



EUROPEAN UNION



ASEAN Member States' Study Visit to the Joint Research Centre of the European Commission on the Eurocodes

Booklet

Organised by the Enhanced Regional EU-ASEAN Dialogue Instrument (E-READI)

European Commission Joint Research Centre, Ispra, Italy

28-30 May 2024

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BACKGROUND

The Eurocodes Dialogue, implemented under the framework of the Enhanced Regional EU-ASEAN Dialogue Instrument (E-READI) by DG INTPA, aims to raise awareness on the Eurocodes in the ASEAN Member States (AMS). The Eurocodes are state-of-the-art standards for the structural and geotechnical design of buildings and other civil engineering works, like bridges and roads.

The activities referred to the Eurocodes Dialogue in E-READI's Work Plan for 2024-25, build on the general interest in the subject and direct feedback from the stakeholders in the region, and on the results of the 2nd regional workshop on the Eurocodes Dialogue held in Singapore in October 2023. A study visit on the Eurocodes to the European Commission's Joint Research Centre (JRC)-Ispra (Italy) site for a delegation from the ASEAN Member States is organised on 28-30 May 2024. The ASEAN study visit on the Eurocodes will enable the ASEAN experts to benefit from easier access to the experience of European Commission's officials, the Eurocodes Technical Committees' experts (CEN/TC250) and EU experts from National Standardisation Bodies, as well as to showcase examples of the EU Research infrastructure and related research activities.

Objectives of the workshop

The visit is expected to raise awareness of the benefits of using Eurocodes, contributing to understanding how to draft the roadmap for their adoption and facilitating the elaboration of the National Annexes to the Eurocodes. It aims to generate collaboration among national stakeholders and establish mutual cooperation at a regional level, fostering networks among both public and private entities and developing communication modalities for follow-up activities. Additionally, the visit will familiarise participants with the EU Research Infrastructure, consolidating lines of communication between the EU and ASEAN to ensure proper feedback to the JRC on efforts deployed in ASEAN regarding the adoption and implementation of Eurocodes. Showcasing various research facilities will further explore a wider range of collaboration opportunities and strengthen links to the Regional Research Infrastructure Dialogue.

Key Elements of the Workshop

The study visit will include the following elements:

- Workshop on a Roadmap towards Eurocodes national implementation, to assist the ASEAN Member States (AMS) that have expressed their interest in learning the steps towards the Eurocodes adoption, or have requested support on developing the National Annexes to the Eurocodes, with tailor made support by EU experts.
- Meeting with representatives from the European Committee for Standardisation (CEN) to discuss the possibilities for review and adoption of the Eurocodes.
- Demonstration session on the use of JRC's Nationally Determined Parameters (NDP) database.
- Presentation of case studies on the adoption process and implementation of the Eurocodes by EU MS and third countries.
- Visits to selected JRC Research Infrastructures that support EU policy making for the built environment (European Laboratory for Structural Assessment and European Crisis Management Laboratory)

PROGRAMME AND AGENDA

28 May 2024: Day 1

Ispra Time (UTC+2)	Activities	PIC/Speakers	Location
08:10	Shuttle to Joint Research Centre		
08:45 – 09:30	<ol style="list-style-type: none"> 1. Visitors' arrival to JRC-Ispra site 2. Security clearance procedures and distribution of entry badges 	E-READI Team	ESE building meeting room 1 st floor
09:30 – 10:30	Visit to the Europa Science Experience building	JRC Team	Europa Science Experience building
10:30 – 11:00	Coffee break		ESE building
11:00 – 11:15	Welcome addresses and introduction	<p>Matthias Oel, Director, Directorate E - Space, Security & Migration, JRC</p> <p>HE Sujiro Seam, Ambassador of the EU to ASEAN (recorded)</p>	ESE building meeting room 1 st floor
11:15 – 11:35	Introduction of participants and experts in the study visit	ASEAN participants, EU experts, JRC experts, E-READI team	ESE building meeting room 1 st floor
11:35 – 11:45	JRC's Safety and Security of Buildings Unit (JRC.E3)	François Augendre , Head of Unit, Safety and Security of Buildings Unit, JRC	ESE building meeting room 1 st floor
11:45 – 12:00	JRC activities supporting safe, smart and green buildings	Georgios Tsionis , Safety and Security of Buildings Unit, JRC	ESE building meeting room 1 st floor
12:00 – 12:10	EU policies for the construction ecosystem	Manfred Fuchs , DG GROW (online)	ESE building meeting room 1 st floor
12:10 – 12:20	Supporting the EU-ASEAN cooperation through science	Elena Sachez , Member States, Partnerships and International Relations Unit, JRC	ESE building meeting room 1 st floor
12:20 – 12:25	Towards a regional research infrastructure strategy and a talent mobility platform in ASEAN	Aldo Dell'Ariceia , Team Leader, E-READI (online)	ESE building meeting room 1 st floor
12:25 – 13:30	<ol style="list-style-type: none"> 1. Transport by Bus to building 102 2. Lunch 	E-READI Team	Building 102
13:30 – 14:00	The European Standardisation System for the construction sector	Pavlina Karagianni , CEN Management Centre (online)	Building 102 Room E02
14:00 – 15:00	<p>EU MS Case Studies presentations on the implementation of the Eurocodes - challenges and lessons learnt</p> <ol style="list-style-type: none"> 1. Belgium 2. Bulgaria 3. Greece 	<p>(i) Belgium</p> <p>Pierre Spehl, SECO, Senior Civil Engineer; Head of the Belgian Delegation for the Eurocodes</p> <p>(ii) Bulgaria</p> <p>Iren Dabizheva, Managing Director of the Bulgarian Institute for Standardization (BDS)</p> <p>(iii) Greece</p> <p>Nikolaos Malakatas, Chairman CEN/TC250/SC1; Chairman of the Greek Eurocodes Mirror Committee</p>	Building 102 Room E02

Ispra Time (UTC+2)	Activities	PIC/Speakers	Location
15:00 – 15:30	Coffee break		ESE building
15:30 – 15:50	EU MS Case Studies presentations on the implementation of the Eurocodes - continue	(iv) Italy Paolo Formichi , Chairman of CEN/TC250/SC10; University of Pisa	Building 102 Room E02
15:50 – 16:15	Case study on non-EU country's adoption of Eurocodes	Roberta Apostolska , Institute of Earthquake Eng. and Eng. Seismology, UKIM-IZIIS; University Ss Cyril and Methodius, UKIM	Building 102 Room E02
16:15 – 16:45	Panel discussion on the implementation of the Eurocodes - challenges, and lessons learnt	(i) Belgium Pierre Spehl , SECO, Senior Civil Engineer; Head of the Belgian Delegation for the Eurocodes (ii) Bulgaria Iren Dabizheva , Managing Director of the Bulgarian Institute for Standardization (BDS) (iii) Greece Nikolaos Malakatas , Chairman CEN/TC250/SC1; Chairman of the Greek Eurocodes Mirror Committee (iv) Italy Paolo Formichi , Chairman of CEN/TC250/SC10; University of Pisa (v) North Macedonia Roberta Apostolska , Institute of Earthquake Eng. and Eng. Seismology, UKIM-IZIIS; University Ss Cyril and Methodius, UKIM	Building 102 Room E02
16:45 – 17:00	Key take-away points and lessons learnt from the case studies	Adamantia Athanasopoulou , Scientific Project Officer, Safety and Security of Buildings Unit JRC Roberta Apostolska , Institute of Earthquake Eng. and Eng. Seismology, UKIM-IZIIS; University Ss Cyril and Methodius, UKIM	Building 102 Room E02
17:00	Shuttle to the hotel		Building 102 Room E02

Ispra Time (UTC+2)	Activities	PIC/Speakers	Location
08:15	Shuttle to Joint Research Centre		
08:30 – 09:00	Visitors' arrival to JRC-Ispra site; entrance procedure; transportation to Building 102	E-READI Team	
09:00 – 10:00	Visit to the European Crisis Management Laboratory (ECML) <ul style="list-style-type: none"> • Earthquakes: estimating the impact in GDACS (Global Disaster Alert and Coordination System) for the humanitarian response community • Wildfires: emissions and pollution; urban-wildland interface – relation to building codes? • Disaster risk: methods for qualitative and quantitative risk assessment • Partnerships and international initiatives: Coalition for Disaster Resilient Infrastructure 	JRC Team	Building 102
10:00 – 10:30	Coffee break		Building 101-Room 1003
10:30 – 11:00	CEN-CENELEC international cooperation, global outreach adoption of European standards	Zhuohua Chen , Project Manager, European & International Policy	Building 101-Room 1003
11:00 – 12:00	Discussion of AMS country reports on the regulatory and standardisation framework for the construction sector	Brunei Darussalam Cambodia Malaysia Lao Thailand Viet Nam Moderator: Roberta Apostolska , Institute of Earthquake Eng. and Eng. Seismology, UKIM-IZIIS; University Ss Cyril and Methodius, UKIM	Building 101-Room 1003
12:00 – 12:30	Round table discussion: analysis of AMS country reports, proposed steps in the roadmap	Zhuohua Chen , Project Manager, European & International Policy Adamantia Athanasopoulou , Scientific Project Officer, Safety and Security of Buildings Unit JRC Roberta Apostolska , Institute of Earthquake Eng. and Eng. Seismology, UKIM-IZIIS; University Ss Cyril and Methodius, UKIM	Building 101-Room 1003
12:30 – 13:30	Lunch	E-READI Team	Outside Building 101-Room 1003

Ispira Time (UTC+2)	Activities	PIC/Speakers	Location
13:30 – 15:00	Preparation of draft roadmap towards the adoption of the Eurocodes: Group work in parallel sessions (3 groups)	<p>Facilitator: Pierre Spehl, SECO, Senior Civil Engineer; Head of the Belgian Delegation for the Eurocodes</p> <p>Iren Dabizheva, Managing Director of the Bulgarian Institute for Standardization (BDS)</p> <p>Nikolaos Malakatas, Chairman CEN/TC250/SC1; Chairman of the Greek Eurocodes Mirror Committee</p> <p>Paolo Formichi, Chairman of CEN/TC250/SC10; University of Pisa</p> <p>Pietro Croce, Convenor of CEN/TC250 HG Bridges; University of Pisa</p> <p>Zhuohua Chen, Project Manager, European & International Policy</p> <p>Adamantia Athanasopoulou, Scientific Project Officer, Safety and Security of Buildings Unit JRC</p> <p>Roberta Apostolska, Institute of Earthquake Eng. and Eng. Seismology, UKIM-IZIIS; University Ss Cyril and Methodius, UKIM</p>	Building 101 Room 1003, 2002, 2303
15:00 – 15:30	Coffee break (participants to rooms 1003, 2002, 2303 allocated for the breakout sessions)		Building 101- Room 1003
15:30 – 16:10	<p>30-minute breakout sessions (parallel sessions / AMS participants to choose two sessions most appropriate for their profile):</p> <ol style="list-style-type: none"> Meeting with CEN representative and expert from NSB on having access to the EN Eurocodes for review and procedure for ENs adoption. Meeting with experts on steps for national adoption of Eurocodes and collaboration with stakeholders. Technical meeting(s) with EU experts. 	<ol style="list-style-type: none"> Zhuohua Chen, Project Manager, European & International Policy; Iren Dabizheva, Managing Director of the Bulgarian Institute for Standardization (BDS). Pierre Spehl, SECO, Senior Civil Engineer; Head of the Belgian Delegation for the Eurocodes; Nikolaos Malakatas, Chairman CEN/TC250/SC1; Chairman of the Greek Eurocodes Mirror Committee. Paolo Formichi, Chairman of CEN/TC250/SC10; University of Pisa; Pietro Croce, Convenor of CEN/TC250 HG Bridges; University of Pisa 	Building 101 Room 1003, 2002, 2303
16:10 - 16:15	Participants to move to Room 1003		
16:15 – 17:10	<p>Presentation of the group work outcome on the draft roadmap preparation</p> <p><i>Facilitated by AMS rapporteurs and supported by experts</i></p>	<p>Brunei Darussalam, presenter TBC</p> <p>Cambodia, presenter TBC</p> <p>Malaysia, presenter TBC</p> <p>Lao, presenter TBC</p> <p>Thailand, presenter TBC</p> <p>Viet Nam, presenter TBC</p>	Building 101 Room 1003, 2002, 2303
17:10 – 17:15	Wrap-up and closure for the day	<p>Adamantia Athanasopoulou, Scientific Project Officer, Safety and Security of Buildings Unit JRC</p> <p>Roberta Apostolska, Institute of Earthquake Eng. and Eng. Seismology, UKIM-IZIIS; University Ss Cyril and Methodius, UKIM</p>	Building 101- Room 1003
17:10	Shuttle to the hotel		
19:00 – End	Social dinner		Restaurant – Hotel Europa

Ispira Time (UTC+2)	Activities	PIC/Speakers	Location
08:10	Shuttle to Joint Research Centre	E-READI Team	
08:30 – 09:00	Visitors' arrival to JRC-Ispira site; entrance procedure; transportation to Building 101		Building 101- Room 1003
09:00 – 09:30	Designers' experience in using the Eurocodes	Pietro Croce , Convenor of CEN/TC250 HG Bridges; University of Pisa	Building 101- Room 1003
09:30 – 10:00	JRC activities in support of the Eurocodes implementation; the Eurocodes Nationally Determined Parameters	Adamantia Athanasopoulou , Safety and Security of Buildings Unit JRC Francesca Sciarretta , Safety and Security of Buildings Unit JRC	Building 101- Room 1003
10:00 – 10:30	Panel session: supporting designers' practical training needs in using the Eurocodes	Pierre Spehl , SECO, Senior Civil Engineer; Head of the Belgian Delegation for the Eurocodes Pietro Croce , Convenor of CEN/TC250 HG Bridges; University of Pisa Iren Dabizheva , Managing Director of the Bulgarian Institute for Standardization (BDS). Adamantia Athanasopoulou , Safety and Security of Buildings Unit JRC Francesca Sciarretta , Safety and Security of Buildings Unit JRC Moderator: Roberta Apostolska , Institute of Earthquake Eng. and Eng. Seismology, UKIM-IZIIS; University Ss Cyril and Methodius, UKIM	Building 101- Room 1003
10:30 – 11:00	Coffee Break		Outside Building 101 Room 1003
11:00 – 11:30	Reliability background of the Eurocodes	Paolo Formichi , Chairman of CEN/TC250/SC10; University of Pisa	Building 101 Room 1003
11:30 – 12:00	The JRC Nationally Determined Parameters Database – background, status, registration steps, live demonstration	Cristina Polo López , Safety and Security of Buildings Unit JRC	Building 101- Room 1003
12:00 – 12:30	Regional scientific cooperation in support of the Eurocodes development and implementation	Georgios Tsionis , Safety and Security of Buildings Unit, JRC	Building 101- Room 1003

Ispra Time (UTC+2)	Activities	PIC/Speakers	Location
12:30 – 13:45	Lunch		Outside Building 101 Room 1003
13:45 – 14:30	<p>Round table discussion: lessons learnt and next steps for the roadmap elaboration and implementation</p> <p><i>ASEAN participants to share benefits and lessons learnt and further needs for support</i></p>	<p>AMS representatives Roberta Apostolska, Institute of Earthquake Eng. and Eng. Seismology, UKIM-IZIIS; University Ss Cyril and Methodius, UKIM</p> <p>Adamantia Athanasopoulou, Safety and Security of Buildings Unit JRC</p> <p>Nikolaos Malakatas, Chairman CEN/TC250/SC1; Chairman of the Greek Eurocodes Mirror Committee</p> <p>Pierre Spehl, SECO, Senior Civil Engineer; Head of the Belgian Delegation for the Eurocodes</p> <p>Iren Dabizheva, Managing Director of the Bulgarian Institute for Standardization (BDS).</p> <p>Moderator Georgios Tsionis, Safety and Security of Buildings Unit, JRC</p>	Building 101 Room 1003
14:30 – 14:45	Final Remarks and Closure	<p>Georgios Tsionis, Safety and Security of Buildings Unit, JRC</p> <p>Minna Saneri, Key Expert For AEC, E-READI</p>	Building 101 Room 1003
14:45 – 15:30	<p>Coffee Break</p> <p><i>Participants to move to Building 48 for coffee break</i></p>		Building 48
15:30 – 17:00	<p>Visit the European Laboratory for Structural Assessment (ELSA) facilities</p> <p>Participants divided into 2 groups</p> <ul style="list-style-type: none"> • ELSA Reaction Wall • ELSA HopLab 		Building 48
17:10	Departure of visitors to hotel / airport		

SPEAKER BIOS (In the order of speaking)

Mr François Augendre

Head of Unit, Safety and Security of Buildings Unit, European Commission Joint Research Centre (JRC)

François Augendre is a civil engineer, graduated from Ecole Nationale des Ponts et Chaussées (ENPC, France). He is Head of Unit E.3 “Safety and Security of Buildings” at the Joint Research Centre (JRC) in the European Commission. The unit leads the JRC activities on prospecting and assessment of innovative technologies and methods for a safe, sustainable, and inclusive built environment. It supports DG GROW on policies and standards for sustainable construction (implementation and development of the Eurocodes - the European standards for structural design -, adaptation to climate change, design of underground structures, and implementation of a fire safety engineering approach in the national regulatory frameworks). After almost three years at CERN (Geneva) dealing with preparatory works for the setup of LHC (Large Hadron Collider), F. Augendre joined the European Commission in Luxembourg in 1992 and moved to JRC-Ispra in 2011 where he accumulated experience in the infrastructure field, first at operational level as head of unit “Infrastructure” before moving to his current position where he contributes to the enforcement of the European Green deal while improving safety and resilience of the built environment.

Dr Georgios Tsionis

Safety and Security of Buildings Unit, European Commission Joint Research Centre (JRC)

Dr Georgios Tsionis is a scientific officer at the European Commission’s Joint Research Centre. He has 25 years’ experience in the resilience of the built environment, standards and policies for construction, and operation of research infrastructures. He currently leads a project on safe, smart and green buildings, and coordinates the activities for access to the European Laboratory for Structural Assessment.

Ms Elena Sachez

Member States, Partnerships and International Relations Unit, JRC

Ms Elena Sachez is a Policy Officer in the Joint Research Centre of the European Commission in the Unit “Member States Partnerships and International Relations”. Her role is to coordinate and contribute to the JRC relations with international stakeholders, including relevant negotiations.

Mr Manfred Fuchs

European Commission Directorate-General for Internal Market, Industry, Entrepreneurship and SMEs (DG GROW)

Mr Manfred Fuchs is a Policy Senior Assistant in the European Commission’s Directorate-General for Internal Market, Industry, Entrepreneurship and SMEs, Construction Unit. He is responsible for the technical support in the implementation and review of the Construction Product Regulation (CPR) in particular in the areas of standardisation, sustainability and dangerous substances.

Dr Pavlina Karagianni

Standards Manager, The European Committee for Standardization (CEN and CENELEC)

Pavlina Karagianni is a civil engineer with a strong educational background and practical experience in construction sector. The last years, she is highly involved in standardisation as a CEN and CENELEC project manager for construction by assisting and contribute to more than 40 CEN and CENELEC Technical Committees. CEN and CENELEC is working closely with European Commission to ensure the continuous improvement of the standardisation sector.

Mr Pierre Spehl

SECO, Senior Civil Engineer; Head of the Belgian Delegation for the Eurocodes

Pierre Spehl, civil engineer, is a professional consultant with a long experience in building performance, probability-based risk analysis of structural safety, fire safety, effects of wind, earthquake, impacts and vibrations on buildings, and acoustic comfort. He is main author of Belgian (NBN), European (CEN) and international (ISO) standards in the fields of building performance, structural safety, wind actions and smoke extraction installations.

Mrs Iren Dabizheva

Managing Director of Bulgarian Institute for Standardization (BDS)

Iren Dabizheva is a civil and structural engineer. She was working as structural designer in Research and Design Institute ISPROEKT in Sofia from 1973 to 1999. From 1999 she worked in Bulgarian Institute for Standardization as Senior expert, Head of sector “Building construction and materials”, Technical Secretary of BDS/TC 4 “Cement, lime and Gypsum”, BDS/TC 5 “Concrete and mortars” and BDS/TC 56 “Design of building construction (Eurocodes)”. Responsible expert for Construction Products Directive (CPD) 89/106/EC. Since 2010 till now is Managing Director of BDS. She participated in several Workshops for implementation of Eurocodes in Chisinau, Baku, Skopje, Brussels, Tirana etc. as TAIEX expert.

Dr Nikolaos (Nick) Malakatas

CEN/TC250/SC1 Chair, The European Committee for Standardization (CEN and CENELEC)

Dr Nikolaos (Nick) Malakatas, is a civil and structural engineer who spent most of his career in the Greek Administration (Ministry of Infrastructure and Transport) being personally involved in various important bridge and tunnel projects, motorways and transport infrastructure concession projects and has served as Director in various relevant posts. He has been involved with the Eurocodes since the mid-'80s, initially as a national delegate for Greece and since 2008 as the Chairman of CEN/TC250/SC1 for EN 1991. After many years involved in the standardisation at a national level, he became in 2014 the Chairman of the Greek Eurocodes Mirror Committee.

Prof Dr Paolo Formichi

CEN/TC250/SC10 Chair, The European Committee for Standardization (CEN and CENELEC) / University of Pisa

Paolo Formichi, PhD, works at the University of Pisa since 1996 in the field of structural engineering. From 1996 to 1999 has been involved in a wide European research on Snow Loading, led by the University of Pisa. In 1998 started working in CEN standardisation as a member of CEN/TC250/SC1 Actions on Structures. Since 2008 he has been involved in the works for the further development of EN 1990 “Basis of Structural Design” and in 2016 has been appointed as Chairman of CEN/TC250/SC10 “Basis of Structural Design”, contributing to the evolution of EN1990 towards the second generation of the Eurocodes.

Prof Dr Roberta Apostolska

E-READI Eurocodes Senior Expert

Professor of Seismic Design of RC, Masonry and Steel Structures at University Ss Cyril and Methodius, IZiIS, Skopje, RN Macedonia.

She has over 30 years of experience in seismic design and assessment of RC and masonry structures with more than 80 publications in the field. She participated in and was principal investigator of several national, bilateral and international research. She was a seconded expert at the EC for providing scientific and technical contributions in the context of the JRC support work to DG ENTR for the implementation, harmonisation and further development of the Eurocodes, (2013- 2014). Served as an Editor of the SPRINGER book “Experimental Research in Earthquake Engineering” (2015). She is a member of ISRSM – Mirror TC250-TC40 Committee on Eurocodes (2019-now); a Member of the Executive Board of MAEE and a national delegate to the EAEE (2018-now).

Mrs. Zhuohua Chen

Project Manager European & International Policy, The European Committee for Standardization (CEN and CENELEC)

Zhuohua has been working for CEN and CENELEC for more than 8 years on cooperation with partners outside CEN-CENELEC Membership. Currently, she looks after CEN and CENELEC's cooperation with North and Southeast Asia. Throughout her professional life Zhuohua has been involved for more than 15 years in trade facilitation, standardisation and Best Regulatory Practices through European industry associations and EU-funded projects, contributing to the EU's regulatory dialogues with partner countries. She has lived in China, Belgium and the Philippines.

Prof Dr Pietro Croce

University of Pisa, Italy, Convenor of CEN/TC 250 “Structural Eurocodes” Horizontal group “Bridges”

Pietro Croce, PhD, works at Pisa University. He was responsible for the Italian unit for several Leonardo da Vinci projects facilitating the implementation of Eurocodes. He is a member of the CEN/TC 250 Structural Eurocodes CG (Coordination Group). Within CEN/TC 250, he is the convenor of HG-B (Horizontal Group for Bridges) and AHG (Ad Hoc Group) for Crane Supporting Structures, and vice-convenor of WG 'Bridges'. He is also a member of AHGs 'Fatigue' and 'Reliability Background', of Sub-Committees SC1 (SC1) 'Actions' and SC10 'Basis of Design', and WG2 "Existing structures". He is also a member of the Italian Committee for Structural Engineering of UNI. As well, he is member of commissions entrusted by the National Council of Public Works to draft the new Italian Structural Codes, the National Annexes to Eurocodes, and the Guidelines for the seismic assessment of heritage structures.

Dr Adamantia Athanasopoulou, PhD, MEng, MSc, CEng

Safety and Security of Buildings Unit, European Commission Joint Research Centre (JRC)

Dr Adamantia Athanasopoulou is a Project Officer in the Safety and Security of Building Unit of the European Commission's Joint Research Centre (JRC) since 2016 having also served as a research fellow in the period 2009-2012. She undertakes activities supporting scientific studies, analysis and advice on issues related to the built environment, contributing to the JRC's portfolios "Understanding and acting on risks and opportunities of the future" and "Cities and buildings for better lives". Adamantia has long experience supporting EU policies and standards for safe and sustainable construction, including facilitation of and training on the implementation of the European standards for structural design - the Eurocodes. Adamantia is particularly involved in the dissemination, promotion and training for the worldwide use of the Eurocodes.

Dr Francesca Sciarretta

Safety and Security of Buildings Unit, European Commission Joint Research Centre (JRC)

Dr Francesca Sciarretta is a Scientific Project Officer at the Safety and Security of Building Unit of the European Commission's Joint Research Centre (JRC) since 2022. She contributes to the activities in support of EU policies and standards for safe and sustainable construction, including facilitation of the implementation and further development of the Eurocodes.

Dr Cristina S. Polo López

Safety and Security of Buildings Unit, European Commission Joint Research Centre (JRC)

Dr Cristina S. Polo López is a Project Officer at the European Commission's Joint Research Centre, specialising in the Safety and Security of Building Unit. She focuses on sustainability, climate resilience, and safety in the built environment, with a particular emphasis on climate change adaptation and Eurocodes harmonisation for structural design, contributing to sustainable and energy-efficient built environments in Europe.

Cristina holds a Master's degree in Architecture and a PhD from the Universidad Politécnica de Madrid, as well as a Master's Degree in Advanced Building Technology from the same university. With over 15 years of research and teaching experience, she specialises in integrating solar energy into buildings, improving energy efficiency, and sustainable building practices. Her contributions to International Energy Agency (IEA) tasks have been instrumental in promoting sustainable design practices and updating standards for solar energy in buildings. Before joining JRC, Cristina worked as a researcher at the University of Applied Science and Arts of Southern Switzerland and a research institute affiliated with the National Research Council of Italy. Additionally, she has worked as a freelance architect and professor at the Universidad Politécnica de Madrid.

EN EUROCODES: SYNOPSIS

Background

The first EN Eurocodes are a series of 10 European Standards, EN 1990 - EN 1999, (Figure 1) providing a common approach for the design of buildings and other civil engineering works and construction products. The EN Eurocodes are the reference design codes for buildings and other civil engineering works in Europa and are developed under the guidance and co-ordination of CEN Technical Committee 250 (CEN/TC250) "Structural Eurocodes". CEN/TC250 has the overall responsibility for all CEN work on structural design codes¹.

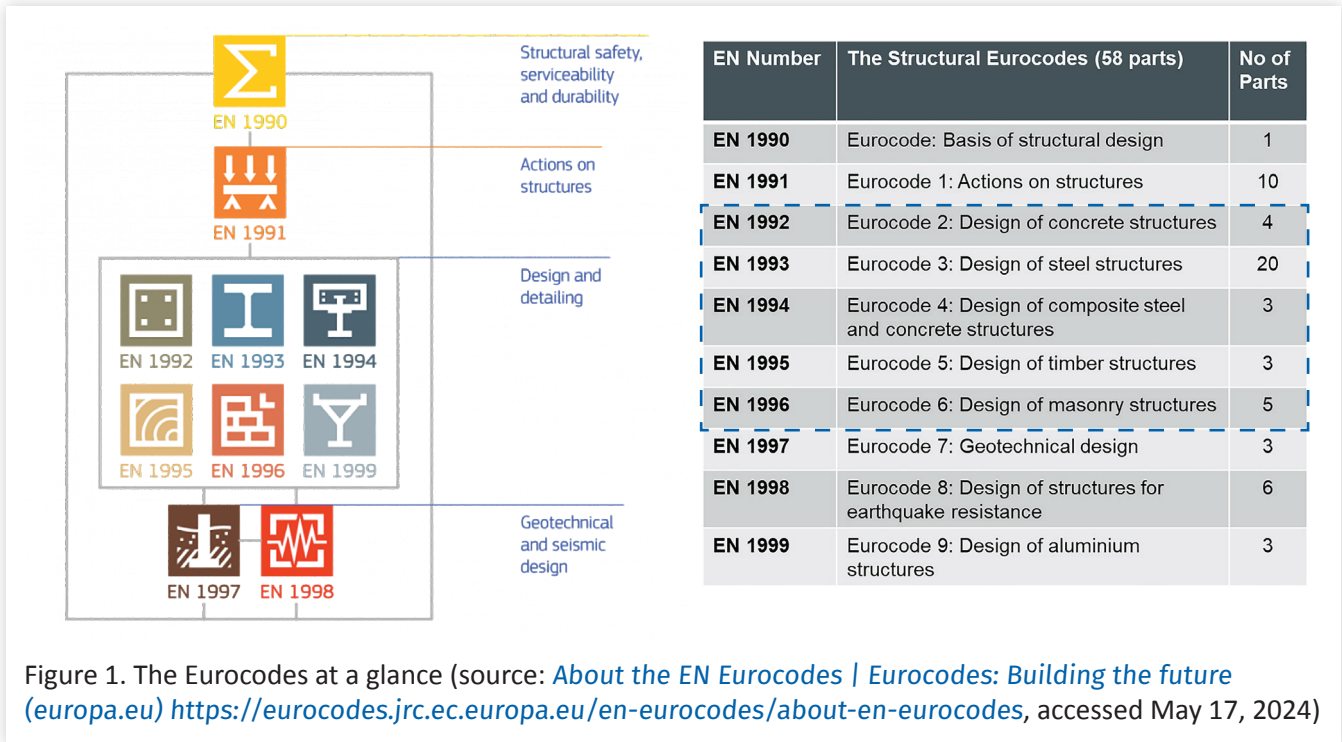


Figure 1. The Eurocodes at a glance (source: [About the EN Eurocodes | Eurocodes: Building the future \(europa.eu\)](https://eurocodes.jrc.ec.europa.eu/en-eurocodes/about-en-eurocodes) <https://eurocodes.jrc.ec.europa.eu/en-eurocodes/about-en-eurocodes>, accessed May 17, 2024)

The EN Eurocodes, as design standards, are part of the comprehensive European Standardisation system relating to the construction sector along with material and product standards, as well as execution and test standards (Figure 2).

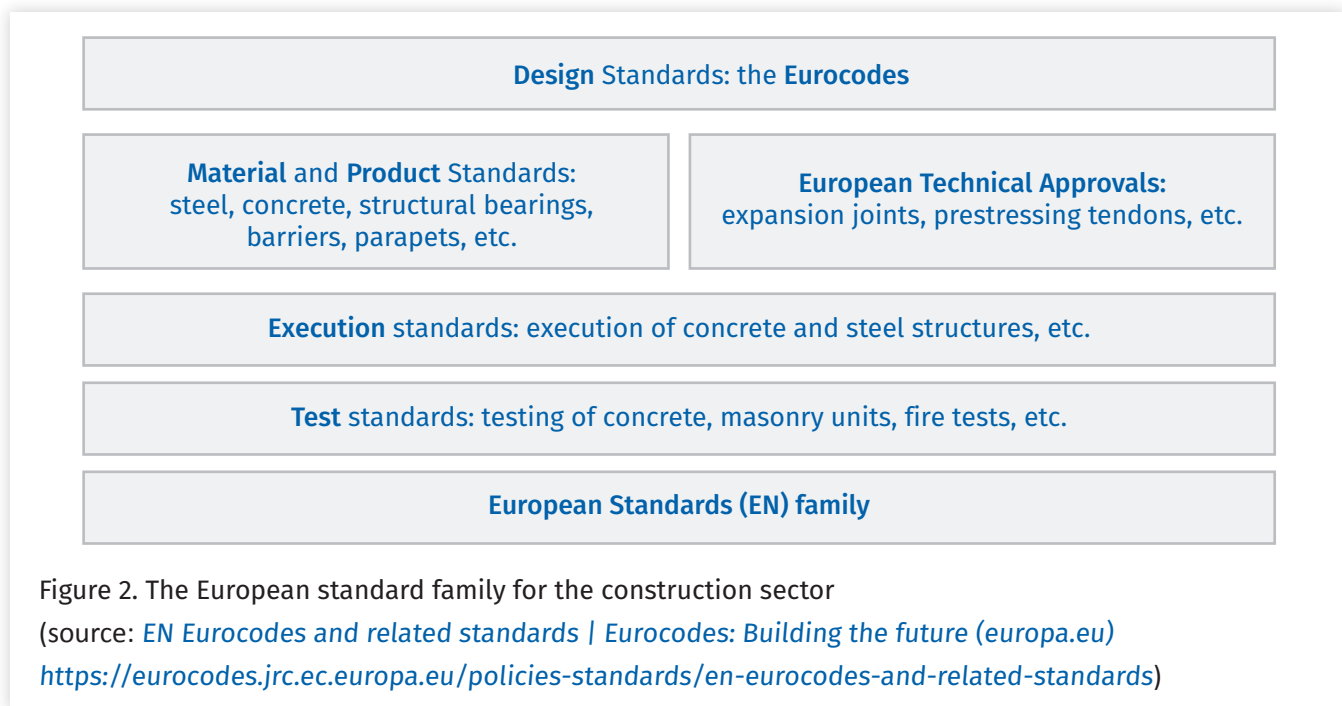
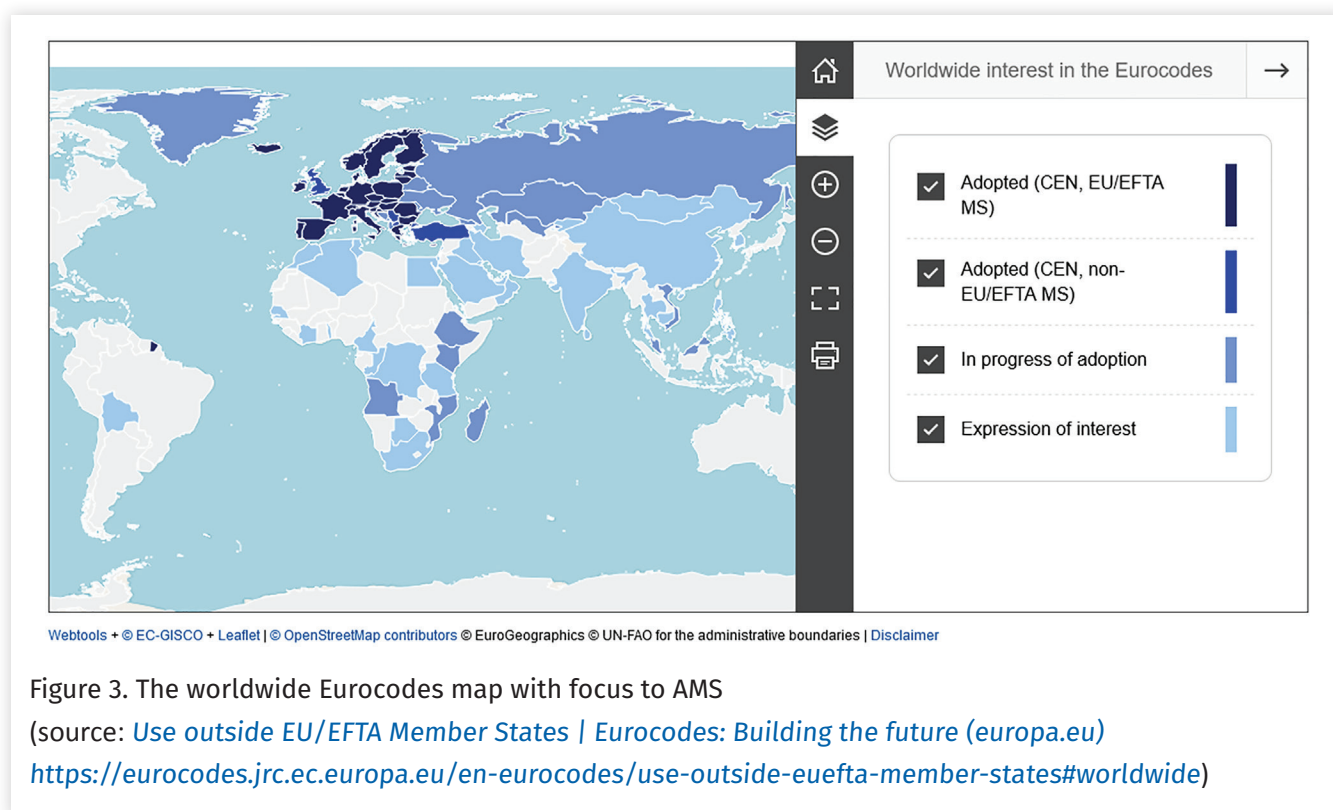


Figure 2. The European standard family for the construction sector (source: [EN Eurocodes and related standards | Eurocodes: Building the future \(europa.eu\)](https://eurocodes.jrc.ec.europa.eu/policies-standards/en-eurocodes-and-related-standards) <https://eurocodes.jrc.ec.europa.eu/policies-standards/en-eurocodes-and-related-standards>)

1. https://standards.cencenelec.eu/dyn/www/f?p=205:7:0:::FSP_ORG_ID:6231&cs=1DE5F6AD2EA1D540EF59F3719FC DFE7FF

The worldwide interest in the Eurocodes

There is a considerable interest in the use of EN Eurocodes outside the EU and many countries have adopted or are in the process of adopting the Eurocodes. The status of worldwide interest in the Eurocodes is visualised in the Eurocodes map (Figure 3). The Joint Research Centre (JRC) has developed the map and updates it based on the information collected.



Second Generation of the Eurocodes

In 2012, DG GROW of the European Commission issued the [Mandate M/515](#) for a detailed work programme for amending existing Eurocodes and extending the scope of structural Eurocodes. The work of CEN/Technical Committee (TC) 250 “Structural Eurocodes” (CEN/TC 250) under the Mandate M/515 started in 2016. CEN/TC 250 successfully completed the largest Standardisation Request under M/515 at the end of 2022. The definitive text of second generation EN Eurocode parts in the official language versions will be distributed by the Central Secretariat to National Standards Bodies (NSBs) as soon as possible after Formal Vote and no later than 30 March 2026 (Date of availability - DAV). All second generation EN Eurocodes will have a Date of publication (DoP) of 30 September 2027. All second generation EN Eurocodes will have a Date of withdrawal (DoW) of 30 March 2028. DoW is the latest date by which national standards conflicting with the EN (i.e. in this case first generation Eurocode parts) have to be withdrawn, (Second Generation of the Eurocodes | Eurocodes: Building the future (europa.eu) <https://eurocodes.jrc.ec.europa.eu/second-generation-eurocodes>).

The works to develop the second generation of the Eurocodes ensure they continue to be the most advanced state-of-the-art codes for structural design in the world. The second generation of the Eurocodes incorporates improvements to the existing suite and extends its scope (Figure 4). The new suite will ensure the standards remain fully up to date by embracing new methods, new materials, and new regulatory and market requirements, namely:

- Promoting further harmonisation and improving the practical use of Eurocodes for day-to-day calculations (ease-of-use);
- Introducing requirements for the assessment, re-use and retrofitting of existing structures;
- Strengthening of requirements for robustness;
- Developing a new Eurocode on structural glass;
- Advancing pre-normative work on fibre-polymer composite structures (FRP), tensioned membrane structures, and respective CEN technical Specifications.

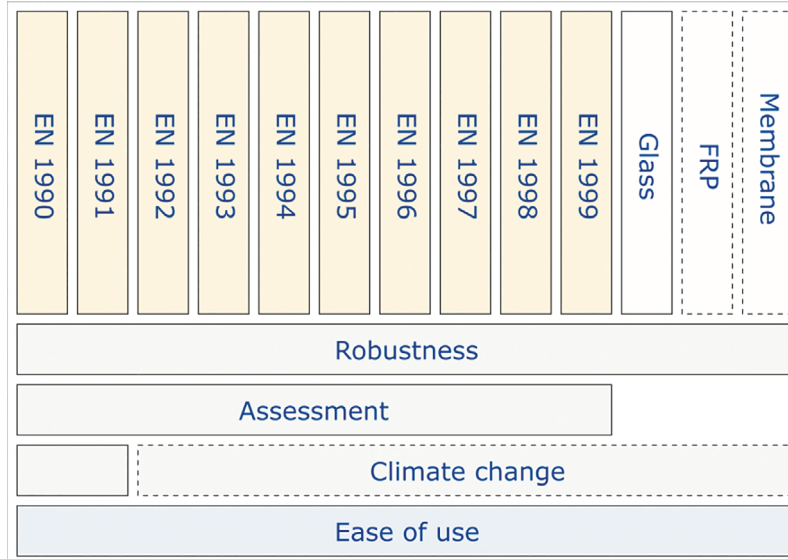


Figure 4. EN Eurocodes – second generation

(source: Denton S., Eurocodes Awareness Workshop Cambodia – 24-25 March 2022, [Second generation of the Eurocodes: what is new? | Eurocodes: Building the future \(europa.eu\)](https://eurocodes.jrc.ec.europa.eu/2nd-generation/second-generation-eurocodes-what-new) <https://eurocodes.jrc.ec.europa.eu/2nd-generation/second-generation-eurocodes-what-new>)

CEN/TC 250 has developed a comprehensive publication schedule and planner to track progress at all stages of the Eurocode development, from M/515 Project Teams to finalisation of text (see figures 5 and 6).

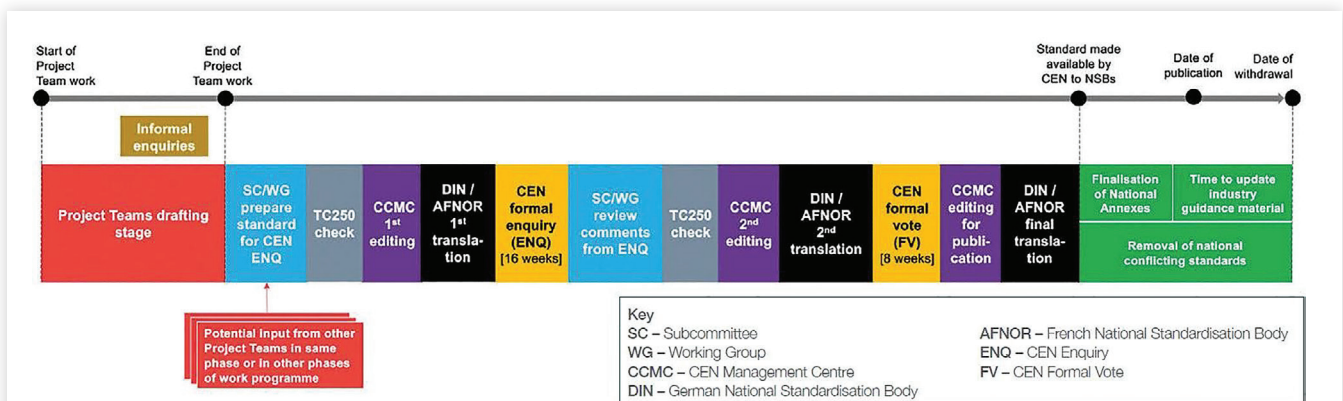


Figure 5. Eurocode development process

(source: [CEN-TC 250_N3659_CEN-TC 250 Letter - Timeline for the evolution of the EN Eurocodes \(2\)_0.pdf \(europa.eu\)](https://eurocodes.jrc.ec.europa.eu/2nd-generation-evolution/timeline-eurocodes-second-generation), [Timeline for the Eurocodes second generation | Eurocodes: Building the future \(europa.eu\)](https://eurocodes.jrc.ec.europa.eu/2nd-generation-evolution/timeline-eurocodes-second-generation) <https://eurocodes.jrc.ec.europa.eu/2nd-generation-evolution/timeline-eurocodes-second-generation>, accessed May 17, 2024)

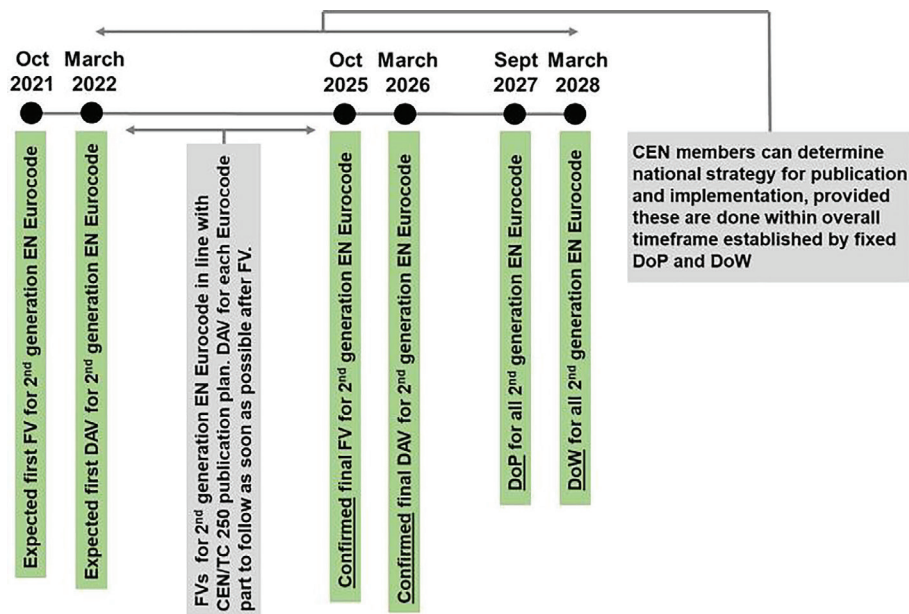


Figure 6. Overview of CEN/TC 250 approach for DoP and DoW

(source: [CEN-TC 250_N3659_CEN-TC 250 Letter - Timeline for the evolution of the EN Eurocodes \(2\)_0.pdf](https://eurocodes.jrc.ec.europa.eu/sites/default/files/2023-09/CEN-TC%20250_N3659_CEN-TC%20250%20Letter%20-%20Timeline%20for%20the%20evolution%20of%20the%20EN%20Eurocodes%20%28%29_0.pdf) (europa.eu))

https://eurocodes.jrc.ec.europa.eu/sites/default/files/2023-09/CEN-TC%20250_N3659_CEN-TC%20250%20Letter%20-%20Timeline%20for%20the%20evolution%20of%20the%20EN%20Eurocodes%20%28%29_0.pdf, accessed May 17, 2024)

For more details related to the timeline for the evaluation of the EN Eurocodes please refer to CEN TC 250 Letter Timeline October 2023 ([CEN-TC 250_N3659_CEN-TC 250 Letter - Timeline for the evolution of the EN Eurocodes \(2\)_0.pdf](https://eurocodes.jrc.ec.europa.eu/sites/default/files/2023-09/CEN-TC%20250_N3659_CEN-TC%20250%20Letter%20-%20Timeline%20for%20the%20evolution%20of%20the%20EN%20Eurocodes%20%28%29_0.pdf) (europa.eu)) https://eurocodes.jrc.ec.europa.eu/sites/default/files/2023-09/CEN-TC%20250_N3659_CEN-TC%20250%20Letter%20-%20Timeline%20for%20the%20evolution%20of%20the%20EN%20Eurocodes%20%28%29_0.pdf).

CEN/TC 250 'Structural Eurocodes' has published a series of 10 non-technical short videos, with support from the British Standards Institution (BSI) and WSP engineering and professional services firm. These videos aim to provide insight into the transition to the Second Generation Eurocodes, presenting their aim and scope, as well as the underlying approach of CEN/TC 250 to the evolution of Eurocodes. A selection of explanatory videos on the Second Generation of the Eurocodes is available on the JRC Eurocodes website at the following link: <https://eurocodes.jrc.ec.europa.eu/2nd-generation/eurocodes-evolution-explained-video-series>.

JOINT RESEARCH CENTRE (JRC), ISPRA

JRC mission

As the science and knowledge service of the European Commission, the Joint Research Centre (JRC) mission is to provide independent, evidence-based science and knowledge, supporting EU policies to positively impact society.

The Joint Research Centre in Ispra is the third biggest European Commission site after Brussels and Luxembourg. Established in 1960 as a nuclear research site, today it is considered as one of Europe's leading research campuses with many laboratories and unique research infrastructures.

Within the construction sector policy, the JRC provides a scientific contribution to the Eurocodes since 1992. The first building designed with Eurocodes was constructed and tested at the European Laboratory for Structural Assessment (ELSA) of the Institute of Protection and Security of Citizens 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 (Figure 7).



Figure 7. The JRC ELSA reaction wall

(source: [European Laboratory for Structural Assessment Reaction Wall - European Commission \(europa.eu\)](https://joint-research-centre.ec.europa.eu/laboratories-z/european-laboratory-structural-assessment-reaction-wall_en) https://joint-research-centre.ec.europa.eu/laboratories-z/european-laboratory-structural-assessment-reaction-wall_en , accessed May 17, 2024)

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 for the national implementation and harmonisation of the Eurocodes, support for the training, international promotion and further development of the Eurocodes**. Since 2015 the scope of the JRC contribution has been extended to support policies and standards for sustainable construction.

The JRC has developed and is regularly updating a series of IT tools to support to the implementation, harmonisation and further development of the Eurocodes, namely:

- JRC Eurocodes web site (Figure 8)
- the Nationally Determined Parameters (NDPs) database - adopted in the EU and EFTA countries implementing the EN Eurocodes and constitutes the basis for the analysis of the NDPs (Figure 9)
- the Background Documents Database - a source of information on the theoretical justification of the Eurocodes technical rules, on the recommendations for the NDPs and on the National decisions about the choice of the NDPs ([Background documents | Eurocodes: Building the future \(europa.eu\)](#) <https://eurocodes.jrc.ec.europa.eu/learning-corner/background-documents>).
- the Centralised Eurocodes Helpdesk with objective to provide a link between users of the Eurocodes, National Standardisation Bodies and CEN/TC250, ([Welcome to the Centralised Eurocodes Helpdesk | Eurocodes: Building the future \(europa.eu\)](#) <https://eurocodes.jrc.ec.europa.eu/resources-tools/welcome-centralised-eurocodes-helpdesk>)

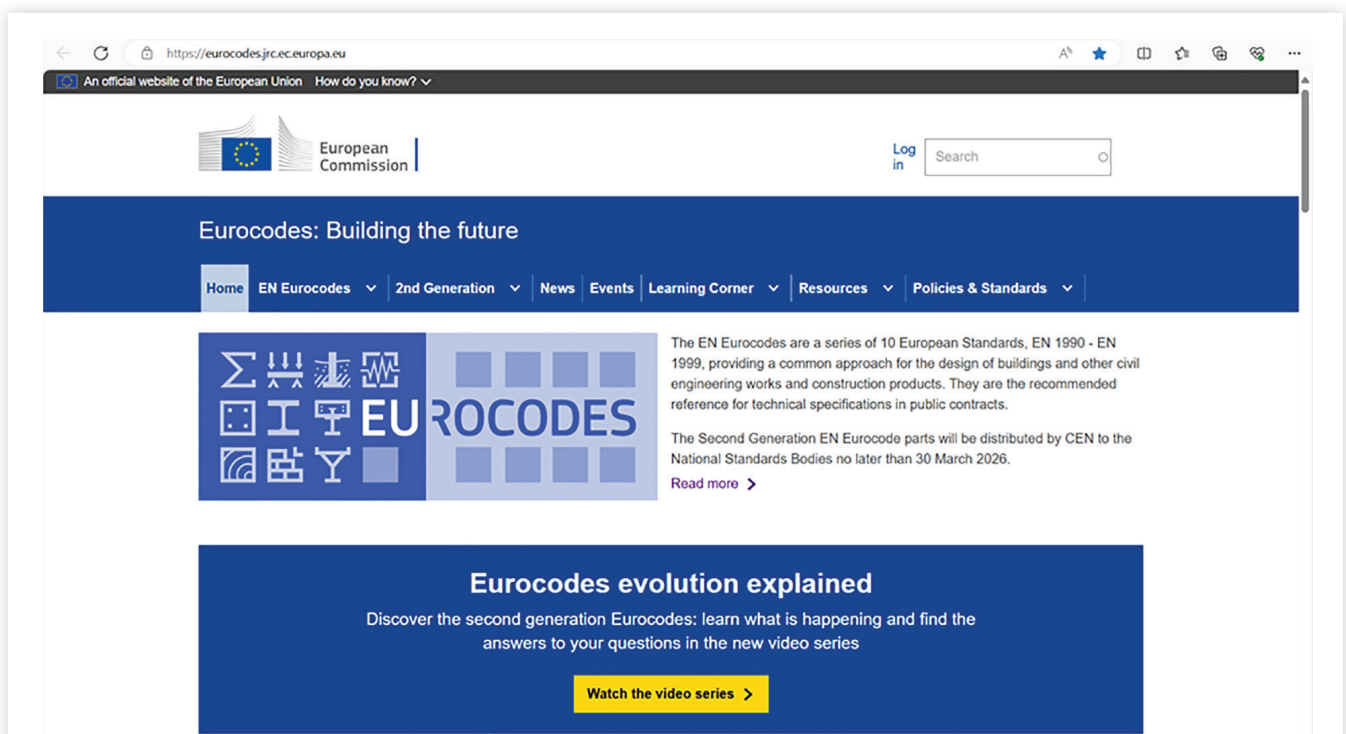


Figure 8. JRC Eurocodes web site - Eurocodes: Building the future)
(source: [Eurocodes Homepage | Eurocodes \(europa.eu\)](#) <https://eurocodes.jrc.ec.europa.eu/>,
accessed May 17, 2024)

DRAFT ROADMAP FOR ADOPTION OF THE EN EUROCODES IN AMS

National implementation of the EN Eurocodes

The national implementation of each Eurocode Part has three phases: 1. the translation period, 2. the national calibration period and 3. the coexistence period (Figure 9).

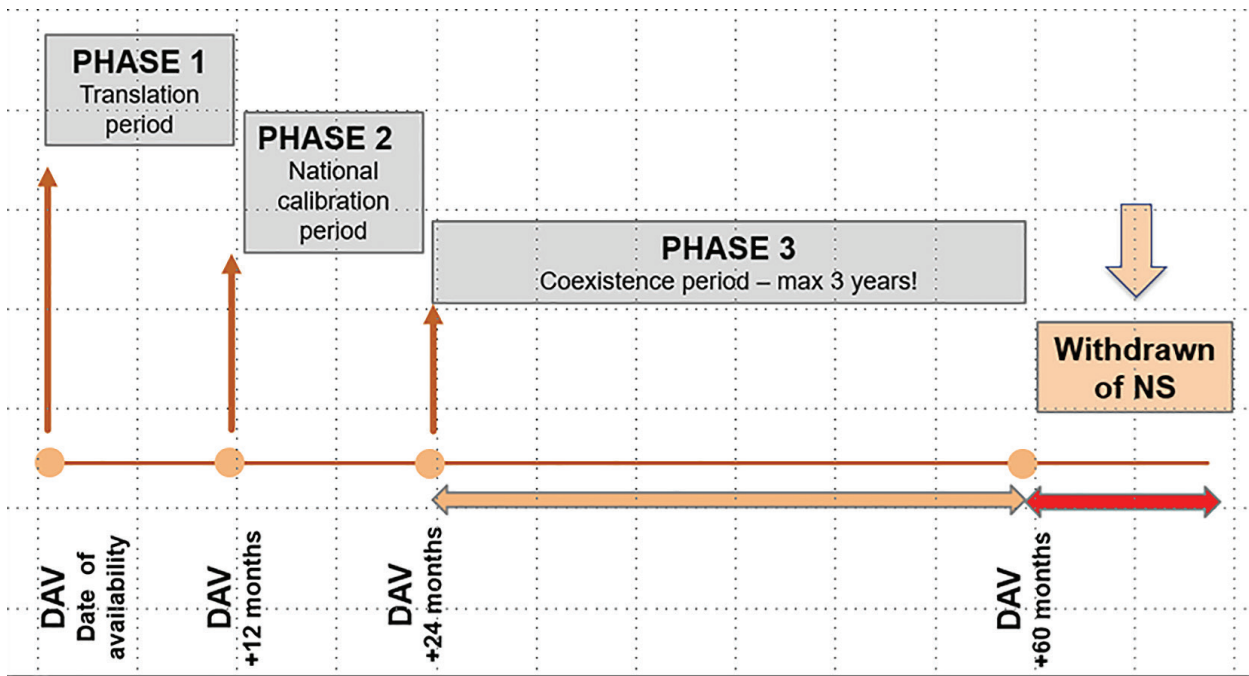


Figure 9. Phases in national implementation of the Eurocodes

The National Standard transposing the EN Eurocode Part, when published by a National Standardisation Body, will be composed of the EN Eurocode text (preceded by a National Title page and by a National Foreword), generally followed by a National Annex (Figure 10). The NSBs should normally publish a National Annex, on behalf of and with the agreement of the national competent authorities.



Figure 10. National publication of EN Eurocode part (source: *National Standards | Eurocodes: Building the future (europa.eu)* <https://eurocodes.jrc.ec.europa.eu/en-eurocodes-implementation/national-standards?id=35>)

Draft Roadmap

The process of adoption, implementation, and promotion of the use of Eurocodes is a complex undertaking, and as such, requires strong commitment by all relevant stakeholders. The table 1 given below represents a general roadmap and emphasises the necessary steps and actions to be taken in the process of adoption and implementation of the Eurocodes by stakeholders. Collaboration at both national and regional levels is a driver in this process.

The proposed draft roadmap will be finalised based on outcomes from anticipated activities within the JRC study visit (panel and roundtable discussions, working group sessions, country reports) and identified specific needs of the AMS.

Table 1. Draft Roadmap (steps, actions and stakeholders) for adoption and implementation of the Eurocodes

STEPS	ACTIVITIES	STAKEHOLDERS
ADOPTION	<ul style="list-style-type: none"> • establish Eurocodes Technical Committees, Task Force etc. • establish liaison with CEN • translate the Eurocode Part in authorized national languages; • set (define) the Nationally Determined Parameters (NDP)s to be applied on national territory, perform calibration studies, comparative analysis; • publish the National Standard transposing the EN Eurocode and the National Annex (NA), containing the national choice on the NDPs and reference to non-contradictory complementary information (NCCI) 	<ul style="list-style-type: none"> • National Standardization Bodies (NSBs) • Universities • Research institutions • Chambers of engineers, engineers' association and institutions • ...
IMPLEMENTATION	<ul style="list-style-type: none"> • create and/or adapt (if necessary) national regulatory framework for implementation of EN Eurocodes and National Annexes published as national standards • promote training on the Eurocodes • update the University curricula on Eurocodes and associated topics • develop a programme of seminars and training for implementation of the EN Eurocodes in everyday engineering practice • revisiting and redefinition of adopted NDPs 	<ul style="list-style-type: none"> • National Regulatory Authorities (NRAs) • Universities • Research institutions • Chambers of engineers, engineers' association and institutions • ...
MAINTENANCE	<ul style="list-style-type: none"> • maintaining the existing Eurocodes (follow-up of the corrigendum, amendments, withdrawing of the standards etc.) • update building technical regulation with new elaborated/corrected/amend standards 	<ul style="list-style-type: none"> • National Standardization Bodies (NSBs) • Technical Committee (s) on Eurocodes • National Regulatory Authorities (NRAs) • ...
UPGRADING	<ul style="list-style-type: none"> • increase awareness of the stakeholders to keep pace with the second generation of the Eurocodes • liaison of Technical Committees on Eurocodes with other responsible bodies for development and adoption of material, test and execution standards in construction sector 	<ul style="list-style-type: none"> • National Standardization Bodies (NSBs) • Technical Committee (s) on Eurocodes • Universities • Research institutions • Chambers of engineers, engineers' association and institutions • ...

Reference

Athanasopoulou A., P. Formichi, P. Spehl, I. Dabizheva, V. Gacesa-Moric, J. Markova, J. A. Calgaro, N. Malakatas, M. Lurvink, P. Croce, R. Apostolska, D. Sumarac, M. L. Sousa, S. Dimova, The implementation of the Eurocodes in the National Regulatory Framework, EUR 29601 EN, Publications Office of the European Union, Luxembourg, 2019, ISBN 978-92-79-98657-4, doi:10.2760/033434, JRC115175.

Links for Further Information on Eurocodes

- European Commission's Joint Research Centre: https://joint-research-centre.ec.europa.eu/index_en
- European Committee on Standardization (CEN): <https://www.cencenelec.eu/>
- Information on Eurocodes: <https://eurocodes.jrc.ec.europa.eu/>
- The Eurocodes Parts: <https://eurocodes.jrc.ec.europa.eu/en-eurocodes/eurocodes-family>
- National implementation of the Eurocodes: <https://eurocodes.jrc.ec.europa.eu/en-eurocodes/eurocodes-national-implementation>
- Use of Eurocodes outside EU: <https://eurocodes.jrc.ec.europa.eu/en-eurocodes/use-outside-euefta-member-states>
- Publications on the Eurocodes: <https://eurocodes.jrc.ec.europa.eu/learning-corner>





