Adoption of the Eurocodes in Bosnia & Herzegovina

- Country Report -

Assist. Prof. Dr. Sanin Dzidic, PE, IBUS
Mr. Borislav Kraljevic, BAS Deputy Director
Assist. Prof. Dr. Naida Ademović, Faculty of Civil Engineering, UoS
Ms. Nihada Kulenovic, BAS Standardization Expert
Eurocodes Adoption Status

- **BAS/TC 58, Eurocodes**
- **NMC to CEN/TC 250**
- **Established November 28, 2013**
- **Chairman: Dr. Sanin Dzidic, PE**
- **Currently 28 members from different sectors and stakeholders; designers, construction industry, universities, research institutions, government representatives...**
- **Changing the structure of committee**
Status, December 2013

Summary of the questionnaires filled by National Authority relevant representatives from non-EU countries in the Balkan region

by

Artur Pinto, Fabio Taucer, Silvia Dimova, Roberta Apostolska

### National Regulatory Framework

#### 1.1 Is there a National Action plan for adoption and implementation of the Eurocodes

<table>
<thead>
<tr>
<th>Country</th>
<th>Status</th>
</tr>
</thead>
<tbody>
<tr>
<td>Albania</td>
<td>Strategy report – MPPT</td>
</tr>
<tr>
<td>Bosnia and Herzegovina</td>
<td>No</td>
</tr>
<tr>
<td>Croatia</td>
<td>Eurocodes is already adopted</td>
</tr>
<tr>
<td>the former Yugoslav Republic of Macedonia</td>
<td>Yes</td>
</tr>
<tr>
<td>Moldova</td>
<td>No, initiated by MCDT</td>
</tr>
<tr>
<td>Montenegro</td>
<td>Yes</td>
</tr>
<tr>
<td>Turkey</td>
<td>No, (EC8 included in NSAP)</td>
</tr>
<tr>
<td>Serbia</td>
<td>Yes</td>
</tr>
</tbody>
</table>

---

**Status, December 2013**

---

**European Commission**

---

**Elaboration of Maps for Climatic and Seismic Actions for Structural Design in the Balkan Region**

27-28 October 2015, Zagreb
### NATIONAL REGULATORY FRAMEWORK

1.3 Does any relevant national institution support projects for A/I of Eurocodes? If yes, please give information and reference to any project financed by EU

<table>
<thead>
<tr>
<th>Country</th>
<th>Support</th>
</tr>
</thead>
<tbody>
<tr>
<td>Albania</td>
<td>GDS (NSB)</td>
</tr>
<tr>
<td>Bosnia and Herzegovina</td>
<td>No</td>
</tr>
<tr>
<td>Croatia</td>
<td>MGIPIU, HZN (NSB) &amp; Chamber of Civil Engineers (national)</td>
</tr>
<tr>
<td>the former Yugoslav Republic of Macedonia</td>
<td>ISRM (NSB), Chamber of authorized architects and engineers/TAIEX, IPA and GTZ support</td>
</tr>
<tr>
<td>Moldova</td>
<td>No</td>
</tr>
<tr>
<td>Montenegro</td>
<td>Twinning project/EU-IPA</td>
</tr>
<tr>
<td>Turkey</td>
<td>No</td>
</tr>
<tr>
<td>Serbia</td>
<td>Academia and ISS (NSB)/GTZ and DIN support</td>
</tr>
</tbody>
</table>

---

ELABORATION OF MAPS FOR CLIMATIC AND SEISMIC ACTIONS FOR STRUCTURAL DESIGN IN THE BALKAN REGION

27-28 October 2015, Zagreb
## Status, December 2013

### 2.1 Is there a Technical Committee for adoption of the Eurocodes already established

<table>
<thead>
<tr>
<th>Country</th>
<th>Status</th>
<th>Details</th>
</tr>
</thead>
<tbody>
<tr>
<td>Albania</td>
<td>YES</td>
<td>KT 250 Eurocode (2007)/Chairman - Mr F. Kadiu</td>
</tr>
<tr>
<td>Bosnia and Herzegovina</td>
<td>NO</td>
<td>BAS/TC 58 (to be set up)</td>
</tr>
<tr>
<td>Croatia</td>
<td>YES</td>
<td>HZN/TO 548 Structural Eurocodes (2006)/Chairman - Mr I. Dzeba</td>
</tr>
<tr>
<td>the former Yugoslav Republic of Macedonia</td>
<td>YES</td>
<td>ISRM TC 40 Eurocodes and National Annexes (2012)/Chairman - Mr T. Delipetrov; <em>(ISRM TC 30: 2007-2012)</em></td>
</tr>
<tr>
<td>Moldova</td>
<td>NO</td>
<td></td>
</tr>
<tr>
<td>Montenegro</td>
<td>YES</td>
<td>ISME/TK 002 Eurocodes (2011)/Chairman - Mr R. Zejak</td>
</tr>
<tr>
<td>Turkey</td>
<td>YES</td>
<td>TSI – Safety of construction</td>
</tr>
<tr>
<td>Serbia</td>
<td>YES</td>
<td>KS U250 – 1,8 (2012)/Chairman – Mr Gj. Vuksanovic</td>
</tr>
<tr>
<td></td>
<td></td>
<td>KS U250 – 3,6,9 (2006)/Chairman – Mr Z. Markovic</td>
</tr>
<tr>
<td></td>
<td></td>
<td>KS U250 – 2 (to be set up)/Chairman – Mr D. Najdanovic</td>
</tr>
<tr>
<td></td>
<td></td>
<td>KS U250 – 5,6 (2011)/Chairman – Mr B. Stefanofic</td>
</tr>
<tr>
<td></td>
<td></td>
<td>KS U182 Geotechnics/Chairman – Mr L. Caki</td>
</tr>
</tbody>
</table>
Status, December 2013

2.2 Please assess the progress of translation of each Eurocode/priorities

<table>
<thead>
<tr>
<th></th>
<th></th>
<th></th>
<th></th>
<th></th>
<th></th>
<th></th>
<th></th>
<th></th>
<th></th>
<th></th>
</tr>
</thead>
<tbody>
<tr>
<td>Serbia</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Turkey</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Montenegro</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Moldova</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>FYRoM</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Croatia</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>BiH</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Albania</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
</tbody>
</table>

none
start
advance
finish
### 2.3 Is there any existing regional cooperation in the process of translation of the Eurocodes?

<table>
<thead>
<tr>
<th>Country</th>
<th>Status</th>
</tr>
</thead>
<tbody>
<tr>
<td>Albania</td>
<td>No</td>
</tr>
<tr>
<td>Bosnia and Herzegovina</td>
<td>No</td>
</tr>
<tr>
<td>Croatia</td>
<td>No</td>
</tr>
<tr>
<td>the former Yugoslav Republic of Macedonia</td>
<td>Yes, with the Institute for standardization of Serbia</td>
</tr>
<tr>
<td>Moldova</td>
<td>No</td>
</tr>
<tr>
<td>Montenegro</td>
<td>Yes, with the Institute for standardization of Serbia</td>
</tr>
<tr>
<td>Turkey</td>
<td>No</td>
</tr>
<tr>
<td>Serbia</td>
<td>Yes, with Institutes for Standardization of FYROM and Montenegro (Eurocodes translated in Serbian were delivered)</td>
</tr>
</tbody>
</table>

**Status, December 2013**
2.4 Please assess the progress of definition of the NDPs of each Eurocode

- Serbia
- Turkey
- Montenegro
- Moldova
- fYRoM
- Croatia
- BiH
- Albania

Status, December 2013
### 3.4 Are there any training material (booklets, leaflets, guidelines etc.) available on each country national language?

<table>
<thead>
<tr>
<th></th>
<th></th>
<th></th>
<th></th>
<th></th>
<th></th>
<th></th>
<th></th>
<th></th>
<th></th>
<th></th>
</tr>
</thead>
<tbody>
<tr>
<td>Serbia</td>
<td>✔</td>
<td>✔</td>
<td>✔</td>
<td>✔</td>
<td>✔</td>
<td>✔</td>
<td>✔</td>
<td>✔</td>
<td>✔</td>
<td>✔</td>
</tr>
<tr>
<td>Turkey</td>
<td>✔</td>
<td>✔</td>
<td>✔</td>
<td>✔</td>
<td>✔</td>
<td>✔</td>
<td>✔</td>
<td>✔</td>
<td>✔</td>
<td>✔</td>
</tr>
<tr>
<td>Montenegro</td>
<td>✔</td>
<td>✔</td>
<td>✔</td>
<td>✔</td>
<td>✔</td>
<td>✔</td>
<td>✔</td>
<td>✔</td>
<td>✔</td>
<td>✔</td>
</tr>
<tr>
<td>Moldova</td>
<td>✔</td>
<td>✔</td>
<td>✔</td>
<td>✔</td>
<td>✔</td>
<td>✔</td>
<td>✔</td>
<td>✔</td>
<td>✔</td>
<td>✔</td>
</tr>
<tr>
<td>fYRoM</td>
<td>✔</td>
<td>✔</td>
<td>✔</td>
<td>✔</td>
<td>✔</td>
<td>✔</td>
<td>✔</td>
<td>✔</td>
<td>✔</td>
<td>✔</td>
</tr>
<tr>
<td>Croatia</td>
<td>✔</td>
<td>✔</td>
<td>✔</td>
<td>✔</td>
<td>✔</td>
<td>✔</td>
<td>✔</td>
<td>✔</td>
<td>✔</td>
<td>✔</td>
</tr>
<tr>
<td>BiH</td>
<td>✔</td>
<td>✔</td>
<td>✔</td>
<td>✔</td>
<td>✔</td>
<td>✔</td>
<td>✔</td>
<td>✔</td>
<td>✔</td>
<td>✔</td>
</tr>
<tr>
<td>Albania</td>
<td>✔</td>
<td>✔</td>
<td>✔</td>
<td>✔</td>
<td>✔</td>
<td>✔</td>
<td>✔</td>
<td>✔</td>
<td>✔</td>
<td>✔</td>
</tr>
</tbody>
</table>

**Yes** (Green) | **No** (Red)

---

ELABORATION OF **MAPS** FOR **CLIMATIC AND SEISMIC ACTIONS** FOR STRUCTURAL DESIGN IN THE **BALKAN REGION**

27-28 October 2015, Zagreb
Status, December 2013

2.9 Please assess the progress of adoption of Eurocodes related harmonized EN standards

Map showing progress in the Balkan region.
3.1 Are the Eurocodes included in the first cycle study (Bachelor) curriculum at the Universities?

- Serbia
- Turkey
- Montenegro
- Moldova
- fYRoM
- Croatia
- BiH
- Albania

Status, December 2013

ELABORATION OF MAPS FOR CLIMATIC AND SEISMIC ACTIONS FOR STRUCTURAL DESIGN IN THE BALKAN REGION
27-28 October 2015, Zagreb
Eurocodes Adoption Status as of October 2015

- BAS/TC 58, Eurocodes
- BAS/TC 58/WG 1 - Eurocode 0 (translation)
- BAS/TC 58/WG 2 - Eurocode 0 (NA)
- BAS/TC 58/WG 3 - Eurocode 1 (NA)
- BAS/TC 58/WG 4 - Eurocode 8 (NA)
Eurocodes Adoption Status as of October 2015

PROJECT OF DEVELOPMENT COOPERATION BETWEEN THE CZECH REPUBLIC AND BOSNIA AND HERZEGOVINA

Support of Capacities of the Bosnian Institute for Standardization in the Area of Implementation of EUROCODES.

Date of commencement: 11/2014
Date of project completion: 12/2017
Eurocodes Adoption Status as of October 2015

Summary of the Project

The project is focused on the support of capacities of the Institute for Standardisation of Bosnia and Herzegovina in the areas of implementation, translation, creation and preparation of national annexes of principles for the design of building structures – EUROCODES.
Eurocodes Adoption Status as of October 2015

UNMZ-BAS

- translations of all parts of Eurocodes (except EN 1990) into one of the languages of BiH

<table>
<thead>
<tr>
<th>Year</th>
<th># pages</th>
</tr>
</thead>
<tbody>
<tr>
<td>2015</td>
<td>2105</td>
</tr>
<tr>
<td>2016</td>
<td>1723</td>
</tr>
<tr>
<td>2017</td>
<td>979</td>
</tr>
<tr>
<td></td>
<td>TOTAL Σ 4807</td>
</tr>
</tbody>
</table>

- creation of priority national annexes (except EN 1990/NA)
  - EN 1998-1/NA
Eurocodes Adoption Status as of October 2015

2015 (Working plan of BAS/TC 58 and implementation of project)

Translation:

- BAS EN 1990:2014 (published)
- BAS EN 1991-1-1:2015 (published)
- BAS EN 1991-1-2:2015 (published)
- BAS EN 1991-1-3:2015 (published)
Eurocodes Adoption Status as of October 2015

Translation:

- PN/BAS EN 1991-1-5:2015 (stage 30.20 ballot initiated)*
- PN/BAS EN 1991-1-6:2015 (stage 30.20 ballot initiated)*
- PN/BAS EN 1991-1-7:2015 (stage 30.20 ballot initiated)*

* Stage Codes System for the development of BAS standards
Eurocodes Adoption Status as of October 2015

Translation:

- PR/BAS EN 1998-1:2016 *(translated and revised)*
- PR/BAS EN 1997-1:2016 *(translated and revised)*
- PR/BAS EN 1997-2:2016 *(translated and revised)*
- PR/BAS EN 1992-1-1:2016 *(translated and revised)*
- PR/BAS EN 1993-1-1:2016 *(translated and revised - end November)*
- PR/BAS EN 1993-1-2:2016 *(translated and revised - end November)*
- PR/BAS EN 1993-1-3:2016 *(translated and revised - end November)*
Eurocodes Adoption Status as of October 2015

- Translated 2500 pages of 5100 or 49%;
- 21 parts of 58 Eurocodes or 36%
Eurocodes Adoption Status as of October 2015

2015 (Working plan of BAS/TC 58 and implementation of project)

- Development of NA’s:

- BAS EN 1990/NA:2015 (published)
- PN/BAS EN 1991-1-1:2015 (stage 30.20 ballot initiated)*
- PR/BAS EN 1991-1-3:2015 (stage 10.99)*
- PR/BAS EN 1991-1-5:2015 (stage 10.99)*

- All this NA’s will be translated in english
Eurocodes Adoption Status as of October 2015

2015 *(Working plan of BAS/TC 58 and implementation of project)*

- **BAS EN 1990/NA:2015**

  - was created by working group BAS/TC 58/WG 2
  - percentage of recommended NDP’s accepted in BAS EN 1990/NA:2014 is **80%**

Important modified NDP’s

- For combination of actions expression (6.10) is used;
- Design of structural members (STR) involving geotechnical actions and the resistance of the ground:

  - Approach 2 is adopted for piles and anchors
  - Approach 3 is adopted for footings, piers, side walls, basement walls, etc.

- Serviceability criteria for deformations and vibrations for buildings are defined.
Eurocodes Adoption Status as of October 2015

2015 (Working plan of BAS/TC 58 and implementation of project)

PN/BAS EN 1991-1-1/NA:2015 (stage 30.20 ballot initiated)

- was created by working group BAS/TC 58/WG 3
- Tables 6.1 & 6.2 are replaced by Table 6.1(BAS)
- Table 6.4 is replaced by Table 6.2(BAS)

- Nationally Determined Parameters were tailored to conform to previous design practice and experience in response of executed structures in Bosnia & Herzegovina
2015 *(Working plan of BAS/TC 58 and implementation of project)*


PR/BAS EN 1991-1-5/NA:2015 (stage 10.99)

- are in the field of working group BAS/TC 58/WG 3
- process of data collecting from the hydro-meteorological institutes
- the working group BAS/TC 58/WG 3 will start with Thermal actions - PR/BAS EN 1991-1-5/NA:2015
Specific problems and needs regarding creation of the NA’s


- insufficient number of stations with digital data for:
  - absolute maximum monthly temperature
  - absolute minimum monthly temperature

- zone maps of maximum/minimum shade air temperatures


- insufficient number of stations with digital data:
  - for maximum height of snow
  - values of density/height of water column

- snow zone maps
Specific problems and needs regarding creation of the NA’s


- insufficient number of stations with digital data for wind velocities

Major disadvantages in the existing data measurements wind velocity are the following:

✓ location of the measuring station and the terrain around it
✓ measuring devices are not located at 10 m
✓ only the measurements at 7, 14 and 21 hour were digitized, but not at all stations
UNMZ-BAS

Seminar – Introduction of EUROCODES, January, 2015,
covered several topics:

- Quality Infrastructure in the Czech Republic and role of UNMZ
- Quality Infrastructure in BiH and current situation related to low, regulations and standards
- Technical standards in the CR/EU and legislation
- EUROCODES implementation in the Czech Republic in relation to standardization structure
- EUROCODES application in relation to other standardization documents and legislation in the construction industry
- Working plan and program of BAS/TC 58 EUROCODES

60 participants from different sectors and stakeholders; designers, construction industry, universities, research institutions, government representatives...
Books, Handbooks, Textbooks

Vahid Hasanović – Concrete Structures

Sanin Džidić
Fire Resistance of Concrete Structures

Davorin Hugo Lončarić – Metal Structures
Timber Structures

ELABORATION OF MAPS FOR CLIMATIC AND SEISMIC ACTIONS FOR STRUCTURAL DESIGN IN THE BALKAN REGION
27-28 October 2015, Zagreb
Assistance in publishing and printing of books, handbooks and textbooks at languages in BiH for design of structures according to Eurocodes and delivery to practitioners and students!?
Thank you for your attention!