

First Announcement

JCSS
Joint Committee on
Structural Safety



Danish Association of
Consulting Engineers
FRI

International Workshop on

Uncertain Climate Futures

A New Reality for Structural Design and Integrity Management

June 16-17, 2025

**Industriens Hus
Copenhagen, Denmark**



Organized by:

NIRAS **RAMBOLL** **COWI**

First Announcement

Objectives of the workshop

To ensure resilience, safety and reliability of infrastructure systems in the face of the uncertain climate futures – a new common rationale for decision support is urgently needed (see also the section on background). This rationale should be generic yet adaptable to specific local climate conditions and their temporal variations.

It is in this light that the [Danish Association of Consulting Engineers \(FRI\)](#) and the [Joint Committee on Structural Safety \(JCSS\)](#) have taken the initiative to conduct this workshop with the objectives to:

- **Provide awareness** - bring the challenge of climate change in the context of planning, design and integrity management of infrastructure systems and structures to the attention of relevant public authorities, owners and operators, as well as consultants and contractors.
- **Align perspectives** – exchange knowledge on the challenges of climate change in its various dimensions for infrastructure systems, and discuss potential approaches on how to cope with the associated very large knowledge uncertainties.
- **Join forces** – achieve consensus on how to move forwards in establishing a rationale for dealing with climate changes in the context of structures and infrastructures, and to set directions on how to implement this – within an adequately short time horizon.

Program of the event

The workshop will take place over 1.5 days, and will bring together professionals from different parts of the world, including; i) climate scientists, ii) owners, operators, contractors, consultants and regulators, and iii) experts in structural reliability, risk informed decision making and pre-normative and normative work.

On the first day the scene will be set by presentations from climate scientists who will provide an overview of what they know and don't know about the future global and local effects of climate change. After this, short appraisals of the challenges of climate changes will be provided from the perspectives of owners of structure and infrastructure systems, operators, regulators, contractors and consulting engineers. This will surely define the themes for discussions at the workshop dinner.

On the second day, experts from the domain of structural reliability, risk informed decision making, pre-normative and normative work, will give their ideas and perspectives on the principal effects of climate changes that should be addressed – and also on how the substantial knowledge related uncertainties, that are associated with the future climate may be accounted for.

Finally, at the end of the workshop we will jointly establish a consensus on how to proceed in developing decision bases for development and integrity management of structures and infrastructure systems.

Reserve the date

The workshop will take place on June 16-17, 2025. More information regarding the details of the program for the event will be distributed before the end of February 15, 2025. The workshop will be organized as a non-profit event and it is estimated that registration costs and attendance of the workshop dinner will be limited to around 400 Euro per person in total.

There may be limitations to attendance, therefore if you are interested in attending, you are encouraged to secure your participation by sending an email to Michael Havbro Faber on mihn@niras.dk. This will help the organizers to anticipate and accommodate attendance.

Venue and logistics

The workshop will take place at Industriens Hus, the premises of the Danish Association of Consulting Engineers (FRI).

Industriens hus is located in the very center of Copenhagen, just next to the Tivoli and the main rail and metro stations with direct connection to Copenhagen Airport only 20 minutes away. There is a very wide selection of hotels within walking range of Industriens Hus.

Background - the climate challenges for societal infrastructure systems

Climate change is a new reality for the global community. It is new in the sense that over the past tens of thousands of years we have prospered from a stable climate, sufficiently predictable and benign for civilization to develop the welfare we enjoy today. However, according to the best available knowledge the climate futures we are presently looking into may not have these qualities. The global temperatures are increasing rapidly and the local climate conditions are becoming progressively volatile, hostile and onerous.

Researchers from the natural sciences are doing a tremendous effort to build up knowledge on what we might experience in terms of climate conditions over the next decades and centuries. However, the global and local climate systems are hugely complex to model and as a consequence, the climate futures we must deal with in societal decision making in the present, are associated with very substantial – knowledge - uncertainties.

For the case of Denmark, as an example, climate models are being discussed that suggest climate changes towards 2100, ranging from climate conditions that resemble those that are presently common in Paris, to climate conditions resembling those that are typical on the mid-west coast of Greenland. Both scenarios, and others are possible, but we do not know which scenario will take place. Clearly, this poses a very substantial and critical challenge for society.

When establishing decision basis for the development, design and integrity management of infrastructure systems and structures, we actually do have a strong tradition and knowledge basis for dealing with uncertainties related to climate effects; temperatures, precipitation, sea water levels, storm surges, ground water levels, winds, waves, snow, floods, wild fires, etc. This is materialized in regulations, codes, standards and best practice guidelines, and the JCSS has contributed substantially to this over more than 50 years. However, in the face of the changing climate the present best practices for dealing with such uncertainties are no longer adequate. For many locations and climate effects around the world they may be misleading and even wrong. A major reason for this is, that in the past we have had only to manage uncertainties within a relatively well understood and stable climate scenario – for which we have had the possibility to learn and adapt from observations over long periods of time. From now on however, when we are deciding on how to design or maintain infrastructure projects – typically looking 100-150 years ahead – we do not know which climate scenario we are dealing with, and we have no observations that we can learn from.

In summary, climate change is a global challenge with strongly diverse local effects and variations over time – of which we know only little. Infrastructure systems are critical for societal functionality within nation states but also across borders. The professionals in the sector of infrastructure systems – at international level – must join forces to ensure that the infrastructure of the future is fit to serve society as it has been in the past.

Organization

The organization of the workshop is supported by a local organizing committee and an international scientific committee. The local organization committee is comprised by Michael Havbro Faber (NIRAS), Inger Birgitte Kroon (COWI) and Søren Randrup Thomsen (Ramboll).

First Announcement

International Scientific Committee

An international scientific committee with the objective to ensure a broad geographical engagement of stakeholders and an adequate representation of the presently available knowledge on the main topic of the conference has been formed. At the present time the international scientific committee is comprised of:

- Mark Stewart (Member of the JCSS, University of Technology Sydney, Australia)
- Colin Caprani (Member of the JCSS, Monash University, Australia)
- Robby Caspele (Member of the JCSS, Ghent University, Belgium)
- Andre Beck (Member of the JCSS, University of Sao Paolo, Brazil)
- Marc, Maes (Member of the JCSS, University of Calgary, Canada)
- Dagang Lu (Harbin Institute of Technology, China)
- Jie Li (Member of the JCSS, Tongji University, China)
- Jianbing Chen (Member of the JCSS, Tongji University, China)
- Jianjun Qin (Shanghai Jiao Tong University, China)
- You Dong (The Hong Kong Polytechnic University, China)
- Yaohan Li (Hong Kong Metropolitan University, China)
- Miroslav Sykora (Member of the JCSS, University of Prague, Czech Republic)
- Daniel Straub (Member of the JCSS, Technical University of Munich, Germany)
- Arzhang Alimoradi (NIRAS, Denmark)
- Signe Schløer (NIRAS, Denmark)
- Tina Vejrum (COWI, Denmark)
- Emilio Bastidas (La Rochelle University, France)
- Alan O'Connor (Member of the JCSS, Trinity College Dublin, Ireland)
- Adamantia Athanasopoulou (Joint Research Center, Italy)
- Marco Broccardo (Member of the JCSS, University of Trento, Italy)
- Gian Paolo Cimellaro (University of Turin, Italy)
- Maria Pina Limongelli (Member of the JCSS, Politecnico di Milano, Italy)
- José Guadalupe Rangel Ramírez (Member of the JCSS, Tecnológico de Monterrey, Mexico)
- Pedro Castro Borges (Centro de Investigación y de Estudios Avanzados del IPN Unidad, Merida, Mexico)
- Raphael Steenbergen (Member of the JCSS, TNO Delft, the Netherlands)
- Ton Vrouwenvelder (Past President of the JCSS, TNO Delft, the Netherlands)
- Jochen Köhler (President of the JCSS, Norwegian University of Technology and Science, Norway)
- Eloi Figueiredo (Lusófona University Lisbon, Portugal)
- Junho Song (Seoul National University, Seoul, South Korea)
- Carmen Andrade (Member of the JCSS, Polytechnic University of Catalonia, Spain)
- Peter Tanner (Member of the JCSS, The Eduardo Torroja Institute for Construction Sciences, Spain)
- Eleni Chatzi (ETH-Zürich, Switzerland)
- Sebastian Thöns (Member of the JCSS, Lund University, Sweden)
- Sven Thelandersson (Lund University, Sweden)
- Jim Hall (University of Oxford, UK)
- Dimitri Val (Heriot-Watt University, UK)
- Bruce Ellingwood (Member of the JCSS, Colorado State University, USA)
- Paolo Gardoni (Member of the JCSS, University of Illinois Urbana-Champaign, USA)