Holcimawards

Acknowledgement

In-Situ Network

Palm tree branches for coastal protection, Tarawa Atoll, Kiribati

Main author

Maj Plemenitas, architect, LINKscale, London, UK

Summary by the jury

Palm tree branches are used as a simple measure to respond to the imminent threat of coastal erosion – due to rising waters and habitat destruction – on Tarawa Atoll. Inserted into the sand, the spoon-shaped branches constitute an ideal barrier, causing sea currents to slow down and deposit sand material into the concave inner surface of the leaf branch. Sand mounds are thus created which gradually elevate coastline embankments, allowing aquatic plants such as mangroves to grow and secure the beach.

Image 1: Palm tree branch as construction material for coastal protection.

Appraisal by the jury

The jury enjoyed the ingenuity and simplicity of the proposal, an ostensibly common solution for the restoration of sandbanks susceptible to the detrimental effects of climate change – a small-scale solution for a large-scale problem. Commended is the intelligent deployment of parametric design to increase the performance of individual branches when combined into groups or swarms of branches, where the whole is greater than the sum of its parts. Furthermore, what was appreciated were the beautiful drawings showing stunning geometric patterns of branch network assemblies, generated from scientific data.

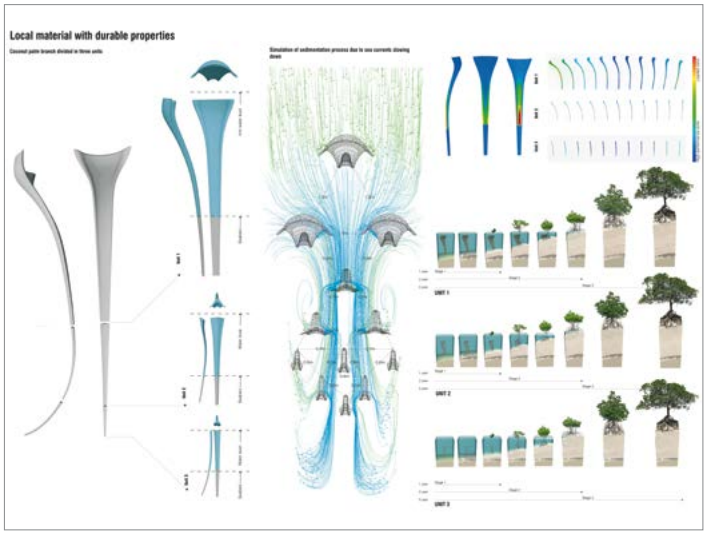

Image 2: Material system: structure and performance. Palm branches have an ideal “spoon” shape which enables a sea current to slow down and deposit sand material in the concave area of the unit. In this way mounds of sand deposit are created, which gradually create a higher coastline. During the process, the palm branch transforms to “geoarmature”, which is able to host aquatic plants, like mangroves.

Project data

Context	Materials, products and construction technologies
Client	Private
Background	Research and development
Planned start	December 2014

Further authors

Ana Abram, architect, Amphibious Lab, London UK

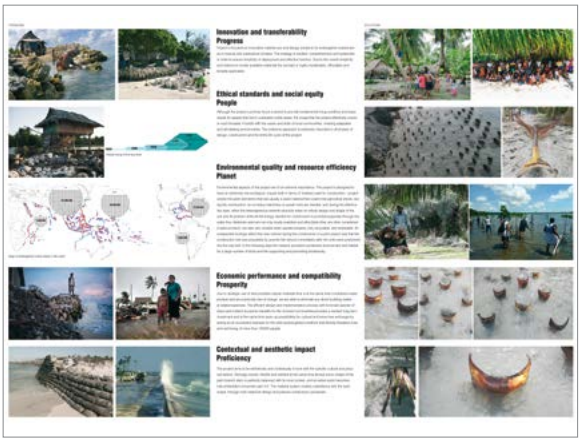

Image 3: "Target issues" for sustainable construction.

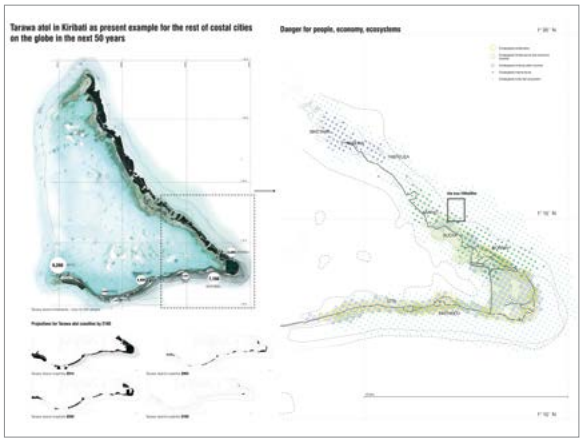

Image 4: Tarawa atoll as an indicator for future events around the globe.

Image 5: Photos from construction site, where building material is usually seen as a waste material.

Image 6: Main "spoon-shaped" unit in the network.

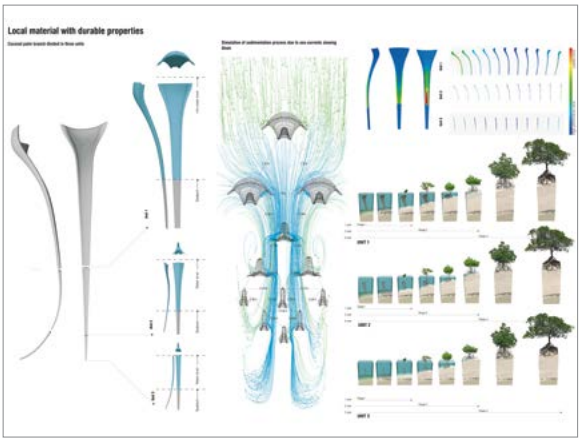

Image 7: Structure and performance of the main construction unit.

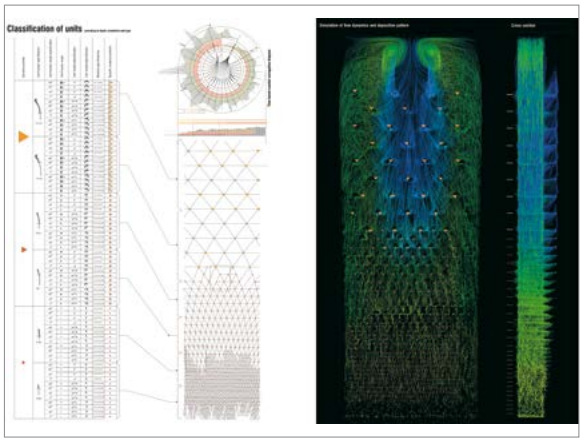

Image 8: Regular grid for unit organization: The number, density, and orientation depends upon specific location.

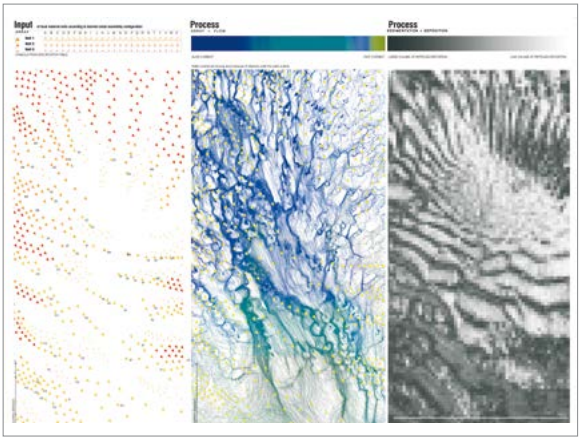

Image 9: Site-specific grid which forms a site-specific morphology.

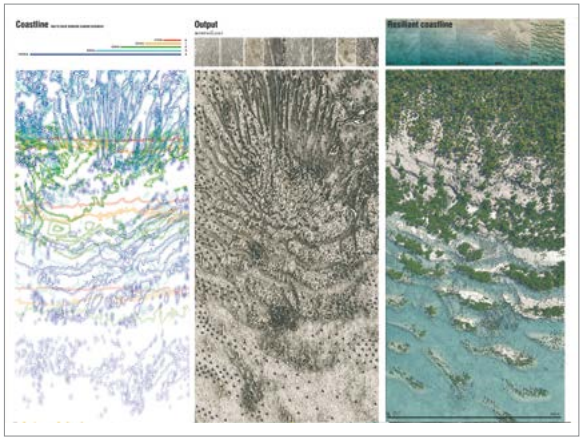

Image 10: Resilient coastline.