

Workshop

The way forward for the Eurocodes implementation in the Balkans

10 - 11 October 2018

Tirana, Albania

WORKSHOP REPORT



Summary

The Eurocodes are state-of-the-art, Europe-wide standards for all aspects of the structural design and development of buildings, bridges and other construction works. On the 10-11 of October 2018, the workshop “The way forward for the Eurocodes implementation in the Balkans” took place in Tirana, Albania. The workshop was organized by JRC.E.4 “Safety and Security of Buildings Unit” within the JRC Enlargement and Integration Action and was hosted by the General Directorate of Standardization of Albania.

Approximately 100 participants (policy-makers, National Authorities & National Standards Bodies representatives, academics and practitioners) attended this 2-day Eurocodes workshop. Lecturers and participants came from 12 different EU Member States (MS) and 8 non-EU Balkan countries (Albania, Bosnia & Herzegovina, the former Yugoslav Republic of Macedonia, Kosovo, Moldova, Montenegro, Serbia and Turkey).

Distinguished experts gave presentations and participated in the round table discussions including Ashok Ganesh, CEN CENELEC Director for Market Perspectives and Innovation, Jean-Armand Calgaro, Immediate Past Chairman of CEN/TC250 “Structural Eurocodes” and many CEN/TC250 experts actively involved in the development of the Eurocodes and also currently working on the 2nd Generation of the Eurocodes.

The workshop was the first of a new series of Eurocodes dissemination and training activities in the Balkan region. It has been the culmination of JRC’s experience in organizing specialized workshops and providing scientific and technical support to the non-EU Balkan countries for the adoption and implementation of the Eurocodes in the period 2013-2016. The workshop in Tirana was an opportunity to collect and share the experience of EU Member States in the Eurocodes implementation in the national regulatory system through the presentation of case studies. Representatives from the participating Balkan countries also presented the status of the Eurocodes implementation at national level and reported on the challenges faced. The round table discussions were an excellent occasion for exchanging of views, expertise, experience and good practices.

Further, the workshop served as an opportunity for the JRC to present the concept of the Eurocodes Community of Practice in the Balkans (CoP – Eurocodes Balkans). The vision for the CoP– Eurocodes Balkans is to provide continuous support in future actions related to the Eurocodes implementation in the Balkans (e.g. mapping knowledge and identifying gaps, exchanging practical examples of structures designed with the Eurocodes, discussing developments related to the publication of the National Annexes to the Eurocodes, organizing visits and other local events, assisting with regional training activities). The idea was warmly accepted by the participants and dedication for involvement was largely expressed.

Introduction

COM (2018) 65 final of February 6th, 2018¹ stresses that one of key priorities in the enlargement process for the Western Balkan partners is to “properly apply EU rules and standards not only in law but in practice”. As noted in the conclusions by the President of the European Council in March 2017: “[...] *the EU remain committed and engaged at all levels to support them (i.e. the Western Balkans) in conducting EU-oriented reforms and projects.*” COM (2018) 65 final also notes that: “*The Commission will enhance its technical assistance to the Western Balkans to help them align with EU legislation and ensure its effective implementation in practice*”.

The activities described herein are aligned with EU’s commitment to support the Western Balkan partners in view of democratic, political, economic and societal improvements and are contributing to the **Action Plan set in COM (2018) 65 final**². The past and future training activities support the Western Balkan countries and other non-EU countries in the Balkan region to build the capacities to adapt their own national legislation in the field of construction to the EU legal framework.

The interest in the Eurocodes³ adoption and implementation in the Balkan region is based on the opportunity for an advanced common standardization environment, adaptable to the local requirements of each country (i.e. geographical, geological or climatic conditions) and allowing selection of the level of safety. Moreover, adoption and implementation of Eurocodes will help the Candidate Countries to fully implement EU *acquis* at the time of accession and support Potential Candidate Countries (and Horizon 2020 associated countries) to progressively align with the EU *acquis*.

The Joint Research Centre (JRC) of the European Commission has offered specialized workshops and provided scientific and technical support to the non-EU Balkan countries for the adoption and implementation of the Eurocodes within the JRC Enlargement and Integration Action in the period 2013-2016. The focus of past activities was to assess the progress and specific needs for the adoption of the Eurocodes and construction related EN standards in the Balkan region. Eurocodes related dissemination events and workshops carried out, within the context of the E&I Action, include the following events:

- “Adoption of the Eurocodes in the Balkan region”, Milan – JRC, Italy (2013)⁴
- “Building capacities for elaboration of NDPs and NAs in the Balkan region”, Skopje, the former Yugoslav Republic of Macedonia (2014)⁵
- “Elaboration of maps for climatic and seismic actions for structural design in the Balkan region”, Zagreb, Croatia (2015)⁶
- “Current status of the Eurocodes in the Balkan region”, Skopje, the former Yugoslav Republic of Macedonia (2016); side event to the 12th Annual Meeting of CEN&CENELEC⁷.

All countries in the Balkan region reported significant progress in the process of the Eurocodes adoption in 2016 at the workshop in Skopje. At the workshop, it was concluded that most of non-EU countries in the region are going to use the Eurocodes as primary standards. Though several National Standardization Bodies (NSBs) reported that the Eurocodes were adopted as standards in 2016, they were still used in parallel with existing national codes as none of non-EU Balkan countries had implemented the Eurocodes in the national regulatory framework. The Balkan countries stated that they are aware about needs for harmonization of their national legislation and standardization framework for construction with the EU legislation. However, they faced challenges, as there was (and continues to be) a lack of relevant institutional support for the implementation of the Eurocodes in national legislation and standardization framework.

The workshop “The way forward for the Eurocodes implementation in the Balkans” was organized in order to assist non-EU countries in the Balkan region to respond to the challenges faced and facilitate the process of Eurocodes implementation in the national regulatory framework.

¹ Communication from the Commission to the European Parliament, the Council, the European Economic and Social Committee and the Committee of Region: “A credible enlargement perspective for and enhance EU engagement with the Western Balkans” COM(2018) 65 final, 6.2.2018

² Annex to COM(2018) 65 final, 6.2.2018: Action 1 “Strengthening support to the rule of law”

³ The EN Eurocodes are a series of 10 European Standards, EN 1990 - EN 1999, providing a common approach for the design of buildings and other civil engineering works and construction products.

⁴ http://eurocodes.jrc.ec.europa.eu/showpage.php?id=2013_12_WS_Balkan

⁵ http://eurocodes.jrc.ec.europa.eu/showpage.php?id=2014_11_WS_Balkan

⁶ http://eurocodes.jrc.ec.europa.eu/showpage.php?id=2015_10_WS_Balkan

⁷ http://eurocodes.jrc.ec.europa.eu/showpage.php?id=2016_06_WS_Balkan

Workshop objectives

The workshop “The way forward for the Eurocodes implementation in the Balkans” aimed at further assisting the adoption and implementation of the Eurocodes in the non-EU countries in the Balkan region. The workshop was a two-day training event with a two-fold aim: (a) facilitate the implementation of the Eurocodes in the national regulatory framework in the Balkan region, and (b) present the concept on a Community of Practice related to implementation of Eurocodes in the Balkan region. The workshop provided the necessary technical assistance in support of the Eurocodes introduction into the national regulatory environment, which is a basic step in full implementation.

In particular, the workshop presentations and the round table discussion sessions served the following objectives:

- Assess the level of commitment of the National Authorities of the non-EU Balkans countries in adopting the Eurocodes;
- Assess the level of harmonization of national policy/legislation with EU regulatory framework;
- Identify challenges and impediments for the Eurocodes implementation at national regulatory framework level and discuss possible actions;
- Assess the progress of definition of Nationally Determined Parameters (NDP) and identify needs for (possible) review of already defined NDPs;
- Facilitate regional cooperation in the Eurocodes implementation;
- Present case studies of EU countries that have successfully implemented the Eurocodes in the national regulatory framework;
- Facilitate exchange of views, knowledge and information between EU experts and representatives of non-EU countries in the Balkan region.

Additionally, the proposal for the establishment of a regional platform to enhance collaboration within the non-EU Balkan countries on the adoption and implementation of the Eurocodes was first presented at the participants. It is envisaged that this platform – i.e. the Community of Practice (CoP) related to Eurocodes and the Balkan region will provide continuous support in future actions related to Eurocodes implementation in the Balkans. The CoP will be engaged in activities related to the Eurocodes and the Balkans (i.e. map knowledge and identify gaps, exchange practical examples of structures designed with the Eurocodes, discuss developments related to the Nationally Determined Parameters (NDPs) and National Annexes (NAs) publication, organize visits and other local events, assist with regional training activities). The CoP will also assist in process of the Eurocodes maintenance and updating once they will be adopted. An e-forum (or platform) will foster the dissemination of information and activities related to the CoP and facilitate the collaboration among its members – it is envisaged that this platform can be hosted at the JRC Eurocodes website (<http://eurocodes.jrc.ec.europa.eu/home>). The CoP members will also have plenary meetings, i.e. occasions to meet, exchange ideas and pave the way for future work. JRC would be monitoring and assisting the CoP with its activities.

Workshop programme

The workshop lasted two full days and comprised presentations of EU MS case studies as examples in the successful implementation of the Eurocodes in the National Regulatory System and supported sharing EU Member States experience and best practice examples for non-EU Balkan countries. Representatives of the non-EU Balkans countries also reported on the status of the Eurocodes implementation in the countries, focusing on the progress made and the problems faces. The event provided an opportunity to build on the experience, initiatives and difficulties concerning the implementation of the European standards and policies for construction in the Balkan Region. The workshop was concluded with a round-table discussion, where the future steps were discussed. The agenda is shown in Table 1.

Table 1. Workshop programme

Wednesday, 10 October 2018	Welcome and introductory presentations.
09:00 – 09:30	<i>Registration</i>
09:30 – 10:00	Welcome addresses and introduction <i>A. Ganesh – CEN CENELEC, Director for Market Perspectives and Innovation</i> <i>R. Hasanaj –General Directorate of Standardization of Albania</i> <i>S. Dimova - DG JRC, European Commission</i>
10:00 – 10:30	Towards the Second Generation of the Eurocodes <i>P. Formichi– Chairman of CEN/TC250/SC10; University of Pisa</i>
	EU MS case studies. Good practices and guidance.
10:30 – 11:00	EU MS Case Study 1: Bulgaria <i>I. Dabijeva – Bulgarian Institute for Standardization, Managing Director</i>
11:00 – 11:30	<i>Coffee break</i>
11:30 – 12:00	EU MS Case Study 2: Belgium <i>P. Spehl – SECO, Senior Civil Engineer; Head of the Belgian Delegation for the Eurocodes</i>
12:00 – 12:30	EU MS Case Study 3: Czech Republic <i>J. Markova - Czech Technical University in Prague, Klokner Institute, Associate Professor</i>
12:30 – 13:00	EU MS Case Study 4: France <i>J. A. Calgaro – Immediate Past Chairman of CEN/TC250</i>
13:00 – 14:00	<i>Lunch break</i>
14:00 – 14:30	EU MS Case Study 5: Netherlands <i>M. Lurvink – Netherlands Standardization Institute, Standardization Consultant</i>
14:30 – 15:00	EU MS Case Study 6: Greece <i>N. Malakatas - Chairman CEN/TC250/SC1; Chairman of the Greek Eurocodes Mirror Committee</i>
15:00 – 15:30	EU MS Case Study 7: Croatia <i>V. Gaćeša-Morić- Croatian Standards Institute, Head of the General Standardization Department</i>
15:30 – 16:00	Round table discussion
16:00– 16:30	<i>Coffee break</i>
	Eurocodes in the design practice. The Eurocodes international status.
16:30 – 17:00	Designers' experience in using the Eurocodes <i>P. Croce – Convenor of CEN/TC250 HG Bridges; University of Pisa</i>
17:00 – 17:30	The European Construction Sector Observatory <i>K. Karaki - Pricewaterhouse Coopers, Luxembourg, Public Sector Associate</i>
17:30 – 17:50	JRC activities in support to the Eurocodes implementation <i>A. Athanasopoulou - DG JRC, European Commission</i>
17:50 – 18:00	Closure Day 1 <i>S. Dimova - DG JRC, European Commission</i>
Thursday, 11 October 2018	Opportunities in the Balkan region.
09:30 – 10:00	Opening of JRC Research Infrastructures: Opportunities in the Balkan region <i>F. Taucer - DG JRC, European Commission</i>
	Current status of the Eurocodes implementation in the non-EU Balkan region.
10:00 – 11:00	Country report – Albania <i>R. Luka, Albanian Eurocodes Mirror Committee</i> Country report – Bosnia and Herzegovina <i>S. Dzidic, International BURCH University Sarajevo</i>

	<p>Country report – the former Yugoslav Republic of Macedonia <i>V. Hristovski, ISRM TC 40 Technical Secretary</i></p> <p>Country report – Kosovo <i>M. Behluli, Eurocode Technical Committee Kosovo</i></p>
11:00 – 11:30	Coffee break
11:30 – 12:30	<p>Country report – Moldova <i>I. Socol, Institute for Standardization of Moldova</i></p> <p>Country report – Montenegro <i>L. Šoškić, Institute for Standardization of Montenegro</i></p> <p>Country report – Serbia <i>J. Skoković, Institute for Standardization of Serbia</i></p> <p>Country report – Turkey <i>A. Erenler, Ministry of Environment and Urbanisation</i></p>
12:30 – 13:00	<p>Presentation of survey on status of Eurocodes implementation in the Balkan region <i>R. Apostolska - Institute of Earthquake Eng. and Eng. Seismology, UKIM-IZIIS; University Ss Cyril and Methodius, UKIM, Professor</i></p>
13:00 – 14:00	Lunch break
	The way forward for the Eurocodes implementation in the Balkan region.
14:00 – 14:30	<p>View from the European Council of Engineers Chambers <i>D. Šumarac – Executive Board of the European Council of Eng. Chambers, Vice-President; Serbian Chamber of Engineers, President</i></p>
14:30 – 15:00	<p>Views from the Chamber of certified architects and certified engineers of Republic of Macedonia <i>P. Cvetanovski - Chamber of certified architects and certified engineers of Republic of Macedonia, Head of Civil Eng. Department</i></p>
15:00 – 15:30	<p>The concept of the Eurocodes Community of Practice in the Balkan region <i>A. Athanasopoulou - DG JRC, European Commission</i></p>
15:30 – 16:00	Coffee break
16:00 – 16:45	Round table discussion
16:45 – 17:00	<p>Conclusions and closure of the workshop <i>S. Dimova - DG JRC, European Commission</i></p>

Brief description of the workshop presentations

Session 1A: Welcome and Introductory presentations.

Chair: **Jean-Armand Calgaro**

Welcome addresses and introduction

Speakers: **Ashok Ganesh**, CEN CENELC, Director for Market Perspectives and Innovation

Riza Hasanaj, General Directorate of Standardization of Albania, General Director

Silvia Dimova, DG JRC, European Commission

Towards the Second Generation of the Eurocodes

Speaker: **Paolo Formichi**, Chairman of CEN/TC250/SC10; University of Pisa

The Eurocodes enable the design of buildings and civil engineering works and comprise 10 Standards in 58 parts. When they were published, prior to 2007, the first generation of EN Eurocodes were the most comprehensive and technically advanced suite of standards for structural and geotechnical design in the world. In May 2010, the European Commission initiated, in cooperation with CEN, the process of further evolution of the Eurocode system, incorporating both new and revised Eurocodes, and leading to the publication of the second generation of EN Eurocodes. The work programme, set up by CEN as a reply to the EC mandate M/515, was then focused on ensuring the standards remain fully up to date through embracing new methods, new materials, and new regulatory and market requirements. Furthermore, the mandate M/515 focuses on further harmonisation and a major effort to improve the ease of use of the suite of standards for practical users.

The presentation focused on the key aspects of the mandate M/515 and related work being developed by experts under the Commission's mandate, towards the second generation of the Eurocodes, highlighting the benefits in terms of ease-of-use and reduction of Nationally Determined Parameters (NDPs).

Session 1B: Process for the implementation of the Eurocodes in the national regulatory framework: guidance and best practice. Presentation of EU MS Case studies.

Chairs: **Ashok Ganesh**, **Paolo Formichi**

EU MS Case Study 1: Bulgaria

Speaker: **Iren Dabijeva**, Bulgarian Institute for Standardization, Managing Director

European standards for structural design of building and engineering works – the Eurocodes are fully implemented in Bulgaria by the legal act “Ordinance for structural design of building works through European design system” from 29 December 2011”. The Bulgarian Institute for Standardization (BDS) together with the Ministry of Regional Development and Public Works covers a very long way during over 10 years to implement all parts of Eurocodes system translated in Bulgarian and to develop all National Annexes.

The National technical committee BDS/TC 56 “Design of building structures” is mirror to CEN/TC 250 and is responsible for the translation of Eurocodes and the elaboration of National Annexes. In the translation process, the most prominent national experts in structural design and building praxis were attracted. BDS undertook many measures to make Eurocodes system accessible for structural designers in the Chamber of Engineers in the Investment Design, as well as for students and professors in Universities in Bulgaria.

EU MS Case Study 2: Belgium

Speaker: **Pierre Spehl**, SECO, Senior Civil Engineer; Head of the Belgian Delegation for the Eurocodes

This presentations described how the National Annexes of Belgium and Luxembourg to the 58 Eurocodes Parts have been drafted and gave examples of their contents.

In Belgium, 58 working groups have produced first drafts which have been translated in Flemish and French languages, submitted to a public enquiry for 6 months, revised to take account of the comments received, and published in December 2011 as NBN standards.

In Luxembourg, the 58 projects based on the Belgian National Annexes have been drafted in French language by only one Working Group of 6 experts; they have been submitted to a public enquiry for 4 months, then revised by the Working Group with the authors of comments, and finally published in December 2011 as ILNAS standards.

In addition, the presentation explained the role of the Eurocodes and their National Annexes, as National standards, within the legal and regulatory systems of the two countries and of the European Union.

EU MS Case Study 3: Czech Republic

Speaker: **Jana Markova**, Czech Technical University in Prague, Klokner Institute, Associate Professor

The Eurocodes were fully implemented into the system of the Czech standards for structural design in 2010 and the National Determined Parameters (NDPs) were selected. The status of the Czech National Annexes (NA) is informative, only the NDPs have normative status for the design of structures in the Czech Republic. Several original Czech standards were revised as some technical issues were not fully covered in the Eurocodes, e.g. actions on water construction works, atmospheric icing, actions due to trams and metro on bridges, design of structures on the mining subsidence areas and assessment of existing structures.

Recently several standards for static and dynamic testing of structures have been revised to be harmonised with the methodology given in Eurocodes. The standard for design of plastic structures has been also under development. Standards in the Czech Republic have voluntary status, however in contracts (or when required by responsible authorities) they have commonly the normative status. The Building law No. 183/2006 Sb. is valid for buildings and for its operational applications the Directive 168/2009 where 7 basic requirements for construction works are given. The law No. 13/1997 on road communications is used for highways and roads. The Ministry of Transport is the road administration office for highways, the regional offices for road class I, the municipality for road class II and III, and for local communications, it is a council. The second generation of Eurocodes is expected to be prepared for implementation in the Czech system of standards according to the availability of new Parts of Eurocodes. The National Annexes will be developed for operational application in the Czech Republic. It is expected that existing software for structural design will be updated and new textbooks will be prepared for students in technical schools and universities in the Czech Republic.

EU MS Case Study 4: France

Speaker: **Jean-Armand Calgato**, Immediate Past Chairman of CEN/TC250

The use of Eurocodes is now generalized in France. The most recent legal European documents were transposed in the national system. The use of Eurocodes is not systematically imposed by the French legal documents, except in the case of fire safety and the safety against earthquakes. But the Eurocodes are a homogeneous and inseparable set, which entails the obligation to adopt (and to use) globally all of them. The common use by engineers of the Eurocodes asked for a period of adaptation of about 10 years.

In Engineering schools and universities, teaching is based on the Eurocodes, but, unfortunately, this teaching is mainly oriented to the design of individual members and, in some cases, the design of structures like buildings and bridges, more or less sophisticated. Yet, there are new types of works, in particular subterranean works, interfering with ground and former foundations of existing structures. In addition, the creativity of certain audacious architects does not simplify the task of the engineers. In their design companies, young engineers are in charge to solve very complex problems, without, in many cases, the help of a senior Engineer. For that reason, they should have a good competence in several Eurocodes. Consequently, the Eurocodes system should be perfectly homogeneous. The present system is rather homogeneous and we hope that the new generation will have a higher degree of homogeneity, if the volume of Nation annexes can be limited.

EU MS Case Study 5: Netherlands

Speaker: **Mark Lurvink**, Netherlands Standardization Institute, Standardization Consultant

The presentation discusses the implementation of the EN Eurocodes in the Netherlands and the preparation of the Dutch National Annexes.

EU MS Case Study 6: Greece

Speaker: **Nikolaos Malakatas**, Chairman CEN/TC250/SC1; Chairman of the Greek Eurocodes Mirror Committee

The existing regulatory system in Greece for the application of the EN Eurocodes is presented, as well as the general framework of the implementation of standards, codes of practice and technical specifications in the field of Civil Engineering Technical Works. Challenges and impediments are highlighted and possible actions considered. Reference is also made to the existing situation of NAs and NDPs and on their future evolution. Examples of structures designed according to the Eurocodes are also presented as an encouraging message for the future.

EU MS Case Study 7: Croatia

Speaker: **Vlasta Gacesa Moric**, Croatian Standards Institute, Head of the General Standardization Department

The topic of this presentation is the experience with the adoption and implementation of Eurocodes in the Republic of Croatia. This assignment was given to Croatian technical committee HZN/TO 548, the National Mirror Committee to CEN/TC 250, and completed with full understanding and financial support by the Ministry of Construction and Physical Planning and the Croatian Chamber of Civil Engineers. All Eurocodes have been adopted and translated into Croatian. The corresponding National Annexes have been developed, published and translated into English. Their implementation is achieved by means of the Technical Regulation for Building Structures. New activities are focused on the active participation of Croatian experts in the development of the new generation of Eurocodes.

Round table discussion

Moderator: **Silvia Dimova**

The session speakers discussed with the participants the main lessons learnt from the implementation of the Eurocodes in the national regulatory framework of the countries presented as case studies.

Session 1C: Eurocodes in the design practice. The Eurocodes international status.

Wednesday, 10th October 2018

Chair: **Nikolaos Malakatas**

Designers' experience in using the Eurocodes.

Speaker: **Pietro Croce**, Convenor of CEN/TC250 HG Bridges; University of Pisa

In the presentation application of Eurocodes in design practice is illustrated and critically discussed, with special emphasis on bridge design. In the first part, some background information is given about definition of relevant actions, also considering the ones to be taken into account during execution, and the evaluation of relevant influence surfaces is shortly discussed for the most relevant and common cases (open or box cross sections, orthotropic decks) in view of the evaluation of most adverse traffic effects. In the second part some relevant design case is illustrated. Starting from the consideration that designers need to face a very wide variety of practical cases, ranging from the design of common bridges, characterised by short spans and common structural schemes and cover more than 95% of the applications, to medium and large span bridges, some relevant design case is illustrated. The case studies demonstrate that Eurocodes are suitable to cover all practical needs with different degree of complexity, according to the refinement required by the specific assessment. In the worked examples some relevant fatigue assessment is discussed as well. Finally, the application of Eurocodes in case of repair, rehabilitation and seismic upgrading of an existing historical masonry bridge is illustrated, so stressing that Eurocodes are so flexible that they can be applied even in cases not explicitly covered.

The European Construction Sector Observatory

Speaker: **Karim Karaki**, Pricewaterhouse Coopers, Luxembourg, Public Sector Associate

With the limited prospects of the EU domestic construction market, European companies have increasingly dedicated efforts to identifying and exploiting business opportunities abroad - often with the support of EU or Member States' policies and instruments. However, companies also face numerous challenges, whether relating to financing, local regulatory environment or standards harmonisation. This is reflected in the European Construction Sector Observatory analytical reports, which look into more depth in the internationalisation and competitiveness of the EU and EU Member States' construction sector with a view to

facilitate knowledge sharing and accelerating policy learning among policy makers. This presentation hence looked at the drivers and challenges around the internationalisation process of EU construction companies, with a view to provide recommendations about how policy-makers can best facilitate such as process. By doing so, the presentation notably mentioned the role of Eurocodes and its impacts on the internationalisation process.

JRC activities in support to the Eurocodes implementation

Speaker: **Adamantia Athanasopoulou**, DG JRC, European Commission

In support of the Eurocodes implementation in the EU and other interested third countries, the Joint Research Centre has organized and provided support to a series of dissemination and training events within the EU but also in third countries. These training events were designed based primarily on the target audience (i.e. national authorities and national standards bodies, academics, industrial organization, engineers and practitioners) and the specific needs of the countries.

Further, the website “Eurocodes: Building the Future” serves as platform for exchange and dissemination of training and promotional material between the Member States. A collection of training and guidance materials on the Eurocodes (books, designer’s guides, manuals, etc.) is available at the Eurocodes Publications Database. Such tools facilitate the exchange of knowledge and good practices between the countries while fostering regional collaboration and capacity building and enhancing the connection between science, policy and common practice.

A co-ordinated approach towards the implementation and further promotion of the Eurocodes was deemed necessary, involving all major stakeholders (the Commission, Standardisation and Industrial Organisations, academics, national authorities, etc.) to achieve full implementation of the Eurocodes, supporting risk-reduction in parallel to safe and sustainable growth in the construction sector.

Session 2A: Opportunities in the Balkan region.

Chair: **Adamantia Athanasopoulou**

Opening of JRC Research Infrastructures: Opportunities in the Balkan region.

Speaker: **Fabio Taucer**, DG JRC, European Commission

The JRC hosts 58 physical research infrastructures at Ispra, Karlsruhe, Geel and Petten, of which 40 have the potential of opening to external users. Offering access to visiting researchers is part of JRC's strategy to enhance dissemination of scientific knowledge, boost competitiveness, bridge the gap between research and industry and provide training and capacity building.

In June 2017 the JRC opened at the JRC Science Hub the first calls for open access, addressed to Member States and Candidate countries and countries associated to the EU Research Programme Horizon 2020. Access is offered to public and private institutions, including SMEs, following a peer-review evaluation of proposals, and charges users only the additional costs associated to such access under the condition that the generated data is openly disseminated. At present nine (9) research infrastructures are opening access in the fields of safety and security of buildings, and nanobiotechnologies, both at Ispra, and in the field of nuclear safety and security in Geel and Karlsruhe. Overall 57 eligible proposals have been received from 21 different countries. The first two projects have already started at the research infrastructures in Ispra. During the second half of 2018 four (4) more research infrastructures will offer access in the fields of fuel cells in Petten and molecular ecology at Ispra.

The JRC is planning to issue calls towards the end of 2018 on Training and Capacity Building at JRC research infrastructures covering the travel and accommodation of users from Enlargement and Integration countries. In 2019 the JRC will revise its Framework by waiving the access costs and covering the costs of travel and subsistence of users visiting the JRC from the Spreading Excellence and Widening Participation RTD list of countries.

Session 2B: Current status of the Eurocodes implementation in the non-EU Balkan region.

Chairs: **Fabio Taucer, Pierre Spehl**

Country report - Albania

Presenter: **Rikard Luka**, Albanian Eurocodes Mirror Committee

Country report – Bosnia and Herzegovina

Presenter: **Sanin Dzidic**, International BURCH University

Country report – the former Yugoslav Republic of Macedonia

Presenter: **Vilijam Hristovski**, ISRM TC 40 Technical Secretary

Country report - Kosovo

Presenter: **Merita Behluli**, Eurocode Technical Committee Kosovo

Country report - Moldova

Presenter: **Iurii Socol**, Institute for Standardization of Moldova

Country report - Montenegro

Presenter: **Ljiljana Soskic**, Institute for Standardization of Montenegro

Country report - Serbia

Presenter: **Jelena Skoković**, Institute for Standardization of Serbia

Country report - Turkey

Presenter: **Atila Erenler**, Ministry of Environment and Urbanism

A presentation on the status of the Eurocodes implementation in the national regulatory system and identification of challenges encountered in this process was provided by each country participating at the workshop. Each country report gave answers/views of the invited participants related to the objectives of the workshop. The following issues were addressed by each country report:

- (i) Structure of the National Mirror Technical Committee for the Eurocodes.
- (ii) Overview to the current status of elaboration of the Eurocodes and the National Annexes (NAs).
- (iii) Obstacles and advantages for the implementation of the Eurocodes in the national regulatory framework.
- (iv) Implementation (eventually) of the Eurocodes in the current design practice.
- (v) Possible topic(s) for joint (regional) cooperation in the process of elaboration, adoption and implementation of the Eurocodes.

Presentation of survey on status of Eurocodes implementation in the Balkan region

Speaker: **Roberta Apostolska**, Institute of Earthquake Eng. and Eng. Seismology, UKIM-IZIIS; University Ss Cyril and Methodius, UKIM, Professor

The presentation reported the results from the survey conducted on the recent progress in the adoption and implementation of the Eurocodes in the Balkan non-EU member countries. It particularly focused on the progress made, challenges encountered for national implementation and identification of good practices. Brief introduction to the activities carried out previously aimed to provide scientific and technical contribution in the context of the JRC support to DG GROW for the promotion of the Eurocodes and to support Accession and Candidate Countries within the JRC Enlargement and Integration Action was given. For the purpose of the survey, a Questionnaire was prepared consisting of two parts: part A dedicated to the status of elaboration of EN parts, NDPs and NAs in the above countries and part B - implementation of the Eurocodes in the national regulatory framework, drivers and barriers.

Session 2C: The way forward for the Eurocodes implementation in the Balkan region.

Chairs: **Roberta Apostolska, Adamantia Athanasopoulou**

Views from the European Council of Engineers Chambers

Speaker: **Dragoslav Sumarac** Executive Board of the European Council of Eng. Chambers, Vice-President; Serbian Chamber of Engineers, President

The Serbian Chamber of Engineers, in cooperation with the European Council of Engineers Chambers (ECEC), organized several lectures on the application of Eurocodes as part of the Continual Professional Development (CPD) program for its own members. The lecturers were prominent professors and recognized experts from various fields. The topics were aimed at directly presenting and familiarizing engineers with the implementation of eurocodes in real, practical examples. Some of the topics covered are the following:

- Experience of Hungarian engineers in the preparation of Eurocodes.
- Design of concrete road bridges in Slovakia according to Eurocodes.
- ResyLab 2015 sliding symposium.
- EN 1990, Basis of structural design, EN 1991 (Eurocode 1), Actions on structures.
- Design of reinforced concrete structures according to EN 1992-1-1, Eurocode 2
- The cross-section of the balance and the Eurocodes in Serbia from EN 1990 to EN 1999.
- Eurocodes for the calculation of steel structures.

Views from the Chamber of certified architects and certified engineers of Republic of Macedonia

Speaker: **Petar Cvetanovski**, Chamber of certified architects and certified engineers of Republic of Macedonia, Head of Civil Eng. Department

The presentation gave a review of the recent state of the implementation process of Eurocodes in Macedonian technical regulative system. Also, Chamber activities in this process and expectations were expressed. A general information about Chamber structure and organization was presented in the beginning. Department of civil engineers is the largest one with about 1000 active members. This presentation discussed the Chamber activities in professional review of Eurocodes translations and organization of seminar for implementations. Some experiences from those activities were expressed. The dilemma “Eurocodes as an obligation or need?” as technical regulation in non-EU countries was briefly explained. The imperative for adoption and implementation of Eurocodes, as a technical regulative, was emphasized. Also, the related provisions and activities were suggested. The Macedonian Chamber has a very active role in the process of Continued Professional development (CPD) of the engineers in the former Yugoslav Republic of Macedonia. In that regards, the Chamber has organized, and plans to organize in future, educational seminars across the country in order to support adoption of Eurocodes.

The concept of the Eurocodes Community of Practice in the Balkan region

Speaker: **Adamantia Athanasopoulou**, DG JRC, European Commission

This presentation focused on the concept for the establishment of a regional platform to enhance collaboration within the non-EU Balkan countries on the adoption and implementation of the Eurocodes. It gave the opportunity to present to the participants the framework for a Community of Practice (CoP) related to Eurocodes and their implementation in the Balkan region and secure involvement of invited members.

It is envisaged that the CoP related to Eurocodes and the Balkan region will provide continuous support in future actions related to Eurocodes implementation in the Balkans. The concept is that the CoP will be engaged in activities related to the Eurocodes and the Balkans (i.e. map knowledge and identify gaps, exchange practical examples of structures designed with the Eurocodes, discuss developments related to the Nationally Determined Parameters (NDPs) and National Annexes (NAs) publication, organize visits and other local events, assist with regional training activities). The CoP will also assist in process of the Eurocodes maintenance and updating once they will be adopted. An e-forum (or platform) will foster the dissemination of information and activities related to the CoP and facilitate the collaboration among its member – it is envisaged that this platform can be hosted at the JRC Eurocodes website. The CoP members will also have plenary meetings, i.e. occasions to meet, exchange ideas and pave the way for future work. JRC would be monitoring and assisting the CoP with its activities.

Round table discussion

Moderator: **Silvia Dimova**

The session speakers discussed with the participants the challenges and needs in relation to the implementation of the Eurocodes in the regulatory framework, linking to countries examples presented on Day 1 and the current status of implementation as discussed in the country reports.

Workshop material

All workshop presentations are available for download from the JRC Eurocodes website at the following link:

https://eurocodes.jrc.ec.europa.eu/showpage.php?id=2018_10_WS_Balkan

A JRC Report on the process of the Eurocodes implementation in the National Regulatory Framework will be published as a follow-up of the event. The report will be based on the material prepared for the workshop and the discussions. The report will focus on assessing the challenges non-EU Balkan countries are encountering in Eurocodes implementation in the national regulatory framework and providing recommendations for facilitating the procedure based on the EU MS case studies. The JRC report is expected to be published in the beginning of 2019 and have a global resonance, taking into account that many countries outside Europe have expressed strong interest in the Eurocodes.

Workshop Conclusions

Below are presented the most important observations and conclusions based on the presentations and round table discussions during the workshop:

- Significant and important progress has been achieved by all non-EU countries in the Balkan region in the adoption of the Eurocodes since the workshop in Skopje in 2016.
- EU MS invited lecturers have shared the experience and good practices in the implementation of the Eurocodes in the national regulatory system in their countries; it seems that there is no single-type solution for the challenges faced by the Balkans countries as the approach is strongly linked to the regulatory system of each country and its specificities; however there are examples to be considered as good practices which could support the advancement of the implementation of the Eurocodes in the Balkans.
- There is evidence of strengthened collaboration and information sharing among the non-EU Balkan countries and support given to the countries by neighboring EU MS; such activities are important good practices that need to continue and be further elaborated in the future.
- The Eurocodes are used in the design practice in the non-EU Balkan countries and there are practitioners that are acquainted with the Eurocodes concepts and system.
- There is lack of sufficient coordination between the National Authorities and the NSBs on the implementation of the Eurocodes, even though from the standpoint of the standards adoption, a lot of work has been done. EU MS experts have suggested to set a clear timeline for the future steps and actions, clearly identify the resources needed and assess stakeholders/institutions that can support the actions in the timeline; it is also important to seek and confirm agreement on actions by all stakeholders involved.
- It was the first time in such type of Eurocodes' events targeted for the Balkan region that representatives from the Chambers of Engineers participated and it was agreed that the Chambers have an important role to play in the process of the Eurocodes implementation and provide a link with the practitioners.
- The situation with regards to the membership of the Balkan countries NSBs to CEN is not uniform for all countries as some NSBs have acquired CEN membership (the former Yugoslav Republic of Macedonia, Serbia and Turkey), other are CEN affiliated members (Albania, Bosnia and Herzegovina and Montenegro) or CEN Companion Standard Bodies (Moldova), while Kosovo has no formal status. However, there is strong will expressed from all countries NSBs to collaborate with CEN. They also consider that information on the planned changes in the second generation of the Eurocodes would allow them to set-up now their NDPs in a way allowing a smooth transition to the second generation of the Eurocodes. A proposal has been formulated to address CEN/CENELEC Management Centre (MC) to provide access to TC250 works and activities for countries not being CEN members or affiliates, while the NSBs will seek resources for supporting their future participation (e.g. from industry).
- All EU MS experts stressed that the Eurocodes serve as a common language for engineers. The National Authorities should consider implementing them at the National Regulatory Framework as a system; it is important not to mix design rules from the Eurocodes with other codes/standards for the structural design of buildings and other construction works.
- Representatives from the Balkans countries suggested that a platform helping users to navigate within the Eurocodes would significantly ease the use in practice of the second generation of the Eurocodes.

Annex 1: Workshop Participants

Participants from non-EU countries in the Balkan region (Albania, Bosnia and Herzegovina, the former Yugoslav Republic of Macedonia, Kosovo⁸, Moldova, Montenegro, Serbia and Turkey) attended the workshop, presented the progress in adoption of the Eurocodes and discussed the way ahead. Participation was on invitation only by the Organizing Committee. Participants were representatives of National Authorities (NAs), National Standardisation Bodies (NSBs), Engineering Chambers, Chairmen of CEN/TC250 Mirroring Committees and members of TC250 mirroring working groups. Further, representatives from institutions that are involved in the determination of the National Annexes and the training on the Eurocodes and provide support for the Eurocodes adoption were also invited. Nominated experts from the European Commission, EU Member States, CEN Management Centre and CEN/TC250 'Structural Eurocodes' participated and gave presentations.

The total number of participants from non-EU Balkan countries was 77 (Fig. 1) wherein 35% were representatives from National Authorities (NA) and policy decision makers, 21% were from the National Standardization Bodies (NSB), 23% were professional users of standards and 21% were representatives from the institutions who will stream elaboration of NDPs and training on the Eurocodes. Figure 2 illustrates some photos highlights from the workshop sessions and social events.

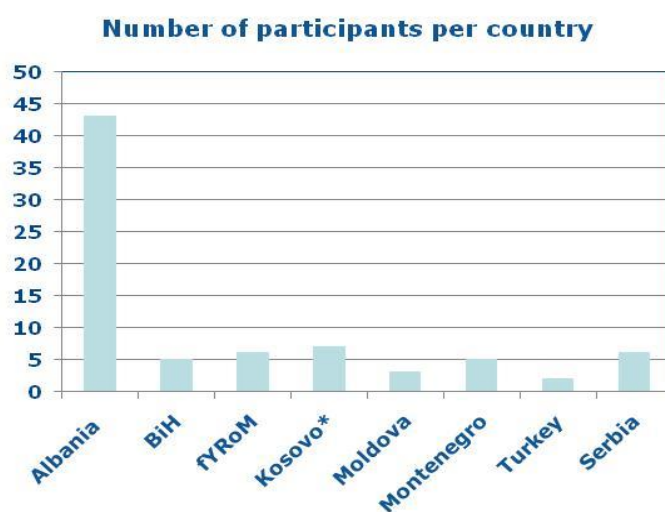


Figure 1. Number of participants per non-EU Balkan country

⁸ This designation is without prejudice to positions on status, and is in line with UNSCR 1244 and the ICJ Opinion on the Kosovo Declaration of Independence.



Group photo of non-EU Balkan countries speakers with the JRC Organizing Committee



Invited experts from CEN/TC250 "Structural Eurocodes" enjoying the social dinner



Workshop participants socializing at the workshop breaks



Jean-Armand Calgaro, CEN/TC250 "Structural Eurocodes" immediate-past Chairman opening the workshop first session



Silvia Dimova from JRC.E.4 at the welcome address



View of the workshop venue

Figure 2. Photos for the workshop "The way forward for the Eurocodes implementation in the Balkans", Tirana, 10-11 October 2018

Annex 2: Questionnaire on the status of Eurocodes implementation in the Balkan countries

A questionnaire aimed to assess recent progress, difficulties and needs for the implementation of the Eurocodes in the national regulatory framework in the Balkan countries was distributed to the invited participants before the workshop and was analyzed and discussed at the workshop.

The questionnaire aimed assess the state of implementation of the EN Eurocodes in the national regulatory framework (NRF) and consisted of two parts, Part A and Part B. Part A was dedicated to collect information regarding: (1) Translation and publishing of Eurocodes; (2) Progress of elaboration of NDPs and acceptance of RVs and (3) Publishing of NAs. Responsible for delivering this part was representative from the NSB from each country. Part B addressed three different groups of questions: (1) Eurocodes in NRFs; (2) Eurocodes in public procurements and for important structures and (3) Obligatory use of any EN part. This part of the questionnaire was filled by NAs representative. During the second day of the workshop representatives of each country delivered the country report regarding the current state of the Eurocode implementation.

The summary of the collected questionnaires and country reports is presented in the Tables 2 and 3, below.

Table 2. Summary of the Questionnaire – Part A

Country	EN part translated	EN part published as National Standards	Progress of NDPs elaboration	Acc. of RVs	NAs published	Comments
Albania	All, except EN1995 and EN1999	All, except EN1995 and EN1999	50%-100%	Same	0	/
BiH	100%	100%	All in EN1990, EN1991-1-1 to EN1991-1-5 and EN1998-1	Diff.	8	Networking, Czech Office for standards, metrology and testing
FYROM	100%	100%	All, except climatic maps	Around 90%	All, except SH and climatic maps	/
Kosovo*	In progress	100%	0	0	0	Networking with DGS Albania
Moldova	100%	100%	All in EN1990-EN1995	90%	16	Networking with Romanian standards assoc., TU – Bucharest, Czech Office for standards, metrology and testing
Montenegro	44% (26 parts)	44% (26 parts)	n/a	Diff.	44% (26 parts)	Twinning with NSB from Austria
Serbia	27% (16 parts)	100%	100%, except EN1996 and EN1997	Diff.	80% (46 parts)	/
Turkey	44%	100%	0	0	1	TBEC (2018)

Table 3. Summary of the Questionnaire – Part B

Country	B1. Eurocodes in NRF	B2. Eurocodes in public procurements/ certain categories of structures	B3. Obligatory use of any EN part
Albania	No	No	No
BiH	Eurocode 2 and Eurocode 6	Eurocode 2 and Eurocode 6	BAS EN related standards
FYROM	No	No	No
Kosovo*	No – (roadmap for adoption, implementation and promotion of the Eurocodes)	No (by law) - (in practice for high risk structures)	No
Moldova	No – approved NAP, 2014-2020 (Decision no. 933, dated 2014)	No	No
Montenegro	Anticipated – end of 2019 (NAP for adoption and implementation dated 2014)	No	No
Serbia	n/a	Usually for most important infrastructure projects (parallel use)	n/a
Turkey	No - the construction engineering practices in Turkey is largely governed by the provisions in the Turkish Building Earthquake Code (TBEC), enforced 01.01.2019. Some sections of the Eurocode parts and some EN standards are incorporated to TBEC, (EN1990 Annex D; EN1992-1; EN1993-1-3; EN1995 (12); EN1996-1 (11); EN15129; EN1997 (16))		

As a possible way of go ahead, the following activities have been identified based on the country reports and the related round table discussion:

- To support the creating of a Eurocodes Community of Practice for the Balkan region to boost regional collaboration in the adoption and implementation of the Eurocodes.
- To explore possibilities for organizing regional training courses supported by European Commission's JRC Enlargement and Integration Action in order to further facilitate the implementation of the Eurocodes in the Balkan region.
- To launch bilateral projects for building national capacities for adoption and implementation of the Eurocodes (positive examples – BiH and Czech Standardization Institute, KSA and Albanian Standardization Agency, Moldova and TU Bucharest and Czech Standardization Institute).



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