

Unlocking opportunities for climate-resilient infrastructure

By Indu K Murthy.

Climate-resilient infrastructure refers to the built environment designed and constructed to withstand the impacts of climate change, including rising temperatures, increased precipitation, sea-level rise, and more frequent extreme weather events. It goes beyond traditional infrastructure development by incorporating climate considerations to ensure long-term sustainability and holds several key benefits such as

*- **Climate risks mitigation:** Withstands extreme weather events and reduces the risk of damage and disruption to communities and economies.*

*- **Adaptation and flexibility:** Adapts to changing climate conditions, ensuring functionality and performance over the long term.*

*- **Economic opportunities:** Stimulates economic growth, creates jobs, and attracts private sector investments, providing cost savings by avoiding losses caused by climate-related damages.*

Investing in sustainable and adaptive solutions can unlock numerous opportunities to safeguard our communities, economies, and the environment.

Sustainable Design and Construction

Constructing buildings that are energy efficient and incorporating renewable energy sources reduce greenhouse gas emissions, lower energy costs, and enhance resilience. [The Edge](#), a sustainable office building in Amsterdam, Netherlands, is a prime example, achieving the highest sustainability rating and showcasing how green buildings can be economically viable.

Likewise, the One Central Park in Sydney, Australia, is a residential and commercial complex featuring stunning vertical gardens that cover the facades of the buildings. It helps reduce the urban heat island effect, provides natural insulation, and enhances air quality. The project incorporates solar panels, blackwater recycling, and energy-efficient systems, earning a 5-star Green Star rating.

Nature-Based Solutions: Success Stories

Nature-based solutions leverage the power of ecosystems to enhance resilience and adaptability. These solutions include urban green spaces and coastal restoration and protection. Incorporating parks, green roofs, and urban forests into city planning provides multiple benefits. The High Line in New York City, a repurposed elevated railway, offers recreational spaces, mitigates the urban heat island effect, reduces stormwater run-off, and enhances biodiversity.

Projects such as the [Sand Motor](#) in the Netherlands and the [Mangrove Restoration Initiative](#) in the Philippines demonstrate the effectiveness of restoring coastal ecosystems. These efforts protect against storm surges, stabilise shorelines, and support biodiversity while offering economic benefits through tourism and fisheries.

[Delta Works](#) in the Netherlands is a prime example of climate-resilient infrastructure, comprising a network of dams, dikes, storm surge barriers, and other coastal protection measures designed to defend against rising sea levels and storm surges. This project has protected low-lying areas from floods, demonstrating the effectiveness of proactive planning and investment in resilience.

The [Mombasa–Nairobi Standard Gauge Railway](#) in Kenya incorporates climate resilience by considering climate change risks, such as increased rainfall and flooding. The project has

incorporated innovative engineering techniques, so the railway's bridges and culverts can withstand extreme weather events.

These success stories from around the globe demonstrate how integrating climate resilience into large-scale infrastructure projects can help protect critical assets and ensure continued functionality.

The Need for Global Collaboration

Collaboration among governments, businesses, and communities is vital in unlocking opportunities for climate-resilient infrastructure at a global scale. Successful collaborations require

- Policy coordination: Governments need to adopt policies that incentivise the development of climate-resilient infrastructure and discourage practices that contribute to climate vulnerability. International cooperation can facilitate knowledge sharing, best practices, and the alignment of policies to achieve collective resilience goals.

- Public-private partnerships: Collaboration between the public and private sectors is crucial to leverage resources, expertise, and funding for climate-resilient infrastructure. Public-private partnerships can promote innovation, attract investments, and accelerate the implementation of projects.

- Technology transfer: Developing countries often face challenges in accessing climate-resilient technologies. Developed nations can support technology transfer, capacity building, and financial assistance to enable the adoption of climate-resilient infrastructure solutions in vulnerable regions.

By integrating resilience measures into infrastructure development and investing in sustainable design, nature-based solutions, and collaborative policy interventions, we can unlock multiple benefits such as safeguarding lives and economies, reducing carbon emissions, and preserving natural resources. Working together, we can pave the path to a sustainable future where climate-resilient infrastructure is the bedrock for a thriving, resilient, and sustainable society.

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