

FLOWall

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Ecological and Individualized Coastal Protection using Additive Manufacturing

What is the **future** of our urban coastal areas?

*Currently, urban coastal areas are home to **40%** of the total human population (within **100km** from the shoreline) and the number is only expected to increase. Humans greatly benefit from the marine ecosystem services, both **monetary** and **non-monetary** ones.*

*Accumulated effects of the human pressures on the marine environment are now unraveling into **hazardous risks** for human lives and assets, in the form of climate change consequence as sea-level rise, increased frequency in storm-surges, but as well as loss of biodiversity and others.*



An architectural rendering of a coastal protection concept. In the foreground, a series of large, curved, ribbed concrete structures (the FLOWall) are partially submerged in water. The water is dark and reflects the sky. Several people are standing on the top of the concrete structures, looking out towards the sea. In the background, there are several buildings: a red brick building with many windows, a tall modern glass skyscraper, and a grey stone building with many windows. There are also some trees and greenery. The sky is blue with some light clouds.

CONCEPT PROPOSAL. FLOWall

Ecological and Individualised Coastal Protection

Ecological and Individualized Coastal Protection using Additive Manufacturing

In the quest of redefining our coast and approaching the problem with understanding of inherent layered complexity, we propose concept that aims at **conscientious design** with a help of additive manufacturing.

It includes:

at site 3d printing with use of either local or recycled components of the material



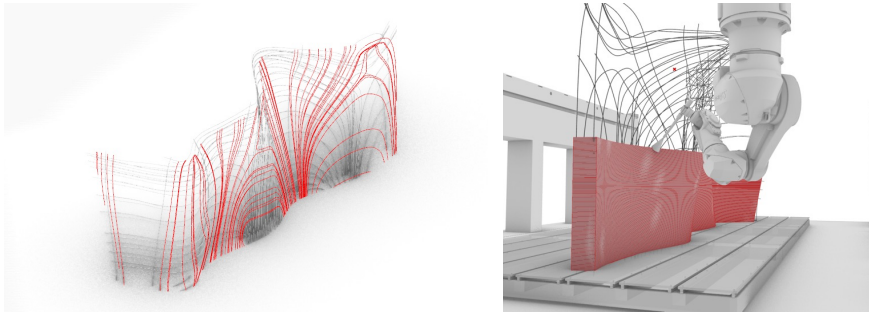
form follows bathymetry;
form adapts to "urban squeeze"

artificial habitat for (urban)
marine benthos

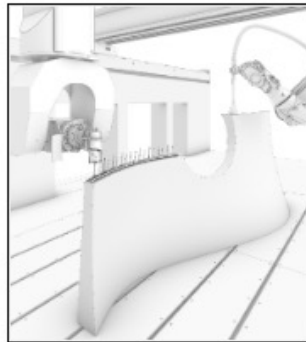
aesthetical non-monetary
benefit for humans

Ecological and Individualized Coastal Protection using Additive Manufacturing

Current advances in large-scale additive manufacturing:



*reinforcement follows isocurves [bending of bars/WAAM]
wall curve follows site-specific context
wall dents and geometrical complexity oppose hydrodynamic influence
microdents and rough surface create shelter for local species*



Thank you for the attention.