

Global safety, sustainability and resilience: East & Southeast Asia

Safety and sustainability: the core pillars of the Institution

The Institution's global reach and purpose

Jiemin Ding, Vice President China and Central Asia, IStructE (China)

Find out more about the Institution's global reach and purpose, through knowledge-sharing, professional development and a commitment to safe, sustainable, and resilient engineering. The presentation will showcase key initiatives that strengthen engineering capacity and help address global challenges.

Decarbonising construction in East and Southeast Asia

Takuma Watari, Senior Researcher, National Institute for Environmental Studies (Japan)

Construction materials account for the majority of industrial emissions. This talk argues that deep decarbonisation will not be achieved by low-carbon materials alone. Instead, it requires a portfolio of strategies spanning the full lifecycle.

Resilience design: strategies beyond increasing safety factors

Goman Ho, Fellow, Arup (Hong Kong)

Resilience design goes beyond increasing structural safety factors by focusing on a system's ability to maintain function and recover quickly after catastrophic events. While current design practices emphasize life safety, resilience aims to minimize downtime, economic loss, and service disruption. By integrating strategies for rapid recovery, adaptability, and continuity of operations, resilience design enhances overall system performance. Practical examples will illustrate how these principles can be effectively applied in real projects.

Resilience in a local context: case studies, initiatives, and research**Engineering precision beneath a live Mass Rapid Transit station: redefining underground construction**

Ashok Somasundaram, Technical Director Civil and Structural, Mott MacDonald (Singapore)

An overview of the design approach, challenges encountered, and engineering solutions implemented for the underpinning structure supporting the underpass constructed beneath the existing station. The study highlights innovative solutions for executing complex underground works under live operational conditions.

Buckling analysis and lightweight design for ultra-long wind turbine blades

Xiaoming Zhang, Professor, Chongqing University (China)

This presentation focuses on buckling analysis and lightweight design for ultra-long wind turbine blades, a key focus for China's "dual carbon" goals. CFRP and GFRP are primary materials, but ultra-long blades face critical issues like local buckling, delamination, and tower-sweeping. The research proposes a curved sandwich structure model (integrating spar caps and core webs) to replace conventional single-shell designs.

Market benchmark of concrete embodied carbon in Singapore

Nia Bell, Senior Manager, ConcreteZero, Climate Group (UK)

ConcreteZero tackles concrete embodied carbon challenge by clarifying data, improving collaboration, and guiding low-carbon decisions. This presentation showcases refined solutions, gathered insights, and delivered practical tools. Key findings and best practices relevant to engineers will be discussed, along with next steps focusing on engineering action, with resources available for deeper learning.