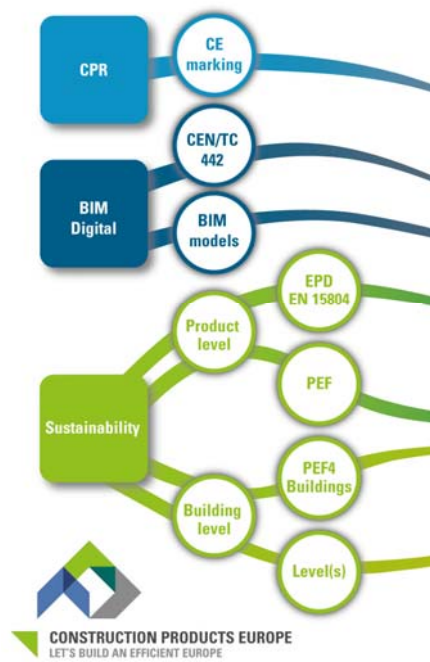






Building assessment schemes



Different schemes and methods

Linked to National approaches
but not limited to them

Based on CEN/TC 350
methodology

Limited use of manufacturer's
product information

HOW STANDARDS PROLIFERATE:
(SEE: A/C CHARGERS, CHARACTER ENCODINGS, INSTANT MESSAGING, ETC.)





Level(s)

1: Greenhouse gas emissions along a buildings life cycle

2: Resource efficient and circular material life cycles

3: Efficient use of water resources

4: Healthy and comfortable spaces

5: Adaptation and resilience to climate change

6: Optimised life cycle cost and value

1.1 Use stage energy performance (kWh/m²/yr)

1.2 Life cycle Global Warming Potential (CO₂ eq./m²/yr)

2.1 Life cycle tool: Building bill of materials (t/g)

2.2 Life cycle tools: Scenarios for lifespan, adaptability and deconstruction

2.3 Construction & demolition waste and materials (t/g/m²)

3.1 Use stage water consumption (m³/occupant/yr)

2.4 Life cycle tool: Cradle to cradle Life Cycle Assessment (LCA)

Overarching assessment tool

Thematic area: Health and comfort

4.1 Indoor air quality

4.2 Time out of thermal comfort range

Potential future aspects
4.3 Lighting and visual comfort
4.4 Acoustics and protection against noise

Thematic area: Cost, value and risk

5.1 Life cycle tools: Scenarios for projected future climatic conditions

Potential future aspects
5.2 Increased risk of extreme weather events
5.3 Increased risk of flood events

6.1 Life cycle costs (€/m²/yr)

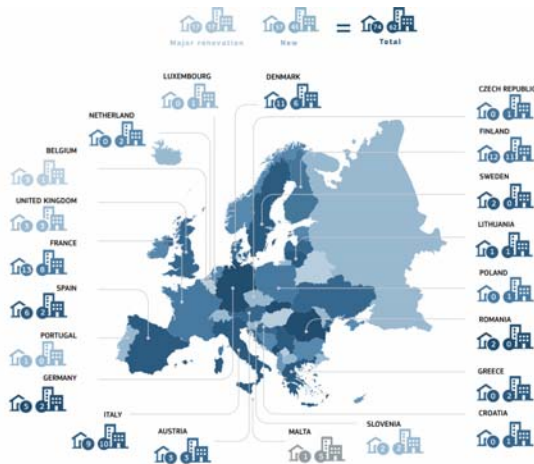
6.2 Value creation and risk factors

Life Cycle Assessment (LCA)

Life Cycle Costing (LCC)

European standards

Level(s)



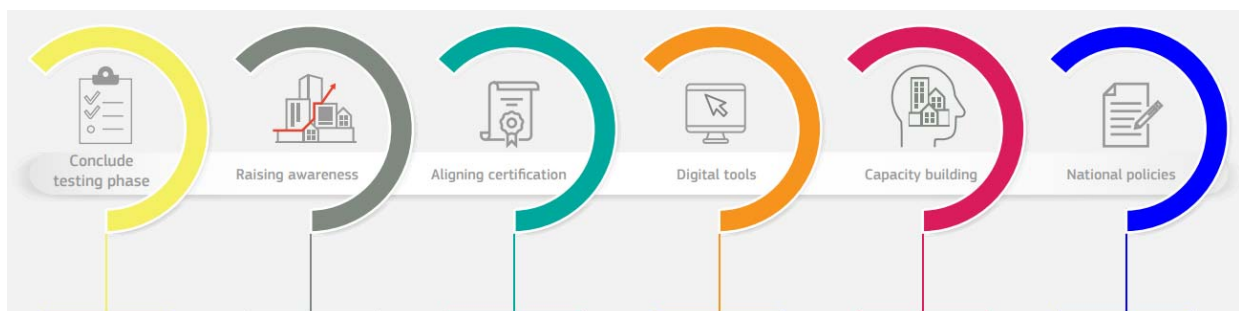
Intended to be use by all type of buildings and not only best in class

Pilot projects ongoing all around Europe

"Level(s) provides the framework for common data on life cycle performance. Learnings can be fed back to industry so instead of designing time bombs for the future we can start investing in solutions that are systematic about targeting the things that actually have the most impact." Judit Kimpián, Architects Council of Europe

Level(s)

Goal: Single reference assessment method at European level applied in all Member States

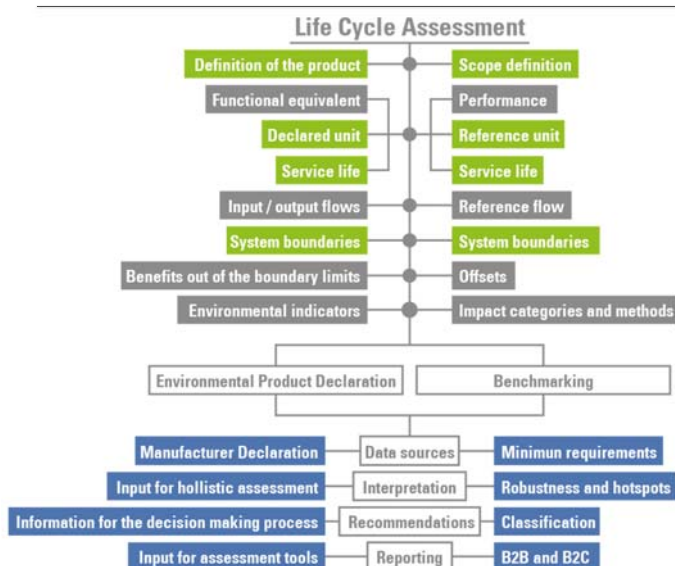




Product level



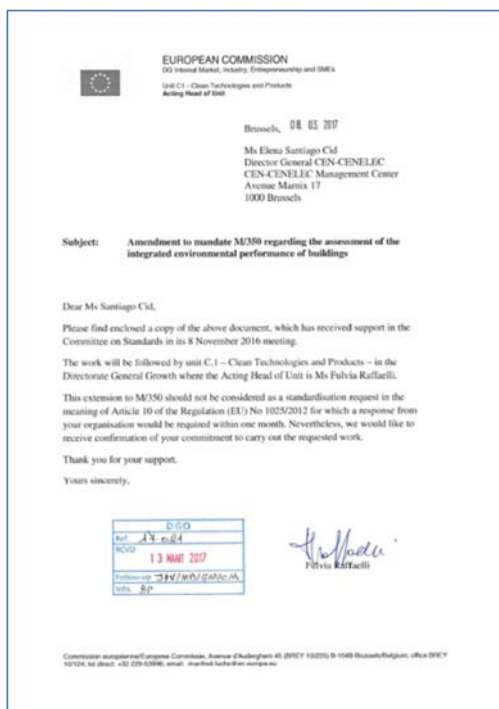
EPD vs PEF



Different approaches to the Life Cycle Assessment:

- Product definition
- Modelling
- Indicators
- Deliverable

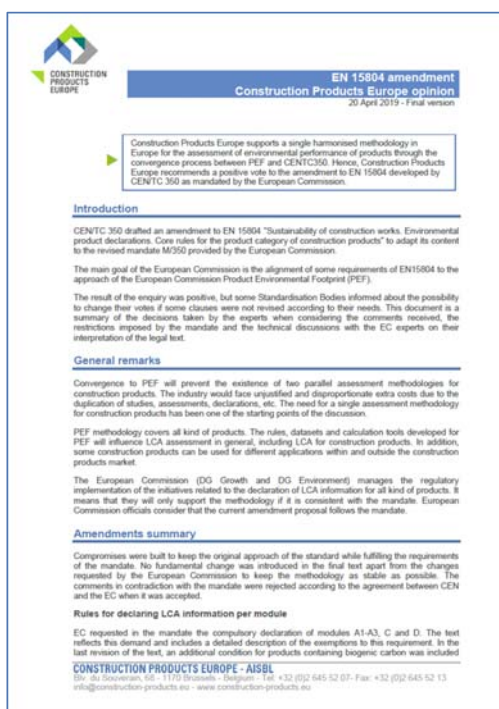
[More information](#)



Mandate M/350

European Commission request to adapt CEN/TC 350 standards focusing on

- EN 15804
- B2C communication

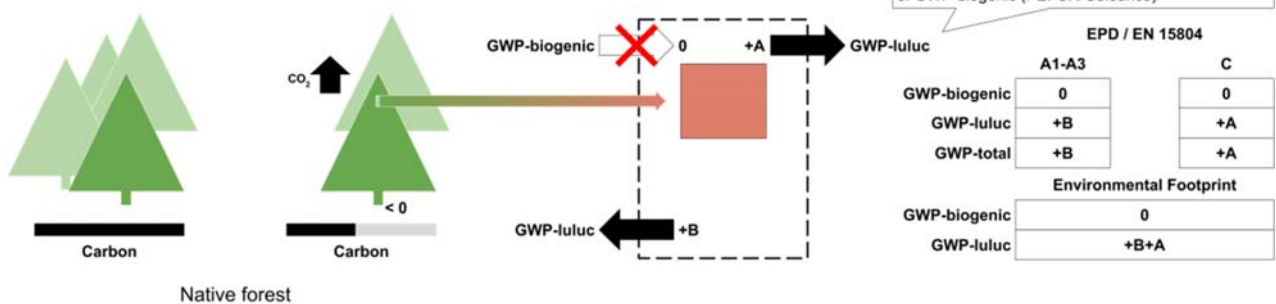
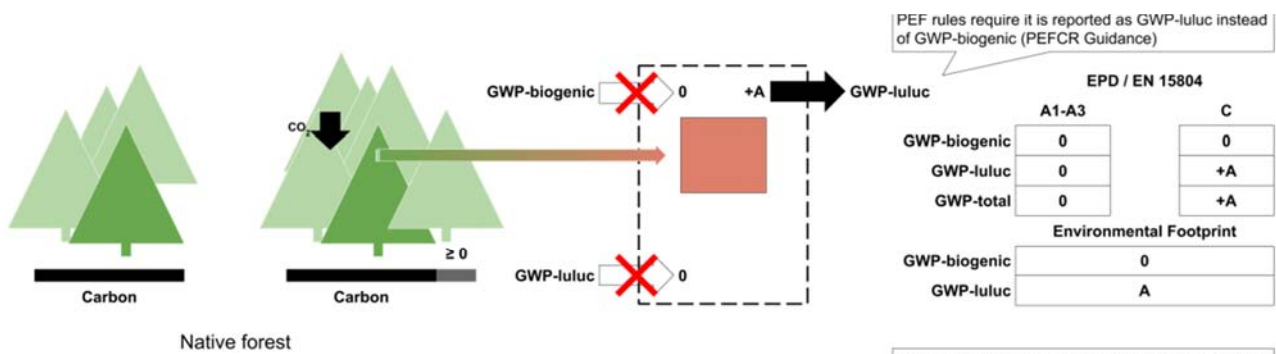
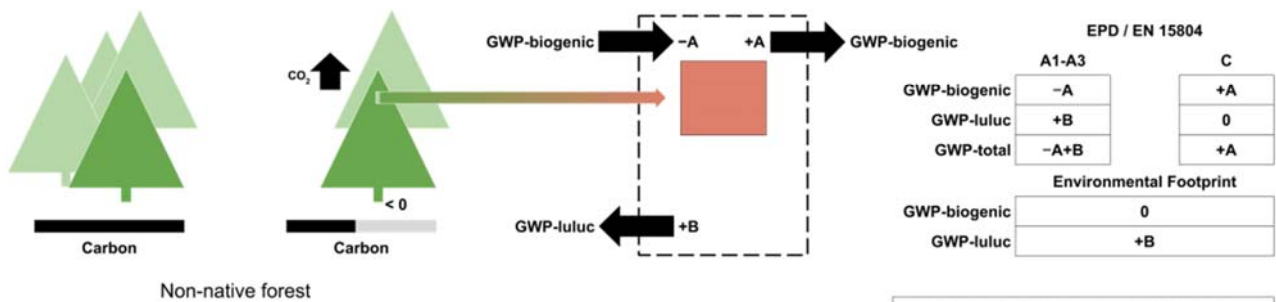
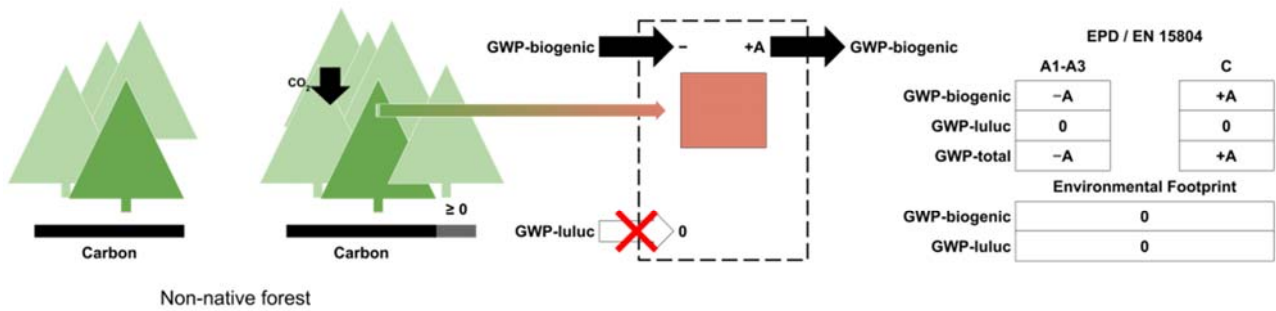


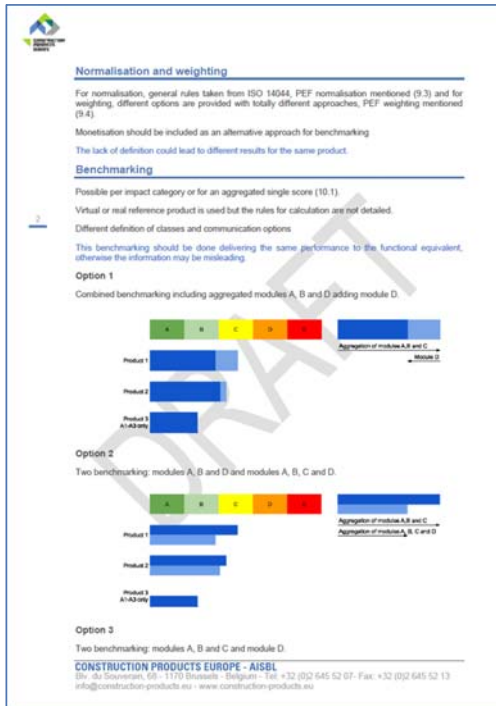
Amended EN 15804

→ Compulsory modules:

A1-A3	A4	A5	B1	...	B7	C1	C2	C3	C4	D
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- PEF Impact categories
- PEF indicators and modelling
- ILCD format and nomenclature
- Data quality
- Biogenic carbon modelling ☐





B2C

Aggregation of A1-C4 results into a total sum of impacts for cradle to grave B2C communication

Rules for benchmarking

- Representative product
- Default scenarios
- Functional unit



Building – product interface

EPD in building assessment tools

Parameter	Unit in Eq.	A1-A3	A4	A5	B1	B2	B3 - B5	B6 - B7	C1	C2	C3	C4	D
GWP	kg CO ₂	2,55E+02	7,66E+00	4,12E+00	n. rel.	n. rel.	n. rel.	n. rel.	6,08E-01	4,98E+00	1,83E+00	4,07E+00	-1,48E+00
ODP	kg CFC11	4,14E-09	3,67E-11	9,66E-09	n. rel.	n. rel.	n. rel.	n. rel.	2,89E-12	2,38E-11	2,47E-11	5,10E-11	-4,22E-10
AP	kg SO ₂	3,40E-01	4,83E-02	-7,04E-03	n. rel.	n. rel.	n. rel.	n. rel.	2,47E-03	2,92E-02	1,35E-02	2,58E-02	-9,57E-03
EP	kg PO ₄ ³⁻	3,67E-02	1,15E-02	-3,98E-04	n. rel.	n. rel.	n. rel.	n. rel.	5,35E-04	6,92E-03	3,09E-03	3,54E-03	-1,56E-03
POCP	kg Ethen	5,07E-02	-1,92E-02	-6,36E-04	n. rel.	n. rel.	n. rel.	n. rel.	2,81E-04	-1,15E-02	1,87E-03	2,43E-03	-1,01E-03
ADPE	kg Sb	3,04E-05	2,89E-07	-4,14E-07	n. rel.	n. rel.	n. rel.	n. rel.	2,28E-08	1,87E-07	2,84E-06	1,53E-06	-2,65E-07
ADPF	MJ	4,16E+03	1,06E+02	-4,78E+01	n. rel.	n. rel.	n. rel.	n. rel.	8,33E+00	6,85E+01	3,48E+01	5,35E+01	-1,88E+01

Parameter	Unit in Eq.	A1-A3	A4	A5	B1	B2	B3 - B5	B6 - B7	C1	C2	C3	C4	D
GWP	kg CO ₂	2,76E+02	4,14E+00	6,81E+00	n. rel.	n. rel.	n. rel.	n. rel.	9,58E-02	1,71E+00	2,30E+00	2,13E+00	-3,94E+00
ODP	kg CFC11	3,81E-05	5,11E-07	4,99E-09	n. rel.	n. rel.	n. rel.	n. rel.	1,17E-08	2,11E-07	2,87E-07	6,38E-07	-4,55E-07
AP	kg SO ₂	6,20E-01	2,21E-02	8,51E-04	n. rel.	n. rel.	n. rel.	n. rel.	7,22E-04	9,12E-03	1,77E-02	1,27E-02	-1,91E-02
EP	kg PO ₄ ³⁻	1,99E-01	6,35E-03	2,38E-03	n. rel.	n. rel.	n. rel.	n. rel.	2,04E-04	2,62E-03	4,89E-03	3,68E-03	-7,41E-03
POCP	kg Ethen	1,63E-01	2,10E-03	1,69E-04	n. rel.	n. rel.	n. rel.	n. rel.	1,08E-04	8,66E-04	2,65E-03	2,58E-03	-2,35E-03
ADPE	kg Sb	1,38E-04	3,40E-07	8,48E-08	n. rel.	n. rel.	n. rel.	n. rel.	2,86E-08	1,40E-07	4,75E-07	2,21E-06	-1,32E-05
ADPF	MJ	4,50E+03	5,60E+01	5,71E-01	n. rel.	n. rel.	n. rel.	n. rel.	1,33E+00	2,31E+01	3,19E+01	5,35E+01	-5,02E+01

Difference

One order of magnitude

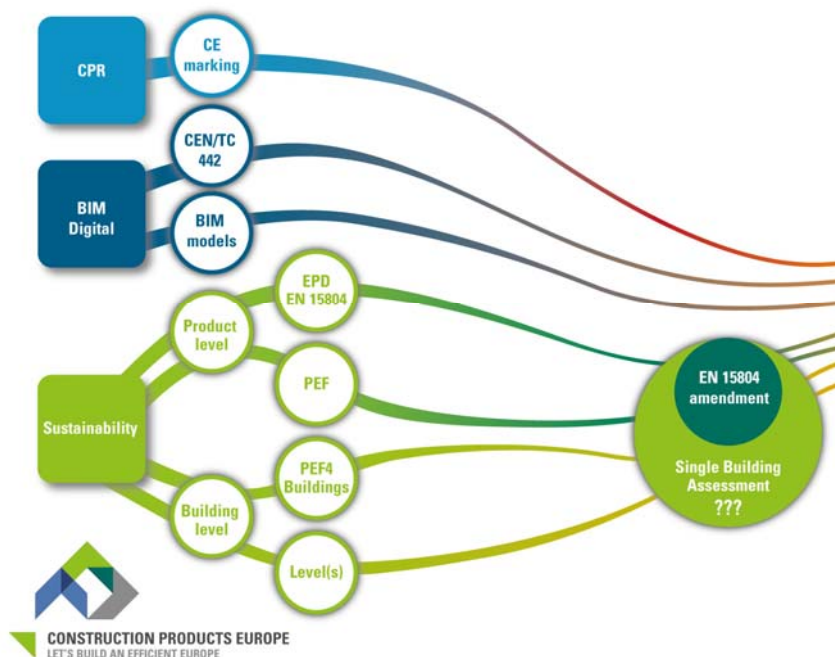
More than one order of magnitude

Building assessment tools set different requirements for the EPD to be used

Only validated EPD or generic information is allowed

Only human readable information

⇒ Impact of using two different background data sets





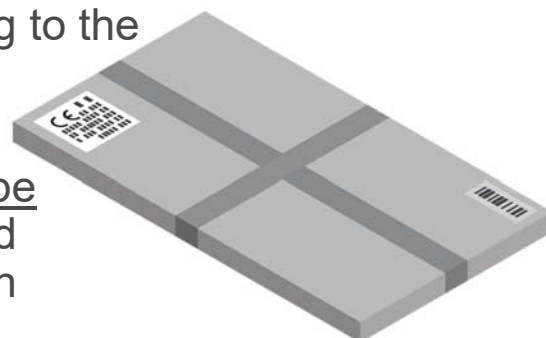
CE marking meaning

The performance of this construction was assessed in accordance with a harmonised technical specification.

Compulsory for the European market (hEN)

Performance only possible according to the harmonised system described in the harmonised technical specification

Member States national rules must be aligned to the declaration in hEN and cannot request additional information



Common technical language

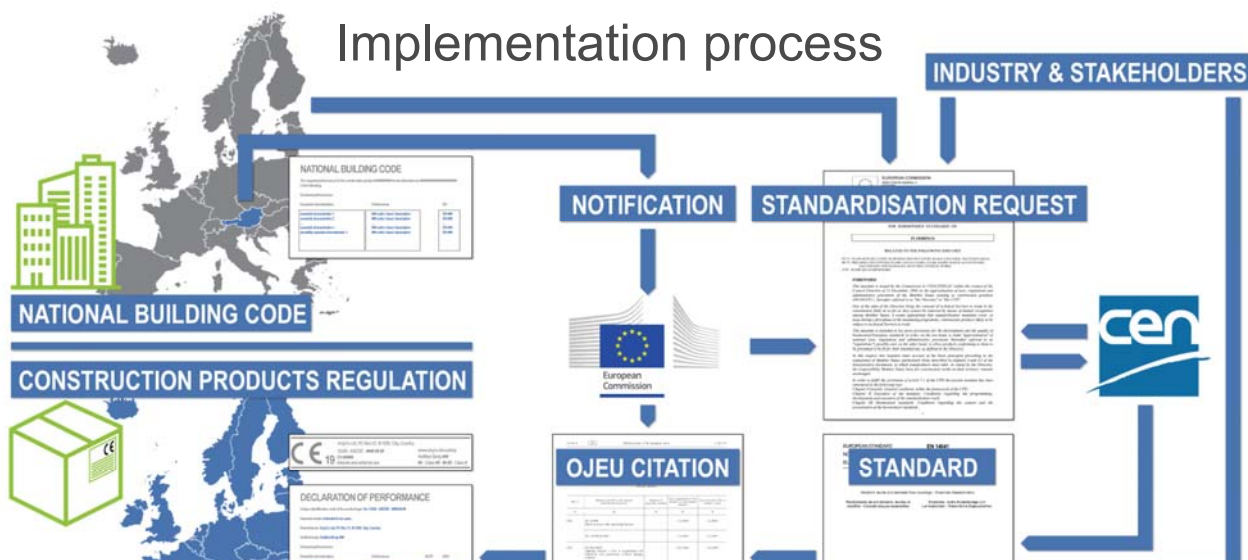
European Commission requested the update of EN 15804 to their requirements – Single European approach



Harmonised standards to follow
amended EN 15804 for the assessment
and declaration

Unique declaration of performance (DoP) at
European level (no National approaches)
including required third party tasks

Single market free of barriers to trade



Ongoing process for: reinforcing steel, solid fuel stoves, windows & doors, gypsum products and thermal insulation

Third party tasks

CPR determines required third party tasks for the assessment in this case AVCP system 3 (ongoing discussion)

Bodies notified by Member States to perform third party tasks
Single market for Notified Bodies (manufacturer's choice)
AVCP system 3: Notified body to assess the performance
Program operators current activities not aligned to the regulatory approach

	Manufacturer	Notified Body	AVCP system	1+	1	2+	3	4
Factory production control (FPC)		☒						
Assessment of the performance								
Initial inspection (plant and FPC)				☒	☒	☒	☒	☒
Continuous surveillance, assessment and evaluation of FPC				☒	☒	☒	☒	☒
Audit — testing of samples taken by the Notified Body				☒				

Single European declaration

Problem – Single declaration at EU level to fit National needs

National declaration is not possible within the CPR framework
Harmonised common rules (PCR) per product family:

- Scenarios – “parametric” declaration
- Reference service life and functional/declared unit
- Modelling details to be implemented

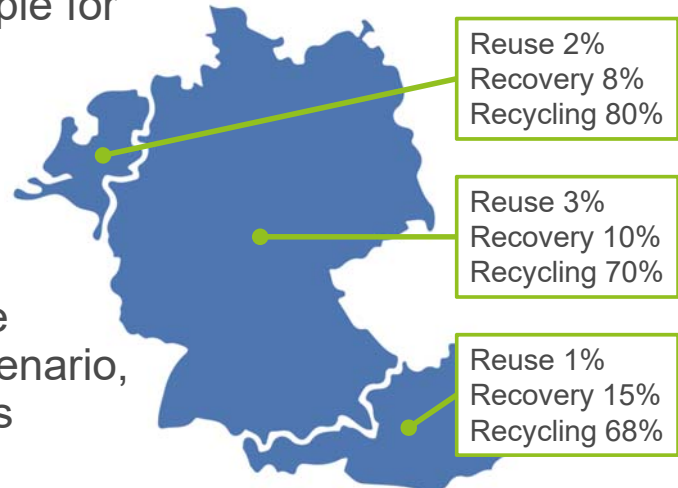
Alignment to Member States' requirements in an early stage

Single European declaration to fit National needs

“Parametric” approach example for
module C3:

- C3 full reuse scenario
- C3 full recovery scenario
- C3 full recycling scenario

During the assessment of the
building the most relevant scenario,
or the combination of them, is
selected



Other pending issues

CPR provides options to the declaration

Declaration of NPD (no performance determined) for the full
table unless

- there is a National requirement
- the information is declared in other document

Sharing and cascading allowed – applicable for “sectoral”
EPD under a contractual agreement and for products
manufactured from components



Some problems need to be solved

Declaration requires a unique valid background dataset

DoP to be revised when performance changes (e.g. energy mix)

Performance to be declared in CE marking (label in product, packaging or accompanying document)

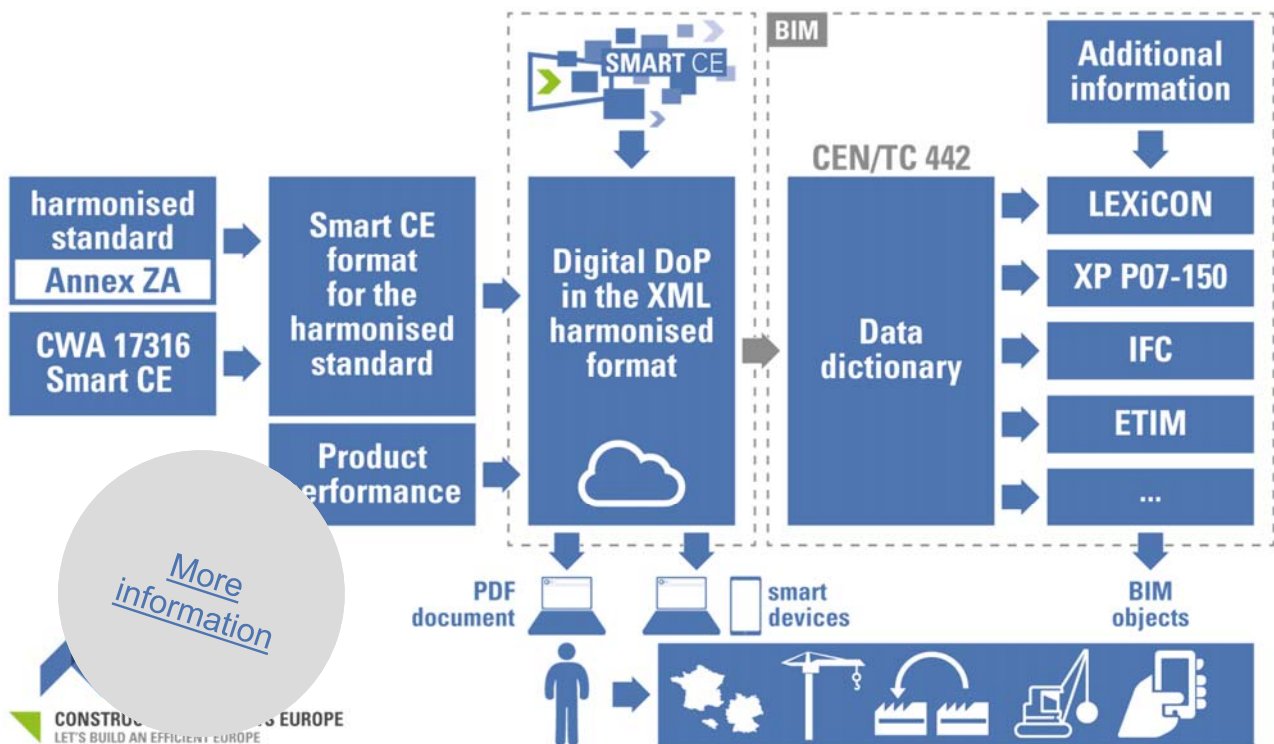
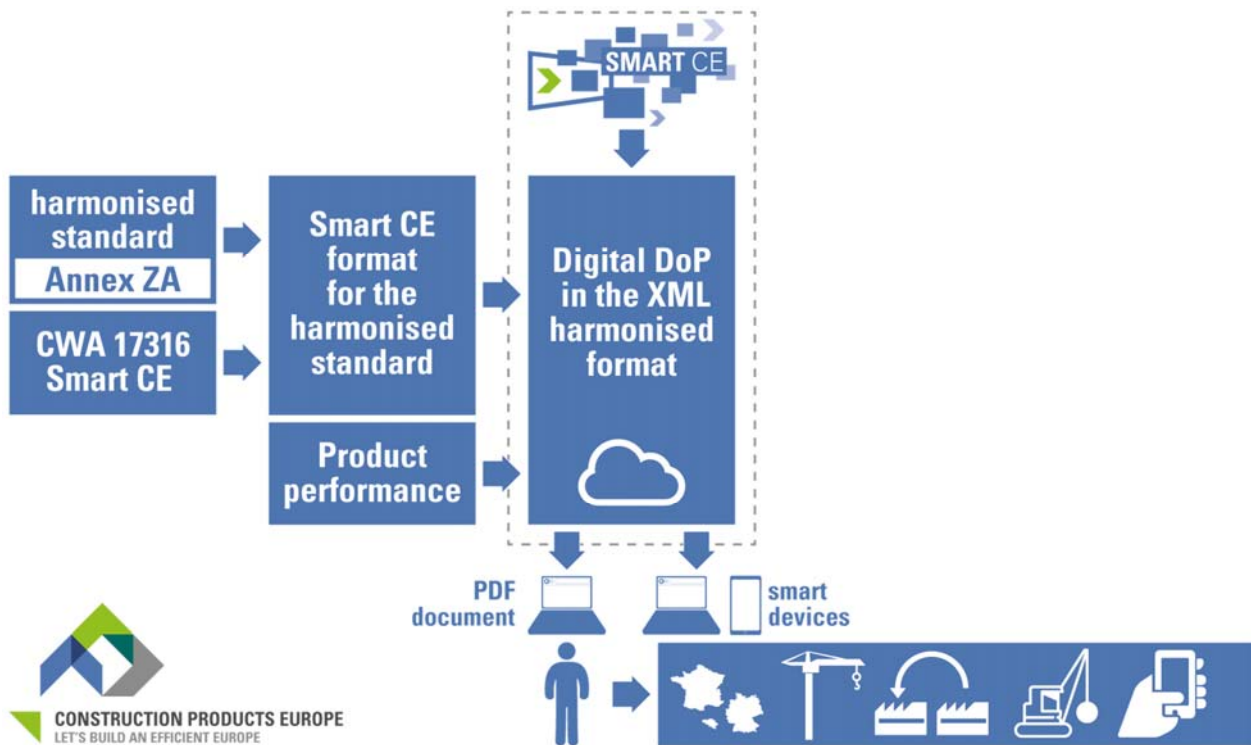


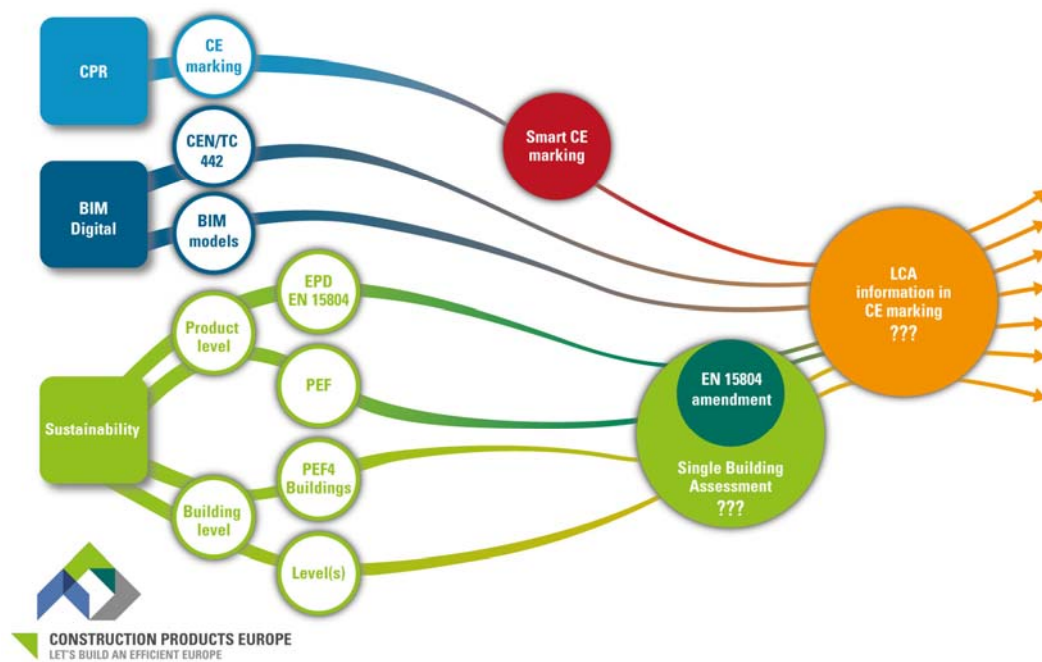
EPD information is too complex and long for PDF documents

Data to be provided in a computer readable way to be used for building assessment

CPR allows this approach as it is being implemented in coordination with BIM developments – Smart CE®







Circular economy

EC published a report and some staff working documents on the implementation of their action plan on circular economy

- Report on the implementation of the Circular Economy Action Plan
- Staff working document with details and references for the 54 actions that were listed in the action plan
- Staff working document on Sustainable Products in a Circular Economy

Circular economy

Actions in the working plan related to construction

- Development of quality standards for secondary raw materials (in particular for plastics)
- Interface between chemicals, products and waste legislation
- Pre-demolition assessment guidelines for construction
- Voluntary recycling protocol for CDW
- Core indicators for the assessment of the lifecycle environmental performance

Circular economy

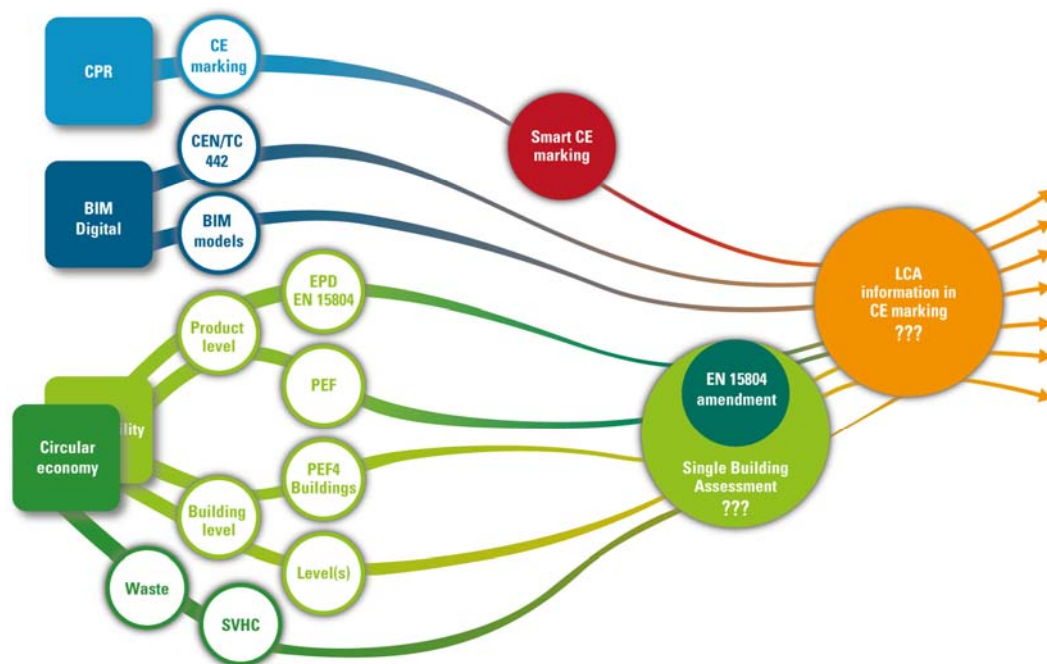
Future developments related to construction

- LCA thinking and Level(s) as the "common language" on sustainability and circularity for buildings for the assessment of the mainstream market.
- Allow the substitution of energy intensive materials by others with lower impact (e.g. cross-laminated timber).
- High potential for reuse (e.g. windows and beams).
- Addressing full life cycle is key but will require market incentives due to the long lifetime of buildings.

Circular economy

Policy recommendation

	EU policy tools on safety, including sectoral legislation (non-exhaustive)	EU policy setting minimum requirements for circular design	EU policy tools promoting Sustainable production and/or consumption	EU policy tools on waste handling/recycling
Buildings and construction	CPR	Level(s)	EPBD EED Level(s)	WFD (Recovery target and selective demolition obligation)



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