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MITIGATING COASTAL HAZARDS: A COMPREHENSIVE REVIEW OF NATURAL DISASTER MANAGEMENT APPROACHES

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Coastal hazards, including storm surges, tsunamis, erosion, and sea level rise, increasingly threaten ecosystems, infrastructure, and communities across the world. This comprehensive narrative review documents global efforts to prevent coastal disasters, focusing especially on Nature-Based Solutions (NBS), policy instruments, community-based approaches to resilience, and cases from advanced and developing countries. Through case studies from developed nations (Japan, USA, Portugal, Netherlands) and developing regions (Bangladesh, Indonesia), this paper analyzes the effectiveness of structural (seawalls, levees), non-structural (zoning laws, early warnings), and hybrid (mangrove restoration, living shorelines) approaches. The community based coastal hazard mitigation, preparedness and response, policy and governance structure related to coastal hazards and climate change mitigation and adaptation strategies in coastal areas. Our main findings are that integrated coastal zone management, climate-adapted infrastructure development, and institutional locale capacities are important to effectively minimize disasters. Challenges persist despite considerable experience, including institutional fragmentation, inadequate funding, and social inequality. The study highlights the importance of adaptive policy formulation, interplay, and monitoring with advanced technologies like AI, drones, and satellites to manage coastal hazards exacerbated through climate change. By synthesizing past lessons from main disasters like Hurricane Katrina (2005) and the Indian Ocean Tsunami 2004. Finally, this paper provides actionable insights for policymakers and regulatory bodies to enhance coastal resilience through science-based planning, equitable recovery, and ecosystem-based adaptation , which helps in the planning and decision-making process.

Keywords: Coastal hazards, Nature-based solutions, Disaster risk reduction, Early warning