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These Pots Are Designed To Create Mangrove Forests That Will Protect Our Beaches

The Tetrapot is a stable home for trees that help break waves, collect sand, and guard our coastlines.

BY ADELE PETERS 1 MINUTE READ

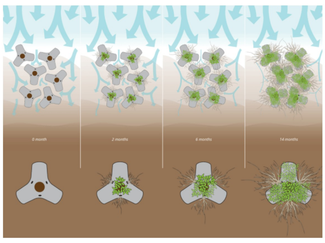
Every time he walks at the beach in Taiwan, designer Sheng-Hung Lee notices the concrete breakwater lining the waterfront. "The government put these concrete blocks on the beach," he says. "It breaks the emotional connection to nature, and it looks ugly."

The interlocking, four-legged blocks–found on beaches around the world–are supposed to prevent erosion, but can sometimes make it worse, as waves crashing through the gaps pull away sand. They also disrupt the local ecosystem.

Lee started thinking about an alternative as a design student. "We often think, from a human perspective, that we have to do some artificial sea defense," he says. "But in nature, there's a natural defense."

Mangrove trees, which can grow in brackish water along coasts, are one natural defense, helping protect and build beaches as the trees' roots catch sand and leaves. But rising seas are making it harder for young mangroves to establish roots.

Both problems–the ugliness of an artificial breakwater, and the fragility of mangroves in the face of climate change–inspired Lee and a team of designers to create a dual solution. Tetrapot is a concrete pot filled with mangrove seeds, meant to act as a stable planter to hold mangrove seeds.



As the mangroves grow, in theory, their roots will extend out the open sides of the pod, and interlock to form a natural breakwater. Over time, typical tetrapots could wash away; the trees are meant to help hold them in place.

"The tree protects the artificial sea defense, and the artificial sea defense protects the mangroves," Lee says.

Lee, who now has a full-time job, is continuing to work on the project on the side. He's starting to work with experts in ocean engineering at a Taiwanese university, who will test a prototype of the planter with artificial waves; later, it will be tested in the ocean.

The engineers will also test different types of concrete to figure out which are best for marine life. Lee is hoping that the design can eventually be used at beaches around Taiwan, and any other place–from Mumbai to parts of Japan–where mangroves naturally grow.

"I'm not designing this to make money," he says. "I'm designing to help Taiwan, as a first step. So at least my children or grandchildren could have the experience of seeing a beautiful beach."

ABOUT THE AUTHOR
Adele Peters is a senior writer at Fast Company who focuses on solutions to some of the world's largest problems, from climate change to homelessness. She contributed to the second edition of the bestselling book "Worldchanging: A User's Guide for the 21st Century" and the upcoming "State of Housing Design 2023" book from Harvard's Joint Center for Housing Studies More