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## Innovative Approaches to Climate-Responsive Building Design

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This reprint examines how the construction sector can address climate change by moving beyond traditional methods and promoting adaptive, resilient, low-impact design, highlighting practices and case studies that enhance built environment resilience and reduce carbon emissions. The reprint opens with a critical reflection on the concept of sustainability, framed within the transition toward regenerative and climate-resilient built environments. At the urban scale, the strategic role of vegetation and green infrastructure in improving outdoor thermal comfort and reducing emissions is highlighted, demonstrating the interdependence between urban morphology, wellbeing, and environmental performance. At the building scale, the contributions investigate innovative envelope technologies, biomimetic façades, shading systems, and advanced glazing solutions, emphasizing the importance of computational design and simulation tools for optimizing energy efficiency, daylighting, and visual comfort. Further studies draw attention to vernacular architecture as a valuable source of climate-responsive strategies. The final section addresses assessment, retrofit, and decarbonization, proposing replicable methodologies, low-carbon interventions, and BIM-based frameworks for embodied carbon evaluation, adaptable also to developing country contexts. Overall, the volume highlights the urgency of a holistic approach that integrates environmental, social, and cultural dimensions to guide cities and buildings toward sustainability and climate resilience.



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