



EUROPEAN COMMISSION
 ENTERPRISE AND INDUSTRY DIRECTORATE-GENERAL

Sustainable Growth and EU 2020
Sustainable Industrial Policy and Construction

Brussels, 12 December 2012
M/515 EN

**MANDATE FOR AMENDING EXISTING EUROCODES AND EXTENDING THE SCOPE OF
 STRUCTURAL EUROCODES**

1. BACKGROUND

1.1. Policy framework

- The Eurocodes have been developed to enable the design of structural construction works (building and civil engineering works) in order to comply with the Essential Requirement n°1 (mechanical resistance and stability) and partially Essential Requirement n°2 (safety in case of fire) and n°4 (safety in use) and to determine the performance of structural construction products.
- Commission Recommendation (2003/887/EC), on the implementation and use of the Eurocodes for construction works and structural construction products, recommends the Member States to adopt the Eurocodes as a suitable tool for designing construction works and indicates that "continuous efforts to maintain the Eurocodes at the forefront of engineering knowledge and developments in structural design are needed, through further research at MS and at EU level facilitating uptake of the latest scientific knowledge and the development of the construction market, including new materials, products and construction methods". In addition, the Recommendation indicates the need to assess the variations of the Nationally Determined Parameters (NDPs) with the aim of further harmonisation.
- Application of the Eurocodes in the EU Member States supports the Directive 2006/123/EC of the European Parliament and of the Council of 12 December 2006 on services in the internal market ("Services Directive"). Disparities in design/calculation methods of the national building regulations constitute impediments to the free circulation of engineering and architectural services within the Community. The implementation of the Eurocodes should facilitate the provision of services in the field of construction engineering and architecture by creating conditions for a harmonised system of general rules. To ensure their application over time, the Eurocodes need to be updated to take into account developments on the market (new materials, products, methods, etc).
- The application of the Eurocodes in the EU Member States supports Public Procurement Directives 2004/17/EC and 2004/18/EC entered into force on 31st January 2006. They state that contracting authorities must allow the use of

European Standards, like the Eurocodes, in tenders falling within the remit of these Directives. Common design/calculation rules for infrastructure and other construction works facilitate the circulation of goods and persons in the internal market. Thus, they contribute towards creating conditions for extended competition for public contracts.

- These codes are also being implemented for use in a number of third countries (outside the EEA) where, in addition to the direct benefits for the countries themselves, their use is expected to contribute towards an improved competitiveness of the European construction industry

1.2. Previous standardisation work

All 10 of the EN Structural Eurocodes, in 58 parts, were published prior to June 2007, covering at present:

EN 1990	Eurocode:	Basis of Structural Design
EN 1991	Eurocode 1:	Actions on structures
EN 1992	Eurocode 2:	Design of concrete structures
EN 1993	Eurocode 3:	Design of steel structures
EN 1994	Eurocode 4:	Design of composite steel and concrete structures
EN 1995	Eurocode 5:	Design of timber structures
EN 1996	Eurocode 6:	Design of masonry structures
EN 1997	Eurocode 7:	Geotechnical design
EN 1998	Eurocode 8:	Design of structures for earthquake resistance
EN 1999	Eurocode 9:	Design of aluminium structures

2. GROUNDS

A sustained development of the Eurocodes programme is necessary to preserve the users' confidence in the codes and continue to strive towards meeting the overall objectives regarding safety and Internal Market. This development process should:

- encourage/accompany innovation (related to materials and products, construction techniques and research on design methods), ensuring that the Eurocodes reflect and incorporate sustained market developments,
- take into account new societal demands and needs,
- facilitate the harmonisation of national technical initiatives on new topics of interest for the construction sector.

Long-term confidence in the codes is based on the ability of the structural Eurocodes to evolve in an appropriate manner in order to address the variety of new methods, new materials, new regulatory requirements and new societal needs developing. Thus, it is considered necessary for the structural Eurocodes to be appraised so as to identify improvements to the existing suite to reflect the state of the art, and extend harmonisation by, for example, reducing the need for Nationally Determined Parameters and exploring the need to assist new entrants to the market and small and medium sized enterprises.

Based on the CEN reply to the framework mandate M/466¹, it is foreseen that at least one additional structural Eurocode and substantial additions to the existing codes, shall be developed as part of the action at European level.

They shall at least cover:

- assessment, re-use and retrofitting of existing structures,
- strengthening of the requirements for robustness,
- improving the practical use for day-to-day calculations
- new Eurocode on: structural glass²,
- incorporation of ISO Standards in the Eurocodes family, such as atmospheric icing of structures and actions from waves and currents on coastal structures.

3. EXECUTION OF THE MANDATE

Using the CEN reply to mandate M/466 as the basis, CEN is invited to develop a detailed standardisation work programme.

This mandate does not include maintenance related to existing clauses in the Eurocode standards; such work is covered by the previous mandates for the development of the Eurocodes. The preparation and implementation of the standardisation work resulting from this mandate should not be allowed to delay high-priority maintenance tasks related to the existing Eurocodes.

CEN is requested to provide:

- the development of new standards or new parts of existing standards (vertical approach); and,
- the incorporation of new performance requirements and design methods (horizontal approach)
- the introduction of a more user-friendly approach, in several existing standards. (horizontal approach); and.
- A technical report on how to adapt the existing Eurocodes and the new Eurocode for structural glass to take into account the relevant impacts of future climate change.

CEN is requested to provide a response to fulfil the requirements for each of the work packages indicated in annex I. The detailed work programme should demonstrate how

¹ CEN answer to programming mandate M/466 on 28th June 2011

² Although they are not included in the present scope, it is envisaged that this mandate may be amended in future to include the development of further additional structural Eurocodes covering FRP structures and tensile surface structures.

the scope will be fulfilled, although the approach for doing so is for CEN to determine. It will be acceptable for the work programme to be phased, and for the level of detail included in the work programme to reflect this phasing of work.

In this Work Programme the title of each proposed standard will be followed by:

- a clear and comprehensive preliminary field of application (scope), including the Products/materials to which it will apply;
- a clear and comprehensive list of product standards linked to/affected by each Eurocode;
- the list of reference documents: European standards (EN, ENV, TS, prEN), national standards, ISO standards, research results, etc.;
- the timetable for the development and the publication of each standard by the relevant TCs and of its reference by the Commission;
- the identification of the responsible CEN Technical Body(Bodies).

After examination of the Work Programme and consultations with CEN/CENELEC, the Commission will endorse the timetable and the list of standards which meet the terms of this mandate.

The terms of reference of the mandate may be subject to modification or addition, if necessary. Especially, when the Commission has endorsed the Work Programme, annex I will be updated with the corresponding parts of the endorsed Work Programme.

Representatives of the authorities responsible for national regulations will be able to participate in the activities of CEN/CENELEC through their national delegations and to present their points of view at all stages of the drafting process.

The Commission may participate in standardisation activities as an observer and has the right to receive all relevant documents.

CEN/CENELEC will immediately inform the Commission of any problem relating to the carrying out of the mandate from within the Technical Committees.

In an annual review meeting CEN/CENELEC will inform the Commission about the progress of the work.

The formal acceptance of this mandate by CEN/CENELEC will initiate the standstill procedure referred to in article 7 of the European Parliament and the Council Directive 98/34/EC of 22 June 1998.

CEN/CENELEC will present the final drafts of the European standards to the Commission for confirmation of compliance with this mandate at the latest in accordance with the timetable agreed between CEN/CENELEC and the Commission.

CEN/CENELEC members will publish the standards transposing the mandated European standards at the latest 6 months after their adoption in CEN/CENELEC. National measurement/test standards covering the same scope will continue to be applicable until the date agreed between CEN/CENELEC and the Commission.

Scientific and Technical International Associations will be associated with the EUROCODE work as far as needed.

As appropriate, CEN will invite the representative organisations of consumers' interests (ANEC), environmental protection (ECOS), workers (ETUI) and small and medium-size enterprises (NORMAPME) and other relevant organizations as appropriate to take part in the standardisation work.

4. IMPLEMENTATION OF THE MANDATE

CEN will reply to this mandate, i.e. submit the standardisation work programme to the Commission as soon as possible, but no later than **9 months** following the acceptance of this mandate.

ANNEX I

The following work packages are split into two three parts:

- Package I: Framework standards of general relevance and technical report on requirements for climate change
- Package II: Specific standards (existing Eurocodes and as new material group to be added: glass in construction/structural design)

Since CEN has provided a general overview on where improvements beyond the maintenance of the existing Eurocodes should be made, these work items will not be repeated for package II. It is expected that this reply will be the basis for a more detailed description of the proposed work at the technical, organisational and financial level.

5. WORK PACKAGE I: FRAMEWORK/ASSESSMENT EUROCODES: EN 1990, EN 1991, EN 1997, EN 1998

5.1. General

- (a) Extension of existing rules for the assessment of existing buildings and structures and their strengthening;
- (b) Extension of existing horizontal rules for robustness.

5.2. Further development

- (a) Assessment of all existing Eurocodes concerning the potential to significantly reduce the number of Nationally Determined Parameters (NDPs). This work should be done in close collaboration with the JRC and be based on the NDPs as defined on national level and uploaded in the specific NDP database;
- (b) Refinement to improve the ‘ease of use’ of Eurocodes by practical users.
- (c) Incorporation of recent results of international studies and practical experience from scientific and technical associations and results from research programmes relevant to innovation (including the performance-based and sustainability concepts in design and construction);
- (d) Incorporation of recent results of international studies and practical experience from scientific and technical associations and results from research programmes relevant to contribution of structural design to sustainability;
- (e) Adoption, where relevant, of ISO standards to supplement the Eurocodes family (currently identified potential issues are atmospheric icing of structures and actions from waves and currents on coastal structures);

- (f) Developing auxiliary guidance documents to facilitate feedback from stakeholders and the practical local implementation wherever necessary.
- (g) Developing information on the determination of material and resistance factors, serviceability for buildings and bridges; fatigue verification; improving the fire safety engineering approach (EN 1990)
- (h) Incorporating new developments in the field of traffic loads and climatic actions; atmospheric icing; waves and currents (EN 1991)
- (i) Providing a clear and complete list of background documents used during the standardisation process
- (j) Developing a technical report analysing and providing guidance for potential amendments for Eurocodes with regard to structural design addressing relevant impacts of future climate change (general and material specific)

6. WORK PACKAGE II: OTHER EXISTING EUROCODES: EN 1992-1996 AND NEW EUROCODE ON GLASS IN CONSTRUCTION

6.1. Work package IIa: General

- (a) Extension of existing rules for the assessment of existing buildings and structures and their strengthening;
- (b) Extension of existing rules for robustness (in particular EN 1992-1996 and EN 1999).

6.2. Work package IIa: Further development

- (a) Assessment of all existing Eurocodes concerning the potential to significantly reduce the number of Nationally Determined Parameters (NDPs). This work should be done in close collaboration with the JRC and be based on the NDPs as defined on national level and uploaded in the specific NDP database;
- (b) Refinement to improve the ‘ease of use’ of Eurocodes by practical users.
- (c) Incorporation of recent results of international studies from scientific and technical associations and results from research programmes relevant to innovation (including the performance-based and sustainability concepts in design and construction);
- (d) Incorporation of recent results of international studies from scientific and technical associations and results from research programmes relevant to contribution of structural design to sustainability;
- (e) Adoption, where relevant, of ISO standards to supplement the Eurocodes family (currently identified potential issues are atmospheric icing of structures and actions from waves and currents on coastal structures);

- (f) Developing auxiliary guidance documents to facilitate feedback from stakeholders and the practical local implementation wherever necessary.
- (g) Providing a clear and complete list of background documents used during the standardisation process
- (h) Developing a technical report analysing and providing guidance for potential amendments for Eurocodes with regard to structural design addressing relevant impacts of future climate change (general and material specific)
- (i) Assessing the link to harmonised product standards developed under the framework of the Construction Products Directive/Regulation (89/106/EEC, 305/2011/EU) or other European standards, in particular with regard to any discrepancies between Eurocodes calculation approaches and performance declarations provided by CE marked products

6.3. Work package IIb: Glass

- (a) Incorporation of recent results of international studies from scientific and technical associations and results from research programmes relevant to innovation (including the performance-based and sustainability concepts in design and construction);
- (b) Incorporation of recent results of international studies from scientific and technical associations and results from research programmes relevant to contribution of structural design to sustainability;
- (c) Adoption, where relevant, of ISO standards to supplement the Eurocode family (currently identified potential issues are atmospheric icing of structures and actions from waves and currents on coastal structures);
- (d) Use of clear language and structure to aid the ‘ease of use’ of Eurocodes by practical users.
- (e) Preparation of full background documents with justification of recommendation made.
- (f) Providing a clear and complete list of background documents used during the standardisation process
- (g) Assessing the link to harmonised product standards developed under the framework of the Construction Products Directive/Regulation (89/106/EEC, 305/2011/EU) or other European standards in particular with regard to any discrepancies between Eurocodes calculation approaches and performance declarations provided by CE marked products