Nordic Climate Forum for Construction 2024

Aim and target

Boverket

NORDIC CLIMATE FORUM FOR CONSTRUCTION

Aim

- Promote **Nordic harmonization** of regulation **about climate impact** from buildings
- Provide **an update on decided and upcoming regulations** within the EU and the Nordics regarding the climate impact of buildings
- To meet physically to discuss and **gather comments from the Nordic construction industry** about introduced regulation and upcoming regulation with the Nordic building authorities

Target

- To **facilitate for the construction industry** to reduce climate impact (apply the regulation) without excessive administrative burden/costs
- Promote **innovation and development**
- Give **input to EU regulations** on the climate impact of buildings

Program

Opening words
Kristina Einarsson, Boverket, moderator
Greetings from the Swedish government
Andreas Carlsson, Minister for Infrastructure and Housing, video
EU outlook and update about relevant EU policies
Phillippe Moseley at European Commission and Luzie Rück at Viegand Maagøe contracted by the European Commission
Nordic outlook *Thomas Johansson at Boverket and Helle Redder Momsen at Nordic Sustainable Construction*
Coffee Break
Experiences from decided climate regulation from the authority's
Niels Bruus Varming at Danish Authority of Social Services and Housing in Denmark, Ingunn Marton at Norwegian Building Authority and Kristina Einarsson at Boverket in Sweden
Break
Experience from decided climate regulation from the industry
Christian Mølholm and Marcus Hedman at NREP in Denmark, Ben Toscher at Norgehus in Norway and Jeanette Sveder Lundin at Skanska in Sweden
More on upcoming regulation
Maria Tiainen at Ministry of Environment in Finland, Hannamary Seli at Ministry of Climate in Estonia, Elin Thorolfsdottir at Housing and Construction Authority of Iceland
Lunch break

Round table discussions in the afternoon only invite not online

Greetings from the Swedish government

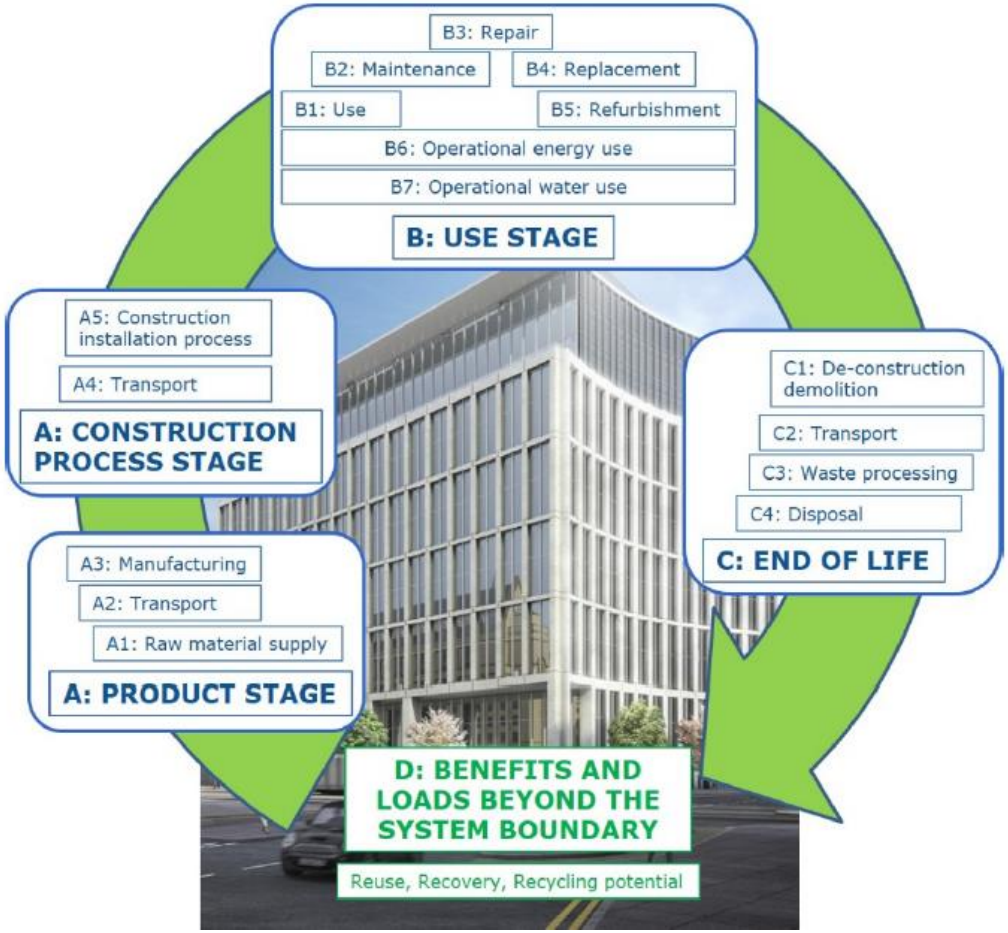
Andreas Carlsson, Minister for Infrastructure and Housing in Sweden, video

EU outlook and update about relevant EU policies

Whole life carbon, circularity and the Construction Products Regulation

Nordic Climate Forum for Construction
11 September 2024, Malmö

Philippe Moseley
Team Leader, Sustainable & competitive construction
Directorate-General for Internal Market, Industry, Entrepreneurship & SMEs



The stages in a building life cycle, based on EN 15978.
Source: JRC 2021 Level(s)

Whole life cycle GHG emissions of buildings

- High priority for industry (expressed in High Level Construction Forum)
- Major part of EU construction policy via Transition Pathway for construction
- Now firmly established in legislation

European Commission

Political Guidelines for European Commission 2024-2029

*“I will appoint a Commissioner whose responsibilities will include housing, and I will put forward a first-ever **European Affordable Housing Plan**.*

This will address structural drivers, develop a strategy for housing construction, offer technical assistance to cities and Member States and focus on investment.”

European Commission

What is the new Construction Products Regulation?

Harmonised rules for the marketing of construction products

- Single market
- Free movement of products (CE marking)
- Common technical language: functionality, safety and environment
- Digital Product Passport

National Building Codes

- Construction works

European Commission

Construction Products Regulation

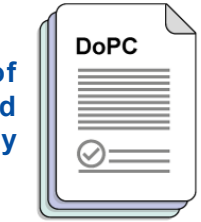
National construction codes

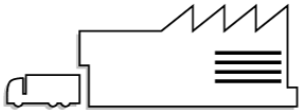
Product related regulatory needs

Single market for construction products

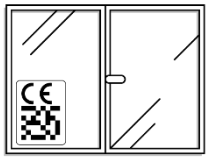
Placing on the market

Declaration of performance and conformity

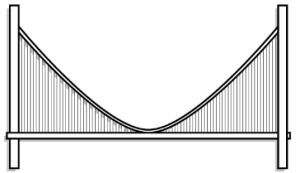




Manufacturer



CE marking



Construction works

European Commission

Scope of the CPR

IN

Key parts of products

Parts or materials intended to be used for products, if the manufacturer of the parts or materials wants it

Products delivered as part of a service (including manufacturing onsite)

3D Printing of products

Packaging, instructions for use

OUT

Excluded are lifts, performance assessment and requirements subject to the drinking water directive

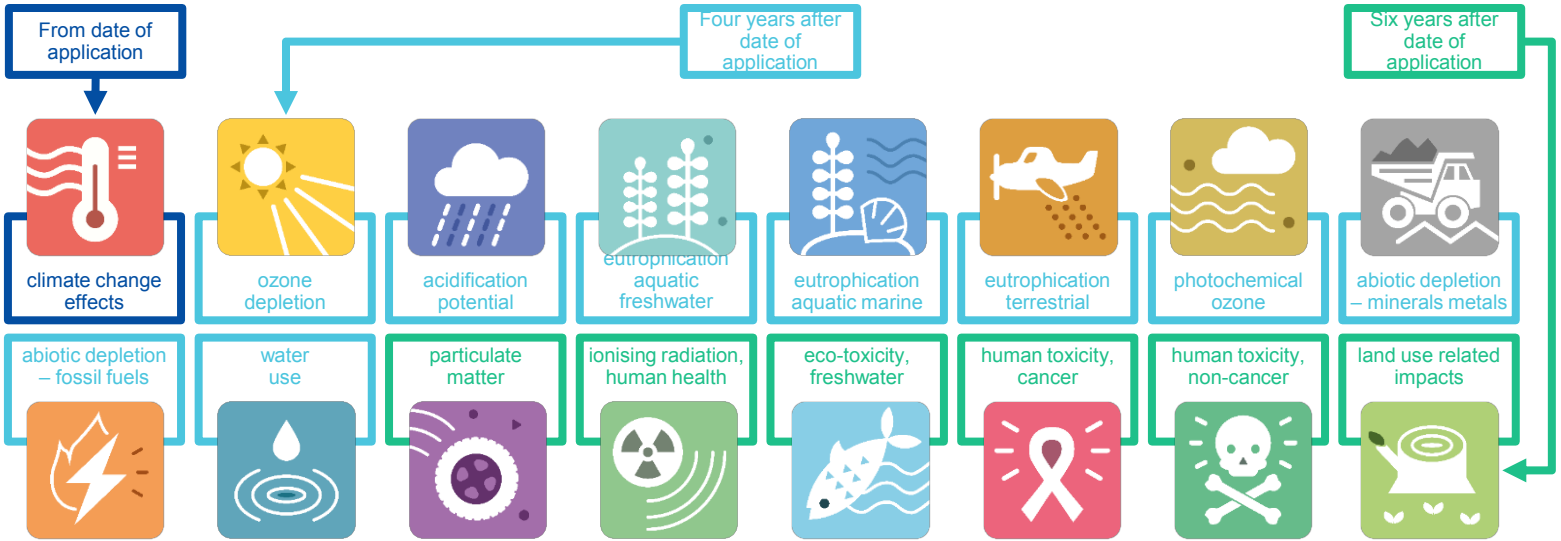
Individually manufactured or custom-made products in a non-series process (opt-in possible)

Binding decisions whether an item is covered

European Commission

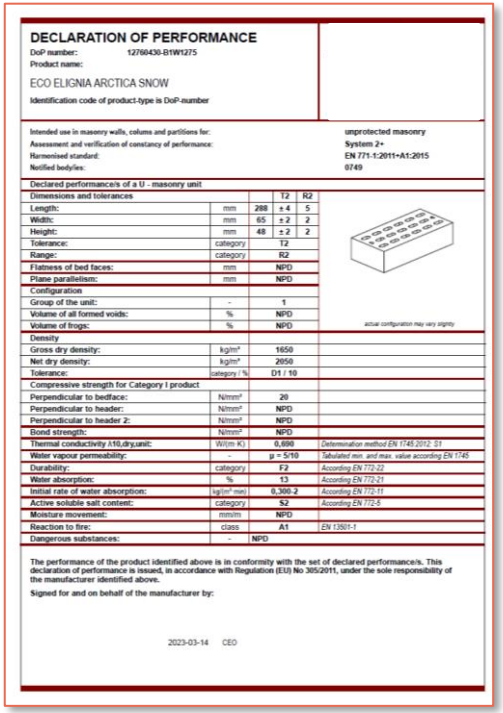
LCA environmental indicators

New CPR establishes by default, mandatory declaration of the following essential characteristics in three steps



European Commission

Declarations by different manufacturers



DECLARATION OF PERFORMANCE

DoP number: 12760430-B1W1275

Product name:

ECO ELIGNIA ARCTICA SNOW

Identification code of product-type is DoP-number

Intended use in masonry walls, colums and partitions for: unprotected masonry

Assessment and verification of constancy of performance: System 2+

Harmonised standard: EN 771-1:2011+A1:2015

Notified bodyies: 0749

Declared performance/s of a U - masonry unit

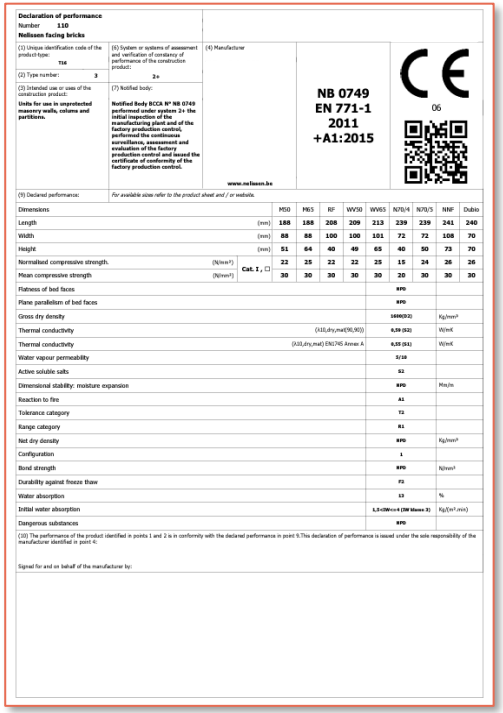
Dimensions and tolerances			T2	R2
Length:	mm	288	± 4	5
Width:	mm	65	± 2	2
Height:	mm	48	± 2	2
Tolerance:	category		T2	
Range:	category		R2	
Flatness of bed faces:	mm		NPD	
Plane parallelism:	mm		NPD	
Configuration				
Group of the unit:	-		1	
Volume of all formed voids:	%		NPD	
Volume of frogs:	%		NPD	
Density				
Gross dry density:	kg/m³		1650	
Net dry density:	kg/m³		2050	
Tolerance:	category / %		D1 / 10	
Compressive strength for Category I product				
Perpendicular to bedface:	N/mm²		28	
Perpendicular to header:	N/mm²		NPD	
Perpendicular to header 2:	N/mm²		NPD	
Bond strength:	N/mm²		NPD	
Thermal conductivity λ10,dry,unit:	W/(m·K)		0,690	Determination method EN 1745:2012: S1
Water vapour permeability:	-		μ = 5/10	Tabulated min. and max. value according EN 1745
Durability:	category		F2	According EN 772-22
Water absorption:	%		≤3	According EN 772-21
Initial rate of water absorption:	kg/(m² min)		0,300-2	According EN 772-11
Active soluble salt content:	category		S2	According EN 772-5
Moisture movement:	mm/m		NPD	
Reaction to fire:	class		A1	EN 13501-1
Dangerous substances:	-	NPD		

actual configuration may vary slightly

The performance of the product identified above is in conformity with the set of declared performance/s. This declaration of performance is issued, in accordance with Regulation (EU) No 305/2011, under the sole responsibility of the manufacturer identified above.

Signed for and on behalf of the manufacturer by:

2023-03-14 CEO



Declaration of performance

Number 110

Nelissen facing bricks

(1) Unique identification code of the product-type: 114

(2) Type number: 3

(3) Intended use or uses of the construction product: **Units for use in unprotected masonry walls, colums and partitions.**

(4) Manufacturer

(5) System or systems of assessment and verification of constancy of performance of the construction product: 2+

(7) Notified body: **Notified Body BCCA N° NB 0749 performed under system 2+ the determination of the manufacturing plant and of the factory production control, performed the continuous surveillance, assessment and evaluation of the factory production control and issued the certificate of conformity of the factory production control.**

NB 0749
EN 771-1
2011
+A1:2015

CE 06

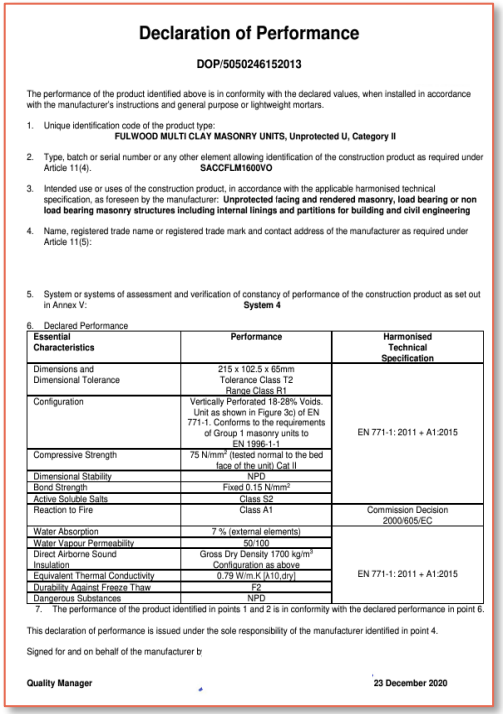
www.nelissen.be

(9) Declared performance: *For available sizes refer to the product sheet and / or website.*

Dimensions		M50	M65	RF	WV50	WV65	NF0/4	NF0/5	NNF	Dubio
Length	(mm)	188	188	208	209	213	239	239	241	240
Width	(mm)	88	88	100	100	101	72	72	108	70
Height	(mm)	51	64	40	49	65	40	50	73	70
Normalised compressive strength.	(N/mm²)	22	25	22	22	25	15	24	26	26
Mean compressive strength	(N/mm²) Cat. I, □	30	30	30	30	30	20	30	30	30
Flatness of bed faces							NPD			
Plane parallelism of bed faces							NPD			
Gross dry density							1600(D2)		Kg/mm³	
Thermal conductivity	(λ10,dry,mat(90,90))						0,59 (S2)		W/mK	
Thermal conductivity	(λ10,dry,mat) EN1745 Annex A						0,55 (S1)		W/mK	
Water vapour permeability							5/10			
Active soluble salts							S2			
Dimensional stability: moisture expansion							NPD		Mm/m	
Reaction to fire							A1			
Tolerance category							T2			
Range category							R1			
Net dry density							NPD		Kg/mm³	
Configuration							1			
Bond strength							NPD		N/mm²	
Durability against freeze thaw							F2			
Water absorption							≤3		%	
Initial water absorption							1,5<Wo<4 (IW klasse 3)		Kg/(m².min)	
Dangerous substances							NPD			

(10) The performance of the product identified in points 1 and 2 is in conformity with the declared performance in point 9.This declaration of performance is issued under the sole responsibility of the manufacturer identified in point 4:

Signed for and on behalf of the manufacturer by:



Declaration of Performance

DOP/5050246152013

The performance of the product identified above is in conformity with the declared values, when installed in accordance with the manufacturer's instructions and general purpose or lightweight mortars.

1. Unique identification code of the product type:
   FULWOOD MULTI CLAY MASONRY UNITS, Unprotected U, Category II
2. Type, batch or serial number or any other element allowing identification of the construction product as required under Article 11(4).
   SACCFLM1600VO
3. Intended use or uses of the construction product, in accordance with the applicable harmonised technical specification, as foreseen by the manufacturer: **Unprotected facing and rendered masonry, load bearing or non load bearing masonry structures including internal linings and partitions for building and civil engineering**
4. Name, registered trade name or registered trade mark and contact address of the manufacturer as required under Article 11(5):
5. System or systems of assessment and verification of constancy of performance of the construction product as set out in Annex V: **System 4**
6. Declared Performance

Essential Characteristics	Performance	Harmonised Technical Specification
Dimensions and Dimensional Tolerance	215 x 102.5 x 65mm Tolerance Class T2 Range Class R1	EN 771-1: 2011 + A1:2015
Configuration	Vertically Perforated 18-28% Voids. Unit as shown in Figure 3c) of EN 771-1. Conforms to the requirements of Group 1 masonry units to EN 1996-1-1	
Compressive Strength	75 N/mm² (tested normal to the bed face of the unit) Cat II	
Dimensional Stability	NPD	
Bond Strength	Fixed 0.15 N/mm²	
Active Soluble Salts	Class S2	
Reaction to Fire	Class A1	Commission Decision 2000/605/EC
Water Absorption	7 % (external elements)	EN 771-1: 2011 + A1:2015
Water Vapour Permeability	50/100	
Direct Airborne Sound Insulation	Gross Dry Density 1700 kg/m³ Configuration as above	
Equivalent Thermal Conductivity	0.79 W/m.K (λ10,dry)	
Durability Against Freeze Thaw	F2	
Dangerous Substances	NPD	

7. The performance of the product identified in points 1 and 2 is in conformity with the declared performance in point 6.

This declaration of performance is issued under the sole responsibility of the manufacturer identified in point 4.

Signed for and on behalf of the manufacturer b

Quality Manager **23 December 2020**

European Commission

Declaration of Performance and Conformity

New CPR establishes additional rules for manufacturers in relation to the DoPC

- Section on declared performance
- Section on fulfilment of product requirements - New
- Provided together with product information - Improved

Product requirements

- A performance declaration combined with a mandatory threshold is better than establishing a requirement:
  - » Performance allows more ambitious requirements by Member States and manufacturers
  - » Performance allows a more detailed declaration instead of pass/fail

	Approach	Assessment method	Threshold	Declaration in the declaration of performance and conformity
Performance + threshold	Essential characteristic: Recycled content	Defined in a mandatory harmonised standard	EU level: 25%	Recycled content: 45%
Requirement	Minimum recycled content of the product	Defined in a voluntary harmonised standard	EU level: 25%	Fulfill minimum recycled content

European Commission

Product requirements

Functionality

- use of specific materials which can be specified also in terms of their chemical composition
- specific dimensions and shapes of products or their components
- use of certain components which can be specified also in terms of materials, dimensions and shapes
- use of certain accessories and requirements for them
- ease of installation and deinstallation
- ease of maintenance or the lack of maintenance required for the expected life span
- characteristics of the product, including its cleanability, scratch resistance and break resistance, under usual operation conditions

Safety

- chemical risks due to leaking or leaching
- risk of unbalanced composition in terms of substances resulting in flawed, safety- relevant functioning of products
- mechanical risks
- mechanical failure
- physical failure
- risks of electric failure
- risks linked to electricity supply breakdown
- risks linked to unintended charge or discharge of electricity
- risks linked to software failure
- risks of software manipulation
- risks of incompatibility of substances or materials
- risks linked to the incompatibility of different items, at least one of them being a product
- risk of not performing as intended, where the performance is safety relevant
- risk of misunderstanding instructions for use in a field affecting health and safety
- risk of unintended inappropriate installation or use
- risk of intended inappropriate use

Environment

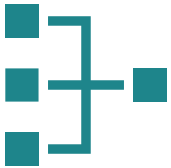
- maximising durability and reliability of the product or its components as expressed through a product's technical lifetime indication of real use information on the product, resistance to stress or ageing mechanisms and in terms of the expected average life span, the minimum life span under worst but still realistic conditions, and in terms of the minimum life span requirements and prevention of premature obsolescence
- minimising life-cycle greenhouse gas emissions
- maximising reused, recycled and by-product content
- selection of safe, sustainable-by-design, and environmentally benign substances
- energy use and energy efficiency
- resource efficiency
- modularity
- identifying which product or parts thereof and in what quantity can be reused after de-installation (reusability), and in what quantities
- upgradability
- ease of reparability during the expected life span, including compatibility with commonly available spare parts
- ease of maintenance and refurbishment during the expected life span
- recyclability and the capability to be remanufactured
- capability of different materials or substances to be separated and recovered during dismantling or recycling procedures
- sustainable sourcing
- minimising the product-to-packaging ratio
- amounts of waste generated, notably hazardous waste

Product information

- Products are accompanied by general product information, instructions for use and safety information
- CPR Annex applies directly and additional guidance about its implementation is provided in harmonised standards
- A delegated act may establish which information must be provided and how, if needed

Information aspects to be covered

Safety during transport, installation, deinstallation, maintenance, deconstruction and demolition



Compatibility and integration into systems or kits

Training and other requirements necessarily to be fulfilled for safe use

Maintenance needs with a view to maintaining the performance of the product during its service life span

Risk mitigation

Safety during use

Recommendations for a product's end of life

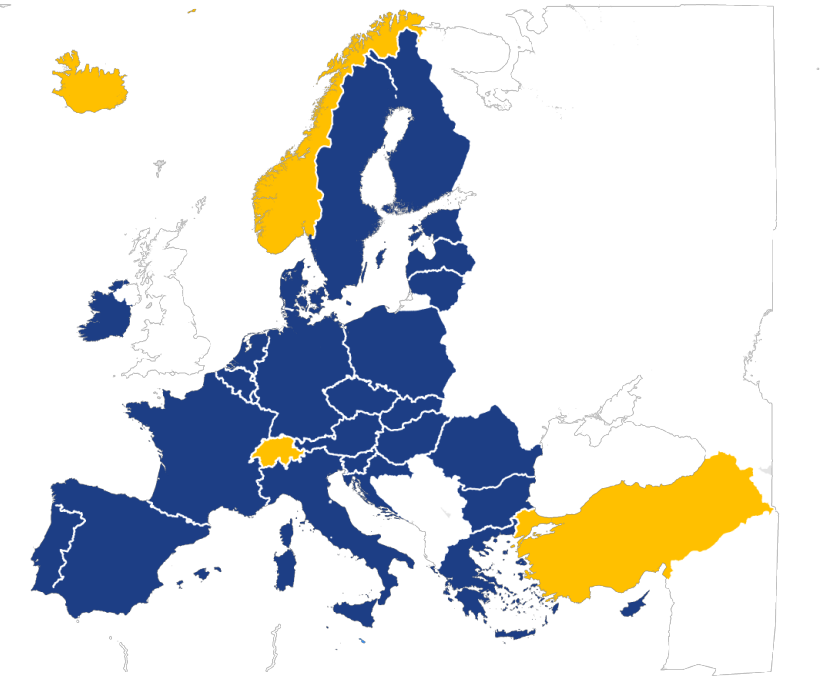
European Commission

Environmental label

- Mandatory label can be established by delegated act
- Based on the environmental performance of the product
- Applicable if
  - » the product is typically chosen or purchased by consumers; and
  - » the product does not have a significantly different overall environmental performance over its life cycle depending on its installation.

European Commission

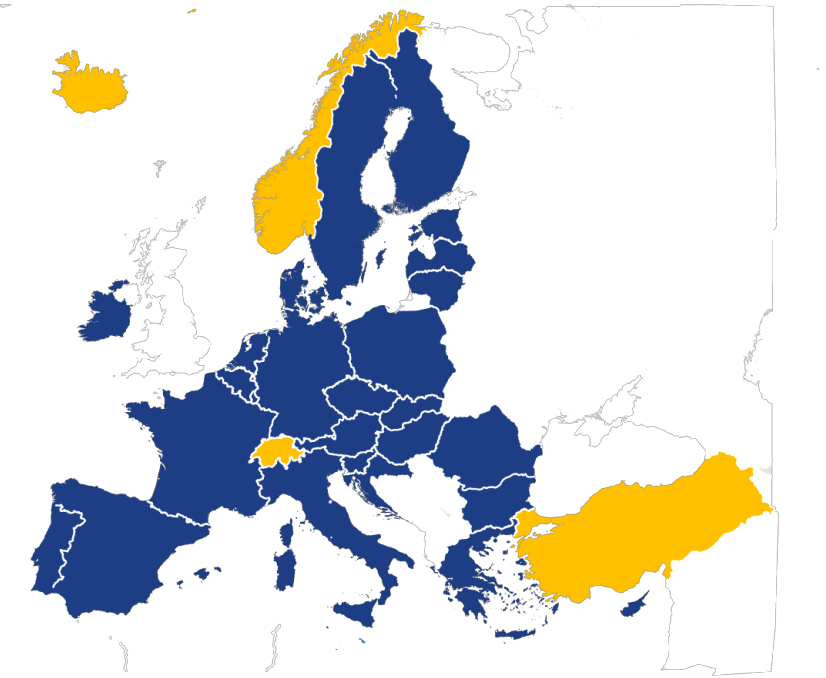
Member States can…



- Establish minimum performances for all or certain applications
- Require more ambitious performance thresholds
- Establish take back obligations for unused products

European Commission

Member States cannot…



- Establish a different assessment method for the declaration
- Demand different third-party tasks to those defined by the CPR
- Require additional essential characteristics not included in the harmonised standard
- Request fulfilment of additional/stricter product requirements

European Commission

CPR Acquis Expert Sub-Groups

Fire

Dangerous substances

Environmental sustainability

Horizontal subgroups

Product families according Annex VII

1 Precast normal/ lightweight/ autoclaved aerated concrete products	9 Curtain walling/cladding/structural sealant glazing	17 Masonry and related products - Masonry units, mortars, and ancillaries.	25 Construction adhesives	33 Fixings
2 Doors, windows, shutters, gates and related building hardware	10 Fixed fire fighting equipment	18 Wastewater engineering products	26 Products related to concrete, mortar and grout	34 Building kits, units, and prefabricated elements
3 Membranes, including liquid applied and kits	11 Sanitary appliances	19 Floorings	27 Space heating appliances	35 Fire stopping, sealing and protective products - Fire retardant products
4 Thermal insulation products - Composite insulating kits/systems	12 Circulation fixtures: road equipment	20 Structural metallic products and ancillaries	28 Pipes-tanks and ancillaries not in contact with water for human consumption	36 Attached ladders
5 Structural bearings - Pins for structural joints	13 Structural timber products/elements and ancillaries	21 Internal & external wall and ceiling finishes. Internal partition kits	29 Construction products in contact with water intended for human consumption	
6 Chimneys, flues and specific products	14 Wood based panels and elements	22 Roof coverings, roof lights, roof windows, and ancillary products. roof kits	30 Flat glass, profiled glass and glass block products	
7 Gypsum products	15 Cement, building limes and other hydraulic binders	23 Road construction products	31 Power, control and communication cables	
8 Geotextiles, geomembranes, and related products	16 Reinforcing and prestressing steel for concrete – Post-tensioning kits	24 Aggregates	32 Sealants for joints	

European Commission

CPR Acquis Expert Groups – current priorities

Fire

Dangerous substances

Environmental sustainability

1 Precast normal/ lightweight/ autoclaved aerated concrete products 1	17 Masonry and related products - Masonry units, mortars, and ancillaries. 9	5 Structural bearings - Pins for structural joints 17	7 Gypsum products 25	6 Chimneys, flues and specific products 33	
20 Structural metallic products and ancillaries 2	24 Aggregates 10	34 Building kits, units, and prefabricated elements 18	33 Fixings 26	32 Sealants for joints 34	
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26 Products related to concrete, mortar and grout 8	14 Wood based panels and elements 16	25 Construction adhesives 24	31 Power, control and communication cables 32		

Horizontal subgroups

Standardisation request discussed

CPR Acquis ongoing work

Other subgroups Fast track possible

Other subgroups Fast track not possible

Fast track ongoing

1 Priority

European Commission

Assessment and verifications system for environmental sustainability

Manufacturer

performance assessment

factory production control

Notified Body

validation of the assessment

- input values
- assumptions
- compliance with applicable PCR
- process applied
- correct usage of software

initial inspection of the manufacturing plant to validate any company-specific data

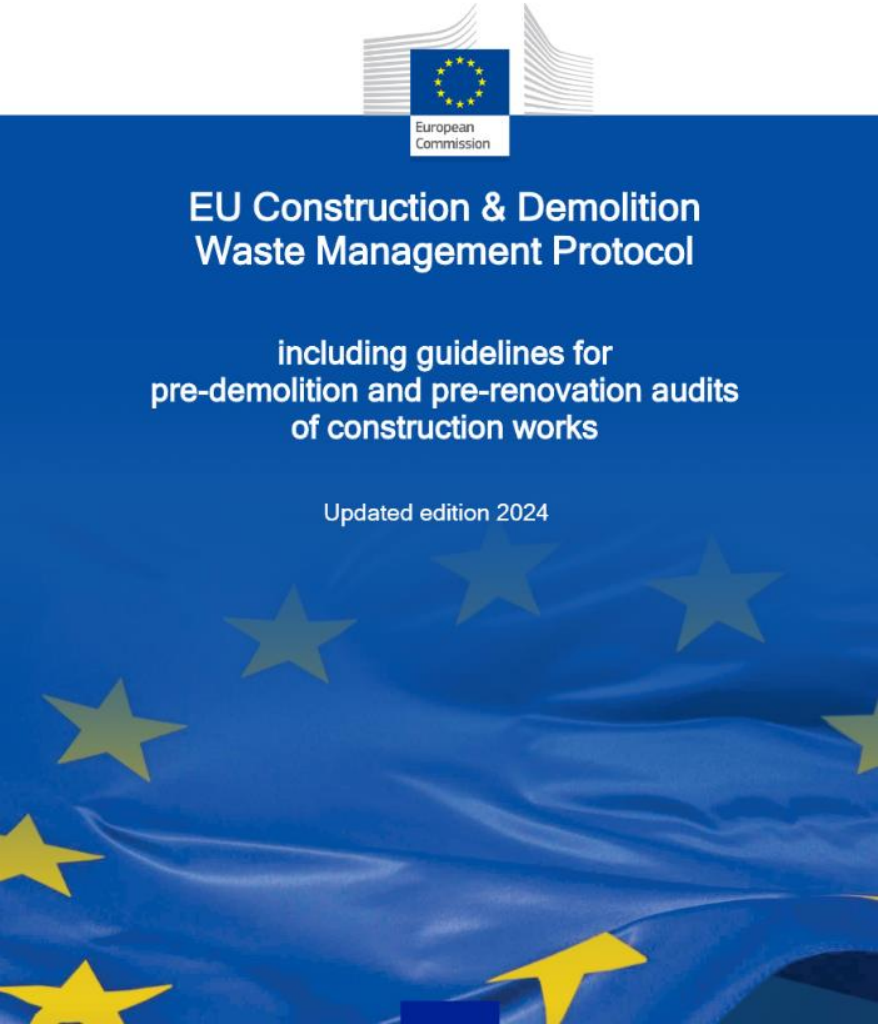
European Commission

End-of-waste status: construction and demolition waste

- Study Final Report: https://op.europa.eu/en/publication-detail/-/publication/89a1cfe5-60fd-11ef-a8ba-01aa75ed71a1/language-en

- 26 September 2024: kick-off ‘Development of EU-wide harmonised End-of-Waste criteria for inert construction and demolition waste'

European Commission



New guidance published:

https://op.europa.eu/en/publication-detail/-/publication/d63d5a8f-64e8-11ef-a8ba-01aa75ed71a1

European Commission

Thank you! Ta(c)(k)k! Aitäh! Þakka! Kiitos!

https://single-market-economy.ec.europa.eu/sectors/construction_en

EU Construction Ecosystem

Life-cycle GWP
Article 7(2) and Article 7(5)

Luzie Rück, Viegand Maagøe on behalf of
DG ENER - Buildings and Products

Increased consideration of the whole-life-cycle performance of buildings & a circular economy

- Buildings are responsible for greenhouse gas emissions before, during & after their operational lifetime.
- The **2050 vision** for a decarbonised building stock goes beyond the current focus on operational greenhouse gas emissions.
- The **whole-life-cycle emissions** of buildings should therefore progressively be taken into account, starting with new buildings.
- Making good choices about **building design, practices, and materials** can significantly reduce both operational and embodied carbon emissions.

Overview of relevant provisions for Life-cycle GWP

- **Calculation of LC GWP** from 1-01-2028 for large new buildings & from 01-01-2030 for all new buildings (Art 7.2)

  ✓Calculation in accordance with the **main principles of Annex III,** pending the adoption of a DA to set out a **Union framework for the national calculation of GWP** by 31 December 2025 (Art 7.3)

- By 01-01-2027, publication & notification of **national roadmaps** detailing introduction of limit values and set targets (Art 7.5)

Overview of relevant provisions for Life-cycle GWP

April 2024

EPBD is formally adopted.

May 2024

Publication of the EPBD in the OJ & enter into force
Directive - EU - 2024/1275 - EN - EUR-Lex (europa.eu)

31 December 2025

The Commission is empowered to adopt delegated act for a Union framework for the national calculation of life-cycle GWP.

(Article 7, 3.)

January 2027

Member States shall publish and notify the Commission of a roadmap over the introduction of limit values & targets

(Article 7, 5.)

January 2028

> Buildings over 1000m2 useful floor area

Member States shall ensure that life-cycle GWP is calculated by Annex III and disclosed in the energy perf. certificate.

(Article 7, 2.)

January 2030

> All new buildings

Member States shall ensure that life-cycle GWP is calculated in accordance with Annex III (and DA) and disclosed in the energy perf. Certificate + **Targets** for all new buildings

(Article 7, 2. + Article 7, 5.)

Calculation & disclosure of the LC GWP

Article 7(2)

Member States shall ensure that the life-cycle GWP is calculated in accordance with Annex III and disclosed in the energy performance certificate of the building:
(a) from 1 January 2028, for all new buildings with a useful floor area larger than 1000 m2;
(b) from 1 January 2030, for all new buildings.

- The only possible exemptions to the requirements are mentioned in Article 7(4) for buildings for which applications for building permits or equivalent applications have already been submitted within the deadlines referred to in paragraphs 1 and 2.

➔ There are no other exemptions from the obligation to calculate the life-cycle GWP of new buildings.

Calculation & disclosure of the LC GWP

Article 7(3)

The Commission is empowered to adopt delegated acts in accordance with Article 32 to amend Annex III to set out a Union framework for the national calculation of life-cycle GWP with a view to achieving climate neutrality. The first such delegated act shall be adopted by 31 December 2025.

- Annex III provides the main principles for the calculation of the GWP & applies until the application of the DA, which will amend Annex III

Calculation & disclosure of the LC GWP

- Annex III refers to the standard EN 15978:2011 & the EU framework Level(s) & Construction Product Regulation (for data).
- The total life-cycle GWP is expressed as kgCO2eq/(m2) (of useful floor area) calculated over a reference study period of 50 years.
- The scope of building elements and technical equipment is as defined in the Level(s) common EU framework for indicator 1.2.
- Where a national calculation tool or method exists, or is required for making disclosures or for obtaining building permits, that tool or method may be used to provide the required disclosure.
- Other calculation tools or methods may be used if they fulfil the minimum criteria established by the Level(s) common EU framework.

-> Next steps: Work will start this autumn jointly with other DGs & the support of EC service contract to define the minimum criteria mentioned in Annex III

Adoption of a DA to set out a Union framework for the national calculation of GWP

Article 7(3)

The Commission is empowered to adopt delegated acts in accordance with Article 32 to amend Annex III to set out a Union framework for the national calculation of life-cycle GWP with a view to achieving climate neutrality. The first such delegated act shall be adopted by 31 December 2025.

- The upcoming DA will amend Annex III and for its preparation we will draw on the experience of countries having established good practices.

-> Next steps: Work will start this autumn jointly with other DGs & the support of EC service contract – see the next slide for considerations

European Commission

Specify the minimum criteria mentioned in Annex III

- The overall goal is to cover the whole LCGWP of buildings, however, until Member States are ready a common denominator approach shall be used as a minimum.
- Common denominator approach
  - A minimum coverage of the scope of modules
  - A minimum coverage of the scope of buildings elements
  - Clarify and describe the minimum approach of the scenarios
- Traceability to the common denominator approach.
- Other clarifications for the DA
  - What stage(s) in a building project the assessment should be done
  - Clearly defined area

National roadmaps

Article 7(5)

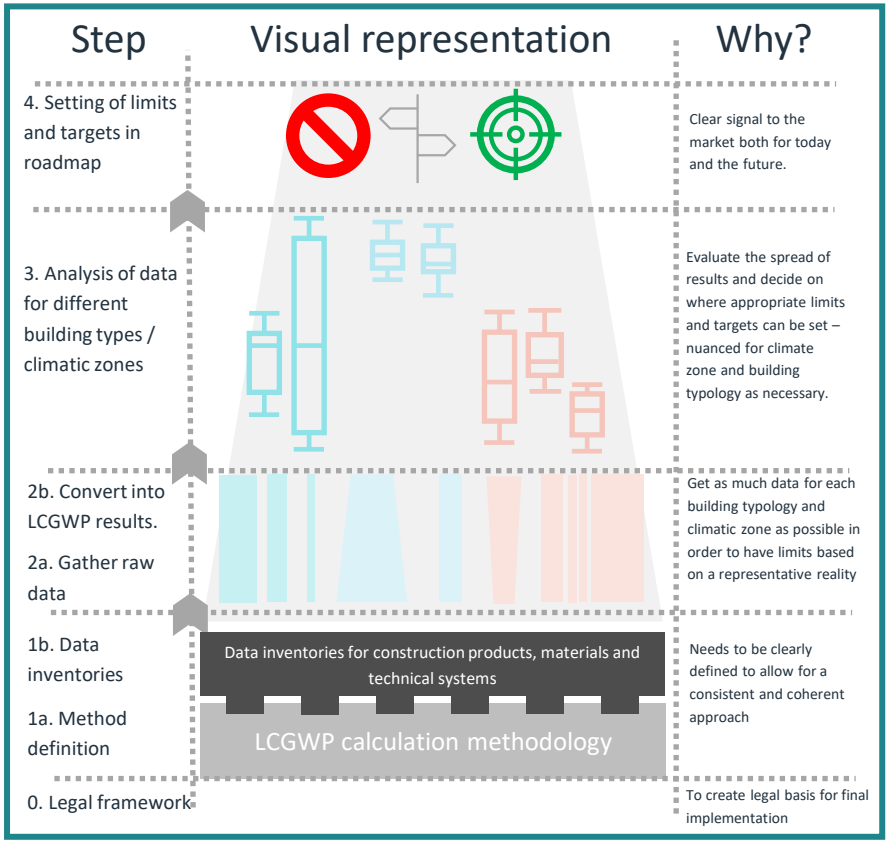
By 1 January 2027 Member States shall publish and notify to the Commission a roadmap detailing the introduction of limit values on the total cumulative life-cycle GWP of all new buildings and set targets for new buildings from 2030, considering a progressive downward trend, as well as maximum limit values, detailed for different climatic zones and building typologies.
Those maximum limit values shall be in line with the Union's objective of achieving climate neutrality.
The Commission shall issue guidance, share evidence on existing national policies and offer technical support to Member States, at their request.

Next steps:

- Guidance to be developed in close cooperation with Member States, and Member States will later this year be able to provide officially comments
- Tentative timeline: 1st half - mid 2025

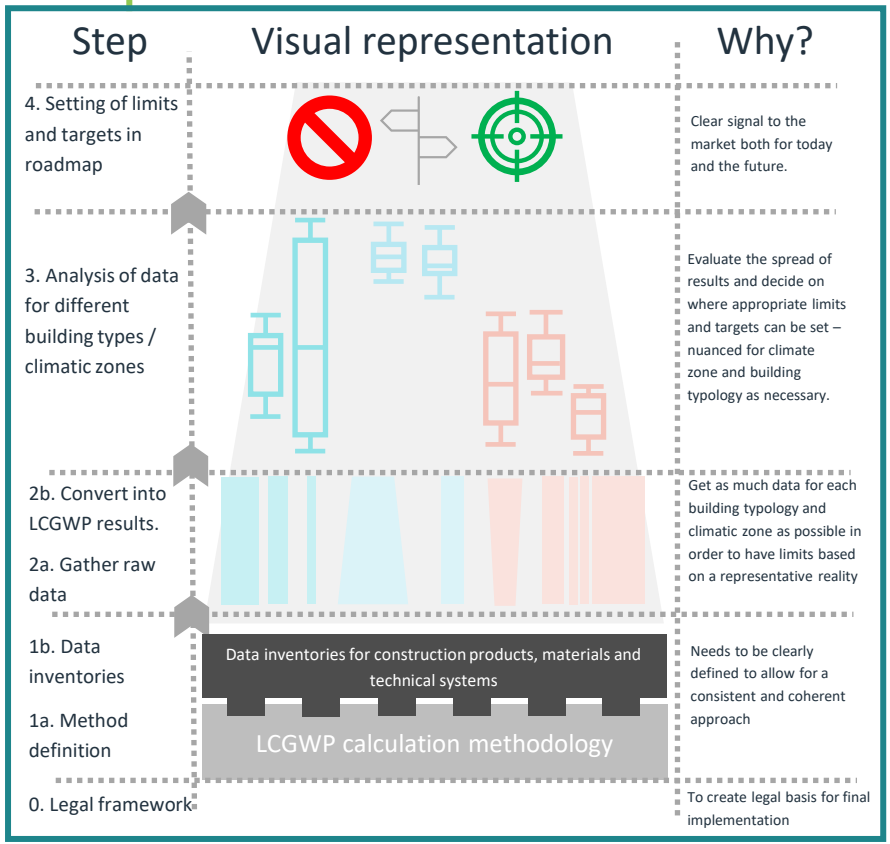
European Commission

National Roadmaps - *Detailed breakdown*



European Commission

National roadmaps



Expected content of the guidance material for the roadmap?

- Guidance on the development of a national-level strategic document (roadmap) based on well established benchmarks (limit and target values)
  - Including methodology, data, analysis etc.
- Downward trend of limit values
- Definition of roles and responsibilities
- Information system for storing LCGWP data for new buildings as time passes

Which elements do you need in the guidance?

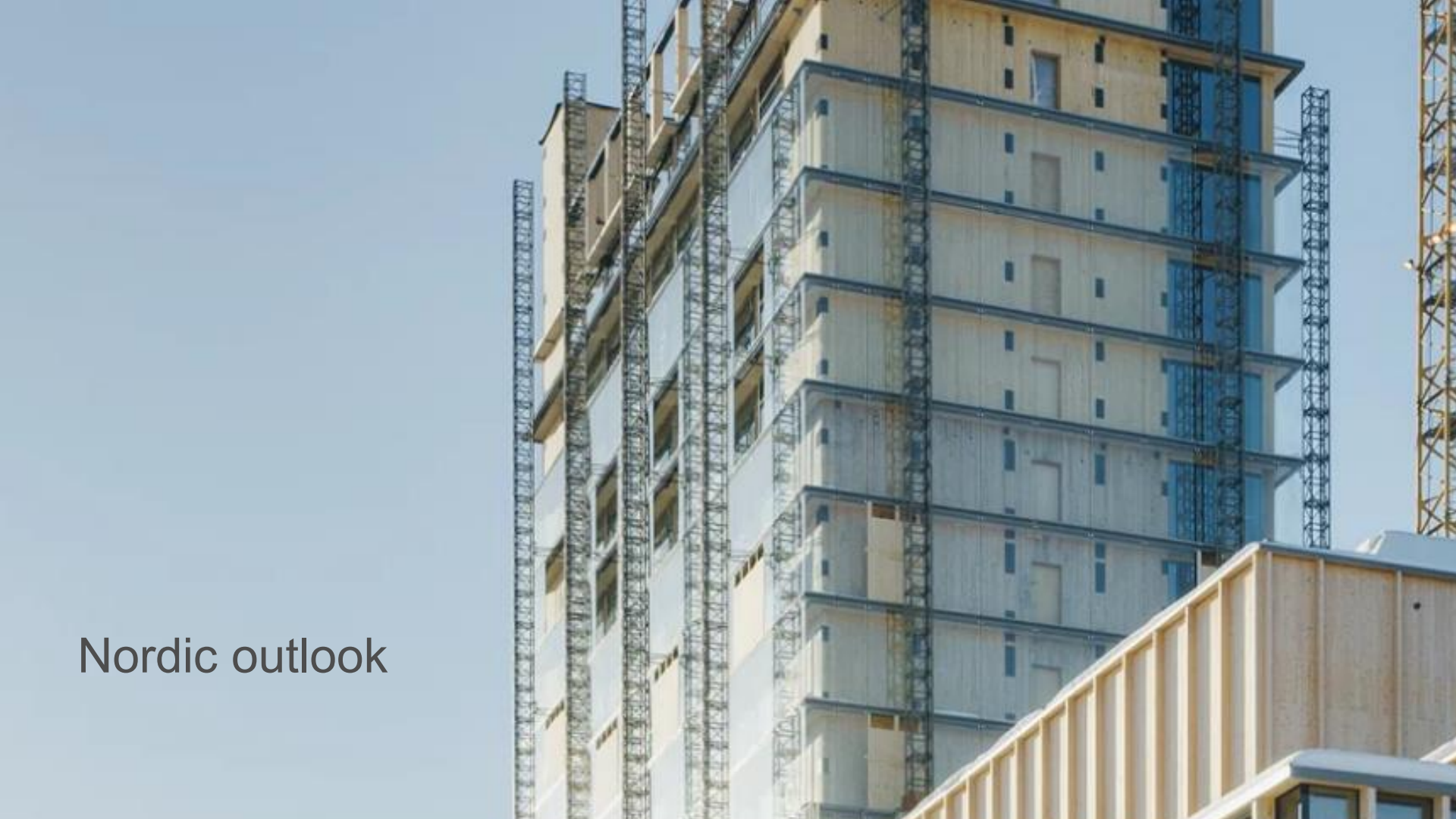
European Commission

The support project

- Follow the support project here: https://www.wlc-epbd-guidance.eu/
- Stakeholder meeting in October; register online on the web page to get an invitation to the event;
  - Possibility to give input – both to the DA and the Roadmap
  - Member States have also the possibility to give inputs at the EPBD Committee and Concerted Actions
- Feel free to contact us through the web page if you have any questions or input


Thank you

Nordic outlook



Nordic outlook

Nordic Regulations and news from Nordic Sustainable Construction

Thomas Johansson (SWE)
Helle Redder Momsen (DK)

11 09 2024

Nordic Sustainable Construction

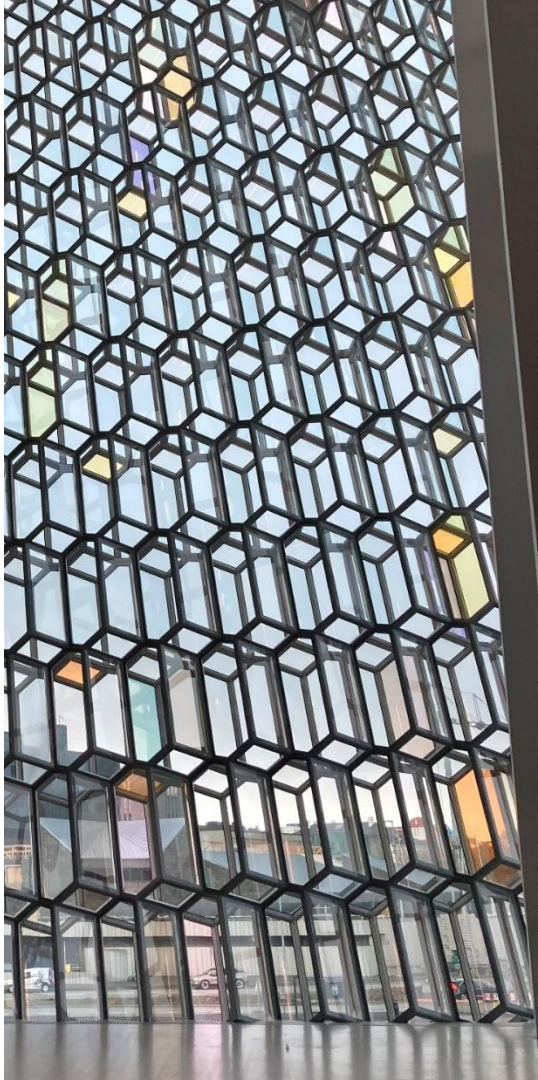
Nordic collaboration since 2018

- Nordic harmonisation of regulation about climate emissions from buildings. Collaboration with the Nordic building authorities.
- Declaration by Nordic Ministers of Housing and Construction on facilitating work towards Low Carbon Construction and Circular Principles in the Construction Sector (2018, 2019, 2023).
- Yearly presentations of the work at Nordic Climate Forum for Construction.

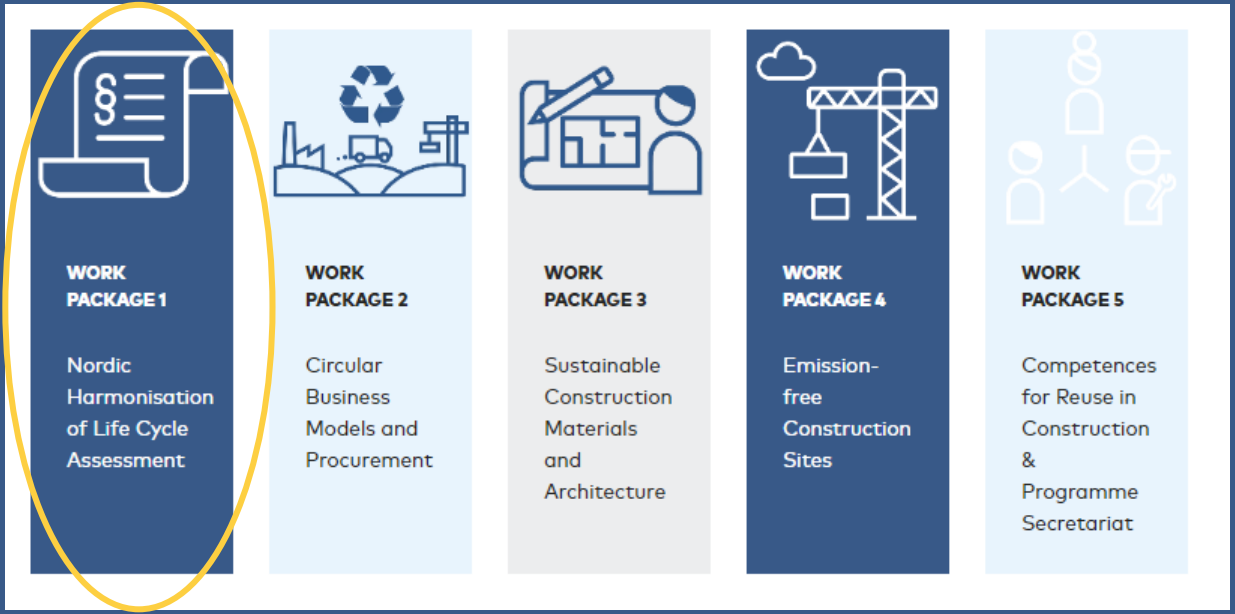
Participants at the Nordic Climate Forum for Construction in Malmö October 2019

Current state

- The Nordic region is a pioneer for climate impact assessment of construction in Europe
- A legal framework is planned to be introduced in all Nordic countries by 2026
- The Nordic regions can provide recommendations for implementations of such policies in other countries
- The strategies adopted by Nordic countries in the implementation of limit values differ in several respects



Nordic collaboration to support declarations



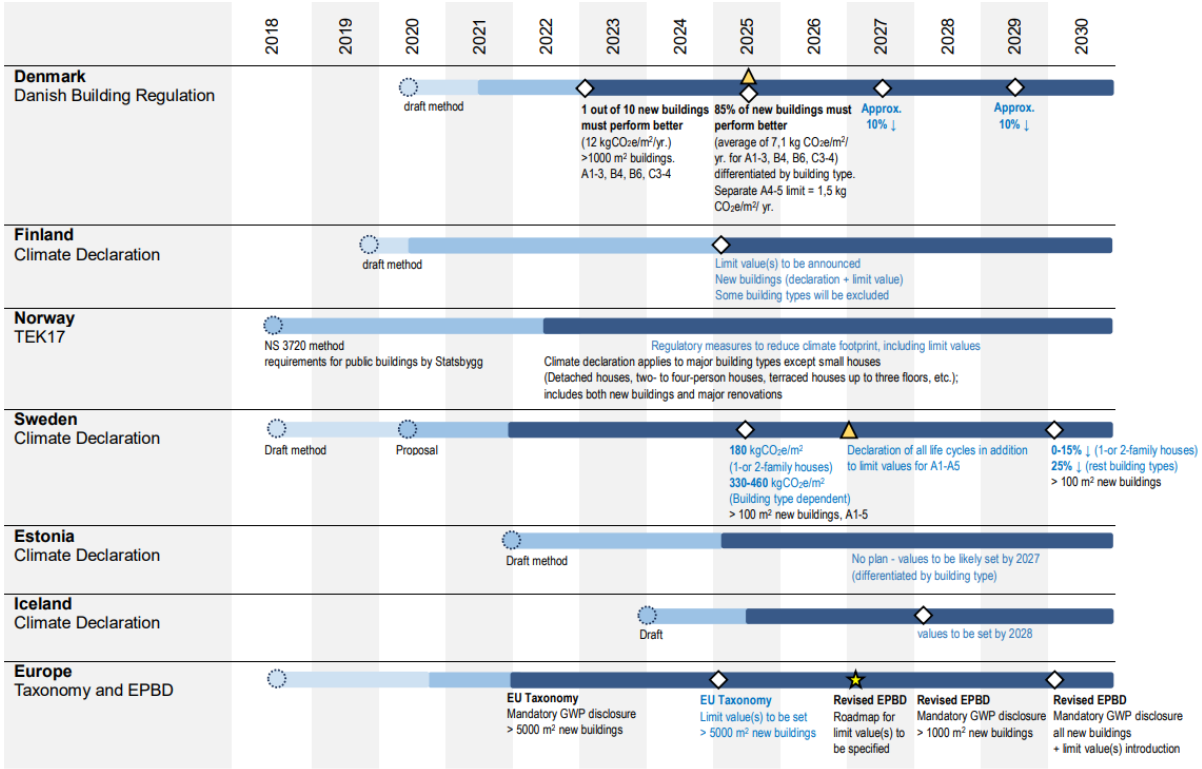
Ympäristöministeriö
Miljöministeriet
Ministry of the Environment

Work Package 1

Nordic Harmonisation of Life Cycle Assessments

Task 1	Task 2	Task 3	Task 4	Task 5
Analysis of Nordic LCA Practices	**Data for LCA**	**BIM for LCA - Calculating the Climate Impact of Buildings Through Digitalisation**	**Limit Values and Monitoring the Decarbonisation of the Nordic Building Stock**	**Acceleration Programme: Knowledge Sharing Clinics and Best Practice Catalogues**
2 reports: • Nordic feasibility study on harmonisation of building LCA (June 2022-internal) • Roadmap for Harmonising Nordic LCA regulation (Sep. 2023)	1 big report: Nordic view on data needs and scenarios settings for full life cycle building environmental assessment (June 2024) Strengthen collaboration between Nordic data LCA experts 2 webinars 5 workshops	2 reports: • The operating environment of building LCA and BIM in the Nordics and Estonia (Dec. 2023) • BIM-based building LCA - instructions for material inventory for climate declarations (Sep 2024) 2 webinars (one coming) +30 BIM models (Sep 2024) 8 short e-learning videos on how to use the BIM models (Sep 2024)	3 reports: • Process for Monitoring the Decarbonization of the Building Stock (Jan. 2024) • Harmonising limit values for buildings across the Nordics (March 2024) • Decarbonization of the building stock (*Sep 2024*) 2 webinars	The acceleration programme to speed up decarbonisation of the building and construction sector 1 launch webinar 1 workshop and tailor made consultancy (Sep. 2024) Report: Nordic Low Carbon Building Catalogue (Dec 2024).

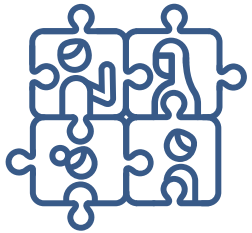
Timeline of carbon declaration and limit values integration

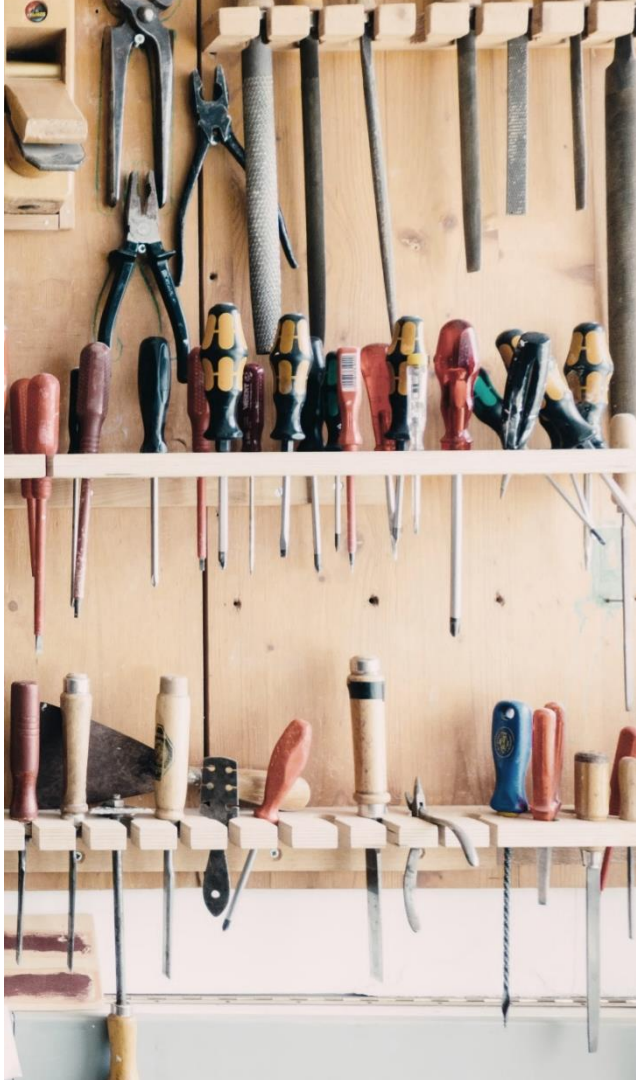


Overview of Nordic Climate Declarations and Limit Values integration | Nordic Sustainable Construction

Significant differences between the Nordic countries

- What buildings to include in the regulation?
- What area and building parts to regulate?
- What scope to include in the limit value calculation?
- When in the building process to declare?
- How to report the LCA data?
- Etc....





Building uses and sizes covered

limit value

carbon declaration

✓= **included** in limit value(s)
✓= **included** in declaration

O = **suggested or planned** inclusion in future limit value(s)
O = **suggested or planned** inclusion in future declaration

1. Sweden provides detailed requirements on which buildings are exempted from declarations and are independent of the building type, such as temporary building constructions, buildings built by private.
2. it can be assumed that the same building types included in the 2022 climate declaration will also be subject to the limit values proposed for July 2025.
3. when a building permit is needed according to a building regulation definition (and according to further exemption rules in Sweden)
4. included when they are in blocks.
5. called "leisure homes" in Norway.
6. Member states may decide not to set or apply the requirements to buildings owned by the armed forces or related government buildings, as well as temporary and agricultural building.
7. Socially critical buildings are exempted from the 2025 limit value, but not from the carbon declaration requirements.
8. Some public authorities are exempted.
9. it can be assumed that the same building types included in the 2025 carbon declaration will also be subject to the limit values proposed to be introduced by 2028

Building TYPE	Denmark	Estonia	Finland	Iceland[9]	Norway	Sweden	Europe (EPBD)
Single-family homes	✓			✓		✓[1,2]	✓
Other residential buildings	✓	O	O	✓	✓	✓[1,2]	✓
Office	✓	O	O	✓	✓	✓[1,2]	✓
Retail and restaurant	✓	O	O	✓	✓	✓[1,2]	✓
School and daycare	✓	O	O	✓	✓	✓[1,2]	✓
Laboratory	✓	O	O	✓	✓	✓[1,2]	✓
Hospital and health	✓	O	O	✓	✓	✓[1,2]	✓
Sports facilities	✓	O	O	✓	✓	✓[1,2]	✓
Cultural and other public buildings	✓	O	O	✓	✓	✓[1,2,8]	✓[6]
Religious	✓			✓	✓	✓[1,2]	
Industrial	✓			✓	✓		✓[6]
Holiday cottages[5]	from 2025				✓[4]	✓[1,2]	✓
Other	✓[7]	O		✓	✓	✓[1,2]	✓[6]
Renovation projects				✓	✓	O[3]	
Size of buildings	**2023-2025:** > 1,000 m^2 **From 2025:** > 50 m^2 for unheated buildings; > 250 m^2 for extensions of single family, terraced and holiday houses	unspecified	no size requirement, except for warehouses, transport and communications buildings, indoor swimming pools and indoor ice rinks (> 1,000 m^2)	unspecified, buildings under scope classes 2 and 3 in Building Regulation	no size requirement, just building type	> 100 m^2	**2028:** > 1,000 m^2 **From 2030:** > 50 m^2

Methodological choices in Nordic regulation

Notable differences:

- Definitions of building reference area (gross, heated, etc)
- Limit value scope full life cycle, or only upfront carbon (A1-A5)
- Biogenic carbon in definitions of Global Warming Potential
- Building parts included

Methodological choices in Nordic regulation		Denmark	Estonia	Finland	Iceland[9]	Norway	Sweden		Europe
		2023/ 2025	2022	2023	2025	2022	2022	2025	2024 (EPBD)
General	Reference unit definition	**GFA** for embodied **HFA** for operational	**HFA**	**HFA**	**GFA**	**GFA**	**GFA**	**GFA**	**UFA**
	GWP indicator	**GWP-total**	**GWP-fossil** and **GWP-total** (most likely)	**GWP-total**	**GWP-total**	**GWP-GHG**	**GWP-GHG**	**GWP-GHG**	**GWP-total**[5]
	Handling of biogenic carbon	**-1/+1 method** not handled separately yet	**0/0 and -1/+1 methods** not handled separately yet	**-1/+1 method** also separately (GWPbio) and in carbon handprint (D4)	**-1/+1 method** also separately as per EN 15804+A2 (GWPbio)	**0/0 method** not handled separately yet	**0/0 method** not handled separately yet	**0/0 method** not handled separately yet	**-1/+1 method**, temporary carbon storage may be reported (Annex V)
Assessment scope	Life cycle modules considered	**2023: A1-3, B4, B6.1, C3-4**; D1 & D2 separate declaration **2025: A4-5** added individually	**A1-3, A4, A5, B4, B6.1, C3-4**; D1 & D2 separately	**A1-3, A4, A5, B4, B6.1, C1, C2, C3-4**; carbon handprint separately	**A1-3, A4, A5, B4, B6.1, B6.2, C1, C2, C3-4**; D1 separately	**A1-3, A4, A5** (only waste), **B2, B4**	**A1-3, A4, A5**	**A1-3, A4, A5** (planned to include B2, B4, C1-4 from 2027 in carbon declaration)	full life cycle scope; the Delegated Act will specify the minimum modules required
	Building model parts included	**Substructure** (piling: allowance for exclusion) **Superstructure** **Building services** (without electricity and firefighting systems) **External works** (partly)	**Substructure** **Superstructure** **Building services**	**Substructure** (foundations: only declaration or excluded[1]) **Superstructure** **Building services** **Furnishing** (only fixed)	**Substructure** **Superstructure** **Building services**	**Substructure** (only pile and shallow foundation) **Superstructure** (without stairs, ramps and balconies)	**Substructure** **Superstructure** **PV panels**	**Substructure** (piling: only declaration from 2027) **Superstructure** **Building services** (for some building types; PV panels: only declaration from 2025) **Furnishing** (only fixed, for some building types)	EPBD refers to LEVEL(s): **Substructure** **Superstructure** **Building services** **External works**[3] **Furnishing**

Legislation Limit value Proposal

Methodological choices in Nordic regulation (continues)

Methodological choices in Nordic regulation		Denmark	Estonia	Finland	Iceland[9]	Norway	Sweden		Europe
		2023/ 2025	2022	2023	2025	2022	2022	2025	2024 (EPBD)
Other	**Exported energy calculation**	Inclusion of max. 25 kWh/m²/year renewable energy (embodied + operation)[2]	To be clarified	Exported energy is part of D3	To be clarified	Not applicable	Not applicable	Exclusion of solar cells (embodied + operation) in the 2025 limit value, and only separate reporting	prEN 15978 proposes two approaches[4]; The Delegated Act may require a specific approach
	Handling of long-term carbon removals	Not yet specified	Not yet specified	Not yet specified	Not yet specified	Not yet specified	Not yet specified	Not yet specified	Must be addressed, no further specification of a method yet (Article 7)
	Template to use when reporting the LCA	Voluntary template to help more uniform submissions (the 2.0 Standard format for LCA delivery) (BR18 - Bygningsreglementet, 2021)	Not yet specified	Not yet specified	online reporting format	No specific format	mandatory data reporting format prepared by Boverket		requires a digital logbook (no specification yet)

1. together with the foundations, it is also investigated whether site preparation and external areas will be only declared or fully excluded.
2. no distinction between self-consumed and exported renewable energy.
3. While LEVEL(s) includes external works, EPBD directive only covers the building, it may be assumed that external works are excluded from the inventory scope of the EPBD carbon declaration.
4. Approach A where embodied impacts of energy-generating systems are fully allocated to the building (exported energy is shown in module D2 as emissions-free) and Approach B where a proportional allocation takes place.
5. Level(s) requests for detailed subdivision as per 15804+A2

Legislation Limit value Proposal

Generic data, scenarios and standard values in Nordic regulation

Notable findings:

- Decarbonisation scenarios for energy supply (B6) are used in some Nordic countries, but not for other scenario-based modules
- Conservative factors are defined differently in conservative generic values for construction products used in Nordic countries

Generic data and scenarios in Nordic regulation		Denmark	Estonia	Finland	Iceland[9]	Norway	Sweden	Europe
		2023/ 2025	2022	2023	2025	2022	2022/ 2025	2021/ 2024
Decarboni-sation scenarios	Energy decarbonisation scenario for B6 (operation)	**Yes** 2023: Danish national policy scenario (2020) 2025: new national policy scenario[1]	**Yes** Estonian national policy scenario (2023)	**Yes** Finnish national policy scenario (to be updated 2024/Q3)	**No** Iceland already has 99% renewables and district heating	**Not relevant** B6 is excluded from the scope.	**Not relevant** B6 is excluded from the scope. May become relevant from 2027 where carbon declaration is planned to include B6.	**Yes** Level(s) chooses EU PRIMES model (EU Reference scenario)
	Decarbonisation scenarios for B/C modules (embodied) [2]	**No**	**No**	**No**	**No**	**No**	**No**	**No**
Generic emission factors	Data source (base)	Table 7 in Appendix 2 of BR18, §297	Approved national generic data expected in 2024	CO2data.fi	no national generic database for building products yet, EPDs or other generic databases are used	no national generic database for building products, EPDs are used	Boverket's climate database	No specific plans for development of a common European database
	Conservative emission factors	New generic data for specific product types are based on the 75% percentile of related EPD Danmark values[3]	1.2	1.2 but not for energy and fuels emission data	1.25 added only if not already included	1.25 added only if not already included	1.25 but not for energy and fuels emission data	No specific proposal

Generic data, scenarios and standard values in Nordic regulation (continues)

Generic data and scenarios in Nordic regulations		Denmark	Estonia	Finland	Iceland	Norway	Sweden	Europe
		2023/2025	2022	2023	2025	2022	2022 /2025	2021/2024
Standard values	Building elements[4] ($kgCO_2e/m^2$)	**Building services** (for A1-3, C3-4: 33-62 $kgCO_2e/m^2$; range due to differences per building type)	**Building services** (for A1-3: 42-125 $kgCO_2e/m^2$; for B4: 6,1-141 $kgCO2e/m^2$; range due to differences per building type) As a rule, CO_2 data.fi also includes C3, D, but not for the broad standard values for building services available per type of building		**Building services** (for A1-3: 56-94 $kgCO_2e/m^2$; range due to differences per building type)	**Not relevant**	**2022: No 2025: Building services** (for A1-5: 12-60 $kgCO_2e/m^2$) **Internal finishes and furnishing** (for A1-5: 22-53 $kgCO_2e/m^2$)	No specific proposal
	Life cycle modules[4]	**No**	Under investigation	**A4**, C2 (20,4 $kgCO_2e/m^2$) **A5** (43-59 $kgCO_2e/m^2$) **C1** (10 $kgCO_2e/m^2$)	**A4** (19.8 $kgCO_2e/m^2$) **A5** (42.5 $kgCO_2e/m^2$) **C1-C4** (43.75 $kgCO_2e/m^2$) **B6:** average data on energy consumption	**No**[5]	**Yes**, derived from a study, but only provided as a guide, project-specific values must be used.	No specific proposal

1. the new scenario reflects 2022-2050 projections by the Danish Energy Agency (DEA), which also incorporate political objectives and not just approved investments (frozen policies); this results in factors being reduced by nearly 40%, 80% and 45% for electricity, district heating and gas, respectively (Nilsson, Høibye, & Maagaard, 2023)
2. Although this aspect is not currently integrated into any of the mandatory methods in Nordic countries and Estonia, it is part of some national voluntary methods such as the FutureBuilt Zero method in Norway. This method follows a simplified approach, where: (a) a technology factor of 0.33 is assumed for the production of PV systems in year 30; (b) for other material-related processes (production, transport and waste incineration) an 1% annual technology development is used, which is based on historical development in Norwegian industry. Such considerations are also seen in the new draft DGNB method in Denmark which applies an 1% annual technological improvement factor (on top of a time factor), (Green Building Council Denmark, 2024)
3. see: Kragh, J., & Birgisdottir, H. (2023). Udvikling af dansk generisk LCA-data. (1 ed..). BUILD Report 2023:16
4. standard values for building elements are usually provided per building type and life cycle module. The sources of the provided values (building elements and life cycle modules) and other values from recent studies done in Sweden and Denmark can be found in Appendix B.
5. A5 can be given as a% of A1-4 and varies per material type. Standard values in terms of transport distance and other parameters can be used for A4.

Legislation Limit value Proposal

Influential variables for limit values

Inventory scope:

Differences represent a large source of variability

In particular the inclusion of deep foundations, external works, building services, interior finishes and refrigerants.

Reference area:

Differences influence whether basements and balconies are seen as advantageous

For buildings with very low embodied emissions, basements and balconies might be detrimental regardless.

Scenarios in modules B and C:

The choice considerably influences the results

Scenarios for replacement and waste treatment should be implemented without break the -1/+1 balance of biogenic carbon.

Generic emission factors:

Differences in national databases can be considerable

This can lead to differences of about 25% for a given building, and above 70% for specific materials.

There are actual differences between products found on each national market, but also methodological differences.

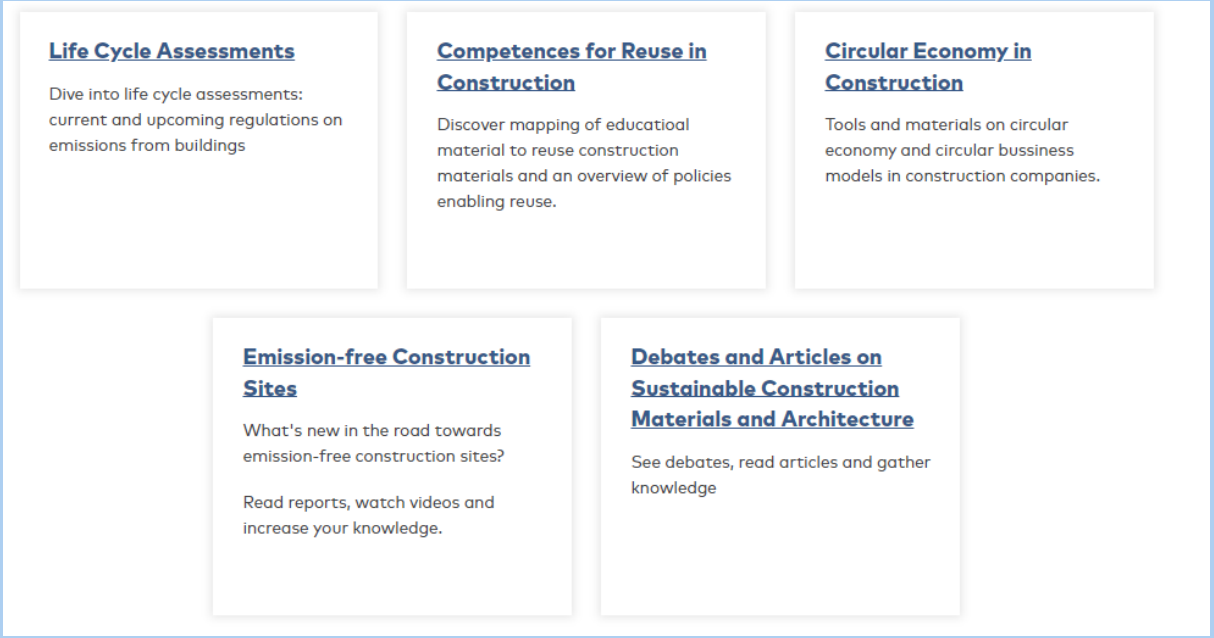
Composition of case basis:

Archetypes or a representative building sample may be used to set the limit value

Ex: set the limit so that x % of buildings in a representative sample would not meet it (Denmark).

The composition of the building sample is highly important.

Find details in Nordic knowledge centre



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