

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
Theme	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
Key Speakers	<ul style="list-style-type: none"> President, WFEO President, ICE Assistant DG at UNESCO CEO Engineers New Zealand VP AI commercialisation, BAIDU, China 	<ul style="list-style-type: none"> President, RAEng UN Science Advisory Council International Hydrology Programme Director, UNESCO Professor of internet and governance at the Oxford internet institute 	<ul style="list-style-type: none"> DG, Netherlands Ministry of Infrastructure & Environment Chairman, National Infrastructure Commission Global Covenant of Mayors 100 resilient cities 	<ul style="list-style-type: none"> President, ASCE President, CSCE Executive Officer, Environmental compliance and sustainability, LA Metro CMS Energy, USA 	<ul style="list-style-type: none"> VP Global Themes, World Bank VP, AECOM Houston Public Works, City of Houston Secretary General, Euro electric
Key Case Studies / Projects	<ul style="list-style-type: none"> Energy efficiency in Africa Creating momentum on diversity and inclusion: a New Zealand experience Smart village in Papua New Guinea: Electricity, education, and entrepreneurship as entry points for achieving all 17 SDGs 	<ul style="list-style-type: none"> Water strategy in Portugal/Spain ISO 37001 anti-bribery Hurricane resilient transport infrastructure in Puerto Rico 	<ul style="list-style-type: none"> Lessons learnt from Hurricane Sandy in New York Make Every Drop Count: How Australia transformed rainwater harvesting 	<ul style="list-style-type: none"> Rhode Island wind farm LA Metro 	<ul style="list-style-type: none"> Expansion project, Water purification plant Houston UK State of Nation report 2018 launch
Objectives	<ul style="list-style-type: none"> Establish a global perspective and explore the scale of change possible via a coordinated plan Agree parameters for change 	<ul style="list-style-type: none"> 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 Define what is needed to remove barriers to change 	<ul style="list-style-type: none"> Delve into how climate resilience can be incentivised, funded and built into all stages of decision making - creating cleaner cities and services 	<ul style="list-style-type: none"> Using case studies and research create guidance and information on how engineers can use technologies to deliver economically feasible and socially equitable projects. Establish a method to quantify social value. 	<ul style="list-style-type: none"> Explore links between engineering, education, governance and finance. Create a vision for a balanced system that improves lives and offers economic growth.
Outcomes	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	STREAM 2	STREAM 3	STREAM 4	STREAM 5
Changing approaches to sanitation and hygiene Using metrics to monitor and foster water and sanitation development	The cost of corruption - barriers to sustainability Highlighting the costs of corruption and how to prevent it	Engineering education for capacity building in Asia and Africa The future of education and paradigm shift needed to meet rapidly changing technology requirements	Disaster mitigation - development of natural disaster early warning systems Case study presentations and lessons learnt from Hurricanes in Florida and Puerto Rico	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	STREAM 2	STREAM 3	STREAM 4	STREAM 5
Hydrological programme and water strategy challenges Detailed assessment of global approaches with case studies from Portugal and Spain	Energy efficiency strategies Improving efficiency, reducing costs and maximising asset value	The role of robotics and the future of work Evaluating applications of robotics across sectors and the human impact	Data & cyber security Engaging individuals with data to maximise potential	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

<p>STREAM 1 </p> <p>Social equity in tariffs structures and flood risk management Community as the solution not the problem</p>	<p>STREAM 2 </p> <p>The social-environmental impacts of renewable energy expansion Positioning the electricity sector in a carbon constrained world</p>	<p>STREAM 3 </p> <p>Innovation and its impact on planning, design, construction and operation How technology is being used to enhance transportation and city operations</p>	<p>STREAM 4 </p> <p>Measuring social value How do we measure and codify value?</p>	<p>STREAM 5 </p> <p>Demonstrating benefits to communities Emphasis on projects delivering outcomes for end users</p>
<p>STREAM 6 </p> <p>Digitally enabled innovation Leading edge technologies that offer new value</p>				

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

14:00 - 15:30

<p>STREAM 1 </p> <p>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?</p>	<p>STREAM 2 </p> <p>Social impact of new technological trends Use of technology to improve quality of life and ways of working</p>	<p>STREAM 3 </p> <p>Innovation capacity building Enable sub-Sahara Africa to prepare CDM-eligible projects and negotiate emissions credits</p>	<p>STREAM 4 </p> <p>Plan for inclusivity and housing and transport connectivity Infrastructure dictates how sustainably a city can function and how to maximise connectivity amongst different systems</p>	<p>STREAM 5 </p> <p>Adaptation without mitigation is immoral Reinforcing the fact that we need a global solution to the climate crisis NOW</p>
<p>STREAM 6 </p> <p>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</p>				

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

BOOK NOW

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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