

The EPBD revision:

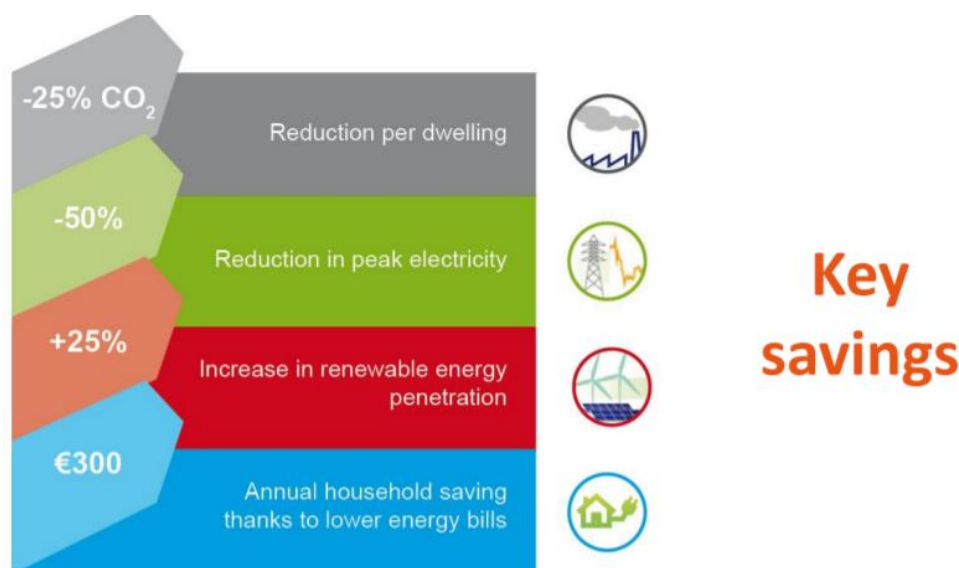
An occasion to unleash the potential of thermal mass for electricity grid flexibility with benefits for the environment and households

Brussels, 22/06/2021 – CEMBUREAU, the European Cement Association, welcomes the opportunity to provide input to the Commission public consultation on the revision of the Energy Performance of Buildings Directive (EPBD).

CEMBUREAU's [2050 Carbon Neutrality Roadmap](#), which was published in May 2020, sets out the cement industry's ambition to reach net zero emissions along the cement and concrete value chain by 2050. Ambitious policies will be essential to achieve this objective and decarbonise the European building stock.

As highlighted in the Green Deal, the annual renovation rate of the building stock varies from 0.4% to 1.2%. As a result, many buildings are simply not energy-efficient and bring about 50 million people in Europe in energy poverty. **CEMBUREAU therefore supports a review of the EPBD to foster the rate of renovation and further incentivise deep renovation and reduce the energy consumption of the European building stock**, in line with the Renovation Wave initiative.

One of the inherent qualities of concrete is **thermal mass, the ability to store energy, which is later released**. This avoids overheating in buildings and keeps temperatures comfortable. Thermal mass has traditionally been used to improve the energy efficiency of buildings and provide a stable indoor temperature. A further - previously untapped – benefit is to **use the thermal storage capacity offered by the structure to provide flexibility in energy grids and boost the uptake of renewable energy** which can lead¹ to:



CEMBUREAU would like the Commission to consider the two following main points in the revision of the EPBD:

- 1. The EPBD should acknowledge activation of thermal energy as complementary to passive thermal inertia / Buildings as actors in the energy system***

¹ See [RENEWABLE ENERGY IN BUILDINGS - Unleashing the potential of thermal mass for electricity grid flexibility](#)

Buildings are moving from being highly energy-demanding and unresponsive elements in a system to becoming highly efficient micro energy-hubs, consuming, producing, storing and supplying energy, making the overall system more flexible and efficient. European project SABINA ² has developed technological solutions to implement demand response in existing buildings at a district level. Thermal inertia of existing buildings is one of the key variables used when designing these new solutions. This project shows the importance of increasing the thermal mass of existing buildings under renovation schemes.

A revision of the EPBD needs to seize the opportunity to acknowledge the role buildings can play in demand-side flexibility and how increasing thermal inertia of existing buildings would help.

The **current version of the EPBD refers to passive thermal inertia, mainly looking at reduction of energy use, whereas it should also consider the activation of thermal mass**. In concrete terms, the available thermal energy storage capacity exploiting the fabric thermal mass of materials in a building can be used to pre-heat or pre-cool a building.³

Simulations on Belgian dwellings have shown that such active demand response strategy using structural thermal energy storage allows higher renewable energy system penetration reducing the operational CO₂ emissions by 15% on average. It was shown that the individual reduction per household was ranging from 6% to 25% depending on the building design and heating system.⁴

The calculation of energy performance of buildings set out in Annex I of the current EPBD refers in its point 3 to thermal capacity as one of the characteristics to be taken into account in the methodology at the same level as heating and cooling, renewable energy and insulation.

CEMBUREAU suggests adding an item to this list of characteristics which is the “available structural storage capacity” as this is a key indicator for the participation of buildings through active demand response in smart grids.

In addition to this change in the EPBD, it is important to create the facilitating factors, including:

- **Calculation models:** the development of energy performance calculation models to consider the dynamic use of thermal energy storage in a load shifting context; the effective implementation of a storage-based automated demand response should be evaluated and rated.
- **Interoperability:** promote the interoperability between buildings and their heating/cooling systems and the energy market to deploy active demand response.
- **End-consumer focus:** encourage energy storage incentives in order to make it economically viable for end-users today: in the near future, the grid operator or electricity supplier can provide incentives to consumers such as time-of-use prices that are reflecting the time-of-use grid congestion in order to encourage them in participating in balancing the grid.

2. The review of the EPBD needs to carefully consider the interaction with other sustainable construction policies, and material neutrality is key to efficiently decarbonise European buildings.

As a general standpoint, CEMBUREAU believes that cross-material life cycle assessment at the level of the building should be one of the key policy drivers of building policies. We also wanted to highlight the following:

² <https://sabina-project.eu/>

³ See [Concrete, thermal mass, and avoiding overheating in buildings](#)

⁴ See 3E study: [Structural thermal energy storage](#) in heavy weight buildings – analysis and recommendations to provide flexibility to the electricity grid.

- The EPBD has an important role in improving the energy efficiency of Europe's buildings. ***Other environmental aspects, including embedded energy of materials, are dealt with elsewhere such as Level(s) building assessment framework, and so the scope of the EPBD should be limited to energy efficiency of buildings in their operation.***
- When developing policies impacting the sustainable built environment, it will be essential to maintain a coherence between the existing legislations. The EPBD legislative proposal is part of a larger regulatory framework where all initiatives announced in the Green Deal need to be developed with an eye for consistency and coordination of definitions and concepts.
- Secondly, ***it is crucial to have policies based on material neutrality and the principle of global CO₂ emission reductions, similar to the approach taken by the European Commission in the Level(s)*** which is a transparent and fair system based on real life-cycle analysis (LCA) and is a powerful tool for optimising the whole life sustainability performance of buildings, including their final energy performance and life-cycle costs.
- Policies promoting one type of material against another would do little for climate protection. In this respect, we are concerned that the inception impact assessment states that *"Buildings can even turn into a carbon sink through [...] the use of nature-based building materials that can store carbon"*. This statement is not science-based and as demonstrated by the ongoing debate in some Member States, the very concept of *"temporary carbon storage"* through bio-based materials is heavily questioned. Material and technology neutrality are key tenets of EU policymaking. ***The EPBD must set performance requirements for a building's energy efficiency, without prescriptive requirements proposing materials. CEMBUREAU therefore urges the Commission to promote material neutrality in all its policies.***

CEMBUREAU stands ready to engage with policy-makers throughout the EPBD revision process.
