

CEN Phase 2 Extension Task 1: Summary Workshop Report

Prof. John Dora, Chair, Project Team 1
Ab de Buck, NEN

31st March, 2021

Contents

Context.....	3
Workshop, format, presentation material and statistics	3
Keynote addresses	3
Day 1:	3
Day 2:	3
Pitches to panels	4
Panel discussions Day 1.....	4
Panel discussions day 2.....	5
Summing-up	5
Next steps	7
ANNEX.....	8
Workshop Agenda.....	8

Context

This report is a short summary of a workshop that took place in a virtual environment using 'Zoom' and hosted by SIRMA over 17th and 18th March 2021. The workshop was a deliverable of the Phase 2 Extension project on European activities on integrating climate change adaptation into standards as per the European Commission's Mandate 526.

Workshop, format, presentation material and statistics

A copy of the workshop agenda is in the Annex.

The format included keynote addresses for both days, with a panel of up to six senior experts in the fields of climate science and data, standards' writers and standards' users. The panel responded to a 'pitch' of questions set by invited speakers and questions from attendees.

Presentation material is available via this link: [workshop presentations](#)

Over 90 attendees attended with registrants spanning 65 countries.

Keynote addresses

Keynote addresses were delivered thus:

DAY 1:

Keynote Address by Dr. Andras Toth, Directorate General Climate Action, European Commission

Title: The New European Strategy for Adaptation to Climate Change and Standards

Keynote Address by Dr. Andreas Walter, Deutsche Wetterdienst (DWD), Germany – Chair of M526 Adaptation to Climate Change – Coordination Group

Title: Factoring climate data into infrastructure standards for a resilient future

Keynote Address by Prof. Steve Denton, Chair TC 250, Eurocodes

Title: The second generation Structural Eurocodes: plans for addressing the changing climate

DAY 2:

Keynote Address by Dr. Rade Hajdin, Infrastructure Management Consultants GmbH (IMC), Switzerland

Title: Climate change and future actions on infrastructure – User requirements

Keynote Address by Dr. Hans-Martin Füssel, European Environment Agency

Title: The European Climate Data Explorer: Improving access to data about the changing climate

Pitches to panels

PANEL DISCUSSIONS DAY 1

Moderators: Dr. Boulent Imam, University of Surrey, UK
Efrén Feliu Torres, Tecnalia, Spain

Panel:

Climate science: Dr. Guido Rianna, CMCC, Italy
Dr. Carlo Buontempo, ECMWF/ Copernicus Climate Change Services

Writers of standards: Dr. Arthur Pinto, DG JRC, European Commission
Prof. Michael Faber, Aalborg University, Denmark

Users of standards: Rob Wheatley, Atkins, UK
Ralph Holst, BAST, Germany

Pitch from Dr. Guido Rianna, Euro-Mediterranean Centre on Climate Change, Italy:

Which future climate information should have priority for the construction sector?

Questions/ points received from participants:

- ***What about integration of climate change consideration in other sectors such as in EPD***
- ***More detailed required on rainfall and flooding***
- ***Need for periodic updating of data***
- ***Application of new designs versus existing infrastructure***

Pitch from Dr. Silvia Dimova, Joint Research Centre, European Commission

***How should the information on the design climatic loading become available in order to be used?
(e.g. in terms of Location, Format, Accessibility, Actuality, Training needs, ..)***

Supplementary question: ***What is your impression of discretionary use of scenarios?***

Questions/ points received from participants:

- ***Standardization of data formats and uncertainty; EU wide data formats would help with cross European projects. Has any progress been made in this area?***

PANEL DISCUSSIONS DAY 2

Moderators: Dr. Nick Malakatas, CEN/TC 250, Greece
Dr. Emilio Bastidas, University of La Rochelle, France

Panel:

Climate Science: Jorge Paz, Tecnalía, Spain
Dr. Silvia Dimova, JRC, European Commission

Standards writers: Dr. Antonio Burgueño, FCC Group, Spain
Dr. Svend Ole Hansen, Svend Ole Hansen APS, Denmark

Standards users: Gudmundur Gudmundsson, Road and Coastal Administration, Iceland

Pitch from Dr. Chiara Cagnazzo, European Centre for Medium-Range Weather Forecasts:

What choices should be made so that comparable datasets are used and referred to in standards – on the national and the European level?

Pitch from Prof. John Dora, Technical Director, Climate Sense, UK and Chair of CEN Phase 2 Extension Project Team 1:

What guidance should be included in the Technical Report (on inclusion of future climate information in Eurocodes/ national annexes)?

Summing-up

Bridging the gap between climate science and the construction sector:

The workshop made clear that there is a broadly shared understanding that it is important to align infrastructure standards and codes with appropriate information about the future climate. This opinion was shared by participants from the three main corners present: climate science, standard writers and users of standards. During the workshop knowledge, ideas and opinions about this issue were shared and did converge.

In development of information about the future climate the focus should be on the needs of the end-user: datasets should meet requirements to standard users on structural reliability of construction. A key feature of the current codes is that they “insulate engineers from the complexity of environmental actions”, and stakeholders from the construction sector express that it would be welcomed if this could also be the case in the future: “clear information is needed, which users not needed to interpret”, “future codes need to be accessible and easy to understand”.

In addition to this the view was expressed that standards (such as the standard on sustainable constructions) could also merely describe an approach rather than specific information, and that engineers should learn that a more elaborated approach is needed.

Developments in the creation of climate information do go fast. Carlo Buontempo, director of Copernicus Climate Change Services, indicated that in the *Climate Data Store* does contain a wide range of data is available on the past and future and climate, for all sub-elements mentioned in the workshop. It asks for priorities from the users. Also specific choices have to be made on issues as scenarios, choice of models and bias-correction.

In addition to this Hans-Martin Füßel from the EEA, showed that in the portal *Climate Adapt* many climate indices from the Copernicus data store will come available. This will be expanded over time and users, also from infrastructure standards, can express their priorities.

Ways to include future climate information into standards:

Steve Denton, chair of CEN/TC 250, presented a pragmatic approach for including a reference to climate change impacts in the codes. This could be done via a scaling factor. This factor based on the impact of climate change on a climate parameter, and could be included in the national annexes. During the discussion it became clear that such a scaling factor should be dynamic, as we don't know how emissions/ climate scenarios will develop.

As a remark to this approach, Michael Havro Faber, from the University of Aalborg, emphasized that there are more parameters that are relevant to consider. Apart from the current parameters in the Eurocodes, more climate change effects exist that are not yet mentioned. It is important to identify these and investigate how are they subject to impacts in new climate scenarios.

Participants from the construction sector also indicated the importance to look at costs and uncertainties about development of the future climate. In this perspective, it might be good to look at more adaptive pathways for design, as well as a more risk-based approach.

Data:

In the workshop many participants emphasized the importance to find reliable future climate information on a central European location. This should be maintained, so that references to this portal can be made. Data could be provided in a GIS as today, users indicate a wish for location specific and interactive information. One consistent European map would be good first step.

This need aligned well with the statement from representatives from climate science indicated that for most climatic impacts data are of will become available. Also the *Climate-Adapt* portal will

provide a central point of access to the data. In the near future new climate indices and sectors can be added, new projections with new interactive features.

During the workshop it became clear that several parameters do have priority to be included in the dataset, such as floods (asking for climate information on a larger scale as flooding is a result of rainfall in larger areas), coastal erosion and soil stability. In general secondary order effects should be considered as well, as well as new impacts that we do not yet experience but might occur in the future climate, such as tornados and hurricanes. The key load cases should be covered.

Knowledge, training and guidance:

In addition to this last point, more knowledge will be needed, such as methodologies for definition of climatic loading on structures from wind, atmospheric icing, flooding perhaps with combined hazards taking into account the future climate. New load cases should be investigated, risks should be elaborated more extensively, looking at the whole system and different scenarios that can occur. Learning and training will also be key in order to come to an appropriate use of the new climate information. Points of attention are definition of parameters, scenarios, models, and more technical issues as bias correction.

Technical Report:

In the next step of the mandated work an outline for a Technical Report will be developed, that will provide guidelines on the use of future climate information in Eurocodes and national annexes. The participants of the workshop expressed widely the need for such a TR, it could be very helpful both for writers and users as these are not climate change experts. The Report should be transparent and easy to understand. Although broadly of interest, the primary users should be standard writers and national authorities, who prepare the national annexes.

Specific issues for which guidance should be given are:

- guidance on the approach and use of new data, how to transform new information into new load cases
- explanation on the 'scaling factor'
- complementary with the national data bases and European datasets
- alignment with the next generation of the Eurocodes, using the same language (for instance in definitions for wind).

Next steps

Next steps will include the following:

- M526 PT1 **reviewing** the outcome of this workshop
- Taking findings from this report and develop **the (outline) for the technical report**
- Selecting **priority datasets** for the construction sector, to include in the **EEA/ Climate Adapt portal** (bridging role for PT1)
- More fundamental **research** on climate impacts on infrastructures and new loads (possibly in framework of Horizon 2020)
- **Training and guidance** for users of datasets

ANNEX

WORKSHOP AGENDA



Climate resilience and design codes - factoring in climate projections Aligning infrastructure standards with information about the future climate

Agenda – 17 March 2021

Time (CET)	Session
09:00 – 09:20	Opening <ul style="list-style-type: none"> – Introduction & Agenda for the workshop – Overview of M/526 and PT1 Study – Overview of SIRMA and infrastructure users' sector
09:20 – 09:50	Keynote Addresses #1
09:50 – 10:00	Short pitch to Panel Key question: Which future climate information should have priority for the construction sector?
10:00 – 11:00	1st Round of Panel Discussion <ul style="list-style-type: none"> – Climate science and data – 2 panellists – Standards writer – 2 panellists – Standards user community – 2 panellists
11:00 – 11:10	Break
11:10 – 11:20	Short pitch to Panel Key question: How should this information become available in order to be used? (location, format, accessibility, actuality, training, ..)
11:20 – 12:20	2nd Round of Panel Discussion (same panel as earlier) <ul style="list-style-type: none"> – Climate science and data – 2 panellists – Standards writer – 2 panellists – Standards user community – 2 panellists
12:20 – 12:30	Wrap up of meeting / 1st round of conclusions



**Climate resilience and design codes - factoring in climate projections
Aligning infrastructure standards with information about the future climate**

Agenda – 18 March 2021

Time (CET)	Session
09:00 – 09:10	Opening
09:10 – 09:40	Keynote Addresses #2
09:40 – 09:50	Short pitch to Panel Key Question: How should standards be adapted in order to refer to future climate information?
09:50 – 10:50	1st Round of Panel Discussion <ul style="list-style-type: none"> – Climate science and data – 2 panellists – Standards writer – 2 panellists – Standards user community – 2 panellists
10:50 – 11:00	Break
11:00 – 11:10	Short pitch to Panel Key Question: What guidance should be included in the Technical Report (on inclusion of future climate information in Eurocodes/national annexes)?
11:10 – 12:10	2 nd Round of Panel Discussion (same panel as earlier) <ul style="list-style-type: none"> – Climate science and data – 2 panellists – Standards writer – 2 panellists – Standards user community – 2 panellists
12:10 – 12:15	Break
12:15 – 12:30	Summarize, conclusions, agreements on next steps