Mombasa Port and CFS influence to city transport

20150807 JST MGCMP

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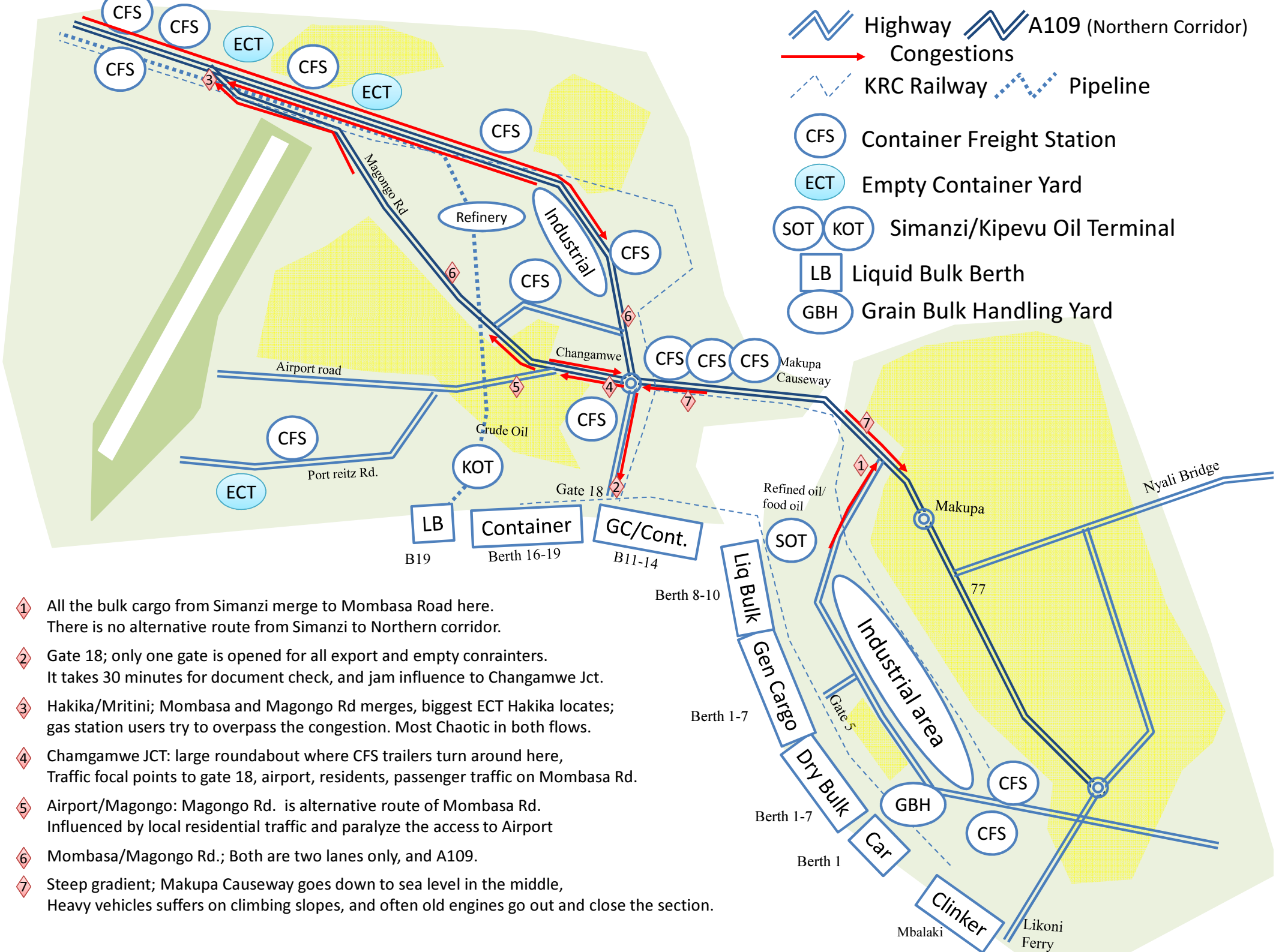


1. All the bulk cargo from Simanzi merge to Mombasa Road here.
   There is no alternative route from Simanzi to Northern corridor.
2. Gate 18; only one gate is opened for all export and empty conrainters.
   It takes 30 minutes for document check, and jam influence to Changamwe Jct.
3. Hakika/Mritini; Mombasa and Magongo Rd merges, biggest ECT Hakika locates;
   gas station users try to overpass the congestion. Most Chaotic in both flows.
4. Chamgamwe JCT: large roundabout where CFS trailers turn around here,
   Traffic focal points to gate 18, airport, residents, passenger traffic on Mombasa Rd.
5. Airport/Magongo: Magongo Rd. is alternative route of Mombasa Rd.
   Influenced by local residential traffic and paralyze the access to Airport
6. Mombasa/Magongo Rd.; Both are two lanes only, and A109.
7. Steep gradient; Makupa Causeway goes down to sea level in the middle,
   Heavy vehicles suffers on climbing slopes, and often old engines go out and close the section.

Evaluation of Port facility

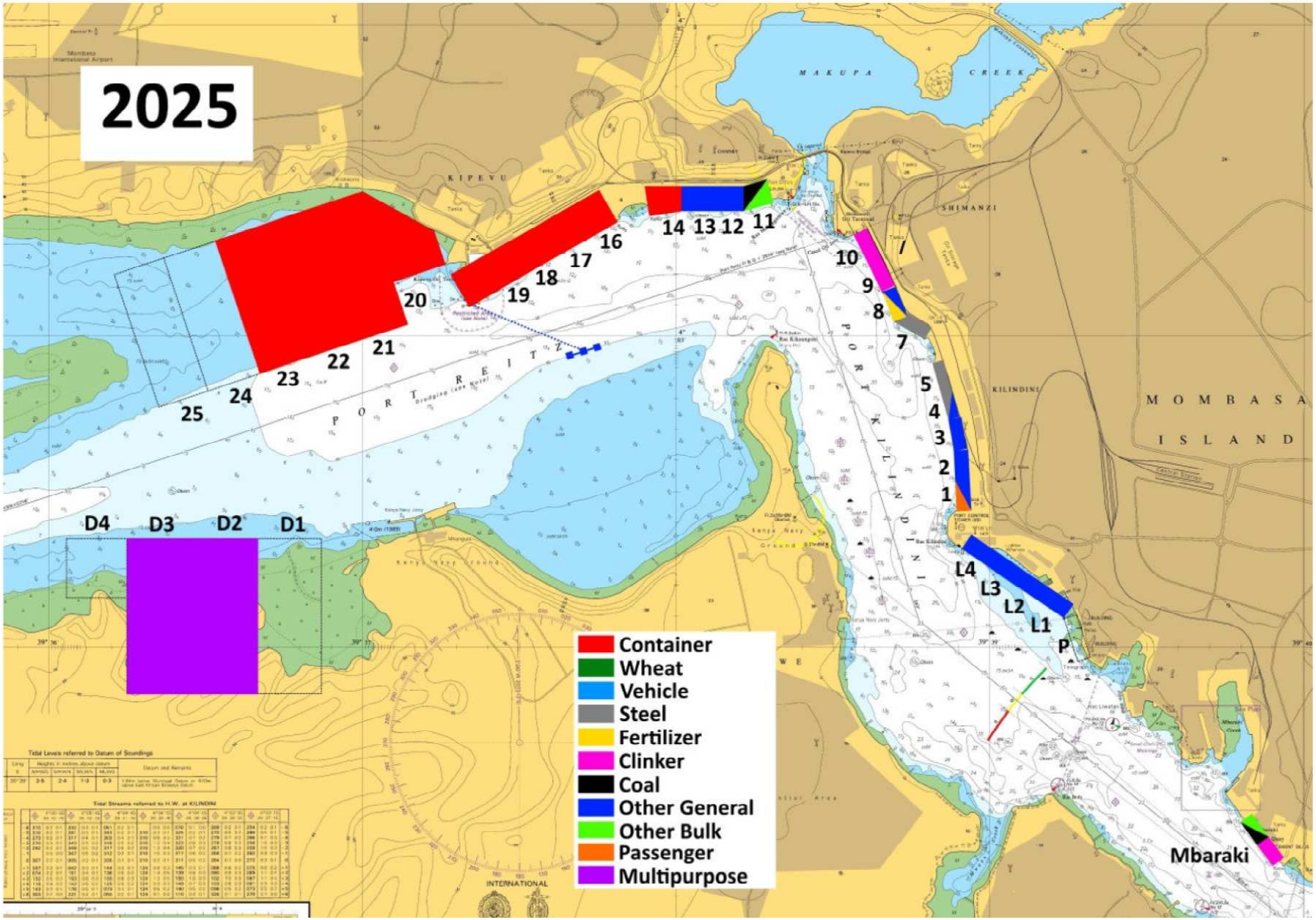
- The length of the berth is too small for vessels.
  - The 66% of vessels exceeds to the size of berth in average, which often affect to neighbor berth operation.
- There is mixture allocation of commodity handlings,
  - e.g., there are 18 berths in Mombasa port and motorcars are handled in 11 berths, containers are in 15 berths, and steels are in 9 berths, which is inefficiency operation of port handling.
- The inefficient handling can be seen always in unloading of Motorcar, steel, wheat, clinker, fertilizer
  - due to insufficient size of the berth facility;
  - Area G development; propose a car parking development
  - Mbalaki wharf expansion is also proposed.

Evaluation of Port facility

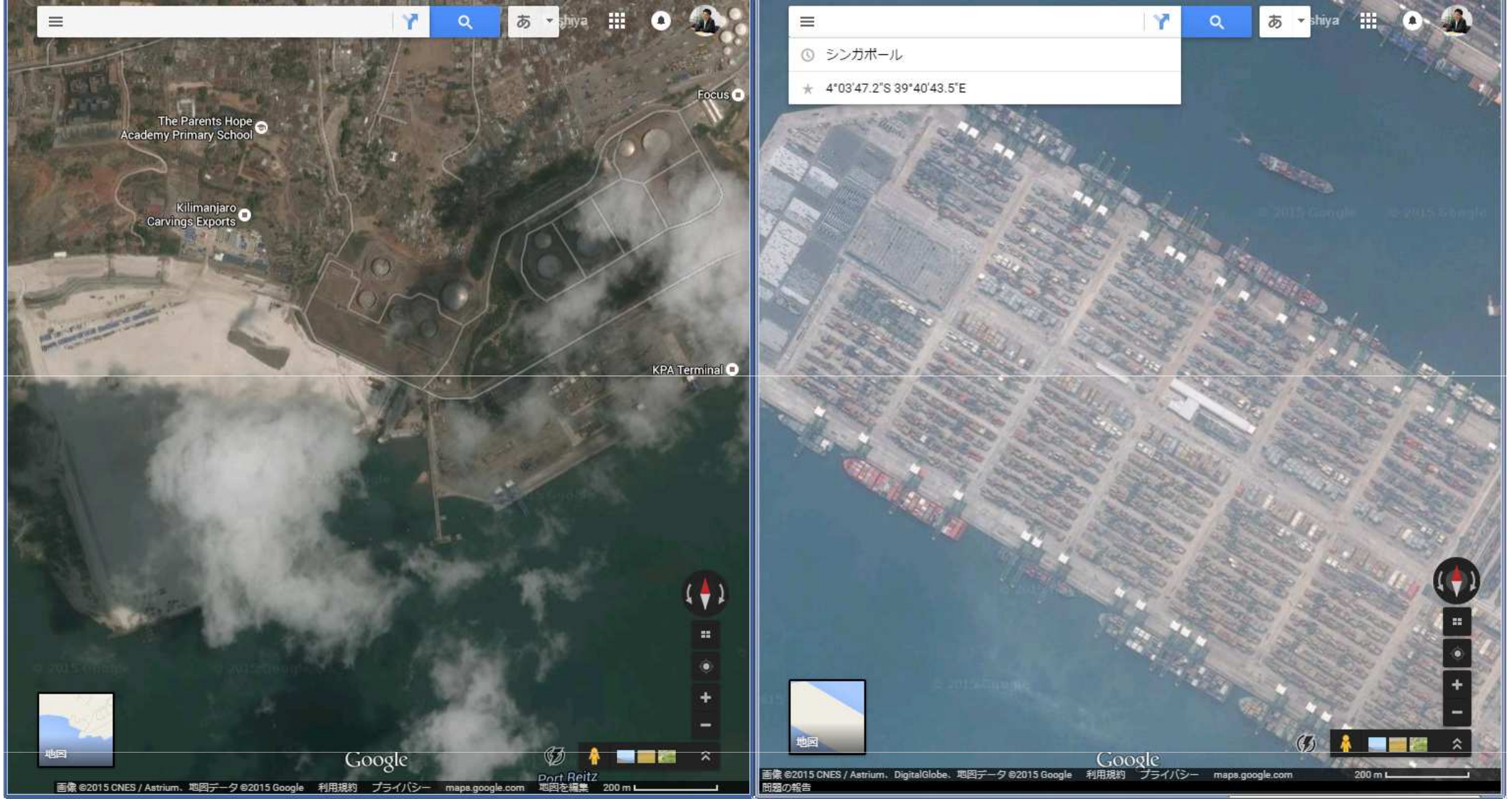
- The port facilities are old;
  - developed in 1920s for berth No1-6,
  - in 1940s for berth No7-8,
  - in 1955-59 for 9-14,
  - in 1971-77 for 16-18, and
  - in 2012 for No 19. (up to here, chapter 6)
- The berth 11-14 was converted from bulk to container in 1990s.
  - It shows The KPA has will to facilitate modern gantry cranes here, but the report suggests more realistic analysis is necessary (chapter 4.1.3)

Evaluation of Port facility

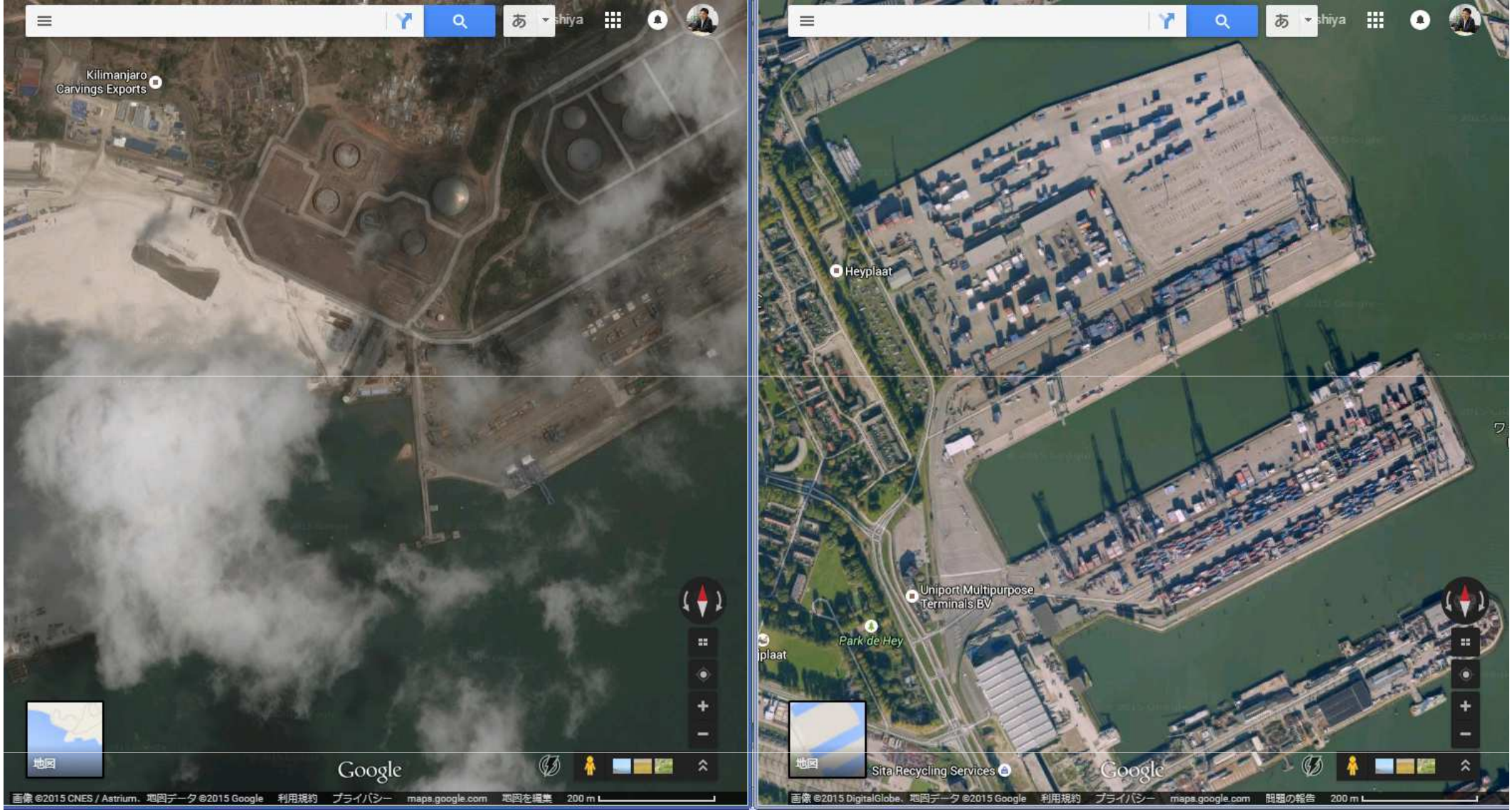
- Simanji Oil Terminal and Kipevu Oil Terminal
  - KOT was constructed in 1963, and SOT was expected to close, but SOT utilized due to increase of import, now both are in full operation
  - MPA did a study to relocate the KOT to Mtongwe
- The small capacity of Container Port itself
  - Designed only 250,000 TEU(P7., Nahodha, 2013.11)
  - CFS was authorized in 2007, when Mombasa port handled 750,000 TEU.
  - Port MP team evaluate B14-19 as 720K TEU port



The planned berth #20-23 shows big land behind the berths for container handling, but the existing container berth #16-19 shows its little capacity in its hinterland which requires CFS in the city permanently.



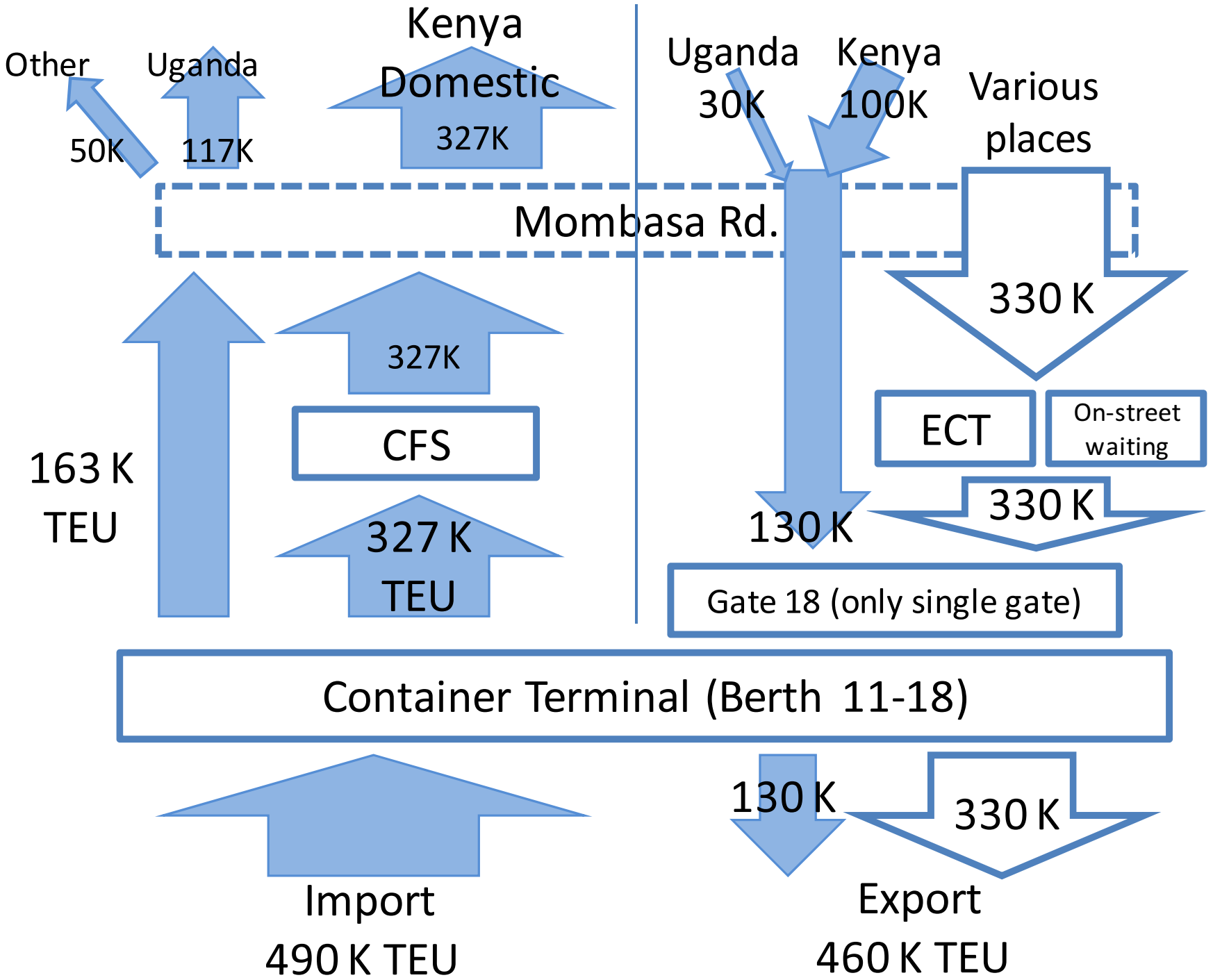
Comparison of Mombasa port container berth 16-19, with Singapore Container terminal (Pasir Panjan Terminal) – Mainly for transhipment, in a same dimension



Rotterdam old port area has such small backyard, mainly used for import/export, and it connect to arterials closely. Container port can be developed closely to residents.

NUMERICAL ANALYSIS

Container Data 2014 Ignoring delivery on Rail (5%)



Quantity

- Berth 11-19 covers 1 M TEU
  - Import transit 163K + export 130 K reaches the original capacity (250K)
- CFS has value of 327 K TEU one-way port
  - export only
- How much capacity of future
  - Berth 14-19: 720K TEU fix to 2015-2035
  - Berth 20-22 by 2020; 597K TEU
  - Berth 20-23 by 2025; 1.03 M TEU
  - Berth 20-24 by 2030; 1.50 M TEU
  - Berth 20-25 by 2035; 1.94 M TEU

CFS Operation

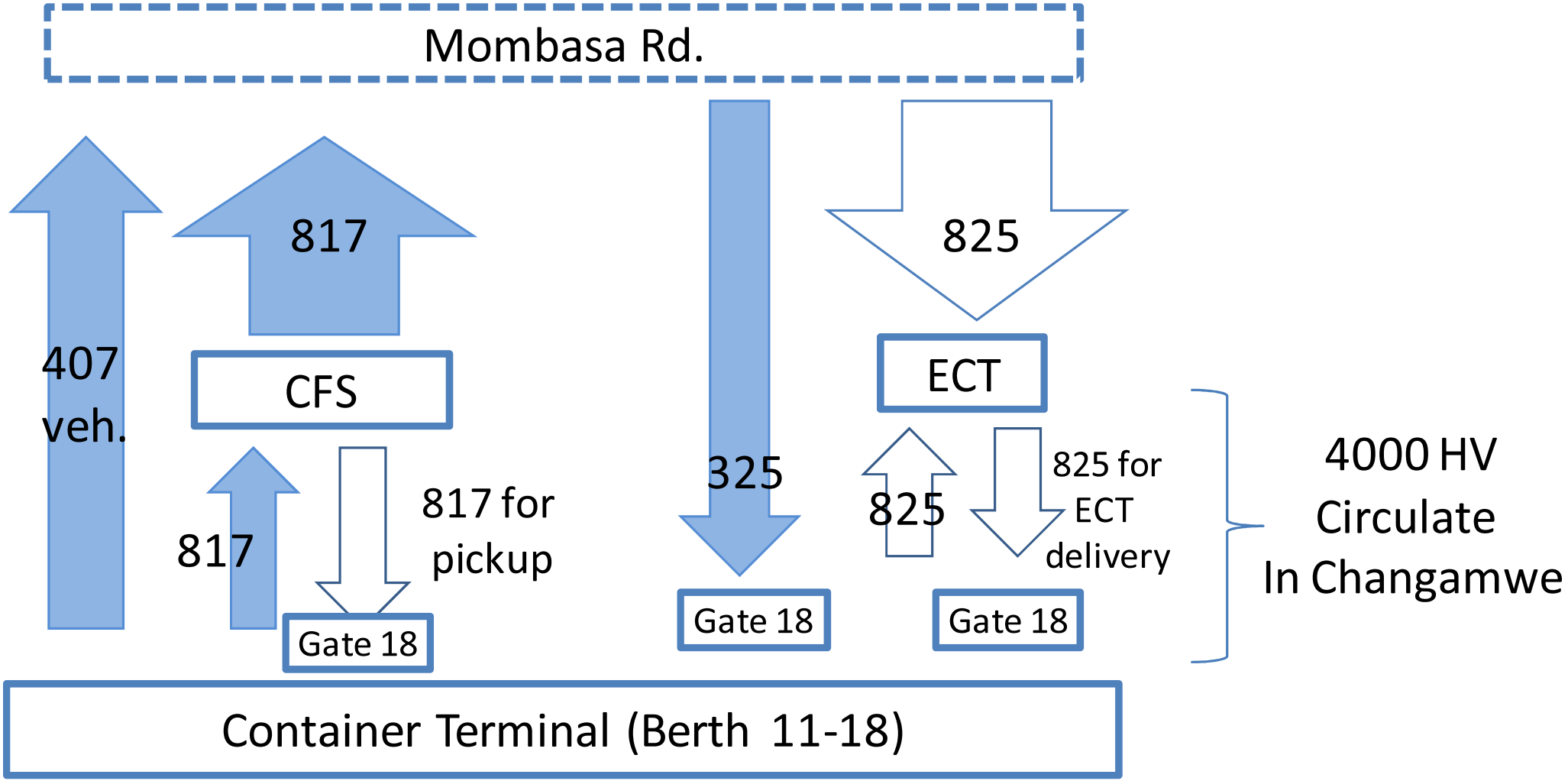
- Locate within 10km radius from the port
- Collect the import container within 48 hours, and store it in CFS for custom clearance
- CFS is designed as custom clearance area
- The statistics says 78% of containers will leave Mombasa within 4 days after landing,
  - CFS will keep the containers around 14-21 days without any additional fee.
  - Basically, CFS has relation with truck companies, and CFS allow to keep the containers for their own truck.

Export and Empty containers

- Empty containers shares 30% of 1 M TEU
  - 60% in export movement in Mombasa
  - Same amount of Import containers
  - Returned to Mombasa as unexpected delayed wave
- Export should be promoted
  - Kenya/Vision2030/JICA study NEC try to promote Export oriented industry
- CFS cannot deal export and empty containers
  - It is designed for custom clearance.
  - The gate 18 has only one gate for export/empty container document clearance

Convert to HV Movement Per day

Assuming 20ft/40ft is 50:50, 300days per year, all empty container stored in ECT



CFS / ECT operation

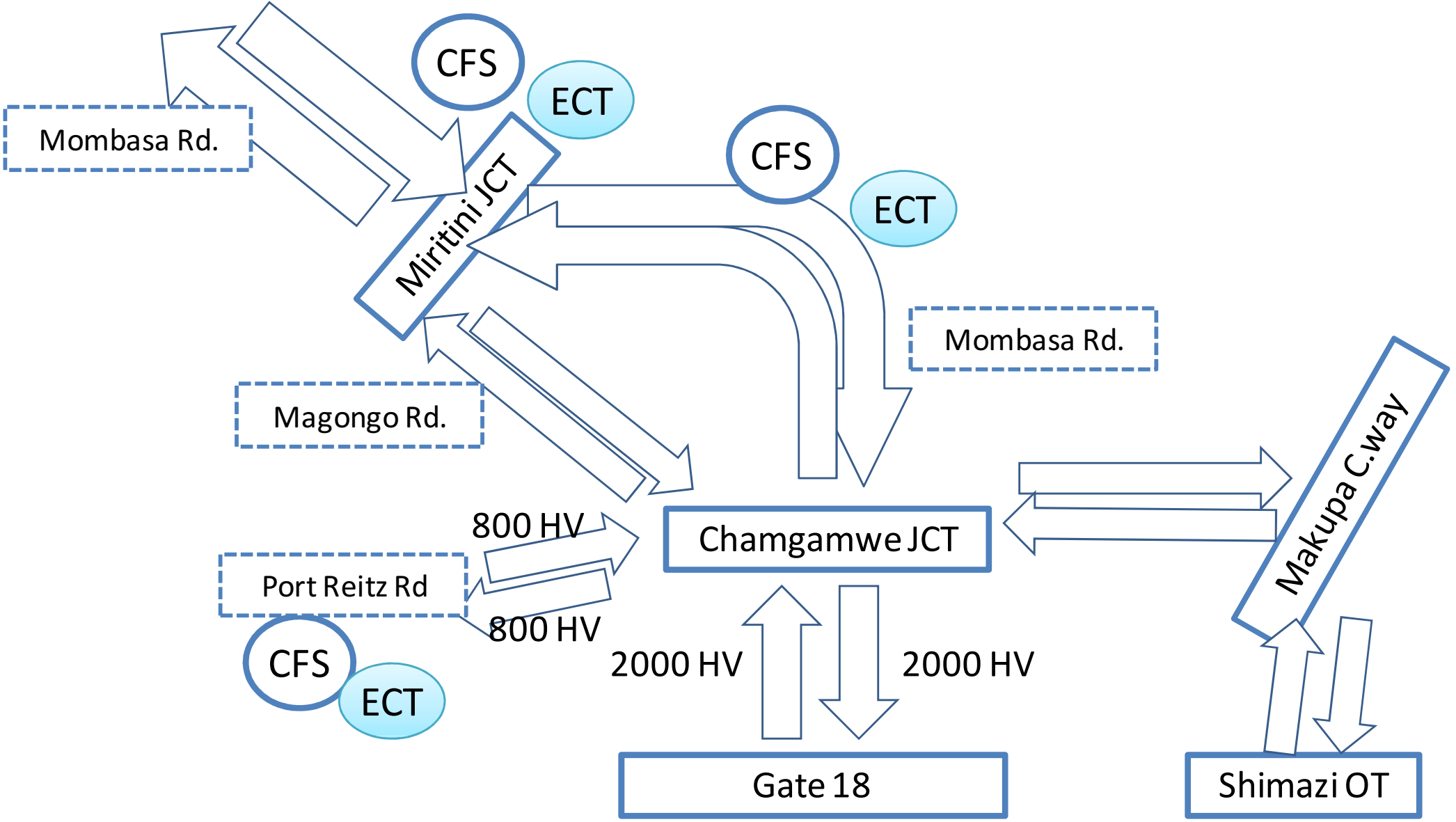
- Empty HV movement
  - CFS needs to pickup the container in 48 hrs
    - Send a vacant trailer, and pick up the full container
  - ECT needs to deliver the ECs when vessels come
    - Send a empty container, and return to ECT
- Theoretically, 50% HV reduction is possible?
  - CFS trailers delivers EC and pickup full container
  - CFS cannot deal the empty due to custom regul.
  - Need enough storage space in container yard.

Table 7- 18: Modewise Load Distribution of Commodity Percentage Carried out at OD1

Mode/ Frequency	Commodity Weight Ranges (Tonnes)								
	Empty	0.1-2.5	2.6-5.0	5.1-10.0	10.1-20.0	20.1-30.0	30.1-40.0	> 40.0	Total
MAV	32.2%	1.3%	1.6%	4.5%	21.0%	35.7%	2.9%	1.0%	1
HCV	7.9%	4.2%	4.2%	18.4%	61.1%	4.2%	0.0%	0.0%	1
LCV	18.6%	14.0%	14.0%	29.1%	23.6%	0.8%	0.0%	0.0%	1

Source: Primary Survey by Consultant for ISUDP Mombasa

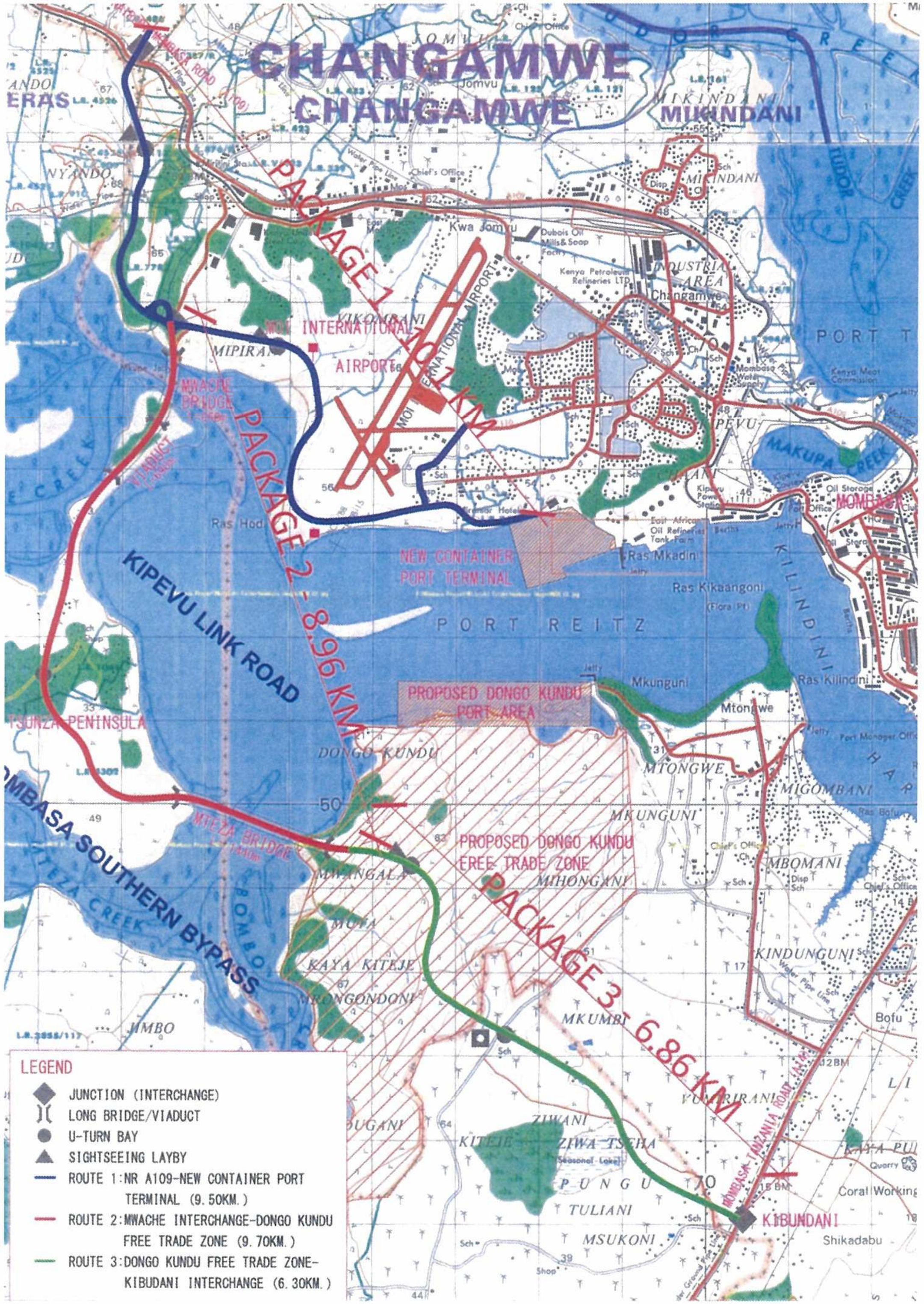
- 32% of Multi axle vehicle vehicles are empty or empty containers (unclear)
  - From KMP study interim
  - Traffic observation in Miritini;



(DRAFT) this analysis can be done, showing how the heavy vehicle circulate in the small area, and make impact in the area.

The Game Changer in 2018/19
New Port, SGR and Sothern Bypass

- New container terminal has enough handling yard
- SGR may absorb 30% of freight traffic in 2020-25
- Southern Bypass – Kipevu Link connection will detour the traffic at Changamwe
  - Also connect to the Airport entrance


CHANGAMWE
CHANGAMWE
MIKINDANI
PACKAGE 1 - 10.1 KM
MOI INTERNATIONAL AIRPORT
MWACHE BRIDGE
VIADUCT
PACKAGE 2 - 8.96 KM
KIPEVU LINK ROAD
NEW CONTAINER PORT TERMINAL
PORT REITZ
PROPOSED DONGO KUNDU PORT AREA
DONGO KUNDU
TSUNZA PENINSULA
MOMBASA SOUTHERN BYPASS
MTEZA BRIDGE
PROPOSED DONGO KUNDU FREE TRADE ZONE
PACKAGE 3 - 6.86 KM
KIBUNDANI
MOMBASA
KILINDINI
MTONGWE
MIGOMBANI
MBOMANI
KINDUNGUNI
MKUMBI
PUNGU
TULIANI
MSUKONI
LEGEND
JUNCTION (INTERCHANGE)
LONG BRIDGE/VIADUCT
U-TURN BAY
SIGHTSEEING LAYBY
ROUTE 1:NR A109-NEW CONTAINER PORT TERMINAL (9.50KM.)
ROUTE 2:MWACHE INTERCHANGE-DONGO KUNDU FREE TRADE ZONE (9.70KM.)
ROUTE 3:DONGO KUNDU FREE TRADE ZONE-KIBUDANI INTERCHANGE (6.30KM.)

CFS will disappear?
Traffic in Changamwe will be cleared?

- Negative;
  - KPA shows their will to continue to operate Berth 14-19 as container terminal, which needs CFS
    - Port MP estimate 750K TEU will go in B14-19 in future
  - CFS is linked with trailer industry, who need storage in Mombasa
  - Still Simanzi and SOT traffic remains in the island
- Unknown
  - Efficiency of railway operation, capacity of Nairobi ICT
  - Connection from Berth 14-19 to new terminal
- Positive
  - Transit/Export containers will go to Kipevu Link

What should do?

- Simazi oil terminals
  - Relocate or create a new exclusive freight bconnection from SOT to Kipevu link
- Berth 14-19
  - Shrink its container operation connected with CFS
  - Convert to general cargo, and close the old berth
  - Direct Connection to Kipevu link, avoid gate 18
- CFS
  - Convert as ICT, for import/export /empty/processing
- Other
  - Confirmation of SGR and Nairobi ICT operation

low capacity of existing port facility

Low operation productivity of port

Concentration of oil facility in Shimazi

Exclusive import operation of CFS

Not ready for Empty containers

Not ready for export containers

Heavy traffic Circulation in Jomvu

Congestion in Changamwe-Jomvu

Congestion in Shimanzi

SGR transfer

Southern Bypass connection

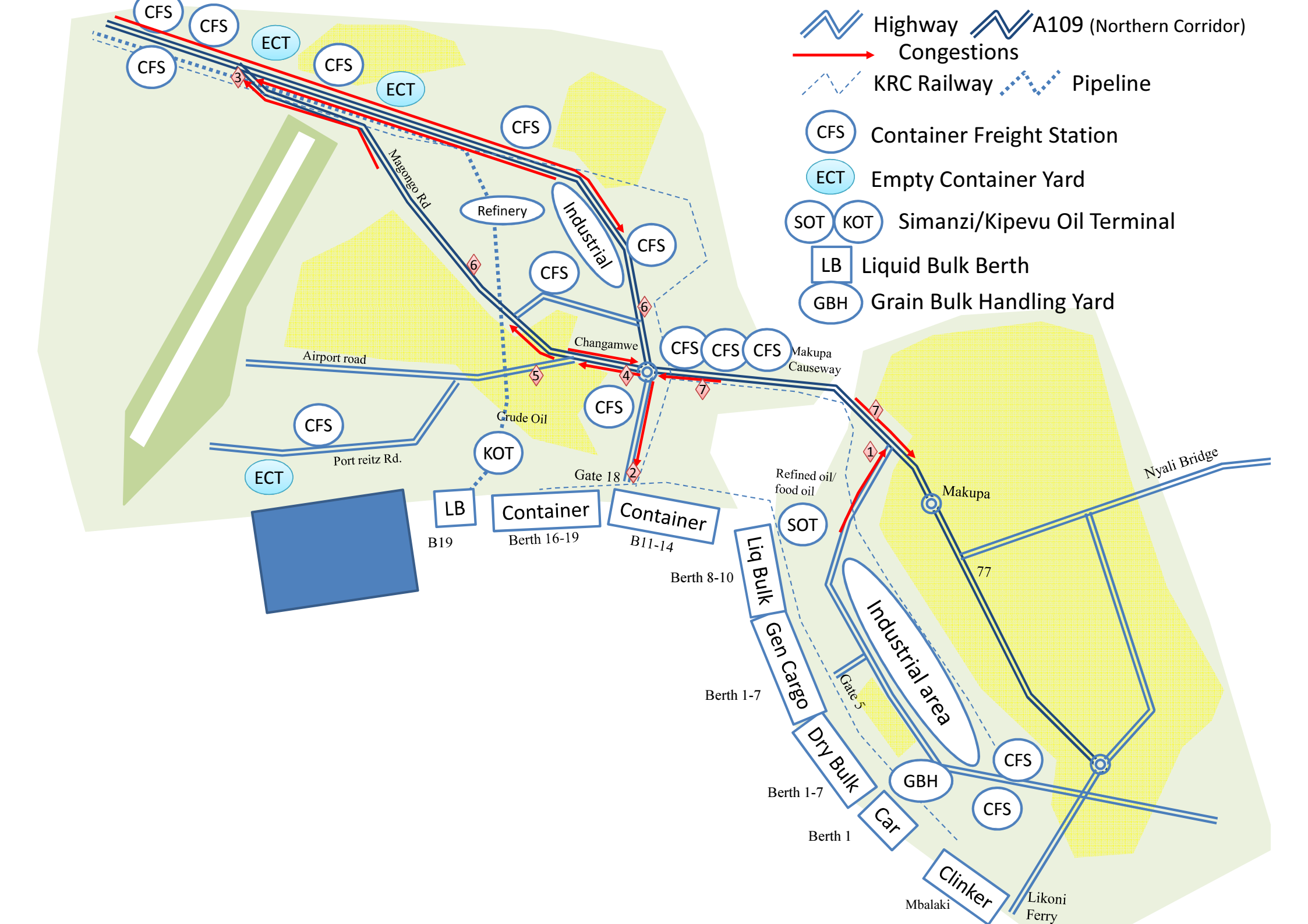
CFR with Export and empty containers

Shrink the berth 16-19 container operation

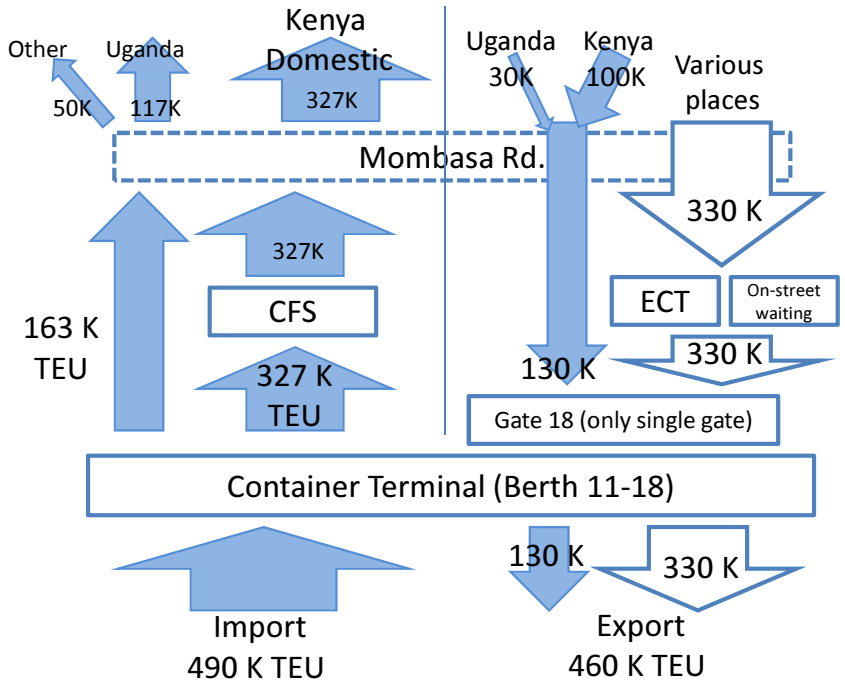
Convert the old port function to B 16-19

Exclusive lane development from Shimanzi to S.Bypass

Export waiting facility in Miritini


Highway
A109 (Northern Corridor)
Congestions
KRC Railway
Pipeline
CFS Container Freight Station
ECT Empty Container Yard
SOT KOT Simanzi/Kipevu Oil Terminal
LB Liquid Bulk Berth
GBH Grain Bulk Handling Yard
CFS
ECT
Magongo Rd
Refinery
Industrial
Airport road
Changamwe
Makupa Causeway
Port reitz Rd.
Crude Oil
KOT
LB
B19
Container
Berth 16-19
Container
B11-14
Gate 18
Refined oil/ food oil
SOT
Berth 8-10
Liq Bulk
Gen Cargo
Berth 1-7
Dry Bulk
Berth 1-7
Car
Berth 1
Clinker
Mbalaki
Likoni Ferry
Makupa
Nyali Bridge
77
Industrial area
Gate 5
GBH
1
2
3
4
5
6
7

Container Data 2014 Ignoring delivery on Rail (5%)



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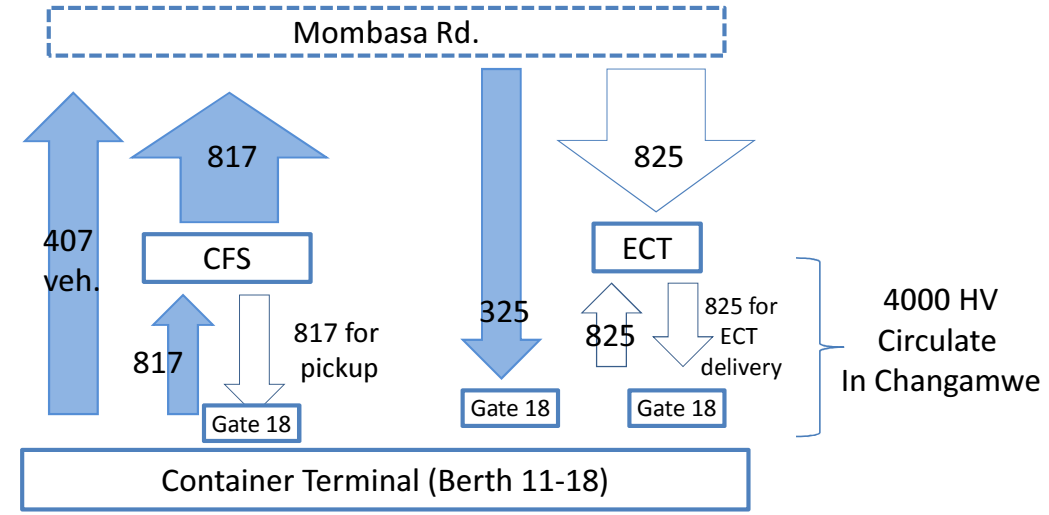

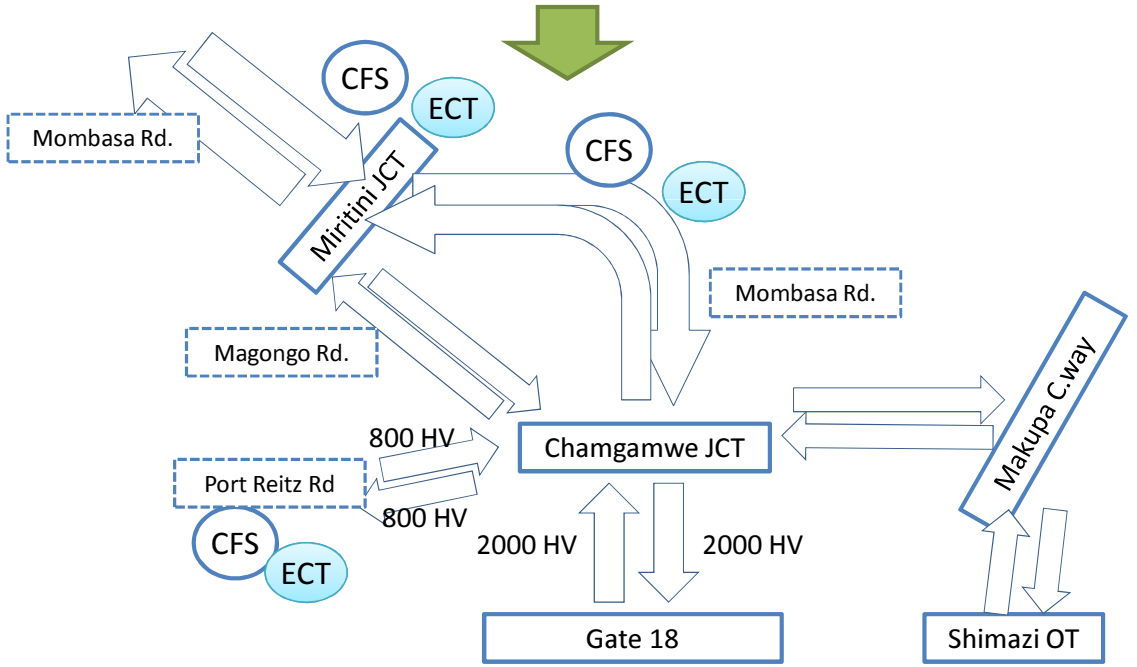

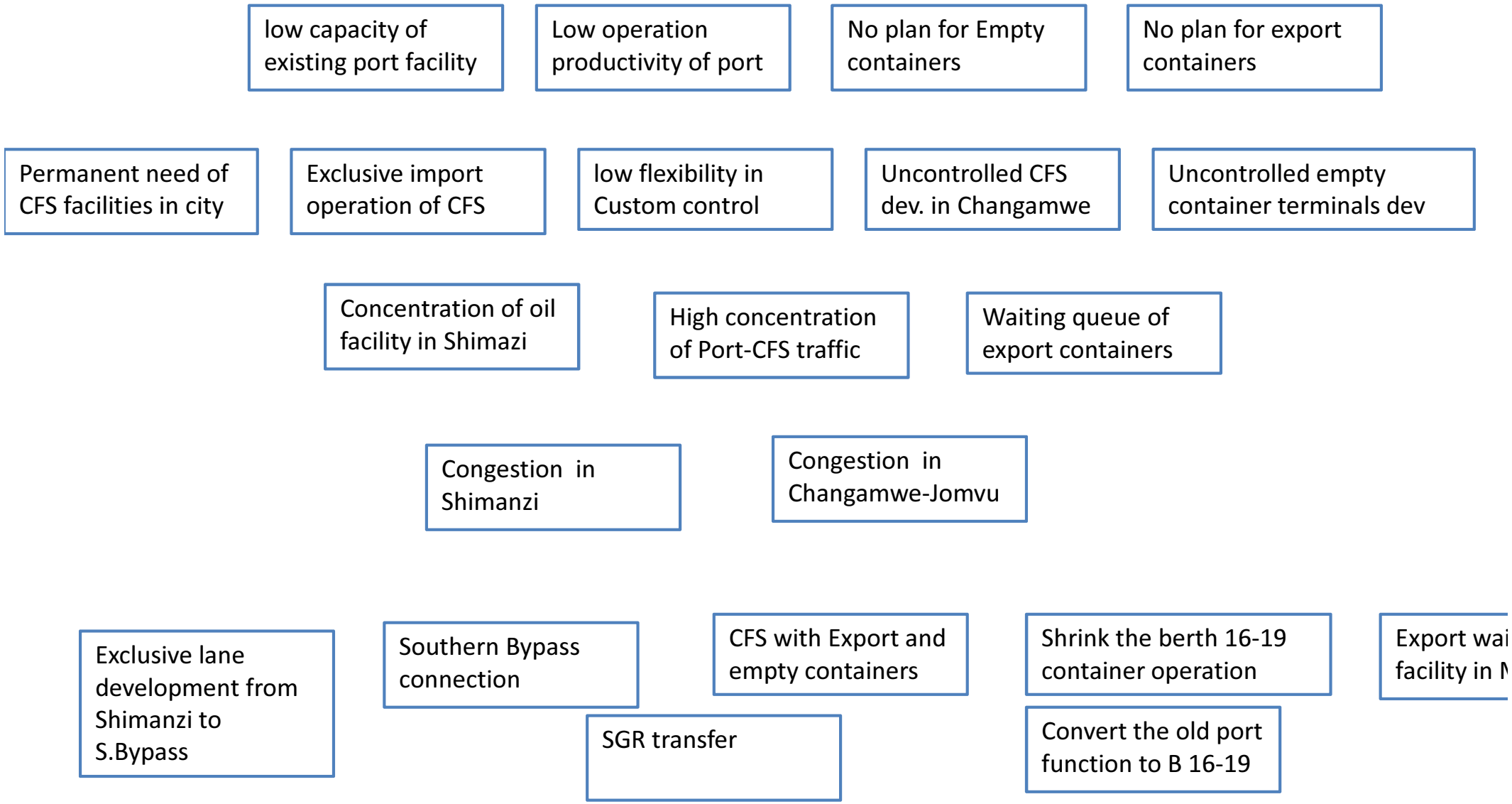
low capacity of existing port facility
Low operation productivity of port
No plan for Empty containers
No plan for export containers
Permanent need of CFS facilities in city
Exclusive import operation of CFS
low flexibility in Custom control
Uncontrolled CFS dev. in Changamwe
Uncontrolled empty container terminals dev
Concentration of oil facility in Shimazi
High concentration of Port-CFS traffic
Waiting queue of export containers
Congestion in Shimanzi
Congestion in Changamwe-Jomvu
Exclusive lane development from Shimanzi to S.Bypass
Southern Bypass connection
CFS with Export and empty containers
Shrink the berth 16-19 container operation
Export wai
facility in M
SGR transfer
Convert the old port function to B 16-19