

# Adapting buildings & infrastructures to the impacts of climate change

## Position paper

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As part of its mission, CEPMC promotes the uptake of efficient construction solutions for buildings and infrastructures. One of the key points of our activity is the reduction of emissions generated during the life cycle of the construction in order to mitigate climate change.

In addition to the on-going work on energy efficiency, adapting our built environment to the impacts of climate change will be a substantial challenge for the European Union. It will require contributions from governments, industry and citizens and the European Institutions have to create the right regulatory framework in order for us to succeed.

In this context, CEPMC would like to share its views on the future EC initiatives in this field.

- **Climate change, buildings & infrastructures**

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Many of the decisions that we take today may increase or decrease our vulnerability to predicted climatic changes. Buildings and infrastructure we design and build today may, in the future, have to resist to more extreme climatic conditions and environmental pressures.

A wide scope of aspects have to be considered:

- Water management civil works are crucial as they allow rainwater harvesting and act as storage during storms and so prevent flooding.
- Infrastructures and buildings can be endangered by the sea-level rise. Moreover, sea defences protect from the effects of high-tides.
- The retreat of glaciers can create instability in mountainous regions, leading to rock falls and avalanches. Adequate construction design will reduce the risk to the surrounding population.
- Climate change will also affect forests and the lack of green cover can increase the risk of floods and erosion. This has to be taken into consideration during the construction or the refurbishment of buildings and infrastructures.
- To protect wetlands and aquatic ecosystems, a reduction of the water consumption is needed. Efficiency water distribution systems, sustainable use and recycling will help to achieve this goal.
- Energy systems rely on infrastructures to maintain their service, especially during storms or floods. Investments in resilient distribution systems will help avert blackouts.
- The construction of transport systems, such bridges, tunnels, roads, railways but also ports and airports that are designed to operate under changing climatic conditions are required as these operate in any circumstances.
- Constructions that are less vulnerable to climate change will require less costly insurance policies.

- **Standardisation of construction works: an available, efficient methodology**

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Over the past twenty years, construction products and their applications have been greatly standardised in Europe. This is due to the action of key players, such as the European Commission (in particular DG Enterprise), CEN, the National standardisation bodies and the Construction products industry.

Some important milestones are:



- The publication of the Construction Products Regulation;
- The publication of more than 450 harmonised standards (hEN), first under the Construction Products Directive and now under the Construction Products Regulation.
- The development and publication of Eurocodes, through CEN TC 250, covering different construction materials and dealing with all kind of actions on structures. Eurocodes series are now under revision.
- Sustainability of construction works in CEN TC 350 including the publication of the frameworks, the methodology and the indicators for the assessment of the environmental performance of buildings. Sustainability standards are now being improved to include the economical and the social performance of the buildings and to include civil works.

The standardisation process covers more and more construction products, and continuously improves the quality and accuracy of the test methods, definition of essential characteristics and calculation methodologies.

Adaptation to climate change creates new requirements that standards are ready to fulfil. The challenge we face is the definition of these requirements and the risks to should be taken into consideration.

**Climate change adaptation requirements should be integrated in existing horizontal standardised technical methodologies (Eurocodes and CEN TC 350 standards). CEPMC believes that there is no need for new tests or assessments to evaluate the properties of products. The current ones should be applied according to adaptation to climate change criteria within the general framework of the horizontal standards.**

- **A need for studies**

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The development of new strategies to adapt construction works to climate change should be based on studies and analysis of the current situation and future scenarios. A high level of collaboration between stakeholders of the construction sector and the European authorities is required. The adaptation process will require the support of EU funding.

Construction products characteristics and properties are known and these are selected to guarantee the structural performance, for example in terms of loads and fire and seismic resistance.

Designers, architects and engineers are trained to manage “traditional” situations but need guidance on how to calculate resistance to climate change related impacts.

CEPMC believes that it is necessary to understand climate change and find ways in which to use material properties to enhance the resilience of construction works.

To reach this objective, CEPMC would recommend the following areas to analyse:

- Collecting information on construction products standardisation;
- Identifying relevant characteristics of climate change scenarios;
- Verifying the applicability of the solutions;
- Studying the feasibility of the suggested designs / applications.

**CEPMC considers that the development of studies is required to ensure that the measures to adapt construction works to climate change are in line with existing technologies and regulatory framework. More so, those studies should provide the scientific information to let the authorities choose the best options and thereby maximize the return on the investments.**

- **Feasibility of the solutions “adapted to climate change”**

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In terms of climate change resistance, CEPMC recommends that an EC study should establish a balance between the required properties and the advantages offered by different design. Indeed, different factors come into play and guidance is required for the decision-making process.

**A scientific approach is needed to find realistic solutions to the challenges created by climate change. A wide scope of properties has to be taken into account to guide the decision-making process.**

- **Synergies with transport and energy sectors**

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CEPMC would like to highlight the close link of construction to other sectors like transport and energy. Indeed, the transport and energy systems rely on the performance of construction products and technologies. Interaction should therefore be promoted.

**CEPMC recommends the creation of an intersectoral forum to promote the exchanges of experience between the different sectors most concerned by climate change adaptation.**

Founded in 1988, the European construction product association (CEPMC) is a Brussels-based international non-profit making association. The association is made up of national and European associations that represent Small and Medium-size Enterprises and world-leading companies. CEPMC aims to promote the European construction industry, to share information on EU legislation and standardisation and to provide input in all European construction-related initiatives.