

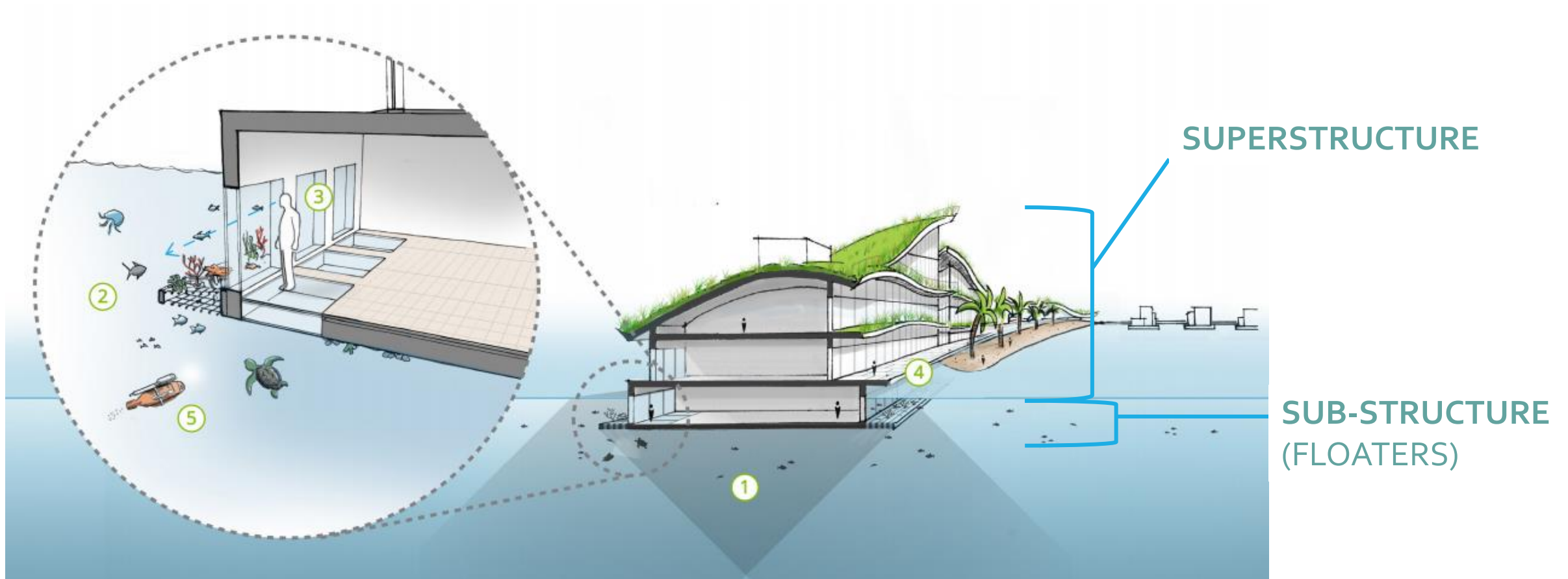


# What is the need for floating development? Examples from around the world

GCA webinar: How can floating development help adaptation to climate change?

02-09-2021 | Fen-Yu (Vicky) Lin, project coordinator@Blue21

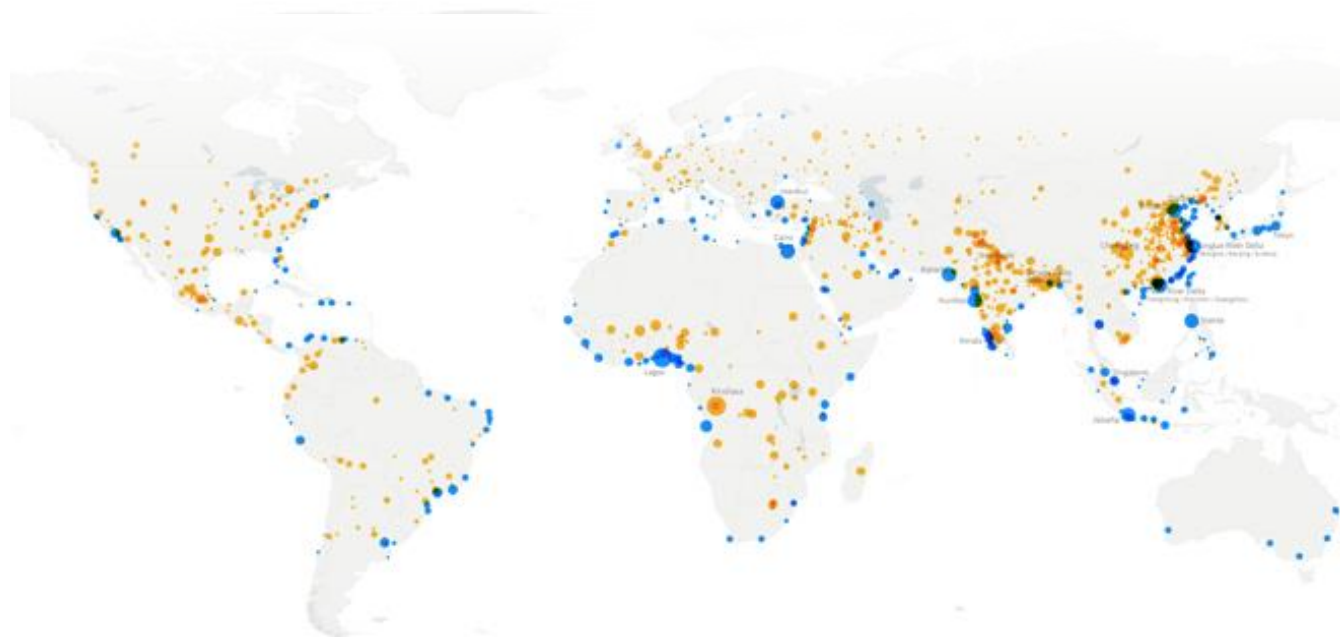
# FLOATING DEVELOPMENT



# Global Challenges for 2050

## URBAN: Most cities still need to be built

Today's cities only provide 40% of the space required in 2050



## CLIMATE: Projected sea level rise of 30 cm

50% of the global population is living within 100km of the coast

## FOOD: Land shortage to feed 10bn

### FUTURE LAND SHORTAGE

A growing world population consuming more food and resources, will require additional space to expand cities and produce food. Land shortage seems inevitable, mainly due to agriculture and biofuel demand.

### TRENDS AND FACTORS

more people  
more consumption

more biofuel

more food

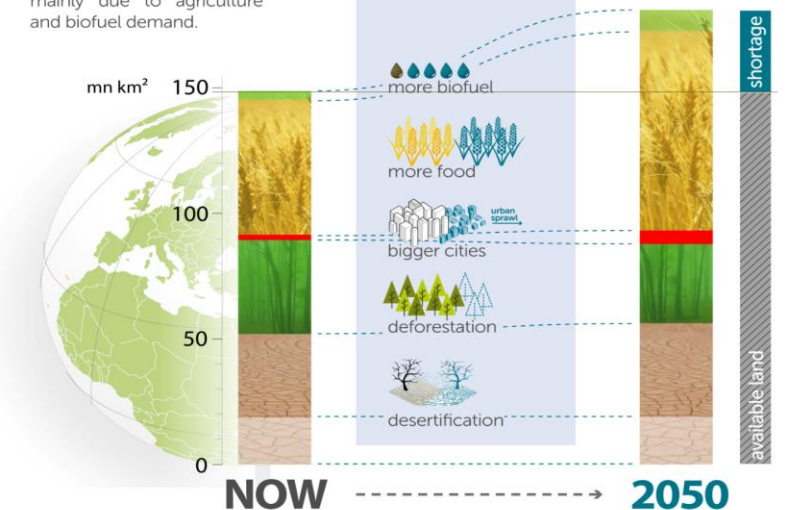
bigger cities

deforestation

desertification

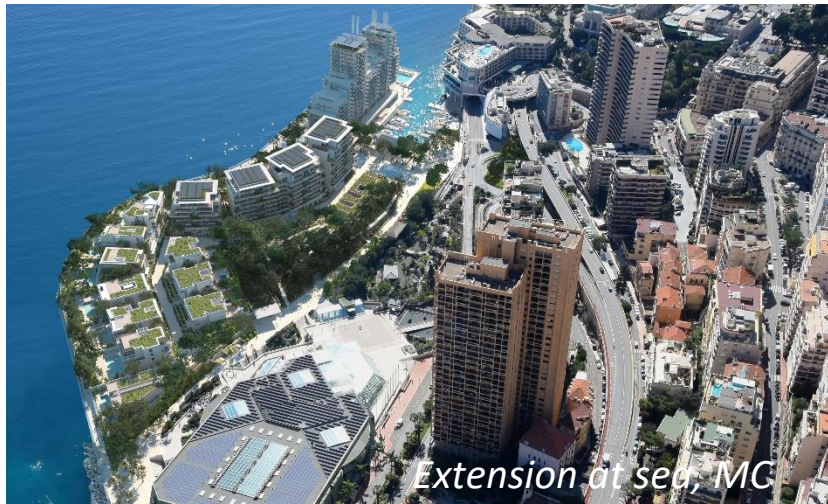
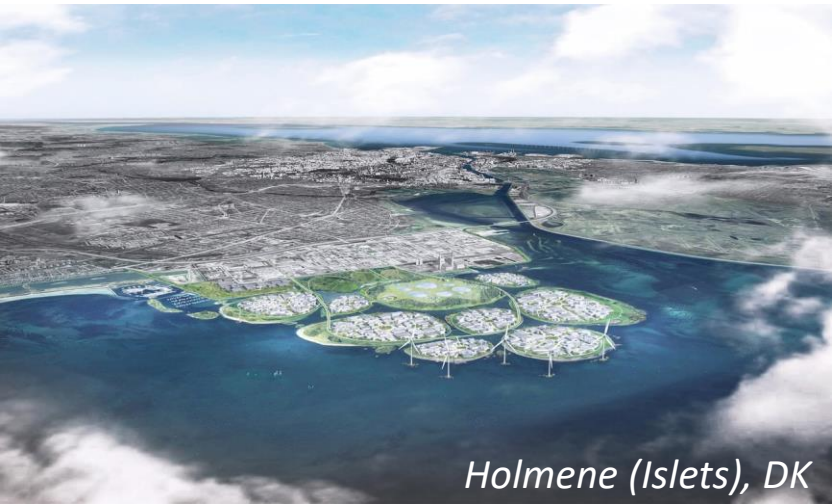
WE WILL BE  
22 MILLION  
sq km  
SHORT

equal to the area of North America!





# Most cities resort to land reclamation...





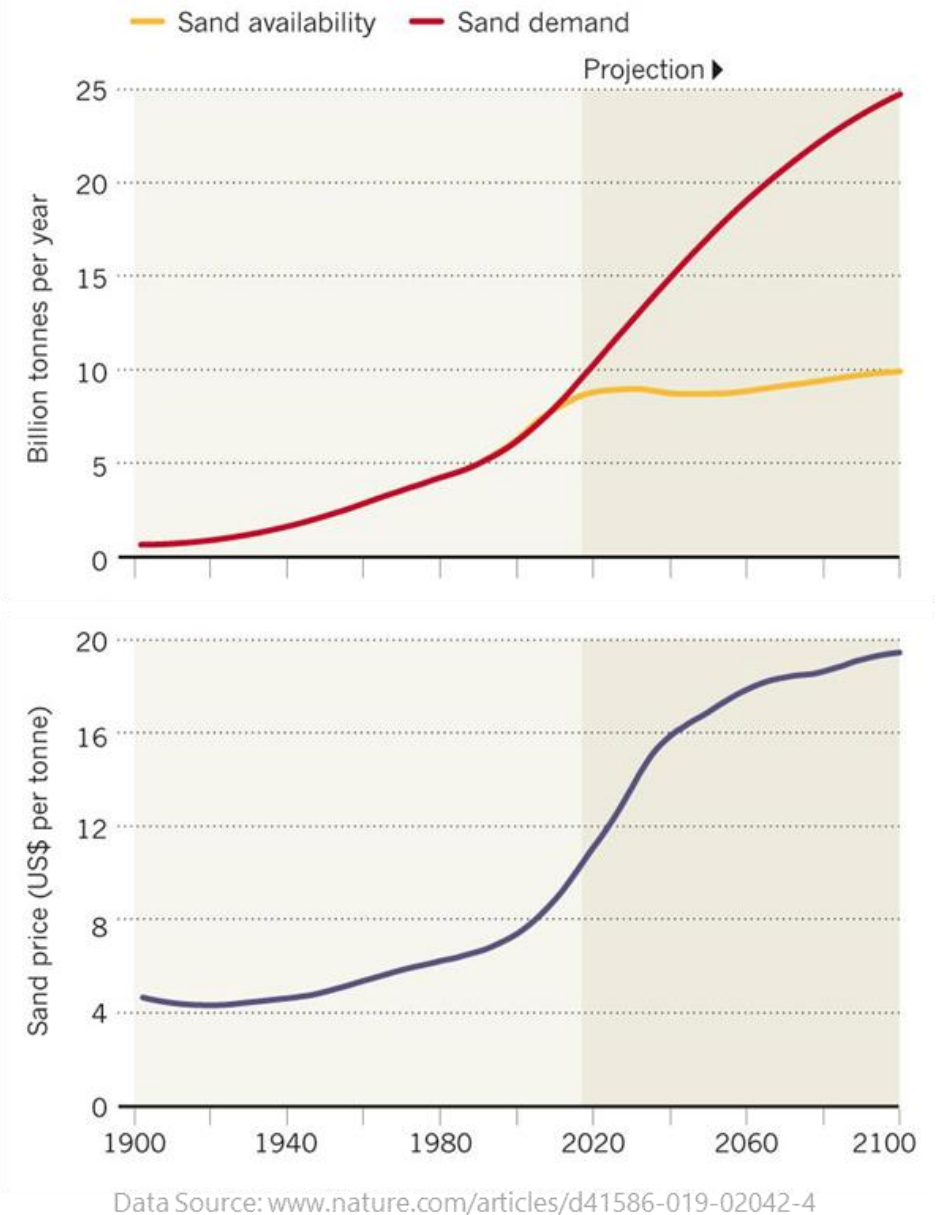
# Reality is: We are running out of sand.

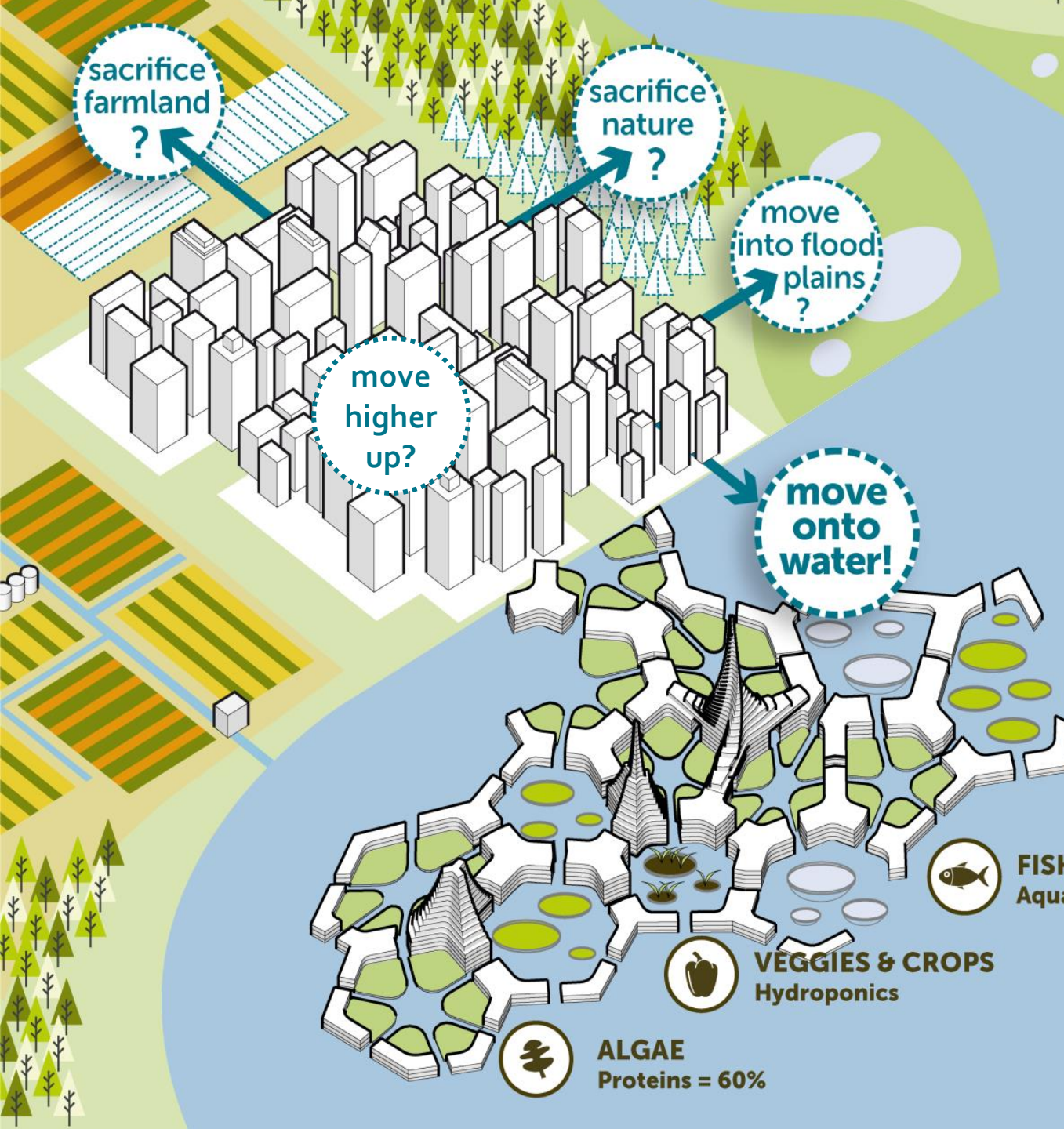
## Global Scarcity of Sand

Demand for sand and gravel for construction is rising faster than natural sources can sustain and prices will soar.

//

*Roughly 32 billion to 50 billion tonnes are used globally each year.. This exceeds the pace of natural renewal such that by mid-century, demand might outstrip supply. A lack of knowledge and oversight is allowing this unsustainable exploitation. – Nature Magazine*





# THE SOLUTION:

CREATING NEW SPACE  
ON THE WATER







## Building blocks are there...







INNOZOWA floating solar  
[by Blue21, NL]







Offshore floating solar  
[by Ocean Sun, NO]







Offshore floating solar,  
IJendoorn  
[by Solar Duck, NL]





Floating offshore wind  
[by Hexicon, SE]



Havfarm 1, floating  
salmon farm  
[by Nordlaks  
Produkter, NO]





# A CITY CAN REDEVELOP & EXPAND PORT AREAS

An aerial photograph of Monaco's harbor. A large, long, rectangular floating breakwater structure, made of concrete blocks, extends from the shore into the dark blue water. Several red tugboats are positioned around the structure. A large red and white ship is docked on the breakwater. The harbor is filled with numerous white yachts and sailboats. In the background, the city of Monaco is built on a steep, rocky hillside, with dense residential and commercial buildings. The sky is clear and blue.

This floating breakwater in Monaco doubles as carpark [by FDN engineering, NL]



# CREATE PUBLIC/EVENT SPACE

Floating stadium in Singapore  
[by SembCorp Marine, SG]

Source: Construction Global, retrieved in 2019.





Floating sea spa in  
Helsinki [by *BLUET, FI*]



# CREATE AFFORDABLE HOUSING



Floating student dormitory in  
Copenhagen  
[by *Urban Rigger, DK*]

Source: area, retrieved in 2019





Floating pilot home in  
Macabebe (Pampanga),  
Philippines [by Finch Floating  
Homes, NL]





Europe's most sustainable  
floating neighborhood in  
Amsterdam  
[by Space&Matter, NL]





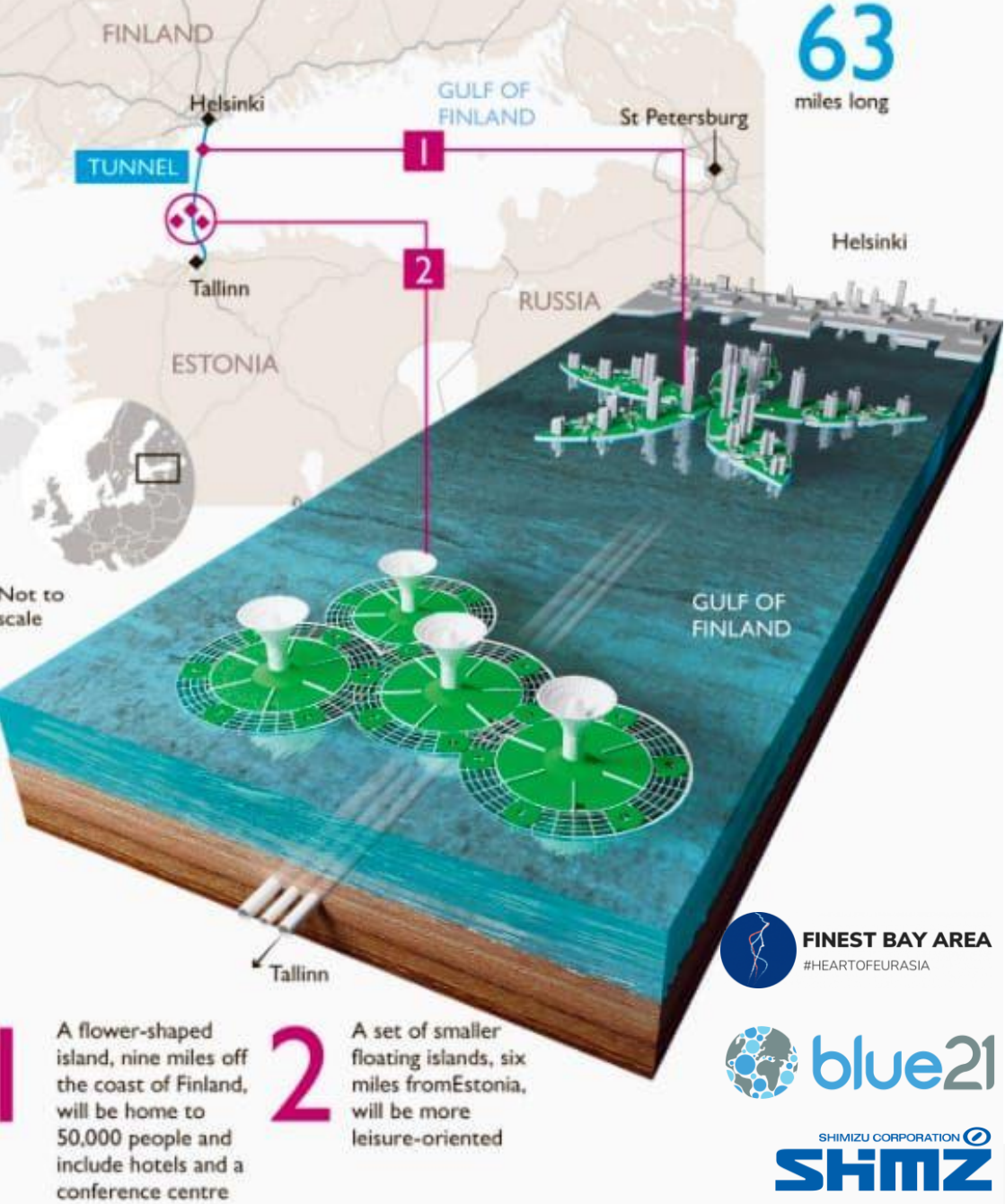
The past..

The  
present..



The future..





Graphic: The Times and The Sunday Times

WORLD AT FIVE

## Angry Birds entrepreneur Peter Vesterbacka hatches plan for £13bn tunnel

A proposed undersea rail link between Finland and Estonia will be the longest in the world — and will include 'leisure archipelagos' housing 50,000 people









# Technically feasible and safe

- The High-rise GREEN FLOAT was certified by Class NK (NIPPON KAIJI KYOKAI).
- Technology concerning structural safety of floating bodies was recognized. This certification is also valid internationally.





# Conclusions



## BENEFITS Climate proof

- Adapts to any future sea level rise
- Coastal protection, flood protection
- Involved climate-sensitive communities



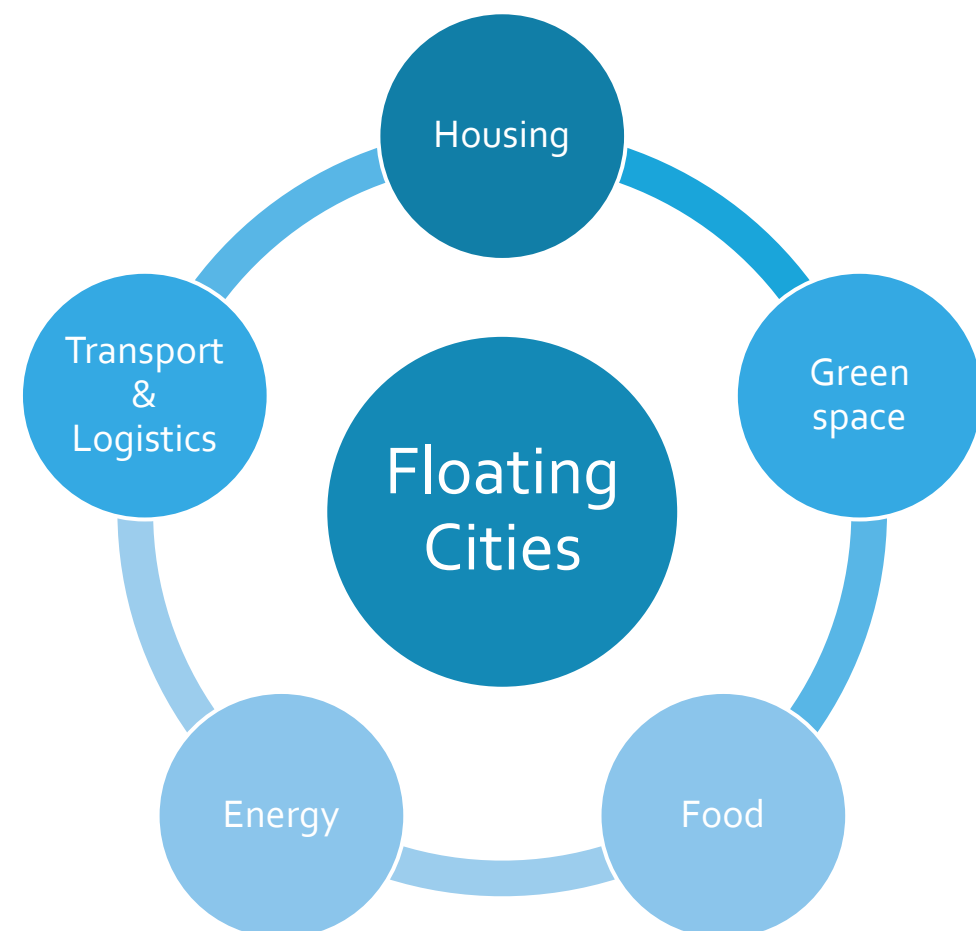
## BENEFITS Safer than land

- Safer in face of climate change, floods, typhoons and earthquakes.
- Exceptional safety level. Engineered to survive 1-in-10,000-year storm.
- Validated and tested with world class basin tests and FEM analyses





# Climate change mitigation & UN-SDGs



## SUSTAINABLE DEVELOPMENT GOALS





# About Blue21

Global knowledge leader in technology, design and realization of floating projects with a positive social and ecological impact

- **Maritime urbanists:** unique combination of the maritime technology and urban development, in-house engineering, design, governance and financial capabilities
- **Pragmatic visionaries:** 14 years of experience and proven track record to move *"from picture to project"*
- **Born collaborators:** Partnerships with world leading knowledge institutes, companies and investors (MARIN, TU Delft, Buxeros, Shimizu)



BLUE REVOLUTION THINK TANK

BLUEREVOLUTION.org



Ministry of Foreign Affairs  
Dutch Good Growth Fund





# October 2020

# PAVING THE WAVES

2ND WORLD CONFERENCE ON FLOATING SOLUTIONS 2020

October 06-08

Online Conference

PROGRAMME

CONFERENCE VIDEOS

## Co-organizers



Waterstudio.NL



GICON®



BLUEREVOLUTION.org



<https://www.pavingthewaves.org/>



2020

2030

2040

2050







Our future is on the water

<https://www.blue21.nl/>

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