



Civil Engineering and Climate Change Protocol

Background

ICE, ASCE and CSCE believe that substantial reductions in greenhouse gas emissions are required to reduce the risk of climate change. Increased concentrations of greenhouse gases are predicted to contribute to climate change. There is a need to adapt infrastructure to the anticipated results of climate change including increased incidence and severity of storms, floods, droughts, sea level rise and storm surge.

The effects of climate change include reduced access to drinking water supplies, increased exposure to flooding and the threat to food security in large parts of Africa, Asia and Latin America. In addition, there are many unforeseen or potentially unanticipated impacts of climate change.

The Role of Engineers

Civil Engineers are central to the planning, design, construction, operation, maintenance and decommissioning of infrastructure networks which underpin economic activity and protect human health and welfare. Major changes to the design, construction and use of these networks will be required to deliver large reductions in greenhouse gas emissions and to ensure sufficient resilience to cope with foreseeable climate change impacts.

Engineering Priorities

Mitigation: Civil Engineering must lead the way in developing new technologies and materials to reduce emissions over the whole life cycle of infrastructure systems. The focus should be on cost effective deployment of existing technologies, however ongoing research into new technologies and materials will also be required. Mitigation strategies should incorporate incentives for the short-term development and implementation of high-efficiency and low- or zero-greenhouse gas emitting technologies as well as cost-effective carbon capture and storage.

We commit to assisting all governments through the development of a low-carbon infrastructure road map setting out key steps up to 2050. This will need to include:

- Energy generation:
 - An up scaling of renewable and low carbon energy generation including nuclear, hydro, wind, tidal, geo-thermal and solar.
 - Increased energy efficiency.
 - Development of new technologies including carbon capture and storage.
- Transport: Encouraging non-structural solutions such as new public transportation systems; projects to reduce major chokepoints that cause transportation congestion; and improved intercity rail transportation.
- Low carbon design: Lower embedded energy in construction and large reduction in the whole life energy demand and emissions from infrastructure systems.

Adaptation: Civil Engineers must develop and implement tools, policies and practices for risk assessment and adaptation of existing and new civil infrastructure to climate change.

We commit to developing guidance documents on engineering vulnerability assessment of civil infrastructure and best engineering practice for adaptation to address those vulnerabilities. This will include:

- Evaluation of physical vulnerability of civil infrastructure.
- Consideration of non-monetary or intangible impacts of climate change events, including indirect impacts e.g. agricultural practices, sea level rise etc.
- Consideration of non structural adaptation measures.

This activity will be carried out through the World Federation of Engineering Organizations to ensure that lessons are shared with professional colleagues worldwide.

Public Policy Priorities

Delivery of engineering solutions to reduce emissions requires national governments to enact clear and stable legislature, and make fiscal and regulatory commitments to facilitate the development and deployment of low carbon technologies.

At the international level we support the creation of a binding international agreement for global emissions and an equitable process for its achievement over the long term.

The agreement would:

- Establish clear and reasonable targets and time frames for the reduction of greenhouse gas emissions;
- Stimulate private investment in greenhouse gas reduction technologies.
- Encourage early action to reduce greenhouse gas emissions.
- Encourage actions by other countries to reduce their greenhouse gas emissions.

This agreement will provide the certainty that investors will require to make very large commitments to new and upgraded infrastructure systems.

Signed: June 2nd, 2009 – St. John's, Newfoundland, Canada

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