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Civil society trusts that engineers will address the challenges that face infrastructures.

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To understand sustainability in the context of current world dialogue, the United Nations Commission on Sustainable Development (CSD) has neatly compartmentalized the scope of human activity into seven broad thematic clusters. So, for example, one of the clusters considers agriculture, rural development, land, drought, desertification and Africa. Cross-cutting each cluster are the basic necessities of life – food, energy and water. By considering each thematic cluster in seven, two-year cycles, CSD develops knowledge and understanding of the subject matter and evolves policies leading to national implementations of recommended actions. Engineering's role in the CSD cluster currently under review – which includes mining, chemicals, waste management and transport – would appear obvious, at least, to engineers. Engineering's role also extends to other CSD thematic clusters and to all infrastructure relied upon by societies worldwide.

What is less obvious is that by setting the focus on these CSD clusters, on the details of each and their inherent

Public Trust Key to Engineers Leadership on Sustainability



Family in Tarialan,Uvs Province, Mongolia, uses a solar panel, a sustainable energy source, to generate power for ger, a traditional Mongolian tent. (UN Photo/Eskinder Debebe)

infrastructures, it is easy to lose sight of the wider picture. It is paramount that we recognize how the CSD thematic clusters impact on the environment and its degradation, and the longer-term sustainability of the human race.

Civil society trusts that engineers will address the challenges that face infrastructures. This trust depends upon engineers applying knowledge and skills to conceive, design, build, operate and maintain the infrastructures that underpin society, the economy, and the quality of life for society. Whether the changing climate, the aging infrastructures, or the emerging contaminants, engineering solutions exist and can be implemented.

Public trust relies upon an engineering profession that within its practices has imbedded codes of practice and ethics, and environmental sustainability guidelines. It is this trust that empowers and enables engineers to lead. Engineers' decisions and advice, when

considered on a global basis, collectively determine the movement towards – or away from – a sustainable world.

Whether recognized by society or not, the burden of this leadership role is clear; on a project level, the engineer must weigh life-cycle and environmental considerations against alternate priorities and select those that limit the impact and minimize long-term negative outcomes. To fulfil that role and maintain public trust, the engineering profession must actively participate in policy deliberations on sustainability.

Theme 5 of the WFEO Committee on Engineering and the Environment's Strategic Plan focuses on the Environment and Sustainability in the Practice of Engineering. In this newsletter, contributors from Australia, the United States, and the United Kingdom write about sustainability initiatives in these countries. I invite you to read on.

What Can a Sustainability Rating Scheme Deliver For the Australian Infrastructure Industry?

By David A. Hood

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Professor David Hood is National Deputy President of Engineers Australia, and the Australian Representative on the WFEO-CEE.

He is also Chairman of the Australian Green Infrastructure Council (AGIC).



For the last two years, the Australian Green Infrastructure Council (AGIC) has been driving the development of a National Sustainability Rating Scheme to promote innovation in social, economic and environmental performance in the design, construction and operation of new and upgraded infrastructure assets.

On completion, the National Sustainability Rating Scheme will provide a common metrics framework for sustainability assessment of the Australian infrastructure market.

The development of the rating scheme is being supported by more than 90 member organisations with over 70,000 staff from leading engineering design consultancies, construction companies, and operators to government departments and non-government organisations.

The National Sustainability Rating Scheme comprises a web-based rating tool, a guideline and assessment manual, case study resources, and the formal AGIC assessor and verification process, together with training programs and industry awards and promotion.

The first version of the rating tool will provide the metrics and methodologies to measure performance in areas such

as project governance and management; environmental management; community and stakeholder relations; and resource efficiencies.

The rating tool can also be used by all Australian governments to check that project delivery and in-service operation actually meet, or better, particular project approval conditions for sustainability. It will complement existing compliance requirements, driving innovation toward more sustainable outcomes for business, governments and the community.

Rather than add complexity, the tool is designed to encourage stretch performance and create new industry benchmarks. The nominated criteria can easily fit within Key Performance Indicators and reporting frameworks currently in use in the market.

The full Award Scheme is on target for release in late 2011 and nationally appointed category authors have now completed the 60-per-cent authorship milestone and are currently working on the final drafts, with the draft tool to be applied on national project trials beginning in May 2011.

The benefits of the rating tool to stakeholders include:

- Sustainability assessment and scoring designed to encourage innovation
- Common national language, metrics, and understanding of sustainability as it applies to infrastructure projects

- Reduced tendering costs to industry through the application of nationally consistent sustainability elements and performance indicators in Requests for Tender (RFT) (at present RFT sustainability requirements vary markedly from department to department and state to state)
- Equitable tender assessment through an aligned national sustainability assessment framework
- Investment attraction through better risk assessment and asset valuation from the use of rating scheme
- Industry recognition for high sustainability achievements.



Sydney Harbour Bridge, an iconic piece of Australian infrastructure. Photo Erik Flakstad

Climate Change Adaptation First Assessment Category

In 2009 the New South Wales (NSW) Department of Environment Climate Change and Water (DECCW) sponsored authorship and trials of the Climate Change Adaptation (CCA) category, which was the first element of AGIC's rating tool to be developed. The category was trialed on two projects sourced through the NSW Department of Public Works.

Parsons Brinckerhoff was the author of the CCA category, AECOM was the technical reviewer, and GHD project-managed the authorship, reviews and pilot trials. The process was open and collaborative and designed to leverage off the experience from these three leading firms.

Consideration of trends and the potential risks posed by a changing climate have not in the past had the prominence that regulators, operators, owners, and infrastructure design and construction companies are now according them.

Traditionally infrastructure is designed on the basis of models based on historical weather records, and an assumption that the future climate will be the same as in the past. In addition, it is still common to find that we are not heeding the lessons (namely social, economic and environmental costs) from the impact of natural catastrophes on current operating infrastructure in our operations and maintenance plans, nor our long-term strategic thinking.

Responding quickly to this changing attitude, AGIC and DECCW agreed to use this category to develop an accessible guideline on how and when to consider climate change risk and adaptation (go to www.agic.net.au for a copy of the manual).



Flooded area of Brisbane, Queensland, Australia.

Criteria were aligned with key infrastructure planning, design, delivery and operations phases. Benchmarks describing a range of performance expectations, from “do nothing” to “implementing best practice” were articulated, guiding the user as to what, and to what degree the processes and initiatives described should and could be implemented.

The draft guideline was developed and then tested on a recently delivered dam, pump station and pipeline network located on NSW north coast (Shannon Dam), and a planned infrastructure upgrade (roads, drainage and services) to a major wastewater treatment facility located west of the NSW Blue Mountains (Lithgow Sewerage Treatment Plant).

Sustainability Support Tools

In addition to development of the National Sustainability Rating Scheme and the Climate Change Adaptation Guideline, AGIC has also released the following supporting resources:

AGIC Knowledge Hub

The purpose of the web-based Knowledge Hub is to act as a directory of information relating to innovation in sustainability in infrastructure. The

Knowledge Hub is structured to capture industry case studies that demonstrate innovative sustainability practices occurring in infrastructure design, construction and operation. It is not designed as a marketing resource for companies to simply promote their expertise, but the contributing organisation is acknowledged against the case study. Case studies are peer reviewed by a Technical Support Working Group (TSWG) to ensure authenticity before uploading to the AGIC Knowledge Hub.

Quick Check

The second release was the AGIC “Quick Check” sustainability reference guide. This questionnaire-based spreadsheet with 136 questions allows the sustainability credentials of a new project or existing asset upgrade to be tested within two hours for areas of strength and weakness in relation to sustainability. Quick Check is freely available on the AGIC website (www.agic.net.au) and provides the user with an understanding of the issues that will be covered by the National Sustainability Rating Scheme when fully developed.

**Find out more at the AGIC website
www.agic.net.au**

New Sustainable Infrastructure Rating System Launched in U.S. by ASCE, APWA and ACEC

By Peter D. Binney, P.E.

Peter D. Binney is Director, Sustainable Infrastructure, with Merrick & Company and is based in Aurora, Colorado, U.S.A.

A new, non-profit Institute for Sustainable infrastructure (ISI) has been launched by the American Society of Civil Engineers, American Public Works Association and American Council of Engineering Companies. ISI will provide a rating system for existing and new civil infrastructure projects to assist owners, project teams and interested groups with an objective



framework to guide and assess the planning, design and performance of those projects. The new rating system, which is nearing the end of its initial drafting stage and will be available for review and comment through the end of 2011, recognizes that sustainability is not only a solution or a series of more efficient outcomes. Sustainability is also enhanced by strategically considering the planning and overall project delivery cycle, not just the design phase, and catalyzing changes in the way we think of and deliver infrastructure solutions to meet a community's needs.

System Includes Ten Primary Criteria

ISI was formally launched in February 2011 with a conceptual rating system that was developed by a working group from the three organizations and a consulting team that brought best-in-class approaches from throughout the United States and international systems. The rating system includes a series of ten primary criteria and 74 sub-criteria along with a graduated performance-achievement assessment to guide the user through the various elements of a decision and project-delivery process. The criteria include a series of considerations related to the conceptual and planning frameworks along with project management and business strategies to promote effective infrastructure solutions.

A second set of criteria relates to the efficiency of the infrastructure solution and promotes resources, materials, water and energy conservation as well as mitigation of impacts beyond regulatory requirements. In aggregate, the rating system promotes consideration of a broad set of project features that encourage high levels of interaction with communities and stakeholders, balancing investments to provide resilience and broad acceptance of benefits and consequences of the proposed project and increasing the wise use of limited resources – classically termed the “Triple Bottom Line.”

Allows for Customized Solutions

Infrastructure projects range from local public works projects to major regional projects of national significance. They can have nominal, if any, adverse consequences on the environment or community, or they can involve legacy commitments of major natural resource eco-systems or regional population centers. The ISI rating system consists of a series of modules that can independently be applied to these various situations. Those various levels of application will allow the practitioners to focus their approach to the context of their application and customize solutions that are relevant and can be understood by those groups involved in framing and delivering the infrastructure project.

ISI will make these resources available on its hosted website and interested parties will be able to use that material for guidance and self-assessment. In addition, ISI will certify practitioners as Assessors who are trained in the use of the rating system, who can guide owners and project teams in approaches that will lead to more sustainable solutions and who could make application to ISI for project recognition. A third-party verification stage would be used by ISI before formal award and recognition of the sustainable performance of the infrastructure project. Award recognition is scheduled to start in 2012.

For more information, contact ISI at www.sustainableinfrastructure.org

CEEQUAL International to Follow Footsteps Of Similar Sustainability Scheme in U.K. & Ireland

By Roger Venables

Roger Venables is Chief Executive of CEEQUAL in the U.K.

CEEQUAL, the assessment and awards scheme for improving sustainability in civil engineering and public realm, which has become firmly established in the U.K., has launched CEEQUAL International, a version of the CEEQUAL Scheme specifically created for the assessment of projects outside the U.K. and Ireland.

CEEQUAL is a rigorous methodology and question set for assessment of performance across 12 areas of environmental and social concern: Project Management, Land Use, Landscape, Ecology & Biodiversity, the Historic Environment, Water Resources and the Water Environment, Energy & Carbon, Materials, Waste Management, Transport, Effects on Neighbours, and Relations with the Local Community and other Stakeholders. In addition to being used as an assessment tool, with awards presented for different levels of achievement, CEEQUAL is used by project teams as an influencer of their decisions on the environmental and social issues they face.

With CEEQUAL for U.K. projects already having been used on or currently in use on more than £16 billion-worth of projects in the U.K., and with more than 120 Awards having been presented, existing users with international operations last year expressed particular interest in having a version of CEEQUAL Assessments, and delivery of its beneficial influence on performance, anywhere they are working. The launch of the new International Scheme will enable assessment of projects wherever there is demand and response to expressions of interest for its use in the Gulf States, across Europe, South Africa and South East Asia. There is increasing interest from clients, contractors and consultants seeking proven independent assessment techniques to help demonstrate improved sustainability performance.



The Naas By-pass in the Republic of Ireland was assessed under the current version of CEEQUAL for Projects in the U.K. and Ireland.

Through the commitment of many experts working for the benefit of the industry, the resulting Assessment Manual for International Projects is applicable anywhere in the world. As with the extensive use of the U.K. Scheme, its use will reflect commitment to high environmental and social standards, and will yield improvements to projects.

CEEQUAL International Demonstrates Commitment to Sustainability

Using CEEQUAL International can clearly demonstrate a serious commitment to the sustainability agenda in every country in which an organisation operates. It not only improves best practice within each project, it also enhances team spirit as a whole by developing a positive attitude towards the environment.

Tim Broyd, Group Technology and Innovation Director at Halcrow and a Director of CEEQUAL Ltd, says: "Since its launch a few years ago, CEEQUAL has become recognised as the pre-eminent U.K. technique for assessing the environmental worth of civil infrastructure. The introduction of an International Scheme will allow us to deliver the benefits that CEEQUAL brings to add value to our clients around the world."

Emma Clark, Senior Consultant at AECOM, and a Senior CEEQUAL Assessor, has been piloting CEEQUAL International on a variety of projects. She says: "CEEQUAL is a unique tool which will now provide an opportunity for sustainability credentials to not only be measured but also rewarded, on a global basis. As an active U.K. CEEQUAL Assessor with international colleagues, I am finding this to be an exciting time for the infrastructure industry."

Based on the same principles as its U.K. counterpart, CEEQUAL International is a self-assessment and evidence-based process carried out by a trained CEEQUAL Assessor – usually a member of the project team. Once the self-assessment has been completed, a CEEQUAL-appointed independent Verifier reviews the project and relevant evidence before making recommendations for a final Award to CEEQUAL. Following ratification, the award is then confirmed. ([Continued next page](#))

Considers Local Regulations and Practice

In the U.K. Scheme, the sections and question scores are weighted to reflect their overall contribution to project performance. With CEEQUAL International, blanket use of the U.K. weightings would be inappropriate because of differences in physical environmental conditions and/or culture. So, a project team using CEEQUAL International needs to undertake a weighting exercise specific to the local area of the project, which CEEQUAL will then use to re-calculate the question scores. The Assessor also needs to take into consideration the local regulations and practice of each country.

In addition to developing CEEQUAL International, the CEEQUAL Management Team has recently been providing paid assistance to the American Society of Civil Engineers and their partners to help them to develop an infrastructure rating system in the U.S.A. (for U.S. developments, see page 4), and providing input to the Australian Green Infrastructure Council (see pages 2 and 3) in their development of their own Scheme for Australia.

For a discussion about how CEEQUAL International could be applied to your projects, or to discuss how CEEQUAL could work with you to develop a locally-focused version, please contact the author at roger.venables@ceequal.com or call +44 (0)20 3137 2379 (Please note the time difference to the U.K.).

For information about CEEQUAL generally, and on how it has been developed, please visit www.ceequal.com. For more information about CEEQUAL International, visit www.ceequal.com/international.htm.

Online Sources of Information On Climate-Change Adaptation

Attention is drawn to the following two online information sources.

1) The summary note of the fourth Nairobi work programme Focal Point Forum is available on-line at: http://unfccc.int/files/adaptation/application/pdf/fpf_summary_note_cancun_2010.pdf

The Forum took place in Cancun during the 33rd session of the Subsidiary Bodies of the UNFCCC.

2) The Nairobi work programme Focal Point Forum (as part of the United Nations Framework Convention on Climate Change Adaptation, Technology and Science Programme) has launched a Facebook page, "The Adaptation Exchange" at www.facebook.com/The.Adaptation.Exchange

The site stimulates and supports collaboration, sharing and networking on adaptation. Participation is encouraged by all NWP partners and their Focal Points in this adaptation initiative. Organizations are encouraged to post, contribute, and discuss adaptation on the page's "wall" and to share stories, information, and views on successes and lessons learned, challenges, solutions and needs.

The Committee on Engineering and the Environment will be posting updates of the WFEO-CEE activities related to Adaptation on this site.

WFEO-CEE and Related Upcoming Events

- Late June 2011 (date TBC) WFEO-CEE Mid-year Teleconference
- Sept. 4, 2011 Geneva, Switzerland – WFEO-CEE Face-to-Face Meeting #4
- Sept. 8–9, 2011 Geneva, Switzerland – WFEO General Assembly
- May 2–15, 2011 New York, U.S.A. – UN Commission on Sustainable Development Meeting No 19 www.csd.org
- June 6–17, 2011, Bonn, Germany – 34th Session of UN Framework Convention on Climate Change (UNFCCC) Subsidiary Bodies – www.unfccc.org
- June 4–6, 2012 Rio de Janeiro, Brazil – United Nations Conference on Sustainable Development 2012 (Rio +20) www.uncsd2012.org

Meetings Relating to WFEO-CEE Themes

Theme 2 – Climate Change Adaptation

- Sept. 6, 2011 Geneva, Switzerland WFEO-CEE Climate Change Sessions 2011 World Engineers Convention (www.wec2011.ch) www.wfeo.net

Theme 3 – Engineering and Agriculture

- July 29–31, 2011 Chengdu, China – International Conference on Environmental and Agricultural Engineering (ICEAE 2011) www.iceae.org

Theme 4 – Sustainability

- May 22–26, 2011 Palm Springs, California, U.S.A. 2011 ASCE-EWRI World Environmental and Water Resources Congress www.asce.org
- Aug. 17–19, 2011 Ottawa, Ontario, Canada – International Conference on Environmental Pollution and Remediation (ICEPR'11) 4th ASCE-EWRI International Perspective on Water Resources and the Environment <http://ICEPR2011.international-ASET.org>