

URBAN ENVIRONMENT

Infrastructures: The Disruptive Impact of Smart Materials & Infrastructures

Concept note

Many modern infrastructure assets have been built, operated and maintained in much the same way for decades, despite enormous strides in innovation across sectors. This is understandable. Governments are loath to risk experimenting with assets as economically and politically important as infrastructure.

However, as we enter a period of unmitigated climate disruption, some changes need to be made to integrate green and gray infrastructure and fill the need for climate-resilient solutions. In fact, all services a competitive and [sustainable city](#) provides —functional housing, schools, hospitals, stores, police and fire departments, heating, cooling, waste management, and so on— depend on a reliable water, electricity, and transit infrastructure. To address this an estimated [\\$97 trillion of infrastructure investment will be needed from today through 2040.](#)

This is a major challenge when contextualized against issues like strained government budgets and the uncertainty around how to improve the commercial viability of emerging technologies. But it's also an opportunity as the transition to a more sustainable infrastructure could entail economic gains worth [\\$26 trillion through to 2030](#) compared to business-as-usual.

In fact, experts consider that the next 2-3 years are a critical window when many of the policy and investment decisions that shape the next 50 years will be taken. To meet these challenges, cities will need to harness the best of new technology, enable multi-functional green infrastructure and find new forms of funding. Green Bonds, Distributed Ledger Technologies (DLT), smart contracts and even crowd-sourcing can transform [infrastructure project finance](#). Moreover, the potential to significantly reduce costs and intermediaries presents additional benefits. Yet this shift will take a concerted and collaborative effort by the public, stakeholders and city leaders.

What is clear is that a global focus on [sustainable infrastructure can boost growth](#), reduce poverty, improve air quality and create jobs, while building low-carbon, climate-resilient economies and [smarter cities with smart foundations](#).

Outcomes

Participants will:

- Learn about the crucial role of infrastructure to develop a sustainable city in the developed and the developing world.
- The value of user-centered design and civic engagement in creating and maintaining infrastructure
- Get new perspectives on how to boost and finance modern infrastructure.
- Identify the key challenges and obstacles to build more sustainable cities.
- Understand the role green infrastructure and bringing the natural world back into cities can play.
- Discover successful examples of transforming infrastructure projects.

Guiding questions

- How do we define sustainable infrastructure?
- How do we engage users and other citizens?
- What is the framework needed for investing in sustainable infrastructure?
- What are the emerging technologies helping integrate green and grey infrastructure?
- How to cope with major challenges, such as governance weaknesses, financing gaps and siloed approaches?
- How can we standardize tools and indicators to accelerate adoption?

Keywords

Infrastructure; sustainable infrastructure; sustainable construction; building management; green infrastructure; smart buildings; green buildings; smart ports;