

Rethinking coastal urbanization in the global south: A case study of a nature-based sustainable model for the Port City Colombo

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Background: Port City Colombo, Sri Lanka's biggest public-private urban development project, presents a unique opportunity to study the combination of sustainability and innovation in a newly reclaimed coastline setting. Spanning 269 hectares, the project represents a paradigm shift from traditional infrastructure-led urbanism to a model founded on Nature-Based Solutions, climate responsiveness, and circular resource loops.

Objective: This paper critically evaluates the socio-economic and environmental strategies implemented in the Port City of Colombo, focusing on their effectiveness in advancing the sustainability agenda through the Port City as a case study. It examines the need for a holistic approach through initiatives such as ecosystem restoration, green infrastructure development, and governance through public-private partnerships, and how the project contributes to aligning with the Sustainable Development Goals and achieving carbon neutrality in Sri Lanka by 2050.

Methods: The study employs a cross-sectional design and follows a case study approach. Based on the 2024 ESG Report and Port City Development Control Regulations data as secondary data, this research aims to explore initiatives such as the rehabilitation of marine ecosystems, gravity-fed rainwater reuse systems, and the construction of over 40 hectares of urban green spaces.

Results: The analysis of the 2024 ESG Report and Port City Development Control Regulations shows that Nature-Based Solutions and green-blue infrastructure, such as coastal buffers, urban green spaces, and storm water reuse, are embedded in project controls, demonstrating alignment with SDGs 6, 11, 13, and 14 and Colombo's climate adaptation agenda. While design measures to reduce operational emissions through efficiency and circular resource use are evident, the absence of lifecycle carbon accounting, interim milestones, or a defined pathway to 2050 means alignment with Sri Lanka's carbon neutrality target is only partial.

Conclusion: Port City Colombo demonstrates a strong commitment to aligning with global and national sustainability goals through the implementation of green infrastructure, ecosystem restoration, and innovative governance. Measurable evidence of carbon reduction and socio-economic benefits is still limited. The project represents a promising model, but its true contribution to the SDGs and Sri Lanka's 2050 carbon neutrality target will depend on transparent implementation and long-term monitoring.

Keywords: Nature-Based Solutions, Urban Sustainability, Port City Colombo, Coastal Resilience, Green Infrastructure