

Using Bamboo Structures for Protecting Mangrove Ecosystems: A Nature-Based Approach

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Abstract : The nurturing of a mangrove ecosystem requires a protected coastal environment with adequate drainage of the soil substratum. In a conceptual design undertaken for a mangrove rejuvenation project along the eastern coast of Mumbai (India), various engineering alternatives have been thought of as a protective coastal structure and drainage system. One such design uses bamboo-pile walls in creating shielded compartments in the form of various layouts, coupled with bamboo drains. The bamboo-based design is found to be environmentally and economically advantageous over other designs like sand-dikes which are multiple times more expensive. Moreover, employing a natural material such as bamboo helps the structure naturally blend with the developing mangrove habitat, allaying concerns about dismantling the structure post mangrove growth. A cost-minimising and eco-friendly bamboo structure, therefore, promises to pave the way for large rehabilitation projects in future. As mangrove ecosystems in many parts of the world increasingly face the threat of destruction due to urban development and climate change, protective nature-based designs that can be built in a short duration are the need of the hour.

Keywords : bamboo, environment, mangrove, rehabilitation

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