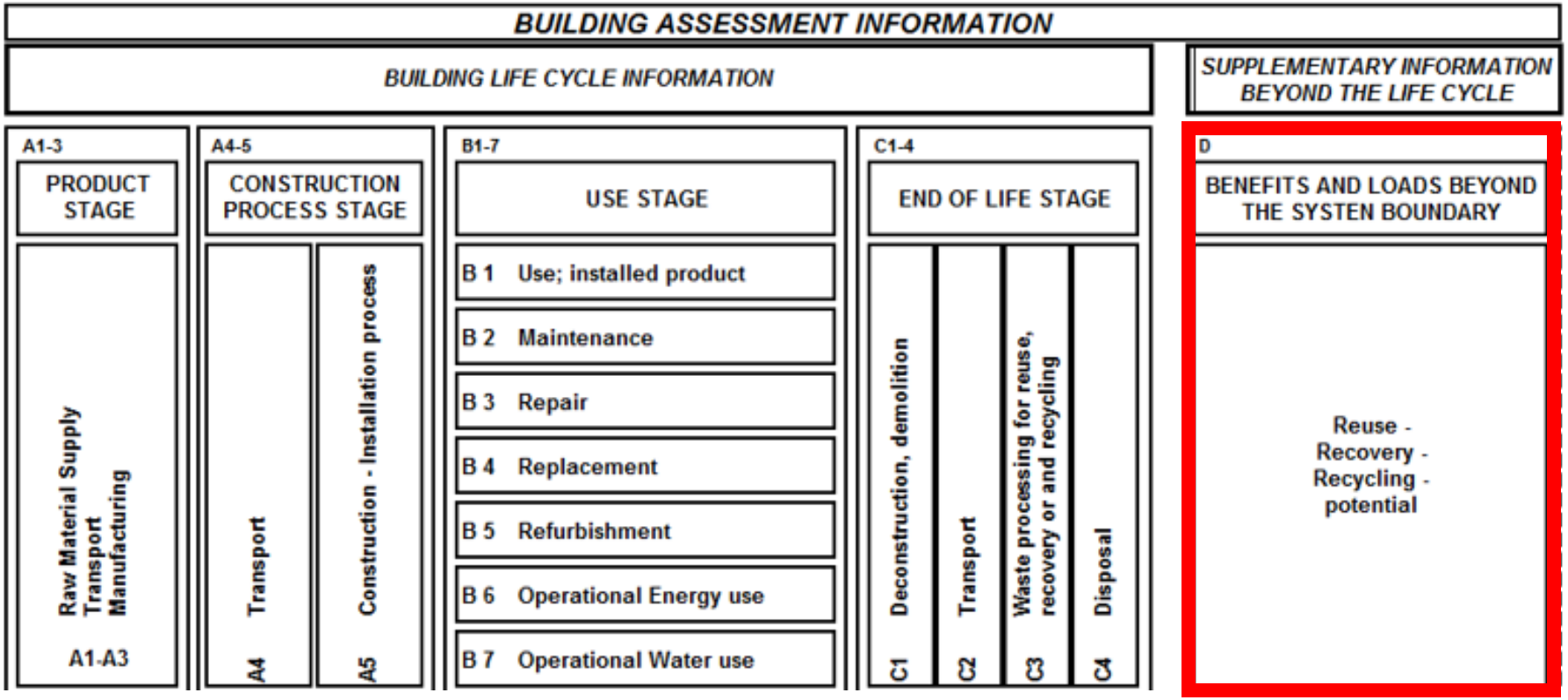
Building level – module B



Building level – module C



Building level – module D



Summary and outlook

- CEN/TC 350 standards enable sustainability indicators to demonstrate the level of
  - Environmental performance,
  - Social performance, and
  - Economic performance

  against the desired functional and technical requirements for a building over its life cycle in a transparent way.

- EN standards based on life cycle approach with quantifiable and performance based indicators are ready NOW.

Thank you