U-CERT

User-Centred Energy Performance
Assessment and Certification

Supported by U-CERT's Deliverables D3.1 & D3.2

EPB standards & EPBD revision keynote

U-CERT

User-Centred Energy Performance Assessment and Certification

EPB CENTER

Consultancy Services on the Energy Performance of Buildings

EPB Center roadshow

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Jaap Hogeling

jaap.hogeling@epb.center

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The Set of EPB Standards

- **Regulations (Codes) or Standards**: the set of EPB standards describe in a normative way the EP assessment procedures. It is up to the regulating authorities to lay down in "codes" how they refer to these standards and provide the (national) policy choices connected to the use of these EPB standards

The set of EPB standards providing the Energy Performance of Buildings assessment method is:

- **Functional**: it works for all types of buildings and systems, New and Existing buildings
- **Sensitive**: it reacts to all available options and encloses both New and existing or old technologies to support a correct renovation evaluation for existing buildings
- **Usable**: it has clear data input, it is adaptable to context, and it provides suitable results for its scope, compliance with EP requirements and energy performance display (certificates)

…the set of EPB standards is: **comprehensive**, **traceable**, **realistic, adaptable …**

… but also **simple, short**, **compact**, **easy to read** and **software proof**, …

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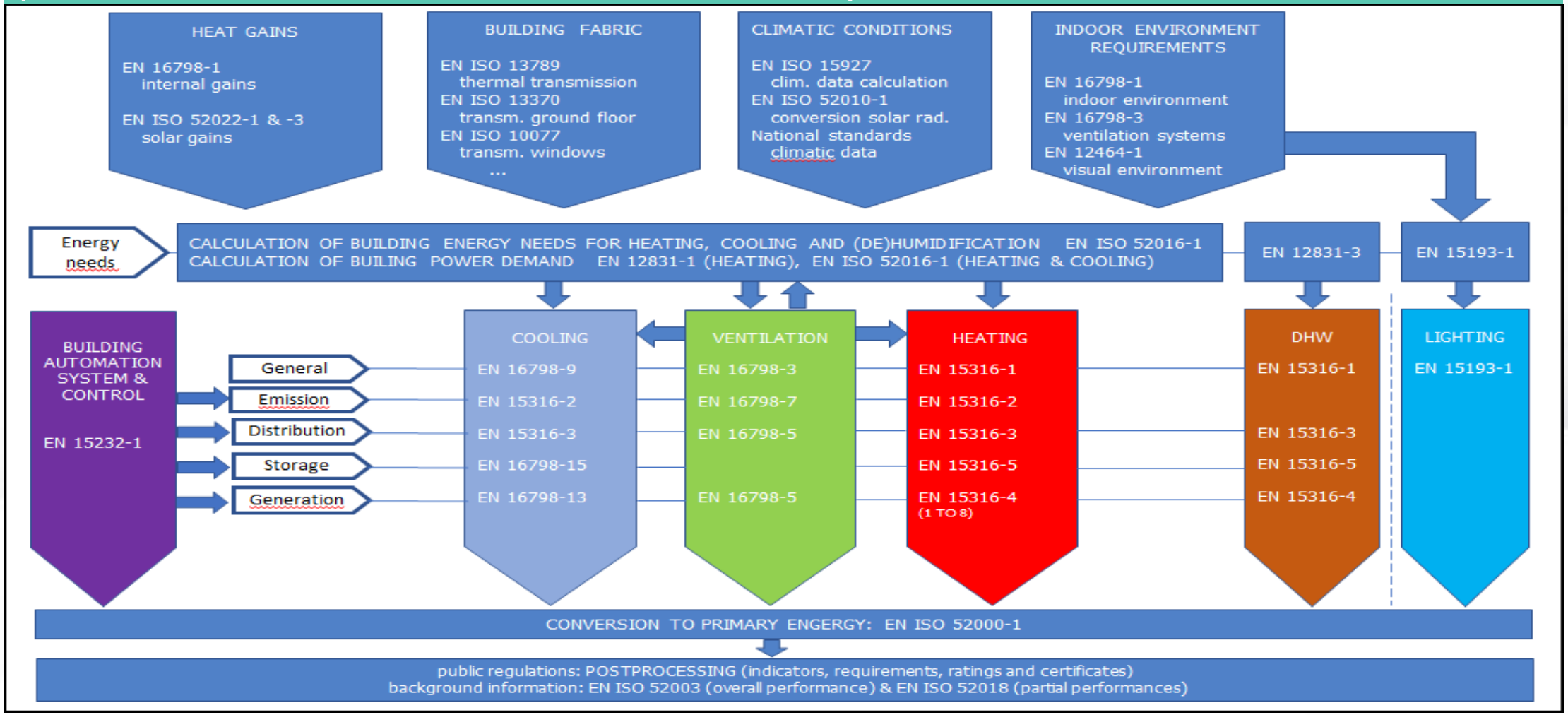
This resulted in the set EPB standards

(See also EPB Center webinar 1, Feb 4, 2020)



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Why modularity ?

Modularity is a real advantage. The «modules = standards» have similar properties and internal organization (structure)

- If you know the structure of one, you (nearly) know all of them
- You can easily replace one with another one for e.g.
  - another type of generator
  - a default / special module (EN / national)
- Most of the EPB standards have an accompanying Technical Report, this TR includes all not-normative information, justification of assumption and examples, the organisation of the contents of the EPB standard and of the related TR are the same.

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Common properties of «EN EPB modules»

The structure: apart from the normative text of the standard there are Annexes to the standard, important for the national implementation is :

Annex A / annex B mechanism: A includes an empty template for reporting the national choices , B includes default data that are ready for use

Structure of the accompanying Excel : EPB Center publishes for all EPB standards with calculation procedures an Excel file to demonstrate the calculation procedure and the inter-connection and needed input data and produced output data

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EU Green Deal – Fit for 55 by 2030

- Drivers for the EPBD revision in 2022
- Will it affect the use of the set of EPB standards?

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EU Green Deal, Renovation Wave:
Fit for 55 by 2030 towards Zero Carbon emission by 2050

- **3 focus areas in Renovation Wave:**
  - tackling energy poverty and worst-performing buildings> towards healthy housing
  - lead examples: priority for renovation of public buildings
  - **decarbonisation** of energy delivered to and exported from the buildings
- To accomplish this the Commission promotes MEPS (Minimum Energy Performance Standards) , which actually stands for **M**inimum **E**nergy **P**erformance **R**equirements,
- The use of EPC's (Certificates) and Building Renovation Passports.

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EU Green Deal, Renovation Wave:
Fit for 55 by 2030 towards Zero Carbon emission by 2050

- Buildings are acknowledged as one of the key focus areas for the European Green Deal and more specific the Renovation Wave Strategy.
  - **Ambition**: at least double annual renovations of EU building stock with focus on **deep renovation**
  - **EPBD: Deep Renovation leading to ZEmB: only deep if more as 30% reduction**

- Basis for the urgent revision of EPBD (version 2018) to direct the national renovation strategies to achieve a decarbonised building stock by 2050

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Revision EPBD :

Needed to:

>Follow-up the policy measures from EU Green Deal, Renovation Wave: Fit for 55 by 2030 towards Zero Carbon emission by 2050

>Making the Energy Performance Certificate (EPC) more attractive and reliable.

Improving the EPC by:

Adding a requirement for the Indoor Environmental Quality: include an **IEQ performance indicator at the EPC** and by doing so, include the energy use of absent or underperforming building systems in the reported Energy performance on the EP-Certificate (label).

The EPBD IV addresses this :

- **in the expected EPBD this is softly addressed in art.4 (related to MEPS),**
- **in art.6 (New Buildings) IEQ issues shall be addressed. Annex I art.2 :** *indoor conditions, and in order to optimise health, indoor air quality and comfort levels defined by MS's*
- **EPBD Annex I refers to the EN ISO 52016-1 which is the energy need calculation which enables to calculate the impact of underperforming or absent building systems.**

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Revision EPBD (2022) Hourly calculation intervals required

reducing the performance gap by improving the comparability (harmonisation) of the EP assessment procedure

- Annex I. art. 2: *The energy needs and energy use for space heating, space cooling, domestic hot water, ventilation, lighting and other technical building systems* ***shall be calculated using hourly or sub-hourly time calculation intervals*** *in order to account for varying conditions that significantly affect the operation and performance of the system and the indoor conditions, and in order to optimise health, indoor air quality and comfort levels defined by Member States at national or regional level.*

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Revision EPBD (2022)

reducing the performance gap by improving the comparability (harmonisation) of the EP assessment procedure

- The new EPBD requires an EP assessment calculation using an hourly calculation step approach. This hourly procedure is more easy to use, more transparent, reproduceable and innovation supportive, it is also expected that it will reduce the performance gap.
- EPBD Article 3: *Adoption of a methodology for calculating the energy performance of buildings: Member States shall apply a methodology for calculating the energy performance of buildings in accordance with the common general framework set out in EPBD Annex 1*.
- EPBD Annex I art.1: National methods shall be described according EN ISO 52000-1, 52003-1, 52010-1, 52016-1, 52018-1, EN 16798-1, EN 17423
- These last two standards on IEQ and PEF & CO2 emission are added to this list.

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New EPBD : Towards improved EP & reduction of GHG emission from buildings: Zero-emission Buildings

- ***EPBD art.2:*** 'zero-emission building' means a building with a very high energy performance, as determined in accordance with Annex I, where the very low amount of energy still required is fully covered by energy from renewable sources generated on-site, from a renewable energy community within the meaning of Directive (EU) 2018/2001 [amended RED] or from a district heating and cooling system, in accordance with the requirements set out in Annex III;

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New EPBD : Towards improved EP & reduction of GHG emission from buildings: Zero-emission Buildings

- Annex I art.3: For the purpose of expressing the energy performance of a building, Member States may define additional numeric indicators of total, non-renewable and renewable primary energy use, and of operational greenhouse gas emissions produced in kgCO2eq/(m2 .y).
  - Zero-Emission Building : The NZEB (Nearly Zero Energy Performance) approach is deleted and replaced by **Zero-Emission Building (ZEmB)**
    - Very low Energy Use assessed according Annex I (and Benchmark Annex III) still needed shall be fully covered by renewable sources produced on site.
  - Building Renovation Passport: providing a tailored roadmap to ZEmB, issued by accredited expert, follows visit on site. (delegated act by 2023),
  - Sustainable mobility infrastructure in and adjacent to buildings (smart charging (2-way) and bicycle parking)
- Renewable Energy Sources includes now geothermal and **ambient** energy

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New EPBD > Zero-emission Buildings

- Deep Renovation leading to ZEmB: only deep if more as 30% reduction
- Definitions for Useful and Reference floor area according EN ISO 52000-1

- **New Buildings:**
  - All ZEmB by 2030, public buildings by 2027
  - Life-Cycle GWP has to be calculated according EN 15978 and reported at EPC by **2027** (>2000m2) and for all by **2030**
  - IEQ shall be addressed as well

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EPBD revision will have impact on the use of EPB standards

- A **more stringent policy regarding EPC's,** their quality and acceptance will emphasize the role of a correct use of the set of EPB standards
- an **EU-harmonised GHG metric** will make use of the EN 17423
- **Reducing the performance gap** by improving the reliability of the calculated asset rating is supported by the **required hourly calculation step**
- Hourly calculation step brings the **use of the SRI to a next stage** where the building and grid interaction will become visible and able to demonstrate the level of decarbonisation of the energy used by the building systems

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EPB Standards:
Revised EPBD & Systematic Review after 5 years:

- ✓ According CEN and ISO rules standards are revisited for review every 5 year after publication.
- ✓ CEN/TC371 “Energy Performance of Buildings” considers (in cooperation with the 5 connected CEN/TC’s and 2 ISO/TC’s for the 52000 family) to coordinate this review process of the set of EPB standards.
- ✓ Given the situation in Europe where the EPBD is currently under revision it necessary to take this EPBD revision into account as well.
- ✓ We already know that some standards need some update (editorial and/or technical updates).
- ✓ Updates may also be needed to make standards better suited for software development which is needed to make the standards better accessible.

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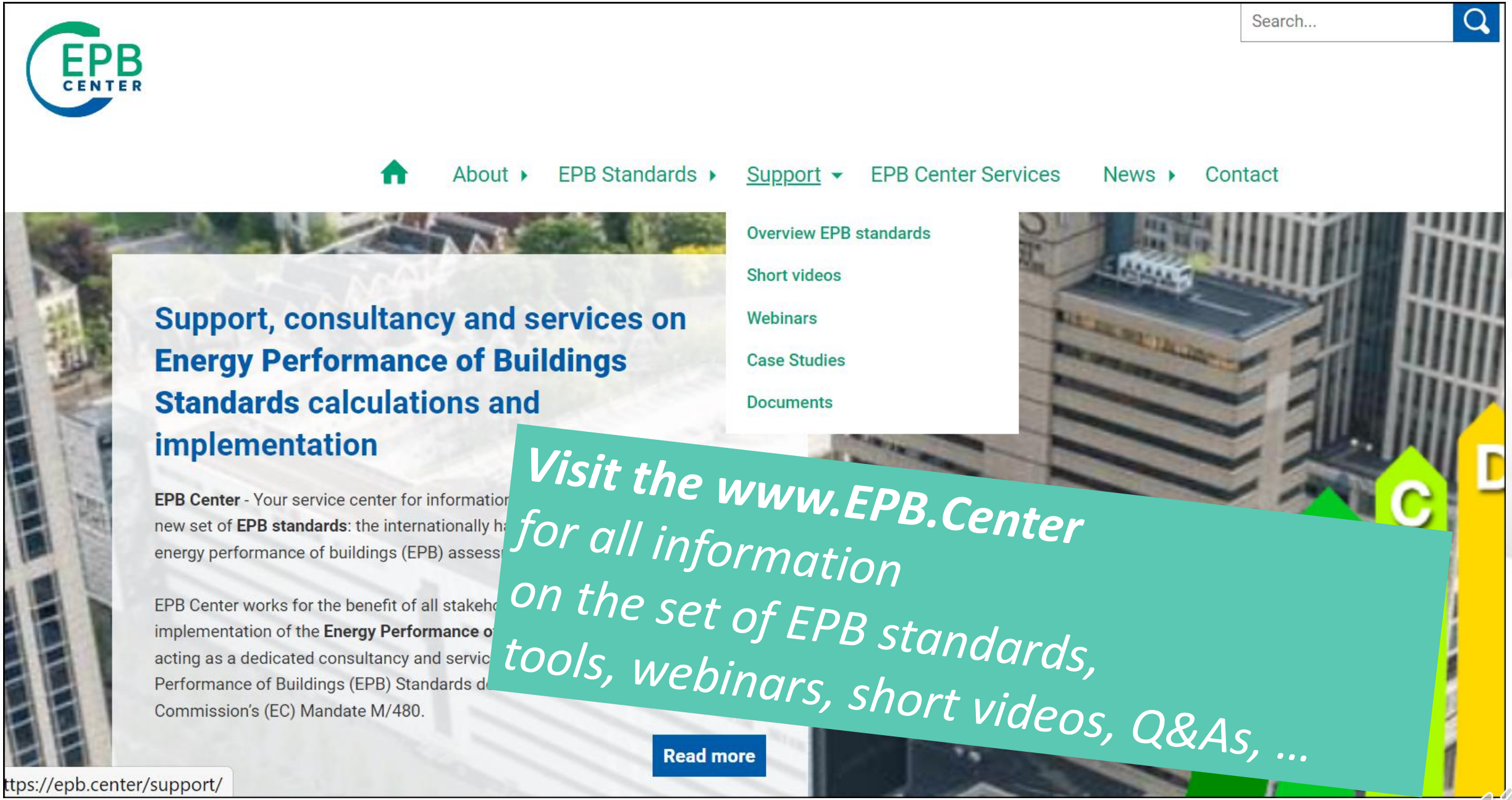

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EPB Standards:
Systematic Review after 5 years

Thank you!
Questions?

More information on
the set of EPB standards:

www.epb.center

Contact: jaap.hogeling@epb.center

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