

PROTOCOL CIVIL ENGINEERING FOR A SUSTAINABLE FUTURE

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ASCE
AMERICAN SOCIETY OF CIVIL ENGINEERS



ice
Institution of Civil Engineers

CIVIL ENGINEERING FOR A SUSTAINABLE FUTURE

BACKGROUND

The American Society of Civil Engineers, the Canadian Society for Civil Engineering and the Institution of Civil Engineers believe that emerging global challenges over the last decade, including the financial crisis, population migration, and food and energy crises, have reinforced the need to secure and fulfill internationally agreed commitments to sustainable development.

The three organizations also believe that sustainable progress toward achieving the UN Millennium Development Goals is necessary to address water and food scarcity.

For such commitments to be realized, critical infrastructure must be adapted to the impacts of climate change and resilient to natural and man-made disasters.

THE ROLE OF CIVIL ENGINEERS

The three institutions commit to lead internationally on the delivery of sustainable infrastructure. Civil engineers of the 21st century are called on to play a critical role in contributing to peace and security in an increasingly challenged world. Civil engineers have an obligation to protect cultural and natural diversity, and they are central to the planning, design, construction, operation, maintenance and decommissioning of infrastructure networks that underpin civil society and economic activity and protect human health and welfare. Emerging challenges have reinforced the key role of these networks in enabling global societal resilience.

Approximately 75% of the issues outlined in Agenda 21, the main action document from the 1992 Earth Summit, involve engineering and technical issues. Action by civil engineers is essential. Society needs the skills of civil engineers to attain sustainable development, yet civil engineers require global political will to enable them to apply their knowledge and expertise to appropriately adapt infrastructure to attain meaningful progress.

While ASCE, CSCE, and ICE are committed to a civil engineering profession able to address the global challenge of sustainable development, they recognize that engineers cannot deliver this vision on their own. Civil engineers must develop new skills for a changing world, foster greater collaboration with other professionals, and promote multidisciplinary approaches. Civil engineers are committed to provide the tools and advice to governments and policymakers at national and supranational levels on the skills and infrastructure required for a sustainable future.

ENGINEERING PRIORITIES AND ACTION

Recognizing the central role of their profession in addressing global challenges, ASCE, CSCE, and ICE developed a Sustainable Development Protocol in 2006, agreeing to develop sustainable development strategies and action plans. This was followed in 2009 by a civil engineering and climate change protocol that further identified priorities for action by engineers.

The three organizations have since adopted and regularly reviewed action plans and undertaken a range of activities to advance sustainability in civil infrastructure. Progress in line with commitments is exemplified in adapting critical infrastructure, utilizing environmental accounting tools, addressing the water crisis and delivering on the UN Millennium Development Goals.

ENVIRONMENTAL, SOCIAL AND ECONOMIC IMPACTS AND COSTS— THE TRIPLE BOTTOM LINE

The three organizations are committed to improving methods for identifying and considering all of a project's environmental, social and economic costs and impacts throughout its life cycle. Practical approaches should be developed that would alter conventional accounting practices to factor in the direct and indirect environmental costs of a facility through its life-cycle of operations.

CONDITION AND CAPACITY OF INFRASTRUCTURE

Civil engineers create and maintain society's infrastructure. Recognizing this responsibility, ASCE, CSCE and ICE are committed to collecting data on infrastructure both nationally and, through collaboration, internationally to provide informed opinion on the condition and requisite capacity of infrastructure for sustainable development.

ADAPTATION OF INFRASTRUCTURE TO CLIMATE CHANGE

To address climate change the engineering profession is applying the principles of sustainability, energy efficiency and innovation to the design, construction, operation and maintenance of infrastructure. Engineers must develop infrastructure capable of adaptation to the impacts of climate change.

Engineers have relied upon historical data to design infrastructure. Such data is often incomplete and limited in duration. Now they must develop design and operational practices to withstand climate conditions — both extremes and gradual changes. They must accommodate increased uncertainties because the data about future climate will never be as precise as the historical data. This creates a challenge to existing infrastructure design approaches and practices.

MILLENNIUM DEVELOPMENT GOALS

ASCE, CSCE and ICE support the internationally agreed upon development goals contained in the Millennium Declaration as they apply to improving the quality of people's lives around the world through science and engineering. The three organizations will work with each other and with domestic and international organizations to engage engineers in addressing the needs of the poor through capacity building and the development of sustainable and appropriate solutions to poverty.

By helping meet the goals of the Millennium Declaration, the engineering profession contributes to a world where all people have access to the knowledge and resources to meet their basic human needs and promote sustainable development. Included are such areas as water supply and sanitation, food production and processing, housing and construction, energy, transportation and communication, income generation, and employment creation.

COMMITMENTS

Within the following areas of leadership with respect to sustainable infrastructure, ASCE, CSCE, ICE commit to:

- Collaborating on their national sustainable infrastructure action plans.
- Encouraging engineers to engage in building sustainable engineering capacity in the developing world and continuing to work with national development organizations such as USAID – US Agency for International Development, DFID – UK Department of Foreign International Development and CIDA – Canadian International Development Agency and other related assistance organizations.
- Working through national representatives to coordinate civil engineering views within the World Federation of Engineering Organizations to enable WFEO to influence programs on sustainable infrastructure and communities in conjunction with UNESCO, the United Nations, the World Bank, international financial institutions and other bodies.

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