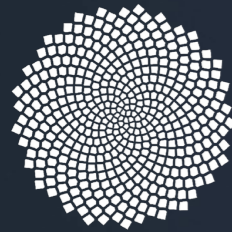


THE GOOD KRAKEN

“The Good Kraken” (TGK) is an ambitious installation that boldly tackles one of the most pressing challenges of our time: **sea level rise** and its devastating impacts on vulnerable coastlines and islands around the world.

Cities like Miami, Dhaka, Mumbai, Tokyo, Venice, Rotterdam and Alexandria are particularly at risk. But they’re not alone. Remote paradises in the Pacific Ocean, such as Tuvalu, Kiribati, the Maldives, Nauru, and the Marshall Islands, are already feeling the inexorable advance of the sea ⁽¹⁾. Our spotlight turns to the **Christmas Island of Kiribati**, however, this case study is far from exclusive; it resonates with every location mentioned.

TGK’s innovative approach demonstrates how soft boundaries and fluid dynamics can merge into a defence mechanism that protects not only human lives but cultural heritage and marine biodiversity. It relies on four principles:



01-Distribution



02-Soft-Tech



03-Biomimeticisme



04-Nature-based solutions

“We are the first to face the reality of climate change, but we are also the last to deny its existence”

Anote Tong - previous president of Kiribati islands.

1 THE PATTERN



You guessed it, it is the golden ratio, nature's preferred pattern. In TGK, using this pattern helps create tight boundaries when needed and a more relaxed landscape when climate conditions are milder. This configuration allows marine animals as well as boats to penetrate the structure without compromising its efficacy. This pattern also allows an infinite adaptability to coastline shapes.



During meteorological events such as storms and typhoons, the sea level rises. The TGK automatically inflates its double watertight ring units to keep the inner level of water lower while the remaining units act as buffers that absorb the sea's agitation.



During milder meteorological conditions a deflated configuration allows boats and marine life to circulate efficiently, the pattern can still inflate or deflate in specific areas for specific reasons.

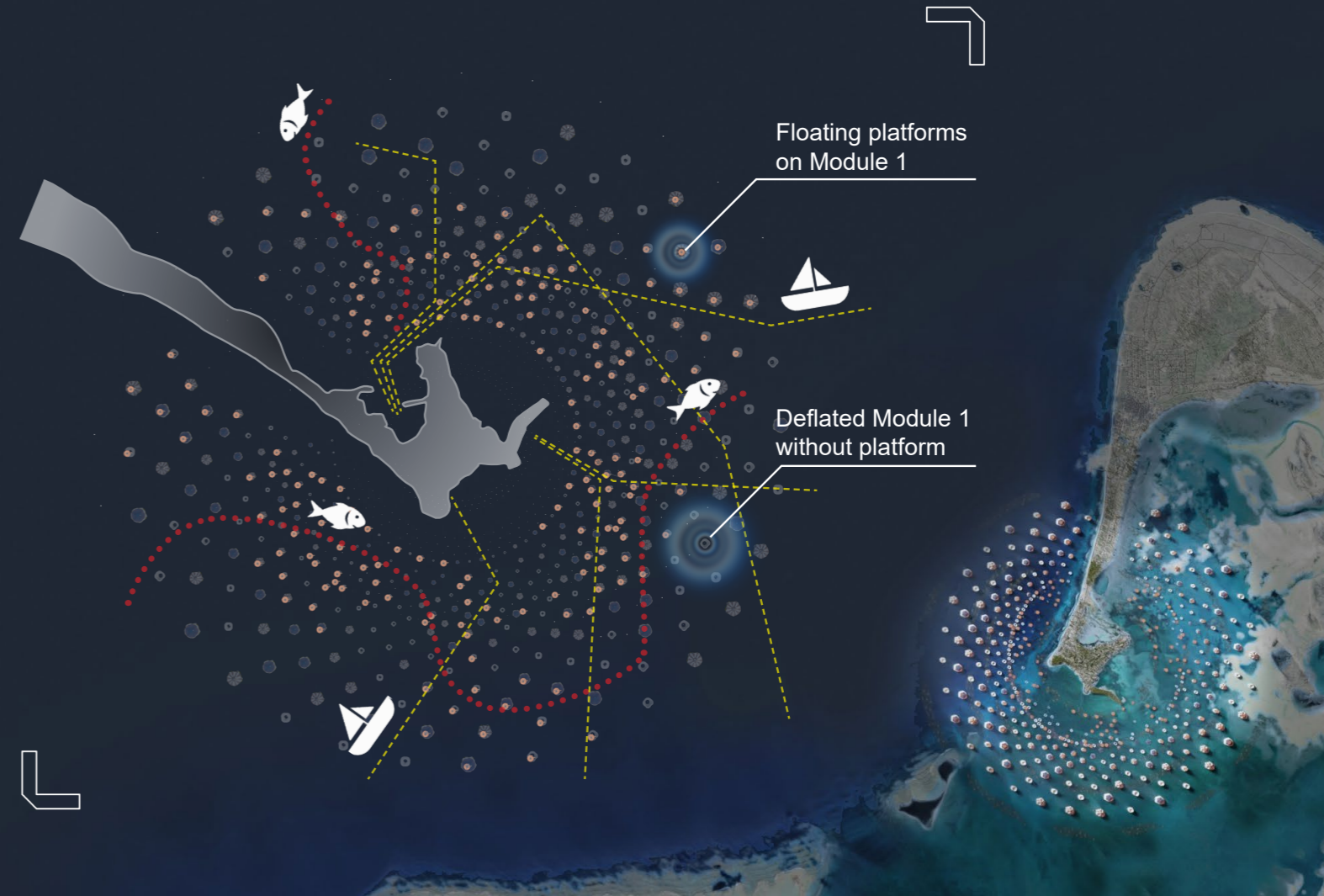


When totally deflated, only the platforms are above sea level. They are used by locals and researchers.

“The ocean is our way of life, and we will do everything in our power to protect it.”
 Dame Meg Taylor - Secretary-General of the Pacific Islands Forum.



Fun fact: think of it as a wave park where people gather in floaters to ride the waves.





2 THE MODULES

3

2

1



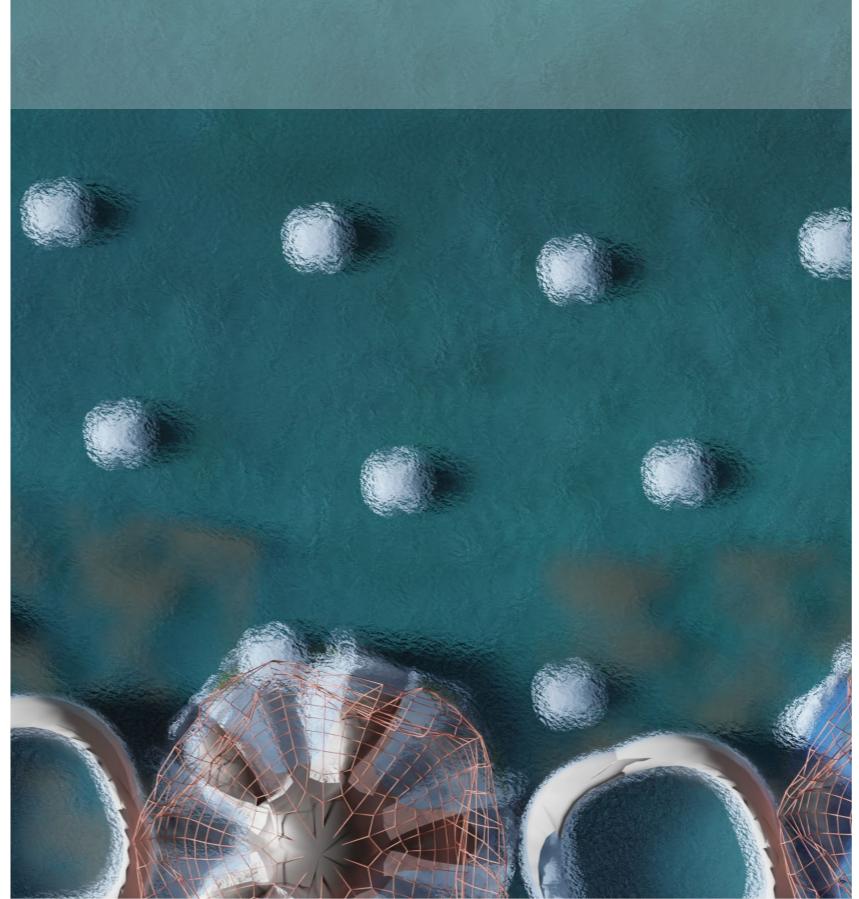
MODULE 1

Those pressurised inflatable units replace concrete dikes that disrupt ecosystems and marine currents. They inflate during storms and bump into each other to form a watertight wall while never creating real physical barriers. They also procure shade keeping the underneath water cool and are topped by a platform that can be used by locals or scientists.



MODULE 2

Those Units, placed closer to the shore and in shallower areas in the lagoon are wave breakers. They inflate creating an underground dome, the sudden reduction of water depth makes the waves break. They are used by professional surfers to break waves afar from the shore where they don't risk hurting themselves if they fall.



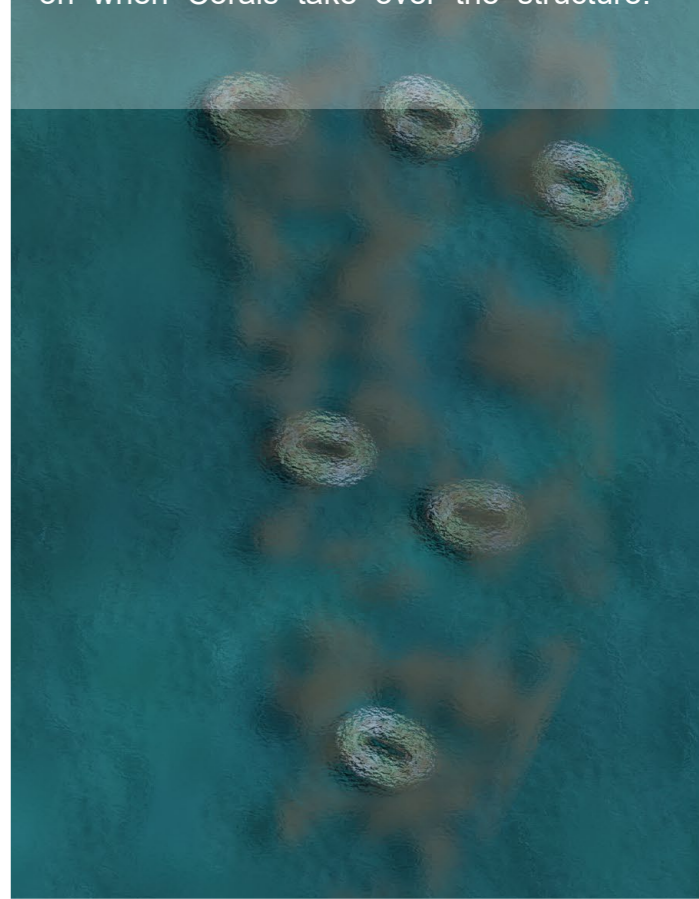
Project's Name: **The Good Kraken - TGK**

Description: **A soft, flexible and distributed approach to coastal infrastructure**

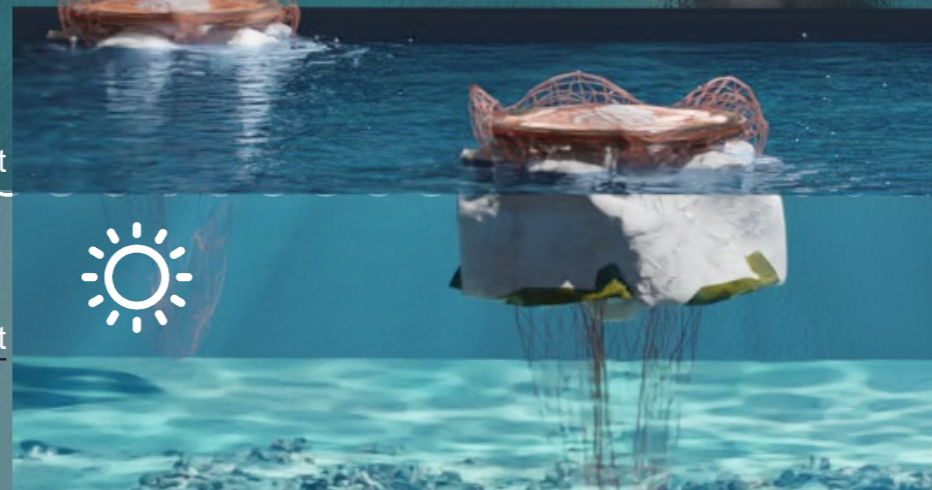
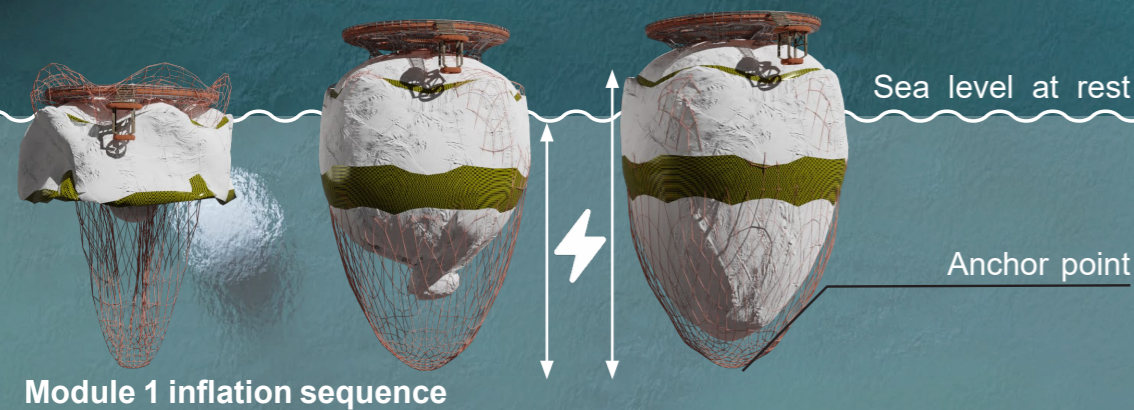
“The ocean is our way of life, and we will do everything in our power to protect it.”
Dame Meg Taylor - Secretary-General of the Pacific Islands Forum.

MODULE 3

Lastly, the Coral cages. Those units consist of oval shaped tubes containing inflatables that protect the centre. In the more tranquil centre, is a Coral nursery. This disposition protects young forming reefs while allowing them to proliferate later on when Corals take over the structure.



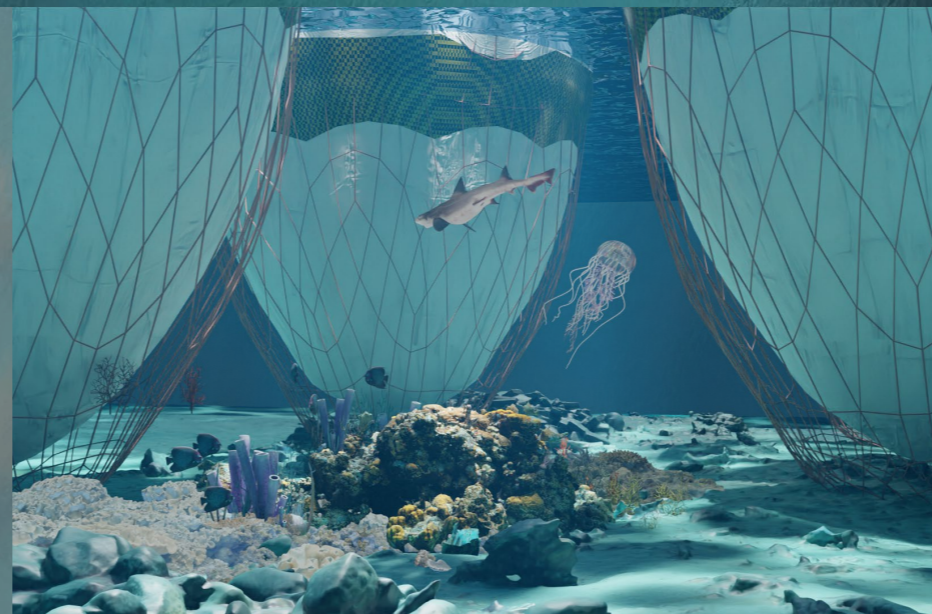
3 MODULE 1



Who benefits from TGK:

1- Humans: The floating platforms of modules (1) are guaranteed to stay above water in all weather conditions. Inhabitants of the coast can use them for different purposes, building fishing facilities, labs, plastic collectors, resorts. By doing so TGK blurs the limit between sea and land and creates a hybrid space where humans and nature coexist. Those platforms are not intended to become a floating city but to expand human activity towards this hybrid zone.

2- Marine Biodiversity: TGK never acts as a wall apart from punctually during storms. However the presence of the modules in the water creates some kind of porosity that would allow marine life to proliferate. The modules also provide shadow do the sea bed making water cooler to help coral growth. Their movement also helps generating electricity for the whole grid.



Section on TGK installed on a coastline

sea water level during a storm

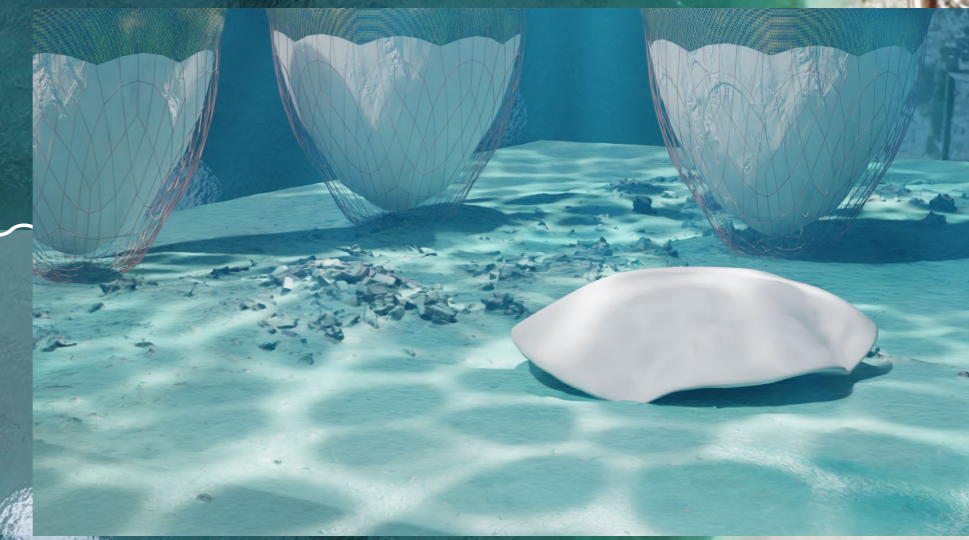
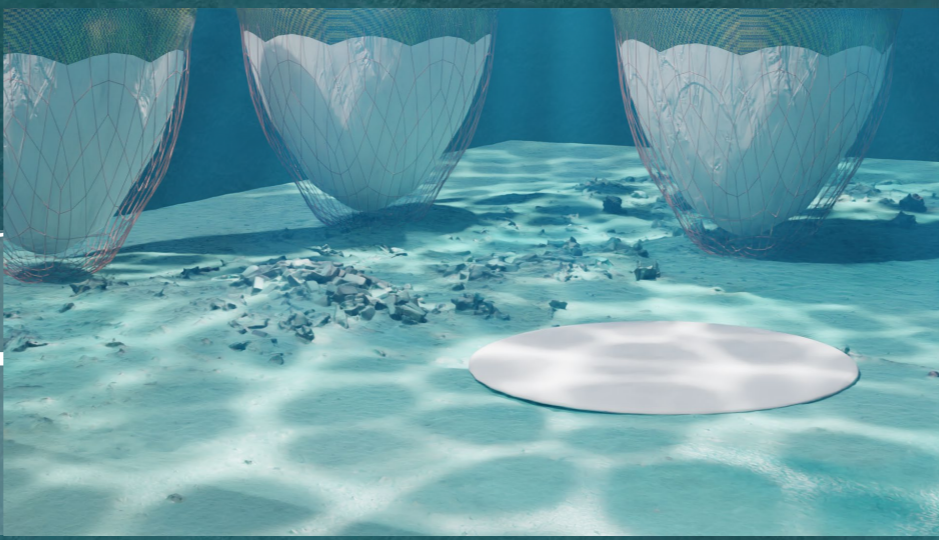
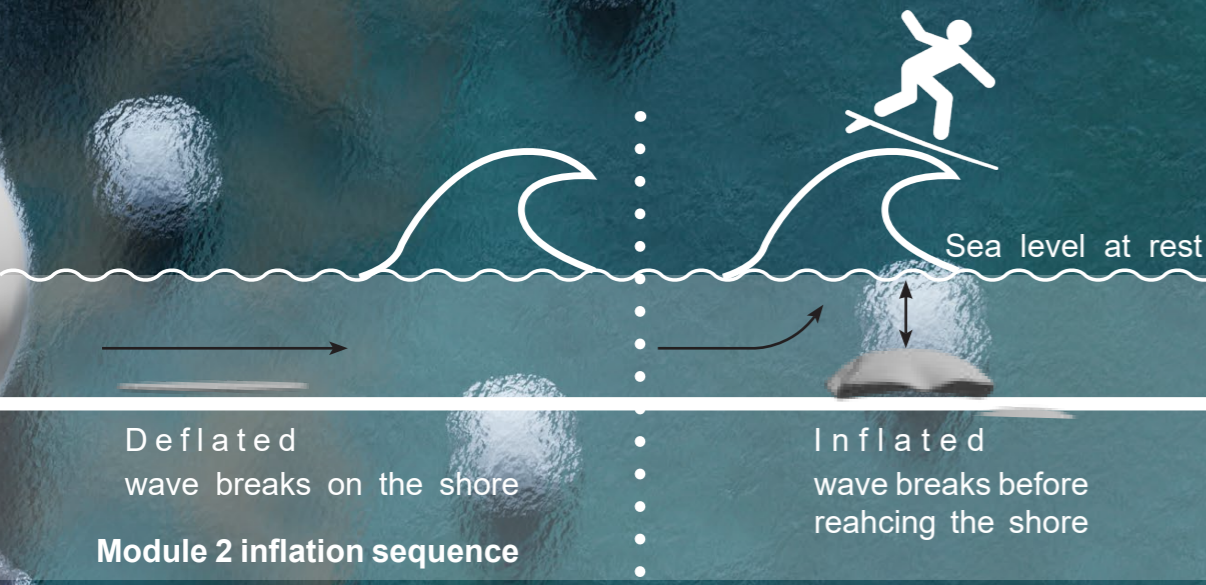
1st watertight Ring

2nd watertight Ring

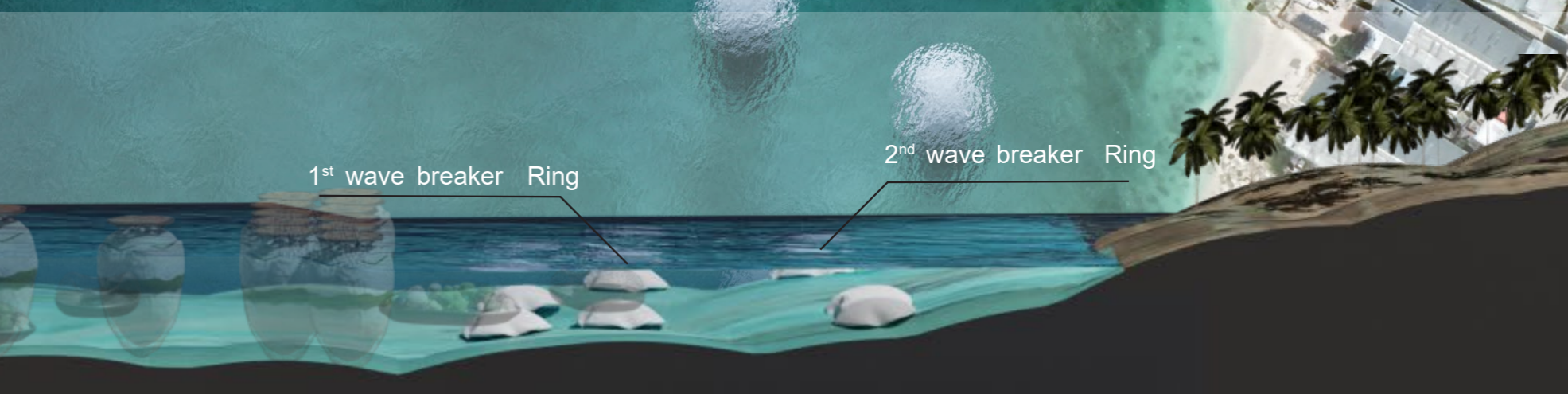
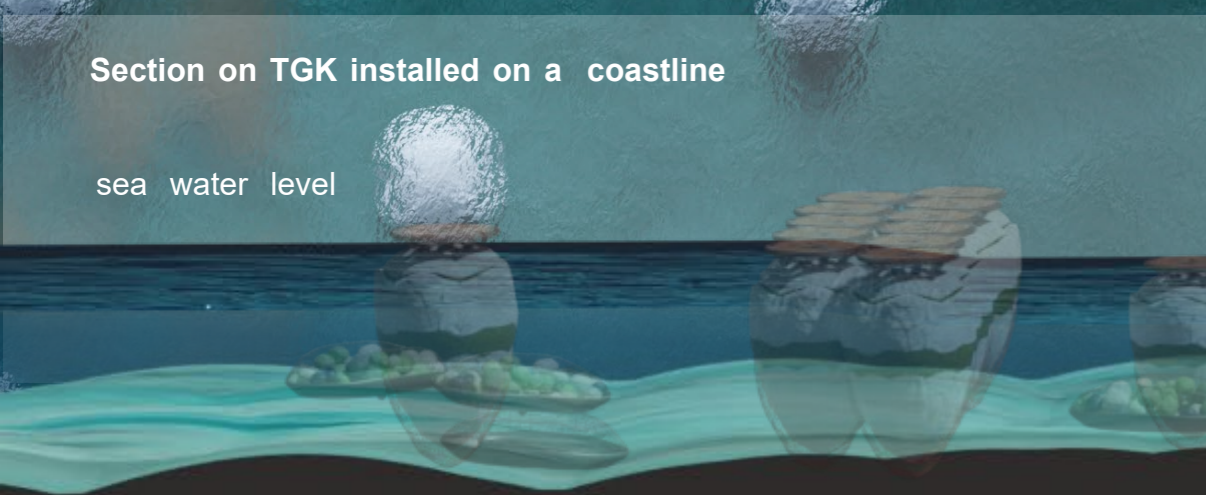
drop in water level

drop in water level

3 MODULE 2



The inflatable wave breakers are dispositifs that force big waves to reach their breaking point earlier in the sea. They are useful on a windy day and during storms. Breaking waves is the role of coral reefs. The wave breakers will temporarily play that role until reefs are restored.

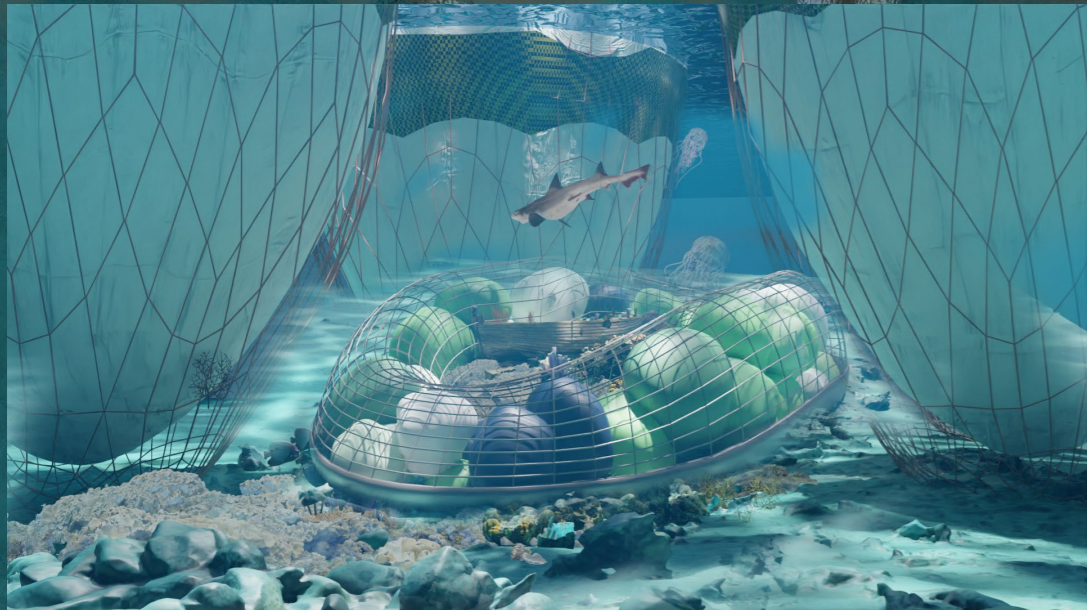
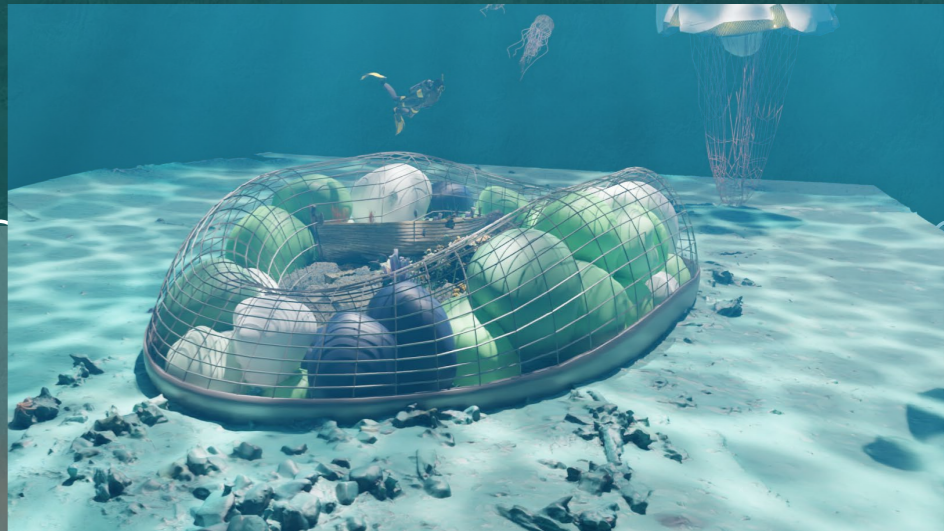
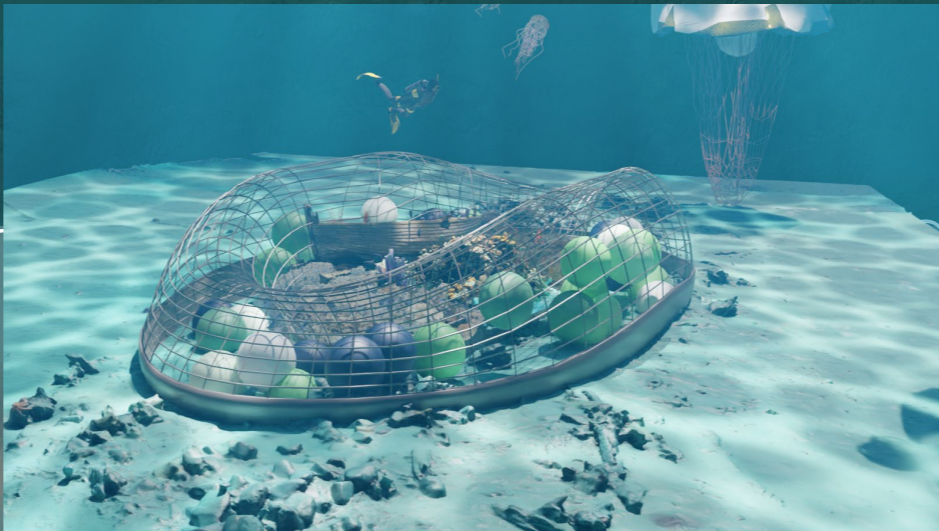


3 MODULE 3

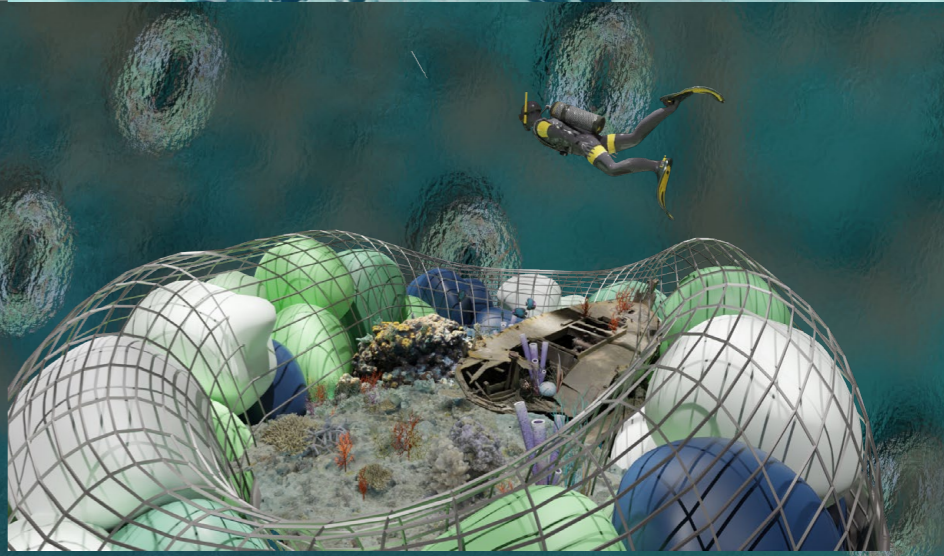
Sea level at rest

Deflated

Inflated

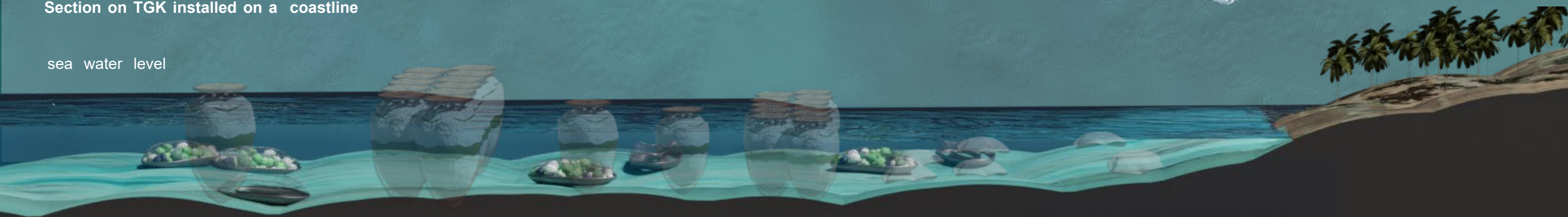


If Modules (1) and (2) are built for immediate actions, Module (3) projects to the future. The impact of this dispositif will be felt by the future generations. Module (3) innovates by its ellipsoïde shape to create coral nurseries. The coral grows inside out (protected) and slowly takes over the structure. The inflating units are filled with water via a pump and protects the corals during high currents or wave episodes.



Section on TGK installed on a coastline

sea water level



4 THE ESSENCE OF TGK



Costly and short-term solutions: around 20 000\$ the cubic metre of structure

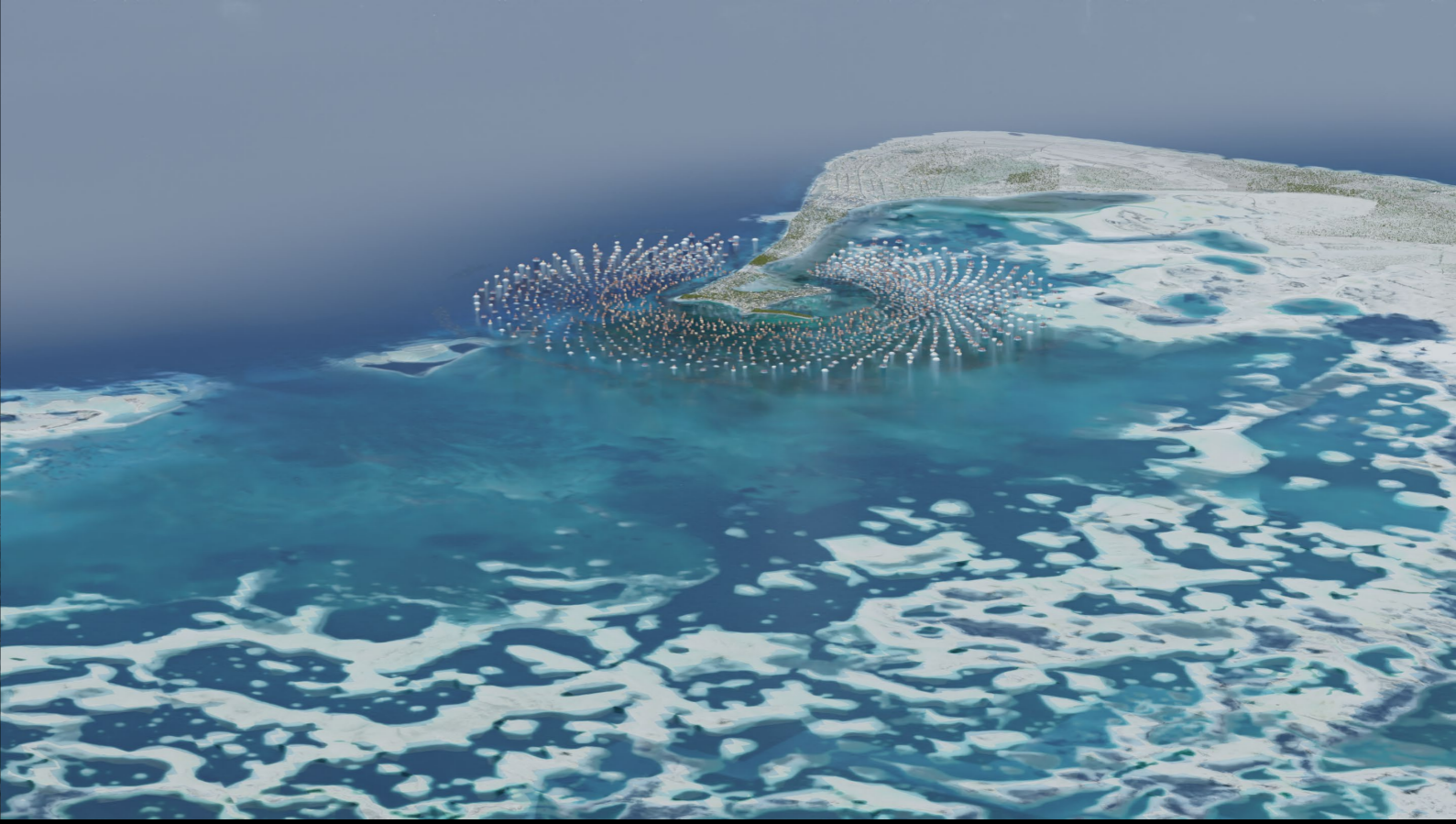
Concrete dikes, Artificially elevating Coastal cities, Concrete wave breakers, building floating cities etc.

TGK



Cheap but needs time to have an impact: around 2 000\$ the cubic metre of maintenance

Coral reef restoration, mussels protective layering, mangrove planting etc.





5 TGK AROUND THE WORLD



TOKYO



VENICE

Science&Vie juillet 2023 N1270

<https://www.waveco.com.au/airwave-worlds-first-inflatable-surf-reef/>

<https://www.sprinter.com.au/sublitech-prints-giant-inflatable-coral-reef/>

Artist jon foreman, Land ART:

<https://sculpttheworld.smugmug.com/>