MIDA CREEK
PROPOSED DEVELOPMENT
PROJECT
Topics of discussion

▶ Visioning and objective/ Business case
▶ Research and mapping
▶ Site analysis
Developing scenarios/Timelines/ Stakeholders

Plan proposals

National Spatial Plan Analysis  Existing and Potential Urban Based Industrial/ Agriculture Regions

Key:
National corridors
Northern national corridors
LAPPSET corridors
National growth areas-cities
Regional growth centers
Urban growth potential areas
Principle Industrial towns
Principle Industrial towns
High agricultural potential zone (High agro-based industrial potential)
Mixed potential zone (Medium Industrial potential)
Rangelands potential zone (High livestock based industry)
Vision 2030 proposed metropolitan area

Existing metropolitan area

Water bodies

KILIFI PROPOSED URBANISATION STRUCTURE

Population per sub-county
Tana River
Taita Taveta
Kwale
Magharini

Malindi

Kilifi South Kilifi Ganze

North

Kaloleni
Rabai

Urban centers with population >2000
County Area: 12,610Km² Population: 1,109,735 (Male 52%< Female 48%)

Sub-county boundaries

KILIFI LIVELIHOOD ZONES

I. Tourism + fishing:
- Tourism and Fishing major economic activities
- Deep-sea fishing lucrative venture
- Sport fishing new venture

II. Agriculture:
- Arable land – maize and cassava are main subsistence crops
- Main cash crops (coconuts, cashew nuts, sisal) citrus fruits Tana River (mangoes, pineapple) Horticulture (Flowers, Fruits, and Vegetables)
- Opportunities exist in their expansion, fertile soils + good weather pattern

III. Livestock:
- Livestock and poultry farming is a major economic activity

Magharini
- Dairy and beef cattle ranches are kept as well as bee-keeping

IV. Mining:
- Salt mining and sand harvesting
- Potential for exploitation include Iron Ore, Titanium

Taita taveta
Malindi
Ganze
Arabuko Sokoke Forest Kaloleni Kilifi
South Marginal Mixed Farming
Mixed Farming
Cash Cropping
Kwale
Ranching Kilifi North
Rabai
45% Tourism
8% Agricultural industries
5% Farming
2% Mining
Economy activity-Kilifi county(2009)

15% Ports & Fishing
6% Fisheries
4% Forestry
15% Other

Marereni
Tana River
Taita Taveta
Kwale

KILIFI PROPOSED URBANISATION STRUCTURE

Existing town New proposed towns

Significant County Centers
Significant sub-county centers
Strategic Development nodes

Transport link loop
Multi-modal transport

Sub-modal transport

Urban centre
Multi-modal transport
Sub-modal transport
Sub-modal transport

KEY POINTS
• Trade potential exists – positioning on Indian ocean shoreline, proximity to international sea port in Mombasa

• Standard Gauge Railway (SGR) cuts across - Mazeras and Mariakani towns

• Active ports with potential for expansion to international standards at Mayungu and Takaungu
• 2 international trunk roads and elaborate network of national and county roads
• Malindi international airport, proximity to Moi international airport in neighboring Mombasa County
• potential for more Special Economic Zones (SEZs), Export Processing Zones (EPZ) and other industrial parks

• County with longest shoreline, great potential for trade in fish, fish products and related service, apart from trade in several cash crops and related goods and services

Gravitational centers
Major proposed air node

KILIFI COUNTY INTERGRATED DEVELOPMENT

Existing ports

PLAN

New ports
Mida Site
Tana River
Kwale county
Marereni
Taita taveta

Ramada, Kakokeni
Kakunyuni
Ngomeni
Malindi
Mazeras
Chakama
i15
i7
i8
i14
i1
i1
Mombasa
T7
T19
T19
T19
T14 ADC Baricho
T17
T14
T11
T7
T13 T17
T16 T13
T3
T15
T17 T12
T13
T5
T4 T3
Gede
Kilifi
Takaungu
Mtwapa
Tezo
i2
Existing factory
New factory
Medium level trade center
Industrial institutional
Administrative center
Industrial town
New town
Existing town
Touristic center
Rainfed-irrigated agriculture/ranching Irrigated based agriculture
Conservation area
Mining & agriculture
Intensive agriculture & dairy farming
Intensive tourism investment
Sport tourism
Existing tarmac rd
Proposed tarmac rd
Proposed murrum rd
Existing murrum rd
Existing railway line
Socio-economic agriculture

• 50% arable, subsistence crops - maize, cassava, green grams, cow peas, rice and bananas

• Cash crops - Cashewnut, coconut and mangoes, major fruits/horticulture pineapples, lemons, passion fruits, lime, pawpaw and water melons

• 56% of county land is suitable for agricultural practices, 44% can be transformed for agricultural purposes by investing in irrigation related technologies

• Total area of 112,879 Ha of land is under food crops while that under horticultural including fruits and vegetables is 73041.7 Ha in the county

  • Working force 53% women to men
  • Small scale farms is 3.6 acres, and large scale is 8.09 ha

Mining

• Vast mineral deposits whose full exploitation could significantly transform the county in terms of poverty reduction and economic development

  • Significant extractions of iron ore, manganese, cement manufacturing, coral rock harvesting, quarrying, ballast, salt and sand harvesting present eg.

Mombasa cement - Takaungu and Athi River cement – Kaloleni
**Renewable energy**

- 80% of the population in the county relies on wood fuel for their energy needs - deforestation
- County receives over 6 hours of sunlight, with an average of Direct Normal Irradiation (DNI) ranging between 4.0 kW²/s in the hinterland areas around the western parts of Magarini sub county to 6.75 kW²/s
- Strong winds on land with an average speed of between 5-71 m/s present a significant opportunity for development of renewable wind energy
- Indian Ocean is a potential source of off shore energy - presence of strong winds, waves, tides and temperature that can be tapped for the development and generation of renewable marine/blue energy

**Aquaculture/seaweed farming**

- Promotion by Pwani University in collaboration with Fisheries department and KEMFRI
- Funding from County government through Ministry of Agriculture, Livestock and Fisheries and Kenya Coastal Development Program (KCDP) for up scaling of the activities
- Improves county's economy through employment creation, foreign exchange earnings, poverty reduction and food security support

**Ports**

- Kilifi county + KPA – explore possibilities developing some of harbors/bays into full fledged ports
- County is exploring the competitive advantage of developing passenger ferry services to Lamu and Mombasa, and potentially ease pressure off the main Mombasa-Malindi-Lamu highway
- Malindi - has a port that serving the local fish industry handling approximately 1,250 MT per year and 8000 tourist boat moves
- Ngomeni - potential to develop as a third port of Kenya and possibly a Special Economic Zone
- Takaungu - port for the offloading of cargo from Ships that dock at Lamu Port situated about 200 km North of Malindi
- Kilifi bay - for water sports, hotel anchorage, jetty, with marina facilities for tourists also handles fish at
TOURISM OPPORTUNITIES

Archaeological monuments & sites
• such as those in Gede, Malindi, Takaungu, Mnarani and Rabai, dating back to the slave trade period
• scenic views, recreational, cultural, historical, nature and shared experiences
• long shoreline hosts innumerable marine sites that offer eco-tourism and water-sport attractions
• include the creeks at Mtwapa, Mida, Kilifi, Ngomeni and Fundisa bay

Hotel industry
• Palm Exotic Hotel—an international brand being the latest having shown interest to open its doors in the region.
• Vipingo Gold Club records being the first Golf club to be accredited international standard in East Africa under USGA in 2016
• 8 classified hotel, 370 unclassified hotels 91.5% includes hotels, villas, cottages, lodges and guest houses and high end hotels

Education
• upcoming Utalii College is expected to open a new frontier in the tourism sector

Transport
• ongoing expansion of Malindi international airport and Mombasa Lamu road, deemed to open more opportunities
• Vipingo airstrip has opened doors for charter planes in the region with the recently launched standard gauge railway (SGR) supporting access to the destination
• Mariakani- Kilifi road has equally eased transport with Bamba- Kilifi and Tsavo East National Park-Malindi road leveraging on infrastructure.
• domestic tourism market has expanded by 72% since 2010 increased investment KTB “Tembea Kenya na Mimi”

CONSERVATION SITES
Malindi and Watamu Marine Parks are UNESCO designated biosphere reserves that are a critical habitat for some indigenous and migratory bird species. They provide breeding and nursery grounds for various endemic fish species, marine turtles and several species of Crustaceans.

Arabuko Sokoke Forest
• Reserve-herd of about 70 elephants
• Diverse populations of reptiles and invertebrates also present in the forest
• 240 birds’ species, including six globally threatened bird species eg Clarke’s Weaver, Sokoke Scops Owl, Sokoke Pipit
• 261 butterflies
• 79 amphibians
• 52 mammals, including 3 taxa which are globally threatened Sokoke Bushy-tailed Mongoose, Ader’s Duiker, Golden-rumped Elephant-shrew
• 600 plants species 50 of which are globally rare

Malindi Marine Park
• endowed with magnificent resources such as fringing reefs, coral gardens in the lagoons, sea grass beds, mangroves, mudflats, and high fish diversity, marine mammals (e.g. dolphins), turtles and various species of shorebirds

Watamu Marine Reserve
• habitats include intertidal rock, sand and mud, fringing reefs and coral gardens, coral cliffs, sandy beaches and the Mida Creek mangrove forest
• Marine life attractions include fish, turtles, dugongs and crabs
• Mida Creek forest has a high diversity of mangrove species that provide refuge to a variety of both resident and migrant bird species
Arabuko Sokoke Forest & Mida Creek
ARABUKO SOKOKE FOREST

- largest single block of indigenous coastal forest remaining in East Africa
- approximately 41,600 ha
- three major vegetation types; Mixed Forest, Brachystegia Forest, Cynometra Forest
› rich biodiversity; a concentration of endemic and endangered flora and fauna

› Ranked as 2\textsuperscript{nd} most important conservation forest in mainland Africa

**Administrative features**

- National road - Malindi rd
- Site situated in Majaoni sub-location
Infrastructure within the forest

- In close proximity to the town centre Mida and police post
- Site accessed through murrum rd and dry weather roads
- Lies between 0-20M above sea level
- Perennial river in close proximity to neighboring 30A plot
- Site edge distance to the creek boundary approx. 40M
- Mida creek is a tidal creek - meandering channel in a coastal wetland subject to bi-directional tidal currents
Vegetation types Population density

• largest single block of indigenous coastal forest remaining in
• Forest products apart from timber-poles, fuelwood, honey, East Africa medicine etc.
• approximately 41,600 ha
• Agro-economy is sustainable by settled mixed farming, cash
• three major vegetation types; Mixed Forest, Brachystegia
  crops eg coconut is intercropped with food crops eg maize Forest, Cynometra Forest
• Average farm size 3.9ha(0.2-20ha)
• rich biodiversity; a concentration of endemic and endangered
• Annual income mean ksh27,000 (ksh 500-166,440) flora and fauna
• Male:female ratio 1:1.08
• Avg household size 7.03
• Per capita income ksh 3,863/yr

Forest management zones
• Largest single block of indigenous coastal forest remaining in East Africa
• Approximately 41,600 ha
• Three major vegetation types; Mixed Forest, Brachystegia Forest, Cynometra Forest
• Rich biodiversity; a concentration of endemic and endangered flora and fauna
• Site partly sits on intervention zone – concerned with meeting subsistent needs and improving neighboring livelihoods

Topographical features
• Lies between 0-20M above sea level
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ARABUKO SOKOKE FOREST- Forest Management
Intervention zone

- Outside forest reserves
- Sub-locations bordering the forest
- Community willingness
- Demand for forest products
- Contribution to meeting subsistence needs and improving livelihoods of forest-adjacent communities
- Reduce pressure on natural forest
- On-farm tree planting
- Tree nurseries
- Problem animal control
- Agroforestry
- Beekeeping
- Butterfly farming
- School & education programme
- Eco-tourism
- Water source management
- Local communities
- KEFRI
- FD
- NMK
- KWS
- Educational institutes
- Tourism players

Local communities dependent on the forest for their livelihood needs,
including: fuelwood, poles, fruits, medicinal plants, bushmeat and fodder populations increase=forest degradation and adverse impacts on biodiversity

Sokoke Amani Sunbird-near endemic
Scops Owl-near endemic

Clarke’s Weaver-endemic
Sokoke Pipit-near endemic

- 230 bird species 6 globally threatened species: Spotted Ground Thrush, East Coast Akalat
ARABUKO SOKOKE FOREST - Biodiversity

Ader’s Duiker Golden-rumped
Elephant-shrew
Sokoke Bushy-tailed
Mongoose

Elephants
52 mammal species; 3 taxa which are globally threatened, 250 recorded species of butterfly, 600 recorded plant species,
MIDA CREEK - VEGETATION

Site Mida creek is a tidal inlet located. Creek has diverse ecosystems types such as in Watamu Marine Park and mangrove forest, coral reefs, and sea reserve in Kilifi County and covers grasses among other. It lacks overland an area of 3200 ha freshwater input but receive underground freshwater recharge from Arabuko Sokoke forest.

MIDA CREEK – LAND USE 1969
MIDA CREEK – LAND USE 2010
Mangrove ecosystem services, economic values and human wellbeing
Community awareness of mangrove regulating and cultural services
Use of mangrove-based products by local households
<table>
<thead>
<tr>
<th>Activities</th>
<th>US$/YEAR</th>
<th>US$/HA</th>
</tr>
</thead>
<tbody>
<tr>
<td>Economic value of Fish</td>
<td>735,800</td>
<td>555</td>
</tr>
</tbody>
</table>
mangrove ecosystem
Fish breeding &
1,873,000 585
Woodfuel, timber, poles & nursery
honey Fish Firewood & charcoal
Tourism & education
Carbon sequestration
1.1 11.2
8.3
44.44.5
2 45,500 166
Building materials 13,200 16 Honey 14,700 22
Shoreline protection
2,914,000 911
Flood control 0 0 Carbon sequestration
293,400 177
Biodiversity 129,000 40 Tourism & recreation
497,500 155
Education & research
44,000 14
TOTAL 6,559,700 2,050
Malindi Marine Park
Gede Ruins
Hotel
0.5km
tourism corridor
*Mida creek*
Watamu Marine national
Watamu Beach park

Transport nodes
Watamu Marine Park
Touristic nodes
Urban nodes
Conservation nodes
Conservation boundary 50M/30M (forest & creek)
Malindi rd -National rd 40-60M reserve
Seasonal rivers/streams
Eco-walk bridge
Motorable rd/ footpath
Touristic nodes
Community nodes

Client site 24 A
TAPPING/SCALING UP THE ECONOMIC & ECO VALUE OF MANGROVE/FOREST/CREEK/SEA
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TAPPING/SCALING UP THE ECONOMIC & ECO VALUE OF MANGROVE/FOREST/CREEK/SEA
WHAT MAKES THE SITE UNIQUE

TOUR & ACTIVITIES HIGHLIGHTS-
COMMUNITY/EDUCATION/CONSERVATION:

• Wildlife tours, nature tours, birding, and 
  Guide school
• Forest/mangrove, snorkeling, fishing, trekking, water
• Training center

sports, surfing
• Biodiversity conservation center
• Arabuko Sokoke forest, Mida Creek
• Sustainability center
• Watamu National Park
• Affiliations/awards/associations
• Malindi Marine Park
• Local community
• Beaches
• Organic garden
• Heritage sites / culture visits
RESORT ACTIVITIES
TARGET MARKET/CUSTOMERS:

- Wellness/relaxation/fitness/spa / yoga
- Adventurists – thrill seekers
- Craft activities – Farm visits/cooking/baking class/
- Escapists – disconnect to reconnect
- Nature/biodiversity researchers
- Honeymoon & romantic gateways
- Family vacations
- Friend group vacations

NB – Tourism and recreational developments stimulated in conservation areas should be compatible with surrounding land use patterns, cultural values of the local population and not injurious to the natural attraction of the area.

CURRENT SITE USE
Creek – Flood zone buffer 30M, damming, agriculture (rice/fish) potential Creek boundary 30M no building. Forest boundary 50M Agricultural zone potential.

Client site 24 A

Malindi rd -National rd 40-60M reserve

Seasonal rivers/streams

Eco-walk bridge

Creek – Flood zone buffer 30M, Conservation boundary 50M/30M (forest & creek)

Motorable rd/ footpath

CURRENT SITE PHOTOS –
OVERLOOKING THE CREEK
CURRENT SITE PHOTOS – OVERLOOKING THE CREEK
CURRENT SITE PHOTOS – OVERLOOKING THE PLOT
CURRENT SITE PHOTOS – OVERLOOKING THE PLOT

Creek – Flood zone buffer 30M, damming, agriculture (rice/fish) potential Creek
boundary 30M no building
Forest boundary 50M Agricultural zone potential

CONCEPT SKETCH/ ZONNING – theme
(tropical paradise/sea + forest)

Views into forest villas

Private
villas

island

resort
Public resort
island

Community inclusive eg museum/learning centre
Access
Island/sea (social and recreational areas) Eg wellness / spa, restaurant
Eco-Villa units/ Resort (accommodation)
Agro-forest
Creek – Flood zone buffer 30M, damming, agriculture(rice/fish) potential Creek boundary 30M no building
Forest boundary 50M Agricultural zone potential

**CONCEPT SKETCH/ ZONNING – theme**
(tropical paradise/sea + forest)

Botanical garden Island- forest/sea (social and recreational areas) Eg wellness / spa, restaurant, viewing platforms,

Organic farm/fishing farm/ back house 6 Agro-forest

Public green space, 3
community accessible
Lodge clusters e.g. 4
Divided into 4 quadrants that can be phased,

Community inclusive e.g. 7

museum, education center, training center 1

Beach front, provides 2
access and connection to the creek for lodgers and community a like
Main rd access 8
Access
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Beach front, provides access and connection to the creek for lodgers and community alike.

Main rd access:

Access

**CONCEPT SKETCH/ ZONNING – theme**

(tropical paradise/sea + forest)

3 Acres

Lodge clusters Divided into 4 quadrants that can be phased,

3.5 Acres @ 4 = 14 Acres

Community inclusive e.g. museum, education center, training center, botanical garden

Community inclusive e.g. museum, education center, training center, botanical garden

2 Acres

4

1.5 Acres

1.5 Acres

Organic farm/fishing farm/ back house

4.27 Acres

Beach front, provides access and connection to the creek for lodgers and community alike
Access and linkages

24.77 Acres TOTAL
CONCEPT SKETCH/ ZONNING – theme
(tropical paradise/sea + forest)

6

8
1
2
Public botanical garden

7
3
Organic farm/fishing farm/ back house

4
Lodge clusters Including cottages, glamps, tents, villas, beach clubs, spa/wellness center
Community inclusive museum, education center, training center, botanical garden

Beach front, provides access and Lodge plots surrounding garden

connection to the creek for lodgers and community alike

Access road 18M

Landscaped water features

PRECEDENCE: LOCAL EXAMPLES
FUNDU LAGOON PEMBA ISLAND, TANZANIA

PRECEDENCE:
ECO-LODGES/ECO-RESORT
&BEYOND MNEMBA ISLAND, ZANZIBAR

PRECEDENCE:
ECO-LODGES/ECO-RESORT
LAPA RIOS ECOLODGE, COSTA RICA

PRECEDENCE:
ECO-LODGES/ECO-RESORT
DAINTREE WILDERNESS ECO-LODGE, AUSTRALIA

PRECEDENCE:
ECO-LODGES/ECO-RESORT

FIVE ELEMENTS- DENPASAR
PRECEDENCE :
ECO-LODGES/ECO-RESORT

TSARA KOMBA, COSTA RICA

PRECEDENCE :
ECO-LODGES/ECO-RESORT
SILKY OAKS LODGE - AUSTRALIA
PRECEDECE : VILLAS LOCAL
PRECEDENCE : ECO-VILLAS
PRECEDENCE : COTTAGE/SUITES/TENT
FLOOR PLAN TYPOLOGIES
PRECEDENCE : COTTAGE/SUITES/TENT
FLOOR PLAN TYPOLOGIES
PRECEDENCE : COTTAGE/SUITES/TENT
FLOOR PLAN TYPOLOGIES
PRECEDENCE :
CHALET/E/BUNGALOW/VILLA FLOOR PLAN TYPOLOGIES