The Commons **Rising Tides**

Nature Based Strategic Planning for Adaptive Coastal Resilience

Staying with the Trouble: Dynamic negotiations in our

ongoing ecological relationship with land and water. Regenerative Circular Economy ecological-driven design and economic structures design out waste

UNITED NATIONS

Outline - Denmark Source: Vemaps

SUSTAINABLE DEVELOPMENT GOALS

The UN SDGs create the point of departure for the project, towards the

regenerative mindset and engagement. Sustainability cannot be the

goal, but it nonetheless provides a level baseline in which to begin.

MASTER OF ARTS IN ARCHITECTURE **STRATEGIC DESIGN & ENTREPRENEURSHIF**

Integrated in the first semesters in collaboration with Copenhagen Business School students, the programme trains future signers to navigate local and glo challenges, with an innovative and strategic approach to help create necessary change amongst our many and varied current crises.

programme merges research, strategy, and design in a holistic manner, through inter-

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Sustainability

do less harm

DESIGN CHALLENGE

Through the study of early-phase strategic planning in Copenhagen, Denmark; How can nature-based solutions in urban coastal development allow for an adaptive framework for simultaneously addressing:

Coastal adaptation for sea level rise and storm surge events, biodiversity regeneration and rewilding strategies, and, public recreation?

Research, Strategy, and Design, to be integrated at the shallow coastal zone between Nordhavn and Charlottenlund Fort.

STRATEGIC POSITIONING

This project suggests the opportunity for a new position in a transitioning industry, where hose trained in seascaping with a focus on the voice of the ocean and mult environments, become an integral part of the built environment and particularly our blue and green urban spaces. The role ensures no living species are left behind, and share equal voice in our ongoing negotiations.



RBAN DEVELOPMENT IN COPENHAGEN

presented with, from both natural and human forces.

Copenhagen's dynamic coastline over the last 500 years has continually evolved, and will continue to as we address and respond to challenges and opportunitites that we are

Global sea level is rising and will continue to rise long after our time. Coastal cities must

adapt to these new challenges, or retreat away from the coastal edge. This project uses 3m

of sea level rise as the case study, which is associated with long term 1.5degrees Celcius

global warming increase, above pre-industrial times (Paris Agreement).



SEA LEVEL RISE

Infill of Copenhagen's Coastline Living with the Sea Urban Zones Amagerfælled Landfill Amager Strand Park Development of Nordhavn Lynetteholm

OVER THE LAST FEW HUNDRED YEARS. EXISTING INFRASTRUCTURE

CONCRETE SHEET PILE WALLS.

"THE FRONT ROW" AT HELLERUP.

POWER WITHIN GENTOFTE MUNICIPALITY.

Strandvejen, Hellerup 2900

BUILT ON SAND SEDIMENT AND DEVELOPED





Satelite Image Copenhagen Denmark (2022 Source: European Space Agency



EXISTING COASTAL ZONE

BY 'THE FIRST ROW' LEFT UNTOUCHED.

ACTIVITIES AND COASTLINE TO CONTINUE

AS PER 2023 WISHES. OPPORTUNITY FOR FUTURE

ENGAGEMENT WITH THE REST OF THE CITY.



Intervene and Wait Assist and Respond Environmental Economical Maintenance

PROJECT MODEL

The Problem ← The Context

element in adaptive and flexible planning.

Five phases are worked with in this project, both in the academic space and in the strategic planning in practice scope. It is noted that Phases

4 and 5 are in ongoing dialogue and negotiations with each other, a key

DYNAMIC ADAPTIVE POLICY PATHWAYS (DAPP)

A flexible strategic planning tool allowing for decisions to be made and assessed under deep uncertainty. Created in the Netherlands in 2015 and is IPCC recommended, the tool allows planners to keep adaptation measures open for as long as possible, before reaching their threshold where the next pathway can be adopted.



NATURE BASED SOLUTIONS Actions to protect, manage, restore, and regenerate

natural ecosystems. Additionally these strategies offer significant climate change adaptation potential at the coastal threshold between land and sea.

Other potential nature based solutions include stone reefs and green infrastructure, such as grass covered dike wall systems.

> Underwater planted ecosystems Permanently or seasonally flooded in shallow waters. Habitats for many ecosystem zones loaded with myriad marine and arboreal species. biodiversity and vegetation.

DESIGN PHASES OVER TIME

Srategies over the next 130 years, with 'assumed' incremental interventions along the way, responding to and participating in accordance with natural forces and climate change intensity. Charlottenlund Flexible strategies that can be called into action when and if

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Existing Conditions

Year: 2023



EXISTING DYNAMICS

THE COASTAL EDGE

Year: 2023

3.0m SLR 2.0m SLR

------> SEA

Øresund / Sweden

EXISTING STONE WALL

TO MITIGATE EROSION.

LIMITED EXISTING PUBLIC RECREATION IN THE AREA.

MATERIAL SOURCING

_____ _____ Primary material required for the barrier islands is sand and core sea bed sediment material - in line with currently planned infrastructure projects in Copenhagen. Designated Offshore Locations



EIA approved offshore locations near Denmark. Preferred method over land-use change. \rightarrow (The Project Other

Excess from Copenhagen building projects. South of Zealand sea bed. Excess material from Norwegian Tunnel projects.



The Blue + Green Connection

Infrastructure & Adaptation Vision

Nicholas Davine Master of Arts in Architecture Strategic Design & Entrepreneurship

SECTION - A Possible Scenario - 2150

0 10 20 30 40 50m

The Royal Danish Academy of Fine Arts School of Architecture, Design, & Conservation Master Thesis Project 25 May, 2023

SCALE - 1:500



SPECIES INTEGRATION





