Logistics Review of Beira and Nacala Corridors

Beira and Nacala Ports Productivity and Efficiency Assessments

Beira, Mozambique
29 June 2012

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Agenda

- Introduction
- Comparative Port Assessment
- Port Efficiency and Productivity
- Legal and Regulatory
- Terminal Handling Charges
- Current and Planned Development
- SWOT Analysis
- Recommendations

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Location Map of Beira and Nacala Ports

Port Assessment Objective and Scope

Study Objective

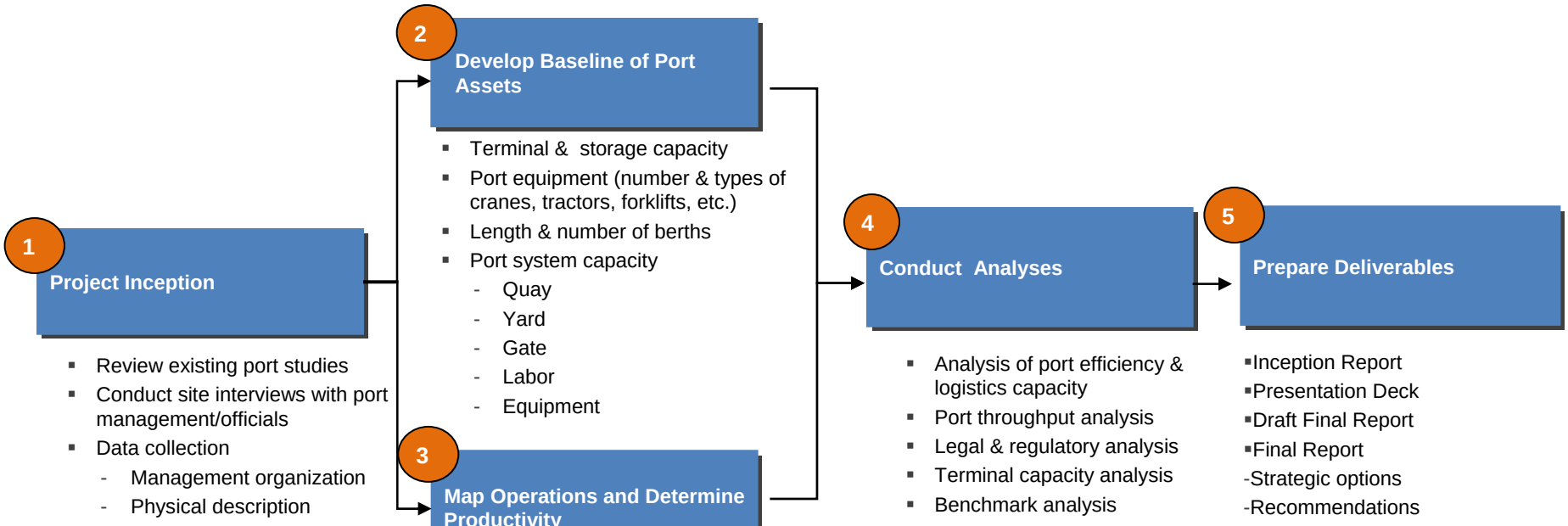
The objective of the port assessment was to determine the productivity and efficiency of Beira and Nacala Ports.

Assessment Scope

The scope of the assessment consisted of the following tasks:

- Review port technical studies
- Determine the port capacity and efficiency
- Determine port dwell time and identify any required legal and regulatory changes
- Establish the ports' fee structure and related charges
- Assess current and planned port development infrastructure
- Document on-going donor and government interventions

Our framework to evaluate the performance and efficiency of Beira and Nacala Ports consist of five-steps



- Review existing port studies
- Conduct site interviews with port management/officials
- Data collection
  - Management organization
  - Physical description
  - Port facilities & equipment
  - Operations
  - Port traffic
  - Planned Investments
- Inspect port facilities, equipment

- Terminal & storage capacity
- Port equipment (number & types of cranes, tractors, forklifts, etc.)
- Length & number of berths
- Port system capacity
  - Quay
  - Yard
  - Gate
  - Labor
  - Equipment

- Port Operations
  - Delivery
  - Storage
  - Transfer
  - Discharging
- Port Productivity (KPIs)
  - Cargo dwell time
  - Ship productivity
  - Ship waiting time
  - Cargo handling charges
- Traffic profile (Transit, Export & Import)
  - Containers
  - Dry & Liquid Bulk, Break-bulk

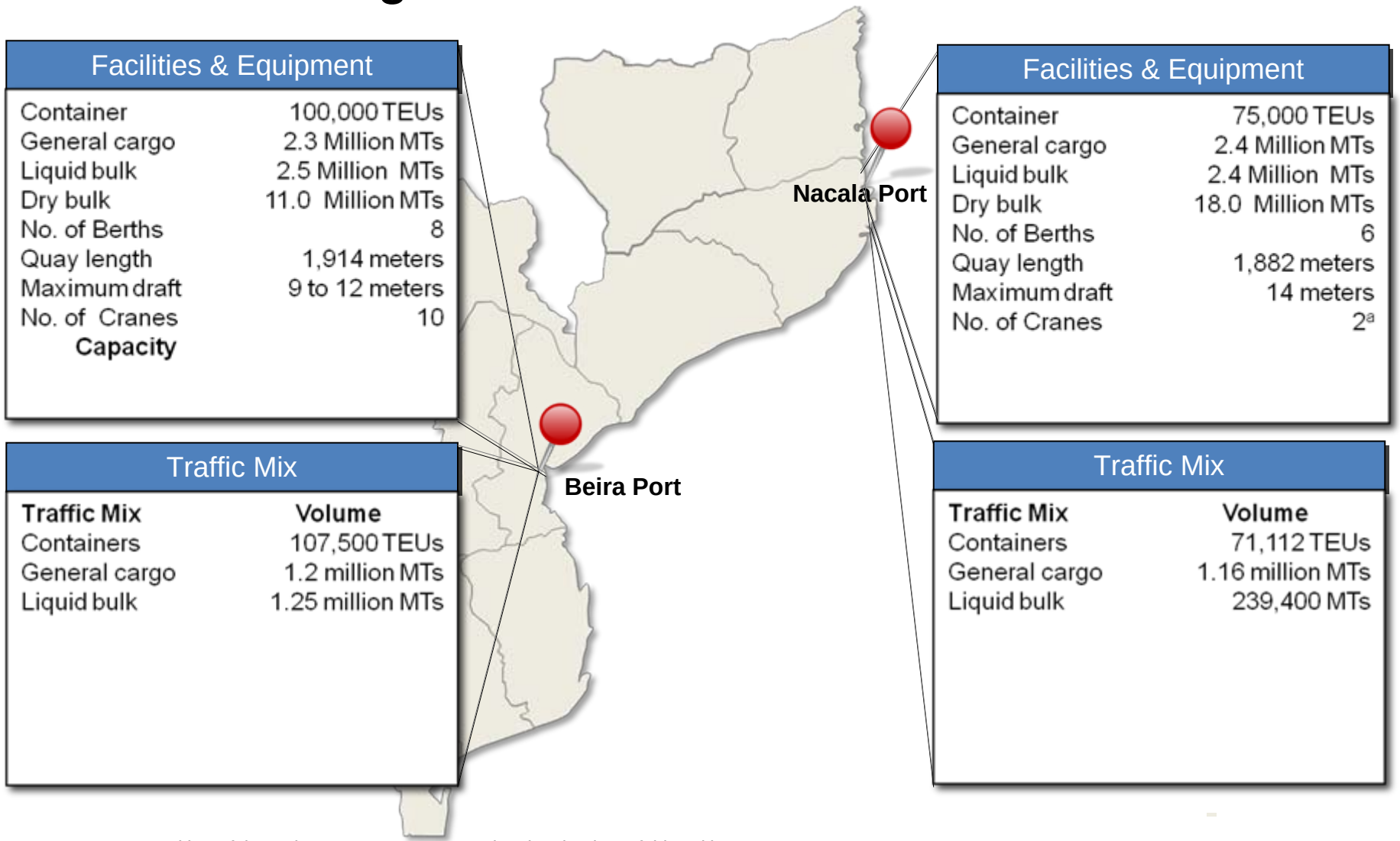
- Analysis of port efficiency & logistics capacity
- Port throughput analysis
- Legal & regulatory analysis
- Terminal capacity analysis
- Benchmark analysis

- Inception Report
- Presentation Deck
- Draft Final Report
- Final Report

-Strategic options

-Recommendations

Supply and demand characteristics of the Ports of Beira and Nacala at a glance



Note [a]: Neither of the 2 shore cranes were operational at the time of this writing.

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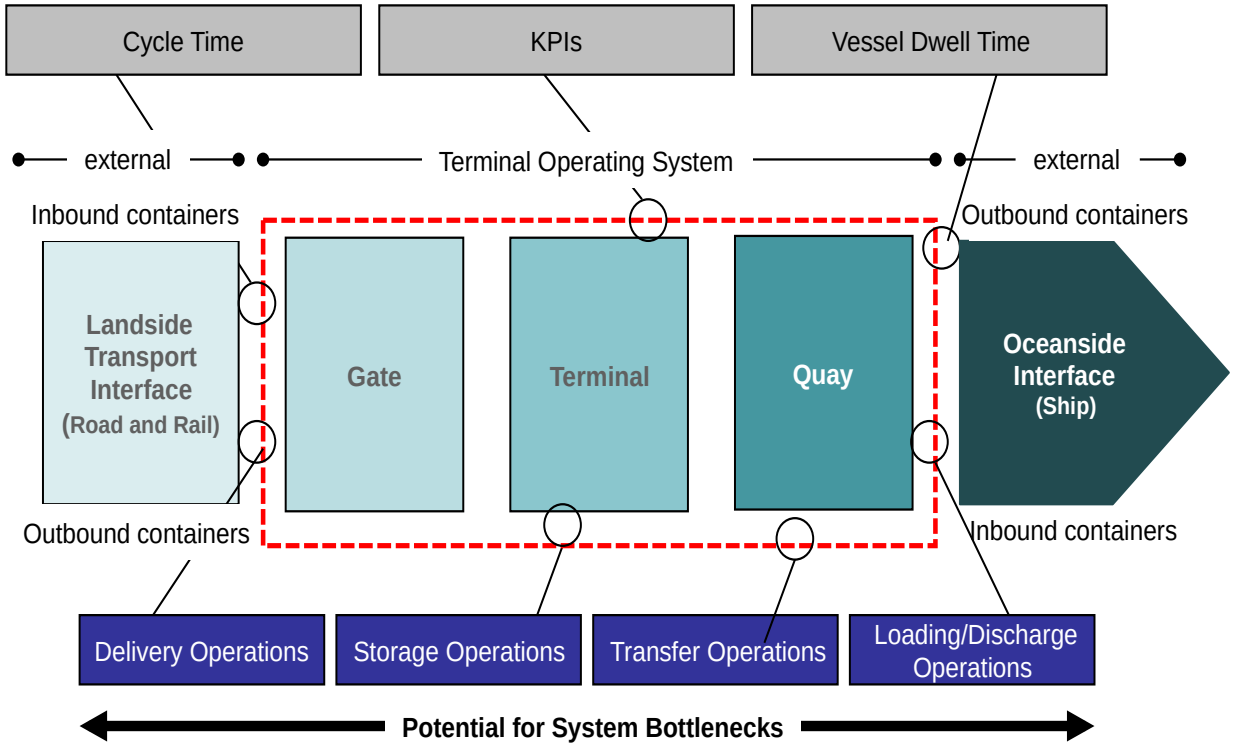
The assessment examines the two ports from three dimensions

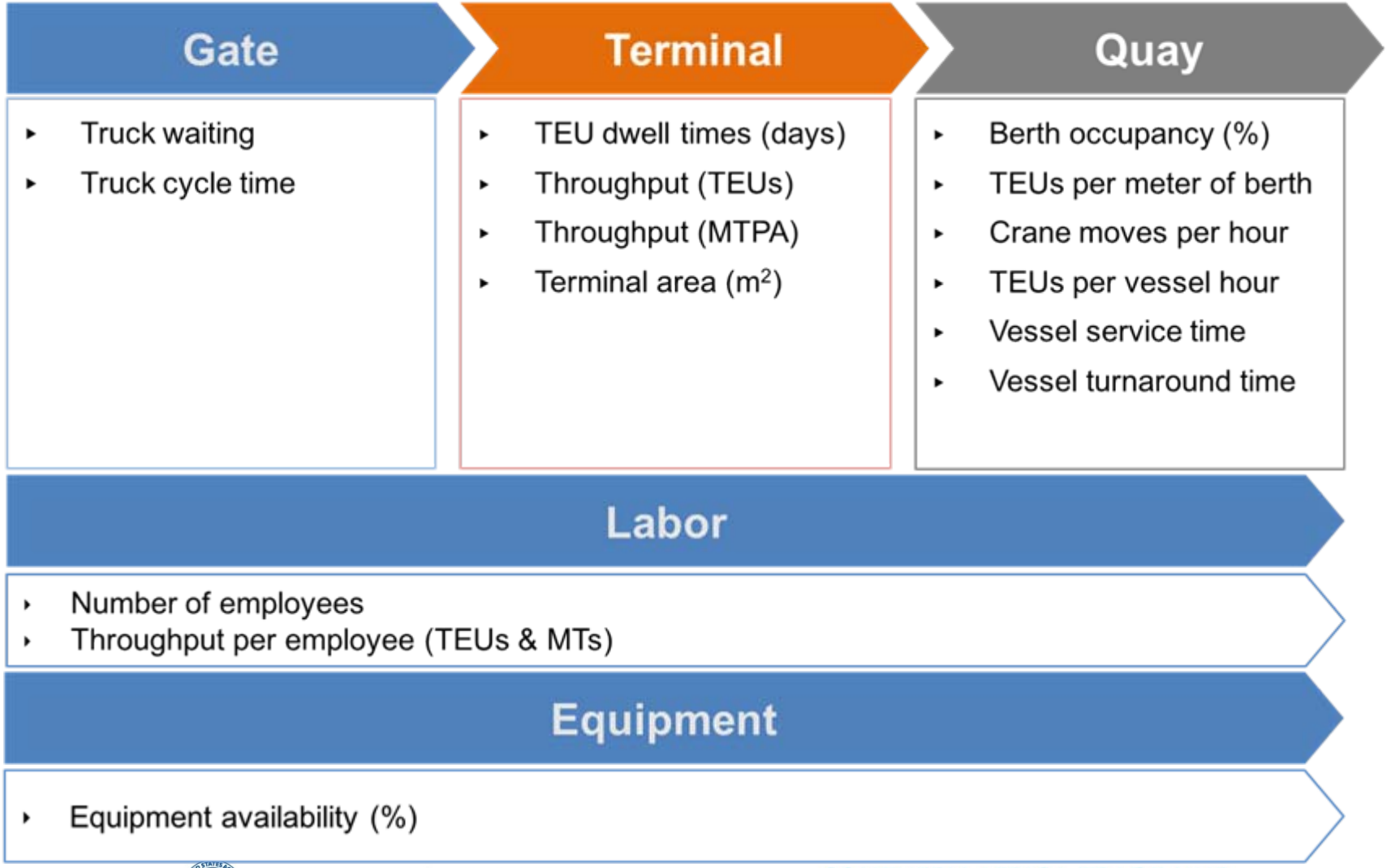
(i) The Gate
(ii) The Terminal
(iii) The Quay

Overarching these dimensions is a process analysis, which examines the movement of a container from the gate through to the container terminal and onto the ship and vice versa through the port

The key components of the container terminal operating system were assessed using our evaluation framework



Port efficiency and productivity were assessed using key performance indicators for a terminal operating system



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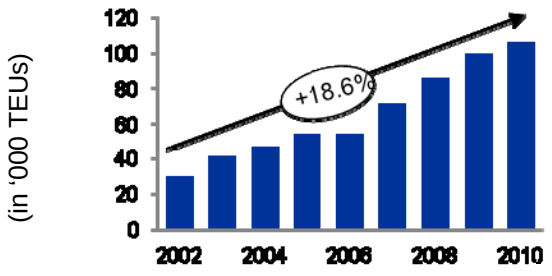
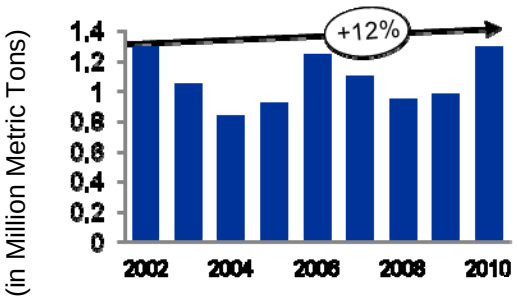
Beira and Nacala Ports have had a strong traffic base but is threatened by constrained capacity and inefficiencies

Beira Port

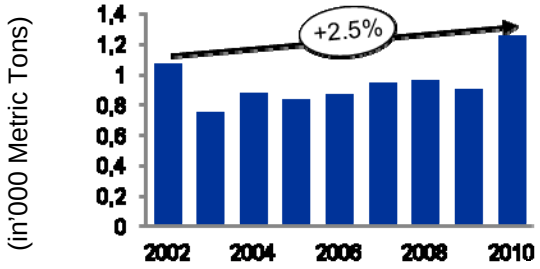
Container Traffic



General Cargo

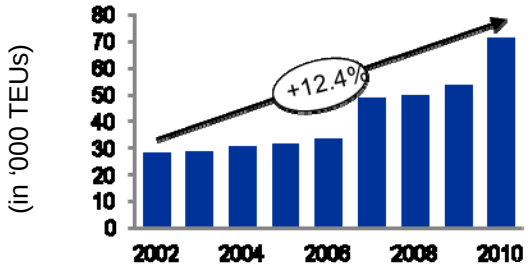


Liquid Bulk

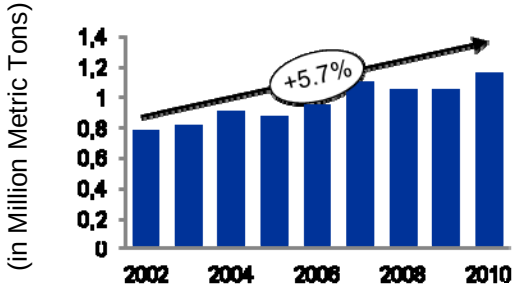


Nacala Port

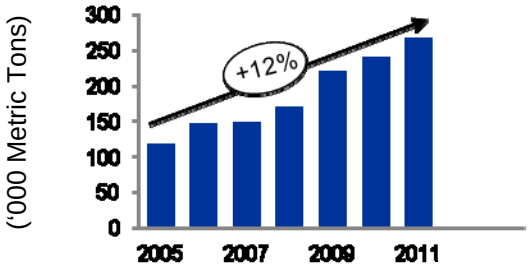
Container Traffic



General Cargo



Liquid Bulk



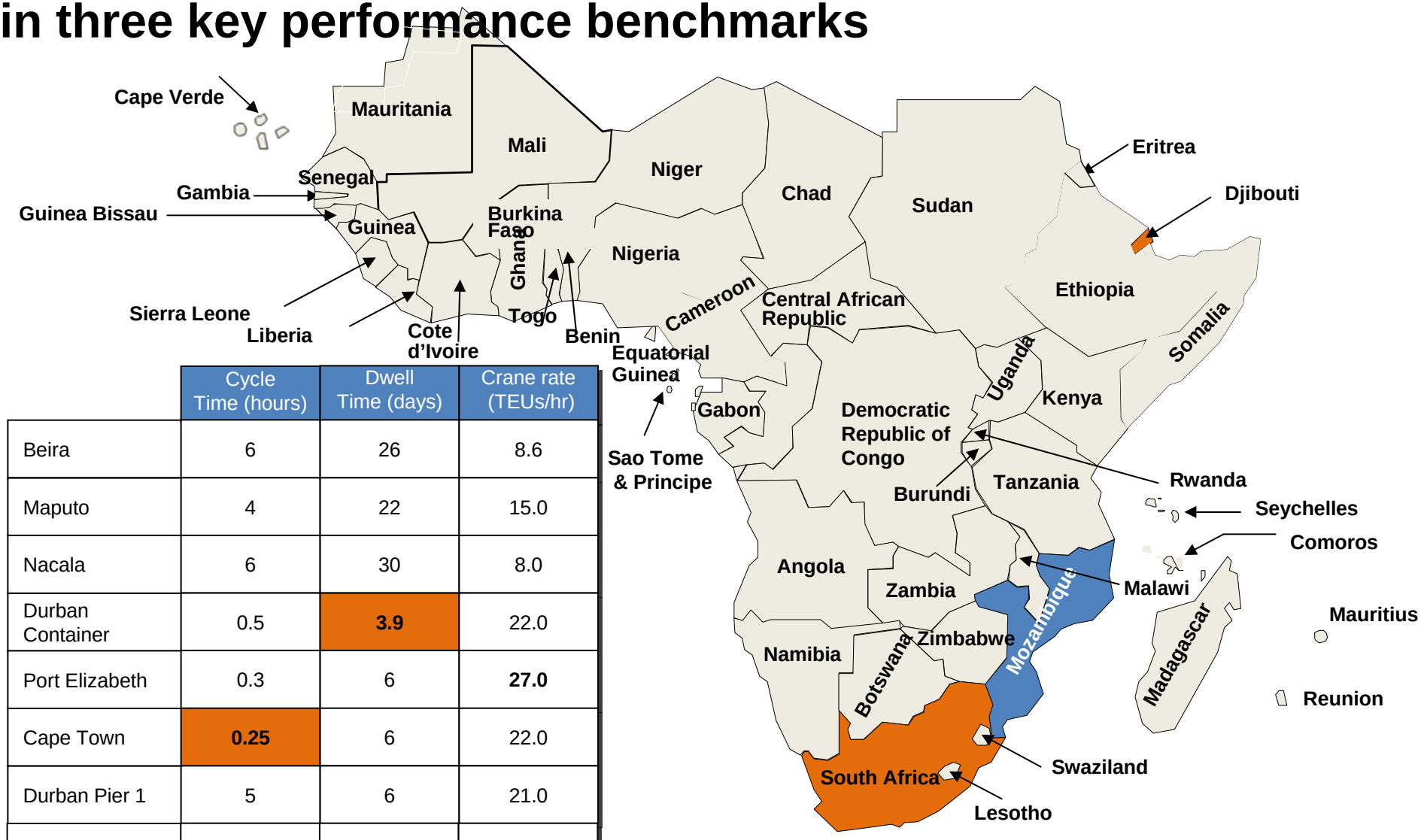
Source: Cornelder and CDN, Infrastructure Analytics analysis, 2012

The port performance map indicate Beira performed only marginally better than Nacala Port in a few key areas

Comparison of Port KPIs (2010)

	Beira Port	Nacala Port	
▪ Truck cycle time (hrs)	6.8	6.5	Inputs
▪ Crane moves per hr	8.6	8.0	
▪ Dwell times (days)	26.1	30	
Equipment availability (%)	77.1	33	
▪ Labor productivity (TEUs/employees)	192	299	
▪ Berth occupancy (%)	51.4	35.4	
▪ Ship arrivals	296	145	
Container ship arrivals			
▪ TEUs vessel hour (Net)	10.4	10.0	
▪ Containers (TEUs)	105,700	71,112	Outputs
▪ General cargo (million MTs)	1.44	1.155	

South Africa's ports outperformed Beira and Nacala Ports in three key performance benchmarks



	Cycle Time (hours)	Dwell Time (days)	Crane rate (TEUs/hr)
Beira	6	26	8.6
Maputo	4	22	15.0
Nacala	6	30	8.0
Durban Container	0.5	**3.9**	22.0
Port Elizabeth	0.3	6	**27.0**
Cape Town	**0.25**	6	22.0
Durban Pier 1	5	6	21.0
Mombasa	5	5.7	10.0
Djibouti	8	8	**28.0**
Dar as Salaam	18	19	19.0

"Best in Class"

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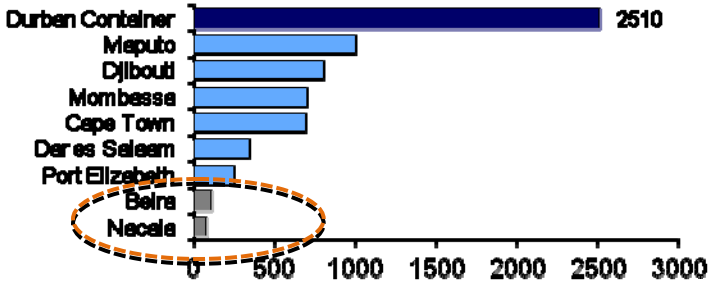
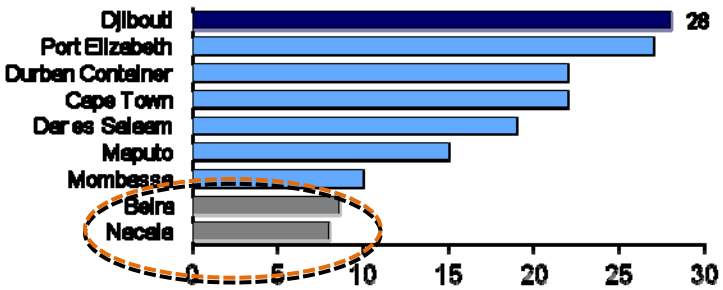
Peer comparisons indicate Beira and Nacala Ports underperformed in each of four benchmarks in 2010

Container Throughput



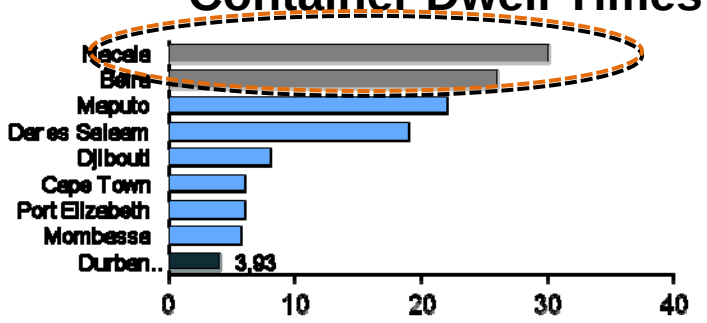
(in "000 TEUs)

Crane Productivity



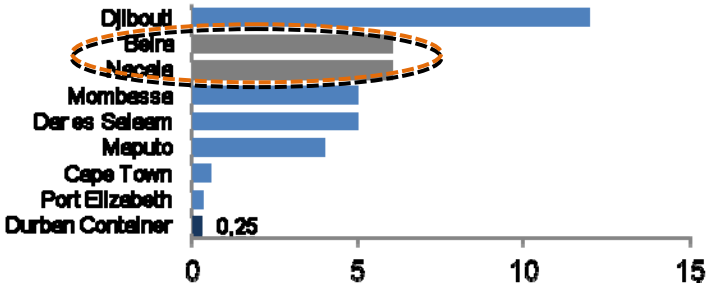
(in crane moves per hour)

Container Dwell Times



(in Days)

Truck Cycle Time



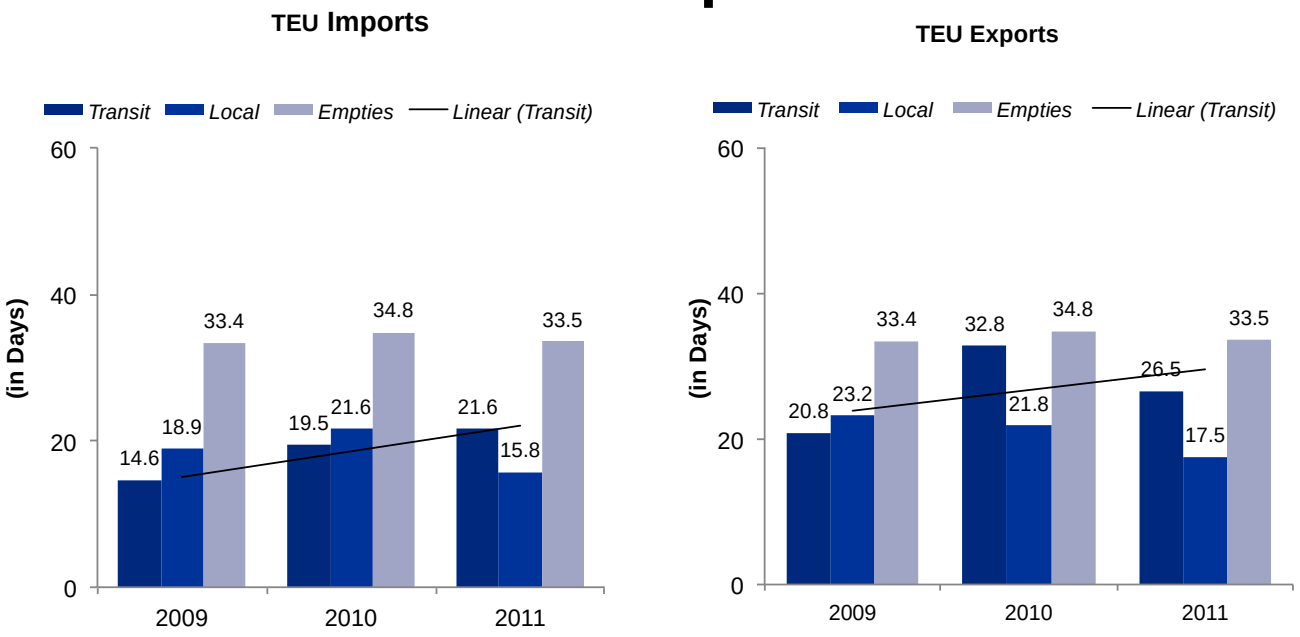
(in Hours)

Note 1: All data are for year 2010

Note 2: Navy blue bars represent "Best in Class"

Sources: Infrastructure Analytics analysis, 2012

High dwell times for transit containers at Beira Port continue to increased unacceptable levels



Source: CDN, Infrastructure Analytics analysis, 2012

Key findings:

- Local import and export TEUs show modest improvements but remain high at 15.8 and 17.5 days
- Repositioning of empty TEUs hampered by shipping lines preference for full containers
- Reduction in free days and increase in TEU storage costs are unlikely to reduce dwell times significantly because of price elasticity of demand

Dwell times for import transit TEUs are increasing.

14.6 days to

21.6 days

Dwell times for export transit TEUs are increasing.

20.8 days to

26.5 days

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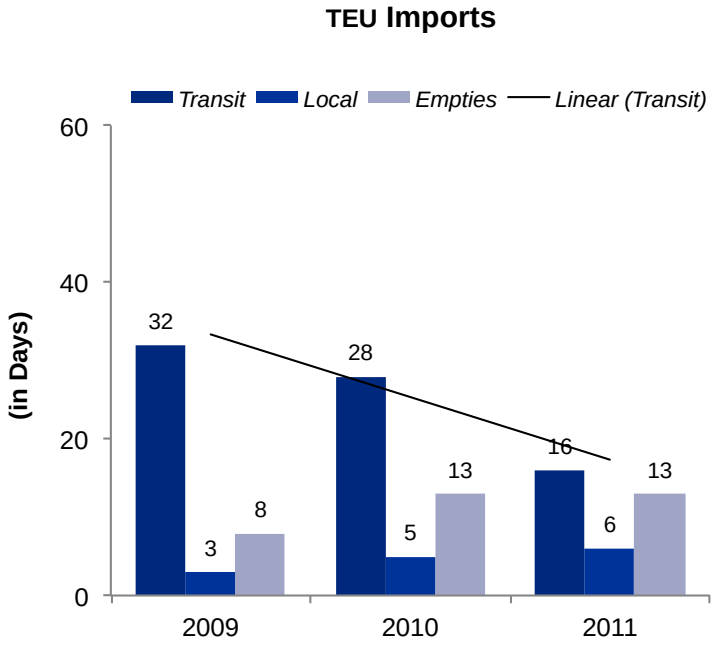
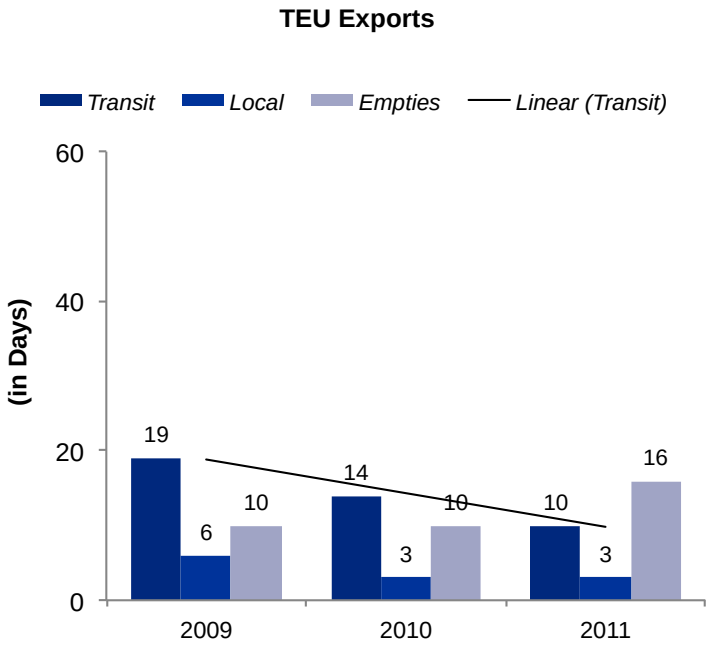
Dwell times for transit containers at Nacala Port are improving at a faster rate than local containers





Source: CDN, Infrastructure Analytics analysis, 2012

Key finding:

Dwell times for import and export transit TEUs have improved over the past 3 years.

Transit Imports

32 days to 16 days

Transit Exports

19 days to 10 days

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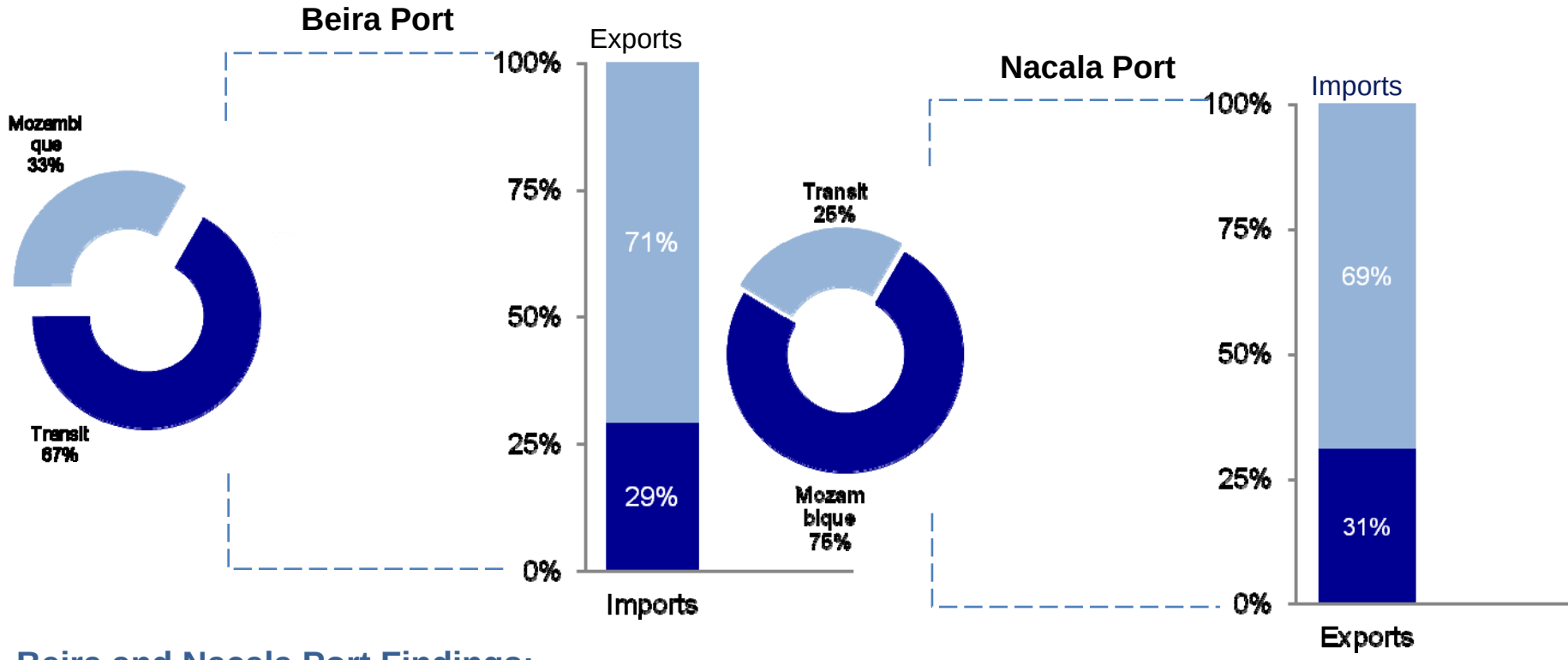
Dwell times for transit containers at Nacala Port are improving at a faster rate than local containers

A recent World Bank study of dwell times in several sub-Saharan Africa countries found that extensive dwell times were, in part, being caused by small firms using port terminals to store and manage their inventory

The long-run effects of such an operations strategy can be devastating for a port, because it is devoid of a vision for the port, lacks a coherent strategy and is unlikely to encompass a well conceived port development and investment plan to meet future port traffic demand or international competition.

Exports are driving container demand at Beira Port while imports are driving demand at Nacala Port



Beira and Nacala Port Findings:

Container demand driven by transit exports at Beira Port and national imports at Nacala Ports have accelerated in the past five years.

Exports

71%

Imports

69%

Source: Corneldor, CDN, Infrastructure Analytics analysis, 2012

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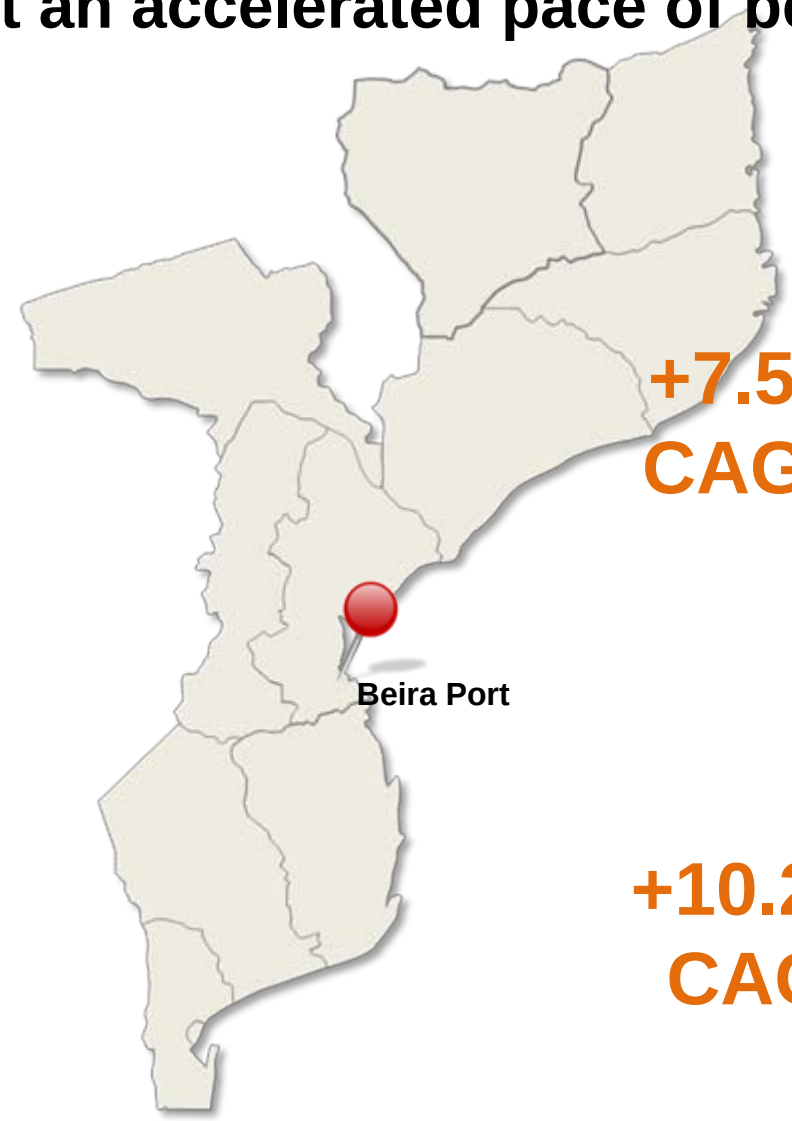
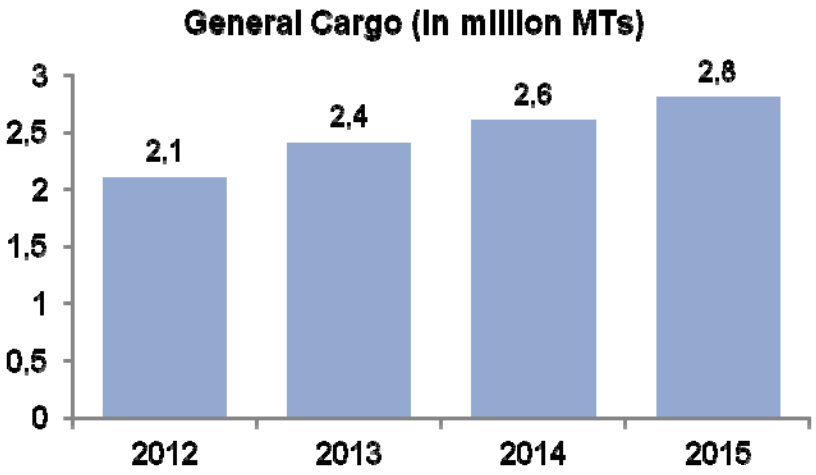
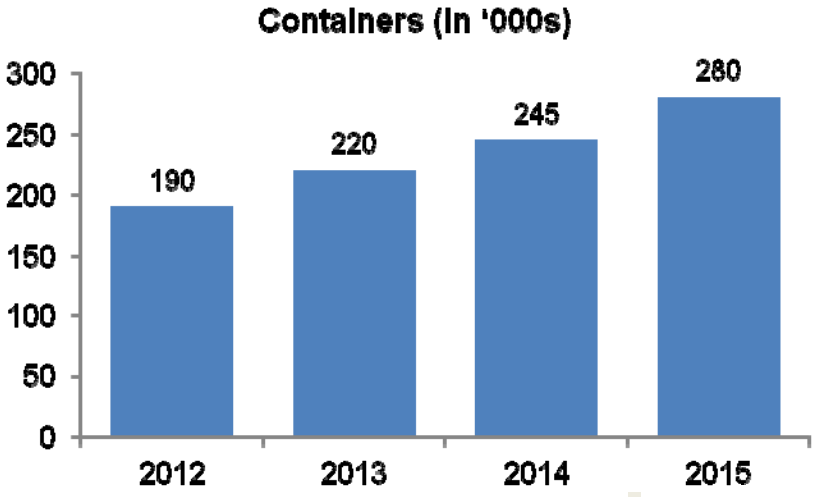
Beira Port's traffic mix over the next four years will grow at an accelerated pace of between 7.5% and 10.2 %



+7.5% CAGR



+10.2% CAGR



Source: Cornelder, Infrastructure Analytics analysis, 2012

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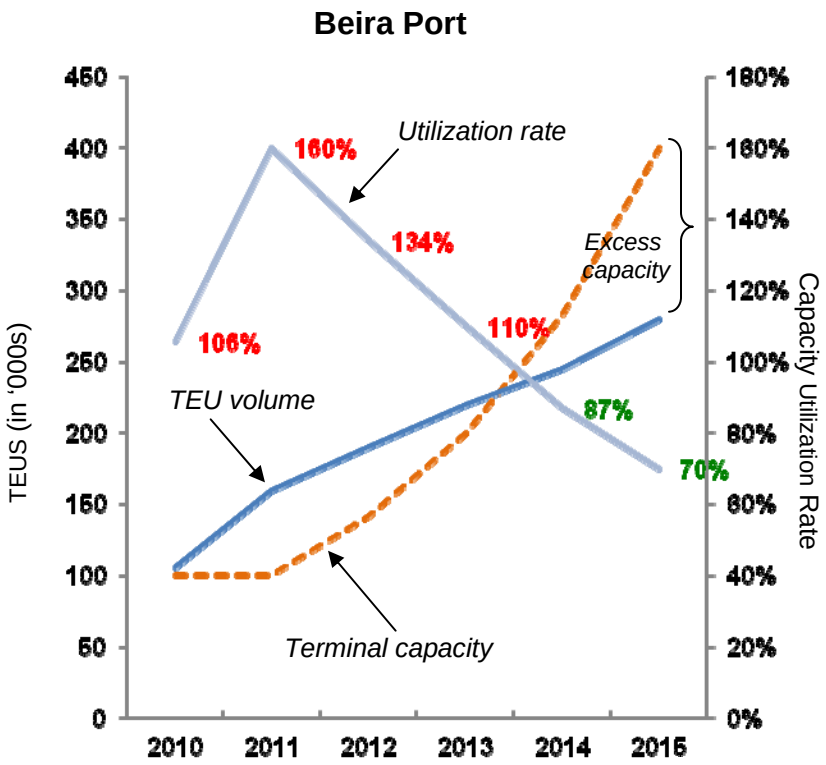
Beira Port's container terminal faces significant challenges in reducing its capacity utilization

Beira Port exceeded its container terminal capacity of 100,000 TEUS in 2010 when volumes reached 106,000 TEUs, and again in 2011 when container throughput was 160,000 TEUs. Demand for containers services is outpacing supply and won't begin to re-balance until 2014 as the port adds capacity.

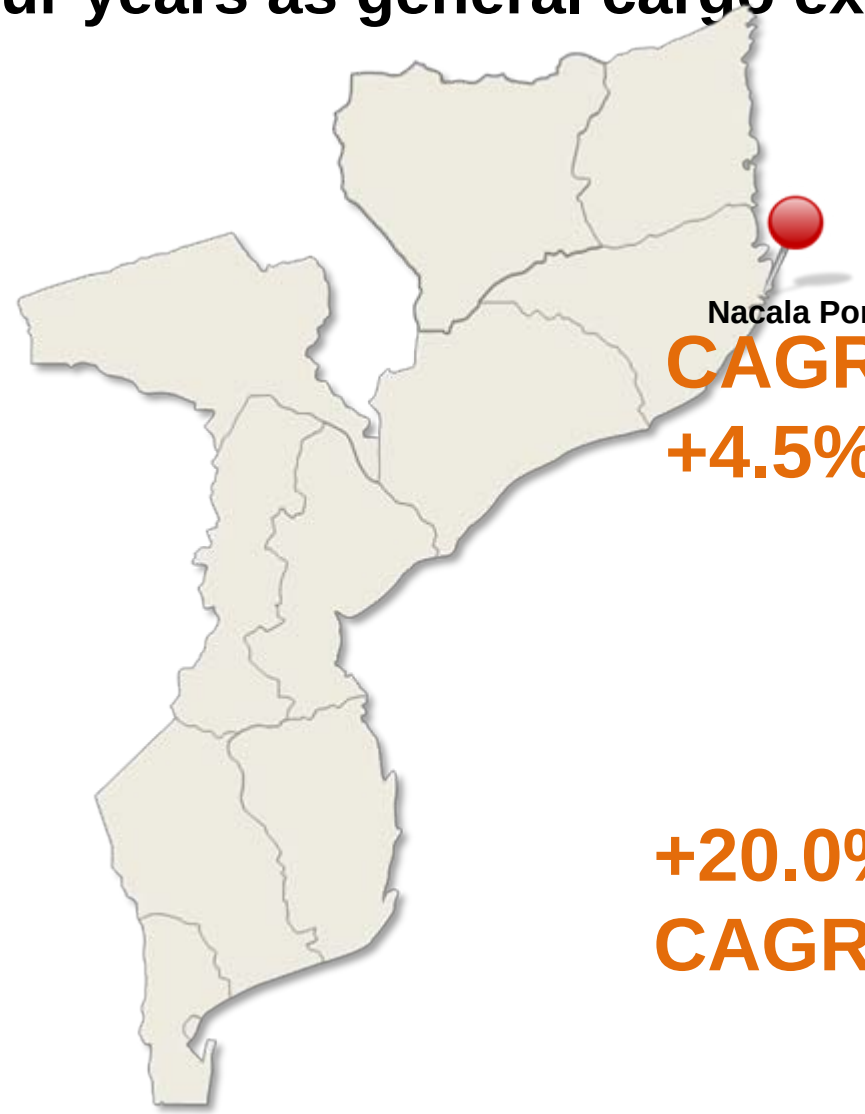


Beira Port Findings:

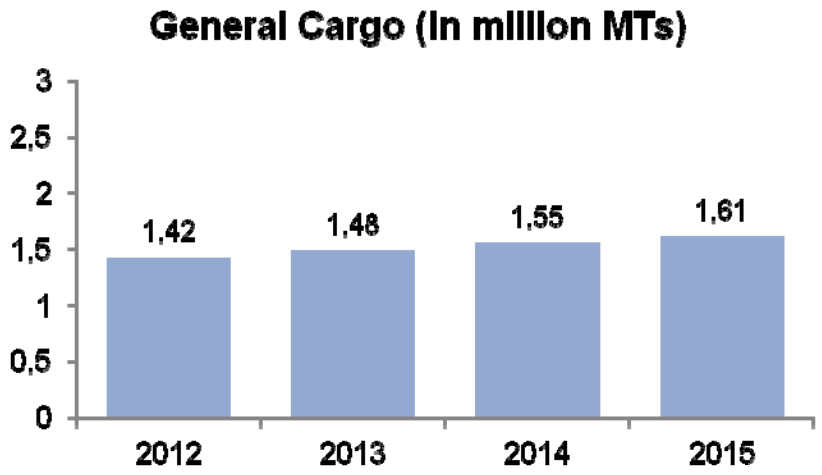
- **Demand for container services at Beira Port is projected to increase year over year at 10.2 percent to 2015**
- **To meet the demand Beira Port intends to expand its terminal capacity by an average of 75,000 TEUs per year over the next 4 years**
- **With the added capacity utilization rates won't return to acceptable levels (e.g. under 80 percent) until 2015**

Source: Cornelder, Infrastructure Analytics analysis, 2012

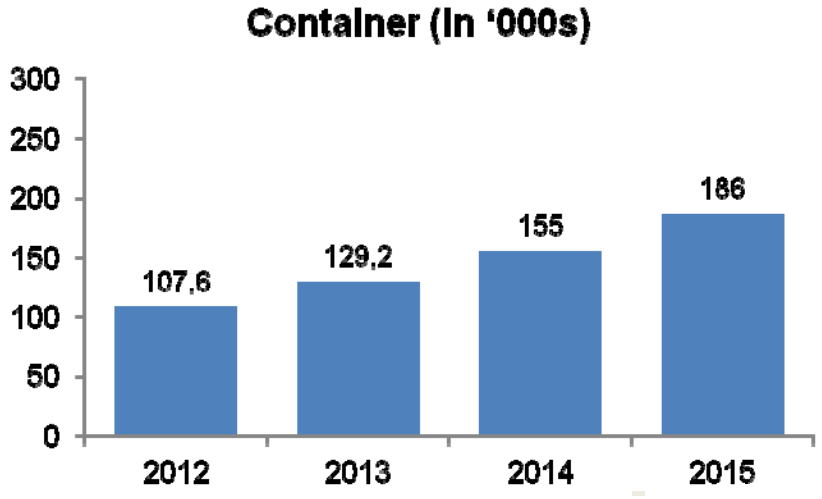
Nacala Port container traffic will grow at 20% Y/Y for the next four years as general cargo experience only modest growth



CAGR
+4.5%



+20.0%
CAGR



Source: CDN, Infrastructure Analytics analysis, 2012

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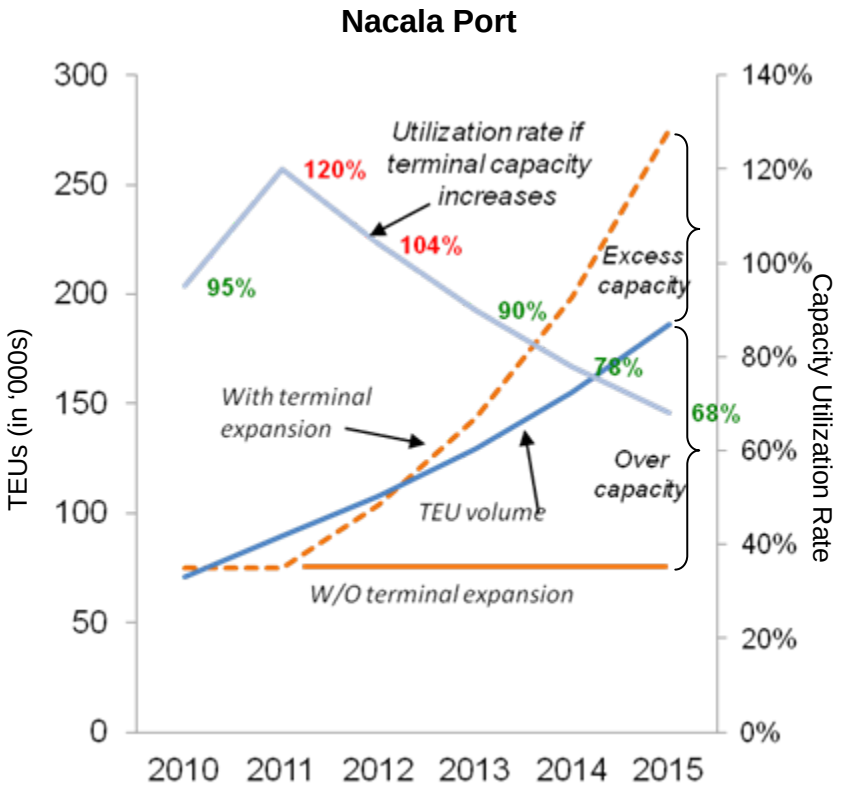
Nacala Port's container terminal demand has outpaced supply and will continue to unless capacity is added

" Nacala Port's container terminal capacity of 75,000 TEUs reached a capacity utilization peak rate of 120% in 2011." Demand for container terminal services at Nacala Port is outstripping supply and will continue unless urgent actions are taken to expand capacity"

Nacala Port Findings:

- **Nacala Port has no immediate plans to expand its terminal capacity to meet demand which will grow at +20% CAGR**
- **Without expansion of the container terminal capacity utilization rate will rise to 248 percent by 2015 which will constrain demand and induce port congestion.**
- **With expansion of the container terminal, capacity utilization rates will decline to 68 percent by 2015**



Source: CDN, Infrastructure Analytics analysis, 2012

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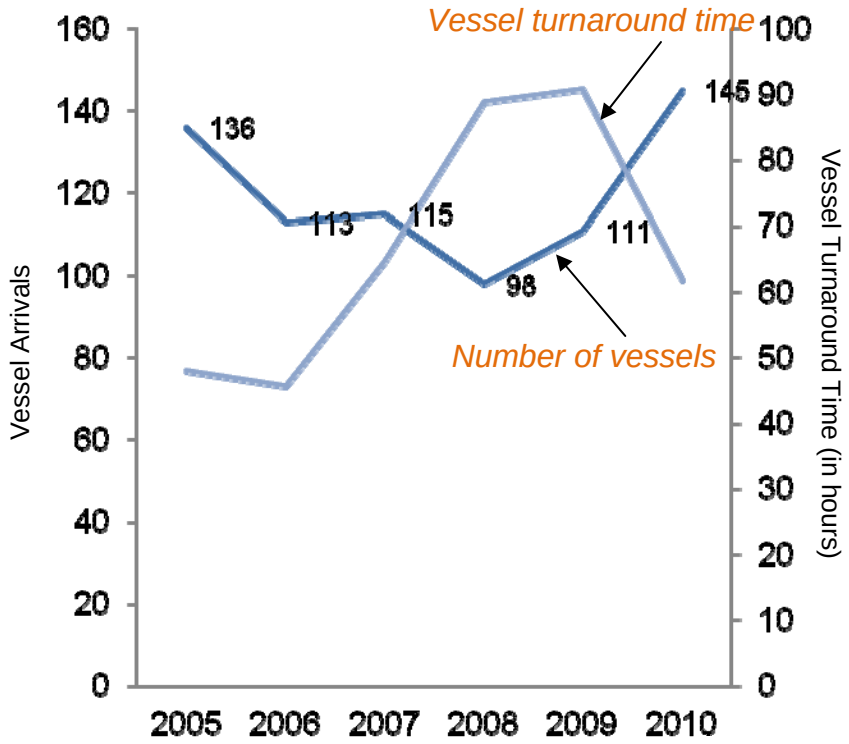
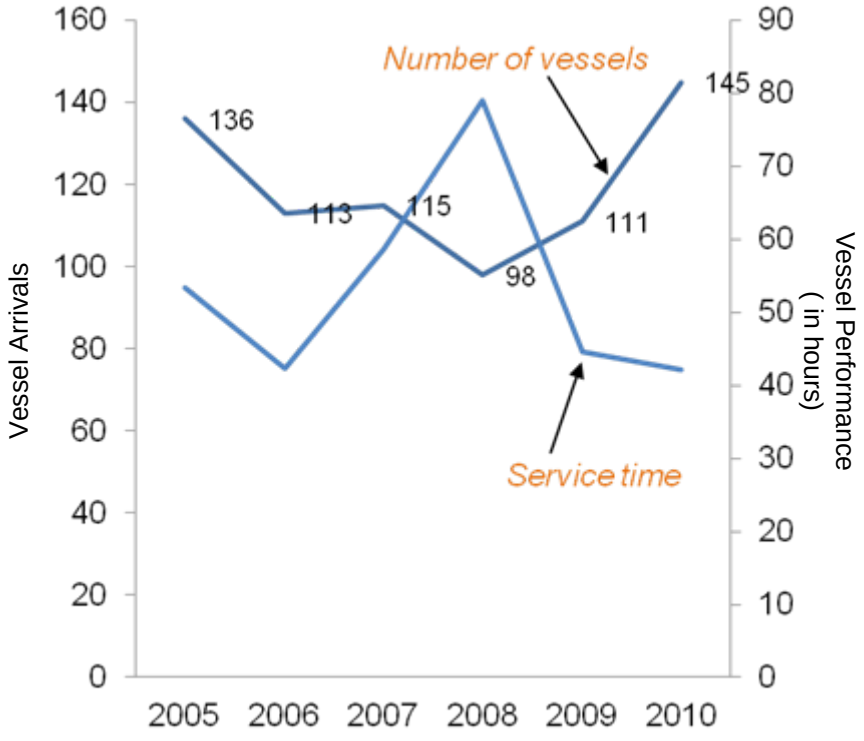
Vessel turnaround and service times have improved at Nacala Port over the past three years

Nacala Port Vessel Performance in 2010





Source: CDN, Infrastructure Analytics analysis, 2012

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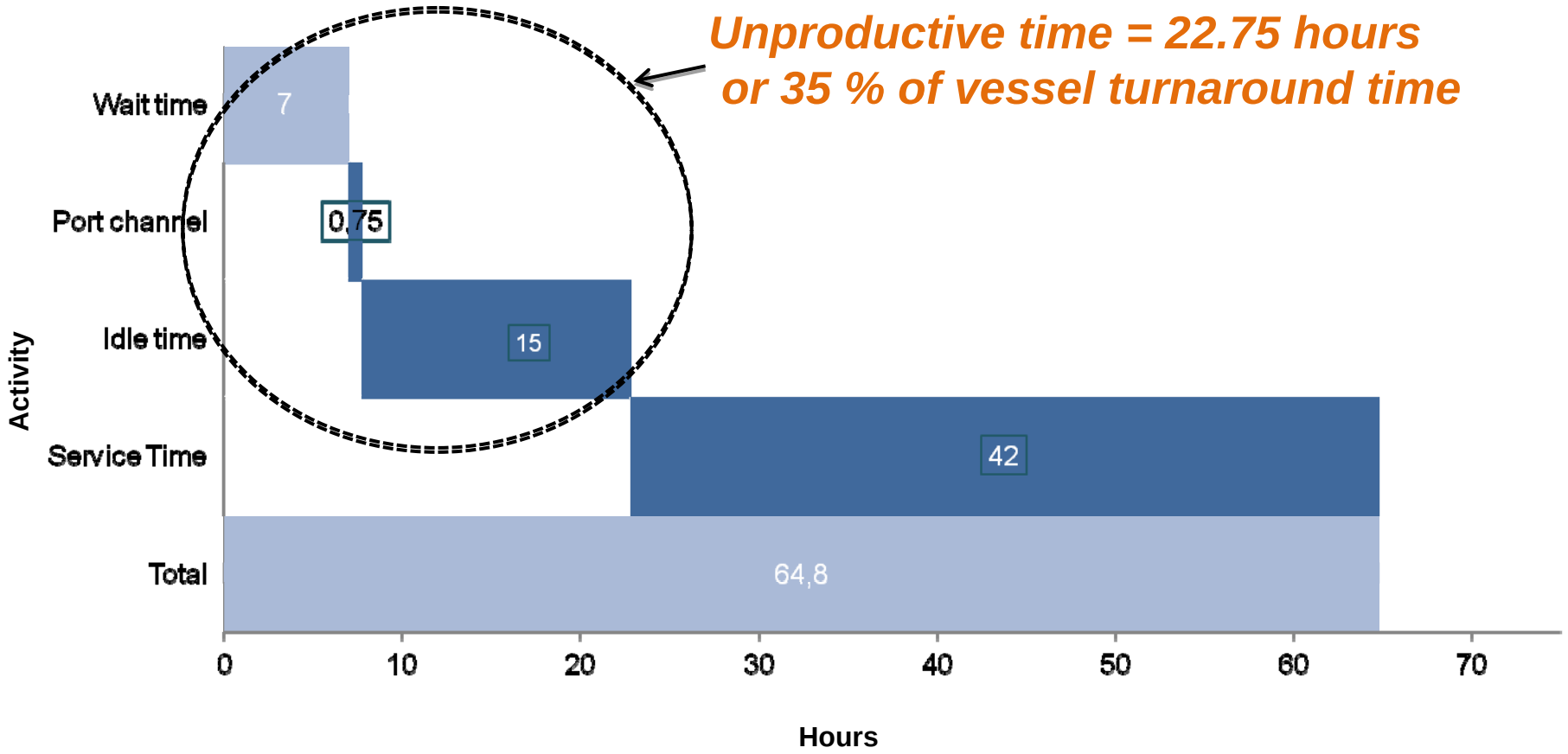
Excessive non-service time at Nacala Port increases vessel turnaround times



Source: Dickie, CDN, Infrastructure Analytics analysis, 2012

Beira Port's handling equipment and availability rates compare favorably to those of Nacala Port

Equipment availability rate comparison by port:

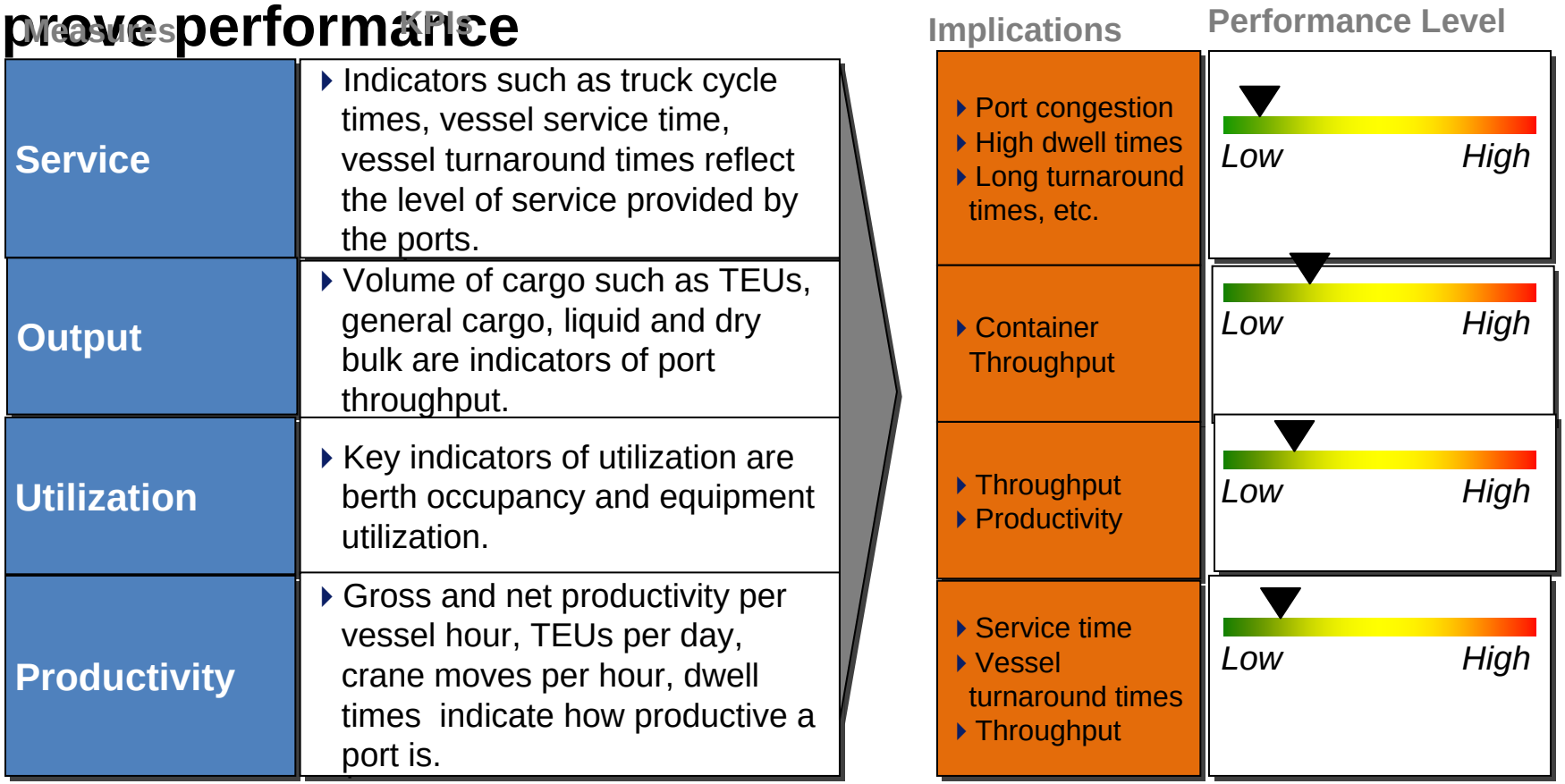
Factors contributing to low productivity and port inefficiencies:

- Reliance on ship's gear due to a lack of equipment
- Low equipment availability rate

Nacala Port	Beira Port
<35%	**77%**

Nacala Port lack adequate equipment to support its handling operations. The equipment the port has is consistently unavailable almost 65 percent of the time. This situation adversely affects the port's productivity and efficiency and produces a spiraling down effect, whereby its stacking, loading and discharging capacity is reduced.

Beira and Nacala Ports' weak KPIs indicate unsatisfactory service levels and areas in which to improve performance



Source: Infrastructure Analytics analysis, 2012

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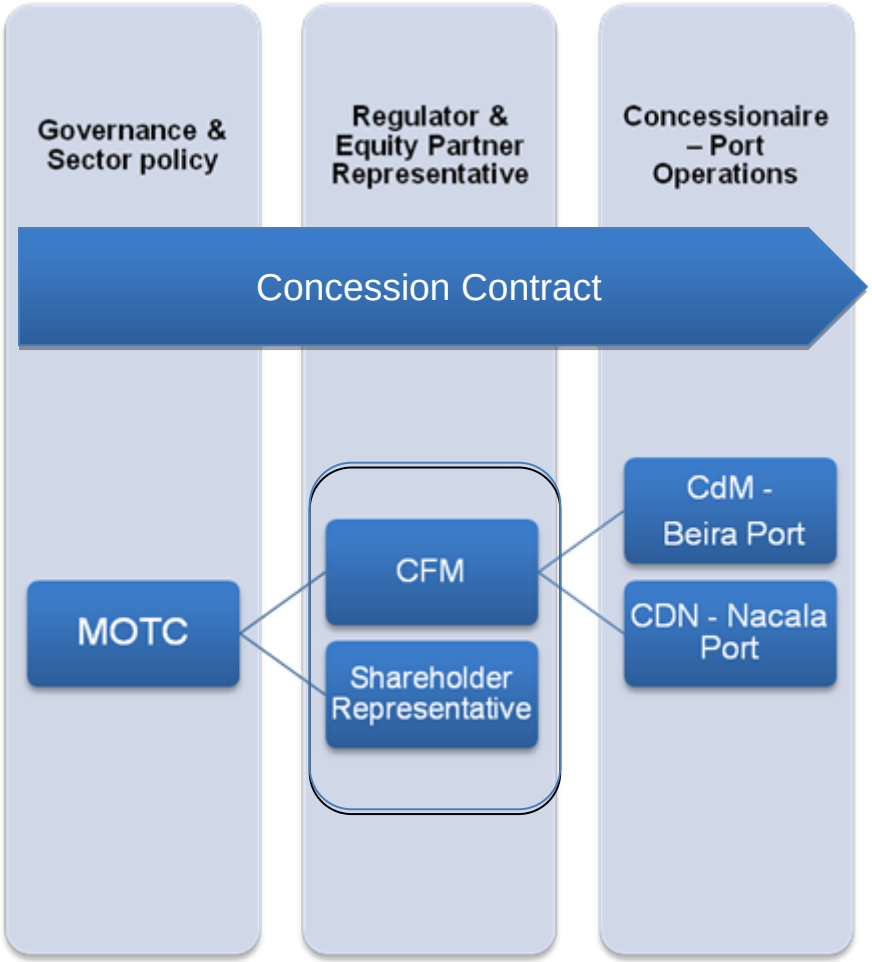
Performance at Beira and Nacala Ports is not adversely affected by the current legal and regulatory framework

Summary of Findings

- MOTC has responsibility for governance, legal and regulatory issues, and sector policy
- CFM provides regulatory oversight and represents GOM under the terms of the concession agreement
- Beira and Nacala Ports operate under concession agreements between the GOM and private companies
- The ports are regulated by the concession contract and no independent port regulatory structure exist
- Sufficient legal authority exists for the concessionaires to operate the ports as they see fit, including tariff and rate setting; managing operations, especially dwell times, and investment decisions-making

Legal and Regulatory Framework



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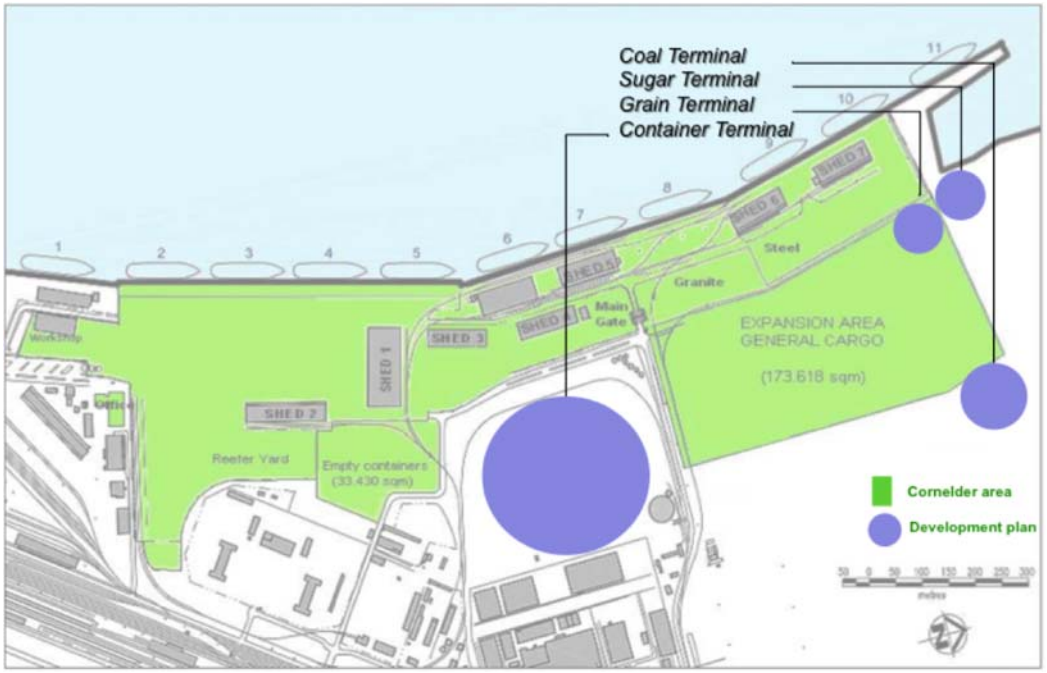
Beira Port's development plans address both future traffic mix and terminal capacity requirements



Development Plans

Container Terminal

- Capacity: +300,000 TEUs by 2015
- Status: Under construction

Coal Terminal

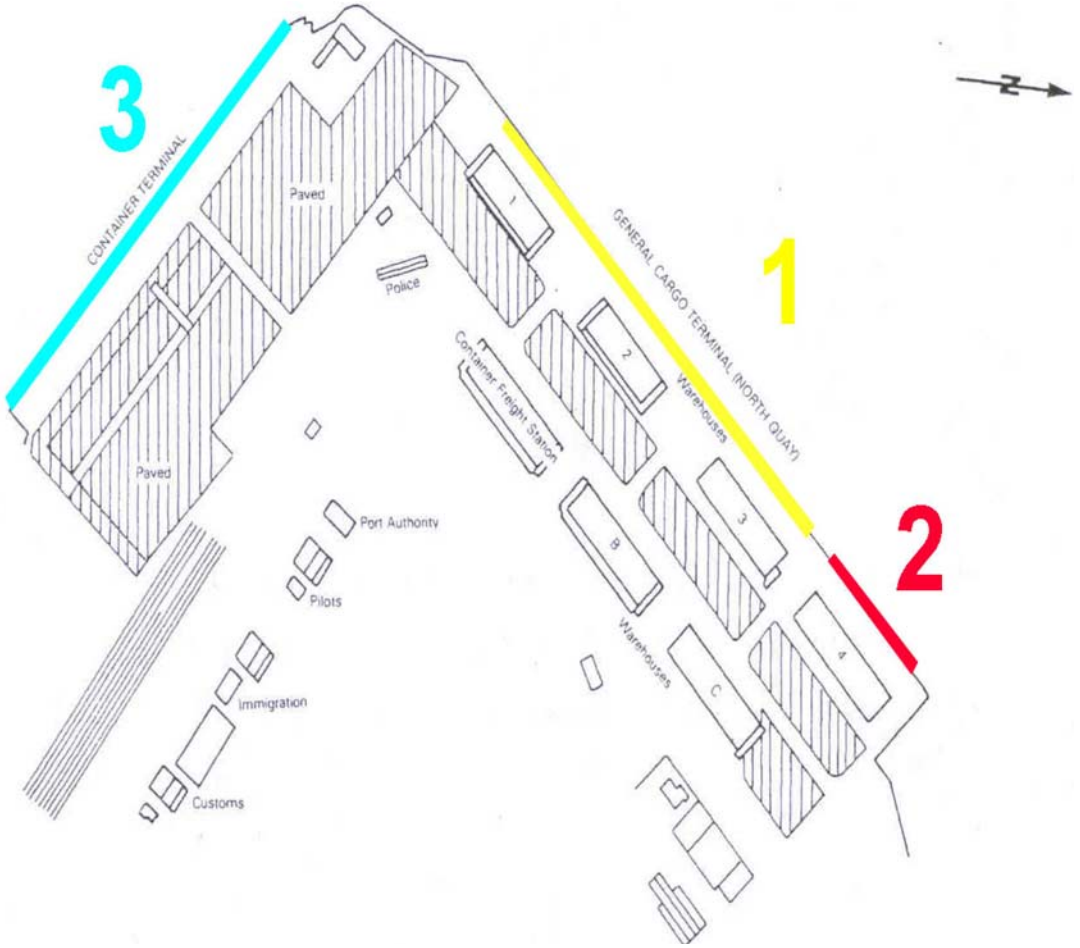
- Capacity: 5,000,000 MTPA
- Status: Completed

Sugar and Grain Terminals

- Sugar terminal capacity: 300,000 MTPA
- Status:
- Grain terminal capacity: +30,000 MTPA

Nacala Port is in transition and future development of the container and general cargo terminals is uncertain

Nacala Port's development plans with the exception of the coal terminal are uncertain due to a recent change in ownership…



Nacala Port findings:

- Likely strategy for the near-term is switching the general cargo terminal to the container terminal to allow larger coal vessels to berth
- Berths at the container terminal has a 14 meters draft versus 7 to 10 meters at the general cargo terminal.
- New export container terminal will impact the demand for port storage

THE END

Thank you