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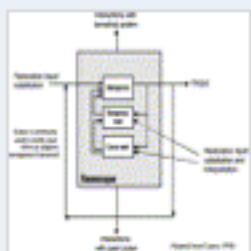
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## Abstract

The tropical coastal "seascape" often includes a patchwork of mangroves, seagrass beds, and coral reefs that produces a variety of natural resources and ecosystem services. By looking into a limited number of attempts at substitution and restoration of ecosystem services (e.g. artificial reefs, aquaculture in mangroves, artificial seawalls), we address the questions: (1) To what degree can technologies substitute for ecosystem services in the seascape? (2) How can ecosystem restoration reestablish not only the functions of direct value to humans, but also the ability of the systems to cope with future disturbance? Substitutions often imply the replacement of a function provided free by a solar powered, self-repairing resilient ecosystem, with a fossil-fuel-powered, expensive, artificial substitute that needs maintenance. Further, restoration usually does not focus on large-scale processes such as the physical, biological and biogeochemical interactions between mangroves, seagrass beds and coral reefs. Nonetheless, restoration might be the only viable management alternative when the system is essentially locked into an undesired community state (stability domain) after a phase-shift. We conclude that ecosystem services cannot be readily replaced, restored or sustained without extensive knowledge of the dynamics, multifunctionality and interconnectedness of ecosystems.

## Figures and tables from this article:

