



JRC support to the implementation of the Eurocodes

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Outline

- **Promotion and training in EU**
- **Implementation** of the Eurocodes
- **Harmonization** –NDP database
- **Further development** (M466 EN and M515 EN)
- **Promotion of the Eurocodes outside EU**



Promotion and training in EU



Training workshops

- **Level 1** – policy for the implementation of the Eurocodes, National Annexes, co-existence with National Codes, etc.;
- **Level 2** – introductory courses for each individual Eurocode;
- **Level 3** – comprehensive courses with design examples of a number of typical structures using a particular package of the Eurocodes.



Training and promotion

(Level 2/3 training workshops – with worked examples)

The following workshops on Eurocodes were held:

- **Design of Bridges with the Eurocodes**
Programme coordination: Steve Denton (CEN/TC250/HG Bridges)
3 days, 4-6 Oct 2010, Vienna
- Eurocode 8: **Seismic Design of Buildings** (RC and Steel)
Programme coordination: Eduardo Carvalho (CEN/TC250/SC8)
2 days, 10-11 Feb 2011, Lisbon
- Eurocode 2: **Design of Reinforced Concrete Buildings**
Programme coordination: Giuseppe Mancini (CEN/TC250/SC2)
and Francesco Biasoli, 2 days, Oct 20-21 2011, Brussels
- **Structural Fire Design with the Eurocodes**
Programme coordination: Bin Zhao (CEN/TC250/HG Fire)
2 days, 27-28 Nov 2012, Brussels
- **Geotechnical Design with the Eurocodes**
Programme coordination: Andrew Bond (CEN/TC250/SC8)
2 days, 13-14 June 2013, Dublin



The training material is available on the EUROCODES website



Publishing JRC reports with worked examples

Published JRC reports:

1. P. Bisch, E. Carvalho, H. Degee, P. Fajfar, M. Fardis, P. Franchin, M. Kreslin, A. Pecker, P. Pinto, A. Plumier, H. Somja, G. Tsionis. Editors: B. Acun, A. Athanasopoulou, A. Pinto, E. Carvalho, M. Fardis. **Eurocode 8: Seismic Design of Buildings Worked examples**. EUR 25204 EN – 2012. 552 pages.
2. Y. Bouassida, E. Bouchon, P. Crespo, P. Croce, L. Davaine, S. Denton, M. Feldmann, R. Frank, G. Hanswille, W. Hensen, B. Kolas, N. Malakatas, G. Mancini, M. Ortega, J. Raoul, G. Sedlacek, G. Tsionis. Editors: A. Athanasopoulou, M. Poljansek, A. Pinto, G. Tsionis, S. Denton. **Bridge Design to Eurocodes – Worked examples**. EUR 25193 EN – 2012. 438 pages.
3. A. Bond, B. Schuppener, G. Scarpelli, T. Orr. Editors: S. Dimova, B. Nikolova, A. Pinto, A. Bond. **Eurocode 7: Geotechnical Design - Worked examples**. EUR 26227 EN – 2013, 172 pages.

JRC reports in advanced preparation:

1. “Eurocodes: **Structural Fire Design** – Worked examples”
2. “Eurocode 2: **Design of Concrete Buildings**” (forthcoming publication)



Report published on 13 November on <http://eurocodes.jrc.ec.europa.eu>



JRC SCIENTIFIC AND POLICY REPORTS

Eurocode 7: Geotechnical Design Worked examples

Worked examples presented at the Workshop "Eurocode 7: Geotechnical Design" Dublin, 13-14 June, 2013


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

Authors:
Andrew J. Bond, Bernd Schuppener,
Giuseppe Scarpelli, Trevor L.L. Orr

Editors:
Silvia Dimova, Borislava Nikolova, Artur V. Pinto

Joint
Research
Centre

Report EUR 26227 EN, 2013



★ + Eurocodes: Building the future - The Eu...

- Home
- About the EN Eurocodes
- CEN/TC250 Newsletter
- Parts and Packages
- EU Legislation & Standardisation
- Implementation
- Designing with the Eurocodes
- Maintenance
- Further Harmonization
- Research & Development
- Use outside EU-EFTA
- Glossary

GEOTECHNICAL DESIGN Workshop with worked examples

13-14 June 2013, Dublin

VENUE: Trinity College Dublin, College Green, Dublin 2, Ireland

EUROCODES
BACKGROUND AND APPLICATIONS

GEOTECHNICAL DESIGN
WITH WORKED EXAMPLES

13-14 JUNE 2013
DUBLIN, IRELAND

JRC Report: Eurocode 7: Geotechnical Design - Worked examples

Objectives

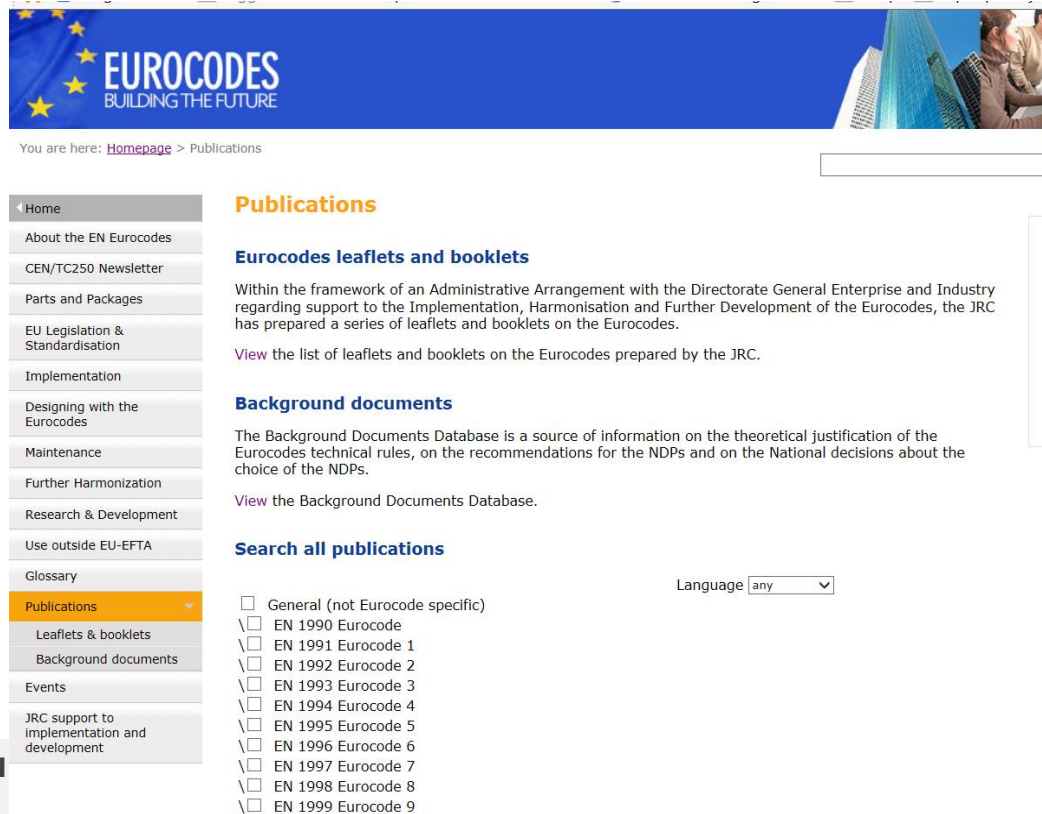


**ADOPTION OF THE EUROCODES IN THE BALKAN REGION
5-6 December, 2013**

Information on the Eurocodes website

<http://eurocodes.jrc.ec.europa.eu/>

- Training events
- Material from the Workshops
- Publications
- **Feedback from use**



EUROCODES
BUILDING THE FUTURE

You are here: [Homepage](#) > Publications

Publications

Eurocodes leaflets and booklets

Within the framework of an Administrative Arrangement with the Directorate General Enterprise and Industry regarding support to the Implementation, Harmonisation and Further Development of the Eurocodes, the JRC has prepared a series of leaflets and booklets on the Eurocodes.

[View](#) the list of leaflets and booklets on the Eurocodes prepared by the JRC.

Background documents

The Background Documents Database is 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.

[View](#) the Background Documents Database.

Search all publications

General (not Eurocode specific)

EN 1990 Eurocode

EN 1991 Eurocode 1

EN 1992 Eurocode 2

EN 1993 Eurocode 3

EN 1994 Eurocode 4

EN 1995 Eurocode 5

EN 1996 Eurocode 6

EN 1997 Eurocode 7

EN 1998 Eurocode 8

EN 1999 Eurocode 9

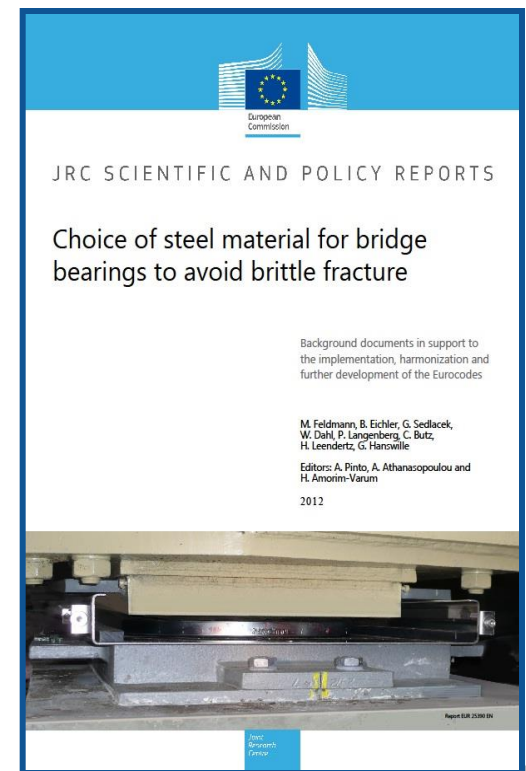
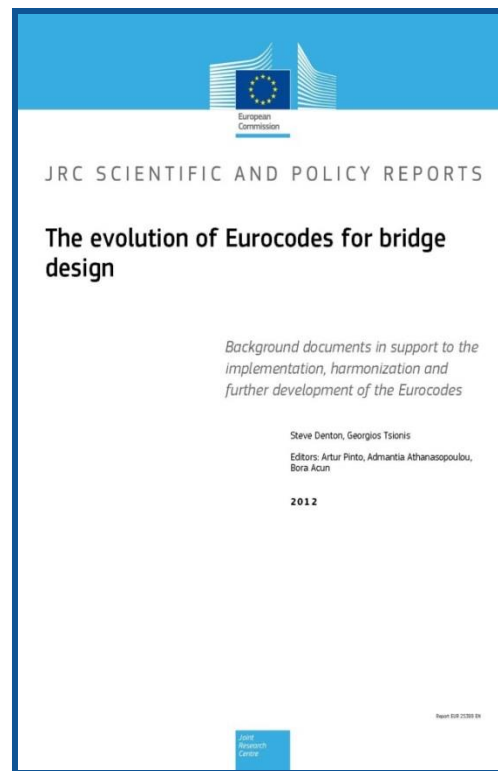
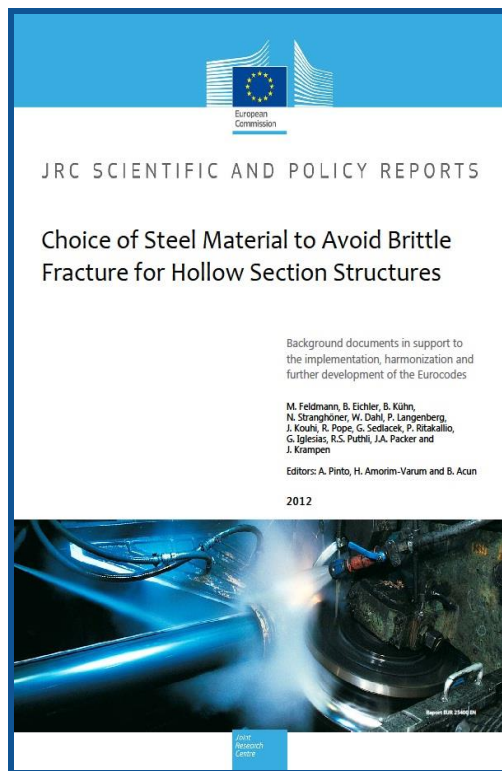
Language

Designer's guides, handbooks

- A variety of materials is published in many languages and on all Eurocodes
- Searchable **database** of publications at Eurocodes website
- Free-of-charge publications are also available
 - JRC/ECCS reports
 - Leonardo Project Handbooks
 - ...



New JRC Scientific and Policy Reports



Published on the Eurocodes website

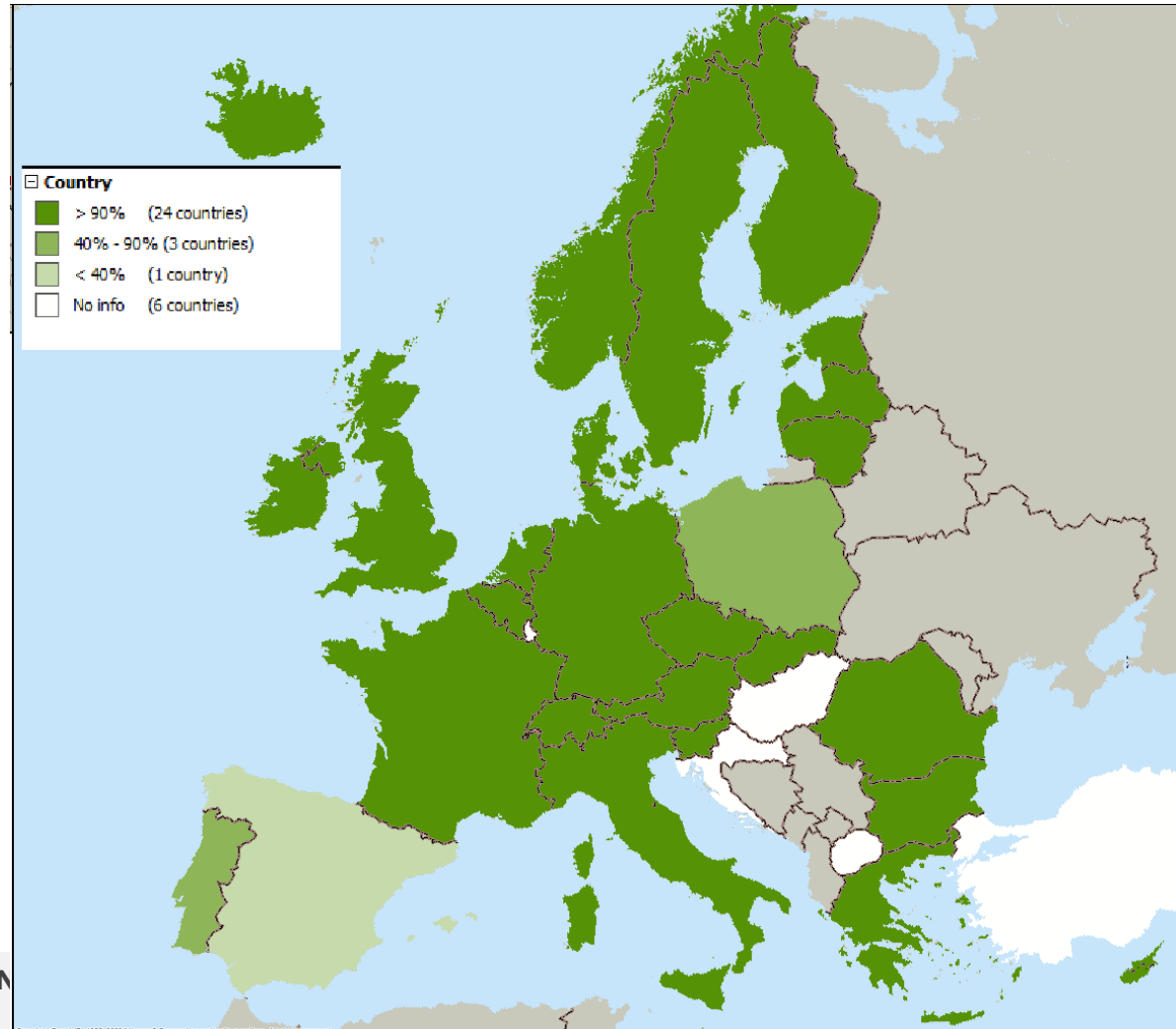
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5-6 December, 2013**



Implementation



National implementation in EU/EFTA - Publication of National Standards



*(Information from ENC
meeting:*

13/09/2010)

*(updated by individual contributions of
some Member States)*

Implementation of the Eurocodes

The plan for mid-to-long term actions (2014-2020) of COM (2012)433 "Strategy for the sustainable competitiveness of the construction sector and its enterprises" **envisages** for 2013-2014 a **Commission report on the implementation of Eurocodes in the Member States.**

On the next **Standing Committee for Construction** DG ENTR will invite the Member States to fill in a questionnaire on the state of implementation.



Collection of feedback on practical implementation of the Eurocodes

Collected by 2 September:

- **guidance material** – 59 publications
- information on **structures designed with the Eurocodes** – 39 structures, from which 31% built in third countries

The collected feedback will be used for:

- publication on the Eurocodes **website**
- preparation of the **Workshop on practical experience using the Eurocodes** – in 2014.



Harmonization –NDP database and JRC activities



Harmonization

1. Harmonization of implementation by EU and EFTA MS

Commission Recommendation of 11 December 2003: *MS should diverge from the recommended values only where geographical, geological or climatic conditions or specific levels of protection make that necessary.*

- Comparison of chosen NDPs
- Cross-border convergence of NDPs

2. Harmonization of second generation of Eurocodes:

- Assessment of the potential for reduction of the NDPs
- Harmonization between the Eurocodes

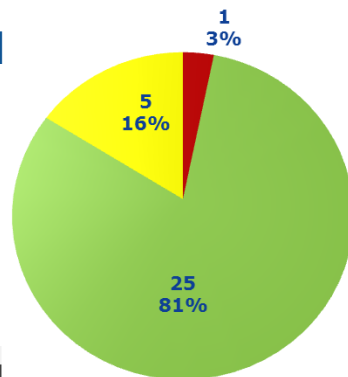


NDPs database – progress of uploading

by 7 November 2013

Out of **31 countries**
(28 EU MS + 3 EFTA MS):

- 25 Registered and **uploading**
(all MS registered)
- 5 Registered, **not uploading yet**
(5 MS - Croatia, **Greece, Italy, Luxembourg** and **Malta,**)
- **1** Not registered
(Iceland)



15,935 NDPs uploaded
(34.8 %)

299 parts completed (16%)

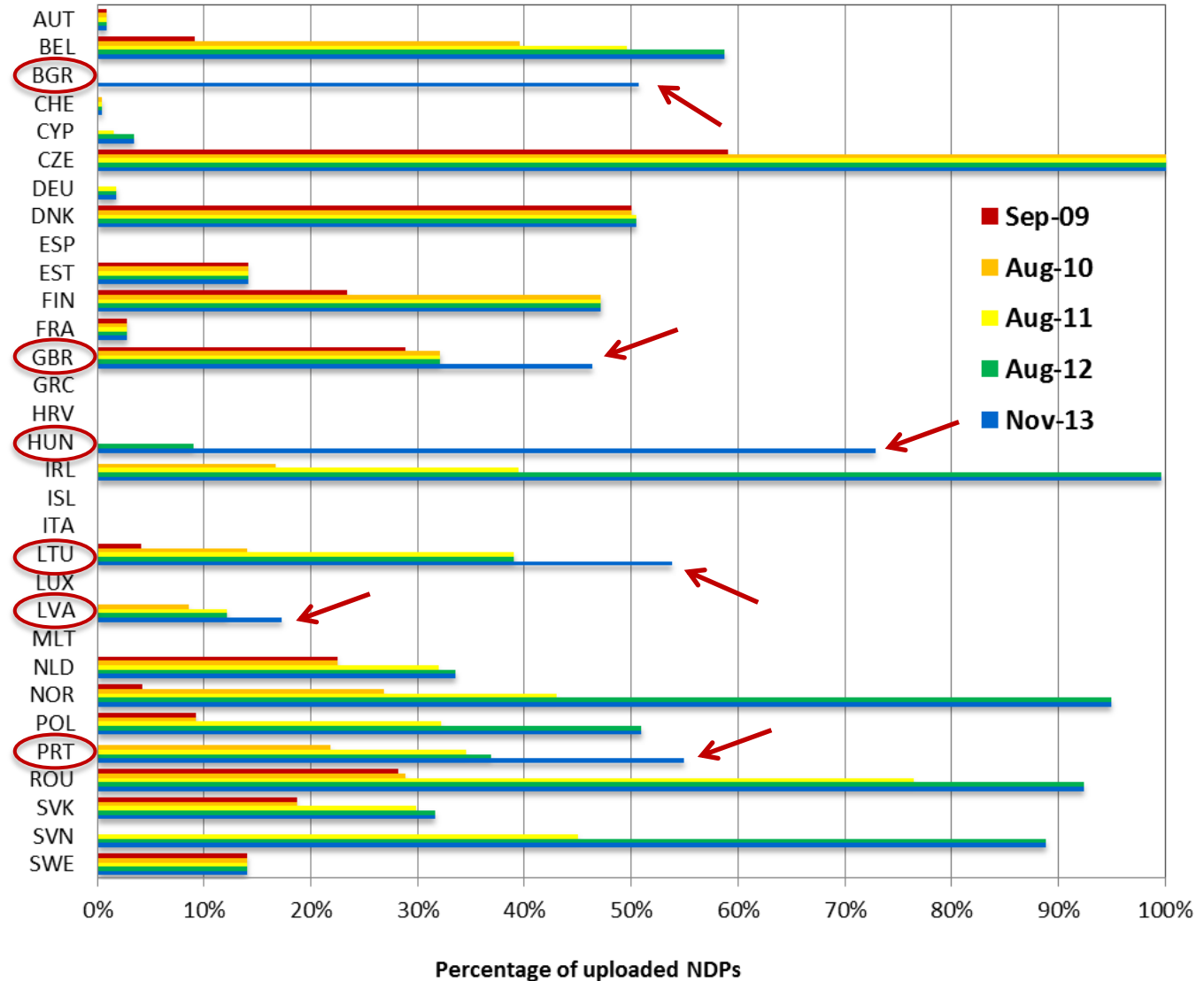
Belgium	6
Bulgaria	19
Germany	1
Denmark	31
Finland	6
Hungary	39
Ireland	50
Lithuania	1
Latvia	1
UK	12
Norway	55
Romania	30
Slovakia	3
Slovenia	42
Sweden	3



NDPs database progress of uploading

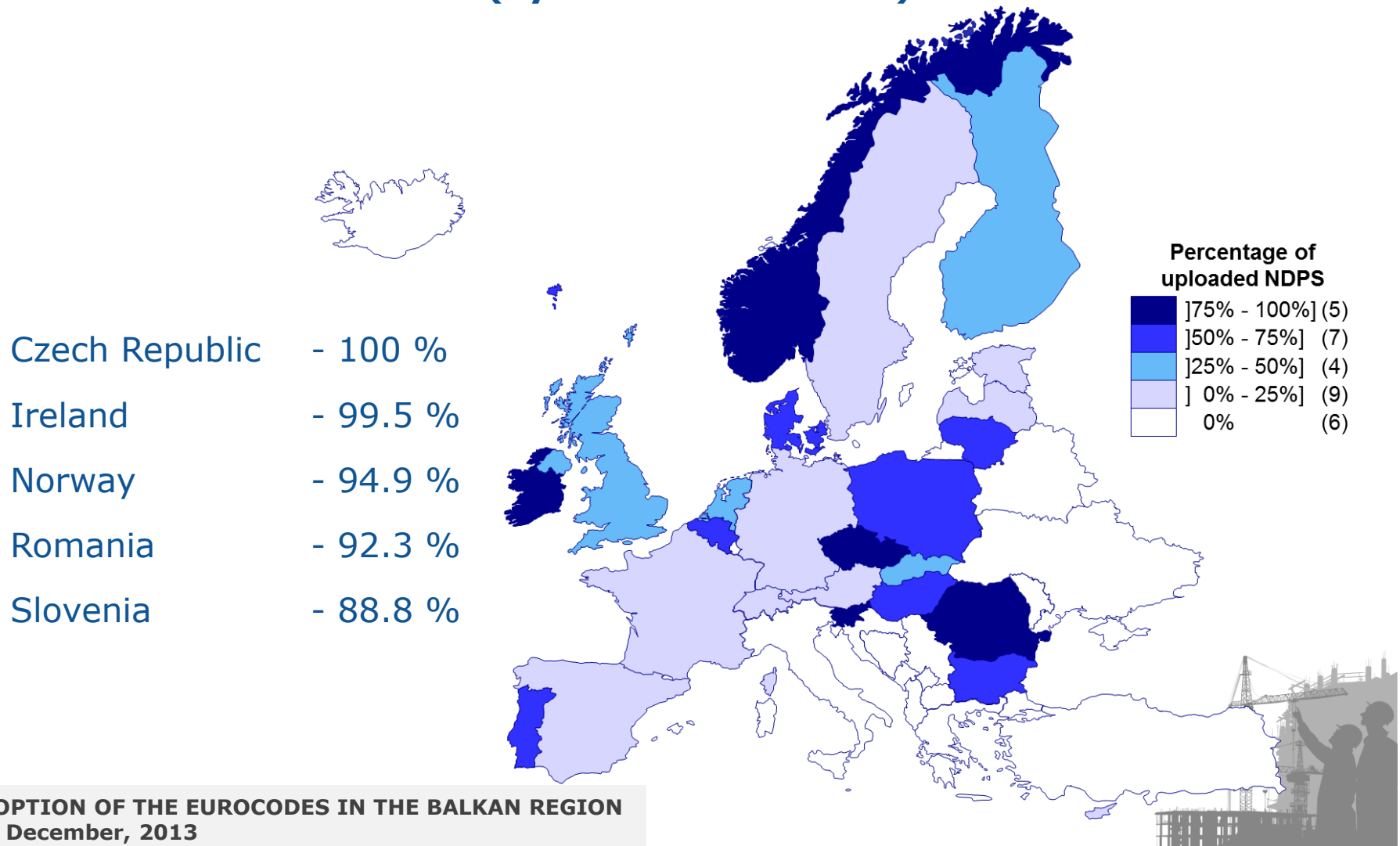
Recently progressing with the upload:

- *Bulgaria*
- *Hungary*
- *Latvia*
- *Lithuania*
- *Portugal*
- *UK*

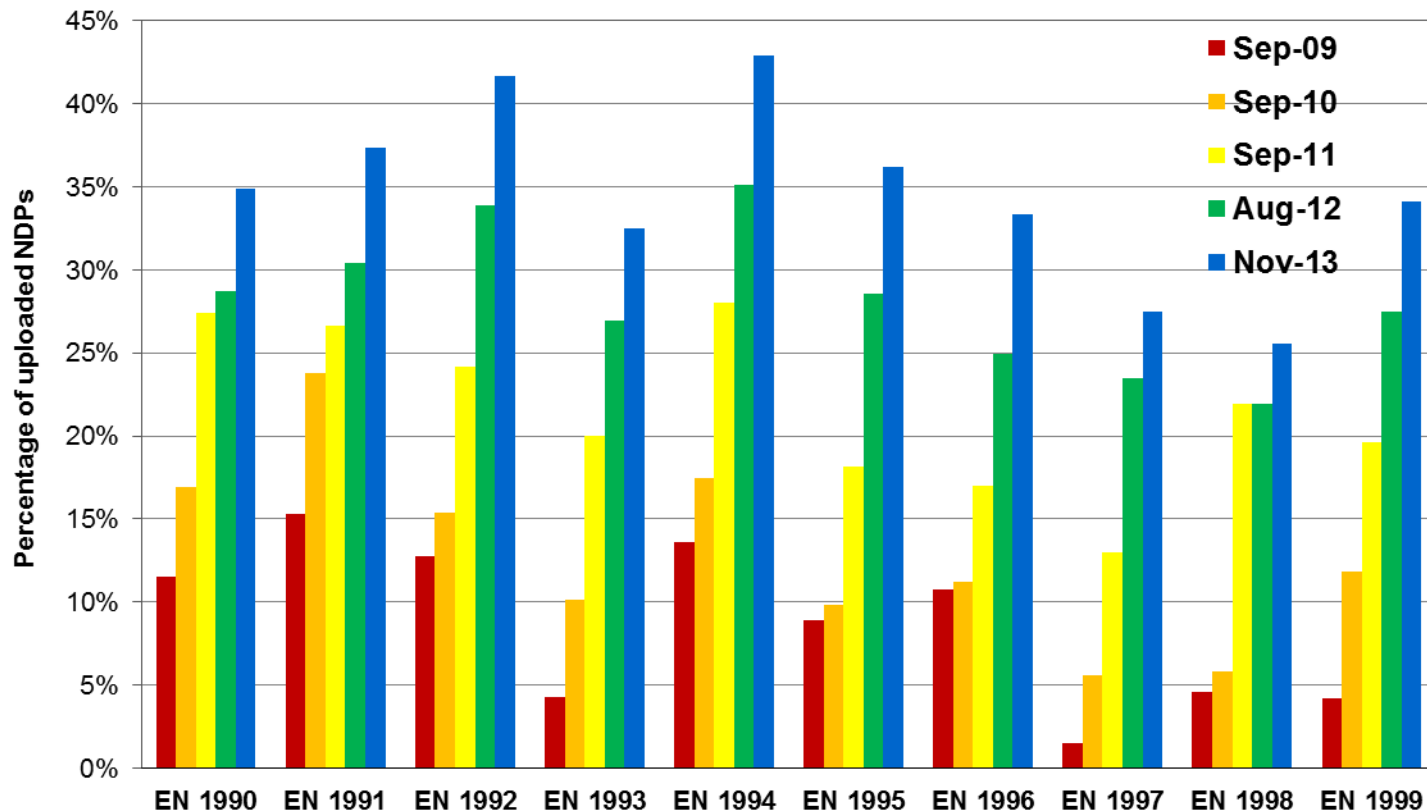


NDPs database – progress of uploading

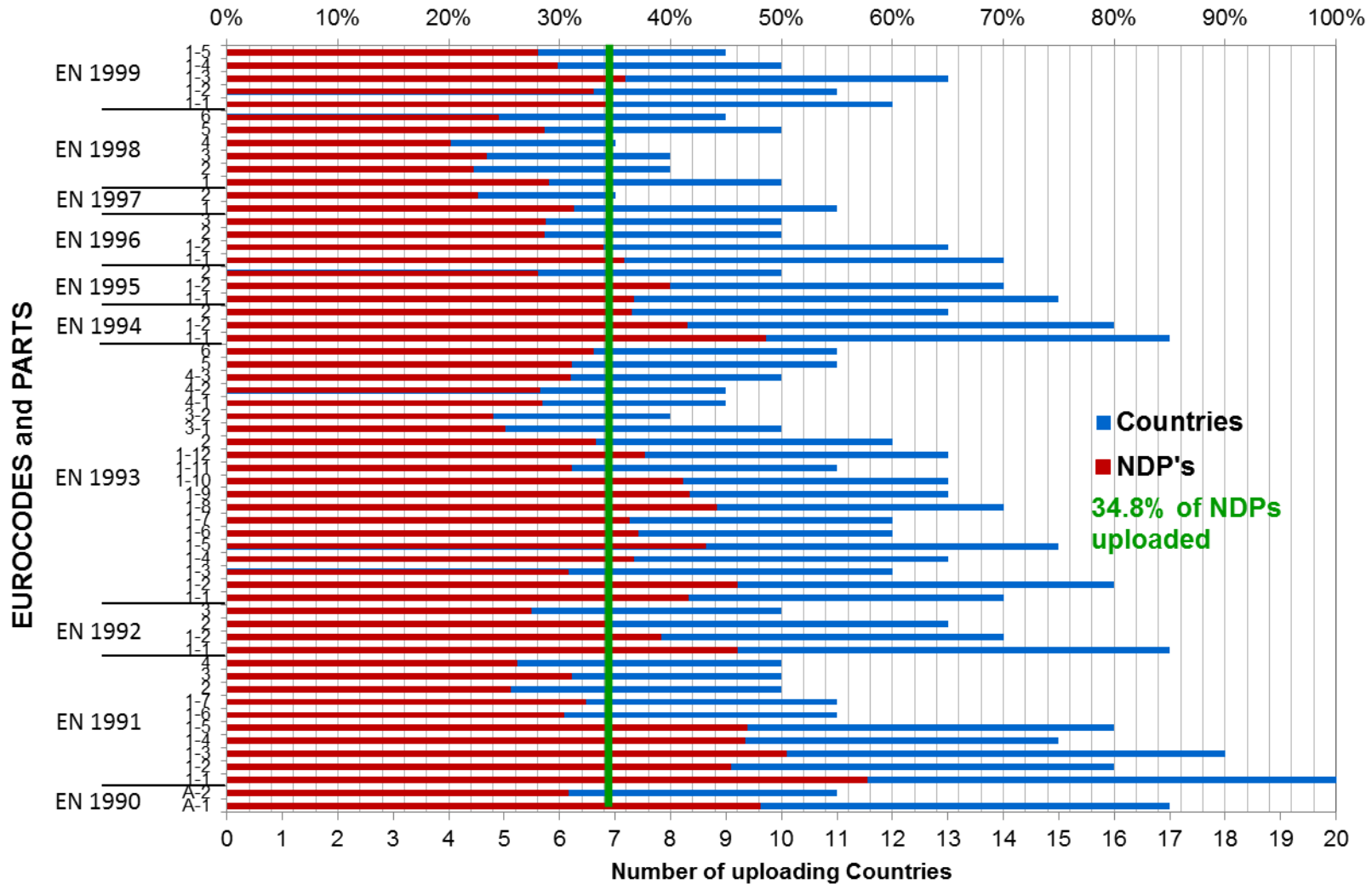
(by 7 November 2013)



Progress of uploading by Eurocode

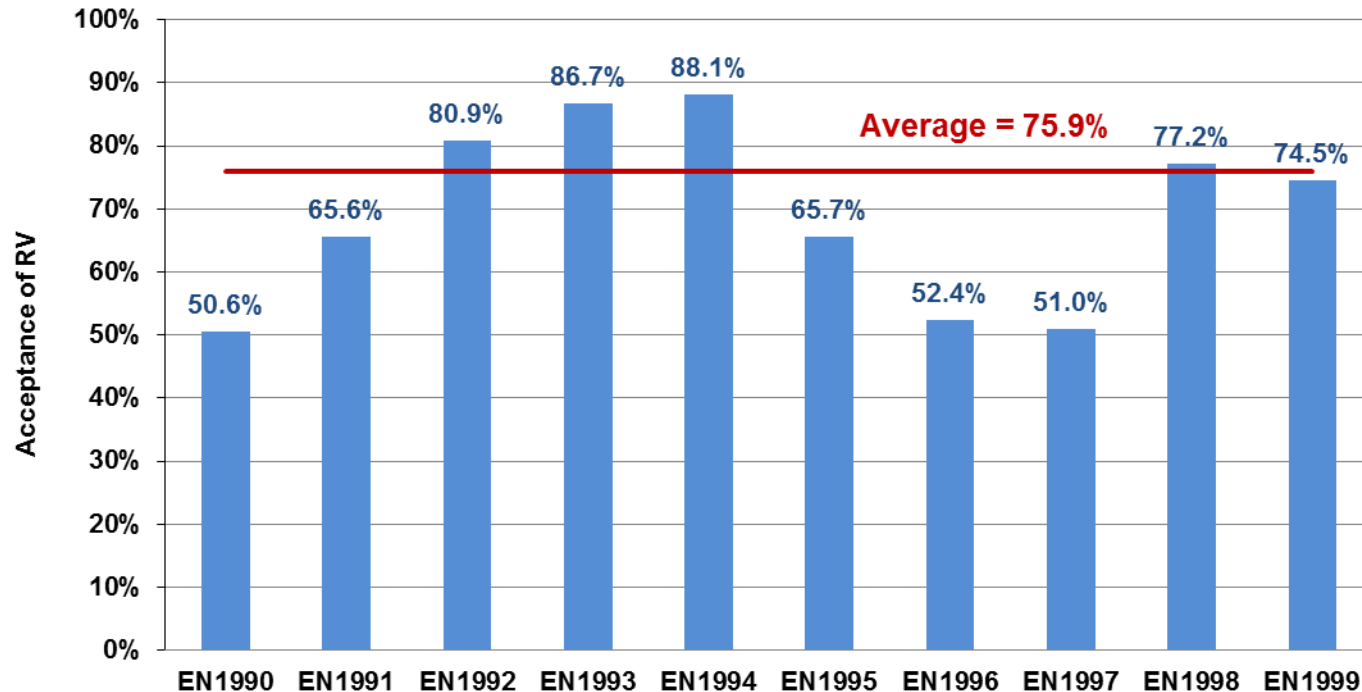


Percentage of uploaded NDP's (by 7 November 2013)



Acceptance of recommended values

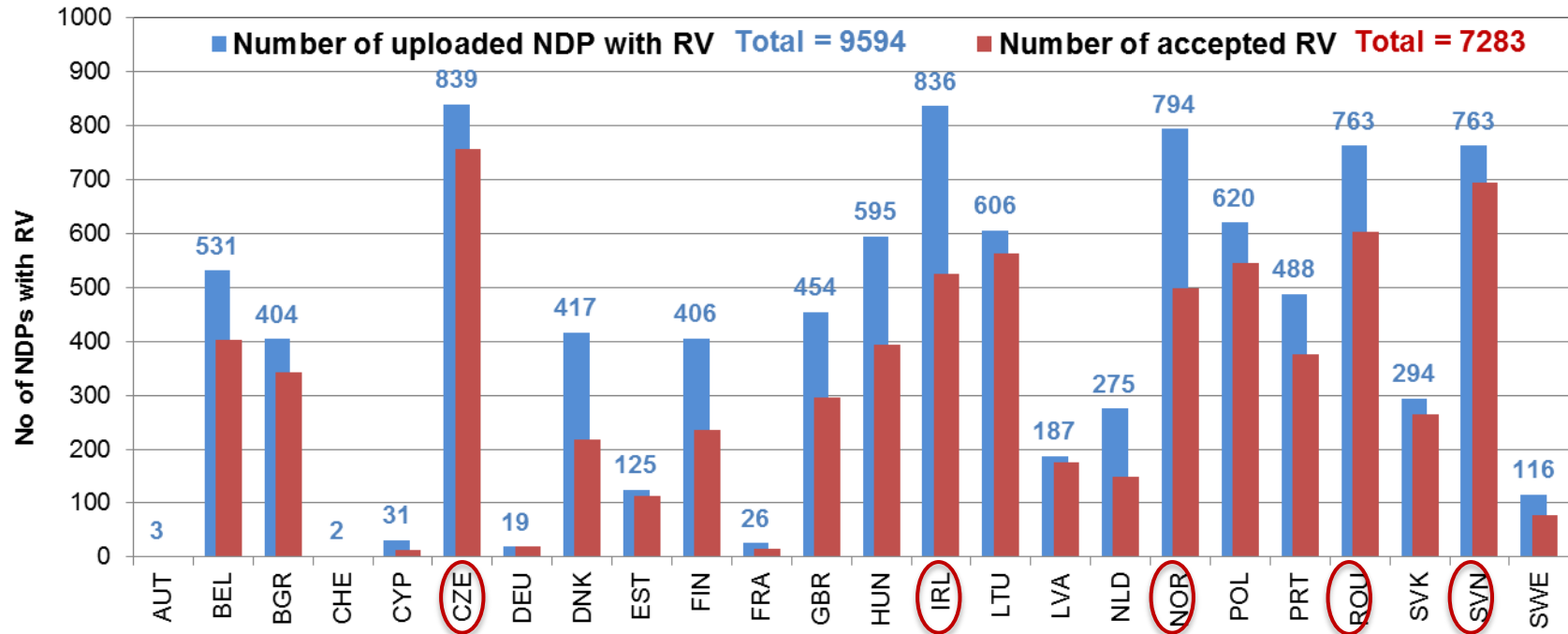
(analysis based on 35% of data available by 7 November 2013)



We can expect good harmonization in the National adoption of the most wide-used "material Eurocodes" **EN 1992 and EN 1993**.

The "head" Eurocode **EN 1990** - **51%** of acceptance. Special attention should be paid to the divergences from the recommended values and their impact as regards the technical differences for works.





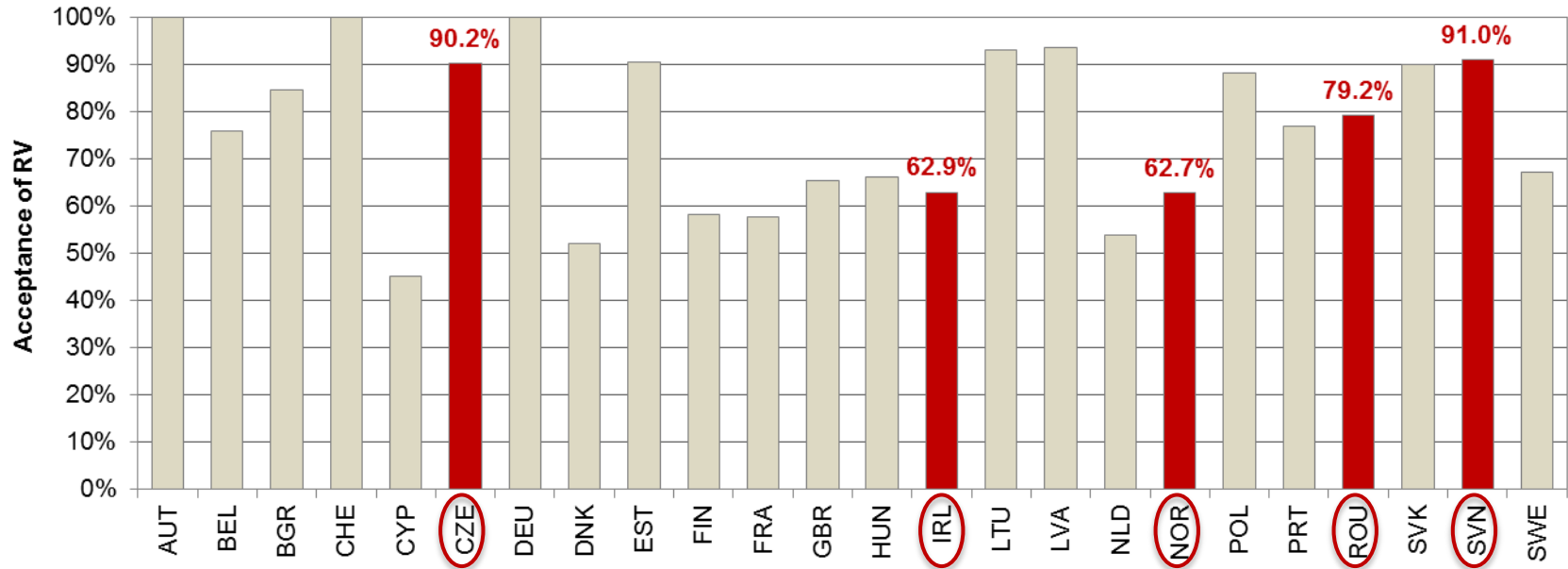
5 countries with **> 75% NDPs uploaded:**

- Czech Republic
- Ireland
- Norway
- Romania
- Slovenia

Analysis of the divergences:

- significance of the **climatic and geographical conditions**
- significance of the **technical traditions.**





Among the 5 countries with > **75% NDPs uploaded**:

- the **highest** rate of acceptance of the RV - **Slovenia 91.0%** and **Czech Republic 90.2%**
- the **lowest** rate of acceptance by **Norway 62.7%** and **Ireland – 62.9%**
- **Romania – 79.2%** accepted



Further development of Eurocodes (M466 EN and M515 EN)



M446 EN/19th May 2010 : European Commission Programming Mandate to CEN on the Eurocodes

CEN was requested to provide a programme covering:

- the **development of new standards or new parts** of existing standards, e.g. a new construction **material** and corresponding design methods or a new **calculation procedure**;
- the incorporation of **new performance requirements** and **design methods** in the existing standards.

CEN replied in June 2011.

M515 EN/12th December 2012 : European Commission Mandate to CEN for Amending Existing Eurocodes and Extending the scope of the Eurocodes

Basing on CEN reply to M446 EN, CEN is invited to develop a detailed work programme:

- **WP1:** Framework/Assessment Eurocodes: EN 1990, EN 1991, EN 1997, EN 1998;
- **WP2:** Specific (material) Eurocodes: EN 1992-1996 and New Eurocode on Glass (initially as S&T Report).

General requirements:

- Extension of existing rules to the assessment and strengthening of **existing buildings and structures**;
- Extension of existing rules for **robustness**.



Other requirements:

- Access the potential to reduce the NDPs;
- Improve the 'ease of use';
- Contribute to sustainability;
- Adoption of ISO standards (e.g. atmospheric icing,....);
- Auxiliary guidance documents;
- Provide background documents;
- Technical report on impacts of climate change.

CEN adopted the reply on 28 May 2013. Ready – by 2019.



JRC contribution

Support to CEN/TC250 on the **definition of the potential for reduction of the number of the NDPs** in the second generation of the Eurocodes.

The standardisation programme of TC250 envisages that the new **pre-normative documents will first be published as JRC Scientific and Policy Reports**, before their publication as CEN Technical Specifications. After a period for trial use and commenting, TC 250 will decide whether the Technical Specifications should be converted into ENs.

Technical and organizational support to DG ENTR and CEN/TC250 for **standardisation works**.



Three events on earthquake engineering/EN1998

JRC/Ispra, 27-29 November 2013

- 1) First meeting of the Working Group 1 (**WG1**) on **Eurocode 8** of the European Association for Earthquake Engineering (**EAE**).
- 2) Workshop on **Seismic Hazard Harmonization in Europe** with the team of FP7 SHARE project, CEN/TC250/SC8 and WG1 of the EAE to discuss the SHARE model, hazard results and the possibility for implementation of SHARE engineering output.
- 3) **27th meeting of CEN/TC250/SC8** to prepare a detailed work schedule for tasks included in the Phase 1 of the evolution of Eurocode 8, to specify the SC8 criteria for selection of Project Team (PT) members, and to address the reestablishment of National Technical Contacts.



Meeting on implications of climate change on structural design

JRC/Ispra, 2 December 2013

Participants:

TC250: SC1, WG2 and WG7

JRC: Structural Assessment Unit, Climate Risk Management Unit

Indications for change (compared to the data of late '90ies) of the extreme (or/and mean) values for:

- temperature/thermal effects,
- wind,
- snow,
- precipitations.



Promotion of the Eurocodes outside the EU



Global Promotion of Eurocodes



The EU/JRC, BSI, CEN, experts: Eurocodes globally seminars and lectures





Promotion outside EU

欧洲规范：在欧盟以外的应用

B2 Роль кода EN 1990: Ключевой Еврокод

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      EN1990[EN 1990] --> EN1991[EN 1991]
      EN1991 --> EN1992[EN 1992]
      EN1991 --> EN1993[EN 1993]
      EN1991 --> EN1994[EN 1994]
      EN1991 --> EN1995[EN 1995]
      EN1991 --> EN1996[EN 1996]
      EN1991 --> EN1999[EN 1999]
      EN1991 --> EN1997[EN 1997]
      EN1991 --> EN1998[EN 1998]
  
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欧盟委员会与工业公司
联合研究中心

B1 THE EUROCODES: IMPLEMENTATION AND USE

2006 = Availability of EN Eurocodes
2008 = Publication of

L2 The Eurocodes
Getting prepared

A strategic approach

Successful implementation of the Eurocodes requires a shared effort and close collaboration of stakeholders, namely: National Authorities, National Standards Bodies, Technical and Professional Associations, Academia and the Construction Industry.

The implementation work programme calls for a strategic approach to address the following issues:

Awareness material

EUROCODES
BUILDING THE FUTURE

on the Adoption of the Eurocodes in the EU New Member, Accession and Candidate Countries

27-29 November 2005
Palace Grand Hotel
Varese, Italy

EU-China Trade Project
Support to China's Integration into the World Trading System

中国-欧盟建筑标准和节能研讨会
EU-China Conference on Standards and Energy Efficiency in Buildings

2008年11月20日，北京
29 January 2008, Beijing

EUROCODES
A high quality safety and healthy environment

Еврокоды
инструмент для устойчивого развития

Содружество ЕС России по стандартизации и сертификации

11 October 2008
Prague/Brno, Moravia

11 October 2008
Prague/Brno, Moravia

EU - RUSSIA Regulatory Dialogue
Construction Sector Subgroup

BRIDGE DESIGN WITH EUROCODES

JOINT RESEARCH CENTRE
ISPRA, ITALY
1 - 2 OCTOBER 2012

ORGANIZED AND SUPPORTED BY
EUROPEAN COMMISSION
DG Joint Research Centre
EUROPEAN FEDERATION
of National Standards Bodies
RUSSIAN FEDERATION
Federal Highway Agency, Ministry of Transport
EUROPEAN COMMITTEE FOR STANDARDIZATION
TC250 Structural Eurocodes

EU - RUSSIA Regulatory Dialogue
Construction Sector Subgroup

Worked Examples on
BRIDGE DESIGN WITH EUROCODES

VENUE: Hotel Kempinski Moika 22
St Petersburg, Russia
17 - 18 APRIL 2013

ORGANIZED AND SUPPORTED BY
EUROPEAN COMMISSION
DG Joint Research Centre
EUROPEAN FEDERATION
of National Standards Bodies
RUSSIAN FEDERATION
Federal Highway Agency, Ministry of Transport
EUROPEAN COMMITTEE FOR STANDARDIZATION
TC250 Structural Eurocodes

ADOPTION OF THE EUROCODES IN THE BALKAN REGION

5-6 December 2013
MILAN & JRC-ISPRA, ITALY

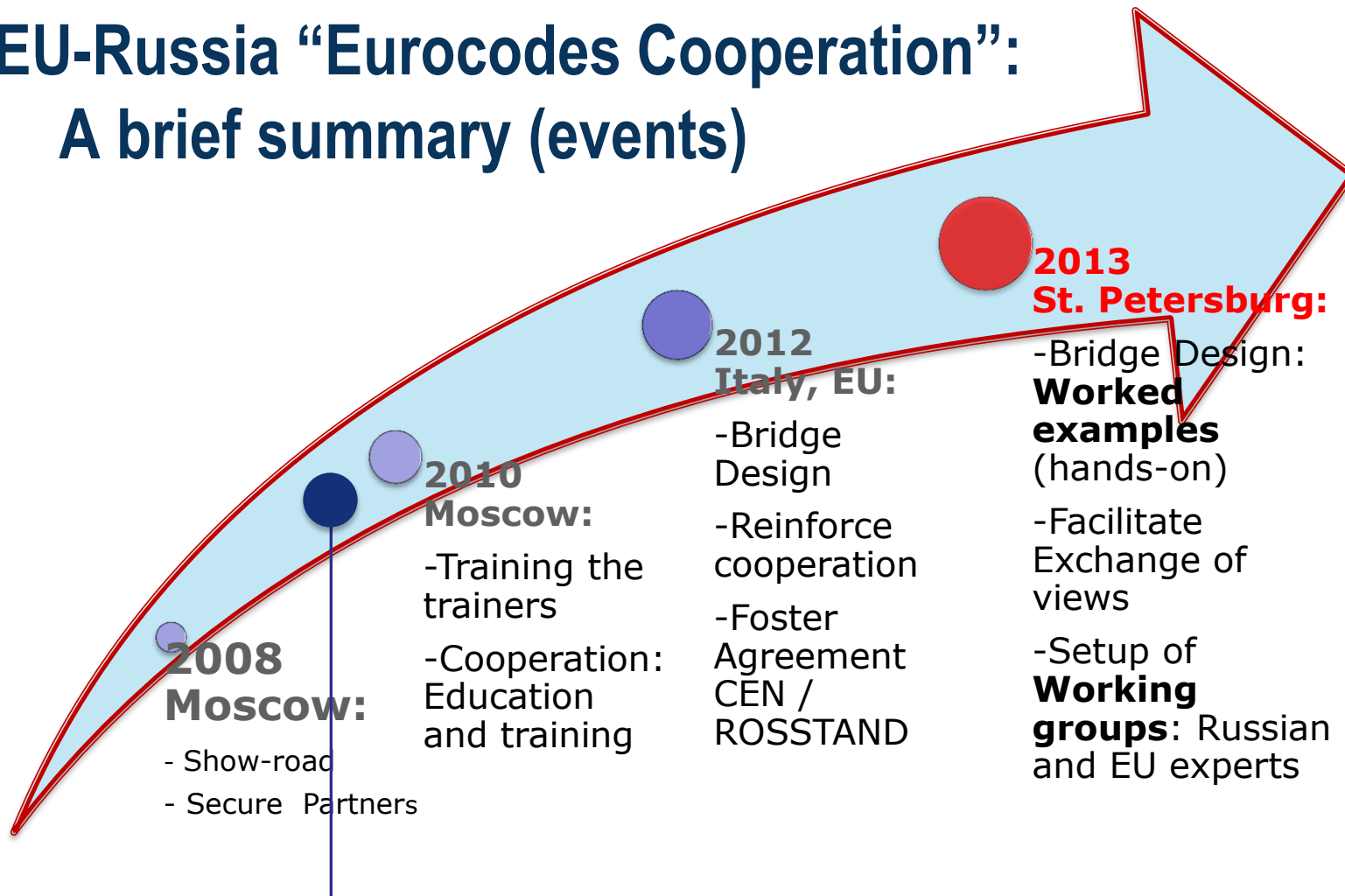
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DG Joint Research Centre

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EUROPEAN COMMISSION
JRC Engagement and Integration Action

International workshops



EU-Russia “Eurocodes Cooperation”: A brief summary (events)



March 2010: **EU-Russia Regulatory Dialogue on construction**



Promotion of Eurocodes in 3rd countries:

Other highlights:

- **Singapore:** adopted Eurocodes as of April 2013
- **Ethiopia:** to be adopted as of December 2013
- **Malaysia:** process for adoption on-going
- **Vietnam:** expressed interest
- **China:** MoU to be signed btw. JRC - University of Tongji





- **Supported by** the JRC Enlargement and Integration action, DG ENTR, DG ELARG, CEN MC, CEN/TC250, MS (Belgium, Bulgaria, Croatia)
- **Participants from non-EU countries** (Albania, Bosnia and Herzegovina, former Yugoslav republic of Macedonia, Moldova, Montenegro, Serbia and Turkey) and Croatia
- Focus on the **progress and specific needs** for adoption and implementation of the Eurocodes and related EN standards in the Balkan region

ADOPTION OF THE **EUROCODES** IN THE **BALKAN** REGION

5-6 December 2013
MILAN & JRC-ISPRA, ITALY

Organized by
EUROPEAN COMMISSION
DG **J**oint **R**esearch **C**entre

Supported by
EUROPEAN COMMISSION
JRC **E**nlargement and **I**ntegration **A**ction



Joint
Research
Centre

Thank you for your attention

<http://eurocodes.jrc.ec.europa.eu>

