

# Road/Transport Network Development in Mombasa

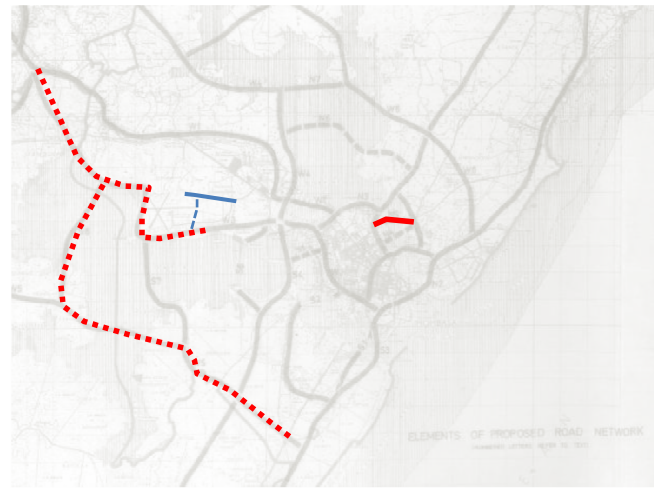
- for Masterplan Preparation -

For Local Transport Working Group  
Jan 2016

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JICA MSA GCMP TEAM

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- What is JICA's Master Plan?
  - 1971 MP, KMP in 2015
- Criteria for road development
  - Road ratio
- Issue & Strategies
  - Strategy for **suburban** transport
  - Strategy for **Island** transport
  - Strategy for **Region-wide** transport
  - **Exclusive Passenger** transport services



## Road Network Proposals in 1971 MP and its achievement in 2015

The only achieved section is the Nyalı Bridge (1975, JICA loan).  
Southern Bypass/Kipevu Link are on-going (expected around 2020, by JICA Loan).  
The both follows the 1971 MP.

The other development are i) Airport Road, due to renewal of Airport in 80s  
ii) Airport-Port Reitz Road (under construction by Trademark)

## 1971 MP road proposal

- Why was it not achieved, ignored?
  - Most links contain bridges and coastal roads, thus high engineering cost
  - Passing port custom control area
    - Need coordination with KPA and KRA
  - No arrangement of budgeting proposals
- General comment
  - Little analysis on traffic flow
  - Not applicable to present condition

Figure 7- 36: Proposed Road Network Improvement for Mombasa County



KMP Interim

## Road Network Proposals Review

- No plan for existing developed areas.
  - The additional road network should be proposed
- Missing link and focal point
  - Correction must be proposed
- Dense road network in the suburbs
  - Should be corrected

## What is Master Plan?

- To Regulate un-necessary road development
  - With proper vision.....
- Contains
  - budget mechanism
  - legal commitment with criteria,
  - monitoring system to achieve the commitment
- *Detail road network alignment proposal is not so important, just reference for future.....*

# Criteria for Road development

## Road Ratio

	City Surface sqkm	Road Surface sqkm	Road Ratio
Paris	105	27	25.7%
New York	834	210	25.2%
London CBD	589	96	16.3%
Tokyo CBD	110	24	21.8%
Taipei CBD	134	20	14.9%
Bangkok CBD	225	16	7.1%
Jakarta	656	48	7.3%
<b>Mombasa</b>	<b>212</b>	<b>4.9</b>	<b>2.3%</b>

S Hanaoka (TIT), STREAM Project, Data for Mombasa; JST

City needs roads not only for commuting, but delivery, industry, city services, etc.  
Around 15-20% are target for highly developed city.

## High road density in Island

	Road Area	Surface Area	Road Length	Road Ratio
Island	2.789	13.88	121.8	<b>20.1%</b>
North (Nyali, Kisauni)	1.059	102.14	118.4	<b>1.0%</b>
West (Changamwe, Jomvu)	0.692	50.03	70.3	<b>1.4%</b>
South (Likoni)	0.256	46.58	37.6	<b>0.5%</b>

Road area (sqkm); calculated by JST, assuming 26m width for 6 lanes, 17m for 4 lanes, 9 m width for arterial 2 lanes, and 6 m for others, for all category road including National and county. Covering for paved area only for 2,4,&6 lanes, not including ROW.

Surface area (sqkm); County Road Infrastructure rehabilitation study 2011, road inventory study.

Road Length (km); calculated by JST based on the rehabilitation study 2011 and KeNHA materials,

Road ratio; calculated by JST.

**This suggest “DO NOT treat Mombasa all at once.”**

Propose the regional strategy;

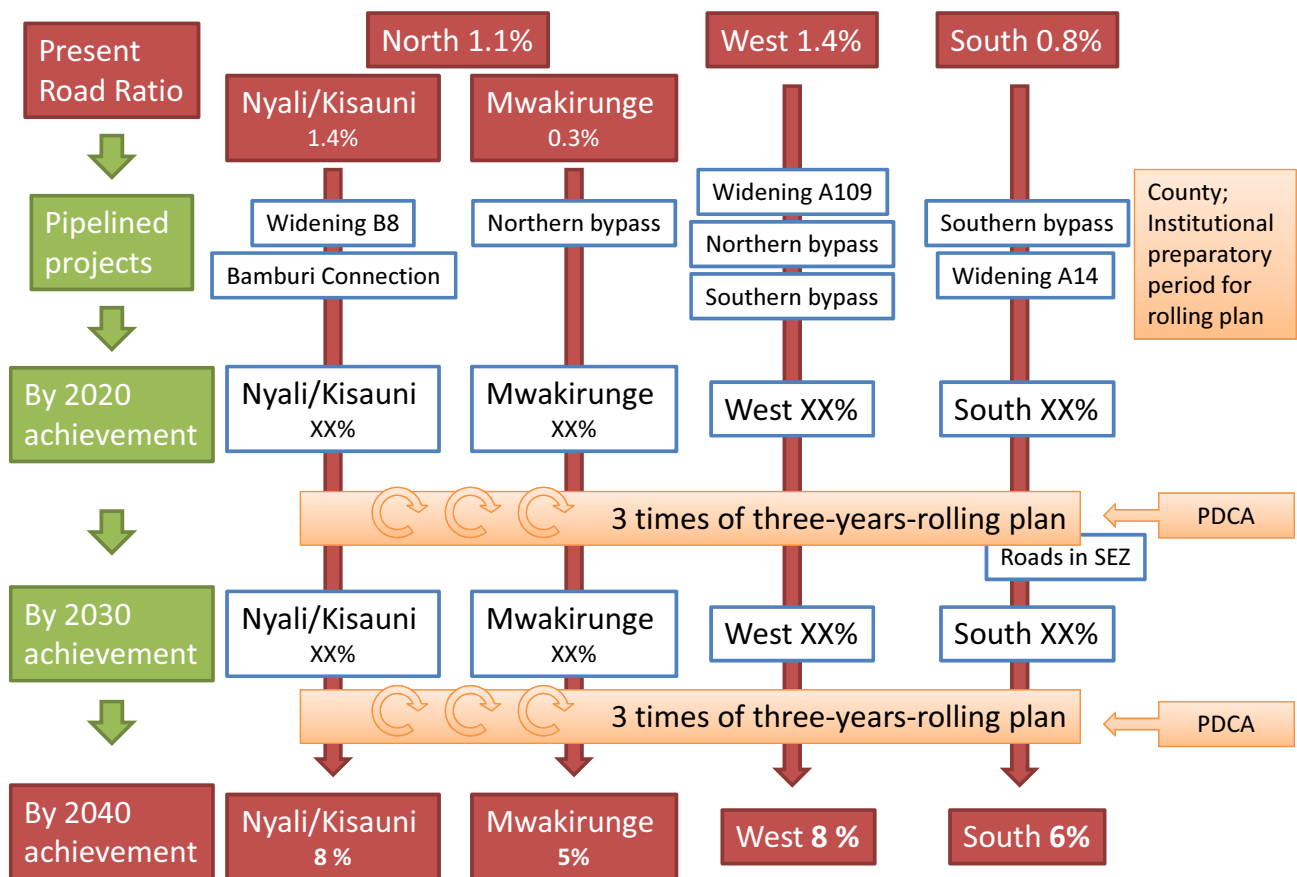
1) suburban, 2) island and 3) Region wide

# **STRATEGY ON SUBURBAN REGIONS - TARGET ON QUANTITY -**

## **Suburban Common Strategy**

- Need quantitative development and proportional budget to financial needs.
- Regional target should be prepared
  - Nyali/Kisauni and Mwakirunge should be separated

# Initiation; Road Development Program

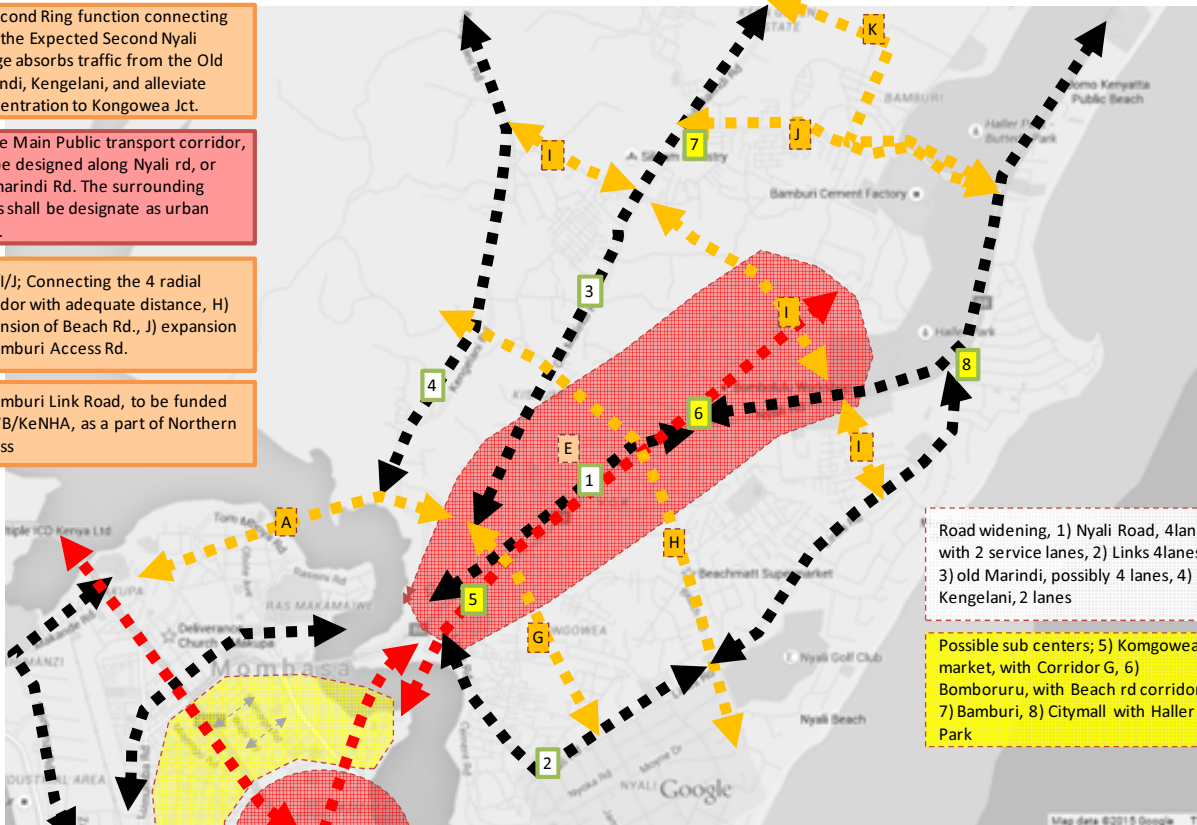


## Suburban

### Legalize this Cycle as Masterplan

- CGM will organize the related stakeholders for the road development in Mombasa
- CGM and stakeholders should monitors the three years rolling policy for 20 years.
- Local and National budget shall be secured to achieve the investment
- Arrangement of large investment need to communicate with JICA first.

- A. Second Ring function connecting with the Expected Second Nyali Bridge absorbs traffic from the Old Marindi, Kengelani, and alleviate concentration to Kongowea Jct.
- E. The Main Public transport corridor, will be designed along Nyali rd, or old marindi Rd. The surrounding areas shall be designate as urban core.
- G/H/I/J; Connecting the 4 radial corridor with adequate distance, H) expansion of Beach Rd., J) expansion of Bamburi Access Rd.
- K: Bamburi Link Road, to be funded by WB/KenHA, as a part of Northern Bypass



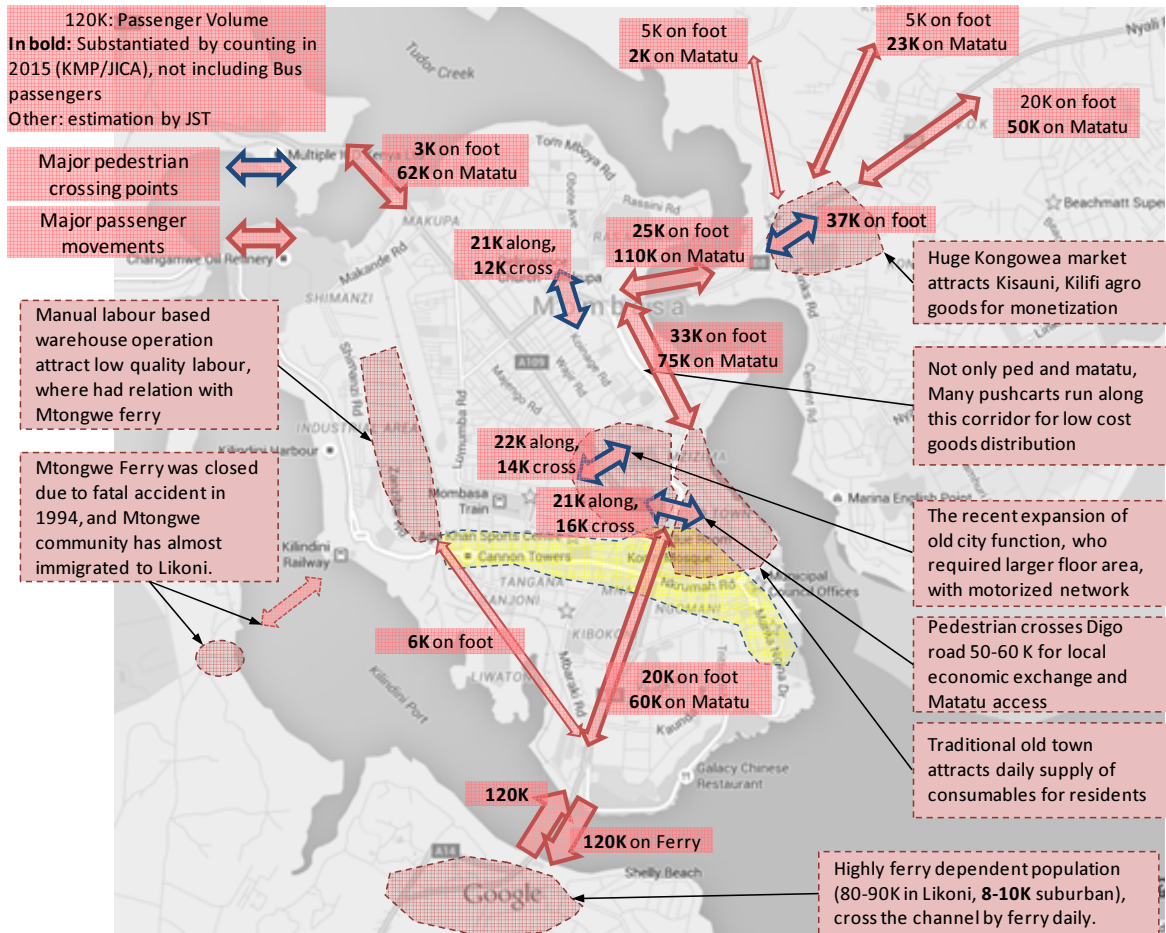
- Road widening, 1) Nyali Road, 4lanes with 2 service lanes, 2) Links 4lanes, 3) old Marindi, possibly 4 lanes, 4) Kengelani, 2 lanes
- Possible sub centers; 5) Kongowea market, with Corridor G, 6) Bomboruru, with Beach rd corridor, 7) Bamburi, 8) Citymall with Haller Park

**Urban Core** where enhance public transport access and pedestrian, control private car access

Example of JICA STUDY Road Network Masterplan Alignment will be proposed roughly

# STRATEGY FOR ISLAND TRANSPORT NETWORK

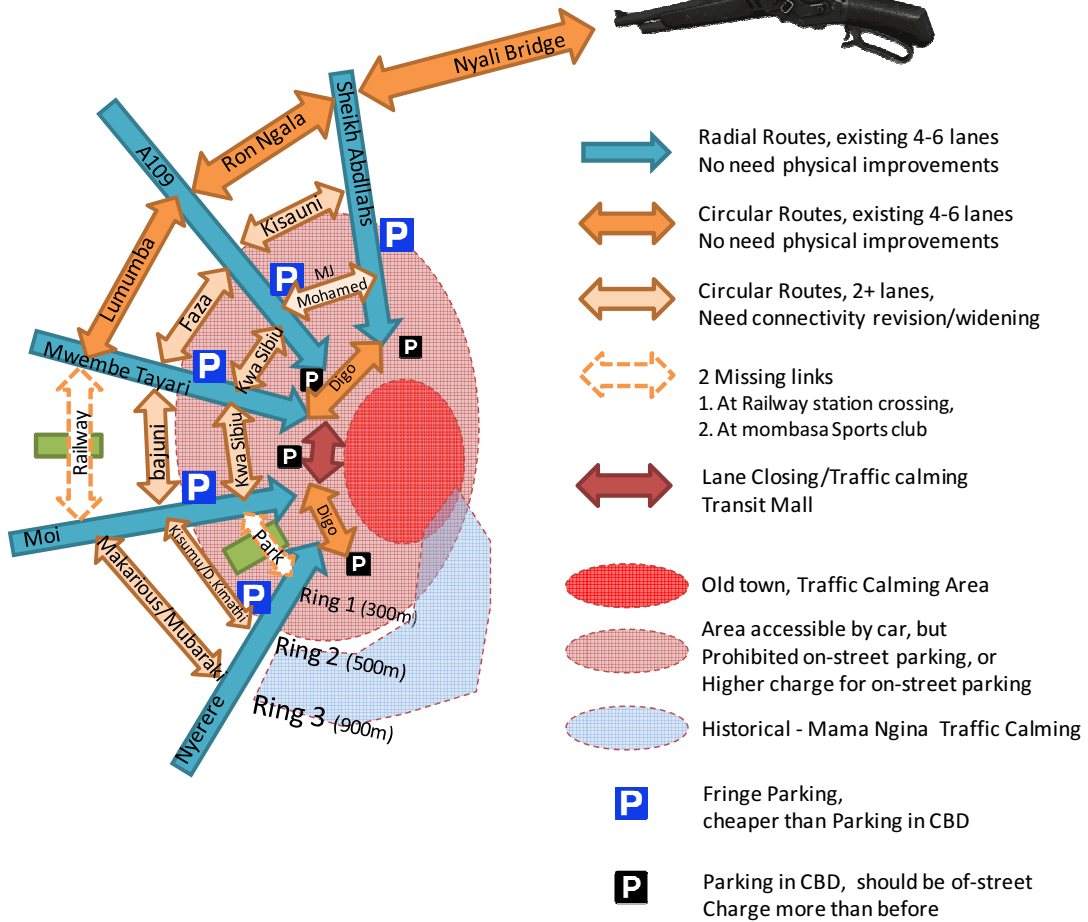
## Ferry-Kongowea Local Economic Corridor



## Island Analysis and **Strategy**

- No need further road development
  - Perhaps, some roads/lanes can be closed,
  - Develop the missing link only
- Utilize the existing space for present and future demand and flow
  - Accommodate and enhance pedestrian flow
  - Control circular flow, apply shot-gun and fringe parking strategy
- Develop district level plan
  - Mama Ngina/Kizingo; for traffic calming / Tourism
  - Lumumba-Industrial; for hyper economic corridor

# Shot-gun Strategy and Fringe parking for Island



Sub Centers; creates 1) intercity bus terminal at Mombasa station premises, 2) transfer functions to other modes

3) Haile Celasie; beautify as historical corridor, with traffic calming  
4) Moi – Mwenbe Tayari can be designed as one-way circulation.

5) Service / collector roads in circular directions should be improved.

A. Second Ring function connecting with the Expected Second Nyali Bridge absorbs traffic from the Old Marindi, Kengelani, and alleviate concentration to Kongowea Jct.

E. Shimanzi- Kipevu Link; connecting from Shimanzi Oil terminal to Kipevu Link, passing KPA premises.

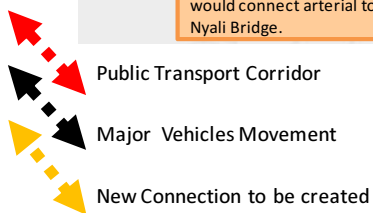
B. The inner ring function connecting Nyali Bridge, Lumumba Rd., expect to pass Railway station plots, Ganjoni, and Mbaraki Rd.

C. The outer ring function connecting Second Nyali Bridge, Shimanzi, coastal plots, and to Likoni connection.

D. The Likoni connection shall be connected to the hyper corridors, D1 is proposed by KenHA, but D2 would connect arterial to SEZ and Nyali Bridge.

F. The Main Public transport corridor provide exclusive passenger transport function between the Core, Kongowea, Bomboruru, Bamburi

G. The Main Public transport corridor provide exclusive passenger transport function between the Core, Makupa, Changamwe, Magongo, AP



**Urban Core** where enhance public transport access and pedestrian, control private car access

**Sub Center** where creates sub centers for urban transport functions

**Hyper Corridor** where accommodates high speed circular traffic, connecting Likoni-Nyali

**Historical** where realize the traffic calming and improve attractiveness



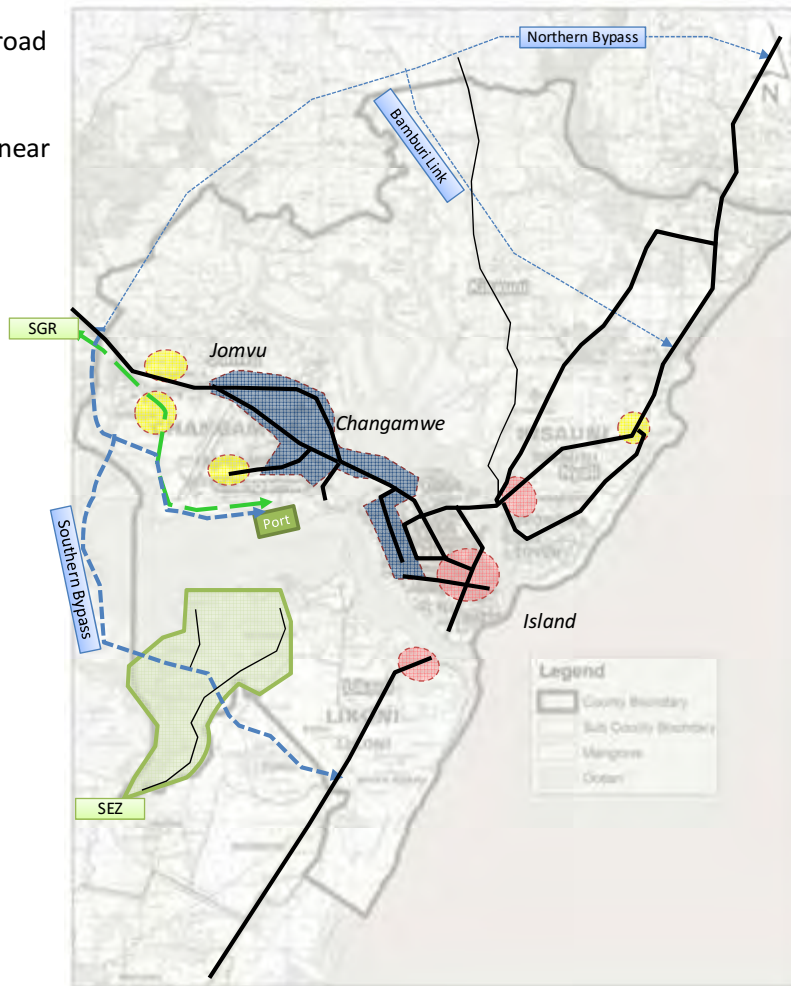
## Regional Traffic Issues and Strategy

- Port freights still remains
  - Berth 1-9 will handle bulk, and Berth 14-19 will handle 720K TEU containers even in 2035.
- Motorization
  - Southern bypass will boost it in Kwale
- SEZ development (2020-2030)
  - Attract region-wide employment
- Population growth
- Projects; where is suitable?
  - Likoni Gateway bridge by KeNHA;
  - Nyali 2<sup>nd</sup> bridge by PPP; necessary?

## Regional Traffic Issues and Strategy

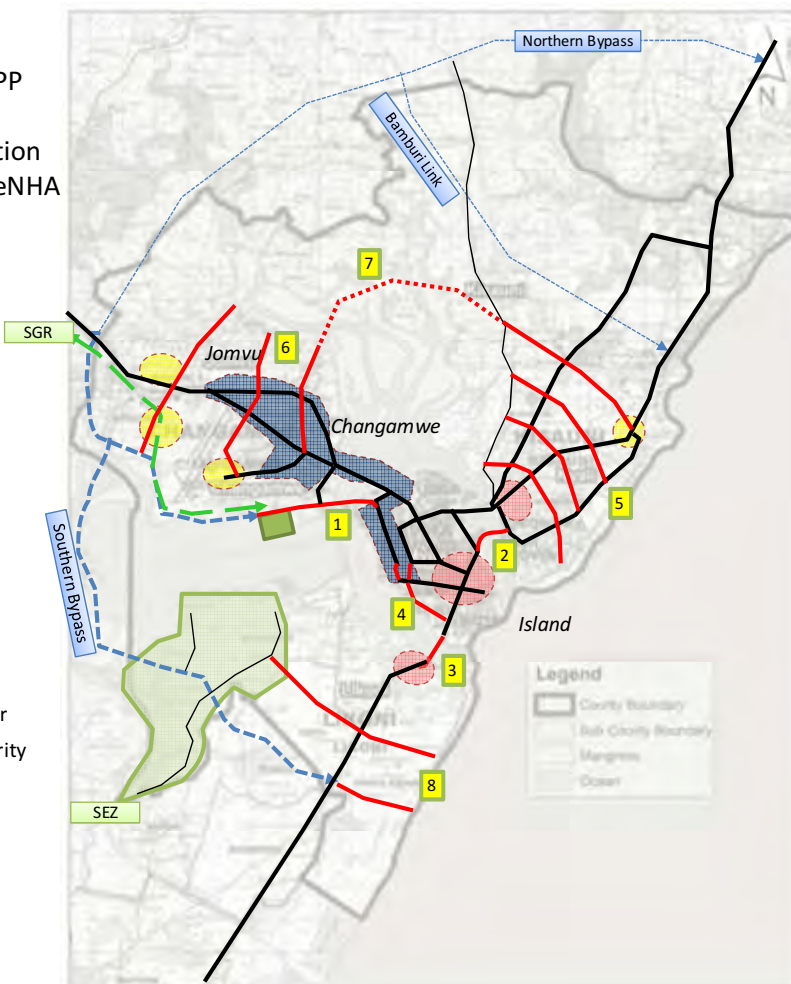
- Freight; try to avoid Changamwe
  - Try to connect all roads to Kipevu link
- Find missing link and fill
- Ring and radial network
- Separation of Pedestrian and Vehicles
- Do not mix local traffic with regional

Present regional road network and Major pipelined developments in near future



- Heavy Freight traffic region
- Pedestrian / Low Income traffic center
- New urban cores in suburb in future
- Existing major regional corridor
- Bypasses by 2020
- SEZ and internal corridor plan

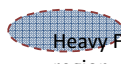

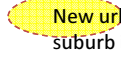




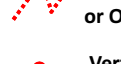

2<sup>nd</sup> Nyali location  
As proposed by PPP  
and  
Likoni Bridge location  
As proposed by KeNHA

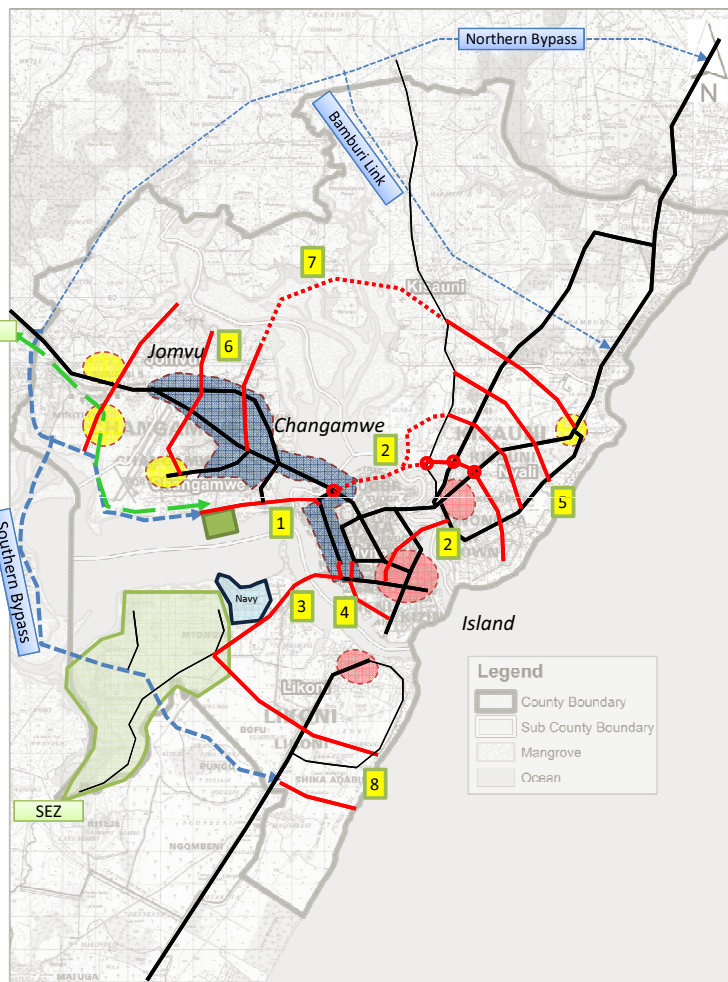


- Proposed major regional corridor
- With lower priority or Optional

- 1) The Shimanji-Kipevu Link, will divert HVs from Makupa causeway, provide direct connection to Kipevu Link from berth 1-9 area. Try to use the existing bridge in the port.
- 2) PPP proposal 2<sup>nd</sup> Nyali Bridge, give direct access link from Digo to Nyali, which will divert the traffic on Nyali but the Digo will receive more motorized traffic.
- 3) Proposal of Likoni Bridge (Gateway Bridge) by KeNHA, attract motorized traffic thru 2<sup>nd</sup> Nyali – Digo- Likoni, merging with pedestrian cores. This also damage the Mama Ngina park.
- 4) The internal missing link in the island, connecting industrial area to Moi, and Likoni ferry, to complete ring function in the Island.
- 5) The ring road functions in Nyali/ Kisauni districts. The JST does not care about locations and alignments.
- 6) The ring road functions in Jomvu/ Changamwe districts. The JST does not care about locations and alignments.
- 7) Third Nyali bridge function proposal, if necessary. However, it will cost due to long span of bridge, and need serious feasibility check.
- 8) The ring road functions in Likoni districts. The JST does not care about locations and alignments.

2<sup>nd</sup> Nyali location  
As proposed by PPP  
and  
Likoni Bridge location  
As proposed by JST

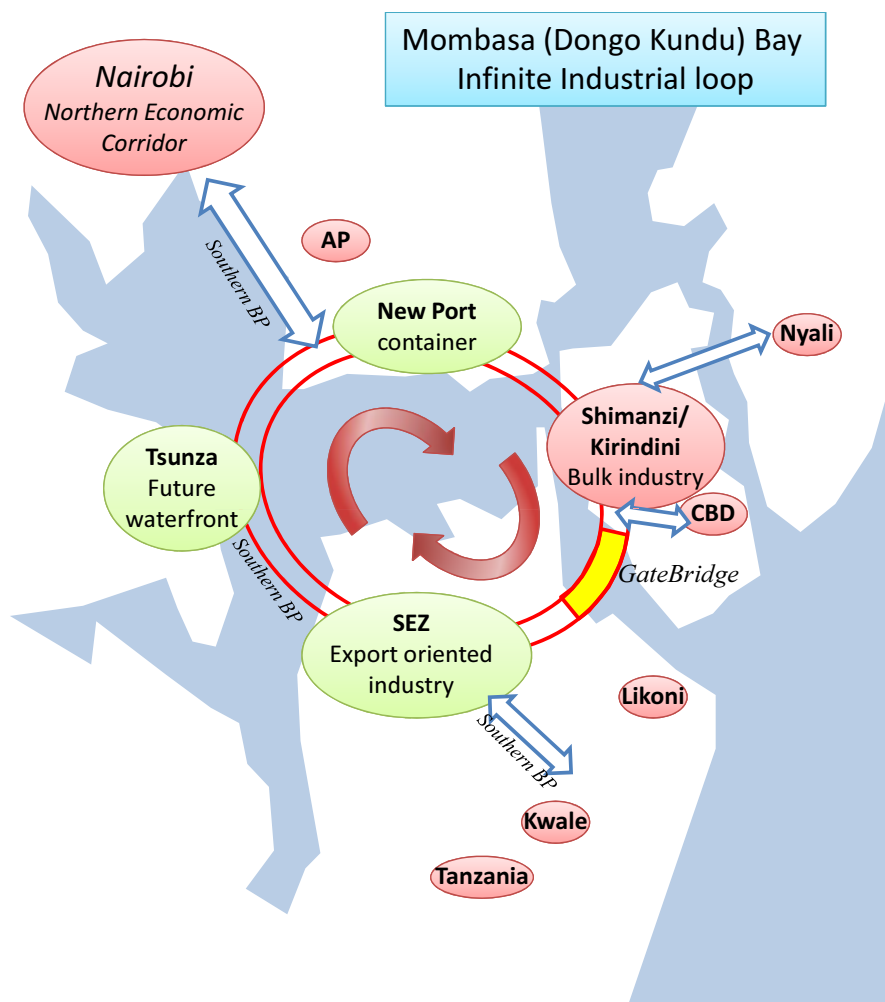
-  Heavy Freight traffic region
-  Pedestrian / Low Income traffic center
-  New urban cores in suburb in future
-  Existing major regional corridor
-  Bypasses by 2020
-  SEZ and internal corridor plan
-  Proposed major regional corridor
-  With lower priority or Optional
-  Vertically separated



- 1) The Shimanji-Kipevu Link, will divert HVs from Makupa causeway, provide direct connection to Kipevu Link from berth 1-9 area. Try to use the existing bridge in the port.
- 2) PPP proposal 2<sup>nd</sup> Nyali Bridge, give direct access link to Island from Links Rd, but mitigate the traffic to ring road function avoiding Mwenve Tayari congestion.
- 3) Proposal of Likoni Bridge (Gateway Bridge), connecting Moi Ave (class H) to the SEZ arterial, serving Kilifi-Kwale region-wide traffic as well as Nyali-SEZ business traffic.
- 4) The internal missing link in the island, connecting industrial area to Moi, and Likoni ferry, to complete ring function in the Island.
- 5) The ring road functions in Nyali/ Kisauni districts. The JST does not care about locations and alignments.
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- 8) The ring road functions in Likoni districts. The JST does not care about locations and alignments.

## The second Nyali Bridge by PPP and the Likoni Bridge by KeNHA

- Both will be form shortest connection between Kilifi-Nyali-Kwale
  - damage the existing pedestrian vulnerable economy in Likoni-Old Town-Kongowea.
  - The Likoni by KeNHA will Attract all traffic from Kwale
- The 2<sup>nd</sup> Nyali bridge will be proposed by PPP toll road approach
  - It is same idea of the Nyali Estate 1920s
  - This will not be feasible until the toll-free Nyali bridge collapse





## Before closing

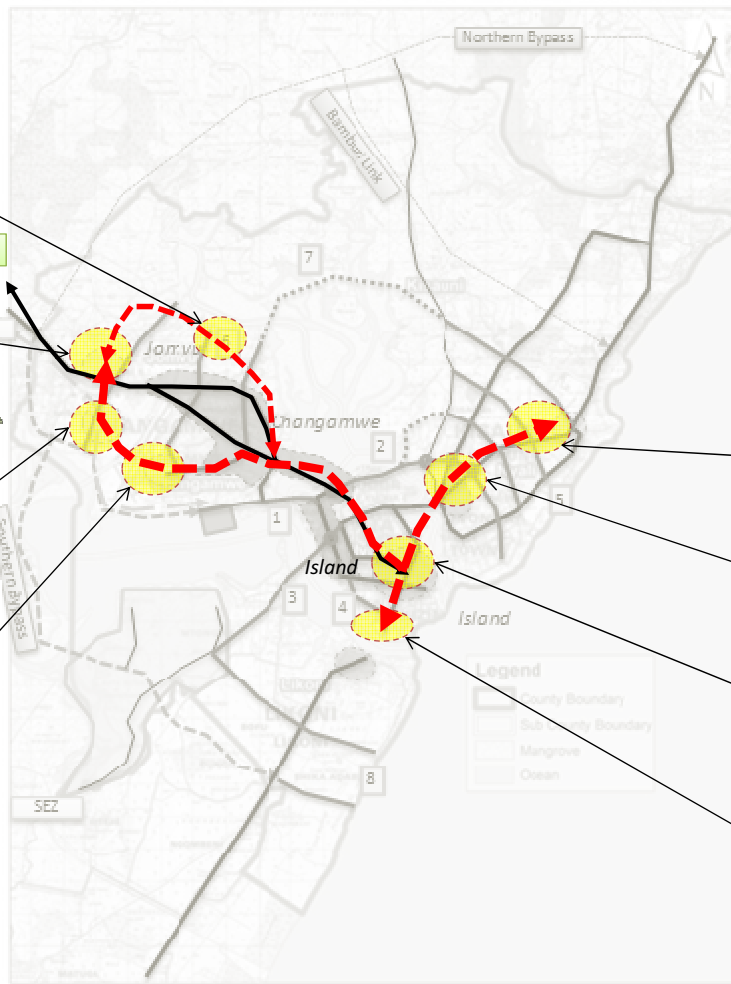
### Exclusive Passenger Services

## AGT, Bus services, community bus

- Passenger traffic should be separated
  - Freight traffic will remain forever in Mombasa
  - Enhance the traffic safety and accessibility
- Apply exclusive service for traffic policy
  - Local economy / Freight corridor; Elevated LRT
  - Traffic calming area; community bus
- Harmonize with existing services
  - RVR lines in Island; could be converted to road??
  - Matatu; re-routing plans
  - 3W/Bodaboda; number provision regulation

## New Urban Cores in Mombasa

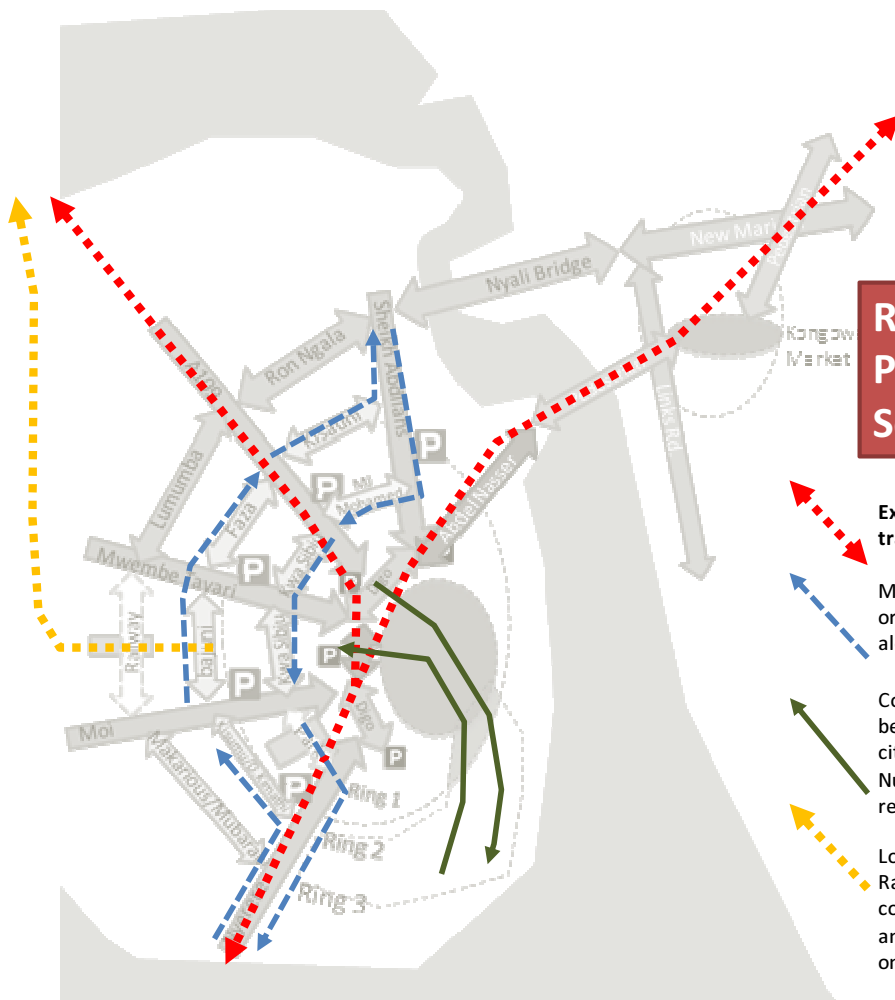
- Mikindani
  - Miritini County Subcenter
  - SGR Passenger Terminal
  - Moi Airport Terminal
-  Exclusive passenger transport service  
 Existing Northern Corridor (A109)







## Elevated LRT (AGT) Proposals

## Urban Cores in Mombasa

- City Mall
- Kongowea Market
- Old town & Moi-Digo CBD
- Ferry & Mama Ngina Park



## Re-organize Passenger Services

-  Exclusive passenger transport service (elevated)
-  Matatu circulation could be organized as one-way flow along the Ring 2 & 3
-  Community bus function could be installed for vulnerable old city economy and tourists. Number of 3Ws will be regulated for traffic calming.
-  Long way buses; existing Railway station can be converted as a city terminal, and railways can be converted one way BRT (draft proposal)

# Summary

## Suburb, Island and Region-wide

- All plan should be consistent
  - Multi-layered in region-wide to district level
  - County Fighting with Motorization, Pollution, Accident
- JICA study team will check the demand/supply balance based on this strategy
  - Quantify the demand, and show necessity
  - Simulate in 2020, 2030, and 2040 scenario

For further inquiry, Pls contact to the member of JICA STUDY TEAM

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**THANKS... FIN...**