CONSTRUCTION PRODUCTS EUROPE
LET'S BUILD AN EFFICIENT EUROPE

Sustainability Assessment Workshop

4th March 2014

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Environmental Product Declaration and PEF

D- BENEFITS AND LOADS BEYOND THE SYSTEM BOUNDARY

Additional considerations for compiling the resource use and emissions profile

Reuse

Recover

Recycling potential

 # - STAGE

PEF

TC 350 EN 15804

A - PRODUCT STAGE

Raw Material Acquisition and Pre-processing

Capital goods

Production

Modelling logistics for the analysed product

Raw materials suply
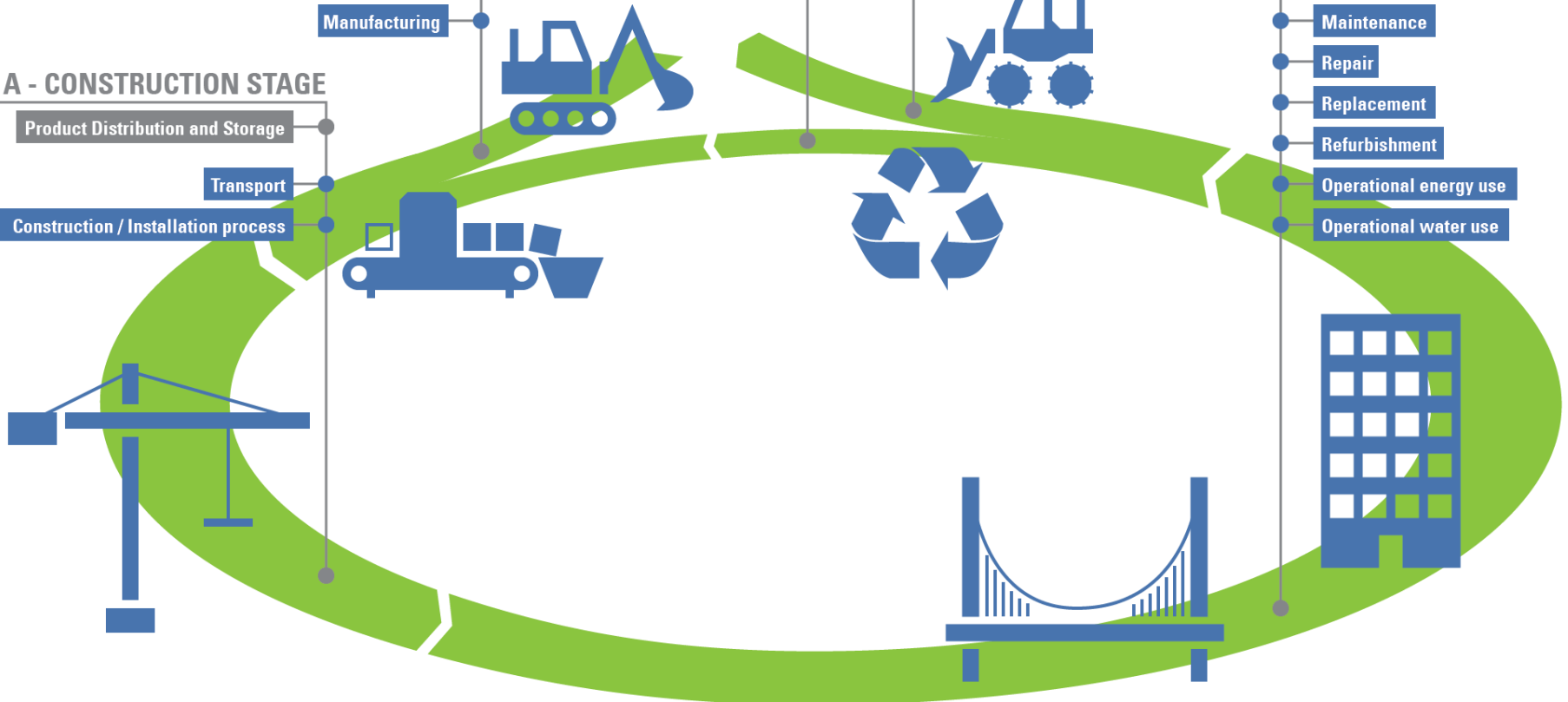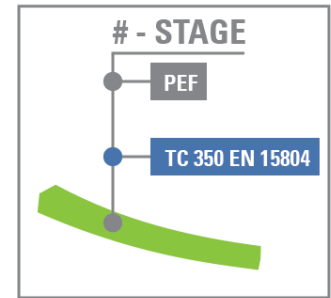
Transport

Manufacturing

C - END OF LIFE STAGE

End of life

Deconstruction / Demolition

Transport

Waste processing

Disposal

B - USE STAGE
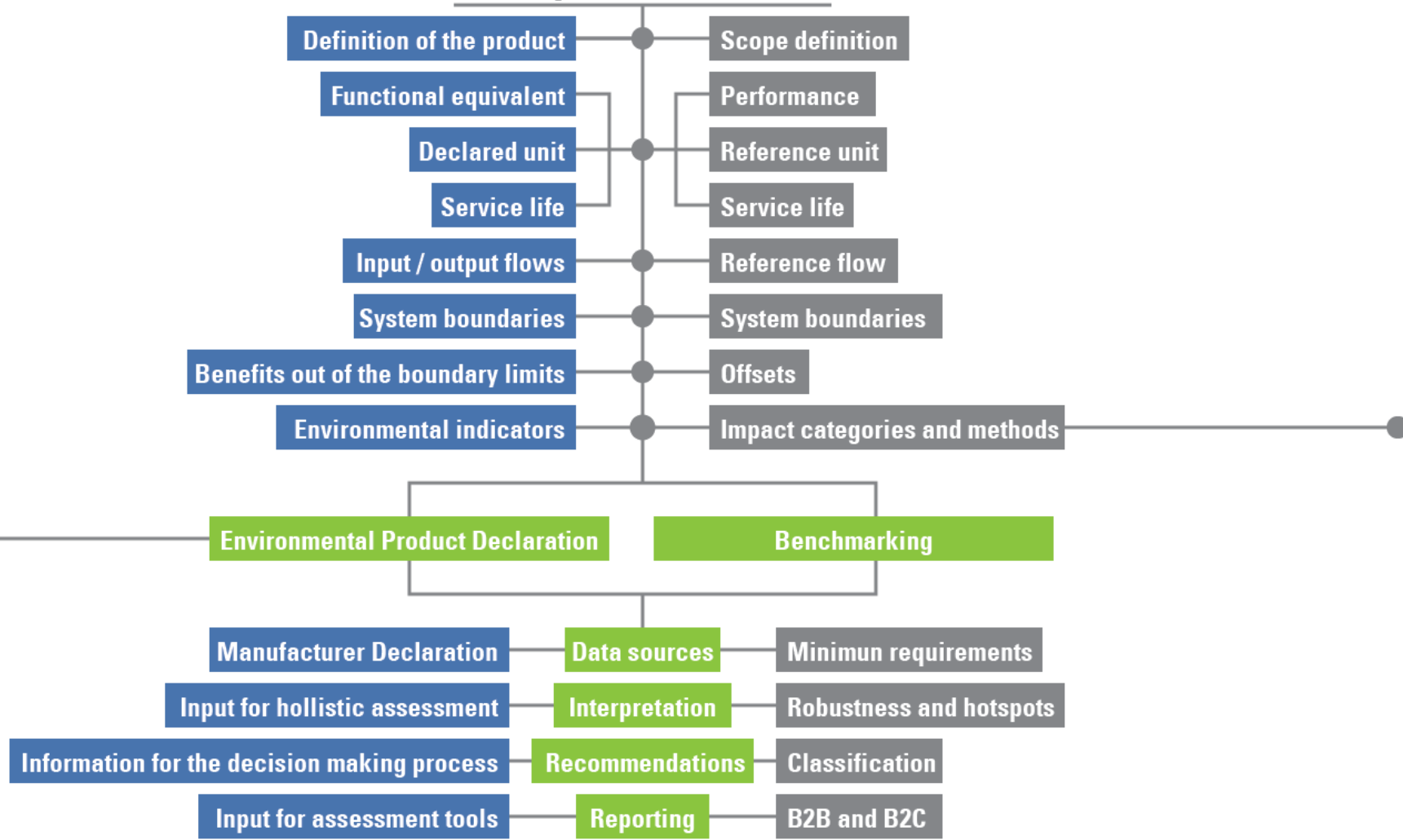
Use stage

Accounting for Electricity Use

Use

Maintenance

Repair

Replacement

Refurbishment

Operational energy use

Operational water use

A - CONSTRUCTION STAGE

Product Distribution and Storage

Transport

Construction / Installation process

Life Cycle Assessment

Definition of the product	Scope definition
Functional equivalent	Performance
Declared unit	Reference unit
Service life	Service life
Input / output flows	Reference flow
System boundaries	System boundaries
Benefits out of the boundary limits	Offsets
Environmental indicators	Impact categories and methods

Environmental Product Declaration | Benchmarking

Manufacturer Declaration	Data sources	Minimun requirements
Input for hollistic assessment	Interpretation	Robustness and hotspots
Information for the decision making process	Recommendations	Classification
Input for assessment tools	Reporting	B2B and B2C

Indicators and impact categories

Global warming potential, GWP	kg CO2 equiv	—●—	kg CO2 equiv	Global warming potential, GWP (Bern model - 100 years)
Depletion potential of the stratospheric ozone layer, ODP;	kg CFC 11 equiv	—●—	kg CFC 11 equiv	Ozone depletion, ODP (infinite time horizon - EDIP model)
Acidification potential of land and water; AP;	kg SO2- equiv	—●—	mol H+ equiv	Acidification (accumulated exceedance model)
Eutrophication potential, EP;	kg (PO4)3- equiv	—●—	mol N equiv	Eutrophication - terrestrial (accumulated exceedance model)
		—●—	kg P equiv / kg N equiv	Eutrophication - aquatic fresh water / marine (EUTREND model)
Formation potential of tropospheric ozone photochemical oxidants, POCP;	kg Ethene equiv	—●—	kg NMVOC equiv	Photochemical Ozone Formation (LOTOS-EUROS model)
Abiotic Resource Depletion Potential for elements; ADP_elements	kg Sb equiv	—●—	kg Sb equiv	Resource depletion - mineral (CML2002 model)
Abiotic Resource Depletion Potential of fossil fuels ADP_fossil fuels	MJ	—●—	kg Sb equiv	Resource depletion - fossil (CML2002 model)
Use of net fresh water	m3	—●—	m3 water / local scarcity	Resource depletion water (Swiss ecoscarcity model)
Land transformation soil organic matter (SOM model)	Under discussion	—●—	kg deficit	Land transformation soil organic matter (SOM model)
Ecotoxicity for aquatic fresh water (USEtox model)	Under discussion	—●—	CTUe	Ecotoxicity for aquatic fresh water (USEtox model)
Human toxicity - cancer effects (USEtox model)	Under discussion	—●—	CTUh	Human toxicity - cancer effects (USEtox model)
Human toxicity - non-cancer effects (USEtox model)	Under discussion	—●—	CTUh	Human toxicity - non-cancer effects (USEtox model)
Particulate matter/ Respiratory Inorganics (RiskPoll model)	Under discussion	—●—	kg PM2.5 equiv	Particulate matter/ Respiratory Inorganics (RiskPoll model)
Ionising radiation (Human Health effect model)	Under discussion	—●—	kg U235 equiv to air	Ionising radiation (Human Health effect model)
Use of renewable primary energy excluding energy resources used as raw material	MJ, net calorific value	—●		
Use of renewable primary energy resources used as raw material	MJ, net calorific value	—●		
Use of non-renewable primary energy excluding energy resources used as raw material	MJ, net calorific value	—●		
Use of non-renewable primary energy resources used as raw material	MJ, net calorific value	—●		
Use of secondary material	kg	—●		
Use of renewable secondary fuels	MJ	—●		
Use of non-renewable secondary fuels	MJ	—●		
Hazardous waste disposed	kg	—●		
Non-hazardous waste disposed	kg	—●		
Radioactive waste disposed	kg	—●		
Components for re-use	kg	—●		
Materials for recycling	kg	—●		
Materials for energy recovery (not being waste incineration)	kg	—●		
Exported energy	MJ per energy carrier	—●		

Indicators PEF TC 350

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	Construction-installation process	Use	Maintenance	Repair	Replacement	Refurbishment	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	MND	MND	MND	MND	MND	MND	MND	MND	MND	MND	MND	X	MND

FU 1m2 porcelanic slab

		Manufacturing			EoL
Parameter	Unit	A1	A2	A3	C4
Global warming potential	[kg CO_2 Eq.]	4.04	0.223	6.05	0.102
Depletion potential of the stratospheric ozone layer	[kg CFC11 Eq.]	2.72E-07	2.36E-08	6.48E-07	2.70E-08
Formation potential of tropospheric ozone photochemical oxidants	[kg ethene Eq.]	2.78E-03	3.45E-04	3.62E-03	2.31E-04
Acidification potential of land and water	[kg SO_2 Eq.]	1.85E-02	3.72E-03	7.03E-03	5.80E-04
Eutrophication potential	[kg PO_4^{3-} Eq.]	5.61E-03	4.90E-04	2.21E-03	1.49E-04
Abiotic depletion potential for non fossil resources	[kg Sb Eq.]	0.0321	0.00153	0.0515	0.00123
Abiotic depletion potential for fossil resources	[MJ Eq.]	73.0	3.52	105	2.84

FU 1m2 porcelanic slab

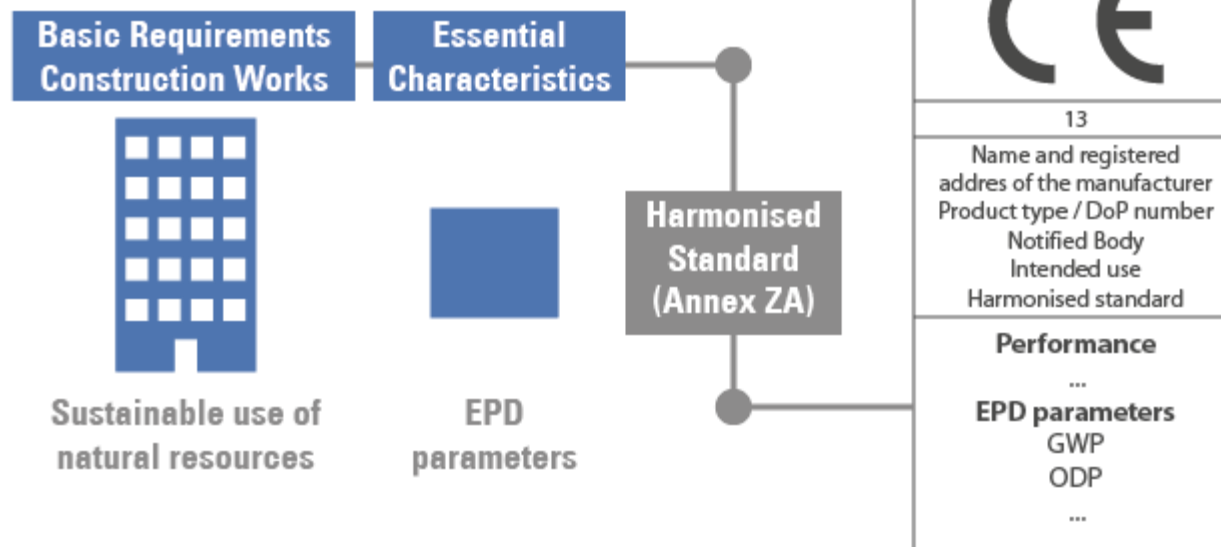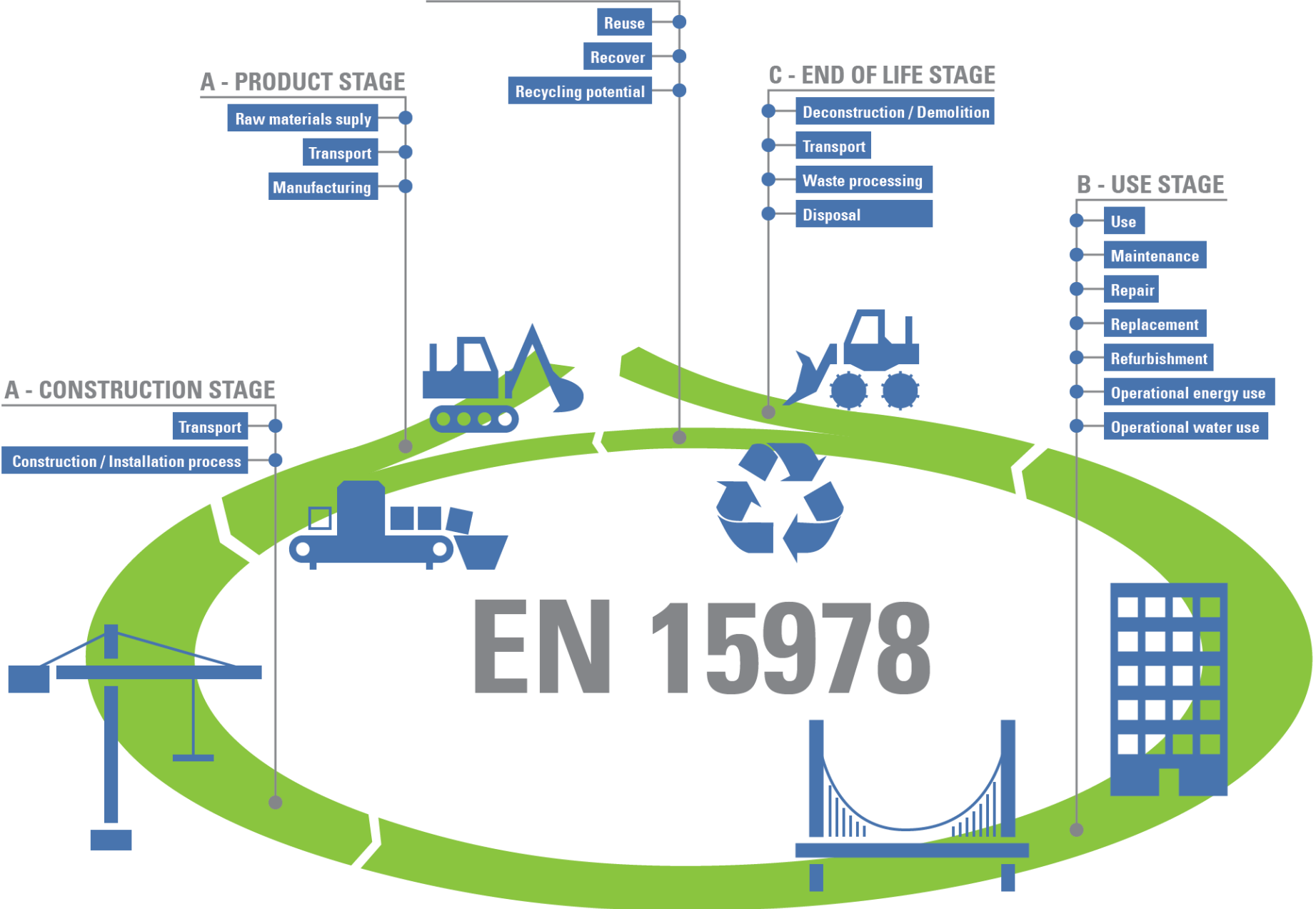|		Manufacturing			EoL
Parameter	Unit	A1	A2	A3	C4
Use of renewable primary energy excluding renewable primary energy resources used as raw materials	[MJ]	1.78	0.0535	20.0	0.0211
Use of renewable primary energy resources used as raw materials	[MJ]	0	0	0	0
Total use of renewable primary energy resources	[MJ]	1.78	0.0535	20.0	0.0211
Use of non renewable primary energy excluding non renewable primary energy resources used as raw materials	[MJ]	62.3	3.25	105	2.74
Use of non renewable primary energy resources used as raw materials	[MJ]	0	0	0	0
Total use of non renewable primary energy resources	[MJ]	62.3	3.25	105	2.74
Use of secondary material	[kg]	-	-	-	-
Use of renewable secondary fuels	[MJ]	-	-	-	-
Use of non renewable secondary fuels	[MJ]	-	-	-	-
Use of net fresh water	[m³]	0.220	0.00197	0.0248	0.00298

FU 1m2 porcelanic slab

		Manufacturing			EoL
Parameter	Unit	A1	A2	A3	C4
Hazardous waste disposed	[kg]	-	-	0.000658	-
Non hazardous waste disposed	[kg]	-	-	3.65	7.86
Radioactive waste disposed	[kg]	-	-	-	-
Components for re-use	[kg]	-	-	-	-
Materials for recycling	[kg]	-	-	-	-
Materials for energy recovery	[kg]	-	-	-	-
Exported energy per energy carrier [Typ]	[MJ]	-	-	-	-

EPD example

Construction Products Regulation BRCW7

Basic Requirements Construction Works → **Essential Characteristics**

Sustainable use of natural resources

EPD parameters

Harmonised Standard (Annex ZA)

CE

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Name and registered addres of the manufacturer
Product type / DoP number
Notified Body
Intended use
Harmonised standard

Performance
...
EPD parameters
GWP
ODP
...

Basic Requirement of Construction Works 7

D- BENEFITS AND LOADS BEYOND THE SYSTEM BOUNDARY
- Reuse
- Recover
- Recycling potential

A - PRODUCT STAGE
- Raw materials suply
- Transport
- Manufacturing

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- Transport
- Waste processing
- Disposal

B - USE STAGE
- Use
- Maintenance
- Repair
- Replacement
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- Operational water use

A - CONSTRUCTION STAGE
- Transport
- Construction / Installation process

EN 15978