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





Structure of CEN TC 350

Framework level	EN 15643-1 Susta General Framewo	Technical	Functionality		
	EN 15643-2 Framework for Environmental Performance of Buildings [2] prEN 15643-5 Framework Civil Engineering Work		EN 15643-4 Framework for Economic Performance of Buildings [4] ity Assessment of	Characteristics Service Life Planning – General Principles (ISO 15686-1) [15]	
Works level	EN 15978 Environmental Performance of Buildings [6] prWl028 Sustainability	EN 16309 Social Performance of Buildings [7] Assessment of Civil En	EN 16627 Economic Performance of Buildings [8] gineering Works [9]	<i>EN ISO 52000</i> <i>Standard Series</i> <i>on Energy</i> <i>Performance of</i> <i>Buildings</i> [16]	
Product level	EN 15804 Environmental Product Declarations [10]	(see Note below)	(see Note below)	Service Life Prediction (ISO 15686-2) [17], Feedback from	
	CEN/TR 16790 Guid. to EN 15804 [11] EN 15942 Comm. Form. B-to-B [12] CEN/TR 15941 [13] CEN/TR 17005 [14]	<i>Note</i> : At present, technica to some aspects of social performance are included provisions of EN 15804 to	and economic under the	Practice (ISO 15686-7) [18], Reference Service Life (ISO 15686-8) [19]	



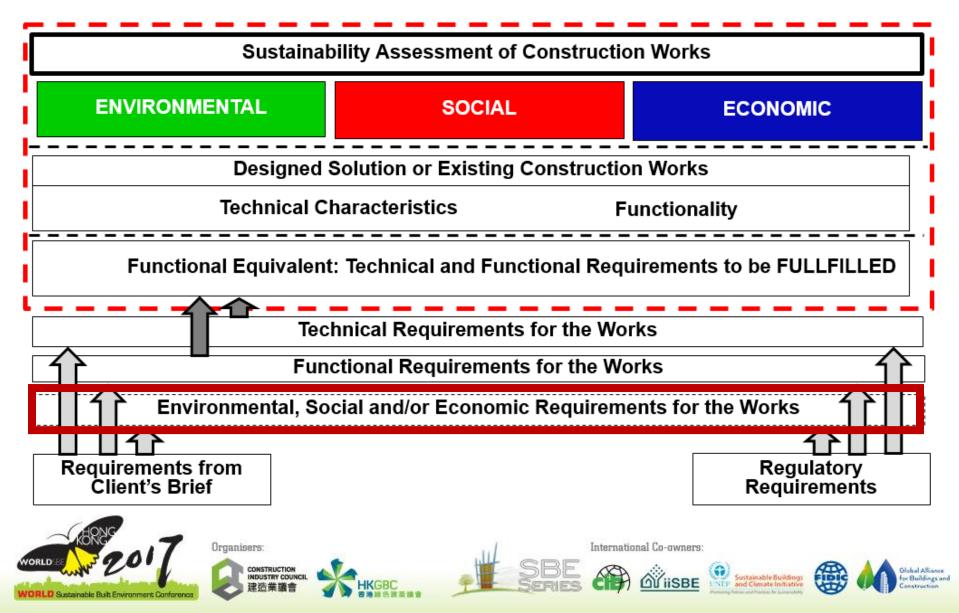
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Integration of additional requirements



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

International Co-owners

- Use of secondary materials
- Use of non-renewable secondary fuels
- Use of renewable secondary fuels
- Net use of freshwater resources



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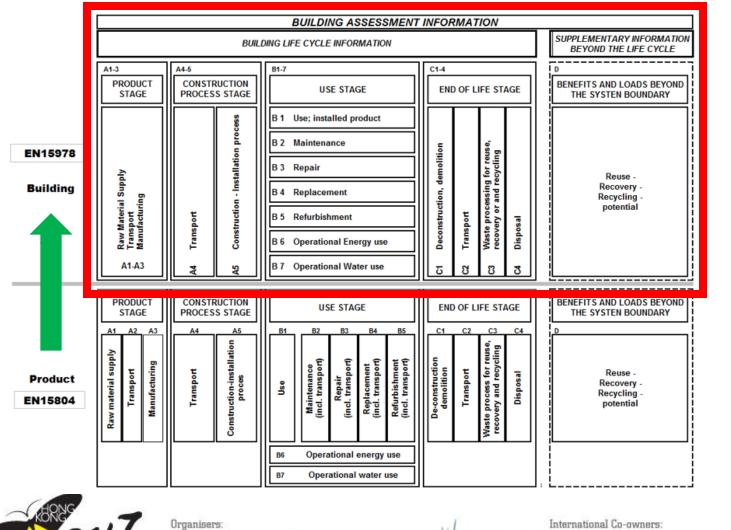
Indicators for other envir. information

- 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

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Building and product level



Building level

Product level



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Building level – the modules

BUILDING ASSESSMENT INFORMATION											
	BUILDING LIFE CYCLE INFORMATION										
A1-3 PRODUCT STAGE		RUCTION S STAGE	B	USE STAGE		C1-4 ENI) of L	IFE ST	AGE		D BENEFITS AND LOADS BEYOND THE SYSTEN BOUNDARY
		process		3 1 Use; installed product 3 2 Maintenance				e,			
Ald.		- Installation		3 3 Repair		demolition		for reus scycling			Reuse -
Raw Material Supply Transport Manufacturing				3 4 Replacement				essin and 1			Recovery - Recycling - potential
n Materi Isport ufactur	[ransport	Construction		3 5 Refurbishment		Deconstruction,	Transport	Waste proc recovery or	Disposal		potential
Raw Tran Man	Tran	Con		3 6 Operational Energy use		Dec	Tran	Was	Disp		
A1-A3	¥ t	A5	B	3 7 Operational Water use		ច	ឋ	ឌ	3		



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Building level – module A

BUILDING ASSESSMENT INFORMATION										
		SUPPLEMENTARY INFORMATION BEYOND THE LIFE CYCLE								
A1-3	A4-5		B1-7	0	:1-4				1	D
PRODUCT STAGE	CONSTRUCTION PROCESS STAGE		USE STAGE		END OF LIFE STAGE			AGE		BENEFITS AND LOADS BEYOND THE SYSTEN BOUNDARY
		process	B 1 Use; installed product	IΓ						
			B 2 Maintenance		lion		reuse, ing			
Ъ		- Installation	B 3 Repair		demolition		for			Reuse -
al Sup ing			B 4 Replacement				essing and r			Recovery - Recycling -
Raw Material Supply Transport Manufacturing	[ransport	Construction	B 5 Refurbishment		Deconstruction,	Transport	e proc	osal		potential
Raw Tran: Manu	Trans	Cons	B 6 Operational Energy use		Deco	Tran	Waste pro recovery	Disposal		
A1-A3	A4	A5	B 7 Operational Water use		ច	ខ	ខ	3		



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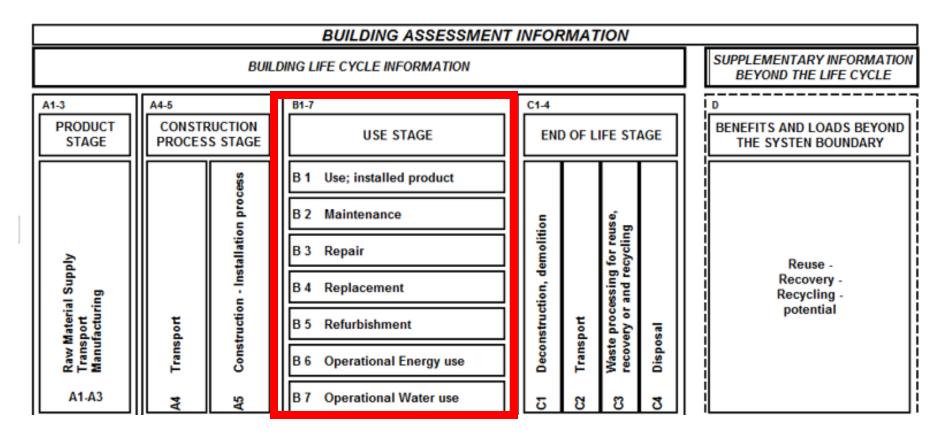
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Building level – module B





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International Co-owners:





Global Alliance for Buildings and Canstruction

Building level – module C

BUILDING ASSESSMENT INFORMATION												
	BUILDING LIFE CYCLE INFORMATION											
A1-3 PRODUCT STAGE		RUCTION S STAGE	B1-	7 USE STAGE	I	C1-4 ENI	D OF L	IFE ST	AGE		D BENEFITS AND LOADS BEYOND THE SYSTEN BOUNDARY	
Raw Material Supply Transport Manufacturing	ų	ction - Installation process	∥⊨	2 Maintenance 3 Repair 4 Replacement		Deconstruction, demolition	ц	rocessing for reuse, y or and recycling	-		Reuse - Recovery - Recycling - potential	
Raw Ma Transpo Manufao	A4 Transport	A5 Construction		6 Operational Energy use		C1 Deconst	C2 Transport	C3 Waste pr recovery	C4 Disposal			



Organisers:









Building level – module D

	BUILDING ASSESSMENT INFORMATION										
		SUPPLEMENTARY INFORMATION BEYOND THE LIFE CYCLE									
A1-3 PRODUCT STAGE		RUCTION S STAGE	B1	1-7 USE STAGE		C1-4 END OF LIFE STAGE			AGE		D BENEFITS AND LOADS BEYOND THE SYSTEN BOUNDARY
Raw Material Supply Transport Manufacturing	t Transport	5 Construction - Installation process	BBB	 3 Use; installed product 3 Maintenance 3 Repair 4 Replacement 5 Refurbishment 6 Operational Energy use 7 Operational Water use 		I Deconstruction, demolition	2 Transport	Waste processing for reuse, recovery or and recycling	t Disposal		Reuse - Recovery - Recycling - potential
ALAS	¥.	A5	۱Ľ	or Operational Water use		ទ	8	ខ	ঠ		



Organisers:









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







Organisers:



HKGBC

International Co-owners:

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