Ayu Tri Prestasia

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The Volta Delta Region is facing not only the challenge of severe coastal erosion but also the future challenge of a high rate of population growth, industrialization in the exploitation of the natural resources and the unavailability of long-term planning of the region.

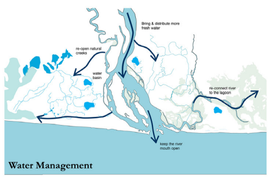
The estuary area is one of the most dynamic parts of the delta with the combination of the sea and river water dynamics. It has high biodiversity of the mudflat and sandy shore ecosystems, and it is governed by three municipalities whose development strategy need to be integrated. By these challenges, the project shows the possible future of integrated landscape to create balance between nature and human system in a dynamic situation of a delta region in a developing country. The project offers ideas of landscape transformation as whole, linking the spatial, economic and ecological systems, as well as technical solutions and vision on how the project may be implemented.

The project also shows the role of landscape architect and spatial design in developing a vulnerable area with limitations in financial, political and technological sectors. In developing site specific landscape design, three main principles were formulated as the common frameworks. First is the sensitivity in placing the new infrastructure which could either trigger or restrain the development itself. Second, is the type of intervention that could grow and adapt to certain changes by the natural process or its users. And last, the circular system, where the intervention should keep open for an opportunity of the local economy, as well as the ecological and environmental quality improvement.

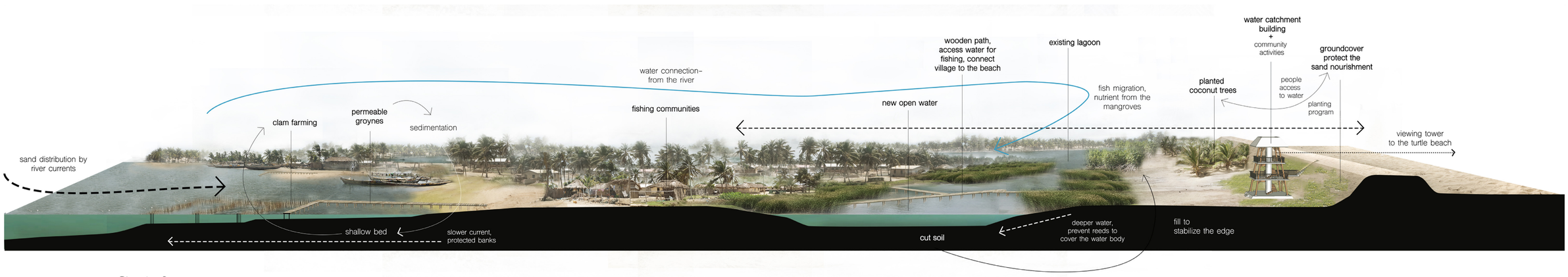
The concept and frameworks resulted in this project are expected to be the starting point of development strategy for the whole Volta Delta coastline in facing the future challenges both from the coastal erosion and urbanization sectors. The display of possible future in the project aims to start a discussion of decision making between the stakeholders in the reality for the future of the Volta Delta.

Keywords: delta dynamics, estuary, circular economy, coastal erosion, adaptive design, ecosystem services, tropical wetlands, developing country, mangroves, biodiversity.

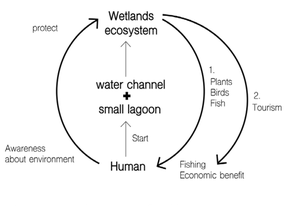
Design Strategy on Estuary Scale



Visionary Strategic Plan - Ada Foah



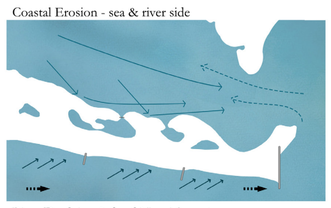
Circular System



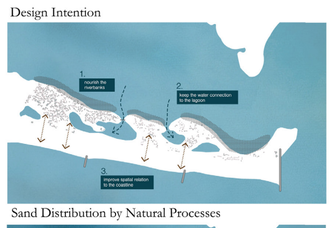
SITE 1

The design intention in site 1 is to anticipate further erosion on the river side which by dredging the river and placing using sand nourishment, as well as involving the community in maintaining sand nourishment on the sea side. In implementing the circular system, sedimentation process that can shallow the riverbed can be integrated with clam farming that can grow towards the river along with the increase of the sediment. A water catchment building will store the rain water for the villagers. It will also improve the accessibility towards the beach, give space for communal activities and support ecotourism.

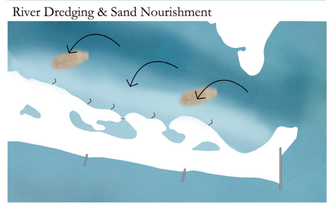
Coastal Erosion - sea & river side



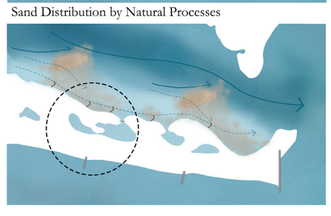
Design Intention



River Dredging & Sand Nourishment

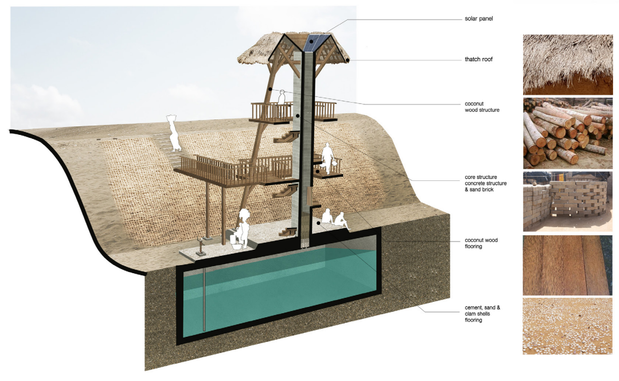


Sand Distribution by Natural Processes

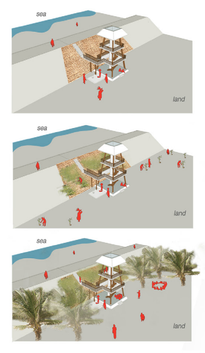


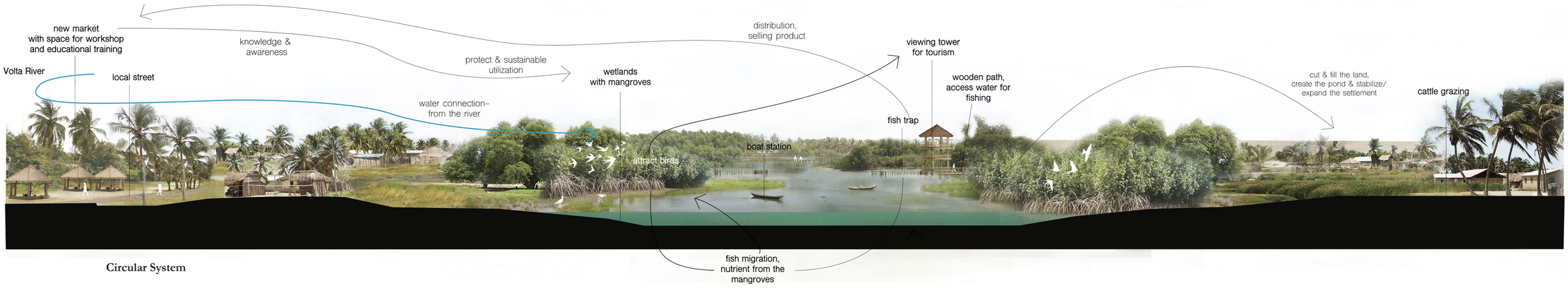
Permeable Groynes & Clam Farming

Water catchment building

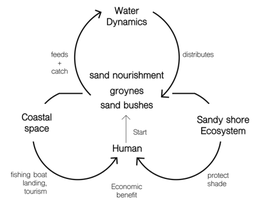


Growing spaces - planting program





Circular System

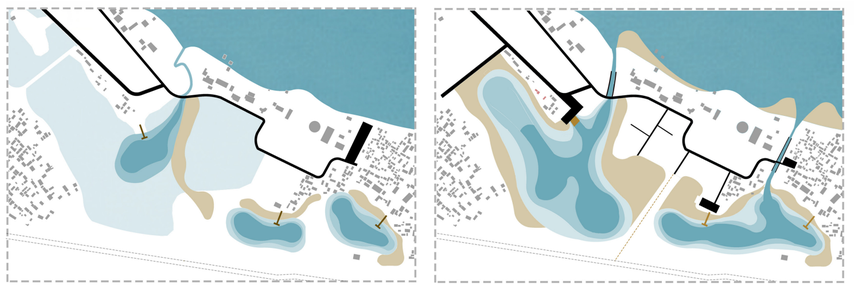


SITE 2

The design intention in site 1 is to anticipate further erosion on the river side which by dredging the river and placing using sand nourishment, as well as involving the community in maintaining sand nourishment on the sea side. In implementing the circular system, sedimentation process that can shallow the riverbed can be integrated with clam farming that can grow towards the river along with the increase of the sediment. A water catchment building will store the rain water for the villagers. It will also improve the accessibility towards the beach, give space for communal activities and support ecotourism.

New Open Channel

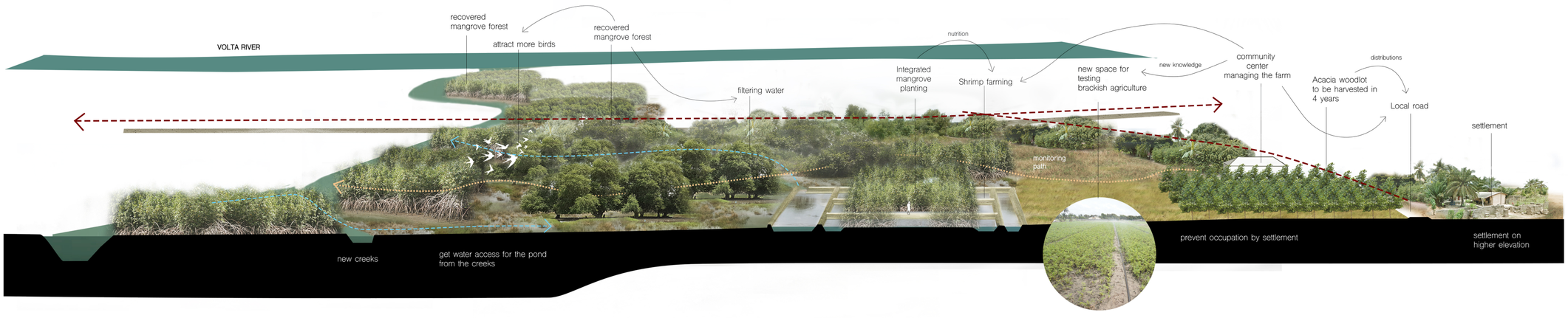
Development Stages in Time



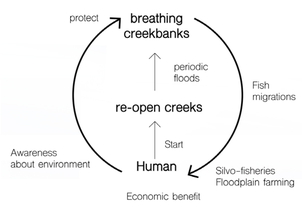
Re-profiling topography

Opening new channel

Improving the program



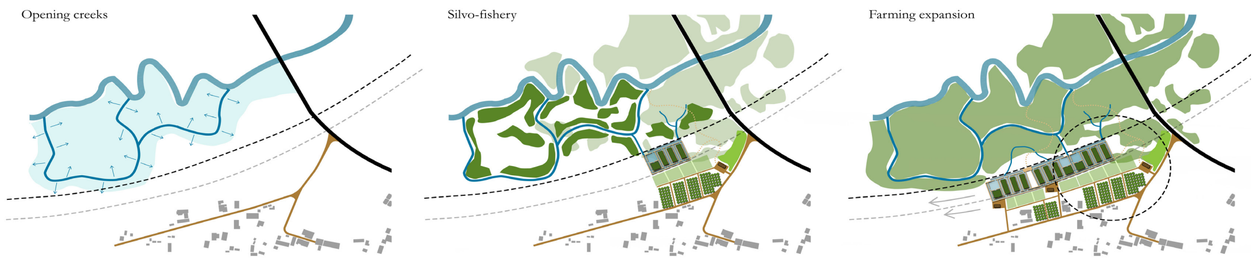
Circular System



SITE 3

The design implementation in site 3 explores the relation of the town fringe towards the nature systems. It is to prevent the settlement growth too close to the creeks, while still providing new opportunity for economic benefit. Buffer zone with 150 distance from the creek will be recovered with the mangrove using 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. By using the natural boundary and adding value of the land are expected to make the edge of the town is protected as well as profitable for the local communities.

Development Stages in Time



Silvo-fishery system