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University / School	Delft University of Technology / TUDelft
Academic year	2018
Title of the project	The Living Estuary : A Study of Developing Landscape Spatial Adaptive Strategy to Integrate the Water, Ecosystem and Anthropo-Dynamics in the Estuary of Volta I
Authors	Ayu Tri Prestasia

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TECHNICAL DOSSIER

Title of the project	The Living Estuary												
Authors	Ayu Tri Prestasia												
Title of the course	Graduation Studio Landscape Architecture: Flowscapes												
Academic year 2018													
Teaching Staff	Staff Inge Bobbink and Marjolein Spaans												
Department/Section/	Program of belonging	Department of Urbanism / Section of Landscape Architecture /											
		Master of Landscape Architecture											
University/School	Delft University of Techn	ology / TUDelft											

Severe coastal erosion, as well as rapid informal urbanization and the absence of long-term planning, is a challenge for the Volta Delta in Ghana. The project offers an integrated landscape architectonic approach, intertwining spatial, economic and ecological systems by developing local technical solutions and by envisaging its implementation. The project tries to determine what the role of the landscape architect and spatial design is in such vulnerable areas with stringent limitations in the financial, technological and political sector. For this site-specific design, three central interventions construct the framework of the project. Firstly, a well-positioned new road was located, which directs urban sprawl. Secondly, interventions with an adaptive capacity to specific changes in natural processes (catching sediments, creating water bodies, etc.) are implemented. And thirdly, the concept of a circular system was initiated, open for interventions of people to support the local economy and improve ecological and environmental issues. The appealing images of this possible future are meant as a starting point for discussion between stakeholders showing that it is possible to involve sustainable strategies for the future of developing countries.

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The design intention in site 1 relies on the anticipation of further erosion along the river. The strategies include the dredging of the river and sand nourishment at measured locations, as well as the involvement of the community in maintaining measures along the sea side.

The circular system consists of the use of increasing sedimentation processes (that builds up in the riverbed) for farming. A water catchment building will store the rainwater for the villagers. It will also improve the accessibility towards the beach, giving space for communal activities and supports ecotourism.



Distribution of sand nourishment by river currents







(above) Architectonic elements as water catchment building, social spaces, and improving ecotourism. (left) Groynes to catch sediment are integrated with clam farming to trigger economic improvements for the local communities



SITE 1

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	community activities groundcover protect the	
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In Site 2, the design intends to recover the wetlands which are currently abandoned and prone to seasonal floods, as a former mangrove plantation is gone. The intervention starts by re-profiling the topography in gradual slopes towards the water to capture more water and to allow a variety of vegetation to grow. This intervention creates, at the same time, a more stable area between water and land protecting the settlement from flooding. The second stage of the intervention connects the wetlands to the river, enabling fish migration, the recovery of the local ecosystem and the creation of new uses like facilities for ecotourism, new paths, a pavilion on the water, and a new community center with a market (to be managed by the inhabitants).

fish migration, nutrient from the mangroves

Development Stages in Time











Recovering the Wetlands

SITE 2





The design intention in site 3 explores the relationship between the town fringes and the natural systems. The intervention here aims to prevent the settlement from growing too close to the creeks protecting it from further urban development, while still providing new opportunities to benefit the economy.

A 150 meter buffer zone along the creek will be recovered with mangroves, using the periodic floods by re-operating the dam and opening the waterway to let the water reach further. Silvo-fishery (a combination system of shrimp farming and mangrove planting) and woodlot with acacia for firewood harvesting will be located at the transition zone.



(below) Silvo-fishery system (right) Small channel as irrigation bordering agriculture area to the silvo-fishery area





Buffering the Edges

SITE 3



Development Stages in Time

- (1) Opening creeks(2) Silvo-fishery
- (3) Farming expansion

