



JRC SCIENCE FOR POLICY REPORT

State of implementation of the Eurocodes in the European Union

Support to the implementation, harmonization and further development of the Eurocodes

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2015

Eurocodes ▶

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Abstract

The Eurocodes are implemented in 23 EU Member States

The Report is part of the Commission Action Plan to COM (2012)433. It analyses the state of the Eurocodes implementation in all EU Member States and Norway. In 23 EU Member States and Norway the Eurocodes are implemented. There is need of a Commission Recommendation on the regulatory environment for use of the Eurocodes to achieve their full implementation.

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Executive Summary

Policy context

The report presents the results of the enquiry on the implementation of the Eurocodes in the EU Member States and Norway, which was performed by DG GROW and DG JRC of the European Commission in 2014-2015. The enquiry consisted of two questionnaires addressed to the National Authorities, and to the National Standardization Bodies.

The report is part of the activities envisaged in the Action Plan to "Strategy for the sustainable competitiveness of the construction sector and its enterprises" aimed to assess the need of action to strengthen or enforce the use of Eurocodes in Public Procurement and other instruments. The results reported will be used also in the analyses envisaged for the fitness check of EU legislation affecting the construction sector. Although the Commission Recommendation on the implementation and use of Eurocodes for construction works and structural construction products is non-binding, it is intended to explore whether the Eurocodes are *de facto* mandatory for some segments of the construction sector (i.e. for public work suppliers) or in some Member States, and whether they create benefits in terms of market and business opportunities.

Key conclusions

The analysis of the state of implementation of the Eurocodes in the EU Member States and Norway concludes that in 83% of the analysed countries the Eurocodes are implemented; Malta, Portugal and Spain should speed the progress in adoption of National Annexes; Italy and Romania should remove the legal restrictions impeding the implementation of the Eurocodes.

The identified restrictions imposed by existing National Regulations which define technical rules different from the provisions of the Eurocodes, indicate that the CEN requirement for withdrawal of conflicting standards is not enough to guarantee the enforcement of the Eurocodes in countries where the National Regulations introduce directly design rules. There is need of a Commission Recommendation on the regulatory environment for use of the Eurocodes.

Main findings

The results show that the Eurocodes are already accepted as National Standards in Europe: all EU Member States and Norway published as National Standards 100% of the Eurocodes Parts, except Germany and Luxembourg, which did not publish one part, and Spain, which published or ratified 83% of the Eurocodes Parts. 90% of the considered in the analysis countries published National Annexes to more than 70% of all Eurocodes Parts, which is a very good progress in enforcing the use of the Eurocodes.

There are no National Standards used in parallel with the Eurocodes Parts in 80% of the countries included in the analysis. However, this positive result shall be considered having in mind the regulatory environment in some EU Member States, where the National Regulations introduce directly design rules.

In more than half of the analysed countries the National legislative provisions refer to standards and in many cases make the compliance with them compulsory. The results of the enquiry show that:

- As regards the need of amendment of the National Regulations to allow use of the Eurocodes, 41% of the analysed countries reported that no amendment was needed, in 14% of the countries amendment was (or will be – in Portugal and Spain) needed for less than 40% of the Eurocodes Parts, and in 45% of the countries amendment was needed for more than 40% of the Eurocodes Parts.
- As regards the obligatory use of the Eurocodes Parts, 55% of the analysed countries declared that none of the Eurocodes Parts is obligatory, in 10% of the countries all Eurocodes Parts are obligatory, and in 35% of the countries different amount of Eurocodes Parts (varying between 6 and 46) is obligatory.

Besides the restrictions posed by references to non-contradictory complementary information in Ireland, or by special conditions for the application of some general methods of calculation in Germany, the regulatory environment in Italy and Romania poses strong restrictions to the implementation of the Eurocodes.

Regulatory Framework enforcing the use of the Eurocodes in Public Procurement exists (or will be implemented) in 41% of the analysed countries, another 17% of the countries consider that the Eurocodes are well-placed in the Public Procurement without having a particular Regulatory Framework, thus 60% of the analysed countries reported a good place of the Eurocodes in their Public Procurement.

The preliminary results on the acceptance of the recommended values of the Nationally Determined Parameters show that in almost three out of four cases the recommended values were accepted. Such a high mean rate of acceptance is an essential prerequisite for the harmonized implementation of the Eurocodes.

Related and future JRC work

Since March 2005 the JRC provides scientific and technical support to DG GROW in the frame of Administrative Arrangements on the Eurocodes. The mission initially devoted to the JRC included: support to the national implementation and harmonization of the Eurocodes, support to the training, international promotion and further development of the Eurocodes. Since 2015 the scope of the JRC contribution has been extended to support to policies and standards for sustainable construction.

Quick guide

The publication of the Eurocodes by the European Committee for Standardization (CEN) in May 2007 marked a major milestone in the European standardisation for construction, since they introduced common technical rules for calculation of the mechanical and fire resistance, and the stability of constructions and construction products. The on-going implementation of Eurocodes in the Member States of the European Union and of the European Free Trade Association (EFTA) does enhance the functioning of the Internal Market for construction products and services by removing the obstacles arising from different national practices.

1. Introduction

1.1 The Eurocodes within the European construction sector

The construction sector is of strategic importance to the European Union (EU) as it delivers the buildings and infrastructure needed by the rest of the economy and society. It represents almost 10% of EU GDP and more than 50% of fixed capital formation. It is the largest single economic activity and it is the biggest industrial employer in Europe. The sector employs directly almost 20 million people. It is at the heart of the European Energy Union Strategy¹, and the European Investment Plan² foresees that under the European regional and cohesion funds considerable investments will be devoted to transport infrastructures and energy efficiency.

At this stage, the European Commission has identified a three-pronged approach to unlock the potential of the construction sector for smart and sustainable growth and jobs:

- Foster demand for energy and resource-efficient construction;
- Promote better products and processes in a smart and resource efficient construction sector;
- Facilitate enhanced market access inside and outside of the EU.

The publication of the Eurocodes by the European Committee for Standardization (CEN) in May 2007 marked a major milestone in the European standardisation for construction, since they introduced common technical rules for calculation of the mechanical and fire resistance, and the stability of constructions and construction products. The on-going implementation of Eurocodes in the Member States of the European Union and of the European Free Trade Association (EFTA) does enhance the functioning of the Internal Market for construction products and services by removing the obstacles arising from different national practices.

The Eurocodes provide Pan-European framework for a successful market uptake of high quality products and services, and innovation, and this new standardization environment strengthens the world-wide competitive advantage of the European construction industry. The Eurocodes are used also outside EU, because they are:

- a complete set of design standards that cover all principal construction materials, all major fields of structural engineering and a wide range of types of structures and products
- the most up-to-date codes of practice
- flexible, offering the possibility for each country to choose the levels of safety through the Nationally Determined Parameters

Furthermore, the Eurocodes:

- are a major tool for the successful removal of trade barriers for construction products and services

¹ COM (2015) 80. A Framework Strategy for a Resilient Energy Union with a Forward-Looking Climate Change Policy.

² COM(2014) 903. An Investment Plan for Europe.

- contribute to the safety and protection of the people in the built environment, on the basis of the best possible scientific advice
- are a common basis for technical and scientific collaboration

The European Commission has supported, from the very beginning in 1975, the elaboration of the Eurocodes, and contributed to the funding of their drafting. The creation of the Eurocodes has been widely supported by the European scientific and technical communities. The extensive interaction between CEN Technical Committee 250 "Structural Eurocodes" (CEN/TC250) and the national and international scientific and technical institutions and organizations gave opportunity to build Eurocodes on best European practice, expertise and research achievements.

The next goal of the European Union is to keep the Eurocodes as the most advanced state-of-the-art codes for structural design in the world. The Directorate General Internal Market, Industry, Entrepreneurship, and Small and Medium Enterprises (DG GROW) mandated CEN^{3,4} to develop the second generation of the Eurocodes, whose publication is expected by 2020.

The Joint Research Centre of the European Commission (JRC) provides scientific contribution to the Eurocodes since 1992. The first building designed with Eurocodes was constructed and tested at the ELSA laboratory of the Institute of Protection and Security of Citizen in Italy, in 1994, and from then on more than 20 reference tests were carried out aiming at calibration and further development of the Eurocodes.

Since March 2005 the JRC provides scientific and technical support to DG GROW in the frame of Administrative Arrangements on the Eurocodes. The mission initially devoted to the JRC included: support to the national implementation and harmonization of the Eurocodes, support to the training, international promotion and further development of the Eurocodes. Since 2015 the scope of the JRC contribution has been extended to support to policies and standards for sustainable construction.

1.2 Why Eurocodes implementation enquiry

In the Commission Recommendation⁵ on the implementation and use of Eurocodes for construction works and structural construction products, it was recommended to the Member States to:

1. Adopt the Eurocodes as a suitable tool for designing construction works, checking the mechanical resistance of components, or checking the stability of structures.
2. Lay down the Nationally Determined Parameters (NDPs) usable in their territory.
3. Use the recommended values of the NDPs provided by the Eurocodes. They should diverge from those recommended values only where geographical,

³ M/466 EN, 2010. "Programming Mandate Addressed to CEN in the Field of the Structural Eurocodes" DG Enterprise and Industry, European Commission, Brussels, 19 May 2010.

⁴ M/515 EN, 2012. "Mandate for Amending Existing Eurocodes and Extending the Scope of Structural Eurocodes" DG Enterprise and Industry, European Commission, Brussels, 12 December 2012.

⁵ Commission Recommendation 2003/887/EC on the implementation and use of Eurocodes for construction works and structural construction products.

geological or climatic conditions or specific levels of protection make that necessary.

4. Compare the NDPs implemented by each Member State and assess their impact as regards the technical differences for works or parts of works.
5. Refer to the Eurocodes in their national provisions for conformity assessment.
6. Undertake research to facilitate the integration into the Eurocodes of the latest developments in scientific and technological knowledge.
7. Promote instruction in the use of the Eurocodes.

In line with the Europe 2020 strategy for smart, sustainable and inclusive growth⁶, standardization plays an important part in supporting the industrial policy for the globalization era. The improvement of the competition in EU markets through the adoption of the Eurocodes is recognized in the "Strategy for the sustainable competitiveness of the construction sector and its enterprises"⁷, and they are distinguished as a tool for accelerating the process of convergence of different National and regional regulatory approaches and for fostering the global competitiveness of the European construction enterprises. The plan for mid-to-long term actions (2014-2020) envisages a Commission report on the implementation of Eurocodes in the Member States in response to the Commission Recommendation on the implementation and use of Eurocodes for construction works and structural construction products. Based on the results of this report, the Commission envisages to propose action to strengthen or, if need be, enforce the use of Eurocodes in Public Procurement and other instruments.

A fitness check of EU legislation affecting the construction sector for ensuring that remains fit for purpose and delivers the results intended by the EU law-makers has been undertaken by DG GROW in consistence with:

- the Commission Communication on "Strategy for the sustainable competitiveness of the construction sector and its enterprises"
- the Commission Work Programme 2015⁸
- the Commission Communication⁹ on "Better regulation for better results - an EU agenda"

The Commission Recommendation on the implementation and use of Eurocodes for construction works and structural construction products is not intended to be considered in the legislation fitness analysis because of the non-binding nature of the act, but it is intended to explore whether the Eurocodes:

- are *de facto* mandatory for some segments of the construction sector (i.e. for public work suppliers) or in some Member States
- create benefits in terms of market and business opportunities which are worth considering in the analysis, albeit most probably in qualitative terms

The presented in this document enquiry on the implementation of the Eurocodes in the EU Member States has been conceived by DG GROW and DG JRC to retrieve the information necessary for the purposes of the Commission report on the implementation of Eurocodes, envisaged in the Commission Communication on "Strategy for the

⁶ COM (2010) 2020. EUROPE 2020. A strategy for smart, sustainable and inclusive growth

⁷ COM (2012)433. Strategy for the sustainable competitiveness of the construction sector and its enterprises

⁸ Annex 3 to COM (2014) 910. Commission Work Programme 2015. A New Start.

⁹ COM (2015) 2015. Better regulation for better results - an EU agenda

sustainable competitiveness of the construction sector and its enterprises". Having in mind the analyses envisaged for the fitness check of EU legislation affecting the construction sector, the present report presents information relevant to the place of the Eurocodes in the Public Procurement, and to their regulatory and standardization environment in the EU Member States.

The data presented in this report was supplied by the National Authorities and the National Standardization Bodies of the EU Member States, Norway and Turkey. During the data processing and analysis additional questions were posed to some countries in order to clarify details and to correct some inconsistencies. However, the Commission accepts no responsibility or liability whatsoever with regard to the data in this report.

2. Scope of the enquiry

2.1 Questionnaires

The enquiry was aimed to:

- establish the state of implementation of the Eurocodes in the EU Member States in their specific regulatory and standardization environment
- determine the place of the Eurocodes in Public Procurement
- detect potential barriers which restrict or impede the implementation of the Eurocodes
- collect comments regarding experience accumulated in the implementation of the Eurocodes, problems encountered, solutions found

The enquiry consisted of two questionnaires (parts) addressed as follows:

- Part 1 - to the National Authorities
- Part 2 - to the National Standardization Bodies (NSBs)

The questionnaires are shown in Figure 2.1.

PART 1 - STATE OF IMPLEMENTATION OF EUROCODES IN THE EU MEMBER STATES									
To be compiled by the relevant national authorities									
National Authorities									
Country: _____		Compiled by: _____							
Date: _____									
EN Eurocodes parts	This EN part was or will be implemented in your country? (Yes/No)	Amendment of relevant national regulations to allow the use of the Eurocodes		Is the use of the Eurocodes obligatory in your country?		Is the use of the Eurocodes restricted (e.g. additional requirements, calculations, certificates, etc.)?		Is there a regulatory framework in your country enforcing the use of the Eurocodes in public procurement?	
		Was it necessary for the implementation? (Yes/No)	If yes, date (or envisaged date) of such amendment? (Month) (Year)	Is the use of this EN part obligatory in your country? (Yes/No)	If yes, please provide title reference of to the regulation (Yes/No)	Is the use of the EN part restricted? (Yes/No)	If yes, which restrictions apply? (Yes/No)	Framework for use of this EN part in public procurement (Yes/No)	If yes, please provide title reference of to the regulation (Yes/No)
EN 1990 ⁽²⁾	Please select	Please select							
EN 1990 - Annex A2	Please select	Please select							
EN 1991-1-1	Please select	Please select							
EN 1991-1-2	Please select	Please select							
EN 1991-1-3	Please select	Please select							

PART 2 - STATE OF IMPLEMENTATION OF EUROCODES IN THE EU MEMBER STATES												
To be compiled by the national standardisation body												
NSBs												
Country: _____		Compiled by: _____										
Date: _____												
EN Eurocodes parts	This EN part was or will be implemented in your country? (Yes/No)	Date of publication of the EN parts in national standards (Month) (Year)	The EN part was completely translated in National language? (Yes/No)	National Annexes		Is the use of the Eurocodes obligatory in your country?		Is the use of the Eurocodes restricted (e.g. additional requirements, calculations, certificates, etc.)?		Are there national standards on structural design used in parallel with the Eurocodes?		Comments (experience, problems encountered, solutions found)
				Date of publication	Available in English? (Yes/No)	Is the use of this EN part obligatory in your country? (Yes/No)	Is the use of this EN part restricted? (Yes/No)	If yes, which restrictions apply? (Yes/No)	National standards used in parallel with the Eurocodes? (Yes/No)	If yes, please provide reference (Yes/No)	If yes, what is their correspondence to this EN part?	
EN 1990 ⁽²⁾	Please select		Please select			Please select	Please select	Please select		Please select		
EN 1990 - Annex A2	Please select		Please select			Please select	Please select	Please select		Please select		
EN 1991-1-1	Please select		Please select			Please select	Please select	Please select		Please select		
EN 1991-1-2	Please select		Please select			Please select	Please select	Please select		Please select		
EN 1991-1-3	Please select		Please select			Please select	Please select	Please select		Please select		
EN 1991-1-4	Please select		Please select			Please select	Please select	Please select		Please select		
EN 1991-1-5	Please select		Please select			Please select	Please select	Please select		Please select		
EN 1991-1-6	Please select		Please select			Please select	Please select	Please select		Please select		

Figure 2.1. The questionnaires for the Eurocodes implementation enquiry

The questions were posed with regard to each Eurocode Part, with EN 1990-A1 (Annex 2) considered as a separate Part, so the total number of the Eurocodes Parts taken into consideration was 59. The list of the Eurocodes Parts is presented in Table 2.1.

Table 2.1. List of the Eurocodes Parts

EN	Part	Title
EN 1990 Basis of structural design		(includes ANNEX A1 : Application for buildings)
	A1	ANNEX A2: Application for bridges
EN 1991 Actions on structures	1-1	General actions - Densities, self-weight, imposed loads for buildings
	1-2	General actions - Actions on structures exposed to fire
	1-3	General actions - Snow loads
	1-4	General actions - Wind actions
	1-5	General actions - Thermal actions
	1-6	General actions - Actions during execution
	1-7	General actions - Accidental actions
	2	Traffic loads on bridges
	3	Actions induced by cranes and machinery
	4	Silos and tanks
EN 1992 Design of concrete structures	1-1	General rules and rules for buildings
	1-2	General rules - Structural fire design
	2	Concrete bridges - Design and detailing rules
	3	Liquid retaining and containment structures
EN 1993 Design of steel structures	1-1	General rules and rules for buildings
	1-2	General rules - Structural fire design
	1-3	General rules - Supplementary rules for cold-formed members and sheeting
	1-4	General rules - Supplementary rules for stainless steels
	1-5	General rules - Plated structural elements
	1-6	Strength and stability of shell structures
	1-7	Strength and stability of planar plated structures subject to out of plane loading
	1-8	Design of joints
	1-9	Fatigue
	1-10	Material toughness and through-thickness properties
	1-11	Design of structures with tension components
	1-12	General - High strength steels
	2	Steel bridges
	3-1	Towers, masts and chimneys – Towers and masts
	3-2	Towers, masts and chimneys – Chimneys
	4-1	Silos
	4-2	Tanks
	4-3	Pipelines
	5	Piling
	6	Crane supporting structures
EN 1994 Design of composite steel and concrete structures	1-1	General rules and rules for buildings
	1-2	General rules - Structural fire design
	2	General rules and rules for bridges

EN	Part	Title
EN 1995 Design of timber structures	1-1	General - Common rules and rules for buildings
	1-2	General - Structural fire design
	2	Bridges
EN 1996 Design of masonry structures	1-1	General rules for reinforced and unreinforced masonry structures
	1-2	General rules - Structural fire design
	2	Design considerations, selection of materials and execution of masonry
	3	Simplified calculation methods for unreinforced masonry structures
EN 1997 Geotechnical design	1	General rules
	2	Ground investigation and testing
EN 1998 Design of structures for earthquake resistance	1	General rules, seismic actions and rules for buildings
	2	Bridges
	3	Assessment and retrofitting of buildings
	4	Silos, tanks and pipelines
	5	Foundations, retaining structures and geotechnical aspects
	6	Towers, masts and chimneys
EN 1999 Design of aluminium structures	1-1	General structural rules
	1-2	Structural fire design
	1-3	Structures susceptible to fatigue
	1-4	Cold-formed structural sheeting
	1-5	Shell structures

The questions included in the enquiry were as follows:

PART 1 (National Authorities):

- This EN Part was or will be implemented in your country? (Yes/No)
- Amendment of relevant national regulations to allow the use of the Eurocodes
 - Was it/is it necessary for the implementation of the EN part? (Yes/No)
 - If yes, date (or envisaged date) of such amendment?
- Is the use of the Eurocodes obligatory in your country?
 - Is the use of this EN Part obligatory in your country? (Yes/No)
- If yes, please provide title/reference of/to the regulation
- Is the use of the Eurocodes restricted (e.g. additional requirements, calculations, certificates, etc.)?
 - Is the use of this EN Part restricted? (Yes/No)
 - If yes, which restrictions apply?
- Is there a Regulatory Framework in your country enforcing the use of the Eurocodes in Public Procurement?
 - Framework for use of this EN Part in Public Procurement (Yes/No)

- If yes, please provide title/reference of/to the regulation
- Comments (experience, problems encountered, solutions found)

PART 2 (NSBs):

- This EN Part was or will be implemented in your country? (Yes/No)
- Date of publication of the EN Part as National Standard
- The EN Part was completely translated in National language? (Yes/No)
- National Annexes:
 - Date of publication
 - Available in English? (Yes/No)
- Is the use of this EN Part obligatory in your country? (Yes/No)
- Is the use of the Eurocodes restricted (e.g. additional requirements, calculations, certificates, etc.)?
 - Is the use of this EN Part restricted? (Yes/No)
 - If yes, which restrictions apply?
- Are there National Standards on structural design used in parallel with the Eurocodes?
 - National Standards used in parallel with this EN part? (Yes/No)
 - If yes, please provide reference
 - If yes, what is their correspondence to this EN part?
- Comments (experience, problems encountered, solutions found)

2.2 Answers to the enquiry

The enquiry was launched by DG GROW in the end of January 2014, when the Members of the Standing Committee on Construction (SCC) were invited to convey the two questionnaires (see section 2.1) to relevant representatives of National Authorities and National Standardisation Bodies. In this way not only the EU Member States, but also the EFTA Member States and the EU Candidate Countries received the enquiry. In addition, DG GROW gave information on the enquiry at the SCC meeting on 13-14 February 2014.

A map with the countries which replied to the Eurocodes implementation enquiry is presented on Figure 2.2. All EU Member States, Norway and Turkey submitted filled-in enquiry forms.

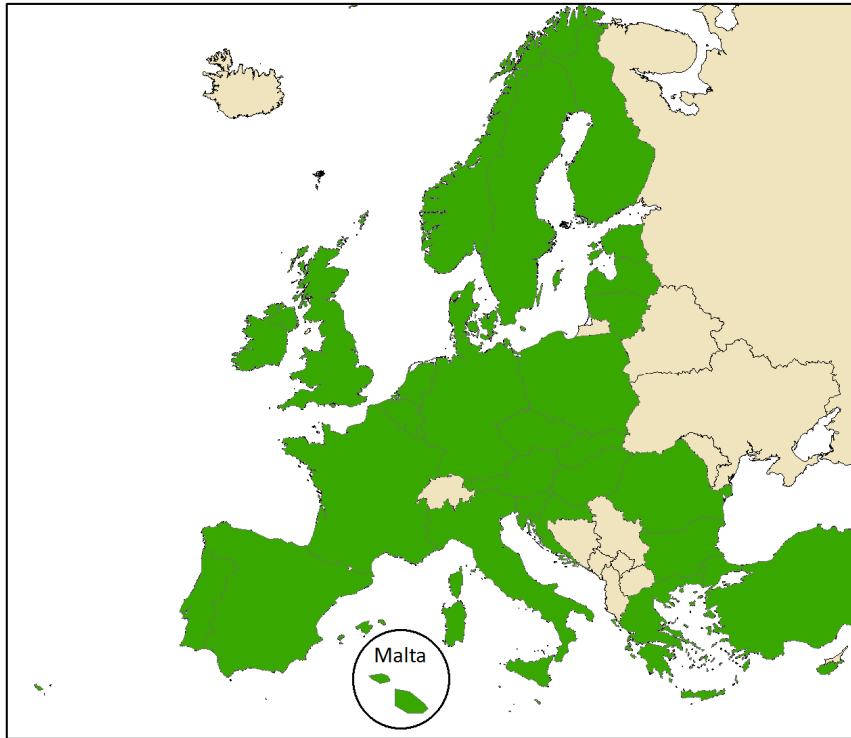


Figure 2.2 Countries which replied to the Eurocodes implementation enquiry

The first reply was received from Bulgaria on 12 February 2014. The last reply was by Denmark on 7 July 2015, when the questionnaire Part 1 was submitted. As far as the data was collected in 2014 (except Part 1 for Denmark), it reflects the state of implementation of the Eurocodes in 2014. The few references to 2015 cited in the report were received in the first half of 2015 when the data was analysed and additional questions were posed to the National Authorities and to the National Standardization Bodies.

The reply of Turkey states that all EN Eurocodes Parts except one (EN 1990-A1) are published as National Standards. The use of the Eurocodes is not obligatory and there is no Regulatory Framework enforcing the use of the Eurocodes in Public Procurement. The reply of Turkey is presented in section 4 "Implementation of the Eurocodes in different countries". As far as Turkey being an EU Candidate Country is not directly affected by the Commission Recommendation on the implementation and use of Eurocodes for construction works and structural construction products, the Turkish reply, being highly appreciated, is not included in the general statistics presented in section 3 "State of implementation", and in the Annexes. The answer of Norway, being an EFTA Member State, is retained in the general statistics, and in the Annexes.

The question "This EN Part was or will be implemented in your country?" was posed to assess whether the EN Part is (or will be) accepted as National Standard, being published or ratified. Although it was answered positively for all EN Parts by most of the EU Member States, there are some Member States which understood the question as "EN Part implemented in the design", which resulted in negative replies for specific types of design, e.g. seismic design in countries with very low seismicity. The fact that different countries attributed different meaning to this question implies that its definition had to be more detailed. For this reason the answers to this question are not commented in the further analysis.

3. State of implementation

3.1 Publication of National Standards on the Eurocodes Parts

The National Standardization Bodies (NSBs) of the 28 EU Member States, three EFTA Member States (Iceland, Norway, and Switzerland), the former Yugoslav Republic of Macedonia, and Turkey, are National Members of CEN. The European Standards (ENs) published by CEN are developed by experts, established by consensus and adopted by the Members of CEN.

The CEN/CENELEC Internal Regulations¹⁰ specify the following two steps to be performed by the CEN National Members in implementation of ENs at national level by giving them the status of National Standards:

- either publication of an identical text or endorsement in 6 months after the date of availability
- withdrawal of any National Standards conflicting with the EN in 6 months after the date of availability

Figure 3.1 shows the state of publication of National Standards on the Eurocodes Parts in % of the considered total of 59 Parts. All EU Member States and Norway published 100% of the Eurocodes Parts, except Germany and Luxembourg, which did not publish EN 1990-A1 (Annex 2) and Spain, which published 75% of the Eurocodes Parts. In fact, the rate of accepted Eurocodes Parts as National Standards by Spain is 83%, because the standards of the EN 1999 series have been ratified. Details on the year of publication of National Standards by country and by Eurocodes Part are presented in Table A1.1 in Annex 1. The above results conclusively show that the Eurocodes are already accepted as National Standards in Europe.

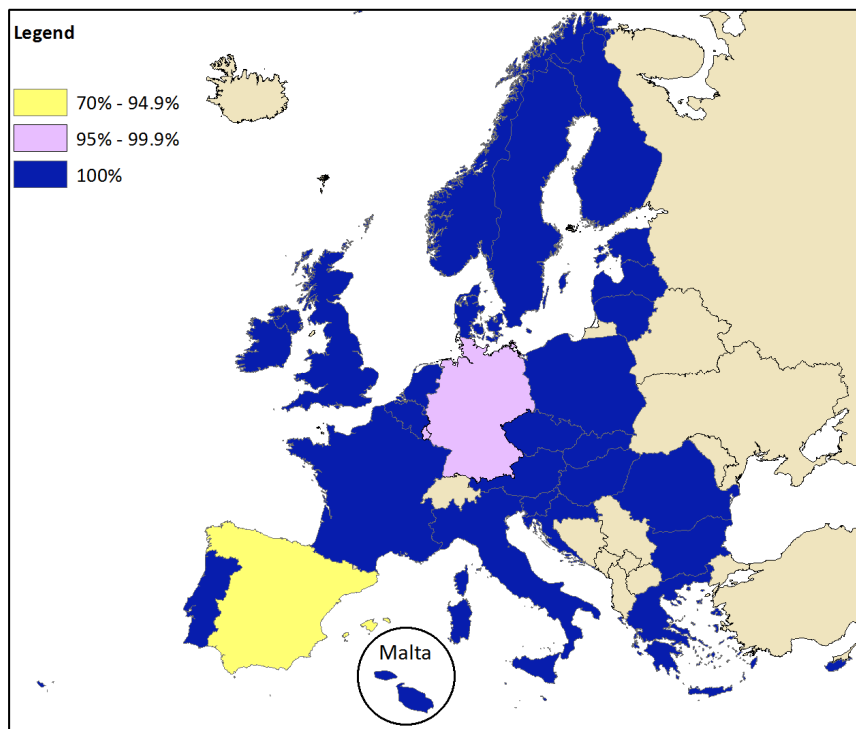


Figure 3.1. Publication of National Standards on the Eurocodes in percentage of all Parts

¹⁰ CEN/CENELEC Internal Regulations - Part 2:2015

The Eurocodes Parts were published by CEN in three languages: English, French and German. The rate of the Eurocodes Parts available in National Language as percentage of the published Parts is shown in Figure 3.2.

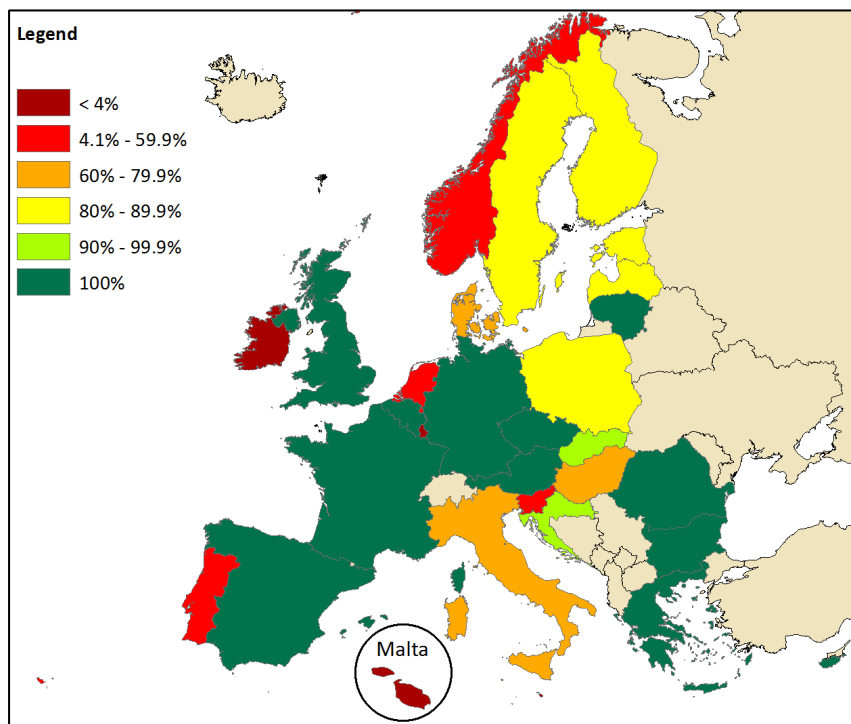


Figure 3.2. Rate of the Eurocodes Parts available in National Language as percentage of the published Parts

All Eurocodes Parts were translated in the National Language in Bulgaria, Czech Republic, Greece, Lithuania, and Romania; Cyprus used the Greek translation; Spain translated all 44 published Parts. More than 80% of the Eurocodes Parts were translated in Croatia, Estonia, Finland, Latvia, Poland, Slovakia and Sweden. In Belgium the Eurocodes Parts are available in French and Flemish.

The very low rate of translation in Maltese language and the lack of translation in Irish language shall not be considered as barriers to the implementation of the Eurocodes, taking into account that English is an official language in these countries. The negative result reported by Luxembourg refers to the lack of translation in Luxembourgish, which is one of the three official languages there together with French and German. Full information on the Eurocodes Parts available in National Language is presented in Table A1.2 in Annex 1.

The above results show that in 72% of countries more than 80% of the published Eurocodes Parts are available in the National Language or into one of the official National Languages.

3.2 Publication of National Annexes

The National Annex (NA) to a given Eurocodes Part contains information on the Nationally Determined Parameters (NDPs), to be used for the design of buildings and other civil engineering works to be constructed in the country concerned, i.e.:

- values and/or classes where alternatives are given in the EN Eurocode
- values to be used where a symbol only is given in the EN Eurocode
- country specific data (geographical, climatic, etc.), e.g. snow map
- procedure to be used where alternative procedures are given in the EN Eurocode

It may also contain:

- decisions on the application of informative annexes
- references to non-contradictory complementary information to assist the user to apply the EN Eurocode.

Figure 3.3 shows the state of publication of National Annexes on the Eurocodes Parts in % of the considered total of 59 Parts.

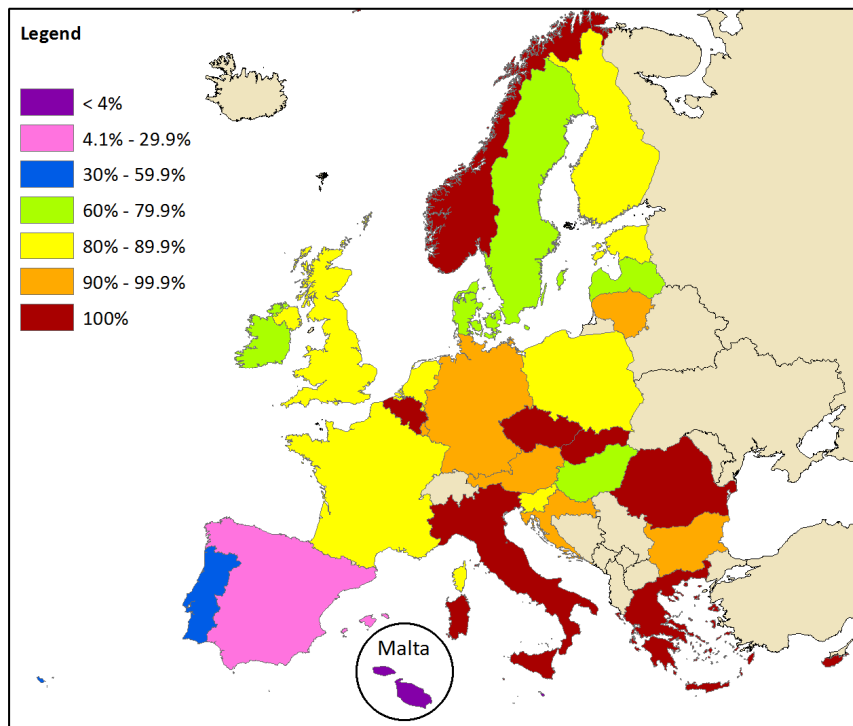


Figure 3.3. Publication of National Annexes on the Eurocodes Parts in percentage of the considered total of 59 Parts

90% of the considered in the analysis countries published National Annexes to more than 70% of the Eurocodes Parts, as follows:

- Belgium, Cyprus, Czech Republic, Greece, Italy, Norway, Romania, and Slovakia published National Annexes to all Eurocodes Parts
- Austria, Bulgaria, Croatia, Germany, Hungary, Lithuania, and Luxemburg published National Annexes to more than 90% of the Eurocodes Parts
- Estonia, Finland, France, the Netherlands, Poland, Slovenia and the United Kingdom published National Annexes to more than 80% of the Eurocodes Parts

- Denmark, Ireland, Latvia and Sweden published National Annexes to more than 70% of the Eurocodes Parts

By 2015 the amount of the published National Annexes reached 83% of the total, as shown in Figure 6.1. In the same time faster progress is expected from Malta, Spain and Portugal, which published National Annexes to less than one-third of the Eurocodes Parts.

The publication of National Annexes on the Eurocodes Parts by country is presented in Table A1.3a in Annex 1. The year of publication of National Annexes on the Eurocodes Parts by country is presented in Table A1.3b in Annex 1. Figure 3.4 presents the rate of publication of the National Annexes by Eurocode as percentage of the total expected (i.e. the number of the Eurocodes Parts to a given Eurocode multiplied by the number of the countries in the analysis).

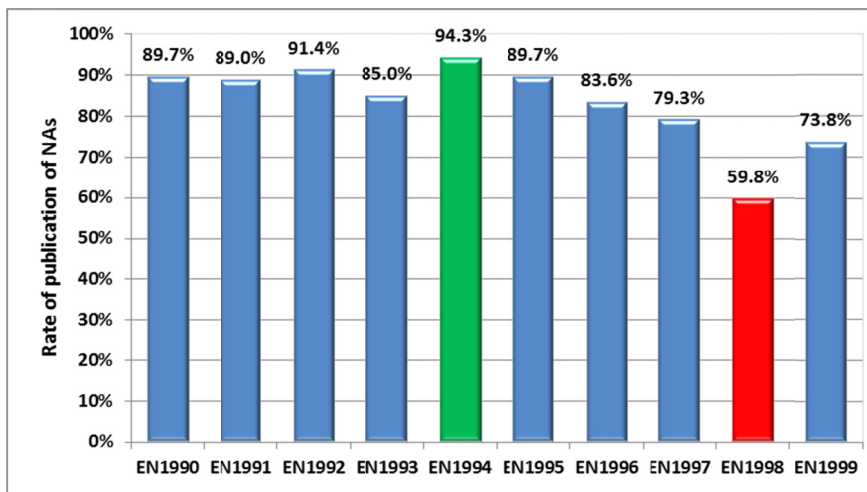


Figure 3.4. Rate of publication of the National Annexes by Eurocode as percentage of the total

The highest percentage of National Annexes was published to EN 1994, which covers an area where National Standards did not exist before in many countries. EN 1998 exhibits the lowest rate of publication of National Annexes (60%) due to the seismicity conditions in many of the analysed countries, which do not require seismic design. The relatively low rate of publication of National Annexes (74%) to EN 1999 can be explained by the fact that some of the countries do not use extensively all possibilities for design of aluminium structures offered by EN 1999 series. The relatively low rate of publication of National Annexes (79%) to EN 1997 is due to the fact that many countries did not publish National Annex to EN 1997-2.

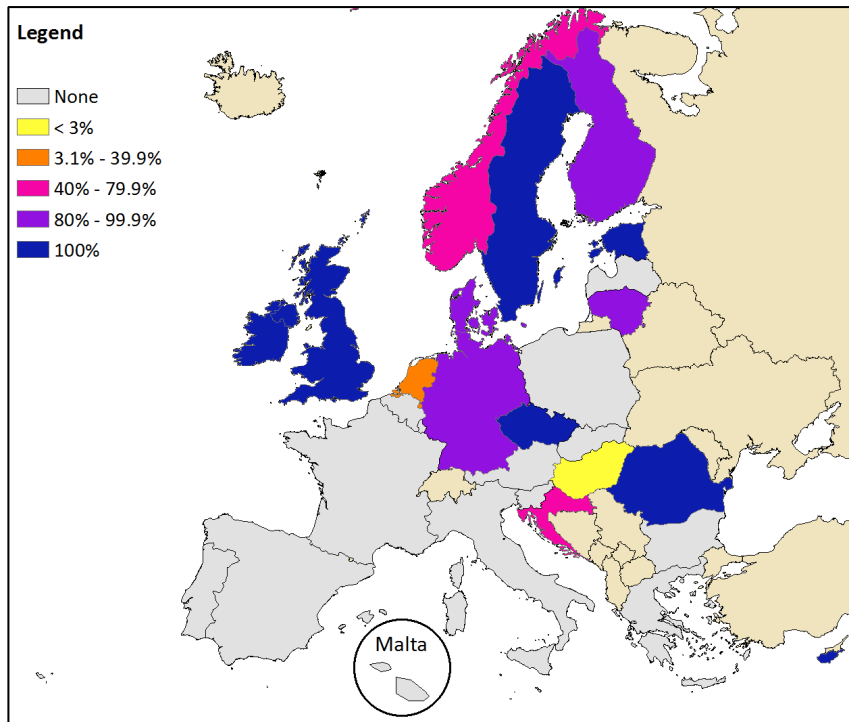


Figure 3.5. Rate of availability of National Annexes in English as percentage of the published National Annexes

The rate of availability of National Annexes in English as percentage of the published National Annexes is depicted in Figure 3.5. Table A1.4 in Annex 1 presents the availability of published National Annexes in English per Eurocodes Part and country. In almost 40% of the considered in the analysis countries the published National Annexes available in English, as follows:

- 100% in Cyprus, Czech Republic, Estonia, Ireland, Romania, Sweden, and the United Kingdom;
- 98% in Germany;
- 80% and more in Denmark, Finland, and Lithuania.

One may conclude that the process of translation of the National Annexes is already underway. More efforts shall be applied in 60% of the considered countries in order to facilitate the trans-border exchange of construction services and products in Europe.

3.3 Use of National Standards in parallel with the Eurocodes Parts

When the CEN National Members are implementing an EN standard, they shall withdraw the National Standards conflicting with it. Figure 3.6 shows the rate of use of National Standards in parallel with the Eurocodes Parts, expressed in percentage of the published Parts. Table A1.5 in Annex 1 gives information on the use of National Standards in parallel with each Eurocodes Part. As seen from Figure 3.6, in 80% of the countries included in the analysis, there are no National Standards used in parallel with the Eurocodes Parts. However, this very positive result shall be considered having in mind the regulatory environment in some EU Member States, where the rules for structural

design are enforced by legislative acts, hereinafter referred to as National Regulations. In the different regulatory environments, the National Regulations either refer to standards thus making the compliance with them compulsory, or introduce directly a set of design rules. In the latter case no National Standards exist, and hence – there is no need to withdraw conflicting standards. As example of countries, where there are no conflicting standards, but the existing National Regulations introduce directly design rules which do not fully reflect the entire set of the Eurocodes provisions, one can mention Italy, Portugal, Romania, and Spain.

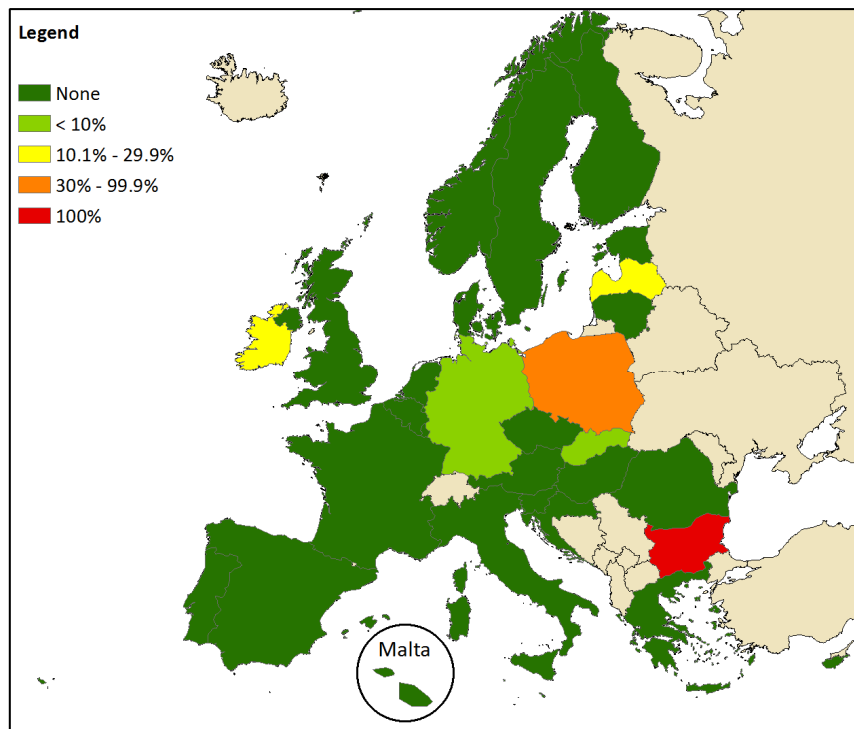


Figure 3.6. Rate of use of National Standards in parallel with the Eurocodes Parts, expressed in percentage of the published Eurocodes Parts

There are also countries, where the National Regulations allow the parallel use of the Eurocodes and other standards or Regulations, as is the case of:

- Bulgaria, where for new construction works of third, fourth and fifth category (e.g. family houses) not assigned under Public Procurement, it is allowed to use either the Eurocodes or the existing National Regulations for design of building structures, without mixing the methods of calculation and design.
- Greece, where the Owner/Authority has to choose the framework of regulatory documents for structural design: either, the pre-existing regulatory documents, or, the Eurocodes together with their National Annexes.
- Latvia, where National Regulations are used in parallel with Parts of EN 1990, EN 1991, EN 1992, EN 1995 and EN 1996. No National Regulations are used in parallel with EN 1994.
- Lithuania and Luxembourg, where there are National Regulations on structural design, which may be used in parallel with the Eurocodes.

The Polish National equivalents of the Eurocodes have status of withdrawn standards. However, other National Standards are used in parallel with 70% of the Eurocodes Parts, posing similar or additional requirements.

In Ireland guidelines are used as non-contradictory complementary information to 7 Eurocodes Parts. The answer by the Irish NSB also specifies that the National Annex to IS EN 1992-1-1 refers to the National Annex to IS EN 206.

In Germany National Standards are used in parallel with EN 1991-4 (DIN FB 140), with EN 1995-1-1 (DIN 1052-10), and with EN 1997-1 (DIN 1054). In these cases the National Regulations and "DIN Fachbericht" complement the Eurocodes Parts.

In Slovakia three National Standards are used in parallel with EN 1997-1 as complementary documents.

The above analysis shows that the CEN requirement for withdrawal of conflicting standards is not enough to ensure the enforcement of the use of the Eurocodes in countries where the National Regulations introduce directly design rules. There is need of a Commission Recommendation on the regulatory environment for use of the Eurocodes. On the other hand, it would be worth discussing how to proceed with the design of structures with low category of importance: the requirements for standards to use could be considered in a more flexible way, as it is the case of Bulgaria.

3.4 Amendment of National Regulations to allow the use of the Eurocodes

The answers to the question "Was it/is it necessary to amend relevant National Regulations to allow the use of the Eurocodes?" are presented in Figure 3.7. There is depicted the percentage of all Eurocodes Parts for which an amendment was necessary. 41% of the analysed countries reported that no amendment was needed. When considering these answers, it should be noted that:

- In Greece a Ministerial Decision has been drafted rendering the use of existing national regulatory documents non-mandatory and allowing the use of Eurocodes as an alternative option, which is the common practice in the case of Public Procurements.
- In Bulgaria Ordinance N^o RD-02-20-19 defines the conditions and procedure for the structural design by the Eurocodes. As this is a new Ordinance, the Bulgarian reply to the enquiry does not consider the act as amendment of the relevant National Regulations.

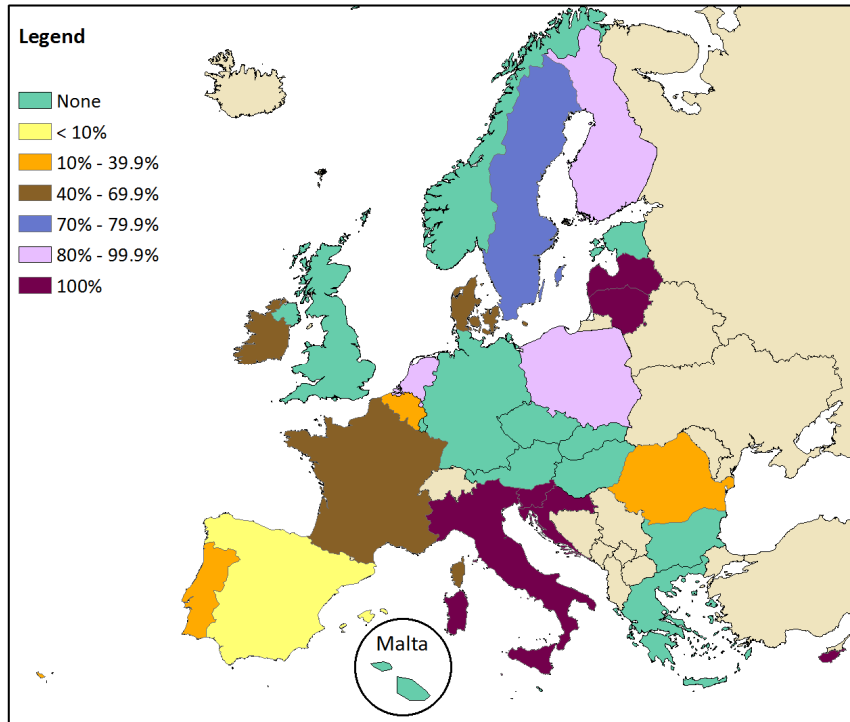


Figure 3.7. Percentage of all Eurocodes Parts for which amendment of National Regulations was/will be necessary

As regards the countries where less than 40% of the Eurocodes Parts required amendment of the National Regulation, it is worth mentioning that:

- Portugal and Spain estimate that it is needed; however it is not yet implemented, as seen in Figure 3.8.
- Belgium amended the National Regulations to allow the use of the Eurocodes Parts related to fire design. EN 1990 was recently made mandatory for the design of football stadiums.
- Romania amended the National Regulations to allow the use of 18 Eurocodes Parts. However, the Eurocodes Parts may be used in Romania as long as their provisions comply with the minimum design requirements/threshold levels/calculation methods, etc. contained in the National Technical Regulations.

For the rest 13 countries, which needed to amend their National Regulations to allow the use of more than 40% of the Eurocodes Parts, it should be noted that:

- In Finland the amendment of the National Regulations was performed by the Ministry of Environment to allow the use of the Eurocodes Parts for design of buildings.
- In Ireland the amendment of the National Regulations was performed by the National Roads Authority to allow the use of 25 Eurocodes Parts in the design of road structures.
- The data for Latvia refer to envisaged for 2015 change of legislation to introduce the use of all Parts of EN 1993, EN 1997, EN 1998 and EN 1999 series and 7 Parts belonging to EN 1991, EN 1992, EN 1994 and EN 1995.
- In the Netherlands all National Annexes are included in National Regulations

- In France 22 Eurocodes Parts related to fire resistant and seismic resistant design are introduced in National Regulations.
- In Italy the Eurocodes Parts were introduced in National Regulations, however their use is restricted by Ministerial Decrees DM 14.01.2008 and DM 31.07.2012, which define the rules for structural design.

The last reported year of amendment of National Regulations is presented in Figure 3.8. Italy first introduced all Eurocodes Parts in 2008. Table A1.6 in Annex 1 presents the year of amendment of National Regulations by Eurocodes Part and by country.

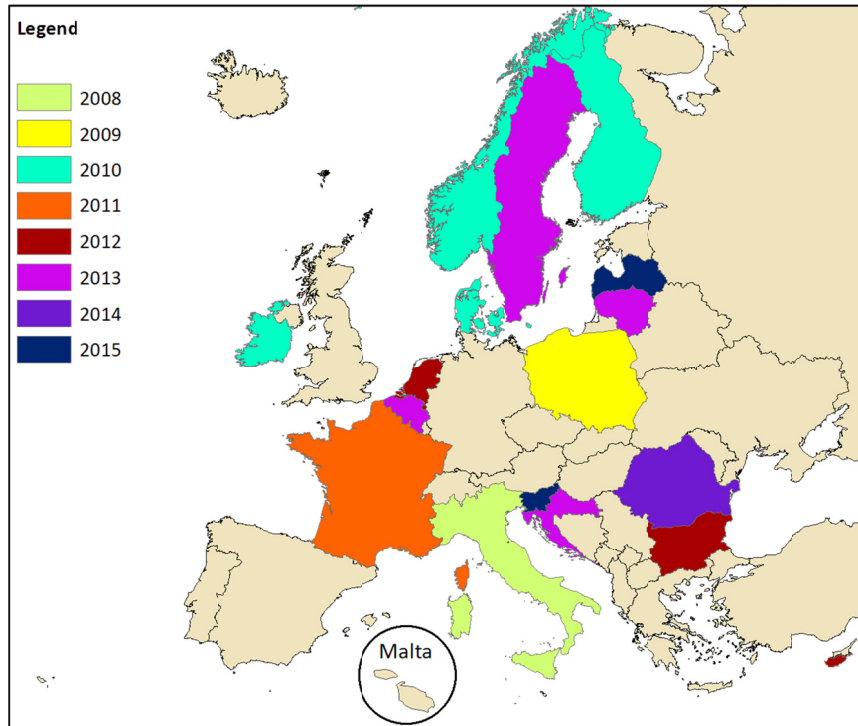


Figure 3.8. The last reported year of amendment of National Regulations

In 2015 are envisaged changes of the National Regulations of Latvia and Slovenia. Portugal and Spain shall amend the National Regulations in the future.

3.5 Are the Eurocodes obligatory?

Voluntary application of standards is one of the founding principles of the European standardization¹¹. However, the National legislative provisions may refer to standards making the compliance with them compulsory. Figure 3.9 shows the rate of obligatory Eurocodes Parts as percentage of all Parts. More detailed information by Eurocodes Part and country is shown in Table A1.7 in Annex 1.

¹¹ Regulation (EU) 1025/2012 on European standardisation

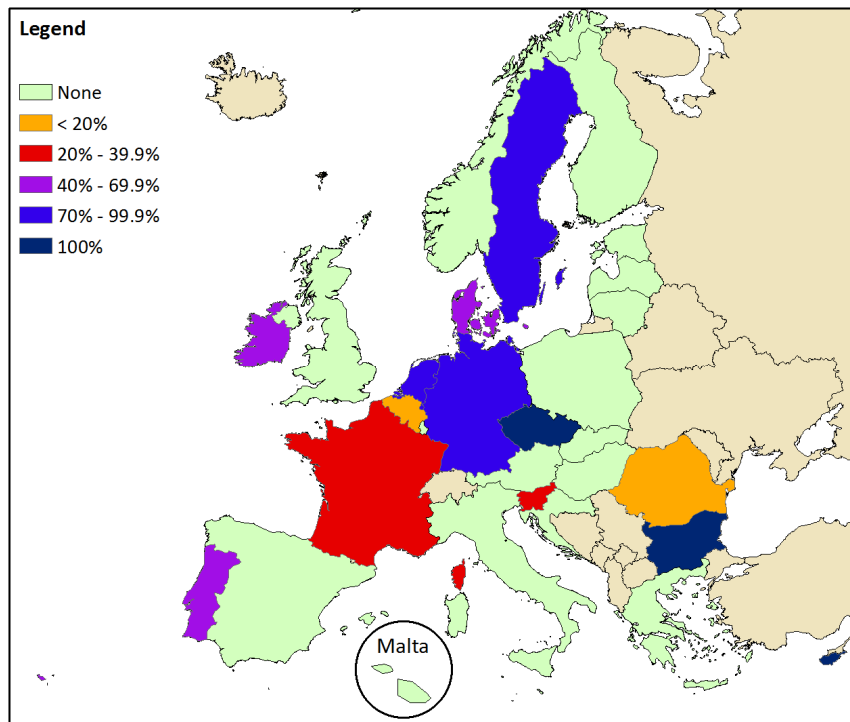


Figure 3.9. Rate of obligatory Eurocodes Parts as percentage of all Parts

55% of the analysed countries declared that none of the Eurocodes Parts is obligatory. When considering this data, it should be noted that:

- Though being non-compulsory, the Eurocodes are in practice the only mean for structural design in Austria, Croatia, Estonia, Finland, Hungary, Norway, Poland, Slovakia, and the United Kingdom.
- The rate of publication of National Annexes in Malta and Spain is in a stage when no design with the Eurocodes can be performed.

The use of all Eurocodes Parts is obligatory in the Czech Republic, Cyprus and in Bulgaria (for some categories of buildings).

In the rest of the countries considered in the analysis the situation is as follows:

- In Ireland 25 Eurocodes Parts are obligatory means for the design of road structures.
- In France 22 Eurocodes Parts are used obligatory for seismic and fire-resistant design.
- In Belgium 6 Eurocodes Parts are obligatory means for fire-resistant design.
- In Slovenia EN 1990, EN 1991 and EN 1998 series are obligatory means for structural design.
- In Denmark 41 Eurocodes Parts are obligatory for structural design. The non-obligatory Parts are: 2 Parts of EN 1991, 6 Parts of EN 1993, 1 Part of EN 1996, 1 Part of EN 1997, EN 1998 series, and 2 Parts of EN 1999.
- In Romania 11 Eurocodes Parts are in obligatory use for structural design. It should be noted, that the Regulations cited as enforcing these Parts, afterwards are cited as restricting the use of the same Parts;
- In Germany 43 Eurocodes Parts are obligatory, in Sweden – 46.

- The percentage shown for Portugal will be achieved when the 38 Portuguese Standards (39 Parts if counting EN 1990-A1 as a separate Part), together with their National Annexes, planned for the first stage of implementation of the Eurocodes, will be published. After that, the Portuguese Government will issue a Decree-Law adopting these Portuguese Standards, together with their National Annexes, as Regulations for the design of structures and specifying the co-existence period.

The results above show clearly two main approaches in the National implementation of the Eurocodes: as voluntary National Standards and via a Regulatory Framework, which encompasses different amount of Parts in the different countries.

3.6 Restrictions to the use of the Eurocodes

The replies to the question on the existing restrictions to the use of the Eurocodes (e.g. additional requirements, calculations, certificates, etc.), are summarized in Figure 3.10. The rate of restricted Eurocodes Parts is presented as percentage of all Parts. Detailed information on each Eurocodes Part is presented in Table A1.8 in Annex 1.

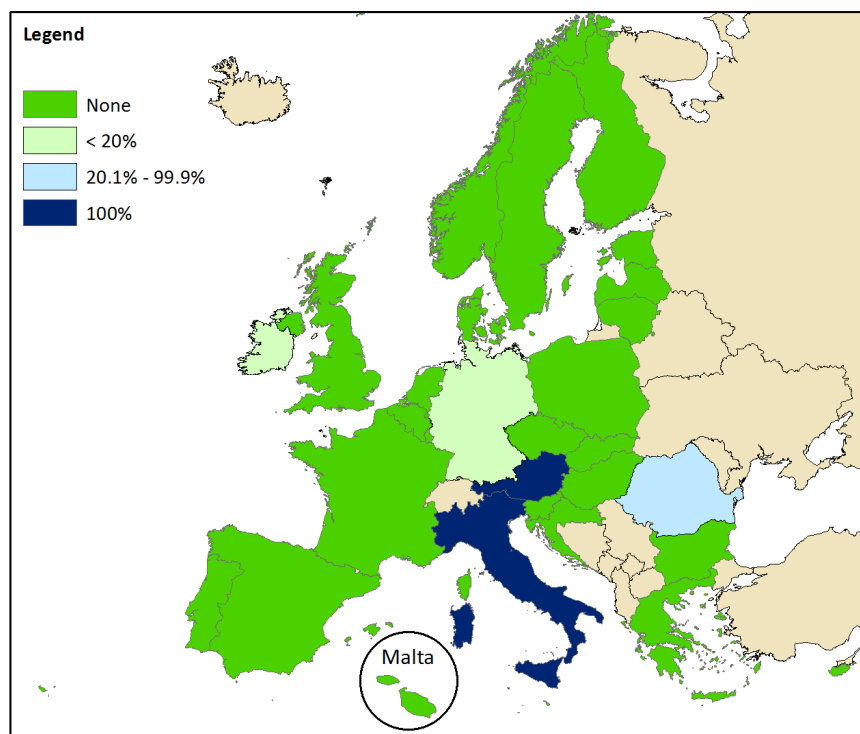


Figure 3.10. Rate of restricted Eurocodes Parts as percentage of all Parts

As seen from Figure 3.10, 83% of the countries encompassed by the enquiry replied that there are no restrictions to the use of the Eurocodes. As about the 5 countries where restrictions have been detected:

- In Ireland the references to non-contradictory complementary information to harmonise with existing practice, are considered as posing some restrictions to 6 Eurocodes Parts.

- In Germany MLTB 03/2014 restricts the use of Annexes B, C, and D to EN 1990. The use of EN 1991-1-2 is restricted by special conditions for the application of the natural fire models due to lack of experience in Germany. The implementation of the annexes to EN 1991-1-7 is considered as restricted, since they remain informative. The use of another 7 Eurocodes Parts (EN 1992-1-2, EN 1993-1-2, EN 1994-1-2, EN 1995-1-2, EN 1996-1-1, EN 1996-1-2, EN 1996-3) is restricted by special conditions for the application of the general methods of calculation due to lack of experience in Germany.
- The Romanian reply identifies 16 Eurocodes Parts as restricted by National Technical Regulations. In the same time, for the rest of the Parts it is mentioned that they are not restricted, but "EN Eurocodes Parts may be used in Romania as long as their provisions comply with the minimum design requirements/threshold levels/calculation methods, etc. contained by the National Technical Regulations".
- In Italy the use of all Eurocodes Parts is restricted by the Ministerial Decrees DM 14.01.2008 and DM 31.07.2012, which define the rules for structural design.
- In Austria the designing with the Eurocodes is restricted to professionals with a relevant authorisation. The authorisation does not pose restrictions to the use of the Eurocodes, but rather to the qualification of the professionals applying them in the design of structures.

The above results show that besides some restrictions posed by references to non-contradictory complementary information in Ireland, or by special conditions for the application of some general methods of calculation in Germany, the regulatory environment in Italy and Romania poses strong restrictions to the implementation of the Eurocodes in structural design.

3.7 Regulatory Framework for use in Public Procurement

Formulation of Public Procurement technical specifications by reference of National Standards transposing EN standards, gives boost to the Internal Market of the EU. Figure 3.11 represents the rate of the Eurocodes Parts under a Regulatory Framework enforcing their use in Public Procurement. Table A1.9 in Annex 1 presents the availability of Regulatory Framework by Eurocodes Part. The results show that in 41% of the analysed countries there is such Framework. All Eurocodes Parts are encompassed in a Regulatory Framework in 8 countries: Austria, Bulgaria, Cyprus, Czech Republic, Ireland, Lithuania, Poland, and Slovenia.

In the Netherlands and in Denmark the Regulations, which made the Eurocodes Parts obligatory, enforced also their use in Public Procurement: 52 Parts in the Netherlands and 41 Parts in Denmark.

In Sweden the 46 obligatory Parts are introduced in Public Procurement by Law (2007:1091).

The percentage shown for Portugal will be achieved when the 38 Portuguese Standards (39 Parts if counting EN 1990-A1 as a separate Part) and the corresponding National Annexes, planned for the first stage of implementation of the Eurocodes, will be published. After that, the Portuguese Government will issue a Decree-Law adopting these Portuguese Standards, together with their National Annexes, as Regulations for the design of structures. This Decree-Law will also establish the period of coexistence of the actual National Regulations for design of structures with the Eurocodes and will enforce their use in Public Procurement.

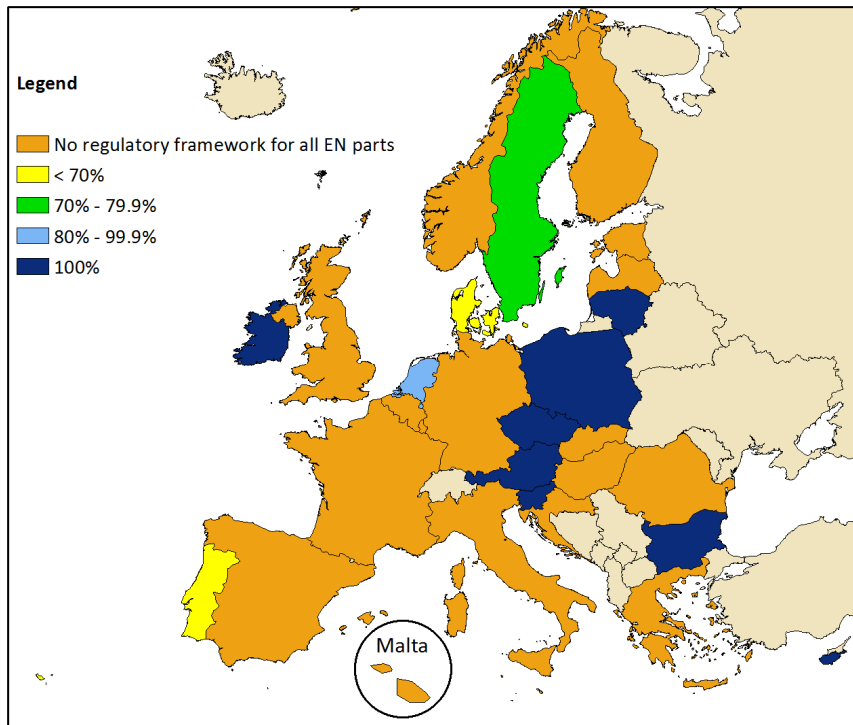


Figure 3.11. Rate of the Eurocodes Parts under a Regulatory Framework enforcing their use in Public Procurement

It is worth mentioning that other 5 countries consider that the Eurocodes as well-placed in the Public Procurement without having a particular Regulatory Framework, namely:

- In Belgium the public authorities write traditionally in their contracts that "all National Standards available at NBN are applicable", so the Eurocodes are automatically included as a referenced standards for the contracts. The most important authorities use also more detailed prescriptions enforcing the use of the Eurocodes for infrastructure works and important buildings.
- In Croatia the National legislation refers to the "National Standards which are adopted European Standards", although, there is no specific reference to the EN Eurocodes.
- The Finnish Transport Agency requires the use of Eurocodes in their contracts.
- In Greece there is no specific Regulatory Framework enforcing the use of the Eurocodes in Public Procurement. However, Public Authorities may allow or enforce the use of the EN Eurocodes in the tender documents for structural design for the construction projects and this is the common practice;
- In Norway the Directive 2004/18/EC is correctly transposed as regards the use of the Eurocodes Parts in Public Procurement.

Having in mind the above positive experiences, one may conclude that 60% of the analysed countries reported a good place of the Eurocodes in their Public Procurement.

4. Implementation of the Eurocodes in different countries

4.1 Austria

All EN Parts are published as National Standards. No other National Standards are used in parallel with the Eurocodes.

The use of the Eurocodes is generally not obligatory, although:

- Within OIB - Guideline 1, mechanical resistance and stability, April 2007 and October 2011, the safety level of EN 1990 is to be observed.
- For railways within the scope of the directive 2008/57/EG implemented in "Eisenbahngesetz 1957" (BGBl. Nr. 60/1957, last amendment BGBl. I Nr. 205/2013), the EN 1990-A1 (Annex A2) and the EN 1991-2 are obligatory referred to 2008/217/EG (TSI INF HS) and 2011/275/EG (TSI INF CR).

The Eurocodes are enforced in the Public Procurement by BVergG 2006 (Federal law on the award of public contracts, BGBl. I Nr. 17/2006, last amendment BGBl. I Nr. 128/2013), according to which they are considered as European Standards.

No National Annexes are published on 5 Eurocodes Parts (the EN 1999 series). The published National Annexes are not available in English.

The design with the Eurocodes is restricted to professionals with a relevant authorisation. The authorisation does not pose restrictions to the use of the Eurocodes, but to the qualification of the professionals applying them in the design of structures.

A survey is currently in preparation in Austria aimed to detect difficulties and problems with applications of the Eurocodes.

4.2 Belgium

All Eurocodes Parts are published as National Standards. They are available in French and Flemish. The use of the Eurocodes is voluntary, as generally is the state of the standards in Belgium. The Civil Code considers that the designers are obliged to follow the "rules of the art", which include generally the available National Standards.

There is an exception for the fire safety: if the designer uses calculations to justify the fire safety, the use of the Eurocodes Parts relevant to fire safety (except for aluminium structures) was made mandatory by the Ministerial Decree of May 17, 2013 "M.D. 17/5/2013" as an amendment of the preceding situation. Another recent exception is the design of football stadiums, for which EN 1990 was made mandatory (Ministerial Decree of July 6, 2013).

As regards the Public Procurement, the public authorities write traditionally in their contracts that "all National Standards available at NBN are applicable", so the Eurocodes are automatically included as a referenced standards for the contracts. The most important authorities use also more detailed prescriptions enforcing the use of the Eurocodes for infrastructure works and important buildings.

No other National Standards are used in parallel. No special provisions exist for enforcement of the Eurocodes in the Public Procurement.

National Annexes are published on all Eurocodes Parts in French and Flemish. No translation in English is available.

4.3 Bulgaria

All Eurocodes Parts are published as National Standards and translated in the National Language. According to the Law on the National Standardization the application of the Eurocodes standards is voluntary in general. As far as the structural design concerns the citizen's health and safety, it is obligatory to introduce the Structural Eurocodes or Parts of them through National Ordinances. Ordinance N^o RD-02-20-19 of 29 December 2011 (effective as of 6 January 2012) defines the conditions and procedure for the structural design of construction works or of parts thereof by using the Eurocodes. As this is a new Ordinance, the Bulgarian reply to the Eurocodes implementation enquiry does not consider the act as amendment of the relevant National Regulations.

From 6 January 2014 the use of the Eurocodes is obligatory for the design of new construction works for contracts awarded under the Public Procurement Act (Ordinance amending Ordinance N^o RD-02-20-19 of 29 December 2011, Gazette, n. 111 from 2013).

From 6 January 2015 the use of the Eurocodes is obligatory for the design of new construction works of first and second category, where the categories are specified in Article 137 of the Spatial Development Act. For new construction works of third, fourth and fifth category, which are not assigned under the Public Procurement Act, the design can be made with the Eurocodes or with the existing National Regulations for the design of building structures, without mixing the methods of calculation and design.

National Annexes are published to all Eurocodes Parts except to EN 1997-2, and their translation in English is in the final stage. All National Annexes are available free of charge on BDS website www.bds-bg.org, and on the website of Ministry of Regional Development and Public Works www.mrrb.government.bg (www.mip.government.bg).

4.4 Croatia

All Eurocodes Parts are published as National Standards. They are translated in the National Language, except the EN 1990 series. The use of the Eurocodes is not obligatory. The designer has a choice to use any other specification or scheme in order to give evidence that Basic Works Requirement "mechanical resistance and stability" is fulfilled, but the result must be at least as safe as if he has used the Eurocodes; since there is no other national scheme available, the consequent result is that in practice the use of the Eurocodes is similar to the case when they would be obligatory.

No other National Standards are used in parallel with the Eurocodes.

Regarding Public Procurement, the National legislation refers to the "National Standards which are adopted European Standards", although, there is no specific reference to the EN Eurocodes.

National Annexes are published on all Eurocodes Parts except EN 1997-2. The published National Annexes are available in English except those to EN 1991, EN 1992 and EN 1993 series.

4.5 Cyprus

All Eurocodes Parts are published as National Standards, except EN 1990-A1 (Annex 2) and translated in the National Language. Regulation 479/2011 introduces the Eurocodes as obligatory means for structural design.

There are no other National Standards used in parallel with the Eurocodes.

L12(I)/2006 is the Regulatory Framework enforcing the use of the Eurocodes in Public Procurement.

National Annexes are published on all Eurocodes Parts except EN 1990-A1 (Annex 2) in English.

4.6 Czech Republic

All Eurocodes Parts are published as National Standards and translated in the National Language. The National Regulation 268/2009 on buildings makes reference to the NDPs (standardised values) providing the list of Eurocodes in its Annex. The National Regulation 104/1997 (Amendment 2011) for road bridges and SZDC regulations for railways make reference to valid National Standards.

Eurocodes are obligatory means for structural design. There are no other National Standards used in parallel with the Eurocodes.

Law 137/2006 on Public Procurement is the Regulatory Framework for enforcing the use of the Eurocodes in Public Procurement.

National Annexes are published to all Eurocodes Parts and all National Annexes are translated in English.

The Czech experience in implementations of the Eurocodes shows that in case of some needs several Czech State Institutions help to solve the problem, also the co-operation with CEN/TC 250 is very helpful.

4.7 Denmark

All Eurocodes Parts are published as National Standards and 31 Eurocodes Parts are translated in the National Language. 41 EN Parts are obligatory means for structural design, introduced by the "Building regulation" (BEK Nr 810 of 28/06/2010), which specifies the rules for construction of buildings in Denmark, and by the "Load and calculation rules for track carrying bridges and earthworks and Public Roads Act". The same regulations enforce the use of the Eurocodes in Public Procurement.

There are no other National Standards used in parallel with the Eurocodes.

National Annexes are published on 41 EN Parts. National Annexes are not published on 2 Parts of EN 1991, 8 Parts of EN 1993, EN 1998 series, and 2 Parts of EN 1999. 33 National Annexes are translated in English. National Annexes may be downloaded free of charge from <http://www.eurocodes.dk/en/national-annexes/national-annexes-for-building-structures> .

For the design of certain types of buildings of consequence class 3, it is required to be performed by a certified engineer. Deviations from the Eurocodes prescriptions are allowed, but in this case one should validate by calculation that the same safety level is achieved.

4.8 Estonia

All Eurocodes Parts are published as National Standards and all Eurocodes Parts except those of EN 1998 and EN 1999 series are translated in the National Language. According

to the Estonian Building Act §3(1) "Construction works shall be designed and built according to good building practice. Standards (including Eurocode) are considered to be part of good building practice." However, this does not mean that it is obligatory to use standards. Other guidance documents may also be used, but in this case the builder/designer takes full responsibility concerning the appropriateness of these documents.

There are no valid Estonian Standards on structural design used in parallel with the Eurocodes. There is no particular Regulatory Framework in enforcing the use of the Eurocodes in Public Procurement.

It is not currently intended to publish National Annexes to EN 1998 series. All published National Annexes are available in English.

4.9 Finland

All Eurocodes Parts are published as National Standards and all Eurocodes Parts except those of EN 1996-3, EN 1999-3, and EN 1998 series are translated in the National Language.

The use of the Eurocodes is voluntary. No other National Standards are used in parallel.

The National Annexes are implemented by the Ministry of Environment for buildings and by the Transport Agency for roads and bridges.

The presented in this report year of amendment of relevant National Regulations for the separate Eurocodes Parts corresponds to the implementation of the National Annex for buildings as part of Finnish regulations by the Ministry of Environment. The Finnish Transport Agency has implemented the National Annexes as recommendations.

There is no particular Regulatory Framework in enforcing the use of the Eurocodes in Public Procurement. The Finnish Transport Agency requires the use of Eurocodes in their contracts.

National Annexes are published to all EN Parts except to EN 1998 series. All published National Annexes are available in English except those intended for design of bridges. The English translations of the National Annexes are unofficial versions made by the Ministry of Environment.

4.10 France

All Eurocodes Parts are published as National Standards in French language. The 22 Eurocodes Parts which are obligatory, are those related to the French ordinances for fire resistant and seismic resistant design: Arrêté du 16 mars 2011 sur la résistance au feu; Arrêté du 22 octobre 2010 modifié sur la construction parasismique; Arrêté du 24 janvier 2011 parasismique; Arrêté du 19 juillet 2011 parasismique; Arrêté du 26 octobre 2011 parasismique ponts.

No other National Standards are used in parallel with the Eurocodes. There are no restrictions to the use of the Eurocodes Parts.

There is no particular Regulatory Framework in enforcing the use of the Eurocodes in Public Procurement.

No National Annexes are published on 8 Eurocodes Parts (2 on EN 1993, 1 on EN 1997 and 5 on EN 1999). The published National Annexes are not available in English.

4.11 Germany

All Eurocodes Parts except EN 1990-A1 (Annex 2) are published as National Standards in German language. Regulation MLTB 03/2014 introduces 39 Eurocodes Parts as obligatory means for structural design, where all 4 Parts of EN 1996 have co-existence period until 31 December 2015. The Eurocodes Parts dealing with bridges (EN 1002-2, EN 1992-2, EN 1993-2, and EN 1994-2) are implemented by the Federal Ministry of Transport and digital infrastructure (BMVI) and are also obligatory.

Other National Standards are used in parallel with EN 1991-4 (DIN FB 140), EN 1995-1-1 (DIN 1052-10), and with EN 1997-1 (DIN 1054). In these cases the National Regulations and "DIN Fachbericht" complement the Eurocodes Parts.

MLTB 03/2014 restricts the use of Annexes B, C, and D to EN 1990. The use of EN 1991-1-2 is restricted by special conditions for the application of the natural fire models due to lack of experience in Germany. The implementation of the annexes to EN 1991-1-7 is considered as restricted, since they remain informative. The use of another 7 Eurocodes Parts (EN 1992-1-2, EN 1993-1-2, EN 1994-1-2, EN 1995-1-2, EN 1996-1-1, EN 1996-1-2, EN 1996-3) is restricted by special conditions for the application of the general methods of calculation due to lack of experience in Germany.

There is no particular Regulatory Framework in enforcing the use of the Eurocodes in Public Procurement.

No National Annexes are published on 5 Eurocodes Parts (EN 1990-A1 (Annex 2), which is not yet published as a standard, EN 1993-3-1, EN 1998-3, EN 1998-4, and EN 1998-6). All the published National Annexes are available in English with the exception of the National Annex to EN 1995-1-1.

4.12 Greece

All Eurocodes Parts are published as National Standards and translated in the National Language. At present the EN Eurocodes are not obligatory in Greece.

A Ministerial Decision has been drafted rendering the use of existing national regulatory documents non-mandatory and allowing the use of Eurocodes as an alternative option, which is the common practice in the case of Public Procurements. The "Common Ministerial Decision" DIPAD/372/30-05-2014 (Official Government Gazette 1457 B/05-06-2014) implies that:

- the Eurocodes in combination with the relevant National Annexes may be used as regulatory documents for the design of new and the assessment and redesign of existing structures, both for public and private (civil engineering) works;
- pre-existing National Codes/Regulations are no more mandatory;
- the Owner/Authority has to choose the framework of regulatory documents for structural design between the two following options: either, the pre-existing regulatory documents, or, the Eurocodes together with their National Annexes;
- a selective use of clauses from both regulatory systems is prohibited.

It is also worth mentioning that the Code Of Structural Interventions (Final Harmonized Text, August 2012), ("KAN.ΕΠΕ" in Greek) is applied in parallel with EN 1998-3 as non-contradictory complementary information.

There is no specific Regulatory Framework enforcing the use of the Eurocodes in Public Procurement. However, Public Authorities may allow or enforce the use of the EN

Eurocodes in the tender documents for structural design for the construction projects and this is the common practice.

National Annexes are published to all Eurocodes Parts; there is still no official translation in English.

4.13 Hungary

All Eurocodes Parts are published as National Standards and 37 Parts are translated in the National Language. Their use is voluntary. The Hungarian Building Code refers to the standards as a tool of dimensioning the loadbearing structures. But, similarly to other standards, this reference is not binding.

No other National Standards are used in parallel with the Eurocodes.

There is no Regulatory Framework enforcing the use of the Eurocodes in Public Procurement.

No National Annexes are published to 20 Eurocodes Parts (13 on EN 1993, 3 on EN 1998 and 4 on EN 1999). The National Annexe to EN 1991-1-4 is available in English.

4.14 Ireland

All Eurocodes Parts are published as National Standards in English. The use of the Eurocodes is voluntary. They may be used as a method of indicating compliance with Irish Building Regulations. However, this fact does not preclude the use of other design codes, provided that the relevant requirements of the Regulations are met.

The Irish Building Regulations are accompanied by Technical Guidance Documents (TGDs). TGD A (Structure) and TGD B (Fire Safety) recognise the Eurocodes in principle and facilitate their use with Irish National Annexes. Where works are carried out in accordance with the TGD A, this can be taken as *prima facie* evidence of compliance with the Irish Building Regulations. Due to the withdrawal of conflicting National Codes in 2010, TGD A was updated to make sole reference to the Eurocodes Parts and their National Annexes.

The Structural Eurocodes (and their companion Product and Execution Standards) are obligatory for the design and construction of road structures (including geotechnical works) on all National road schemes. Since March 2010 this obligatory requirement by the Irish National Roads Authority (NRA) encompasses 25 Eurocodes Parts. NRA Interim Advice Note 02/11 was issued by the NRA to implement this requirement.

As regards other National Standards used in parallel with the Eurocodes, references to non-contradictory complementary information were published in 7 Irish National Annexes to harmonise with existing practice. The National Annexes concerned belong to EN 1991-1-1, EN 1991-1-7, EN 1991-2, EN 1995-1-1, and the EN 1996 series. Also, the National Annex to IS EN 1992-1-1 refers to the National Annex to IS EN 206.

The regulation S.I. No. 329 of 2006 provides framework for the use of the Eurocodes in Public Procurement.

No National Annexes are published on 14 Eurocodes Parts (2 on EN 1991, 1 on EN 1992, 4 on EN 1993, 1 on EN 1997 and the EN 1998 series). The published National Annexes are available in English.

4.15 Italy

All Eurocodes Parts are published as National Standards and 37 Parts are translated in the National Language. The use of the Eurocodes is voluntary.

The use of the Eurocodes is restricted by the Ministerial Decrees DM 14.01.2008 and DM 31.07.2012, which define the rules for structural design.

No other National Standards are used in parallel with the Eurocodes, but the rules for structural design are defined in the Ministerial Decrees DM 14.01.2008 and DM 31.07.2012.

There is no Regulatory Framework enforcing the use of the Eurocodes in Public Procurement.

National Annexes are published to all Eurocodes Parts. They are not available in English.

4.16 Latvia

All Eurocodes Parts are published as National Standards and 48 Parts are translated in the National Language. The use of the Eurocodes is voluntary. All Parts of EN 1993, EN 1997, EN 1998 and EN 1999 and 7 Parts belonging to EN 1991, EN 1992, EN 1994 and EN 1995 should be introduced in the legislation in 2015.

There are National Regulations used in parallel with Parts of EN 1990, EN 1991, EN 1992, EN 1995 and EN 1996. No National Regulations are used in parallel with EN 1994.

There is no Regulatory Framework enforcing the use of the Eurocodes in Public Procurement.

No National Annexes are published on 13 Eurocodes Parts (2 on EN 1991, 1 on EN 1992, 5 on EN 1998, and on the entire EN 1999 series). The published National Annexes are not available in English.

4.17 Lithuania

All Eurocodes Parts are published as National Standards and translated in the National Language. The use of the Eurocodes is voluntary. Amendment of the National Regulations to allow the use of the Eurocodes was performed in July 2013.

There are National Regulations on structural design which may be used in parallel with the Eurocodes.

The use of the Eurocodes in Public Procurement is enforced by the Law on Public Procurement of the Republic of Lithuania (Valstybės žinios (Official Gazette) No 77-2985, 2006; No 21-986, 2010) implementing the Directive 2004/18/EC.

National Annexes are published on 58 Eurocodes Parts, there is no National Annex published on EN 1997-2. The published National Annexes are available in English with the exception of 7 National Annexes (EN 1990-A1 (Annex 2), EN 1991-1-3, EN 1991-1-4, EN 1991-1-7, EN 1991-2, EN 1992-1-1, EN 1997-1).

4.18 Luxembourg

All Eurocodes Parts except EN 1990-A1 (Annex 2) are published in English, French and German language. There is no translation available in Luxembourgish. The use of the Eurocodes is not obligatory.

There are National Regulations on structural design which may be used in parallel with the Eurocodes.

There is no Regulatory Framework enforcing the use of the Eurocodes in Public Procurement.

National Annexes are published on all Eurocodes Parts except EN 1990-A1 (Annex 2). The published National Annexes are not available in English.

4.19 Malta

All Eurocodes Parts are published as National Standards. EN 1990 and EN 1991-1-1 are translated in the National Language. The use of the Eurocodes is voluntary.

National Annexes were not published officially by the moment of Malta reply to the enquiry in 2014. The National Annexes on the most important Eurocodes Parts are published for public comment.

Regulatory Framework for Public Procurement is not yet approved by Building Regulations Office.

4.20 Netherlands

All Eurocodes Parts are published as National Standards and 33 Parts are translated in the National Language. All EN Eurocodes Parts except EN 1991-1-6 and EN 1998 series are obligatory means for structural design enforced by separate Decision (Bouwbesluit) for each part. The same Decisions enforce the use of the Eurocodes Parts in Public Procurement.

There are no other National Standards used in parallel with the Eurocodes.

No National Annexes are published on 9 Eurocodes Parts (1 on EN 1993, on EN 1998 series and 2 on EN 1999). 14 National Annexes are available in English. All National Annexes are included in the building regulations.

4.21 Norway

All Eurocodes Parts are published as National Standards and 23 Parts are translated in the National Language. On 26.03.2010 a new Building Code was published, specifically referring to the use of the Eurocodes and of the National Annexes to the Eurocodes Parts. The use of the Eurocodes is not obligatory, because other methods can be chosen after proving that they are technically equivalent.

There are no other National Standards used in parallel with the Eurocodes.

As regards the use of the Eurocodes Parts in Public Procurement, the Directive 2004/18/EC is correctly transposed in Norway.

National Annexes have been published to all Eurocodes Parts. 26 National Annexes are available in English.

4.22 Poland

All Eurocodes Parts are published as National Standards and translated in the National Language except the EN 1998 series. The use of the Eurocodes is voluntary.

The Polish national equivalents of the Eurocodes have status of standards withdrawn. However, other National Standards are used in parallel with most of the Eurocodes Parts with the exception of: EN 1991-1-2, EN 1991-1-7, EN 1992-1-2, EN 1993-1-2, EN 1993-4-3, EN 1993-5, EN 1994-1-2, EN 1995-1-2, EN 1996-1-2, EN 1996-3, EN 1998 series, and EN 1999-1-2. The most of the above cited Parts concern fire design.

Article 30 of the Public Procurement Law (Dz.U.2013.907 z późn. zm.) enforces the use of the Eurocodes Parts in Public Procurement.

National Annexes were published to all Eurocodes Parts except to the EN 1998 series. No National Annexes are available in English.

4.23 Portugal

All EN Eurocodes Parts are published as National Standards. A decision has already been taken to produce Portuguese translations and National Annexes to 38 Eurocodes Parts (39 Parts if counting EN 1990-A1 as a separate Part); a decision about the remaining Parts (mainly concerning EN 1993 series) will be taken later on.

The publication of the Portuguese translation of each Eurocode Part and the publication of the corresponding National Annex is made simultaneously. Currently 19 Eurocodes Parts, translated in Portuguese, and the corresponding National Annexes, have been published.

The Portuguese Government will issue a Decree-Law adopting these Portuguese Standards, together with their National Annexes, as Regulations for the design of structures. This Decree-Law will also establish the period of coexistence of the actual National Regulations for design of structures with the Eurocodes and will enforce their use in Public Procurement.

There are no National Standards used in parallel with the Eurocodes, since in Portugal there are no National Standards on structural design, but rather legislation.

No translations of the National Annexes in English are available.

4.24 Romania

All Eurocodes Parts are published as National Standards and translated in the National Language. 11 Eurocodes Parts are in obligatory use for structural design. It should be noted, that the Regulations cited as enforcing these Parts, afterwards are cited as restricting the use of the same Parts. The Romanian reply identifies 16 Eurocodes Parts as restricted by National Technical Regulations. For the rest of the Parts it is mentioned that they are not restricted, but "EN Eurocodes Parts may be used in Romania as long as their provisions comply with the minimum design requirements/threshold levels/calculation methods, etc. contained by the National Technical Regulations".

The new Romanian Codes keep the format of the previous National Codes, but do not contradict the Eurocodes. If some issue is not covered by the Romanian Codes, one may use any state-of-the-art standard, including the Eurocodes.

There is no Regulatory Framework enforcing the use of the Eurocodes in Public Procurement.

National Annexes were published to all Eurocodes Parts. The National Annexes are available in English.

4.25 Slovakia

All Eurocodes Parts are published as National Standards and translated in the National Language, except EN 1993-1-12, EN 1998-3, EN 1999-1-4, and EN 1999-1-5. The Eurocodes are the only valid system of standards for design of structures in the Slovak Republic starting from 1 April 2010. All National Standards, which were in conflict with the Eurocodes, were withdrawn. The use of the Eurocodes is voluntary.

There is no Regulatory Framework enforcing the use of the Eurocodes in Public Procurement.

National Annexes to all Eurocodes Parts were published only in Slovak language.

4.26 Slovenia

All Eurocodes Parts are published as National Standards and 22 Parts are translated in the National Language. EN 1990, EN 1991 and EN 1998 series are obligatory means for structural design enforced by the "Rules on the mechanical resistance and stability of buildings". The same regulation enforces the use of all Eurocodes Parts in Public Procurement.

No other standards are used in parallel with the Eurocodes.

National Annexes are published on all Eurocodes Parts except EN 1991-2, EN 1996 series and EN 1997-2. The National Annexes are not available in English.

4.27 Spain

It is intended to publish as National Standards all Eurocodes Parts, up to now 44 EN Parts are published as National Standards and EN 1999 series is ratified. The published Eurocodes Parts are translated in the National Language. The use of the Eurocodes is not obligatory.

There is no Regulatory Framework enforcing the use of the Eurocodes in Public Procurement.

There are no National Standards used in parallel with the Eurocodes, since in Spain there are no National Standards on structural design, but rather legislation.

10 National Annexes are published. The published National Annexes are not available in English.

4.28 Sweden

All Eurocodes Parts are published as National Standards and 50 Parts are translated in the National Language. All EN Parts except 13 Parts (EN 1993-3-1, EN 1993-3-2, EN 1993-4-3, EN 1993-5, EN 1996-1-2, EN 1996-3, EN 1997-2, and EN 1998 series), are obligatory means for structural design enforced by regulation BFS 2011:10.

The obligatory Parts are introduced in Public Procurement by Law (2007:1091).

There are no other National Standards used in parallel with the Eurocodes.

National Annexes are published on all 46 obligatory EN Parts. The published National Annexes are available in English.

4.29 Turkey

All EN Eurocodes Parts except EN 1990-A1 (Annex 2) are published as National Standards and 11 Parts are translated in the National Language. The use of the Eurocodes is not obligatory.

There is no Regulatory Framework enforcing the use of the Eurocodes in Public Procurement.

The Eurocodes are used as primary standards when there are no existing Turkish codes. The Turkish Permanent Technical Committee proposed a two-stage-four-year programme for elaboration of National Annexes and Nationally Determined Parameters to the Eurocodes, which is under consideration.

National Annex is published to EN 1991-1-3. It is not available in English.

4.30 United Kingdom

All EN Eurocodes Parts are published as National Standards in English. The Building Regulations in England were amended in 2013 to reference the Eurocodes. However, they are not obligatory.

No other National Standards are used in parallel with the Eurocodes.

There is no Regulatory Framework enforcing the use of the Eurocodes in Public Procurement.

National Annexes are published in English on all Eurocodes Parts except 7 (EN 1993-1-6, EN 1993-1-7, EN 1993-3-2, EN 1993-4-1, EN 1993-4-2, EN 1993-4-3, and 1998-3).

5. Harmonized use of the Eurocodes

5.1 Introduction

The Commission Recommendation on the implementation and use of Eurocodes for construction works and structural construction products indicates that “Member States should, acting in coordination under the direction of the Commission, compare the Nationally Determined Parameters implemented by each Member State and assess their impact as regards the technical differences for works or parts of works. Member States should, at the request of the Commission, change their nationally determined parameters in order to reduce divergence from the recommended values provided by the Eurocodes.”

A Database for the Nationally Determined Parameters (NDPs) was created by DG JRC in the framework of the Administrative Arrangements with DG GROW in view of implementing the concerned parts of the Commission Recommendation on the implementation and use of Eurocodes for construction works and structural construction products. The NDPs Database acts as a platform of notification to the European Commission by the Member States of EU and EFTA on the adopted values of the NDPs. It constitutes the basis for the analysis of the NDPs required by the Commission Recommendation and for the definition of strategies for further convergence.

The upload of the NDPs for each country is made by the National Authority, which may delegate it to the corresponding National Standardization Body. The site has restricted and controlled access and it is administrated by the DG JRC, ELSA Unit.

This section presents the progress of uploading of NDPs and a preliminary statistical analysis of the acceptance of recommended values (RVs) of the Eurocodes.

5.2 Data available in the NDPs Database

In all Eurocodes Parts there are 1,507 Nationally Determined Parameters (NDPs). In a number of cases, an NDP cannot be represented by a single numerical value. In fact, many NDPs take the form of tables, graphs, acceptance of the recommended procedure, choice of calculation approach among given alternatives, introduction of a new procedure, etc.

The full set of expected data on all Eurocodes Parts should contain 42,804 NDPs provided by a total of 29 countries considered in the analysis. These countries are the 28 EU Member States and Norway, which is an EFTA Member State that made considerable progresses in the uploading to the NDPs Database. Taking into account the answers to the enquiry on the implementation of the Eurocodes in the EU Member States, the set of expected data has been recalculated with reference to the National Annexes (NAs) published or to be published by the referred Member States and corresponds now to 37,003 NDPs. Thereby, by September 2015, there is a total of 21,699 NDPs available for data post-processing, representing approximately 59% out of all expected data based on published, or expected to be published National Annexes.

Figure 5.1 illustrates the geographical distribution of the percentage of uploaded NDPs in the Database by September 2015. It shows that 13 countries uploaded more than 75% of their NDPs, and three EU Member States are not uploading yet; they are Croatia, Greece and Malta.

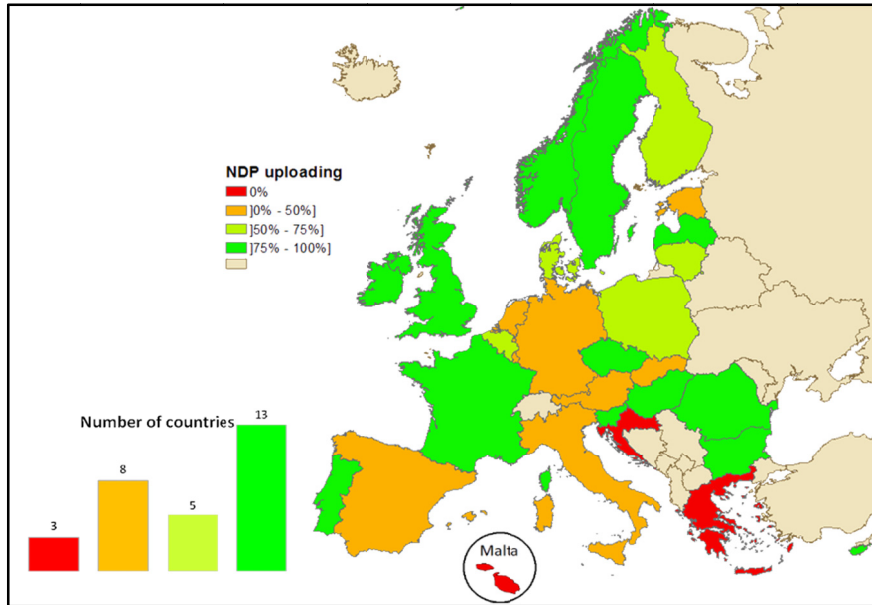


Figure 5.1. Geographical distribution of the percentage of uploaded NDPs in the Database

As by September 2015, the Database contained NDPs for all Eurocodes Parts. Table 5.1 presents the number and percentage of NDPs uploaded in the Database, per Eurocode. The most populated Eurocodes are EN 1992 and EN 1994 with a total of 4,015 and 915 NDPs uploaded, respectively, corresponding to 65% and 64% of the expected NDPs. The least populated Eurocodes are EN 1996 and EN 1997 with 788 and 729 NDPs uploaded, respectively, corresponding to 54% and 53% of the expected NDPs.

Table 5.1 Number and percentage of NDPs uploaded in the Database, per Eurocode

EN 1990	EN 1991	EN 1992	EN 1993	EN 1994	EN 1995	EN 1996	EN 1997	EN 1998	EN 1999	All
622	5,225	4,015	6,066	915	517	788	729	1,587	1,235	21,699
52.6%	57.2%	65.3%	57.3%	64.2%	60.3%	53.9%	53.4%	58.6%	57.7%	58.6%

The next two figures show the progress of uploading in the Database, throughout the last five years, where the red bars mark the percentage of uploaded NDPs that was reached in September 2015. Figure 5.2 shows the progress of uploading of NDPs for each Eurocodes and Figure 5.3 for each country.

From these figures it can be concluded that in September 2015, EN 1992, EN 1994, and EN 1995 reached more than 60% of their expected NDPs. The percentage of uploaded NDPs for EN 1992, EN 1994 and EN 1995 is above the average of 58.6% (indicated by the blue horizontal line in Figure 5.2). EN 1992 presents the highest percentage of uploaded NDPs and EN 1997 the lowest. Furthermore, there are 3 countries that uploaded 100% of their expected NDPs: the Czech Republic, France, Hungary and Ireland, while Bulgaria, Cyprus, Latvia, Norway, Portugal, Romania, Slovenia, Sweden, and the United Kingdom uploaded more than 75% of their NDPs (Figure 5.3).

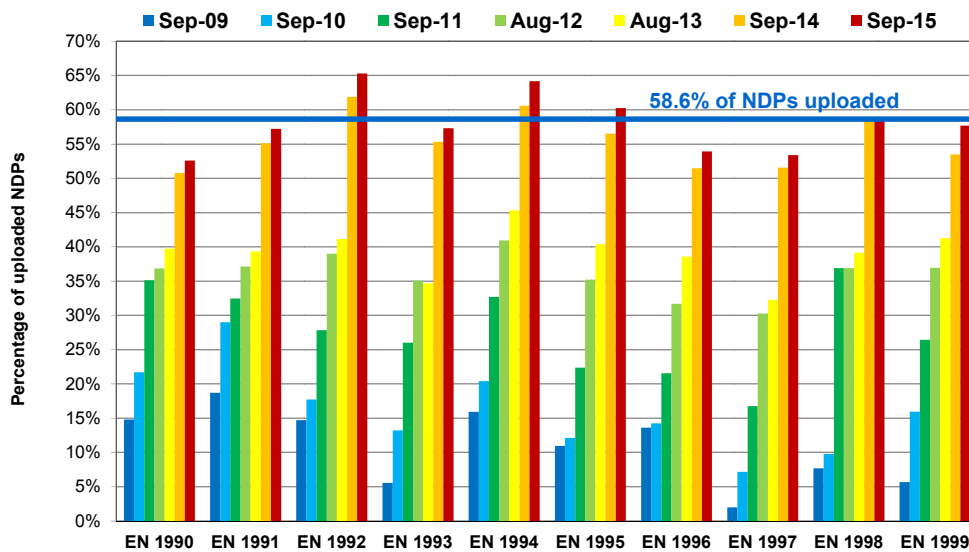


Figure 5.2. Progress of uploading of NDPs for each Eurocode

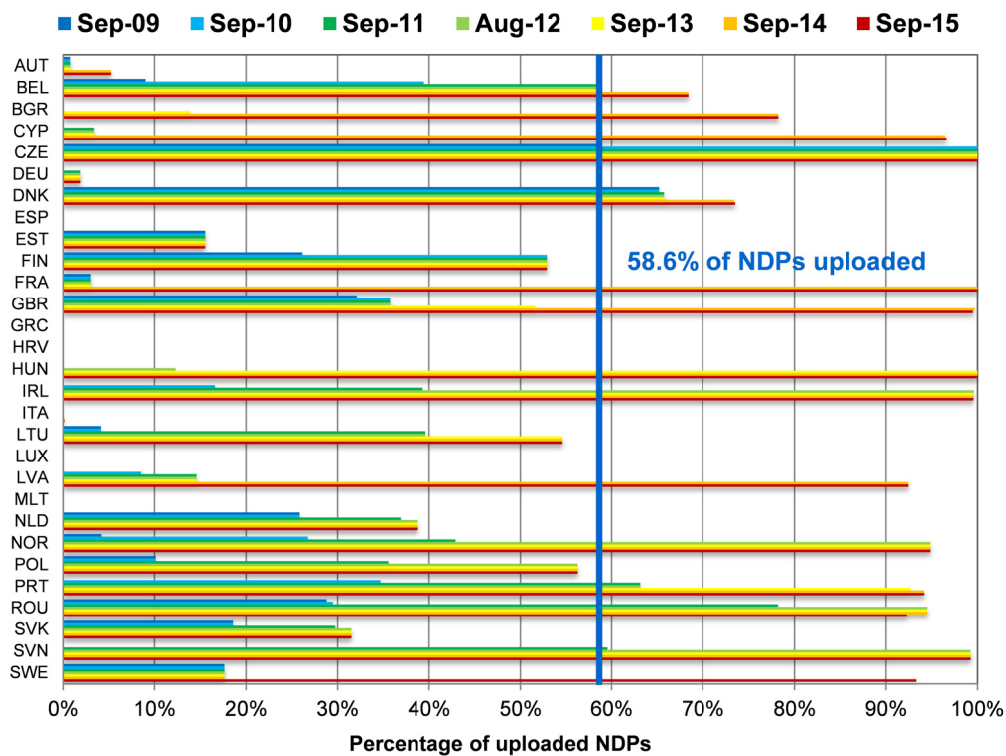


Figure 5.3. Progress of uploading of NDPs for each country

The percentage of NDPs uploaded in the Database for each Eurocodes Part and the number of uploading Member States is shown in Figure 5.4. The green line in this figure marks the total number of NDPs uploaded in the Database, represented as a percentage (58.6%) of all expected data based on the published National Annexes. The Eurocodes Part with the highest percentage of NDPs uploaded is EN 1992-1-1, with 69.6%, closely followed by EN 1991-1-1, with 69.0%. The Parts that have the highest number of

countries uploading are EN 1990-A1 and EN 1992-1-1, showing 21 out of 29 countries uploading. There are other Parts like EN 1991-1-1, EN 1991-1-3, EN 1991-1-5, EN 1994-1-1, and EN 1994-1-2 that have 20 out of 29 countries uploading. These Parts are potential good candidates for the first studies on the reduction of the number of the NDPs in the second generation of the Eurocodes.

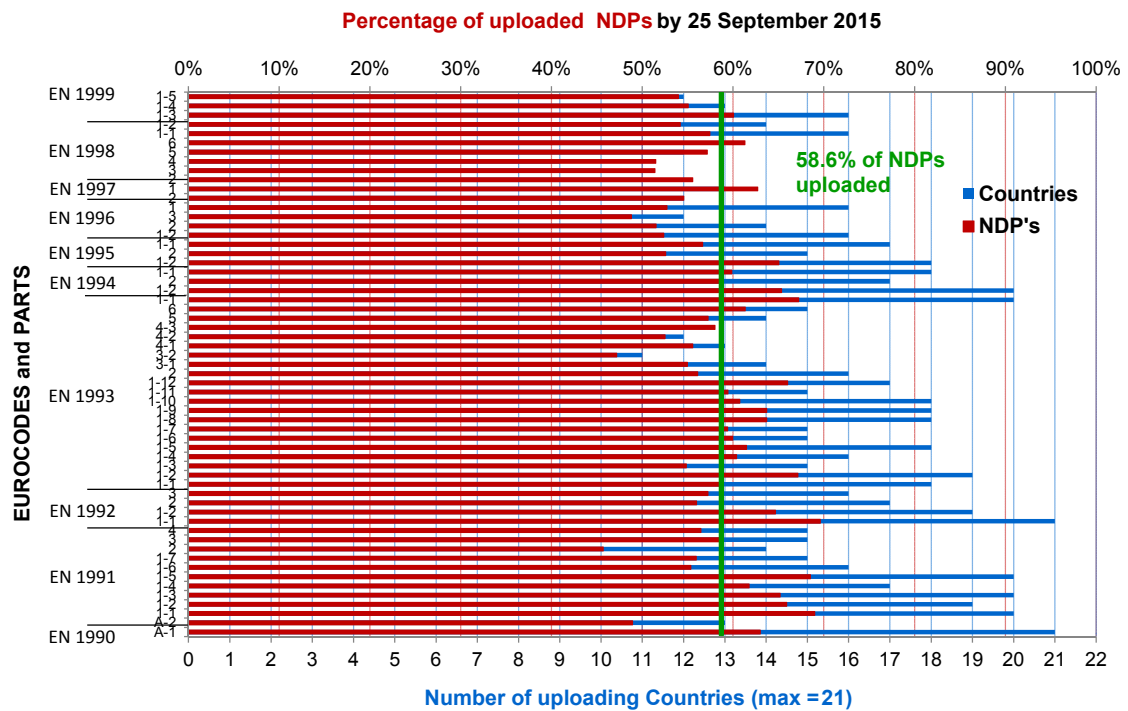


Figure 5.4. Percentage of uploaded NDPs with respect to each Eurocodes Part and number of uploading countries in the Database

Figure 5.5 presents the percentage of National Annexes uploaded in the Database, by Member State.

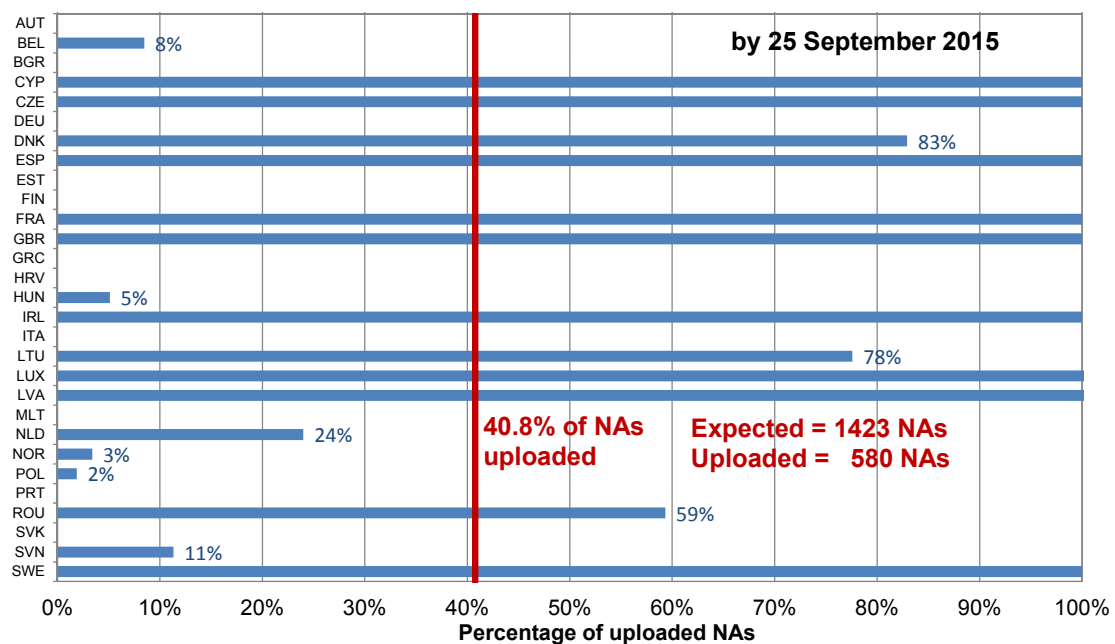


Figure 5.5. Progress of uploading of NAs for each EU Member State

The mean percentage of uploading of National Annexes is 41%, considerably lower than the percentage of uploading of NDPs. The graph also shows that Cyprus, the Czech Republic, France, Ireland, Luxembourg, Latvia, Spain, Sweden, and the United Kingdom uploaded 100% of the expected National Annexes.

5.3 Acceptance of recommended values

The presented analysis should be considered as preliminary, since the available data for post processing represents approximately 61% out of all expected NDPs that have recommended values, and cannot be treated as final. One should recall that the available data represents 58.6% of all NDPs (with and without recommended value).

The preliminary analysis shows that the mean acceptance rate of recommended values for all Eurocodes is 74%, resulting from a total of 9,496 RVs accepted in 12,808 NDPs uploaded, meaning that in almost three out of four cases the recommended values were accepted.

As illustrated in Figure 5.6, by September 2015, the post-processing of NDPs with recommended value given shows that:

- the mean percentage of acceptance of the recommended values for all NDPs is 74.1%.
- the Eurocodes with higher than the mean percentage of acceptance of the recommended values are EN 1994 with 84.9% of acceptance, EN 1993 with 83.8%, EN 1992 with 78.7% and EN 1999 with 74.9%. These results indicate that one can expect good harmonization in the national adoption of the most widely-used "material Eurocodes" EN 1992 and EN 1993;
- the Eurocode with the lowest percentage of acceptance of the recommended values is EN 1997 with 47.4% of acceptance, followed by EN 1990 with 51.1% of acceptance.

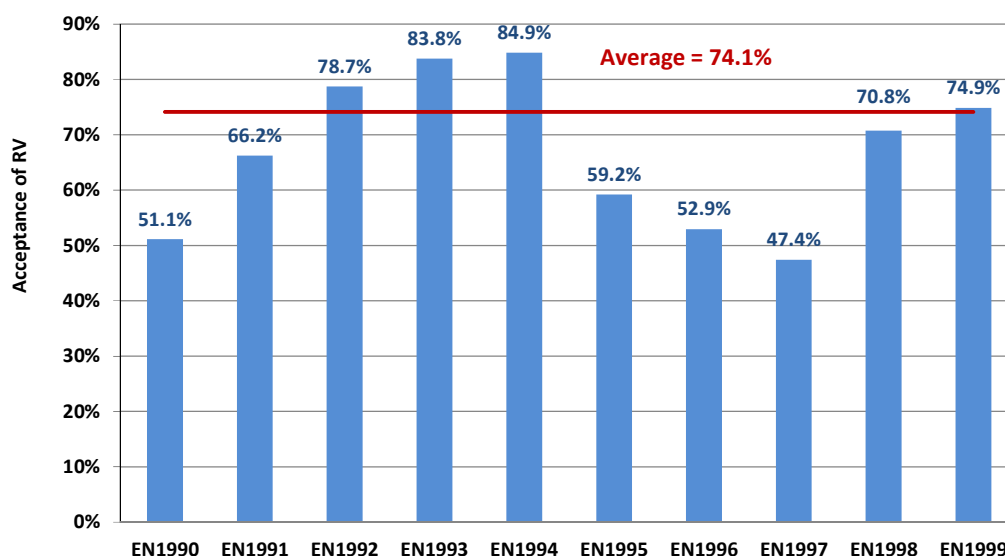


Figure 5.6. Percentage of acceptance of the recommended values for each Eurocode

The total number of uploaded NDPs with recommended value and the number of accepted recommended values for each Member State is presented in Figure 5.7. The percentage of acceptance of uploaded NDPs with RV, for the countries that have uploaded more than 75% of their NDPs, is shown Figure 5.8. One should recall that the percentage of upload was calculated on the basis of the published National Annexes by each country (see table A1.3a). For instance, in the case of Portugal, the percentage of upload of the NDPs is calculated on the basis of 19 National Annexes published.

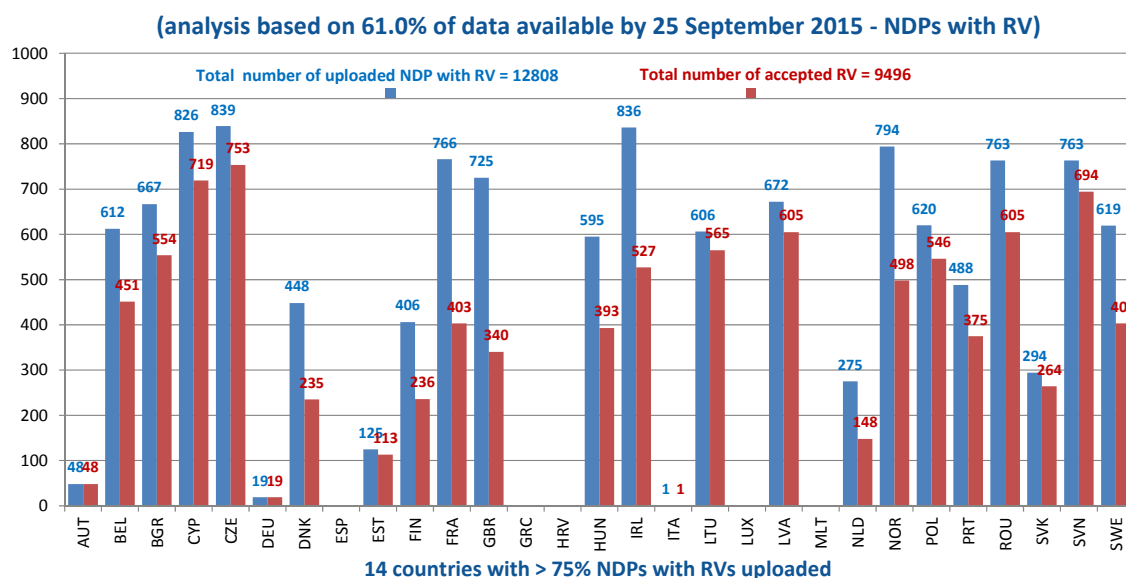


Figure 5.7. Number of uploaded NDPs with RV and of accepted RV, by country

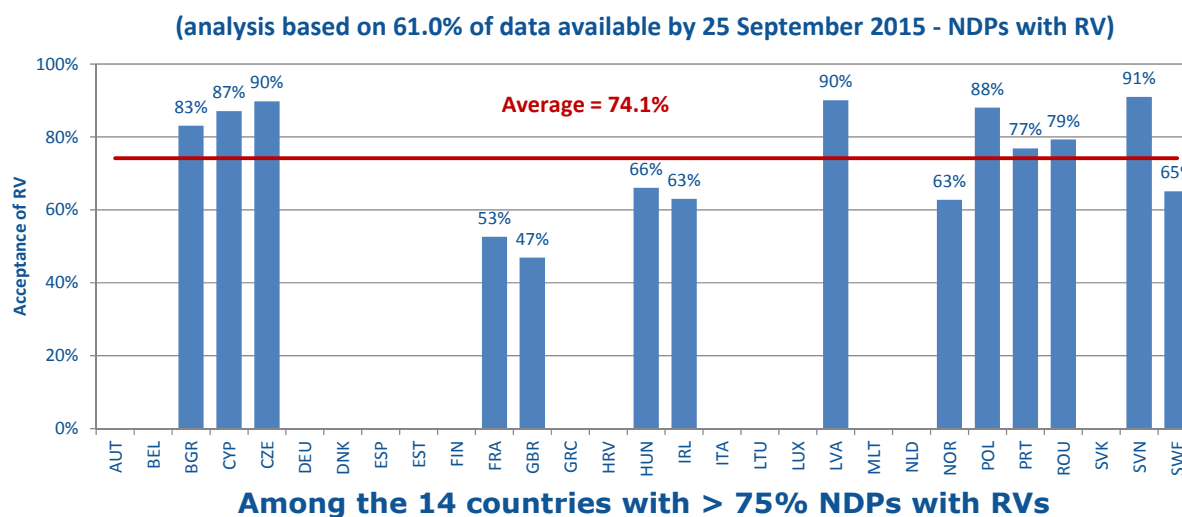


Figure 5.8. Percentage of acceptance of uploaded NDPs with RV, by country that uploaded more than 75% of their NDPs

Among the 14 countries that uploaded more than 75% of their NDPs that have RV, there are eight countries with an acceptance rate higher than the average (Bulgaria, Cyprus, Czech Republic, Latvia, Poland, Portugal, Romania and Slovenia). The country with the highest rate of acceptance of the RVs is Slovenia, with 91%, followed by Czech Republic

and Latvia, both with 90%. The country with the lowest rate of acceptance is the United Kingdom, with 47%, followed by France, with 53%.

As seen from the above preliminary results, the mean rate of acceptance of the recommended values of almost 75% is quite high, which is an essential prerequisite for the harmonized implementation of the Eurocodes. A more detailed analysis of the harmonization achieved by Eurocodes Part, type of NDP (e.g. acceptance of the recommended procedure, choice of calculation approach among given alternatives, introduction of a new procedure, etc.) is underway and will serve as a basis of a Commission report on the harmonized use of the Eurocodes, planned for 2016.

6. Concluding remarks

All EU Member States and Norway published as National Standards 100% of the Eurocodes Parts, except Germany and Luxembourg, which did not publish EN 1990-A1 (Annex 2) and Spain, which published or ratified 83% of the Eurocodes Parts. The above result shows that the Eurocodes are already accepted as National Standards in Europe. In three out of four countries more than 80% of the published Eurocodes Parts are available in the National Language or in one of the official National Languages.

90% of the considered in the analysis countries published National Annexes to more than 70% of all Eurocodes Parts, which is a very good progress in enforcing the use of the Eurocodes. By 2015 the amount of the published National Annexes reached 83% of the total, as shown in Figure 6.1.

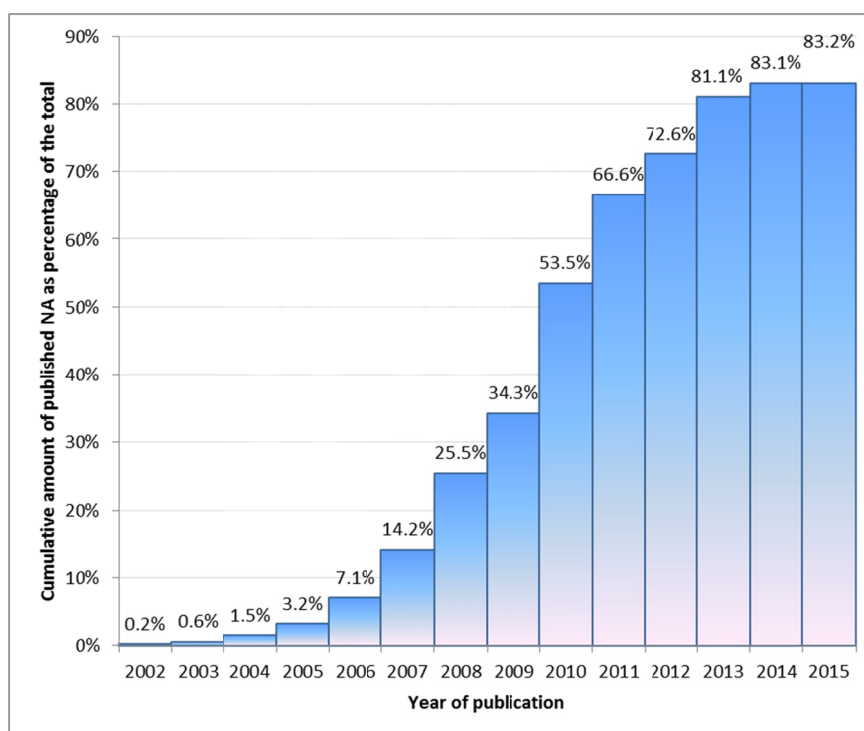


Figure 6.1. Cumulative amount of the National Annexes published in the period 2002-2015 as percentage of the total

In the same time faster progress is expected from Malta, Spain and Portugal, which published National Annexes to less than one-third of the Eurocodes Parts. In almost 40% of the considered in the analysis countries more than 80% of the published National Annexes are available in English. To facilitate the trans-border exchange of construction services and products in Europe, more efforts are shall be directed in the future to translation of the National Annexes in English.

There are no National Standards used in parallel with the Eurocodes Parts in 80% of the countries included in the analysis. However, this positive result shall be considered having in mind the regulatory environment in some EU Member States, where the National Regulations either refer to standards thus making the compliance with them compulsory, or introduce directly a set of design rules. In the latter case no National Standards exist, and hence – there is no need to withdraw conflicting standards. As example of countries, where there are no conflicting standards, but the existing National

Regulations introduce directly design rules which do not fully reflect the entire set of the Eurocodes provisions, one can mention Italy, Portugal, Romania, and Spain.

As example of countries, where the existing National Regulations do not reflect the entire set of the Eurocodes design rules, one can mention Italy, Portugal, Romania, and Spain.

Voluntary application of standards is one of the founding principles of the European standardization. However, the National legislative provisions may refer to standards and even make the compliance with them compulsory. The results of the enquiry show that:

- as regards the need of amendment of the National Regulations to allow use of the Eurocodes, 41% of the analysed countries reported that no amendment was needed, in 14% of the countries amendment was (or will be – in Portugal and Spain) needed for less than 40% of the Eurocodes Parts, and in 45% of the countries amendment was needed for more than 40% of the Eurocodes Parts;
- as regards the obligatory use of the Eurocodes Parts, 55% of the analysed countries declared that none of the Eurocodes Parts is obligatory, in 10% of the countries all Eurocodes Parts are obligatory, and in 35% of the countries different amount of Eurocodes Parts (varying between 6 and 46) is obligatory.

Besides restrictions posed by references to non-contradictory complementary information in Ireland, or by special conditions for the application of some general methods of calculation in Germany, the regulatory environment in Italy and Romania poses strong restrictions to the implementation of the Eurocodes, since:

- in Italy the use of all Eurocodes Parts is restricted by the Ministerial Decrees DM 14.01.2008 and DM 31.07.2012, which define the rules for structural design;
- in Romania 16 Eurocodes Parts are restricted by National Technical Regulations. In the same time, rest of the Eurocodes Parts may be used in Romania as long as their provisions comply with the minimum design requirements/threshold levels/calculation methods, etc. contained by the National Technical Regulations.

Regulatory Framework enforcing the use of the Eurocodes in Public Procurement exists (or will be implemented) in 41% of the analysed countries, another 17% of the countries consider that the Eurocodes are well-placed in the Public Procurement without having a particular Regulatory Framework, thus 60% of the analysed countries reported a good place of the Eurocodes in their Public Procurement.

The above mentioned restrictions imposed by existing National Regulations which define technical rules different from the provisions of the Eurocodes, indicate that the CEN requirement for withdrawal of conflicting standards is not enough to guarantee the enforcement of the Eurocodes in countries where the National Regulations introduce directly design rules. There is need of a Commission Recommendation on the regulatory environment for use of the Eurocodes.

The preliminary results on the acceptance of the recommended values of the Nationally Determined Parameters show that in almost three out of four cases the recommended values were accepted. Such a high mean rate of acceptance is an essential prerequisite for the harmonized implementation of the Eurocodes.

The established state of implementation of the Eurocodes in the EU Member States and Norway is presented in Figure 6.2.

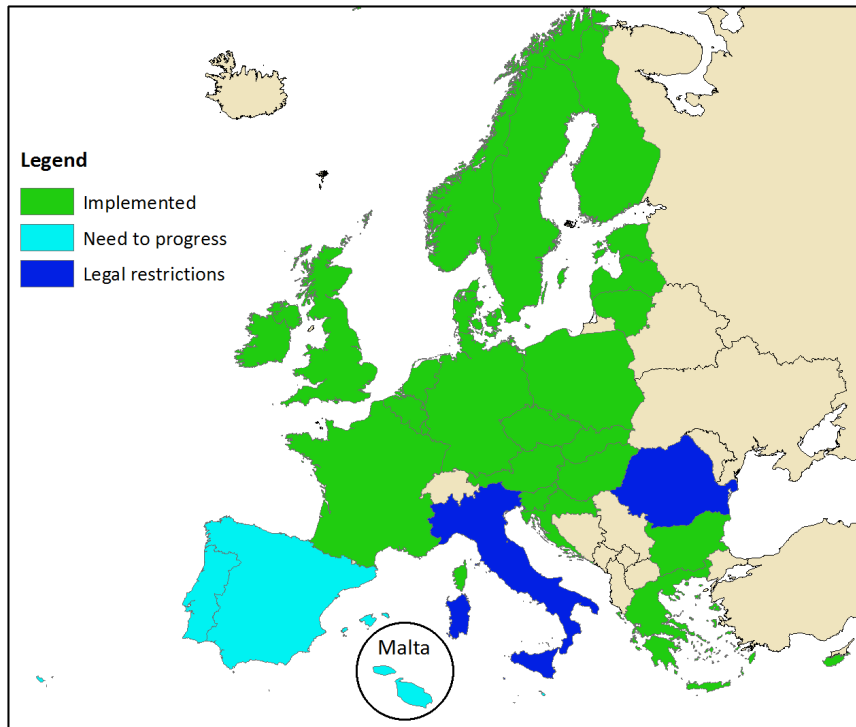


Figure 6.2. State of implementation of the Eurocodes in the EU Member States and Norway

In 83% of the analysed countries the Eurocodes are implemented. Malta, Portugal and Spain should speed the progress in adoption of National Annexes. Italy and Romania should remove the legal restrictions impeding the implementation of the Eurocodes.

Annex 1. Detailed data on implementation of the Eurocodes

Table A1.1. Year of publication of National Standards on the Eurocodes Parts

EN	PART	AUT	BEL	BGR	CYP	CZE	DEU	DNK	ESP	EST	FIN	FRA	GBR	GRC	HRV	HUN	IRL	ITA	LTU	LUX	LVA	MLT	NLD	NOR	POL	PRT	ROU	SVK	SVN	SWE
EN	1990																													
	A1																													
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EN	1991																													
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	1-6																													
	1-7																													
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	3																													
	4																													
	1-1																													
EN	1992																													
	1-2																													
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EN	1993																													
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(*) Parts not published

Table A1.1. Year of publication of National Standards on the Eurocodes Parts




EN	PART	AUT	BEL	BGR	CYP	CZE	DEU	DNK	ESP	EST	FIN	FRA	GBR	GRC	HRV	HUN	IRL	ITA	LTU	LUX	LVA	MLT	NLD	NOR	POL	PRT	ROU	SVK	SVN	SWE
EN 1993	3-1																													
	3-2																													
	4-1																													
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EN 1994	6																													
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EN 1995	2																													
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EN 1996	2																													
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EN 1999	6																													
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	1-2																													
	1-3																													
	1-4																													
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(*) Parts not published

Table A1.2. Eurocodes Parts available in National Language




EN	PART	AUT	BEL	BGR	CYP	CZE	DEU	DNK	ESP	EST	FIN	FRA	GBR	GRC	HRV	HUN	IRL	ITA	LTU	LUX	LVA	MLT	NLD	NOR	POL	PRT	ROU	SVK	SVN	SWE
EN																														
1990	A1																													
	1-1																													
	1-2																													
	1-3																													
	1-4																													
EN	1-5																													
1991	1-6																													
	1-7																													
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	3																													
	4																													
	1-1																													
EN	1-2																													
1992	2																													
	3																													
	1-1																													
	1-2																													
	1-3																													
	1-4																													
	1-5																													
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EN	1-7																													
1993	1-8																													
	1-9																													
	1-10																													
	1-11																													
	1-12																													
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Legend
 YES
 NO
 N/A(*)

(*) Non-applicable (Parts are not published)

Table A1.2. Eurocodes Parts available in National Language

EN	PART	AUT	BEL	BGR	CYP	CZE	DEU	DNK	ESP	EST	FIN	FRA	GBR	GRC	HRV	HUN	IRL	ITA	LTU	LUX	LVA	MLT	NLD	NOR	POL	PRT	ROU	SVK	SVN	SWE	
EN 1993	3-1																														
	3-2																														
	4-1																														
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EN 1994	6																														
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EN 1995	1-1																														
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EN 1996	1-1																														
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EN 1998	1																														
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EN 1999	1-1																														
	1-2																														
	1-3																														
	1-4																														
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Legend
 YES
 NO
 N/A(*)

(*) Non-applicable (Parts are not published)

Table A1.3a. Publication of National Annexes on the Eurocodes Parts

EN	PART	AUT	BEL	BGR	CYP	CZE	DEU	DNK	ESP	EST	FIN	FRA	GBR	GRC	HRV	HUN	IRL	ITA	LTU	LUX	LVA	MLT	NLD	NOR	POL	PRT	ROU	SVK	SVN	SWE
EN																														
1990	A1																													
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	1-10																													
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	1-12																													
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Legend

published
N/A ^(*)
NN ^(**)

(*) National Annexes not published

(**) Non-applicable (National standard was not published)

Table A1.3a. Publication of National Annexes on the Eurocodes Parts

EN	PART	AUT	BEL	BGR	CYP	CZE	DEU	DNK	ESP	EST	FIN	FRA	GBR	GRC	HRV	HUN	IRL	ITA	LTU	LUX	LVA	MLT	NLD	NOR	POL	PRT	ROU	SVK	SVN	SWE	
EN 1993	3-1																														
	3-2																														
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EN 1994	6																														
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EN 1995	2																														
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EN 1996	2																														
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EN 1997	1																														
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EN 1998	3																														
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	1-1																														
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EN 1999	1-3																														
	1-4																														
	1-5																														
	1-1																														
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Legend

published
N/A ^(*)
NN ^(**)

(*) National Annexes not published

(**) Non-applicable (National standard was not published)

Table A1.3b. Year of publication of National Annexes on the Eurocodes Parts

EN	PART	AUT	BEL	BGR	CYP	CZE	DEU	DNK	ESP	EST	FIN	FRA	GBR	GRC	HRV	HUN	IRL	ITA	LTU	LUX	LVA	MLT	NLD	NOR	POL	PRT	ROU	SVK	SVN	SWE
EN	1990																													
	A1																													
	1-1																													
	1-2																													
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2002
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2014
2015
N/A(*)
NN(**)

(*) National Annexes not published

(**) Non-applicable (National standard was not published)

Table A1.3b. Year of publication of National Annexes on the Eurocodes Parts

EN	PART	AUT	BEL	BGR	CYP	CZE	DEU	DNK	ESP	EST	FIN	FRA	GBR	GRC	HRV	HUN	IRL	ITA	LTU	LUX	LVA	MLT	NLD	NOR	POL	PRT	ROU	SVK	SVN	SWE
EN 1993	3-1																													
	3-2																													
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EN 1994	6																													
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EN 1995	2																													
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EN 1996	2																													
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EN 1997	2																													
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EN 1998	2																													
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	5																													
EN 1999	6																													
	1-1																													
	1-2																													
	1-3																													
	1-4																													
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(*) National Annexes not published
(**) Non-applicable (National standard was not published)

Table A1.4. Availability of published National Annexes in English

EN	PART	AUT	BEL	BGR	CYP	CZE	DEU	DNK	ESP	EST	FIN	FRA	GBR	GRC	HRV	HUN	IRL	ITA	LTU	LUX	LVA	MLT	NLD	POL	PRT	ROU	SVK	SVN	SWE
EN																													
1990	A1																												
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EN	1-5																												
1991	1-6																												
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EN	1-1																												
1992	1-2																												
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EN	1-7																												
1993	1-8																												
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Legend

YES

NO

N/A (*)

(*) Non-applicable (no National Annex and/or no National standard published)

Table A1.4. Availability of published National Annexes in English

EN	PART	AUT	BEL	BGR	CYP	CZE	DEU	DNK	ESP	EST	FIN	FRA	GBR	GRC	HRV	HUN	IRL	ITA	LTU	LUX	LVA	MLT	NLD	POL	PRT	ROU	SVK	SVN	SWE		
EN 1993	3-1																														
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EN 1994	6																														
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EN 1996	2																														
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EN 1997	2																														
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EN 1998	1																														
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EN 1999	1-1																														
	1-2																														
	1-3																														
	1-4																														
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Legend
 YES
 NO
 N/A^(*)

(*) Non-applicable (no National Annex and/or no National standard published)

Table A1.5. Use of National Standards in parallel with the Eurocodes Parts

EN	PART	AUT	BEL	BGR	CYP	CZE	DEU	DNK	ESP	EST	FIN	FRA	GBR	GRC	HRV	HUN	IRL	ITA	LTU	LUX	LVA	MLT	NLD	NOR	POL	PRT	ROU	SVK	SVN	SWE						
EN	1990																																			
	A1																																			
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Legend
YES
NO
N/A (*)

(*) Not-applicable because in Germany, Luxembourg and Spain there are no National standards published and in Latvia a regulation enforcing these Parts is expected in 2015.

Table A1.5. Use of National Standards in parallel with the Eurocodes Parts

EN	PART	AUT	BEL	BGR	CYP	CZE	DEU	DNK	ESP	EST	FIN	FRA	GBR	GRC	HRV	HUN	IRL	ITA	LTU	LUX	LVA	MLT	NLD	NOR	POL	PRT	ROU	SVK	SVN	SWE						
EN 1993	3-1																																			
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EN 1996	2																																			
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EN 1997	1																																			
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Legend

YES

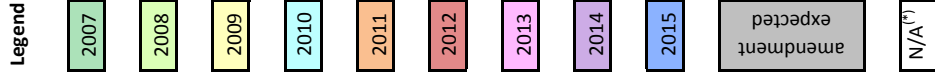
NO

N/A(*)

(*) Not-applicable because in Germany, Luxembourg and Spain there are no National standards published and in Latvia a regulation enforcing these Parts is expected in 2015.

Table A1.6. Year of amendment of National Regulations to allow the use of the Eurocodes Parts

EN	PART	AUT	BEL	BGR	CYP	CZE	DEU	DNK	ESP	EST	FIN	FRA	GBR	GRC	HRV	HUN	IRL	ITA	LTU	LUX	LVA	MLT	NLD	NOR	POL	PRT	ROU	SVK	SVN	SWE
EN	1990																													
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(*) Non-available

Table A1.6. Year of amendment of National Regulations to allow the use of the Eurocodes Parts

EN	PART	AUT	BEL	BGR	CYP	CZE	DEU	DNK	ESP	EST	FIN	FRA	GBR	GRC	HRV	HUN	IRL	ITA	LTU	LUX	LVA	MLT	NLD	NOR	POL	PRT	ROU	SVK	SVN	SWE
EN 1993	3-1																													
	3-2																													
	4-1																													
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EN 1994	6																													
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EN 1995	2																													
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EN 1996	2																													
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EN 1997	2																													
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EN 1998	1																													
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	4																													
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EN 1999	1-1																													
	1-2																													
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(*) Non-available

Table A1.7. Obligatory use of the Eurocodes Parts

EN	PART	AUT	BEL	BGR	CYP	CZE	DEU	DNK	ESP	EST	FIN	FRA	GBR	GRC	HRV	HUN	IRL	ITA	LTU	LUX	LVA	MLT	NLD	NOR	POL	PRT	ROU	SVK	SVN	SWE	
EN 1990	A1																														
EN 1991	1-1																														
	1-2																														
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EN 1992	1-1																														
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	2																														
EN 1993	3																														
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Legend

YES

NO

N/A (*)

(*) Non-applicable (National standard was not published)

Table A1.7. Obligatory use of the Eurocodes Parts

EN	PART	AUT	BEL	BGR	CYP	CZE	DEU	DNK	ESP	EST	FIN	FRA	GBR	GRC	HRV	HUN	IRL	ITA	LTU	LUX	LVA	MLT	NLD	NOR	POL	PRT	ROU	SVK	SVN	SWE							
EN 1993	3-1																																				
	3-2																																				
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EN 1997	3																																				
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EN 1998	1																																				
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Legend

YES




NO

N/A^(*)

(*) Non-applicable (National standard was not published)

Table A1.8. Restrictions on the Eurocodes Parts

EN	PART	AUT	BEL	BGR	CYP	CZE	DEU	DNK	ESP	EST	FIN	FRA	GBR	GRC	HRV	HUN	IRL	ITA	LTU	LUX	LVA	MLT	NLD	NOR	POL	PRT	ROU	SVK	SVN	SWE
EN																														
1990	A1																													
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Legend
 YES
 NO
 N/A (*)

(*) Non-applicable (National standard was not published)

Table A1.8. Restrictions on the Eurocodes Parts

EN	PART	AUT	BEL	BGR	CYP	CZE	DEU	DNK	ESP	EST	FIN	FRA	GBR	GRC	HRV	HUN	IRL	ITA	LTU	LUX	LVA	MLT	NLD	NOR	POL	PRT	ROU	SVK	SVN	SWE							
EN 1993	3-1	NO	NO	NO	NO	NO	NO	NO	NO	NO	NO	NO	NO	NO	NO	NO	NO	NO	NO	NO	NO	NO	NO	NO	NO	NO	NO	NO	NO	NO	NO						
	3-2	NO	NO	NO	NO	NO	NO	NO	NO	NO	NO	NO	NO	NO	NO	NO	NO	NO	NO	NO	NO	NO	NO	NO	NO	NO	NO	NO	NO	NO	NO	NO					
	4-1	NO	NO	NO	NO	NO	NO	NO	NO	NO	NO	NO	NO	NO	NO	NO	NO	NO	NO	NO	NO	NO	NO	NO	NO	NO	NO	NO	NO	NO	NO	NO	NO				
	4-2	NO	NO	NO	NO	NO	NO	NO	NO	NO	NO	NO	NO	NO	NO	NO	NO	NO	NO	NO	NO	NO	NO	NO	NO	NO	NO	NO	NO	NO	NO	NO	NO				
	4-3	NO	NO	NO	NO	NO	NO	NO	NO	NO	NO	NO	NO	NO	NO	NO	NO	NO	NO	NO	NO	NO	NO	NO	NO	NO	NO	NO	NO	NO	NO	NO	NO	NO			
	5	NO	NO	NO	NO	NO	NO	NO	NO	NO	NO	NO	NO	NO	NO	NO	NO	NO	NO	NO	NO	NO	NO	NO	NO	NO	NO	NO	NO	NO	NO	NO	NO	NO			
EN 1994	6	NO	NO	NO	NO	NO	NO	NO	NO	NO	NO	NO	NO	NO	NO	NO	NO	NO	NO	NO	NO	NO	NO	NO	NO	NO	NO	NO	NO	NO	NO	NO	NO				
	1-1	NO	NO	NO	NO	NO	NO	NO	NO	NO	NO	NO	NO	NO	NO	NO	NO	NO	NO	NO	NO	NO	NO	NO	NO	NO	NO	NO	NO	NO	NO	NO	NO				
	1-2	NO	NO	NO	NO	NO	NO	NO	NO	NO	NO	NO	NO	NO	NO	NO	NO	NO	NO	NO	NO	NO	NO	NO	NO	NO	NO	NO	NO	NO	NO	NO	NO	NO			
EN 1995	2	NO	NO	NO	NO	NO	NO	NO	NO	NO	NO	NO	NO	NO	NO	NO	NO	NO	NO	NO	NO	NO	NO	NO	NO	NO	NO	NO	NO	NO	NO	NO	NO	NO	NO		
	1-1	NO	NO	NO	NO	NO	NO	NO	NO	NO	NO	NO	NO	NO	NO	NO	NO	NO	NO	NO	NO	NO	NO	NO	NO	NO	NO	NO	NO	NO	NO	NO	NO	NO	NO		
	1-2	NO	NO	NO	NO	NO	NO	NO	NO	NO	NO	NO	NO	NO	NO	NO	NO	NO	NO	NO	NO	NO	NO	NO	NO	NO	NO	NO	NO	NO	NO	NO	NO	NO	NO		
EN 1996	2	NO	NO	NO	NO	NO	NO	NO	NO	NO	NO	NO	NO	NO	NO	NO	NO	NO	NO	NO	NO	NO	NO	NO	NO	NO	NO	NO	NO	NO	NO	NO	NO	NO	NO	NO	
	3	NO	NO	NO	NO	NO	NO	NO	NO	NO	NO	NO	NO	NO	NO	NO	NO	NO	NO	NO	NO	NO	NO	NO	NO	NO	NO	NO	NO	NO	NO	NO	NO	NO	NO		
	1-1	NO	NO	NO	NO	NO	NO	NO	NO	NO	NO	NO	NO	NO	NO	NO	NO	NO	NO	NO	NO	NO	NO	NO	NO	NO	NO	NO	NO	NO	NO	NO	NO	NO	NO	NO	
EN 1997	1	NO	NO	NO	NO	NO	NO	NO	NO	NO	NO	NO	NO	NO	NO	NO	NO	NO	NO	NO	NO	NO	NO	NO	NO	NO	NO	NO	NO	NO	NO	NO	NO	NO	NO	NO	
	2	NO	NO	NO	NO	NO	NO	NO	NO	NO	NO	NO	NO	NO	NO	NO	NO	NO	NO	NO	NO	NO	NO	NO	NO	NO	NO	NO	NO	NO	NO	NO	NO	NO	NO	NO	
EN 1998	1	NO	NO	NO	NO	NO	NO	NO	NO	NO	NO	NO	NO	NO	NO	NO	NO	NO	NO	NO	NO	NO	NO	NO	NO	NO	NO	NO	NO	NO	NO	NO	NO	NO	NO	NO	
	2	NO	NO	NO	NO	NO	NO	NO	NO	NO	NO	NO	NO	NO	NO	NO	NO	NO	NO	NO	NO	NO	NO	NO	NO	NO	NO	NO	NO	NO	NO	NO	NO	NO	NO	NO	
	3	NO	NO	NO	NO	NO	NO	NO	NO	NO	NO	NO	NO	NO	NO	NO	NO	NO	NO	NO	NO	NO	NO	NO	NO	NO	NO	NO	NO	NO	NO	NO	NO	NO	NO	NO	NO
	4	NO	NO	NO	NO	NO	NO	NO	NO	NO	NO	NO	NO	NO	NO	NO	NO	NO	NO	NO	NO	NO	NO	NO	NO	NO	NO	NO	NO	NO	NO	NO	NO	NO	NO	NO	NO
	5	NO	NO	NO	NO	NO	NO	NO	NO	NO	NO	NO	NO	NO	NO	NO	NO	NO	NO	NO	NO	NO	NO	NO	NO	NO	NO	NO	NO	NO	NO	NO	NO	NO	NO	NO	NO
	6	NO	NO	NO	NO	NO	NO	NO	NO	NO	NO	NO	NO	NO	NO	NO	NO	NO	NO	NO	NO	NO	NO	NO	NO	NO	NO	NO	NO	NO	NO	NO	NO	NO	NO	NO	NO
EN 1999	1-1	NO	NO	NO	NO	NO	NO	NO	NO	NO	NO	NO	NO	NO	NO	NO	NO	NO	NO	NO	NO	NO	NO	NO	NO	NO	NO	NO	NO	NO	NO	NO	NO	NO	NO	NO	
	1-2	NO	NO	NO	NO	NO	NO	NO	NO	NO	NO	NO	NO	NO	NO	NO	NO	NO	NO	NO	NO	NO	NO	NO	NO	NO	NO	NO	NO	NO	NO	NO	NO	NO	NO	NO	NO
	1-3	NO	NO	NO	NO	NO	NO	NO	NO	NO	NO	NO	NO	NO	NO	NO	NO	NO	NO	NO	NO	NO	NO	NO	NO	NO	NO	NO	NO	NO	NO	NO	NO	NO	NO	NO	NO
	1-4	NO	NO	NO	NO	NO	NO	NO	NO	NO	NO	NO	NO	NO	NO	NO	NO	NO	NO	NO	NO	NO	NO	NO	NO	NO	NO	NO	NO	NO	NO	NO	NO	NO	NO	NO	NO
	1-5	NO	NO	NO	NO	NO	NO	NO	NO	NO	NO	NO	NO	NO	NO	NO	NO	NO	NO	NO	NO	NO	NO	NO	NO	NO	NO	NO	NO	NO	NO	NO	NO	NO	NO	NO	NO

Legend
 YES
 NO
 N/A^(*)

(*) Non-applicable (National standard was not published)

Table A1.9. Eurocodes Parts under a Regulatory Framework enforcing their use in Public Procurement

EN	PART	AUT	BEL	BGR	CYP	CZE	DEU	DNK	ESP	EST	FIN	FRA	GBR	GRC	HRV	HUN	IRL	ITA	LTU	LUX	LVA	MLT	NLD	NOR	POL	PRT	ROU	SVK	SVN	SWE
EN																														
1990	A1																													
	1-1																													
	1-2																													
	1-3																													
	1-4																													
EN	1-5																													
1991	1-6																													
	1-7																													
	2																													
	3																													
	4																													
	1-1																													
EN	1-2																													
1992	2																													
	3																													
	1-1																													
	1-2																													
	1-3																													
	1-4																													
	1-5																													
	1-6																													
EN	1-7																													
1993	1-8																													
	1-9																													
	1-10																													
	1-11																													
	1-12																													
	2																													

Legend

YES

NO

N/A (*)

(*) Non-applicable (National standard was not published)

Table A1.9. Eurocodes Parts under a Regulatory Framework enforcing their use in Public Procurement

EN	PART	AUT	BEL	BGR	CYP	CZE	DEU	DNK	ESP	EST	FIN	FRA	GBR	GRC	HRV	HUN	IRL	ITA	LTU	LUX	LVA	MLT	NLD	NOR	POL	PRT	ROU	SVK	SVN	SWE	
EN 1993	3-1																														
	3-2																														
	4-1																														
	4-2																														
	4-3																														
	5																														
EN 1994	6																														
	1-1																														
	1-2																														
	2																														
	1-1																														
	1-2																														
EN 1995	2																														
	1-1																														
	1-2																														
	2																														
	1-1																														
	1-2																														
EN 1996	2																														
	3																														
	1-1																														
	1-2																														
	2																														
	3																														
EN 1997	1																														
	2																														
	1																														
	2																														
	1																														
	2																														
EN 1998	3																														
	4																														
	5																														
	6																														
	1-1																														
	1-2																														
EN 1999	1-3																														
	1-4																														
	1-5																														
	1-1																														
	1-2																														

Legend
YES
NO
N/A (*)

(*) Non-applicable (National standard was not published)

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List of abbreviations and definitions

AA	Administrative Arrangement
CEN	European Committee for Standardisation
DG	Directorate General
EC	European Commission
EN	European Standard (Norme Européenne)
EFTA	European Free Trade Association
EU	European Union
GDP	Gross Domestic Product
DG GROW	Directorate General for Internal Market, Industry, Entrepreneurship, and Small and Medium Enterprises
JRC	Directorate General Joint Research Centre
MS	Member State
NA	National Annex
NDP	Nationally Determined Parameter
NSB	National Standardisation Body
SCC	Standing Committee on Construction
TC250	Technical Committee 250 "Structural Eurocodes"

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