

The potential price tag to meet the 169 targets in the UN SDGs is \$45 trillion, and they don't come with a construction schedule. The Global Engineering Congress will examine interconnected social, sustainability – environmental and economic factors, and explore how government and industry can unlock the \$85 trillion estimated to be sitting in long-term investment vehicles.

Through clear objectives, each day will produce a set of outcomes leading to the production of a ten year roadmap to achieve the UNSDG's, along with associated success indicators.

	DAY 1 - MONDAY	DAY 2 - TUESDAY	DAY 3 - WEDNESDAY	DAY 4 - THURSDAY	DAY 5 - FRIDAY
<b>Theme</b>	Role of engineering in progressing the UN SDGs	Challenges and opportunities to address the SDGs	Building sustainable economies and resilient communities	Quantifying the societal impact of engineering and the influence of technology	Driving Change – investment, education and governance
<b>Key Speakers</b>	<ul style="list-style-type: none"> <li>President, <b>WFEO</b></li> <li>President, <b>ICE</b></li> <li>Assistant DG at <b>UNESCO</b></li> <li>CEO <b>Engineers New Zealand</b></li> <li>VP AI commercialisation, <b>BAIDU, China</b></li> </ul>	<ul style="list-style-type: none"> <li>President, <b>RAEng</b></li> <li><b>UN Science Advisory Council</b></li> <li>International Hydrology Programme Director, <b>UNESCO</b></li> <li>Professor of internet and governance at the <b>Oxford internet institute</b></li> </ul>	<ul style="list-style-type: none"> <li>DG, <b>Netherlands Ministry of Infrastructure &amp; Environment</b></li> <li>Chairman, <b>National Infrastructure Commission</b></li> <li><b>Global Covenant of Mayors</b></li> <li><b>100 resilient cities</b></li> </ul>	<ul style="list-style-type: none"> <li>President, <b>ASCE</b></li> <li>President, <b>CSCE</b></li> <li>Executive Officer, Environmental compliance and sustainability, <b>LA Metro</b></li> <li><b>CMS Energy, USA</b></li> </ul>	<ul style="list-style-type: none"> <li>VP Global Themes, <b>World Bank</b></li> <li>VP, <b>AECOM</b></li> <li>Houston Public Works, <b>City of Houston</b></li> <li>Secretary General, <b>Euro electric</b></li> </ul>
<b>Key Case Studies / Projects</b>	<ul style="list-style-type: none"> <li>Energy efficiency in <b>Africa</b></li> <li>Creating momentum on diversity and inclusion: a <b>New Zealand</b> experience Smart village in <b>Papua New Guinea</b>: Electricity, education, and entrepreneurship as entry points for achieving all 17 SDGs</li> </ul>	<ul style="list-style-type: none"> <li>Water strategy in <b>Portugal/Spain</b></li> <li>ISO 37001 anti-bribery</li> <li>Hurricane resilient transport infrastructure in <b>Puerto Rico</b></li> </ul>	<ul style="list-style-type: none"> <li>Lessons learnt from Hurricane Sandy in <b>New York</b></li> <li>Make Every Drop Count: How <b>Australia</b> transformed rainwater harvesting</li> </ul>	<ul style="list-style-type: none"> <li><b>Rhode Island</b> wind farm</li> <li><b>LA Metro</b></li> </ul>	<ul style="list-style-type: none"> <li>Expansion project, Water purification plant <b>Houston</b></li> <li><b>UK</b> State of Nation report 2018 launch</li> </ul>
<b>Objectives</b>	<ul style="list-style-type: none"> <li>Establish a global perspective and explore the scale of change possible via a coordinated plan</li> <li>Agree parameters for change</li> </ul>	<ul style="list-style-type: none"> <li>Examine factors that have stalled progress against the SDGs to date, highlight regulatory and technical changes that offer new hope, and explore what is needed to move to forward</li> <li>Define what is needed to remove barriers to change</li> </ul>	<ul style="list-style-type: none"> <li>Delve into how climate resilience can be incentivised, funded and built into all stages of decision making - creating cleaner cities and services</li> </ul>	<ul style="list-style-type: none"> <li>Using case studies and research create guidance and information on how engineers can use technologies to deliver economically feasible and socially equitable projects.</li> <li>Establish a method to quantify social value.</li> </ul>	<ul style="list-style-type: none"> <li>Explore links between engineering, education, governance and finance.</li> <li>Create a vision for a balanced system that improves lives and offers economic growth.</li> </ul>
<b>Outcomes</b>	List of enablers/blockers	WFEO Engineering 2030 plan	Infrastructure report card and modelling tool kit disseminated	ICE-ASCE-CSCE statement	PESTLE analysis of 5 SDGs, map connection of all 17

Throughout the 5 days we will build the 10 year engineering roadmap to SDGs and its associated indicators with the global community

**BOOK NOW**

**08:00 - 09:00** | Registration and refreshments

**09:00 - 10:00** | **Welcome remarks and official opening of the Congress**  
Nick Baveystock, Director General, **ICE**

**Opening remarks from the Chair**  
Professor Lord Robert Mair, President 2017 - 2018, **ICE**

**UNESCO brings creative responses to the challenges of the times**  
• UNESCO's role in the 2030 Sustainable Development Agenda

**WFEO engineering leadership for sustainable development**  
Dr. Marlene Kanga, President 2017 - 2019, **WFEO**

**10:00 - 10:30** | Networking, refreshments and exhibition

**10:30 - 12:00**

**STREAM 1**

**Energy strategy and policy**  
Assessing European and GCC policies and their achievements

**STREAM 2**

**Strategic approaches to improve diversity**  
Reviewing different agendas and promoting ways to achieve change

**STREAM 3**

**Humanitarian engineering in Africa and the South Pacific**  
Demonstrating how simple solutions to major global issues could have huge impact

**STREAM 4**

**Future climate and engineering solutions**  
Raising understanding of climate change to create science and engineering based plans for 2050

**STREAM 5**

**Climate change mitigation and adaptation techniques**  
Assessing the linkage between climate change impacts and the interdependencies between infrastructure sectors

**12:00 - 14:00** | Networking, lunch and exhibition

**14:00 - 15:30**

**STREAM 1**

**Smart villages and cities**  
Electricity, education, and entrepreneurship as entry points for achieving all 17 SDGs

**STREAM 2**

**Intelligent transportation**  
Promoting the use of intelligent technology in transport engineering

**STREAM 3**

**The paradigm shift needed in the new world of advanced technologies**  
How education, and engineering have been affected by: globalization and exponential acceleration of tech development

**STREAM 4**

**Engineering decision making when faced with climatic uncertainty**  
Outlining mitigation technologies and related issues in environment and policy

**STREAM 5**

**Governance, security and standards for artificial intelligence technologies**  
How will AI revolutionise our world?

**15:30 - 16:00** | Networking, refreshments and exhibition

**16:00 - 17:00** | **Governance for Sustainable Development**

**Panel discussion**  
Governance for Implementing the SDGs –what have we learnt today to progress the SDGs?

**Panellists:**  
Darrel Danyluk, Head of Adaptation Task Group, Committee on Engineering and the Environment, **WFEO**  
Michael Auer, President, **International Federation of Engineering Education Societies**  
Carsten Ahrens, **Jade University of Applied Sciences**  
Alphonso Fernandez, President, World Council of Civil Engineers, General Manager, **Alpro Ingeniería**

**Evening** | Drinks Reception & WFEO Gala Dinner

● **SDG7:** Clean Energy ● **SDG9:** Industry, Innovation and Infrastructure ● **SDG11:** Sustainable Cities & Communities  
● **Touching on:** Diversity ● **SDG13:** Climate Action ● Inspiring the next generation

**BOOK NOW**

**08:00 - 09:00** | Registration and refreshments

**09:00 - 10:00** | Opening remarks from the Chair

**Innovation and commercialisation of research**  
Dame Ann Dowling, President, Royal Academy of Engineering

Tackling the global imperative for sustainable development using AI

Panel discussion | Innovation and creative solutions for sustainable development

**10:00 - 10:30** | Networking, refreshments and exhibition

**10:30 - 12:00**

**STREAM 1**

**Changing approaches to sanitation and hygiene**  
Using metrics to monitor and foster water and sanitation development

**STREAM 2**

**The cost of corruption - barriers to sustainability**  
Highlighting the costs of corruption and how to prevent it

**STREAM 3**

**Engineering education for capacity building in Asia and Africa**  
The future of education and paradigm shift needed to meet rapidly changing technology requirements

**STREAM 4**

**Disaster mitigation - development of natural disaster early warning systems**  
Case study presentations and lessons learnt from Hurricanes in Florida and Puerto Rico

**STREAM 5**

**Intelligent city and smart life**  
Visualising the future of engineering to 2030, using innovative technologies

**12:00 - 14:00** | Networking, lunch and exhibition

**14:00 - 15:30**

**STREAM 1**

**Hydrological programme and water strategy challenges**  
Detailed assessment of global approaches with case studies from Portugal and Spain

**STREAM 2**

**Energy efficiency strategies**  
Improving efficiency, reducing costs and maximising asset value

**STREAM 3**

**The role of robotics and the future of work**  
Evaluating applications of robotics across sectors and the human impact

**STREAM 4**

**Data & cyber security**  
Engaging individuals with data to maximise potential

**STREAM 5**

**Diversity, leadership and innovation**  
How diverse leadership teams boost innovation

**15:30 - 16:00** | Networking, refreshments and exhibition

**16:00 - 17:00** | Panel discussion | Collaboration as a driver for sustainability – Together we can do more

**Chair:** Prof. Gong Ke, WFEO President Elect and Member, UN Science Advisory Council  
Alain Bentejac President **FIDIC**  
Gail Mattson President **INWES**  
Michael Auer, President **IFEES**

**Release of Statement - WFEO leading engineering for SDGs**

Collation of the day's key statements and discussion of the way forward. Progressing the sustainability agenda; what have we learned so far and how can we move forward?  
**Dr. Marlene Kanga WFEO President**

**Evening** | Drinks reception & Professional Engineering Institutions Gala Dinner

● **SDG6:** Clean Water & Sanitation ● **SDG16&7:** Clean Energy, Governance ● **SDG9:** Industry, Innovation and Infrastructure  
● **Touching on SDG4:** Quality Education ● **SDG11:** Sustainable Cities & Communities ● **SDG13:** Climate Action ● Inspiring the next generation

**BOOK NOW**

**08:00 - 09:00** | Registration and refreshments

**09:00 - 10:00** | **Integrating climate resilience into infrastructure decisions**

- Addressing Infrastructure interdependencies and our increased dependency on the provision of energy and ICT
- The role of the planning system for nationally significant infrastructure on the need to adapt new infrastructure to the impacts of climate change

**Michelle Blom, Director General, Ministry of Infrastructure and the Environment – The Netherlands**

**Striving to reduce the environmental impact of cities**

- Strategy and actions taken to become CO2 neutral by 2025
- Identifying concrete green challenges for CLEAN to solve

**Panel discussion | Creating liveable and inclusive cities**

- Harness the powerful influence that ecological ecosystem services can offer

**10:00 - 10:30** | Networking, refreshments and exhibition

**10:30 - 12:00**

**STREAM 1** 

**Achieve economies of scale in the provision of services – a Developed world view**

**STREAM 2** 

**Complex, resilient and intelligent systems**  
Use research to develop thinking on how resilience can articulate sustainability, and how risk approaches can inform the process of design

**STREAM 3** 

**Improve asset performance to reduce resource consumption & improve efficiency**  
Facilitating sustainable and resilient infrastructure to enable economic growth

**STREAM 4** 

**100 Resilient Cities**  
Incentivise global actors to fund resilience projects that enhance the quality of life in cities and communities

**STREAM 5** 

**Construction targets**  
Analyse the unique challenges in aligning construction targets and assess possible decarbonisation trajectories

**STREAM 6** 

**Resilience series**  
A joint lecture series between ICE, MWH-Stantec and HerriottWatt University Lecture

**12:00 - 14:00** | Networking, lunch and exhibition

**14:00 - 15:30**

**STREAM 1** 

**Collect and treat waste water in low economy countries**  
A workshop on education and social engagements to foster WASH

**STREAM 2** 

**Benchmark tools to track progress toward Goals**  
The economics of achieving environmental benefits in energy

**STREAM 3** 

**Far-reaching impacts of public transport**  
Stimulating economic growth and social inclusion through improved accessibility and mobility for all

**STREAM 4** 

**Global Covenant of Mayors**  
The session will bring together representatives of cities, city networks and the engineering community to discuss knowledge and innovation gaps in cities and how they can be filled through collaborative action

**STREAM 5** 

**Financing decarbonisation**  
Discussing initiatives around the world on heat, energy, transport and supply chain decarbonisation

**STREAM 6** 

**Inclusive cities**  
"Are engineers fully aware of the impact of their work on other people's day-to-day life?"

**15:30 - 16:00** | Networking, refreshments and exhibition

**16:00 - 17:00** | **Building institutional capacity to address climate change**

- Strengthen resilience and adaptive capacity to climate-related hazards and natural disasters
- Integrate climate change measures into national policies, strategies and planning
- Key institutional and policy framework changes needed to achieve targets set

**Sir John Armitt, Chairman, National Infrastructure Commission**

**Evening** | ECCE Drinks reception

 **SDG6:** Clean Water & Sanitation  **SDG7:** Clean Energy  **SDG9:** Innovation  
 **SDG11:** Sustainable Cities & Communities  **SDG13:** Climate Action  Inspiring the next generation

**BOOK NOW**

**08:00 - 09:00** | Registration and refreshments

**09:00 - 10:00** | Opening remarks

**ASCE's roadmap to sustainability**

- Guiding design and construction decisions that go beyond sustainability in terms of resources and our environment
- Assisting engineers in developing solutions that are also economically feasible and socially equitable in their application

**Robin Kemper, P.E. President, American Society of Civil Engineers**

**Providing leadership to embed sustainable engineering practice**

- CSCE's tools and approaches to sustainable development
- Improving and cleaning processes across the whole project life cycle using digital tools

**Glenn Hewus, President, Canadian Society of Civil Engineers**

**Panel discussion | Sustainability is interconnectivity**

- Will digital technologies act as the driver for a sustainable future?

**Panellists:**

Robin Kemper, P.E. President, **American Society of Civil Engineers**

Glenn Hewus, President, **Canadian Society of Civil Engineers**

**10:00 - 10:30** | Networking, refreshments and exhibition

**10:30 - 12:00**

**STREAM 1**

**Social equity in tariffs structures and flood risk management**

Community as the solution not the problem

**STREAM 2**

**The social-environmental impacts of renewable energy expansion**

Positioning the electricity sector in a carbon constrained world

**STREAM 3**

**Innovation and its impact on planning, design, construction and operation**

How technology is being used to enhance transportation and city operations

**STREAM 4**

**Measuring social value**

How do we measure and codify value?

**STREAM 5**

**Demonstrating benefits to communities**

Emphasis on projects delivering outcomes for end users

**STREAM 6**

**Digitally enabled innovation**

Leading edge technologies that offer new value

**12:00 - 14:00** | Networking, lunch and exhibition

**14:00 - 15:30**

**STREAM 1**

**What does the future of drainage look like?**

How can we make game-changing improvements on pipes that haven't fundamentally changed in 6,000 years?

**STREAM 2**

**Social impact of new technological trends**

Use of technology to improve quality of life and ways of working

**STREAM 3**

**Innovation capacity building**

Enable sub-Saharan Africa to prepare CDM-eligible projects and negotiate emissions credits

**STREAM 4**

**Plan for inclusivity and housing and transport connectivity**

Infrastructure dictates how sustainably a city can function and how to maximise connectivity amongst different systems

**STREAM 5**

**Adaptation without mitigation is immoral**

Reinforcing the fact that we need a global solution to the climate crisis NOW

**STREAM 6**

**Addressing the threats of ocean and nutrient pollution by plastic**

If plastic leakage is not quenched, by 2050 the ocean will contain more plastic than fish by weight

**15:30 - 16:00** | Networking, refreshments and exhibition

**16:00 - 17:00** | Panel Discussion | Maximising the application of sustainability solutions in an interconnected world

**Evening** | Triennial ASCE, CSCE, ICE Evening Activity

- **SDG6:** Clean Water & Sanitation
- **SDG7:** Clean Energy
- **SDG9:** Innovation
- **SDG11:** Sustainable Cities & Communities
- **SDG13:** Climate Action
- Inspiring the next generation

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**08:00 - 09:00** | Registration and refreshments

**09:00 - 10:00** | Opening remarks from the Chair

**Financing sustainable infrastructure**

- De-risking infrastructure projects in developing nations
- Mobilising both public and private sector capital
- Effectively managing the risks and costs of infrastructure

**Hartwig Schaefer, Vice President, Global Themes, World Ban**

**Developing reliable, sustainable, and resilient infrastructure**

- Implementing a renewed approach to infrastructure; from strategy to practice
- Think globally, act locally; focusing on regional and trans-border infrastructure

**Guna Gunalan, Vice President, AECOM**

**Panel discussion | Making sustainability an investor's business**

- How sustainability in finance leads to sustainability in infrastructure?

**10:00 - 10:30** | Networking, refreshments and exhibition

**10:30 - 12:00**

**STREAM 1**

**Balance availability and affordability of water – EU & USA case studies**

Water tariffs, cost-recovery principles, investment needs and requirements

**STREAM 2**

**Increase the economic viability of renewable energy sources**

Identify and develop new mechanisms to grow the low carbon energy services market

**STREAM 3**

**Water scarcity: Society's next big challenge**

Engineering answers to water scarcity and its economic impact

**STREAM 4**

**Fostering sustainable financing**

How business can contribute to more sustainable cities, take risks and make a difference

**STREAM 5**

**Debating the policy challenges raised in cities in the UK and Europe**

Challenging the massive transition period and required result

**STREAM 6**

**ICE State of the Nation 2018 Report**

Funding, financing and leadership

**12:00 - 14:00** | Networking, lunch and exhibition

**14:00 - 15:30**

**STREAM 1**

**Value of natural capital in water services**

How do we value water?

**STREAM 2**

**What will the future energy market look like?**

Solutions required to meet the 2050 climate targets

**STREAM 3**

**Is construction a necessary evil?**

Panel discussion on construction methods and the impact on the built environment

**STREAM 4**

**The future of sustainable cities: governance, policy and knowledge**

Defining a systems approach

**STREAM 5**

**Sustainable investing**

What constitutes good criteria for environmental, social and governance investment?

**STREAM 6**

**How to design modern, fit-for-purpose data systems**

Using data to inform planning, decision making and programme design

**15:30 - 16:00** | Networking, refreshments and exhibition

**16:00 - 17:00** | Panel discussion | Providing an engineering roadmap to make sustainability a reality including indicators to evaluate progression

Lessons learnt and tools to use in the short term, technology to implement in the medium term and population behavioural change as the long-term goal to sustain climate change improvements

Closing remarks

**Evening** | Graduates and students networking evening

● **SDG6:** Clean Water & Sanitation ● **SDG7:** Clean Energy ● **SDG9:** Innovation  
● **SDG11:** Sustainable Cities & Communities ● **SDG13:** Climate Action ● Inspiring the next generation

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