

Sabaki River Estuary- A site to behold

1) Introduction

Sabaki River Estuary is located in Mambrui sub-location to the north and Sabaki Sub-location to the south in Magarini Sub County. It covers an area approximately 2,470ha with the estuary proper being 483Ha with central coordinates 40o 8.00' East 3o 9.00' South. The estuary is one of Kenya's 67 Important Bird Areas with a total of 186 bird species and the north-most part of the of Malindi-Watamu-Arabuko-Sokoke UNESCO Man and biosphere reserve. The estuary and the nearby turbid coastal waters are also an important nursery ground for prawns and numerous species of fish and crustaceans of commercial importance.

The estuary is under threat from the sediment load of the Athi-Sabaki river which has increased tremendously from 50,000 tons/year in the 1950s to the current rates of 5 to 13 million tons/year; caused largely by poor land-use practices up-stream. Other threats include unsustainable utilization of natural resources including illegal fishing, cutting of mangroves, sand harvesting, pollution, uncontrolled development and conflicting policies and institutional mandates

The estuary is unique in that it is not permanent, but is more or less completely flushed out after every tidal cycle exposing parts of the main tidal channel and inter-tidal mud-flat area. It is relatively shallow during high water (HW) with mean depth of about 3m and is also ebb dominant, thus favoring net export of sediment out of the estuary. The boundary of the estuary is defined by the flooding of saline water from the Indian Ocean which is 4 km long inwards from the river mouth. The width of the estuary decreases at an exponential rate, from roughly 1 km at the entrance to 200 to 300 m at the tidal limit. The main channel is however, narrow ranging from 50 to 100m in width.

Ecologically, the estuary is one of Kenya's 67 Important Bird Areas (Fish pool and Evans 2001) with a total of 186 bird species, including 91 species of water birds. It hosts more than 1% of the biogeographic population of Sooty Gull; Saunders Tern; and Lesser Crested Tern (Nasirwa et. al. 1995). The estuary and the nearby turbid coastal waters are also an important nursery ground for prawns and numerous species of fish and crustaceans of which are of commercial importance. The sandy shores flanking both sides of the mouth of the estuary extending into Malindi Bay are important breeding grounds of turtles. There are mangrove forest stands on the periphery of the mudflats and the southern bank of the estuary dominated by seven species including *Avicennia marina*, *Brugiera gymnorhiza*, *Ceriops tagal*, *Xylocopus granatum*, *Sonoretia alba*, *Lumnitzera racemosa* and *Rhizophora mucronata*. Species of wildlife include crocodiles and hippopotamus in the mangrove areas while small antelopes such as the Suni and Duikers still exist in small numbers in the scrub vegetation in the adjacent areas. Beyond the intertidal area is a scrubland dominated by *Azardchta indica*, *Acacia spp* and *Prosopis juliflora*, which is a highly invasive alien plant common throughout the agricultural, residential, and scrubland areas. The native bush is severely degraded by charcoal burning and firewood collection.

The estuary is a source of livelihood for the local community which depends on it for domestic water collection, livestock watering, fishing, crustacean/gastropod collection, mangrove harvesting, charcoal burning, bee keeping, small scale agriculture and collection of medicinal plants. Resource extraction, fisheries, and farming activities are unregulated, possibly illegal and their contribution to local livelihoods at Sabaki has not previously been quantified.

The main types of land uses are agriculture, fisheries and sand harvesting. Agriculture remains the main economic activity of the people. Arable agricultural land is under small-scale crop production with the main food crops grown being maize, beans and cassava. In addition, small-holder horticultural irrigation for vegetables is practiced in some of the places. Commercial and subsistence fishing is common among the communities living around the estuary. Sand harvesting is undertaken by licensed and unlicensed traders as a source of livelihood.



Figure 1: Map of Sabaki Estuary and Surrounding areas

2) Implementation of WIOSAP project at Sabaki River Estuary

For close to 12 years since 2010, no much coordinated conservation work happened at the estuary. However, there was sporadic actions by local community supported by a myriad of private companies through corporate social responsibility. Most of these actions included clean-up and mangrove planting. This situation changed with introduction of the WIOSAP project titled “Enhancing stakeholder capacity on use of ICZM as a tool for conservation of the coastal and marine environment through a demo ICZM Project in Malindi –Sabaki Estuary Area, Kenya”. Luckily Nature Kenya and NEMA were not new to the site having worked there before.

3) Project goal, objectives, outputs and achievements

The WIOSAP project was tailored to address the following goal and objectives

Overall goal: To enhance stakeholder capacity on use of ICZM as a tool for conservation of the coastal and marine environment through a demo ICZM Project.

Specific Objectives and outputs and achievements

1. To promote sustainable mangrove and fisheries management in Sabaki estuary.

- a) Rehabilitate degraded mangrove areas; Achievement
 - Establishment of mangrove nurseries with over 370,000 seedlings currently
 - Mapping of mangrove forest
- b) Increased mangrove cover in Sabaki estuary; Achievement
 - Planted over 100,000 seedlings over 10 acres
- c) Reduce use of illegal fishing gear by estuary fishermen; Achievement
 - Trained local fishermen on need for better methods
 - Supplied over 100 standard size nets, 5 cooler boxes and 1 deep freezer
- d) Improved governance of Sabaki estuary BMU; Achievement
 - By training in governance and leadership



Figure 2: Training session for leadership and governance

- e) Improved ecological integrity of Sabaki estuary
 - Development of an integrated management plan



RIVER SABAKI ESTUARY MANAGEMENT PLAN 2023 - 2028



Figure 3: Cover page of Sabaki River Estuary Management Plan

2. To promote community empowerment and alternative livelihoods in Sabaki estuary. Outputs

- a) Alternative livelihoods for local community promoted; Achievement
 - Better fisheries performance
- b) Increased income for the local community;
 - Improved income from ecotourism
- c) Enhanced capacity of locals in alternative livelihoods; Achievement
 - Trained 12 community tour guides
- d) And reduced pressure on Sabaki estuary natural resources
 - Mangrove nurseries as a livelihood option
 - Trained 12 community scouts for protection



Figure 4 Passing out parade for Community scouts

3. To improve governance and management of Sabaki estuary.

Outputs

- a) Improved awareness on importance of Sabaki estuary;
 - Several events at the site including WWD, WED



Figure.5: World wetland Day Celebrations in 2021

- b) Sabaki estuary mapped and delineated;
 - KFS and WRA have delineated the mangrove and wetland area respectively.
- c) Capacity of Sabaki river conservation and development organization (SARICODO) in natural resources management enhanced.
 - Several training, meetings and conflict resolution sessions for the group on leadership and governance

4. To improve solid waste management in Malindi town: Outputs

- a) Waste collection areas zoned in Malindi town;
- b) Reduction in illegal dumpsites in Malindi town;
- c) Waste receptacles installed at strategic points in Malindi town;
- d) Improved awareness on good waste management practices by Malindi town residents

4) Project Beneficiaries

The following will be project beneficiaries:

- a) Sabaki estuary local community. The community will include SARICODO and the other community members adjacent to the estuary. They were involved in preparation of the project proposal and remain to be the direct primary beneficiaries. Groups and households benefiting included: -

Table 1: Distribution of project direct beneficiaries

Beneficiary Group	Men	Women	Total representing Households	Estimate Total Beneficiary Population (Mean HH=5.61)
SARICODO	15	4	19	107
PATANANI WOMEN GROUP	1	24	25	140
BMU-SABAKI BRIDGE GROUP	12	20	32	180
VILLAGE DEVELOPMENT COMMITTEE	11	4	15	84
TOTAL	39	52	91	511

- b) Malindi town residents: The residents of Malindi town will benefit from improved management of waste.
- c) Kilifi County Government: The County Government of Kilifi will benefit through the support to improve mangrove and fisheries resource management at the estuary
- d) National government agencies: National government agencies to be engaged in the project including NEMA, Kenya Fisheries Services, Kenya Wildlife Service and Kenya Forest Service will benefit by gaining capacity in designing and implementation of integrated coastal zone management (ICZM) plans
- e) NGOs to be involved in the project: Nature Kenya will spearhead implementation of alternative livelihoods during the project. The NGO will benefit by gaining capacity in designing and implementation of ICZM plans which is in line with WIOSAP output on promotion of ICZM in the WIO region.

5) Challenges to Estuarine Operational and Spatial Planning at Sabaki

The development of Sabaki River Estuary Management Plan involved spatial zonation of the area for different management actions. This generated serious discussion and often disagreements within the planning team. Some of the reasons of disagreement were

- a) There was no one policy or legal framework to guide the delineation of zones either for strict protection or with community usage. There are many laws that relate to wetlands and water bodies which conflict on various considerations
- b) The presence of “private” lands encroaching into the wetlands and places where common sense would describe as public space
- c) The influence of the river flow into the Ocean was unknown in terms of spatial and sediment scale. There was no indication of the correct extent to consider
- d) River estuaries are affected by activities of the entire basin. The “best case planning scenario” is developing an entire basin plan. This is a massive task cutting across 7 counties including some cross-border areas in Tanzania.
- e) Planning a transitional ecosystem stranding across terrestrial and marine is a complicated affair. The skills requirement are higher than either a pure marine or terrestrial ecosystem. This was clearly manifested in planning for Sabaki River Estuary