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# LANDSCAPE: A PLACE OF CULTIVATION

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# Estuarine Landscape Dynamics in Urban Maputo

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Maputo | coastal landscape | urban development

Maputo is the capital of Mozambique, in Southern Africa. It is located on the Maputo Bay and on the plateau between the floodplains of the Incomati and Matola Rivers. The Bay provided a natural harbor that originated the city location. (Sousa Morais, 2001).
Nowadays Maputo has a double relationship with its waterfront. Although its location by the sea and its main rivers was its original "raison d'être", the waterfront has become the place of leftover spaces. It is an area where neglected and disconnected urban forms are in contact with the coastal ecological systems, and are progressively degrading the coastal ecology.

This paper reviews the state of the coastal landscape of Maputo. The ecological and landscape value of Maputo's urban-water interface is investigated and analyzed from North to South. Focusing on Maputo's coastline as a dynamic, and also man-altered landscape, the aim is to establish a base for the (mid-term) goal determining the natural estuarine system which can be a framework for future urban development.

Maputo is Mozambique's largest and economically most important city, accounting for about 30% of the country's gross domestic product. The surrounding "semi-rural" areas are undergoing a fast process of densification. Maputo and its surrounding metropolitan area, including the administratively separate city of Matola, has a population of over two million. (Promaputo, 2012)

The Maputo Bay, which Maputo overlooks, is the confluence of six rivers: the Incomati, at the North edge of Maputo region; the Infulene, that is the Western physical limit of Maputo's municipality; the Matola River, that confines and gives the name to Matola city, the Umbeluzi, the Tembe and finally the Maputo River, at the Southeast tip of the bay confining the Catembe district on the East side.

Through brief survey of urban and landscape conditions at the interface between urban areas in and around Maputo and these rivers was described resulting in landscape units definition for further investigation of the urban–coastal landscape interface and how development pressures are colliding with estuarine ecologies and subsequent lifestyles.

## LANDSCAPE UNIT 1: INCOMATI FLOOD PLAIN

The Incomati River is at the Northern end of the Maputo Bay. The river deposits large amounts of sediments, and forms a "low and wide alluvial plane with a strong tidal influence, intertwined with dune landscapes" (Oliveira et al., 1996:8). This area is limited by a North-South sand ridge that serves as administrative boundary for the Maputo Municipality."By serving as nursery grounds, the estuary and adjacent mangroves play a major role in the life cycles of economically important fish and shell-fish species and therefore sustain a considerable proportion of local population and the fish industry" (Hoguane, 2007:40).There are dispersed settlements on this low plain, alternating with mangrove areas, shrimp nurseries, tourist facilities, an underused golf course and agricultural fields.

*Photo* Isabel Martinho da Silva

The Incomati flood plain is under pressure from the ring road "Circular de Maputo", currently under construction. The consequent division of the landscape unit by the ring road's embankment will block tidal movements into the plain, compromising the fragile ecosystems that lie within. Mangrove swamps will decrease. The large areas of small horticultural and agricultural plots will not have natural access to water; and the fishermen living in the "Bairro dos Pescadores" will lose direct proximity to their income source, the sea. On the other hand, once the road forms a barrier between the coastline and the city, and removes tidal water from the floodplain, will this area become Maputo's next urbanized territory?

### LANDSCAPE UNIT 2: MAPUTO'S URBAN WATERFRONT

Maputo waterfront is the stretch of coastline from the race track, to the municipality limit at the Infulene River, along the Av. Marginal to Ponta Vermelha. This stretch of elevated "interior degraded fixed dunes and sand layers" (Oliveira et al., 1996:8) is where the city mainly developed during the 19th and 20th century. This relevant geology has "important enterprises in the city at the Ponta Vermelha. A great many of the geological accidents in the city, such as landslides, erosion and tilted buildings have occurred here."(PEUMM, 2008:53)

Here, new investments are foreseen such as the Maputo Waterfront Project (PROAP, 2011). The port and railway station sit at the southern end of this landscape unit, near the Infulene valley. One can suggest it would be more sensible to invest in retrofitting vacant spaces along the waterfront to solve erosion and flood hazards, while focusing new development investments coherently within the city's landscape further inland.

### LANDSCAPE UNIT 3: UMBELUZI WATERSHED MOUTH

At the Western side of the Maputo Bay, the Umbeluzi River, The Matola, the Infulene and the Tembe Rivers are located within the Umbeluzi watershed and they all meet the sea in Maputo Bay, the first two acting as boundaries for the administrative municipalities.

Within this watershed distinct coastline conditions can be found, with an alternating alluvial deposits and sandy clays (Ferrara and Momade, 1995). Here, two sub-units that derive from anthropogenic action rather than natural development, can be described. The Matola waterfront, between the Infulene and the Matola river, is mainly marked by industrial facilities included in the Maputo Development corridor (between Maputo and Johannesburg) that are increasing the pressure on the marine and coastal environment, due to industrial discharges into the Matola River, dredging of the port canals, boats maintenance and spills (2007:19); By contrast in the Umbeluzi Delta, between the Matola and the Tembe Rivers, the mangrove forest is still the dominant landscape, alternating with salt ponds and shrimp nurseries influenced by tidal movements, and agricultural plots further inland. How can environmental conservation and preservation of rural lifestyles co-exist with the industrial development pressures is the challenge.

### LANDSCAPE UNIT 4: CATEMBE

Finally, at the Southern side of the bay, the Maputo River meets the sea. At its mouth there is a succession of tidal deposits and coastal dunes, alluvial deposits (floodable area), a stretch of sandy clay and an interior dune area (Ferrara and Momade, 1995), as one moves from the coastline to the interior. The Catembe rural, dispersed settlements sit on this last stratum, overlooking the bay and the city.

This area is the focus of the next large expansion project for Maputo, the Catembe Masterplan. The first phase consists in the construction of a bridge that will improve the accessibility towards Ponta do Ouro; the second phase is the construction of a new city dependent on foreign investment, and where a future middleclass population will settle: "Maputo South, the new part of the city should host 400.000 inhabitants by 2040. The master plan has already been approved and incorporates housing, commerce, industry, services, tourism and leisure."(Van Orshoven and Ysenbaardt, 2014:94).

### CONCLUSION

It is necessary to protect the still existing estuarine landscapes in the proximity of the expanding urban areas, as its disappearance will weaken future resilience to economic and ecological changes. There is an immense window of opportunity to tackle the problematic of random urban development on ecologically sensitive areas since the approach can anticipate a sustainable development of Maputo, facing new and challenging urban dynamics. Starting from this premise, one can question what are the alternatives to the production of a "generic city" (Koolhaas et al., 1998:1248) in this specific African context?

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