

**BUILDING CAPACITIES FOR ELABORATION
OF NDPs AND NAs OF THE EUROCODES IN
THE BALKAN REGION**

4-5 November 2014, Skopje



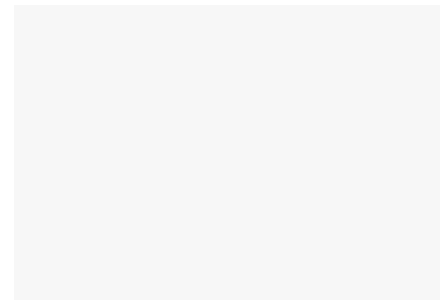
PROMOTION OF USE OF THE EUROCODES IN THE BALKAN REGION WITHIN JRC EI&A

Roberta Apostolska, Fabio Taucer, Silvia Dimova, Artur Pinto

European Commission, Joint Research Centre (JRC),
Institute for the Protection and Security of the Citizen (IPSC),
European Laboratory for Structural Assessment Unit (ELSA)

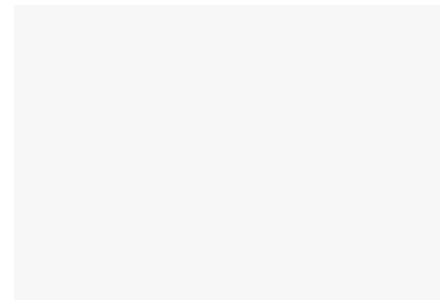
Outline

- ❑ Promotion of the use of the Eurocodes in the Balkan region within E&IA
- ❑ Previous activities – Workshop “Adoption of the Eurocode in the Balkan region”
- ❑ On-going activity – Workshop “ Building capacities for elaboration of NDPs and NAs of the Eurocodes in the Balkan region”
- ❑ Conclusions and recommendations



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The Joint Research Centre (JRC) gives scientific and technical support to countries on the road towards EU membership, New Member States and Framework Programme (FP) Associated Countries. It supports the transfer of the EU legal framework (*acquis communautaire*) to national legislation and facilitates scientific and technical exchange.

Activities (workshops, training courses and conferences)

In the frame of the Enlargement and Integration Action the JRC offers specialised workshops, conferences and advanced training courses within its areas of competence. The workshops are set up to allow competent organisations in the new Member States, Candidate Countries, Potential Candidate Countries, FP7 Associated Countries, and on an ad-hoc basis European Neighbourhood Policy Countries and Russia to study the scientific and technical methods and techniques underpinning EU policy implementation. They also provide an opportunity for EU organisations to learn about the methods currently used in those countries and for both parties to discuss how the EU legislation should be implemented in the future.

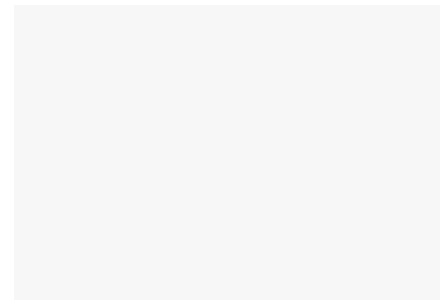
[Planned workshops and training courses](#)

E&IA Contact

For questions please use the following e-mail address: jrc-enlargement@ec.europa.eu ✉

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ADOPTION OF THE EUROCODES IN THE BALKAN REGION

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

Organized by

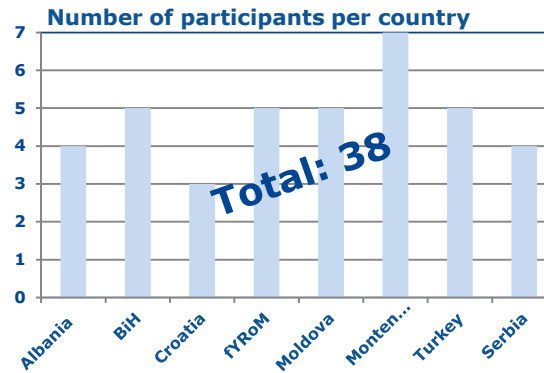
EUROPEAN COMMISSION

DG Joint Research Centre

Supported by

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JRC Enlargement and Integration Action



CONCLUSIONS

- ❑ Most of the non-EU countries in the Balkan region are planning to **use the Eurocodes as primary standards**. However – lack of relevant **institutional support** .
- ❑ Good progress on Eurocodes **translations**, especially of EN 1990, EN 1991 and EN 1992.
- ❑ Eurocodes are included in **university education**; **no training courses for engineers** are offered by professional associations (except in Montenegro); lack of comprehensive **training material**.
- ❑ Need for **creating a regional platform** for collaboration on adoption of the Eurocodes, e.g. itinerant regional conferences and meetings hosted by each country.

Download the report from:

<http://eurocodes.jrc.ec.europa.eu/showpublication.php?id=332>

**BUILDING CAPACITIES FOR ELABORATION OF NDPs AND NAs
OF THE EUROCODES IN THE BALKAN REGION**

4-5 November 2014, Skopje

NDPs, NATIONAL ANNEXES & HARMONIZATION – Translation of Eurocodes and definition of NDPs

(data refer to Dec. 2013)

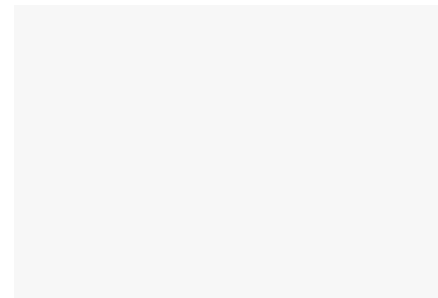
| | Progress of translation of the Eurocodes | | | | | | | | | |
|-----------------|--|---------|---------|---------|---------|--------|--------|---------|---------|--------|
| | EN1990 | EN1991 | EN1992 | EN1993 | EN1994 | EN1995 | EN1996 | EN1997 | EN1998 | EN1999 |
| AL | ✓ | ✓ | ✓ | ✓ | none | none | none | none | ✓ | none |
| BA | none | none | none | none | none | none | none | none | start | none |
| MK ¹ | ✓ | ✓ | ✓ | ✓ | ✓ | ✓ | ✓ | ✓ | ✓ | ✓ |
| MD | ✓ | ✓ | ✓ | ✓ | ✓ | ✓ | ✓ | ✓ | ✓ | ✓ |
| ME | ✓ | advance | none | none | none | none | none | none | advance | none |
| RS | ✓ | ✓ | advance | ✓ | ✓ | ✓ | ✓ | advance | advance | ✓ |
| TR | advance | advance | advance | advance | advance | none | none | none | advance | none |

| | Progress of definition of NDPs | | | | | | | | | |
|-----------------|--------------------------------|---------|--------|--------|--------|--------|---------|--------|---------|---------|
| | EN1990 | EN1991 | EN1992 | EN1993 | EN1994 | EN1995 | EN1996 | EN1997 | EN1998 | EN1999 |
| AL | none | none | none | none | none | none | none | none | start | none |
| BA | none | none | none | none | none | none | none | none | none | none |
| MK ¹ | ✓ | start | start | start | start | start | advance | start | start | start |
| MD | none | none | none | none | none | none | none | none | none | none |
| ME | ✓ | advance | none | none | none | none | none | none | advance | none |
| RS | ✓ | advance | start | ✓ | ✓ | start | start | start | advance | advance |
| TR | none | none | none | none | none | none | none | none | none | none |

¹MK¹ is a provisional code which does not prejudice in any way the definitive nomenclature for this country, which will be agreed following the conclusion of negotiations currently taking place on this subject at the United Nations
(http://epp.eurostat.ec.europa.eu/statistics_explained/index.php/Glossary:Country_codes#cite_note-1)

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- Conclusions and recommendations





BUILDING CAPACITIES FOR
ELABORATION OF **NDPs** AND **NAs**
OF THE **EUROCODES** IN
THE **BALKAN** REGION

4-5 November 2014
Skopje, the former Yugoslav Republic of Macedonia

Organized by
EUROPEAN COMMISSION - DG Joint Research Centre

Hosted by
Standardization Institute of the Republic of Macedonia

Supported by
EUROPEAN COMMISSION
JRC Enlargement and Integration Action



Joint
Research
Centre

About the workshop

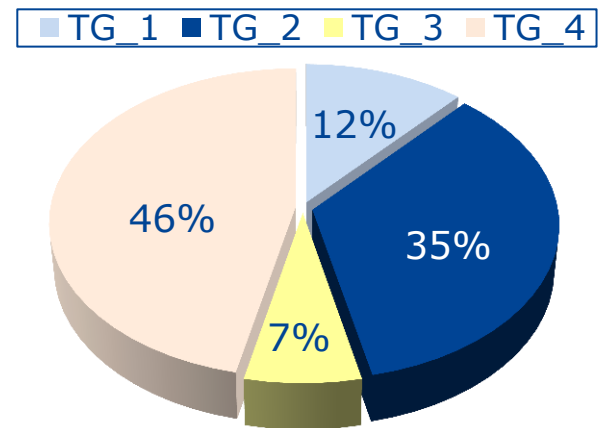
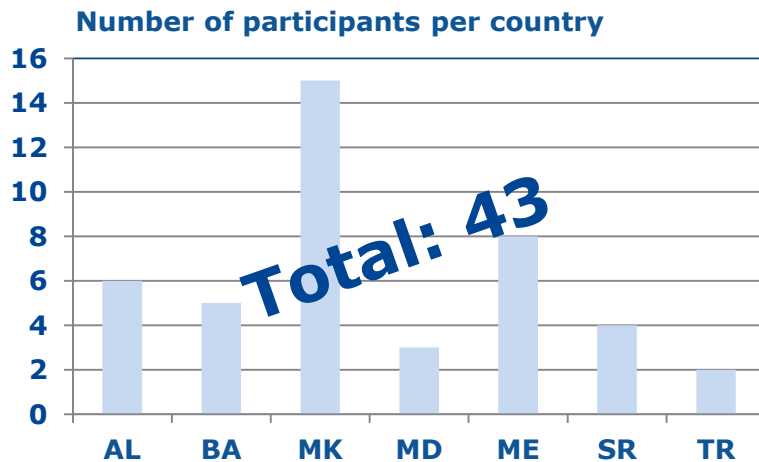
The workshop is aimed to further adoption and implementation of the Eurocodes in the non-EU countries in the Balkan region.

OBJECTIVES:

- ❑ **Assess** recent progress, difficulties and needs for the definition of the NDPs and NAs since the first workshop held in Milan & Ispra on 5-6 December 2013
- ❑ **Boost regional collaboration** for cross-border convergence of NDPs, in particular for the harmonization of seismic hazard maps
- ❑ **Facilitate transfer of knowledge** from EU MS experts to representatives of non-EU countries in the Balkan region
- ❑ **Give an overview of JRC support** to the implementation of the Eurocodes and **raise awareness** of the existing Eurocodes web site and benefits emanating from its use
- ❑ **Improve information flow** between National Standardization Bodies and European Commission
- ❑ **Increase awareness of existing Enlargement funds and instruments** which might support further progress in adoption and implementation of the Eurocodes

About the workshop

Number and groups of participants from non-EU countries



| | |
|-------|---|
| TG_1: | National Authorities and policy decision makers |
| TG_2: | National Standardization Bodies |
| TG_3: | Professional users of standards |
| TG_4: | Institution who will stream the determination of NDPs and the application and training on the Eurocodes |

Questionnaire

OBJECTIVE:

To assess current status in the elaboration of NDPs and NAs of the Eurocodes in the non-EU countries in the Balkan region since last workshop (December, 2013)

Translation of the
EN part in National
language

Questionnaire

OBJECTIVE:

To assess current status in the elaboration of NDPs and NAs of the Eurocodes in the non-EU countries in the Balkan region since last workshop (December, 2013)

Translation of the EN part in National language

Definition of NDPs in the EN part

YES –

Provide the % of accepted RV

NO –

1. Assess the progress in %
2. Provide the % of accepted RV for defined NDPs

Questionnaire

OBJECTIVE:

To assess current status in the elaboration of NDPs and NAs of the Eurocodes in the non-EU countries in the Balkan region since last workshop (December, 2013)

Translation of the EN part in National language

Definition of NDPs in the EN part

Publishing of the EN part as National standard

YES –

Provide the % of accepted RV

NO –

- 1. Assess the progress in %**
- 2. Provide the % of accepted RV for defined NDPs**

YES -

NO –

Provide the envisage date

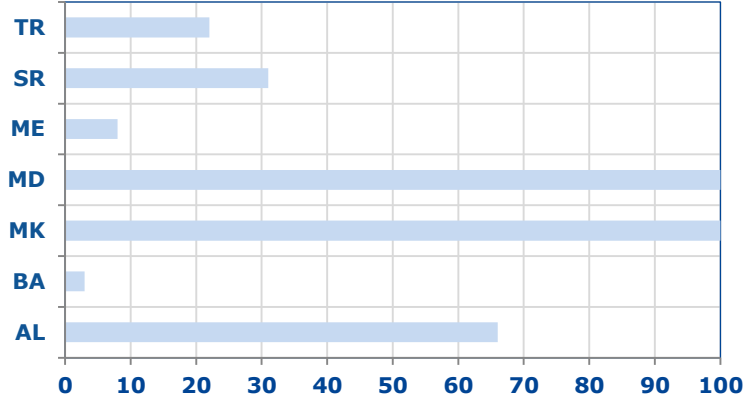
Translation of the EN parts



| EN parts | AL | BA | MK | MD | ME | RS | TR |
|--------------|----|----|----|----|----|----|----|
| EN 1990 | | | | | | | |
| EN 1990 / A1 | | | | | | | |
| EN 1991-1-1 | | | | | | | |
| EN 1991-1-2 | | | | | | | |
| EN 1991-1-3 | | | | | | | |
| EN 1991-1-4 | | | | | | | |
| EN 1991-1-5 | | | | | | | |
| EN 1991-1-6 | | | | | | | |
| EN 1991-1-7 | | | | | | | |
| EN 1991-2 | | | | | | | |
| EN 1991-3 | | | | | | | |
| EN 1991-4 | | | | | | | |
| EN 1992-1-1 | | | | | | | |
| EN 1992-1-2 | | | | | | | |
| EN 1992-2 | | | | | | | |
| EN 1992-3 | | | | | | | |
| EN 1993-1-1 | | | | | | | |
| EN 1993-1-2 | | | | | | | |
| EN 1993-1-3 | | | | | | | |
| EN 1993-1-4 | | | | | | | |
| EN 1993-1-5 | | | | | | | |
| EN 1993-1-6 | | | | | | | |
| EN 1993-1-7 | | | | | | | |
| EN 1993-1-8 | | | | | | | |
| EN 1993-1-9 | | | | | | | |
| EN 1993-1-10 | | | | | | | |
| EN 1993-1-11 | | | | | | | |
| EN 1993-1-12 | | | | | | | |
| EN 1993-2 | | | | | | | |
| EN 1993-3-1 | | | | | | | |
| EN 1993-3-2 | | | | | | | |
| EN 1993-4-1 | | | | | | | |
| EN 1993-4-2 | | | | | | | |
| EN 1993-4-3 | | | | | | | |
| EN 1993-5 | | | | | | | |
| EN 1993-6 | | | | | | | |
| EN 1994-1-1 | | | | | | | |
| EN 1994-1-2 | | | | | | | |
| EN 1994-2 | | | | | | | |
| EN 1995-1-1 | | | | | | | |
| EN 1995-1-2 | | | | | | | |
| EN 1995-2 | | | | | | | |
| EN 1996-1-1 | | | | | | | |
| EN 1996-1-2 | | | | | | | |
| EN 1996-2 | | | | | | | |
| EN 1996-3 | | | | | | | |
| EN 1997-1 | | | | | | | |
| EN 1997-2 | | | | | | | |
| EN 1998-1 | | | | | | | |
| EN 1998-2 | | | | | | | |
| EN 1998-3 | | | | | | | |
| EN 1998-4 | | | | | | | |
| EN 1998-5 | | | | | | | |
| EN 1998-6 | | | | | | | |
| EN 1999-1-1 | | | | | | | |
| EN 1999-1-2 | | | | | | | |
| EN 1999-1-3 | | | | | | | |
| EN 1999-1-4 | | | | | | | |
| EN 1999-1-5 | | | | | | | |

translated
 not translated

Progress of the translation [%]



2016

| Progress of translation of the Eurocodes | | | | | | | | | | | |
|--|---------|---------|---------|---------|---------|--------|--------|---------|---------|--------|--|
| | EN1990 | EN1991 | EN1992 | EN1993 | EN1994 | EN1995 | EN1996 | EN1997 | EN1998 | EN1999 | |
| AL | ✓ | ✓ | ✓ | ✓ | none | none | none | none | ✓ | none | |
| BA | none | none | none | none | none | none | none | none | start | none | |
| MK ¹ | ✓ | ✓ | ✓ | ✓ | ✓ | ✓ | ✓ | ✓ | ✓ | ✓ | |
| MD | ✓ | ✓ | ✓ | ✓ | ✓ | ✓ | ✓ | ✓ | ✓ | ✓ | |
| ME | ✓ | advance | none | none | none | none | none | none | advance | none | |
| RS | ✓ | ✓ | advance | ✓ | ✓ | ✓ | ✓ | advance | advance | ✓ | |
| TR | advance | advance | advance | advance | advance | none | none | none | advance | none | |

Definition of the NDPs

Within the national framework for implementation of the Eurocodes each country must define NDPs to applied on their territory. These parameters are left open for national choice and should cover country differences in geographical, geological and climatic conditions, different design and construction practice, as well as different safety level requirement.

NDPs are required for national implementation of the Eurocodes.

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.

EN parts with defined NAs

Albania 37

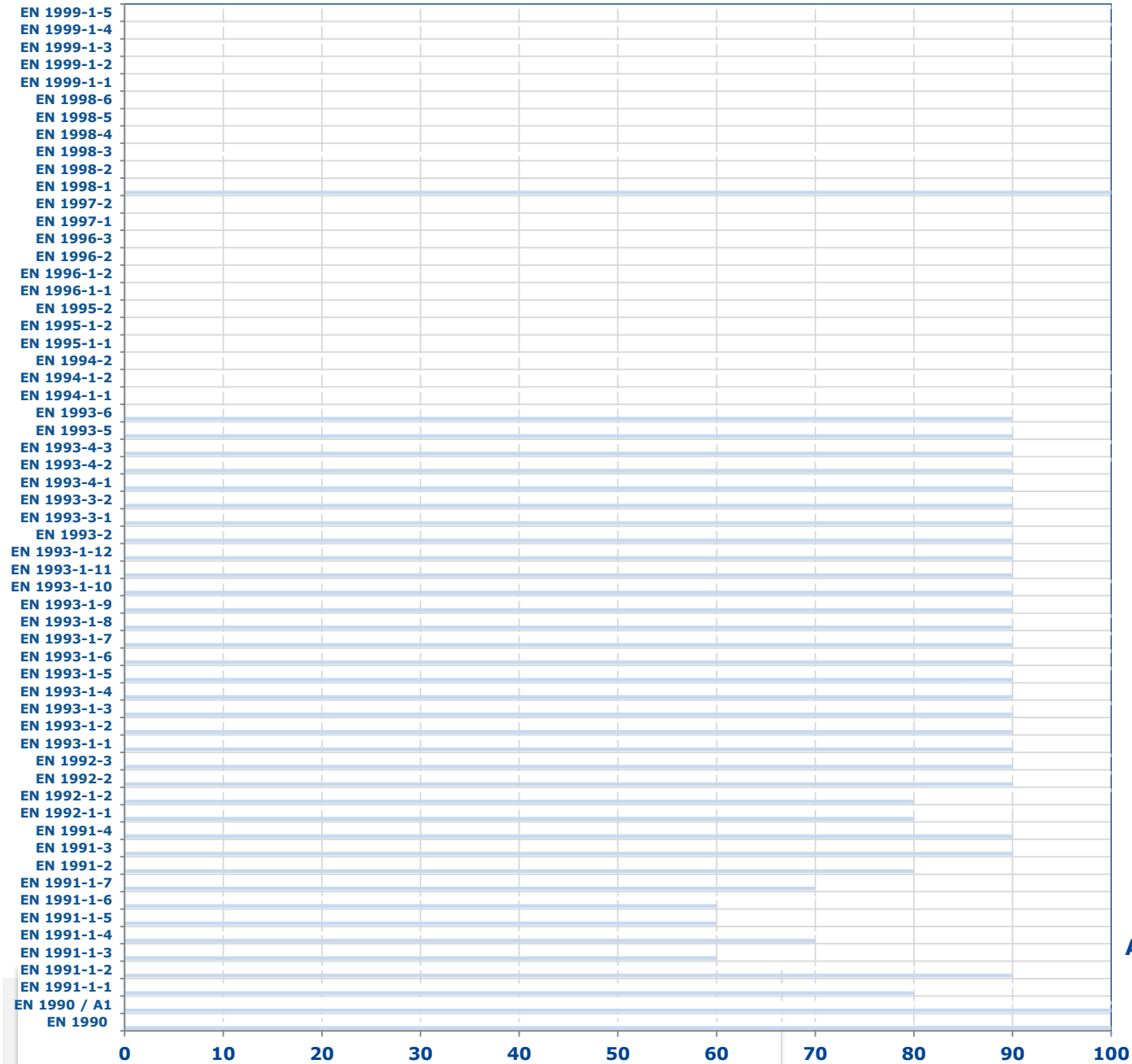
Serbia 34

The former Yugoslav
Republic of Macedonia 28
on public enquiry,
foreseen date for completion
Aug-Sep 2015

Moldova
Document development since
2013: NAs 1990; EN 1991;
EN 1992

| | EN parts | AL | BA | MK | MD | ME | RS | TR |
|-------------|--------------|-------------|----|----|----|----|----|----|
| EN 1990 | EN 1990 | | | | | | | |
| | EN 1990 / A1 | | | | | | | |
| | EN 1991-1-1 | | | | | | | |
| | EN 1991-1-2 | | | | | | | |
| | EN 1991-1-3 | | | | | | | |
| | EN 1991-1-4 | | | | | | | |
| | EN 1991-1-5 | | | | | | | |
| | EN 1991-1-6 | | | | | | | |
| | EN 1991-1-7 | | | | | | | |
| EN 1991 | EN 1991-2 | | | | | | | |
| | EN 1991-3 | | | | | | | |
| | EN 1991-4 | | | | | | | |
| | EN 1992-1-1 | | | | | | | |
| EN 1992 | EN 1992-1-2 | | | | | | | |
| | EN 1992-2 | | | | | | | |
| | EN 1992-3 | | | | | | | |
| | EN 1993-1-1 | | | | | | | |
| | EN 1993-1-2 | | | | | | | |
| | EN 1993-1-3 | | | | | | | |
| | EN 1993-1-4 | | | | | | | |
| | EN 1993-1-5 | | | | | | | |
| | EN 1993-1-6 | | | | | | | |
| | EN 1993-1-7 | | | | | | | |
| | EN 1993-1-8 | | | | | | | |
| | EN 1993-1-9 | | | | | | | |
| | EN 1993-1-10 | | | | | | | |
| | EN 1993-1-11 | | | | | | | |
| EN 1993 | EN 1993-1-12 | | | | | | | |
| | EN 1993-2 | | | | | | | |
| | EN 1993-3-1 | | | | | | | |
| | EN 1993-3-2 | | | | | | | |
| | EN 1993-4-1 | | | | | | | |
| | EN 1993-4-2 | | | | | | | |
| | EN 1993-4-3 | | | | | | | |
| | EN 1993-5 | | | | | | | |
| | EN 1993-6 | | | | | | | |
| | EN 1994 | EN 1994-1-1 | | | | | | |
| EN 1994-1-2 | | | | | | | | |
| EN 1994-2 | | | | | | | | |
| EN 1995 | EN 1995-1-1 | | | | | | | |
| | EN 1995-1-2 | | | | | | | |
| | EN 1995-2 | | | | | | | |
| EN 1996 | EN 1996-1-1 | | | | | | | |
| | EN 1996-1-2 | | | | | | | |
| | EN 1996-2 | | | | | | | |
| | EN 1996-3 | | | | | | | |
| EN 1997 | EN 1997-1 | | | | | | | |
| | EN 1997-2 | | | | | | | |
| EN 1998 | EN 1998-1 | | | | | | | |
| | EN 1998-2 | | | | | | | |
| | EN 1998-3 | | | | | | | |
| | EN 1998-4 | | | | | | | |
| | EN 1998-5 | | | | | | | |
| | EN 1998-6 | | | | | | | |
| EN 1999 | EN 1999-1-1 | | | | | | | |
| | EN 1999-1-2 | | | | | | | |
| | EN 1999-1-3 | | | | | | | |
| | EN 1999-1-4 | | | | | | | |
| | EN 1999-1-5 | | | | | | | |

Acceptance of recommended values [%]



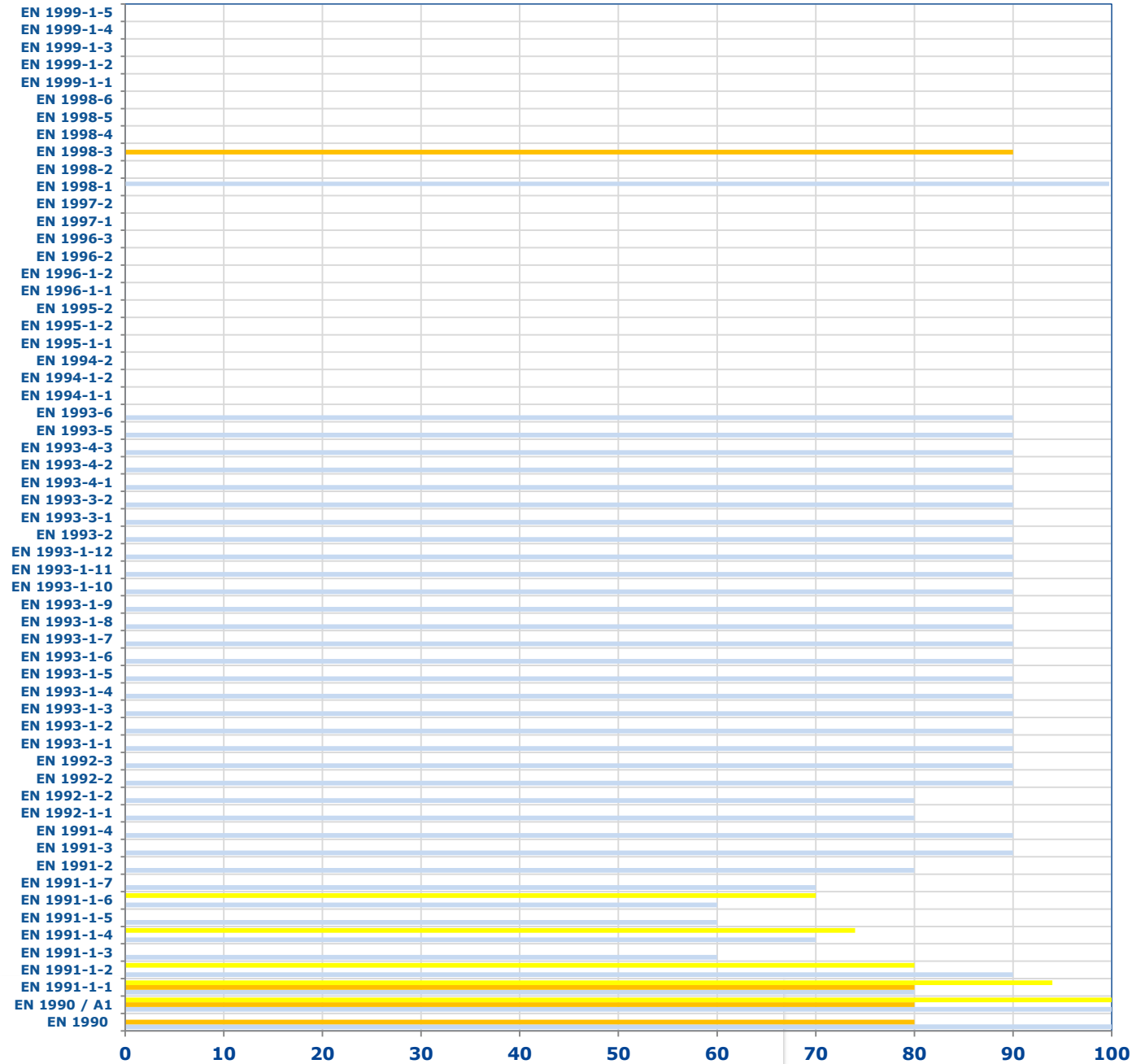
Average 85.8%

AL

Acceptance of recommended values [%]



Acceptance of recommended values [%]



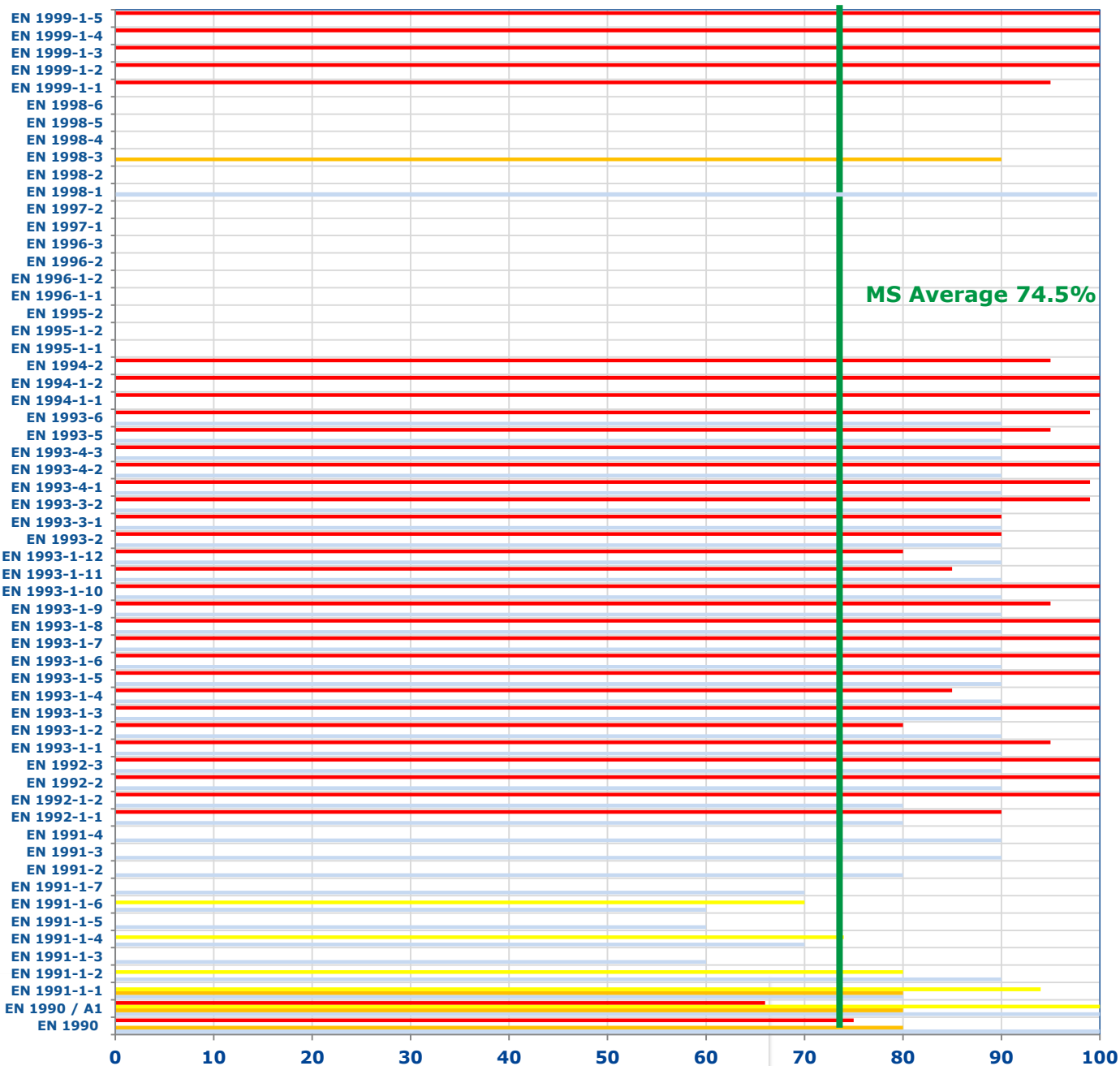
Average 85.8%

Average 80.0%

Average 83.6%

AL MK ME

Acceptance of recommended values [%]



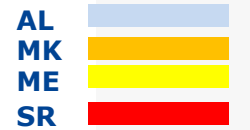
MS Average 74.5%

Average 85.8%

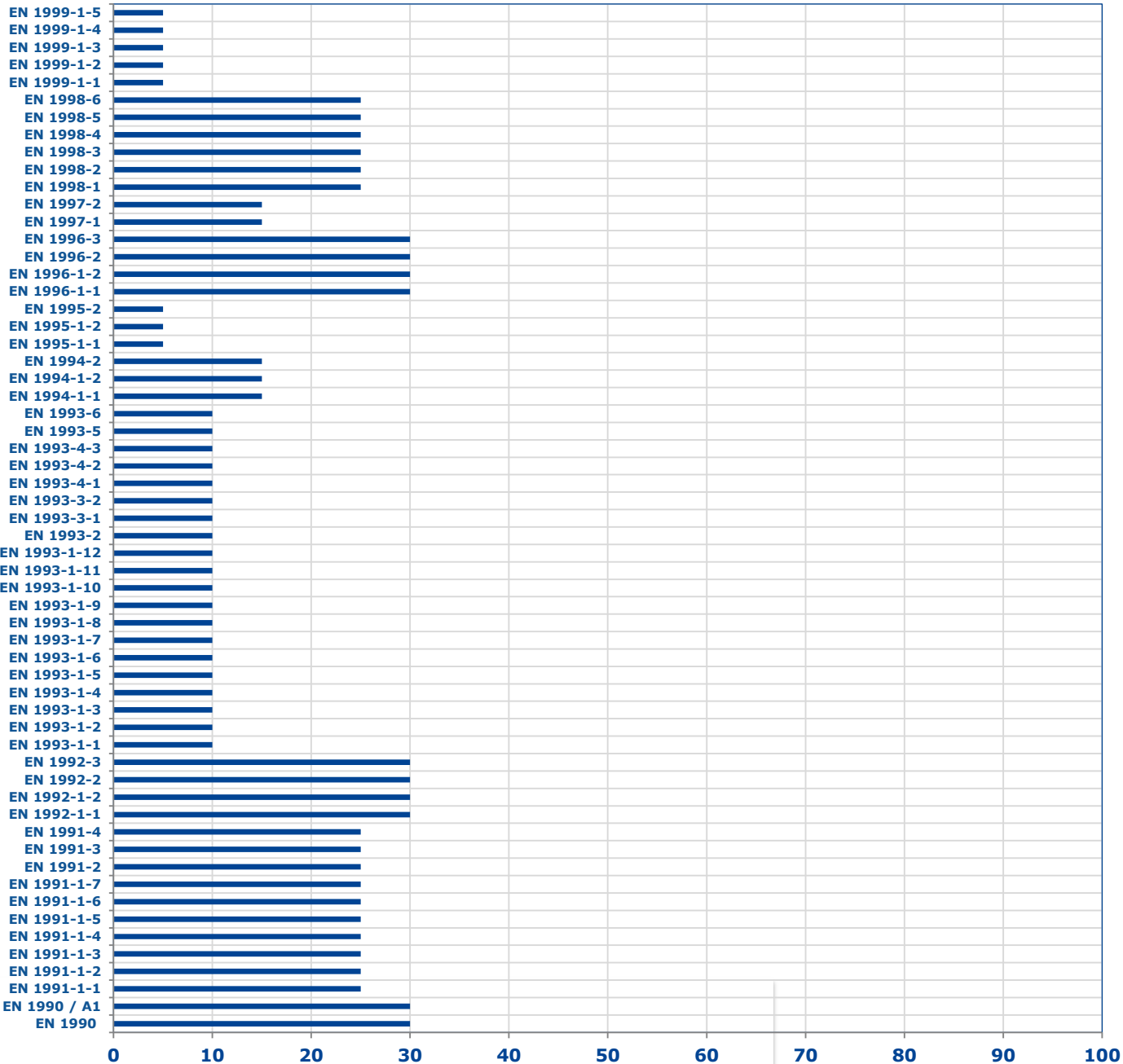
Average 80.0%

Average 83.6%

Average 94.5%



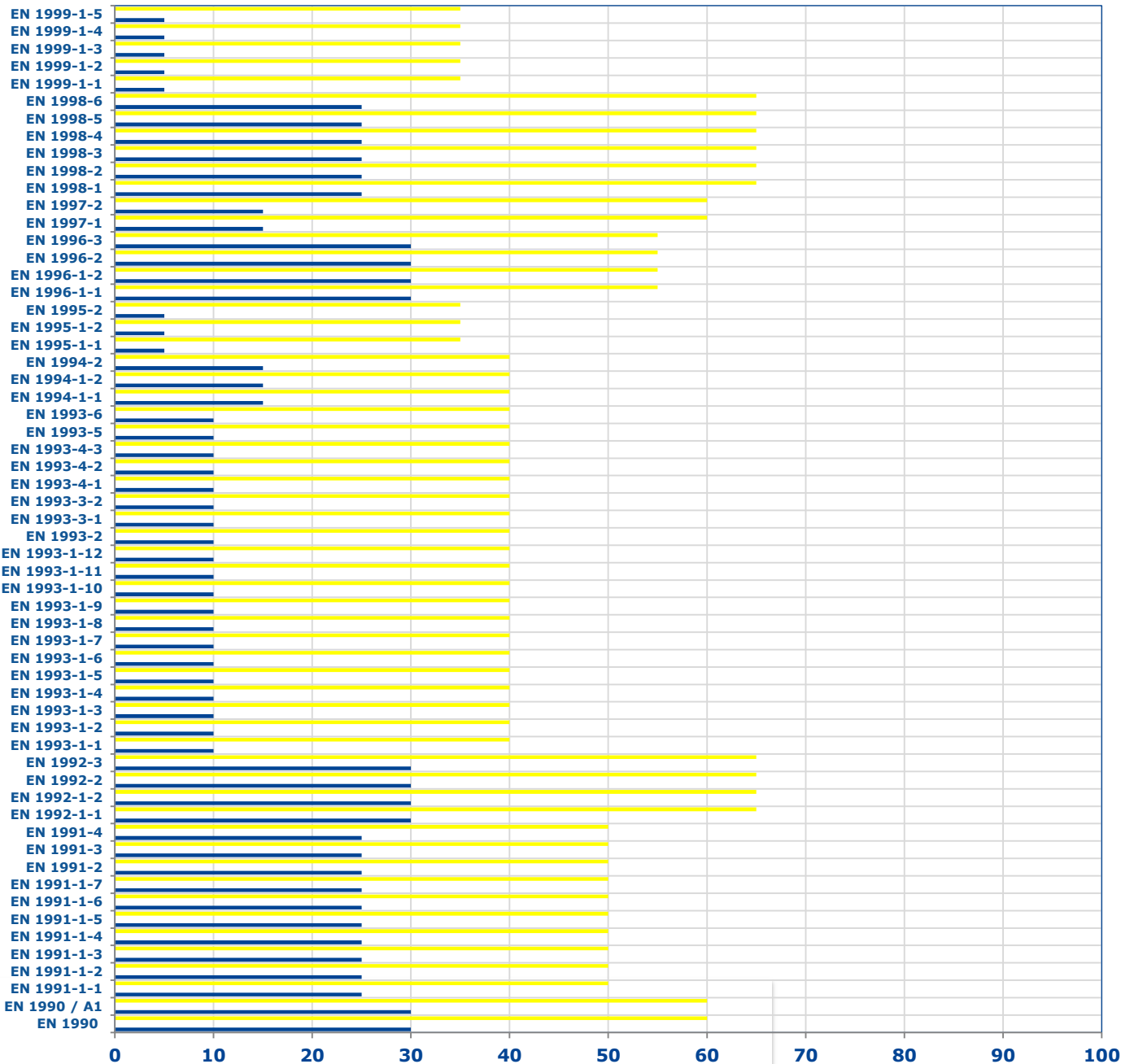
MD: Assessment the progress of definition of NDPs [%]



Average 17.2%

NDPs 

MD: Acceptance of RV for defined NDPs [%]

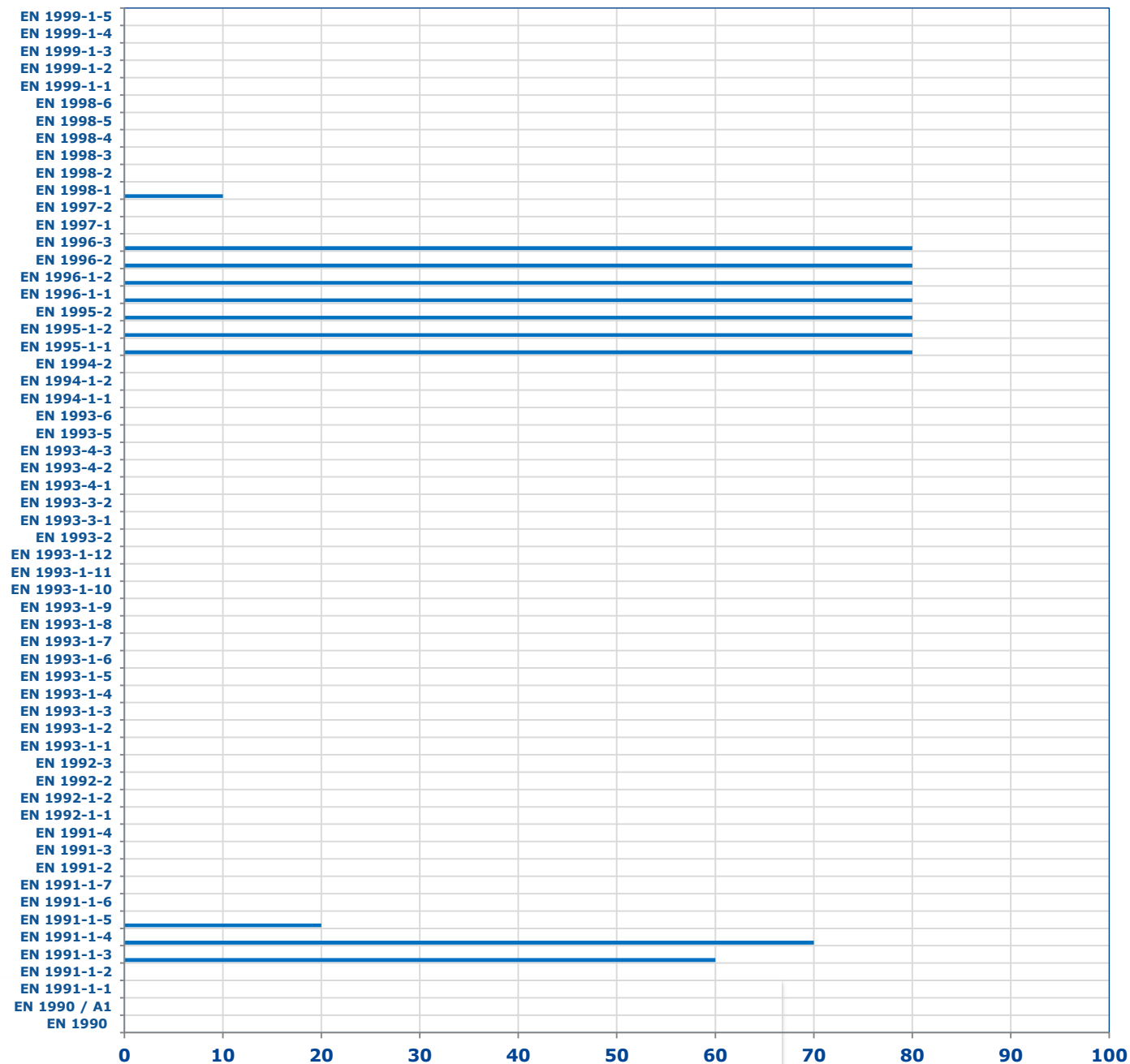


Average 17.2%

Average 48.6%

NDPs 
 RV 

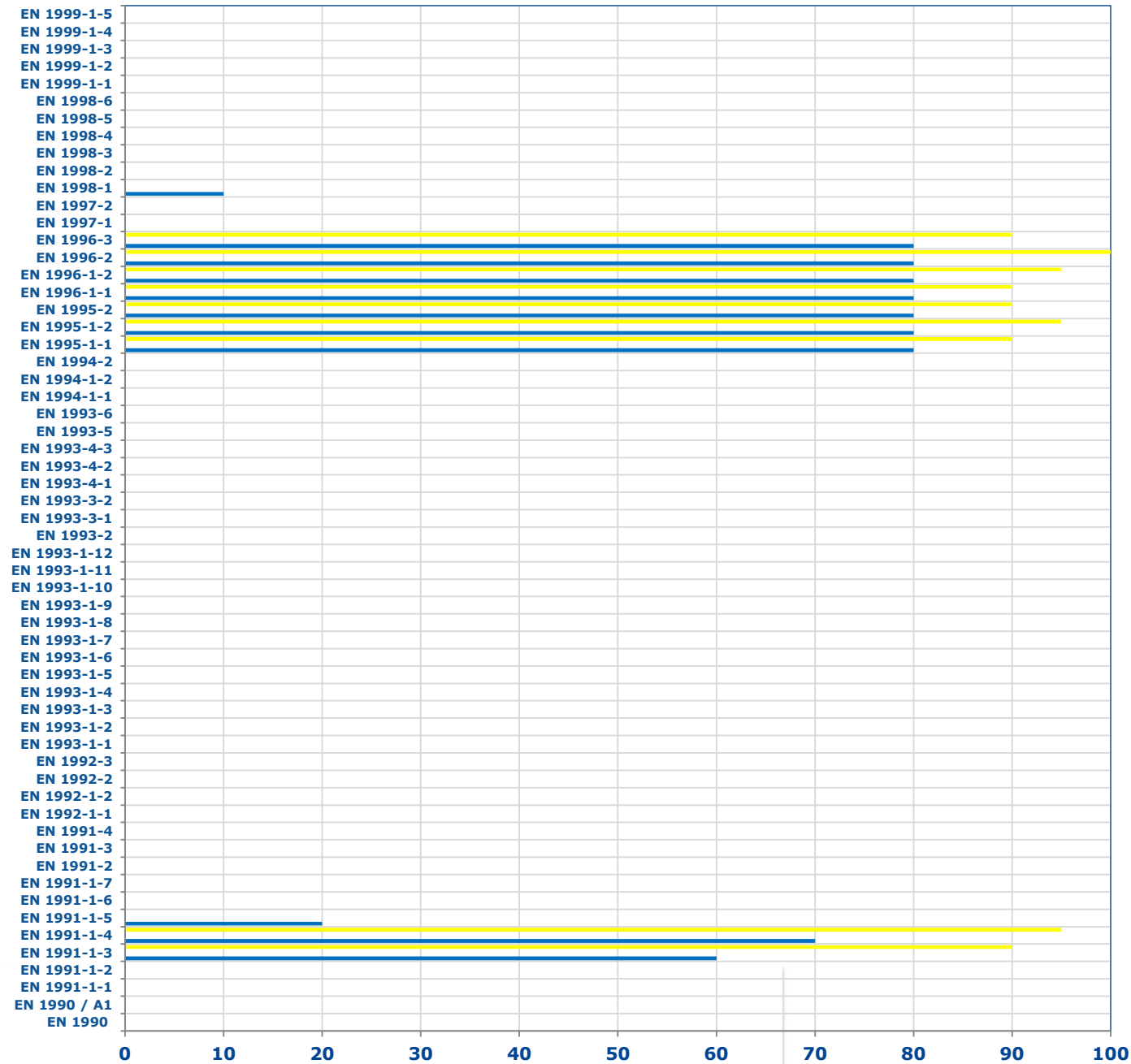
RS: Assessment the progress of definition of NDPs [%]



Average 28.8%

NDPs 

RS: Acceptance of RV for defined NDPs [%]



Average 28.8%

Average 92.2%

NDPs 
RV 

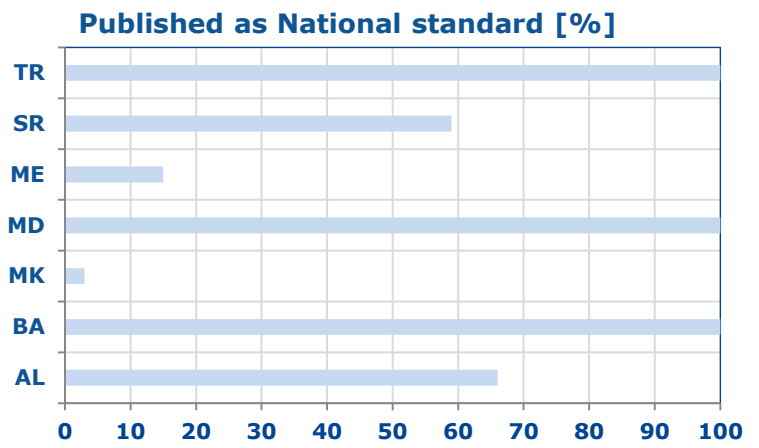
| Code | Country | Assessment of progress of definition of NDPs | Acceptance of RV for assessed NDPs |
|------------|---------|--|------------------------------------|
| EN 1990 | BA | 10% | NR |
| EN 1990/A1 | BA | 10% | NR |
| EN 1998-2 | AL | 50% | 100% |
| EN 1998-5 | AL | 50% | 100% |

The Former Republic Yugoslav of Macedonia reported 90% of acceptance of the recommended values for the NDPs which are in the process of definition.

Publishing of the EN parts



| | EN parts | AL | BA | MK | MD | ME | RS | TR |
|---------|--------------|----|----|----|----|----|----|----|
| EN 1990 | EN 1990 | | | | | | | |
| | EN 1990 / A1 | | | | | | | |
| | EN 1991-1-1 | | | | | | | |
| | EN 1991-1-2 | | | | | | | |
| | EN 1991-1-3 | | | | | | | |
| | EN 1991-1-4 | | | | | | | |
| EN 1991 | EN 1991-1-5 | | | | | | | |
| | EN 1991-1-6 | | | | | | | |
| | EN 1991-1-7 | | | | | | | |
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| | EN 1991-3 | | | | | | | |
| | EN 1991-4 | | | | | | | |
| | EN 1992-1-1 | | | | | | | |
| EN 1992 | EN 1992-1-2 | | | | | | | |
| | EN 1992-2 | | | | | | | |
| | EN 1992-3 | | | | | | | |
| | EN 1993-1-1 | | | | | | | |
| | EN 1993-1-2 | | | | | | | |
| | EN 1993-1-3 | | | | | | | |
| | EN 1993-1-4 | | | | | | | |
| | EN 1993-1-5 | | | | | | | |
| | EN 1993-1-6 | | | | | | | |
| | EN 1993-1-7 | | | | | | | |
| | EN 1993-1-8 | | | | | | | |
| | EN 1993-1-9 | | | | | | | |
| EN 1993 | EN 1993-1-10 | | | | | | | |
| | EN 1993-1-11 | | | | | | | |
| | EN 1993-1-12 | | | | | | | |
| | EN 1993-2 | | | | | | | |
| | EN 1993-3-1 | | | | | | | |
| | EN 1993-3-2 | | | | | | | |
| | EN 1993-4-1 | | | | | | | |
| | EN 1993-4-2 | | | | | | | |
| | EN 1993-4-3 | | | | | | | |
| | EN 1993-5 | | | | | | | |
| | EN 1993-6 | | | | | | | |
| EN 1994 | EN 1994-1-1 | | | | | | | |
| | EN 1994-1-2 | | | | | | | |
| | EN 1994-2 | | | | | | | |
| EN 1995 | EN 1995-1-1 | | | | | | | |
| | EN 1995-1-2 | | | | | | | |
| | EN 1995-2 | | | | | | | |
| EN 1996 | EN 1996-1-1 | | | | | | | |
| | EN 1996-1-2 | | | | | | | |
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| EN 1999 | EN 1999-1-1 | | | | | | | |
| | EN 1999-1-2 | | | | | | | |
| | EN 1999-1-3 | | | | | | | |
| | EN 1999-1-4 | | | | | | | |
| | EN 1999-1-5 | | | | | | | |

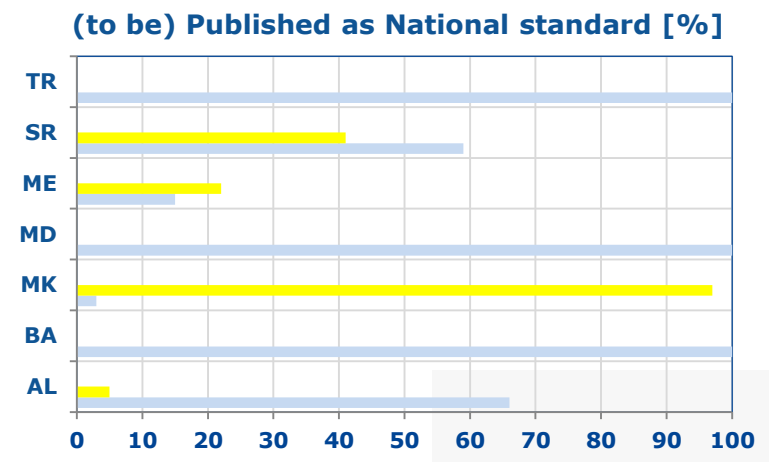
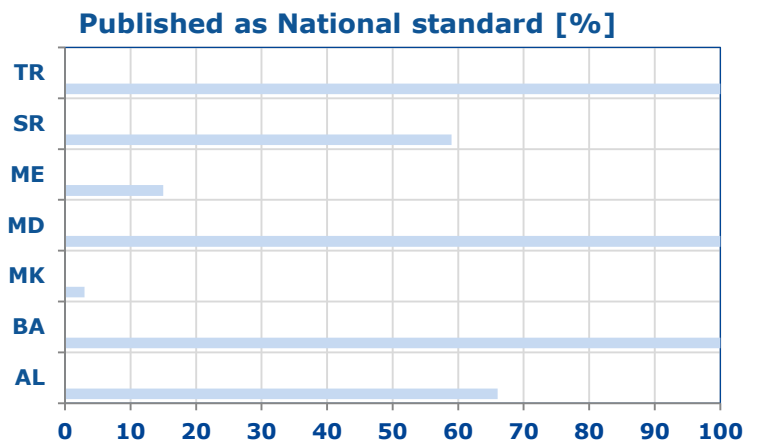


Note: Nov and Dec 2014, as published

Publishing of the EN parts



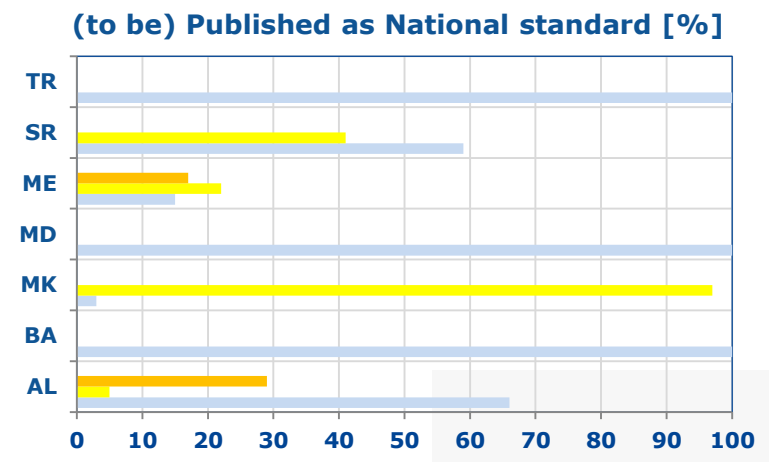
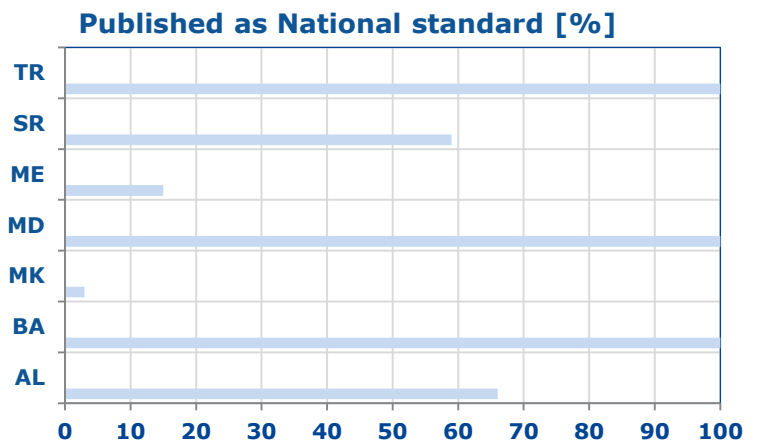
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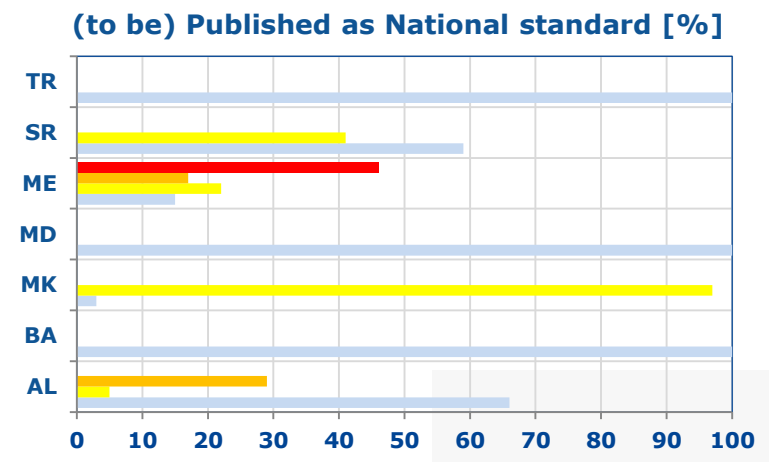
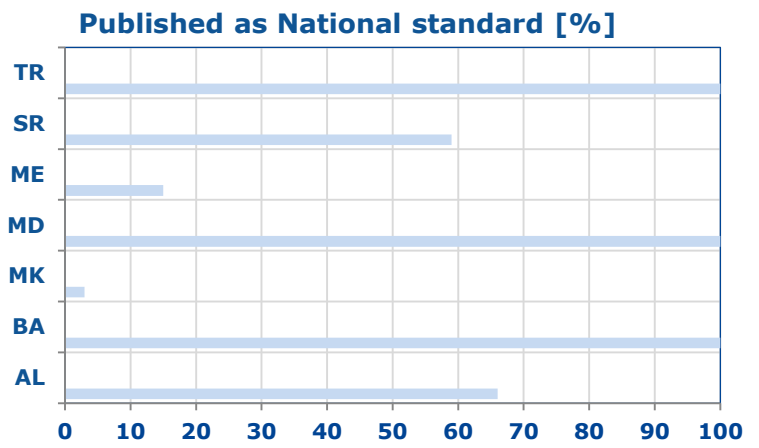
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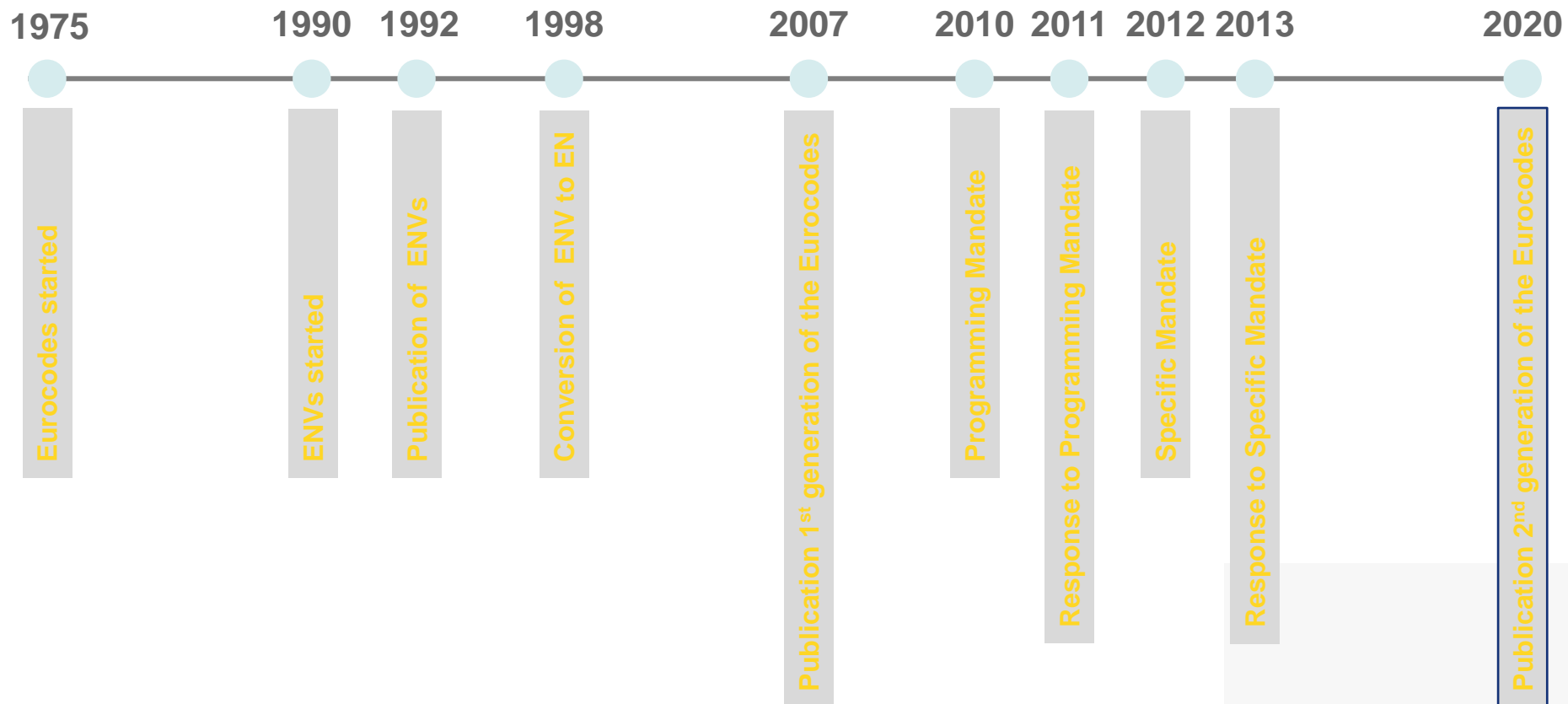
Publishing of the EN parts



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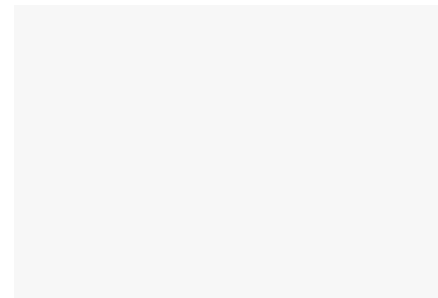


There will be a period of stability for the published Eurocodes until 2020



Outline

- ❑ Promotion of the use of the Eurocodes in the Balkan region within E&IA
- ❑ Previous activities – Workshop “Adoption of the Eurocode in the Balkan region”
- ❑ On-going activity – Workshop “ Building capacities for elaboration of NDPs and NAs of the Eurocodes in the Balkan region”
- ❑ **Conclusions and recommendations**



Conclusions and recommendations

- ❑ There is good progress on Eurocodes translations, since the last workshop. The former Yugoslav Republic of Macedonia and Moldova completed translation and the process is in very advanced phase in Albania (more than 60% translated).
- ❑ Publishing of EN parts as National standards is finished in Bosnia and Herzegovina, Moldova and Turkey. The process is in advanced stage in Albania and Serbia (more than 60% published). 2017 is reported as a dead line for finishing the process in all countries.
- ❑ Most of the non-EU countries in the Balkan region (except Turkey) started with the definition of NDPs. Albania and Serbia are the most advanced with around 60% of NDPs already defined. The percentage of acceptance of the recommended values (for already defined NDPs) is more than 80%. However, in most of the countries there is a lack of relevant institutional support for this process.
- ❑ There is a need for creating a regional platform to boost regional collaboration for cross-border convergence of NDPs, in particular for harmonization of seismic hazards, snow, wind and thermal maps.



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- Use of Eurocodes in EU-EFTA countries
- Publications
- Events
- JRC support to implementation and development

The EN Eurocodes

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. They are the recommended means of giving a presumption of conformity with the basic requirements of the [Construction Products Regulation](#) for construction works and products that bear the CE Marking, as well as the preferred reference for technical specifications in public contracts. [more ...](#)

Singapore implements the Eurocodes on 1 April 2013

As part of the Building and Construction Authority's (BCA) efforts to be aligned with international standards and upgrade the industry's expertise, BCA introduced the Eurocodes as Singapore's building codes on 1 April 2013.

Booklet by European Commission: The European construction sector – A global partner



The European construction sector
A global partner

The Joint Research Centre, the Enterprise and Industry Directorate General and the Energy Directorate General prepared a brochure on the integrated approach of European policy for the construction sector. It covers sustainability, innovation, energy and environmental issues, and the

brochure gives information on the available support schemes and financial instruments and highlights the benefits of international cooperation.

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JRC Scientific and Policy Report: Eurocode 2: Design of Concrete Buildings - Worked Examples



This document is a report with worked examples presenting step-by-step the design of a reinforced concrete cast on site building following Eurocode 2. The design process has been divided between different authors, some of whom were involved in the preparation and/or assessment of Eurocode 2. Each chapter of the report focuses on a different step in the design process: conceptual design, structural



Thank you for your attention

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