

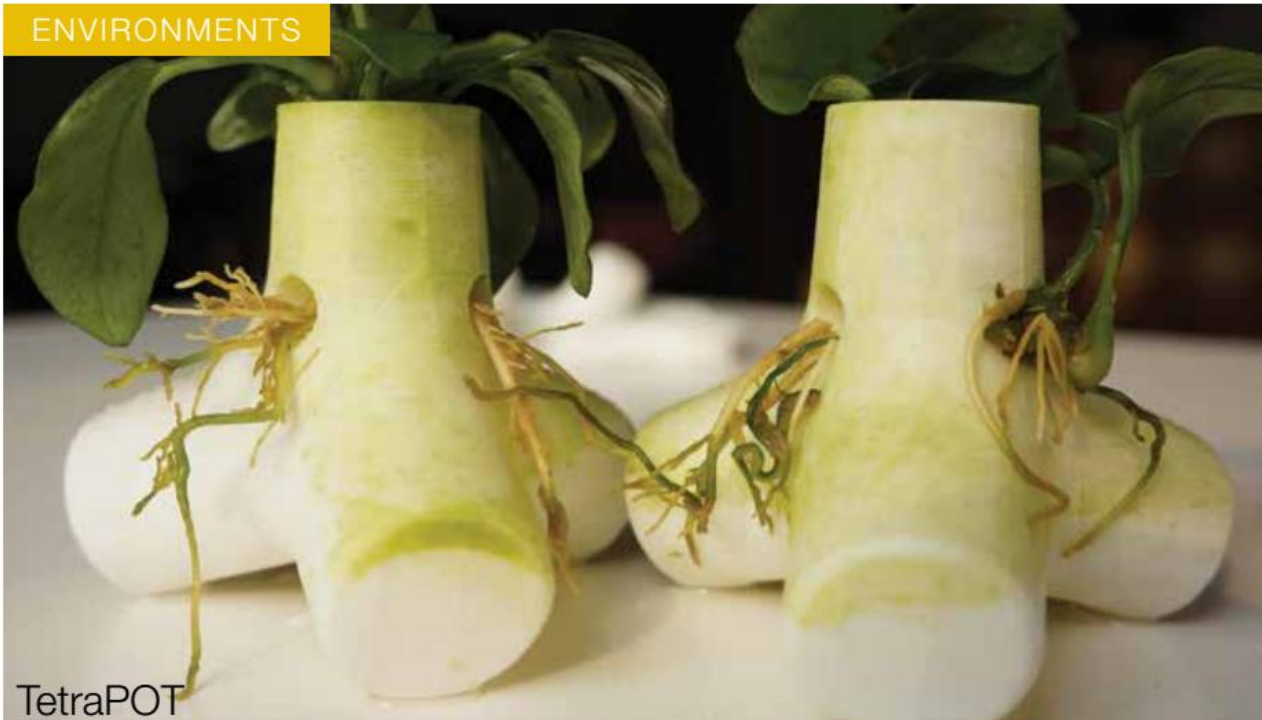
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INNOVATION

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INTERNATIONAL DESIGN EXCELLENCE AWARDS

IDSA



TetraPOT

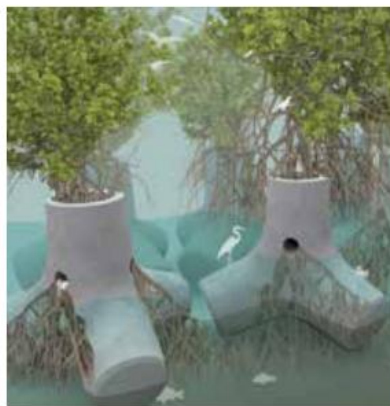
A GREENER SEA BARRIER

TetraPOT is an ecofriendly alternative to traditional tetrapod sea barriers. Randomly distributed TetraPOTs along coastlines will create trees and roots that eventually will intertwine, forming a defense against soil erosion and creating a natural ecosystem.

In Greek *tetrapod* means “four legged.” The traditional four-legged tetrapod is nothing but a concrete structure used to prevent coastal erosion and as an armor unit on breakwaters. The shape of a tetrapod is designed to dissipate the force of incoming waves by allowing water to flow around rather than against it and to reduce displacement by allowing them to interlock.

However, over time tetrapods tend to become dislodged by the force of the ocean constantly crashing against them. They have also been criticized for destroying the natural scenery along coastlines, and people argue that they pose a danger to swimmers, surfers and boaters. In addition, scientific research shows that tetrapods in fact accelerate beach erosion by disturbing the natural processes that shape the coastal environment. The wave action on tetrapods pulls the sand away from the shore faster than nature does.

Nature has also created natural sea barriers, such as mangrove forests. Mangroves are medium-height trees



and shrubs that are adapted to live in harsh coastal conditions. They contain a complex salt filtration and root system to cope with saltwater immersion and wave action and are adapted to the low oxygen conditions of waterlogged mud. Most mangroves are found in tropical and subtropical tidal areas, including estuaries and marine shorelines. Mangrove forests require stable sea levels for long-term survival, otherwise the seeds are not able to root. They are therefore extremely sensitive to current rising sea levels caused by global warming and climate change. To date, more

than 35 percent of the world’s mangroves have been lost because of the greenhouse effect.

The TetraPOT is a sea-defense system that combines the best of both artificial and natural engineering. TetraPOTs are made out of concrete, but because they contain hollow spaces for plants to grow, they use less concrete than tetrapods do. When they are deployed, TetraPOTs are embedded with a decomposable pot planted with seeds. As the plants grow from the inside out, the roots will eventually intertwine to create a long-lasting sea defense of trees and roots that help keep the blocks in place. The design not only prevents soil erosion but also helps create a natural habitat. The TetraPOT is not only a sea barrier but also an ecosystem—a place where life can thrive. ■

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