ORIGINAL

25 Year Ports Development Masterplan. Final Report.

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1. INTRODUCTION

The year 1906 was symbolic in the evolution of port reforms in Nigeria. That year, the Nigerian marine was created. Apart from the heavy reliance on the seaports which was obvious after the country became independent in 1960, there was the need for the indigenization of the port industry. The marine as it was popularly known, emerged as the first port reform to initiate port administration in the country. The Marine existed for about 48 years before it metamorphosed into Nigerian Ports Authority (NPA) in 1954. The enactment of the NPA in 1954 was the first major attempt at forging an integrated national approach to ports administration and terminal development. This was the situation until 1988 when new political economic thinking of privatization and commercialization focus of the military administration restructured the Authority to Nigerian Ports Plc in 1992.

This was later reversed to Nigerian Ports Authority in 1998. It represents a reform strictly limited to change of name. Essentially, the port reforms and evolution in Nigeria can be classified into four major phases as shown below (1906 to 1954 phase, 1954 to 1992 phase, 1992 to 2004 phase and 2004 Till date, phase of the concessionaires/PPP).

The development of any country to a very large extent hinges on the performance of its international trade, as this is the principal generator of overall economic growth.

Domestic and foreign trade is impossible without efficient transportation to convey the goods. Maritime transport is appopriate for transportation of large volume of cargo. With 80% of the volume of international trade transported by sea and with an annual growth rate of 5% over the last few years, maritime transport industry plays a crucial role in international supply chains. The increase in business complexity resulting from companies diverting into foreign markets and globalizing their supply chains and material sources has led into many ship owners specializing in value-added activities

The emergence of new shipping companies has necessitated the establishment of more seaports to accommodate the growth A need to develop a reliable and guiding legislation will ensure a successful relationship between the seaports, private companies and the ship owners. Presently, Nigerian Ports Authority is acting as both the regulator and the landlord pending the enactment of the Ports and Habour Authority and National Transport Commission Bills before the National Assembly.

As of today, the following areas of regulations have been observed and identified: (1, Financial (Lease and throughput fees Art. 3.4). Facilities has not resulted in the lease fees accruing to it, as same was projected on the old state of the facilities. 2, Economic (to check rates chargeable by the Lessee Art. 6.9 (f). 3, Technical (Oversee Infrastructural Development plans, plants and equipment acquisition by terminal operators Art. 4.2 (b). 4, Safety and Security (To provide safety guidelines for Lessee compliance Art. 8.2 (a)(b), To provide regulations governing waterside safety Art. 9.5(ii). 5, Fire control (NPA to provide guidelines on fire control) Art. 8.2. 6, Marine (Power to coordinate marine activities i.e. pilotage, mooring, vessel management). 7, Land (general responsibility for overall port planning and development, power to issue licenses', grant approval to Lessee to access other property, use of common user areas Art 3.5 and 3.7). 8, Human Resources (Monitoring of the Human Resources Development of the Lessees). 9, Environment (Control waste Disposal by Lessee) Art. 8.3(b).) And looking at the perspectives on reliability, (Section 3.3.4. of the CPCS report states Reliability factors include accuracy of scheduling, consistency of transit times (as per schedule) and on-time delivery, the safety/security of cargo

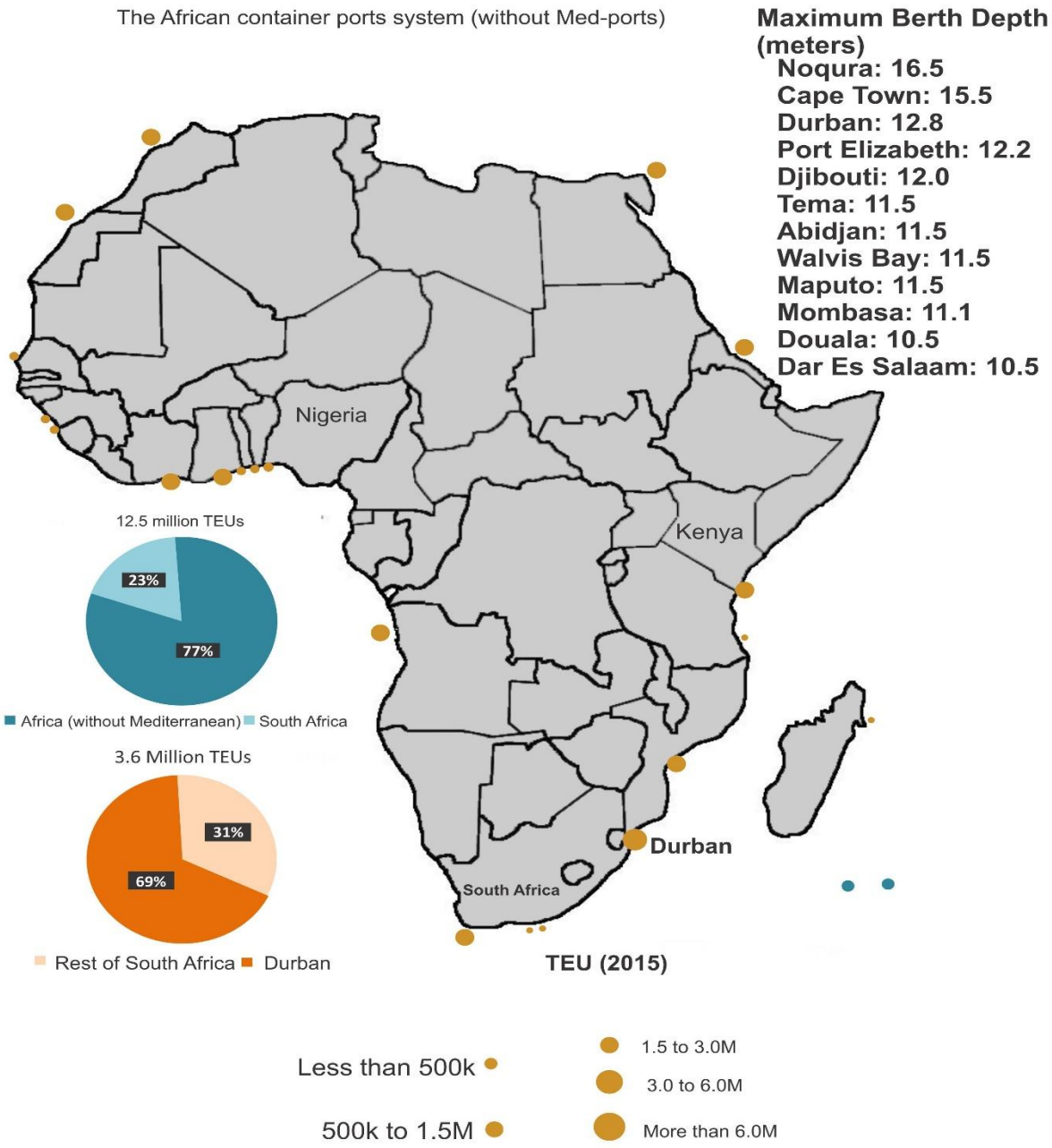


Figure 1: The African container ports system (without Med-ports)

Source: Data Compiled by Consultant from Containerization International and Port Authorities (The Competitiveness of ports in emerging markets)

Figure 1. The African Container Ports System. Source : Data Compiled by Consultant From Containerization International and Port Authorities. (The competitiveness of Ports in emerging markets).

(minimum damage, preserving product integrity, theft), and other related factors. These factors are more so contingent on the performance of shipping lines, terminal operators, trucking companies, etc). Section 3.3.4 further states (Although firms operating in Nigeria have a higher tolerance for insecurity than their counterparts in other West African countries, the security of their cargo nevertheless remains a significant area of concern).

2. BRIEF BACKGROUND OF THE MASTERPLAN

Analyzing the Nigerian Port Authority Administration Model prior to the Master plan.

The ports statistics indicated operational increase between 1970 and 1995. Based on the initial series of studies, government in that line made efforts to improve the services and revenue yielding potential of the Nigerian Ports Authority. Following the breakdown of the Port's sequential growth, it was none the less an inevitable and significant development strategy for the organization.

2.1 INITIAL CHALLENGES

- Rapid Economic Growth
- Globalization
- Containerization
- Changes in vessel sizes & architecture.

- **IMPERATIVES FOR THESE CHALLENGES** :
  - Increased Capacity
  - Efficient service
  - Minimal Cost

Regulations and policies are often seen as breaking away from traditional practices which again can be described as reforms. The concept of reforms identified the applications of it in a holistic and or sectoral manner. Meaning that a particular reform measure may be directed to a single objective and or multiple goals. In the case of ports operation and terminal management, reforms are target or specific oriented. Such targets however may be sectoral and or holistic. Irrespective of the desired goals of the reforms and the manner it is designed and implemented, the anticipated goal is to ensure that the reforms will be capable of achieving sustainable and better improved port operations and terminal management than the existing level of operational performance without which the essence of reform will be defeated and uncalled for.

The history and evolution of port reforms in Nigeria is not recent. The global ports that set themselves up to compete as transshipment hubs need to continue to offer rapid berthing; rapid vessel turn-around; increased capability to handle larger vessels; on-dock storage; great links to nearby terminals and free trade zones; operational visibility as well as excellent customer service. At present, only eight ports in the Asia community (five in China) and about five in Europe can handle a 19,000TEU Capacty container vessel that are nearly 400meter in length. The world's largest container port – Shanghai – has grown nearly 400% since the turn of the century to handle in excess of 35m TEU by 2015. The question of compliance lies in the multitude of ports coalition for the purpose of the same project and operations. The recent enforcement of the World Trade Organization Trade Facilitation Agreement on 22nd February, 2017, with 164 members is a landmark achievement for the World Trade Organization (WTO)and a major milestone for the global trading system.

REACTION THROUGH PORT EXPANSION PHASE (1975 -1980) :

- 3RD Wharf Extension, Apapa (1977)
- Tin Can Island Port (1977)
- (Initial Turning Point) Technical Committee on Privatization and Commercialization.
- Port Infrastructure/Facility Upgrade

FLT TRANSFORMATION 1985

FLT TRANSFORMATION 2013

Figure 2. FLT Transformation (1985-2013). Source : NPA Data.

- **DECREE 25 OF 1988 AND ITS OBSERVATIONS :**
  - Large Organization
  - Unwieldy Operation
  - Lack Of Commercial Orientation

Nigeria is a consumer nation with a very limited export sector (notwithstanding oil and gas exports); in recent years, the ratio of containerised exports to imports has been less than 1:15. Exports are largely comprised of commodities such as charcoal, metals, cocoa beans, sesames, steel, cotton, cashew nuts, rubber, etc. The analysis of port capacity as a catalyst to economic development through export commodities revealed that about 90% of container traffic left the shores of Nigeria empty. This fact underscores the need for the Nigerian Export Promotion Council (NEPC) to encourage Nigerians to fill this gap through export commodities, especially Mines, value added exports and agro-allied products.

(2, Based on meetings with the NEPC, there is a clear indication that the Port does not have access to a simple Cool Chain System facility. No good road and Warehousing Infrastructures for storage. Single window system is not fully effective. There is Cumbersome documentation. No rationale examining export cargo. All areas of quality control/Standardization needed be done at the manufacturing point before goods are transferred to the Ports (NPA). There is disconnection between NSC (Nigerian Shippers Council) and NPA. There is the need for streamlining the relationship between NSC and NPA. Harmonization of operation will be unique to Exportation and perishable goods must be assessed as the cargo e.g. fruits etc. are seasonal. The provision and utilization of the EnviroDome Ventilation Greenhouse Systems is very necessary for the cultivation of perishable and seasonal goods meant for exportation And reefer points needs constant electricity to generate viable output optimally. The area of Advocacy is very essential in the area of bringing regulatory agency with interfacing with the exporters thereby enhancing Exportation. Identification of breaking the Nigerian Economy to regional levels land allocations. Different state identified with a product where they have a comparative advantage. To this regard, an analysis on Cocoa production and Exportation was mentioned as follows: Ivory Coast I million tonnes, Ghana 600,000 tonnes and Nigeria 500,000 tonnes is the present trend. Warehousing, Rail line and

interconnectivity networks of the million tonnes of cargo to be harmonized. For NPA to be able to engage the timely movement of Export bound cargo out of the ports, they will engage in Automation/Electronic operations.)

(3, Section 3.3 of the masterplan report states certain commodities may be perishable (e.g. groceries, agricultural produce). Where this is the case, shorter transit times are typically of the utmost importance to preserve freshness, etc. Other factors such as costs related to financing and insuring imports/exports can also be influenced by transit times..)

- **Its Recommendations :**
  - Incorporation for private sector orientation
  - Zonal structure for decentralized control
  - Establishment of subsidiary companies – Seaview Nig. Ltd. and Continental Shipyard
- **Fragmented Implementation :**
  - Reversal of Policy
  - A renewal effort

The level of interest generated by port reforms is as a result of the increasing complexity, popularity and growth of shipping and cargo activities in the maritime sector, unlike the situation prior to independence in 1960. The Nigerian Port Authority was established as a continuous Public Corporation by the Ports Act of 1954 to address the institutional weakness that bordered on lack of coherent policy framework as port development were done on ad hoc basis driven by changes on the level and demand of sea-borne trade.NPA is wholly owned by the Federal Government of Nigeria under the supervision of the Federal Ministry of Transport. It has the responsibility of providing specific seaport and harbour services for the country's Maritime industry.

This research shows that distortions in port operations is by no means limited to infrastructure inadequacies and this report looked into the Port's background, strategically researching past issues in sharp contrast to the contemporary issues with improvement in information, communication technology facility and quality of infrastructure emphasizing on the port performance, harmonization and capacity building. The effects of concentrations of cargo and infrastructure at the ports will be included. **T**he impact of security threats and how it hinders operational efficiency of the NPA in the past few years will be evaluated for better security planning.

Consequent upon the vantage location of the country within the West and Central African sub-region, Nigerian ports offer transhipment services to her West Coast neighbours and therefore serves as the gateway to land-locked neigbours. The development strategy of the Port will allow for future growth, and thriving economy of the West and Central African sub-region. With modern plants, crafts and equipments to enhance speedy and efficient services, adequate security to ensure safety of customers goods and computerized operational systems, the NPA will be fully prepared for the challenges of the millennium. There is the need for the institution 25 years masterplan to be implemented, serving as a template for other ports.

In February 2009, the Nigerian Ports Authority (NPA) reiterated that the implementation of a comprehensive master plan for the nation's seaports would be a remedy to congestion and inefficiency. To achieve this, 15 companies submitted proposals for expression of interest for the provision of consultancy services for the development of national Port Master Plan. Three of the companies are foreign-based, namely, Royal Haskoning of Netherlands, Cares Consultant of UK and CPCS Company of Canada. The rest are indigenous. According to the then M.D. NPA, the immediate evolution of a comprehensive port development master plan, which would improve the capacity of the national seaports, as envisaged in the proposed 25-year Port Development Master plan for the NPA, provides the most certain and permanent solution to port congestion.

2.2 MILESTONES

- In 2001/2009 (World Bank and Federal Government Initiative)
- Royal Haskoning/Dynamar/Cares/CPCS/Challenge International Associate Diagnostic study to :

  - Update existing sector knowledge
  - Identify Key Issues.

The operational indicators witnessed significant drop in 2015 and 2016 compared with previous years especially 2013 and 2014. This was due to exchange rate fluctuations.

(4, Meetings with the various terminal operators/concessionaires suggests that Paying fees in USD dollars is pretty difficult as some operations are more penalized than others. Foreign exchange evolution since 2006 as Automatic dollar/naira parity and automatic mechanisms is a trauma. As there is no mechanism on CPI (Consumer Price Index). The inflator factor was 10% this year and will be 17% in the next year and as a result there is 14.3% downturn in container. Revenue of 85% is in Naira while they will have to give returns to NPA in dollars.In a particular agreement, there was meant to be a construction of a new berth and recovery of the fees back from NPA BOT. Companies still struggling to recover that back from NPA. The berth was intended to be utilized for the exportation of cement. The terminal operator's Negotiation so far in the last meeting with NPA was not satisfactory. The proposed GMT seemed to be the ideal reason why the lease agreement was not reviewed every 2 years as stipulated. It was emphasised virtually all terminals cannot pay in United State Dollars anymore. And almost all terminals are indebted to NPA. Presently, virtually all are yet to pay all the terminal charges, Ship dues, etc. At the time the concession agreement was signed they did not anticipate or envisage the present global recession trend in terminal Ops.)

Further analysis of cargo throughput revealed that 60% contribution of crude oil shipment was responsible for the overall positive variance of cargo traffic as the cargo handled at the conventional ports dropped by 9.6 per cent. The Federal Government under President Muhammed Buhari's regime (2015-2019) banned the importation of some items which can be produced locally. Although this ban , affected performance of the Ports, the Nigerian Ports Authority remains positive and is positioned to facilitate export trade and improve port performance.

- Generate viable options for reform

- **Royal Haskoning/Dynamar/Cares/CPCS RECOMMENDATION** :
  - Landlord Model
  - Three regional authorities
  - Slim Corporate Headquarters (Marina)
  - Clear role for the FMOT, Corporate Headquarters, Regional authorities
  - Separation of operational from regulatory responsibility

The issue of Port Reforms gave rise to the structural and policy changes in the maritime Industry in general and port Industry in particular. However, it should be noted that the terms of reference of this Committee is to emphasize and present a position report on the road map to Maritime Sector development in Nigeria which no doubt will include other sub-sectors such as the transportation sector, petroleum etc. as a whole, as these institutions are interwoven in this subject. The most voluminous liquid bulk cargoes handled at the Lagos Port Complex are refined petroleum products. Imported refined petroleum products are handled at the Atlas Cove Jetty, from where they are conveyed via pipeline to depots in Mosimi, Satellite, Ibadan, Ilorin, the South East and the North East. The integrity of Nigeria's pipeline has frequently been compromised by acts of theft and vandalism. As such, a significant proportion of refined petroleum products are lifted from fuel depots within the

Lagos area and trucked to Ibadan, Ore, Ilorin and other parts of the country. Based on consultations, it was observed that Lagos serves as a transhipment hub for petroleum products destined to: Lagos, Ogun, Oyo, Osun, Kwara, Ekiti, Ondo, and Niger.

In order to overcome inefficiency and improve the productivity in the ports sector, the Federal Government of Nigeria embarked on a ports reform program including concession of its terminal operations following the recommendations of a diagnostic study in 2001. To facilitate the reform program, the Bureau of Public Enterprises (BPE), with financial assistance from the World Bank, engaged the services of CPCS Transcom International Ltd in December 2003 as the transaction advisors for the port reform. Initially, the consultants from CPCS reviewed previous studies, and carried out the necessary legal, regulatory and financial due diligence. CPCS also proposed a restructuring framework, including a bid tender strategy, a new legal and regulatory framework for the entire port sector in Nigeria, regulatory changes, a human resources plan, a financial plan, as well as business plans for the proposed port authorities. To date, BPE and NPA have successfully executed 24 concession agreements and the terminal operators for those terminals have already taken over their respective terminals.

The relevance of the proposed 25 year Port Development Plan to the future of the nation's seaport, cannot be over emphasized. This plan aims to make port development strategic and anticipatory of challenges with inputs from industry stakeholders, to ensure successful implementation.

The long term solution is to have the 2003 recommendations effected as soon as possible.

Prior to the 2006 port concession, turnaround time for ships was long and usually calculated in weeks, sometimes months, depending on the cargo type. Cargo handling plants and equipment that were owned by the NPA were few and mostly unserviceable. Although payment was made for usage of these plants and equipment, shipping companies often resolved to source these machines from the private sector . This resulted ,in Nigerian seaports being rated as one of the costliest seaports in the world. Even though many options had been tried in the past, including commercialisation and even outright privatisation, it was the 2006 port concession that brought about a reformed NPA.

HALLMARK OF THE LANDLORD PORT :

- Private – Public Sector Partnership (PPP)
- Infusion of private capital
- Separation of regulatory from operational role

Figure 3. **TIN CAN ISLAND PORT COMPLEX. Source : NPA Data.**

- **CPCS MASTER PLANNING EXERCISE :**

(5, In section 3 of the report, The CPCS's master planning exercise is based on the idea of a competitive free market. From the NPA's perspective, within such a market, the user is the primary generator of traffic, and therefore also the primary generator of the Authority's revenues and profits. What is good for users of the NPA's services is also good for the NPA. If users are content with the NPA's level of services, over time, the NPA is likely to generate even more business for itself. Shippers or receivers of transit goods destined for Chad or Niger for instance, would consider increasing their routing of cargoes from the ports of Cotonou or Douala to an NPA port. Lagos Port is still the best transshipment cluster in the nation as it is where the largest tonnage is based with the stuffing and unstuffing of containers.)

Figure 4. LAGOS PORT COMPLEX. Source : NPA Data.

- **PRIVATE SECTOR :**
  - Cargo operation – all cargo operation functions from vessel arrival to cargo exit for imports and from cargo arrival through port gates to loading / vessel departure. The private sector also takes responsibility for imtermodal transport operations in relation to cargo handling.
  - Port Labor – All aspects of port operations staff, apart from NPA and regulatory control personnel, to be contracted, employed and managed by private sector.
  - Investment in equipment – a responsibility of terminal operators in relation to procurement, contracting and maintenance of port equipment (possibly could also include procyrement and operation of cargo scanners)
  - Investment in terminal maintenance – relating to the agreed scope of the terminal footprint as designated in the concession agreement
  - Insurance of concession assets – should always be a responsibility of the terminal operator.
- **In April, 2012. PORT MASTER PLANNING MODEL (Chapter 6 of the CPCS Report) Appointment of CPCS Transcom as adviser to Bureau of Public Enterprise with responsibilities to**:
  - Reform
  - Restructure
  - Concession

The Executive Management of Nigerian Ports Authority in furtherance of its determination to cope with the emerging International economy and the effect of globalisation in the maritime industry, decided to embark on the development of a 25 year National Port Masterplan. The aim is to revamp the decaying port facilities which have suffered neglect over the years and provide a blue print document to address the physical, operational, economic, environmental and recreational requirements. To attain this objective, NPA engaged the consultant CPCS Transcom International Ltd. of Canada to lead in the development of the 25 year National Port Masterplan.

(6, A Port Master planning Model, which calculates the required infrastructures for the projected cargo traffic in the individual port Complex level, was applied to 6 different scenarios to identify the associated development investments necessary to make each traffic flow scenario possible. The investigation of the Development planning for the 6 traffic scenarios are carried out in Sec. 6.2.3.6 of the report. CPCS in a letter after the submission of the report explained to the Authority that the Draft Final Report as submitted is intended as a basis for discussion and subsequent selection by NPA of a preferred development scenario for the Nigerian Ports.)

2.3 REFORM OBJECTIVES

- To increase efficiency in port operation.

In line with the Federal Government's efforts to diversify the economy in the face of dwindling oil revenue, the Nigerian Ports Authority has done an analysis on the volume and pattern of trade in Nigeria with a view to highlighting trade growth potentials and positioning the Nigerian Seaports for higher revenue. The analysis revealed the position of Nigeria as a consuming nation given the fact that non-oil export commodities contributed less than 10% to the export volume and less than 3% to the total volume of trade in Nigeria. This explained the reason why over 86% of imported laden containers left Nigeria empty resulting in loss of revenue that would have accrued if they left Nigeria Laden with export/value added commodities.

To decrease cost of port services to stakeholders and enhance exportation processes.

- To decrease cost to the government for the support of viable port sector
- To attract private sector participation (PSP) so as to free public resources for public services.

The port concession is a bold move to reposition NPA and make it a competitive and efficient entity . that will yield more revenue for the Nigerian Government through improved vessel calls and an enhanced cargo throughout. To a large extent, this has been achieved.

Consultations indicate that nearly 50% of the imported cargoes handled at the Lagos Port Complex are "anchored" to the Lagos area. These cargoes undergo some form of value added activity in/around the city before being distributed around the country as "consumer ready" products. Lagos' dominance as a production centre is largely tied to three factors:

- Lagos enjoys connectivity to road and rail, and is also home to two major (container handling) port complexes within its boundaries.

(7, Looking at the User Perspectives on Transport Costs in Nigeria, in Section 3.3., Shippers and receivers have suggested that most of them face extremely high operating costs with respect to receiving inputs for, and/or physically distributing their final products. Most have attributed their high transport costs to: The lack of cost-effective modal options for the surface transport of goods; and, A forced reliance on Lagos as a hub for almost all warehousing and distribution activities, despite its lack of "centrality" for many finished products trucked elsewhere around the country. In a market where a significant amount of products sold are themselves either imported, or have inputs which are imported, higher total transport costs can very quickly erode profit margins or force an increase in a product's end price—given the extent of competition within the market for consumer products, such occurrences can very easily lead to a rapid loss of market share. Transport costs are resultantly a significant factor influencing their routing decisions.)

- One of the largest cities in Africa, Lagos has a sizeable skilled working age population / labour force; and has remained rather insulated from security threats.
- The abovementioned conditions (as derived in sections 2 of the masterplan) have also contributed to the emergence of Lagos as a logistics cluster; this has further attracted manufacturing and distribution activity to Lagos as a whole, and therefore increased the demand for its port services based on the supply chain value proposition.

(8, Section 1.2 indicates the purpose of the report as to presenting their recommendations for the physical development of the infrastructure of the Lagos Port Complex, their physical development recommendations cover both the construction of new infrastructure as well as the rehabilitation and upgrading of existing facilities, their analysis and recommendations take into consideration private-sector led port developments being carried out in the Lagos area, as well as other regions in Nigeria, which can impact the throughput forecasted for the Lagos Port Complex.)

3. SUMMARY OF THE MASTERPLAN CONTENT IN RELATION TO THE TORs.

The development masterplan aims to create "smart ports"; by examining the driving forces for change in both ports and their related infrastructure, The study shall focus more on container, RoRo and Bulk cargo Ports whose traffic comprises a significant number of containers, cars, dry and wet cargos respectively due to their relative size and complexity.

In May 2013, the Ports Support Project to analyse and improve port congestion in Lagos Ports began implementation with DFID support under PDF I and subsequently continued in 2016 under PDF II. The project aims at identifying the main causes of port congestion, providing solutions and recommendations and producing an action plan to reduce congestion and improve the performance of Lagos Ports.

The project engages with major stakeholders at Lagos Ports, and relevant supply chain actors, and also conducts an assessment of Lagos ports against regional comparators, notably Cotonou, Lome and Tema Ports. This is to stimulate inputs and interactions with port stakeholders and users and provide a relevant comparative framework to validate the analysis and conclusions of this study as well as the suggestions and recommendations outlined thereof.

3.1 CARGO TRAFFIC IMBALANCES ACROSS CARGO CATEGORIES AND EXISTING FREIGHT FLOWS

(9, Based on the report in Section 1.2.3, Under the current situation, there is a significant imbalance in containerized traffic flows, with the Lagos and Tin Can Island port complexes handling in excess of 85% of the NPA's total containerised traffic flows. Liquid and dry bulk cargoes are also fairly concentrated, though not to the same extent. When looking at the various cargo flows (liquid and dry bulk, containers) and their ultimate destinations, it can be determined that while bulk cargoes usually call at the nearest port, this is not the case for containers. A rebalancing analysis aimed at improving the distribution of freight must therefore be conducted for container flows, though it is not necessary for other types of cargo.)

The report in this section outlines the routing choices adopted by shippers and receivers when transporting sea port related freight between various origins and destinations (O-Ds) within the country coupled with the existing freight flows.

From the recorded throughput, the highest cargo throughput before the concession was a mere 46,150,158 metric tonnes. This soared to a staggering 78,281,634 metric tonnes in 2013, and by 2014, it had increased to 84,951,927 metric tonnes. In 2011, NPA successfully remitted the sum of N29bn into the Federation Account . Moving forward the agency should focus resources to the actualisation of deep sea port projects, particularly the greenfield project in Lekki and the proposed Badagry port.(See Table 1, page 11 below for reference on Cargo Throughput around this period of study)

Year	Inward	Outward	Throughput
2003	27,839,293	11,926,652	39,765,945
2004	26,907,075	13,909,,872	40,816,947
2005	29,254,766	15,697,312	44,952,078
2006	29,089,268	17,061,250	46,150,158
2007	35,544,965	21,928,385	57,473,350
2008	41,195,616	23,177,133	64,372,749
2009	45,757,149	20,081,360	65,755,509
2010	46,928,848	29,815, 879	76,744,727
2011	52,022,105	31,439,592	83,461,697
2012	46,222,127	30,870,498,	77,092,625
2013	50,005,603	28,276,031	78,281,634
2014	53,771,183	31,180,744	86,603,903
2015	50,234,651	28,087,907	78,322,558
TOTAL	534,772,649	303,452,615	839,793,880

Table 1. Cargo Movement/Throughput At Nigerian Ports (Pre and Post Concession) Source : NPA Statistics.

The Nigerian Ports Authority (NPA) recently said it had recorded a 7.2 percent increase in cargo throughput totalling 49.3 million tonnes in the first quarter of the year 2015. This is contained in a statement made available by the GM, Public Affairs of NPA at the time. The government agency recorded 45.9 million tonnes of cargo throughput in the first quarter of 2014. The downturn with a significant drop in 2015 when compared with 2014 is primarily due to the persistent increase in exchange rate and the drastic reduction in service boats operation due to the continuous decrease in crude oil prices. According to the statement, a breakdown showed that general cargo was 6.4 million tonnes, while dry bulk cargo was 2.2 million tonnes. LNG shipment was 5.5 million tonnes; refined petroleum products stood at 4.3 million tonnes; while laden containers, which passed through all ports were 233,331 TEUs.

The empty containers handled were 163,850 TEUs, while 30,649 units of vehicles were handled in this period. The statement further explained that 5,139 ocean-going vessels, with a Gross Tonnage (GT) of 61.9 million tonnes, called in all Nigeran Ports. It explained that the GRT of crude oil tankers recorded in this period showed a 12.21 percent increase over the figure.

Cargo throughput recorded during the first quarter of 2016 stood at 43,347,523 metric tonnes, showing a decrease of 12.6 per cent from 49,604,518 metric tonnes recorded in 2015, with crude oil terminals recording 25,754,169 gross tons, indicating a decrease of 12.5 per cent from 29,424,223 gross tons in 2015 with 221 tankers completed. The dwindling trend in throughput is as a result of global recession and the control of some inward cargo (ban) by the government, of which Nigeria can produce locally but yet finding its way into the nation with the adverse result of the depreciation of the Nation's currency and low GDP. From the chart below page 12, we will note the global oil demand has been constant since 2015 with a downward trend as a result of dwindling oil price. Even though the banned importation of some items has affected the overall performance at the ports, the NPA

sees a future for the nation and is positioned to facilitate export trade and improve port performance.

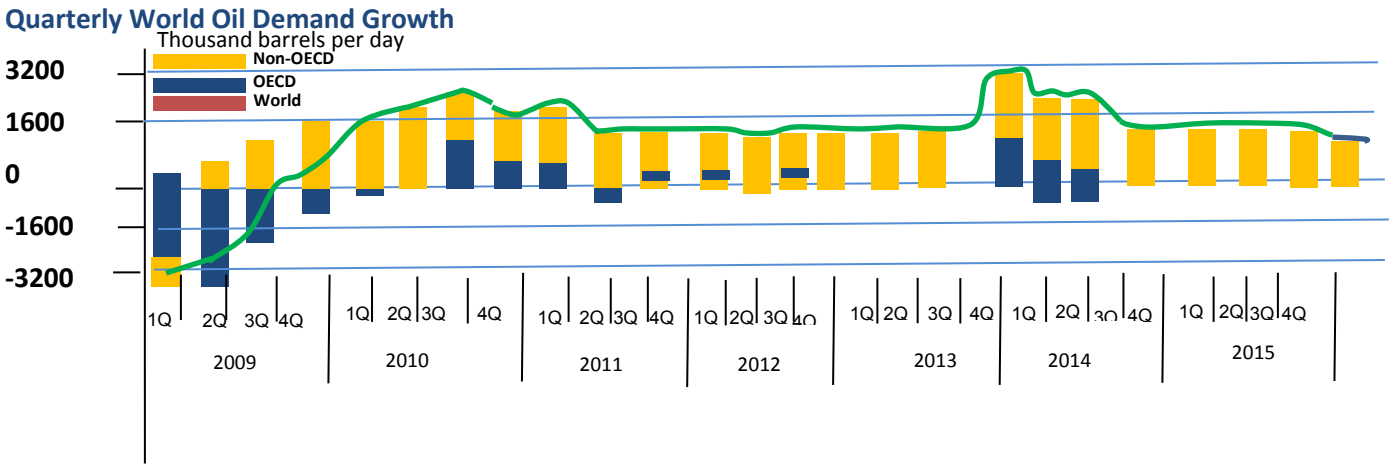
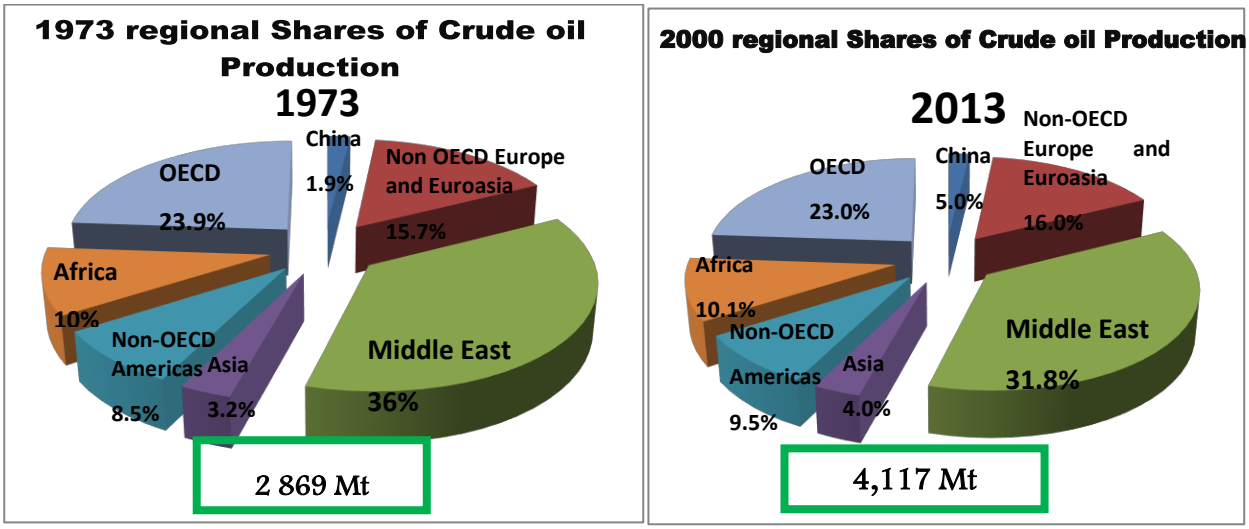


Figure 5. Quarterly World Oil Demand Growth. Source: OPEC.



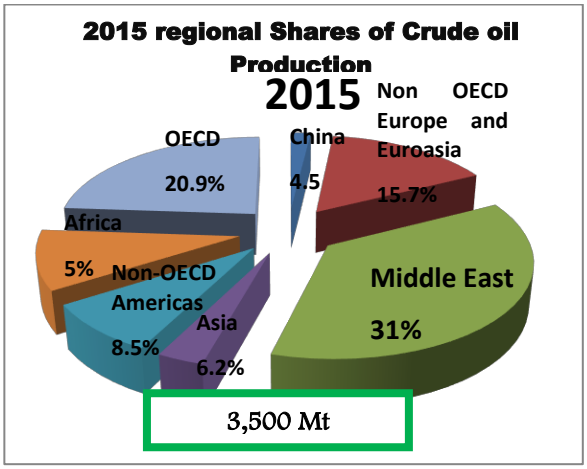


Figure 6. Regional Shares Of Crude Oil Production. Source : OECD.

This trend is sharply reflected also in the histogram below. (See Figure 7, page 14.) Generally in 1st quarter 2015, the level of operational activities at the port locations witnessed positive variance over the 1st Quarter of 2014. A positive growth of 4.17 per cent (104.2% performance) was achieved over 35,023,619 GT forecasted in 1st Quarter 2015 Budgets. This positive achievement could be attributed to growth in Liquid Bulk (crude oil lifting) and General Cargo traffic which can and will be attributed to the economic recovery in Europe.

The Nigerian Ports Authority need to embark on palliative measures on the port access roads in collaboration with Federal Roads Maintenance Agency (FERMA) in a determination to avoid the gridlock that has affected smooth evacuation of cargo from the Ports. The later part of the report will examine how these flows can be optimised in light of prospective developments in Nigeria's transport infrastructure and/or freight logistics supply chain.

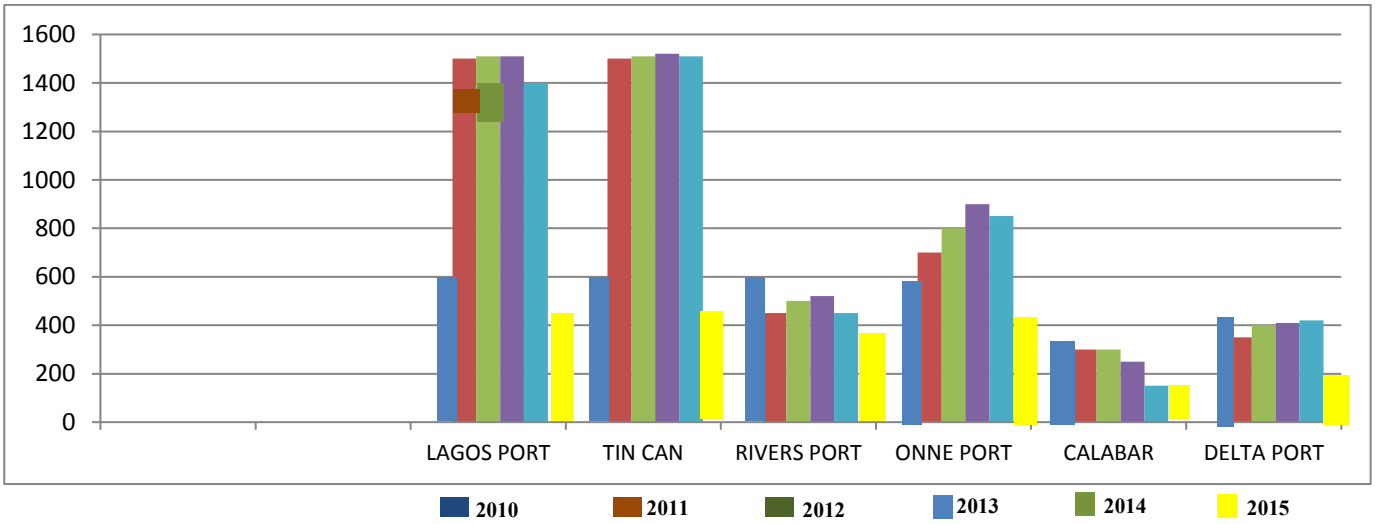


Figure 7. Graphical Description of Throughput in Nigeria Ports. Analysis of Landlord Administrative Model on Shipowners/NPA Relationship.

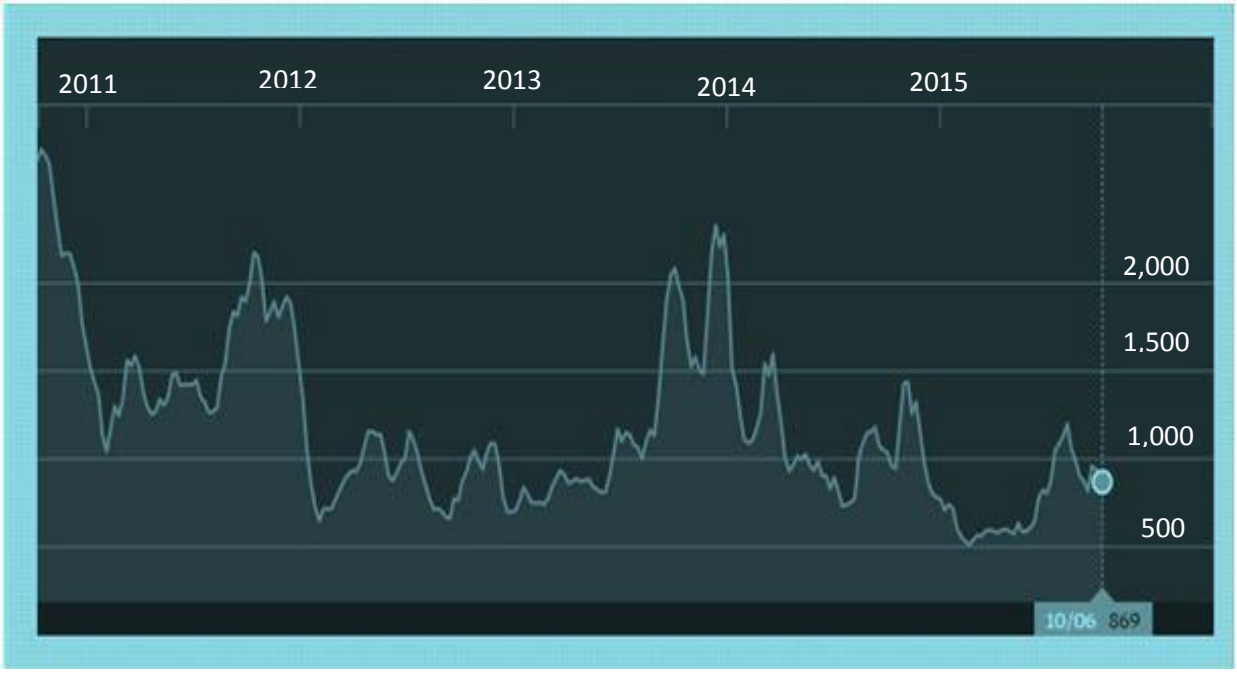
During the period under consideration, the Lagos Port Complex recorded a GRT of 9.2 million tonnes and received 372 vessels. Tincan Island Port recorded a Gross Tonnage of 12.2 million tonnes and handled a total of 435 ocean-going vessels within the period. Calabar Port complex recorded a total Gross Tonnage of 958,288 through 100 ocean-going vessels in the period under review. Rivers Port Complex recorded a total Gross Tonnage of 1.4 million tonnes and handled 132 ocean-going vessels in this period. Onne Port Complex recorded a GT of 12.7 million tonnes with 1,025 vessels handled within this same period. And Delta Port Complex recorded Gross Tonnage of 1.6 million tonnes with 2,816 vessels handled. In the year 2015, the total of 5,090 oceans going vessels with a total Gross Tonnage (GT) of 144,207,122 Tons called at Nigerian Ports.

YEAR	NO OF VESSELS	GROSS REGISTERED TONNAGE (GRT)
2007	4,894	84,806,792
2008	4,623	89,505,702
2009	4,721	90,603,601
2010	4,881	106,689,553
2011	5,232	122,614,716
2012	4,837	120,818,683
2013	5,369	130,628,057
2014	5,541	148,323,065
2015	5,090	144,207,122
GRAND TOTAL	**45,143**	**1,038,197,301**

Table 2. Number and gross registered tonnage (grt) of vessels that entered all nigerian ports: 2007-2015. Source : NPA Statistics/Data.

National sensitization programme for more production of export commodities would encourage economic growth and development. Looking at the Baltic Dry Index (BDI) which is used by many investors to predict short to medium term GDP trends has proved highly reliable. The graph/diagram below, (See Figure 8, Page 15) indicates a period of slower economic growth in this timescale. The effort of the present Government is to intensify the development of agro-allied industries (with emphasis on value adding in an inclusive environment), Mining and other greenfield industrial sectors of the economy to increase exports.

BALTIC DRY INDEX (BDI).



Baltic Dry Index (BDI)– Source Bloomberg

Figure 8. Baltic Dry Index (BDI) Source : Bloomberg.

The BDI is sensitive to the supply and demand of vessel capacity in addition to the GDP of world nations. It was easy to spot the dip (94% decline) and bounce caused by the GFC in 2009. There was also some changes in the mode of transportation with lower air cargo rates making air transport more competitive for slightly lower value cargoes by reducing inventory costs. This negatively affected ocean freight rates. More recently, the tapering off of China's meteoric growth has reduced the need for fuel and raw materials to its producers and their, largely Intra-Asia, suppliers.

The Lagos Port Complex presently handles significant amounts of general, dry, and liquid bulk cargoes. In 2012, the total volume of cargoes handled at the Port was nearly 20 million tonnes, quite evenly distributed amongst general cargo (36 percent of total throughput), dry bulk (26 percent of total throughput), and liquid bulk (38 percent of total throughput).

The outline from the report on this section has been that (10, In the long term for instance, if a given region (e.g. North Central) is projected to become a notable destination for imported cargoes, warehousing and distribution companies and/or wholesalers presently operating out of Lagos may find it commercially viable to further expand and develop new facilities there, rather than to expand upon and continue serving the North Central Region out of their existing facilities in Lagos. As this happens, traffic that was previously considered to be "anchored" to the Lagos Port Complex may perhaps have other, more viable port options. In the absence of an analysis that considers production and consumption centres, the master planning process would have to rely on the demands of the present-day supply chain; rather than considering how freight flows might evolve, and then facilitating their evolution, in such an instance, the master planning exercise would constrain their evolution by cementing the status quo—traffic currently handled in Lagos would continue to be handled in Lagos. This will be discussed as part of our Port Development Options Analysis.)

3.2 EVALUATION AND OPTIMISATION OF FREIGHT FLOWS (CURRENT INEFFICIENCIES)

(11, Section 3.2 outlines there are however, numerous perspectives from, and metrics across which one can evaluate, and subsequently optimise the performance of freight flows. For instance, one can evaluate their performance from the following perspectives:-From the perspective of a transport service provider, such as the NPA, NUPENG, NARTO, NIWA, NRC, or PPMC, by considering how an O-D routing affects each operator's respective traffic volumes or profitabilit vis-à-vis the routing's use of a particular mode of transport; or, -From the perspective of a transport service user (i.e. a shipper or receiver) byconsidering how an O-D routing affects a given shipment's transport cost, transit time, or reliability).

(12, Section 3.2 further states that their analysis is informed by examining metrics which the average user of transport services considers when establishing his/her routing choice. They then comment on the applicability of these metrics within

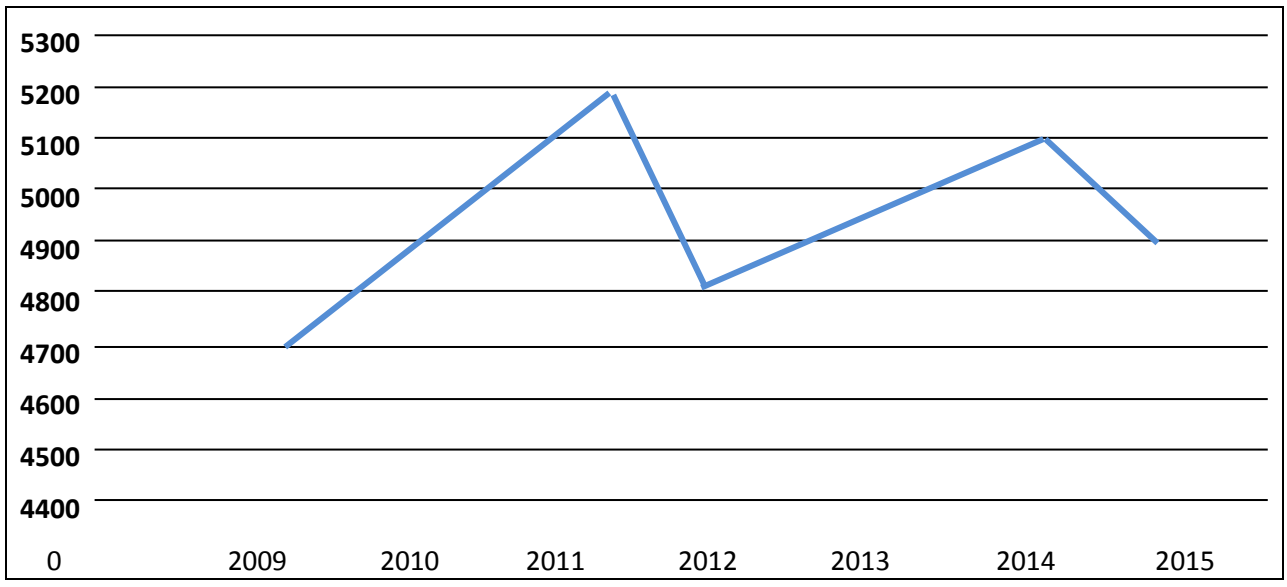
the context of the Nigerian market for transport. As will become evident, the dynamic of the market for transport within Nigeria is such that some metrics, though important to users, cannot directly be improved upon through the development of a ports master plan. Interestingly, these metrics were perceived by users of port services to be of lesser importance than others, which are within the NPA's jurisdiction. Their ultimate focus, therefore, is on the selection of one metric to inform their freight flow optimisation exercise—that which is most important to users and also within the NPA's control to improve upon. It remains worth noting however, that their focus on optimising one metric is not exclusive of improvements in others—indeed, improvements in other metrics are part of a range of fringe benefits which are to be realised through our focus on optimising one.)

(13, Section 3.3 further states, Decisions on whether or not to use a particular transportation routing are largely informed by three main factors: (i) cost; (ii) transit time; and (iii) reliability. In any particular decision, the relative importance that a decision maker assigns to each individual factor depends on the type of commodity being shipped, and the requirements of the shippers and/or receivers involved.)The ability of decision makers to select the routing that offers the optimal combination of cost, transit time, and reliability also depends on the information at their disposal. Simply put, a decision maker cannot take advantage of a routing about which he or she is unaware, or for which information is costly to gather. Moreover, decision makers may dismiss certain routings because of inaccurate or out of date information. And with limited information comes risk. Changes to a shipper's transportation routing also entails risk.)

It was noted that transport costs borne by shippers are the most practical metric for evaluating the performance of freight flows across the country. And the master planning exercise is guided on the basis of minimizing surface transport costs for shippers. By virtue of being situated within Lagos, a well-established hub for both commercial and industrial activity, the Lagos Port Complex, and neighbouring Tin Can Island Port Complex, each enjoy more liner vessel calls than the remaining four Nigerian ports combined. Between 2006 and 2010, the Lagos Port Complex accommodated 33 percent of all ship traffic calling at Nigerian Ports. It also accommodated 30.4 percent of all incoming cargoes and 51.1 percent of all container traffic handled at Nigerian Ports.

It is also important to emphasize that the Nigerian Ports Authority is fully positioned for higher operations as the port Key Performance Indicators (KPIs) have been consistently improved through various policy initiatives. Precisely, Turn-around Time of vessels has reduced from 6.5 days in 2011 to 4.9 days in 2016 while the Berth Occupancy Rate presently stood at 43% indicating port capacity to handle more cargoes. (See page 34, Figure 10.) The Nigerian Port Authority's leadership understands the importance of balancing business with environmental stewardship. Providing a safe and secure environment for National and International trade is also a foremost issue.

Graphical Illustration of Number of Vessels Entering the Nigerian Ports.



Number of Vessels That Entered the NPA BETWEEN 2009 And 2015.

Figure 9. Graphical Illustration of Number of Vessels Entering the Nigerian Ports.

Most of the countries in the West African sub-region are building ports that can berth vessels with capacity for 15,000 containers. Stiff competition for hub status is expected from West and Central African coast from Mauritania to Angola. This maritime axis is one of the few regions of the world

with a dominant hub distribution port. Nigerian ports and its handlers especially its subsequent policy makers should emulate the strategy of the global ports practice who within such a short time was able to actualise the post-concession dream where service providers and users are happy. (See figure 1, Page 2 for The African Container Ports System).

- **REFORM PROCESS :**
  - National Council On Privatization – agreed the procedure for the tendering operation to proceed
  - Expression of Interest December, 2003 – expression of interest for terminals operation were invited from appropriate organisations. / operators
  - 110 Applications Received – expressions of interest received from private sector operators for consideration as pre-qualified bidders. Applicants had to evidence they met the original base criteria and compliance requirements.
  - 94 Prequalified and Issued Bid Documents – after initial evaluation these bidders achieved the pre-qualification criteria. They were issued with the full documents required to submit their bids for final evaluation.
  - 25 Concession Transactions Concluded. – following final evaluation 25 agreements were concluded, contracted and awarded.

  The reforms of 2005/2006 had clear objectives, some of which were to increase port efficiency, decrease port costs and attract private investment into the development of port infrastructure. The reform also created distinct roles for the Authority and the Concessionaires as well as other stakeholders in the industry such as the Nigeria Customs Service, Shipping Agents, Freight Forwarders, Importers, Truck Owners, etc.

  The activities of all these players also impact on the overall port efficiency. There is need for all the agencies involved with the clearance of goods and trade facilitation to create synergy through a single window network. The WTO's trade facilitation Agreement which seek to ease Customs norms came into effect on 22nd February, 2017 with 160+ plus members ratifying the pact. This will give a boost to the global trade, which has been impacted due to slowdown in the world economy.

- **PRESIDENTIAL COMMITTEE ON REFORM (PCR)**
  - The PCR guided the process in relation to the concessioning of terminals, to ensure success they maintained a continual dialogue with the relevant stakeholders. Legal issues were addressed and a Draft Bill was presented to the National assembly. Agreements were reached with concessionaires and the first handover, to APMT, took place on 20th March 2006.
  - Considering for the activity was noted as the rapidly changing pattern of global trade, Exports, as a percentage of GDP, has have grown five fold, with exports now ,representing around one in every four dollars of GDP produced on the planet generated globally. IMF/PwC estimate that by 2030, more than half of the fastest growing trade lanes will be connected with China. And India, Indonesia, Nigeria, UAE and Saudi Arabia are some of the fastest-growing of all .

- **THE CONCESSION**

  The overall concept is to delineate the ports into terminals and concession them to large Independent Terminal Operators for 10 – 25 years. Such operators are selected through a transparent, international, competitive tendering process. The following table indicates the number of concessions at each of the relevant ports.

PORTS	NO. OF CONCESSIONS
Lagos Ports Complex	6 + 1 (ICD)
Tin Can Island Port Complex	4 + 1 (BOT)
Rivers Port	2
Delta Ports Complex	5
Onne Ports (FOT & FLT)	4
Calabar Port	3
Total	**24 + 2**

ICD INLAND CONTAINER DEPOT

BOT BUILD OPERATE AND TRANSFER

Looking at the optimization aspect, many shippers and receivers use one port for all their needs. They do not have sufficient knowledge or information on the costs and/or benefits of using an alternative routing, and for the most part, remain averse to the potential downsides associated with using another routing. Users therefore do not review other routings on a proactive basis; rather, they review them on a reactive basis, when faced with a challenge on their primary routing.

Although optimising the total logistics cost rather than one of its components (transport cost) would seemingly provide for a more comprehensive approach toward the development of a ports master plan, it is not well suited for a macro level analysis. Total logistics cost, as previously explained, is inclusive of inventory costs, which themselves vary at the firm (micro) and commodity – specific levels. As such, optimising such costs is better left to firms themselves. Furthermore, inventory costs are significantly dependent on transit times, which as previously explained, are for the most part, outside the control of the NPA. Considering another notable source contributing to transit time includes road congestion at the Lagos Ports with several components of transport cost, i.e. Handling Charges, Shipping Liner charges, Port Dues, etc.

3.3 PROJECTED FREIGHT FLOWS AND RELATED OPTIMISATION

(14, Section 3.6 states the consultants approach toward optimizing freight flows, insofar as they relate to sea ports, is based on the idea of optimizing (through minimizing) transport costs for shippers and receivers. This approach however, requires to some degree, the rebalancing of throughput between the NPA's seaports.)

(15, In section 4.1, the survey and subsequent analysis of freight flows across Nigeria highlighted the structural inefficiencies inherent within the market for containerised freight. Whereas the flow of breakbulk cargoes, liquid bulk cargoes, and dry bulk cargoesto/from their respective consumption and production centres are already fairly optimal, this is not the case for containerised cargoes, which are almost entirelyhandled in Lagos and Onne. Through consolidating information on consumption and production centres with state-specific demographic and economic data, they estimated the proportion of current and forecasted NPA global throughput attributable to each of Nigeria's 36 states and the Federal Capital Territory.)

(16, Looking at the cost implications on the NPA further in Section 3.6.1. their approach thus far has sought to establish the amount of freight that can be optimised on the basis of transport costs through being re-routed from the Lagos, Tin Can Island, and to an extent, Onne Port Complex to the Delta, Rivers, and Calabar Port Complexes. In some cases, re-routing cargoes would require significant investments in bringing the latter three ports' infrastructure up to shape (e.g. dredging, redeveloping quay walls, etc.). As part of their approach and methodology, they first focused on the user of transport services. Their second step is to consider throughput hurdle rates forshipping lines. Based on their findings, they then know what kind of investments would be required by the NPA to accommodate projected throughput under each freight rebalancing scenario. The third step therefore is to evaluate the financial viability of each prospective freight rebalancing plan (i.e. master plan development scenario) for the NPA. Their fourth step extends upon their financial analysis by carrying out a broader economic analysis. Ultimately, they will provide the NPA with port development proposals outlining their financial and economic implications. Having reviewed this Report, the NPA will therefore be in a position to make informed decisions around Nigerian seaport development. It also remains worth noting that optimising freight flows on the basis of transport costs will also enhance the allocative efficiency of the NPA's port assets and lead to improvements in transit time. Allocating throughput to otherwise underutilised ports will enhance the productivity of these ports. Furthermore, in the process of routing cargoes through a port closer to its ultimate destination, transit times will improve as less time would be

spent transporting and transhipping cargoes over land. Transit times will also improve as a result of ports such as Lagos and Tin Can Island experiencing lesser congestion.)

Note that we are distinguishing between raw materials, semi-finished products, and finished products. As mentioned in earlier discussion on existing freight flows, nearly 50% of the imported cargoes handled at the Lagos Port Complex are "anchored" to the Lagos area. These cargoes undergo some form of value added activity in/around the city before being distributed around the country as "consumer ready" products (i.e. they are raw or semi-finished products). Similarly, an estimated 30% of cargoes calling at Onne are anchored to the area surrounding the Port. A much smaller proportion, transits through the Onne Port Complex.

The Delta, Rivers, and Calabar Port Complexes are unable to handle significant volumes of container traffic due to a range of infrastructural constraints. As a result, over time, shippers and receivers have developed facilities (warehouses, distribution centres, factories, etc.) collocated with container handling ports such as Apapa, Tin Can Island, and Onne. (There is the need to note here the port area should not be encouraged for/as persistent storage point.)

Within such a system, users of transport services have come to rely on these container handling ports for their needs, and have resultantly accommodated their supply chain around this. In an effort to outline the concept in a simple manner, we assume that the greater the distance between a port and a consumption/production center, the higher the cost of transporting it by land. An exception to this would be, in an instance where both road and rail modal options are available. In such an instance, the cost of transporting freight over a greater distance by rail could be cheaper than the cost of conveying it over a shorter distance by road. Our freight optimization model selects the routing choice which provides the lowest cost, be it by rail or road. Given the amount of time which it can take to transport a container from Lagos to its ultimate destination, unload, and subsequently return it to the city (or vice versa), almost all shippers and receivers have elected to strip them sooner in an effort to avoid demurrage costs..

(17, Bringing by a missallocation of seaports resources in same Section, The development of the existing six port complexes is a sunk cost. Overreliance on some ports has come at the expense of other ports being significantly underutilised. As one Port Manager at an underutilised NPA port explained "the other ports are busy because of the constraints here." As a result, at times, some ports face congestion (e.g. the Lagos Ports in 2012) while others lie relatively idle.)

The aim for this masterplan is to accommodate projected growth in Nigerian traffic through to 2037 in a manner that generates the highest Value for Money (VfM) for the Federal Government of Nigeria (FGN) and by extension the Nigerian public. In the preceding Chapter, the team proposed the development of master planning scenarios which are guided on the basis of minimising transport costs for the average Nigerian shipper. In particular, the report intend to focus on minimising the surface transport costs of conveying freight between NPA seaports and Nigeria's various consumption and production centres. With the wake of altering Congestion at the Lagos Ports Complex, an alternative port is feasible to this area of freight conveyance which is demand oriented.

(18, Section 4.1 outlines, In consultation with the Federal Ministry of Power, Works & Housing, the Federal Ministry of Transport, and the Nigerian Railways Corporation, this master plan does however, account for infrastructural developments that would result in changes in the cost of transporting freight over land. Chief amongst developments in land transport is the greenfield development of two rail lines:

- *The Lagos – Abuja – Kano railway line (expected in 2028), and*
- *The Coastal Rail line (expected by 2025).)*
- *The Lagos—Ibadan dual railway line bound to be fully constructed by end of 2018 linking to the lagos parts and the Hinterlands etc.*

In view of the above, a contract which is set to be completed in the later end of next year, 2018 has already been awarded to the Chinese CRCC/CCECC to carry out the installation of the Lagos-Ibadan railway line enroute Kano which will also be linked to the Apapa Ports in conveyance of heavy cargos into the hinterlands. The coastal rail line expectation of 2025 may still be feasible as at this projected

time. The present government visited the Chinese government to seal the pending contract in January 2016.

The optimized, unconstrained scenario is premised on the theoretical assumption that all six NPA port complexes should offer similar levels of service from an operational perspective—that is to say, each port should have all the requisite equipment and infrastructure (including access channels with a draught of 12m or greater) to accommodate major shipping lines as well as to provide the port's respective customers with a similar standard of service. Each NPA port complex would therefore serve as a full - fledged container handling port.

(19, Section 4.1 outlines, Under the status quo, the Lagos Port Complex, Tin Can Island Port Complex, and Onne Port Complex all handle containerised cargoes on a routine basis. The cost to develop a full-fledged container terminal at these ports has already been realised (i.e. it is a sunk cost). Furthermore, shippers' supply chains have been developed with these three ports in mind. These ports must factor into every freight rebalancing scenario.)

Whereas the optimised unconstrained scenario serves as a theoretical ideal, sharing freight across four Eastern ports may not be an attractive proposition to shipping lines. This feeds into earlier discussion on minimum traffic thresholds for shipping lines. The more ports there are, the less traffic there is to go around. In addition to the two Lagos Ports and the Onne Port Complex, given the purpose of our freight rebalancing exercise, it is worth considering the redistribution of freight to at least one additional Eastern Port. Each Eastern port should therefore factor on an individual basis into a rebalancing scenario.

At the same time, given the costs of dredging any of the remaining Eastern ports to a comparable service level (i.e. at least 12 meters of draught), it would not make sense for one scenario to include more than one additional Eastern port, since total traffic remains constant and any additional dredging would have to be paid off the same level of overall traffic. As will become apparent in later chapters where we carry out financial and economic analyses, the above mentioned scenarios give further consideration to the constraints that affect the NPA, terminal operators, shipping lines, etc. Rather than allocating traffic across six port complexes on the basis of minimising surface transport costs, the four alternate scenarios allocate container traffic through the master planning period amongst a lesser number of ports, whilst continuing to place primacy on minimising surface transport costs.

3.4 EXISTING PORT INFRASTRUCTURE

In the report, It was opined Lagos Port Complex and Tin Can Island Port Complex are located very close to each other and essentially share cargo destinations inland. In the master planning models, the throughput and infrastructure of these two ports are aggregated and treated as one port.

For quay infrastructure the concept Berth Handling Unit (BHU) is introduced; it represents one unloading unit (be it a harbour crane, a conveyor or a gang operating a hatch of a vessel). A BHU corresponds to 60m of quay. Storage areas are represented in hectares (ha). Lagos and Tin Can Island complexes (excluding KLT) when aggregated is composed of:

- 118 BHU, distributed on 34 berths with total quay length 7157 m
- Depth at berths: Apapa up to 13.5 m, Tin Can Island up to 11.7 m
- 236 ha of overall storage area
- Access channels to the ports are adequately dredged and maintained.

The Master Plan assessment of possible productivity at NPA berths is based on the optimal number of BHUwhich can be arranged for simultaneous cargo handling at a ship calling the berth. One BHU will typically represent a berthing point for cargo handling, consisting of: a ship to shore handling crane or ramp; necessary feeder equipment; and adequate operational staff. The BHU number of a berth depend on the actual type of commodity, the deck and hatch arrangement of the ship, the length of

the berth and the mode and specialisation of cargo evacuation to/from the berth. The optimal number of BHUs at each type of berth at the NPA ports has been estimated from the actual berth geometry, expected type and dimensions of vessels and general practice experienced at similar ports in West Africa and Europe.

(20, Section 5.1 outlines The overall port capacity is the maximum possible throughput limited mainly by Berth Capacity but also by Storage capacity in the port, coupled with the capability to move the goods out of the port storage areas. Therefore, if goods are moved out of the ports sufficiently fast, then it is essentially the sum of Berths capacity (Length and Depth) that determines the Port's CapacityCargo handling equipment may also be a capacity limiting factor, but it is believed that the concessionaires at all times will optimize their Cargo handling equipment in order to match the demanded throughput. The port key assets reported and described for the individual ports in the following sections are updated and extended summaries of the assets reported in the Interim Reports. Updates take new infrastructure developments (2013 to 2015) into consideration and extensions pertain to the diversification of asset usage in the ports, with regard to cargo categories.Same Section on Access Channels states the dredging quantities for port access waterways in need of necessary dredging have been determined on the basis of Admiralty charts. The accuracy of the assessed necessary dredging to fulfill required channel depths is estimated to be within approximately 20%. For exact estimation of required dredging quantities it would be necessary to perform detailed bathymetric surveys, which are outside the scope of this project.)

The existing storage areas at the ports will not be fully outlined in this report simply as a result of the consultants not seeing the Ports premises as a storage point.

(21, Section 5.1 of the report further opines the usage of areas has been estimated terminal by terminal and then added up for each port complex. Some areas may be used for two or more cargo categories, so the summaries of areas given below in Table 5-5 are only indicative. However, the accuracy should be adequate for master planning and the total areas would be quite close to the actual areas.).

In the area of Access Channels-Navigational Areas, The Harbour Master of Lagos Port Complex mentioned that it would be beneficial for 1 or 2 safe dedicated anchorages in Badagry Creek and if possible a lay by jetty (which could also accommodate bunkering of vessels), so that exchange of vessels at berth could be done with ease and less waiting time (instead of coming all the way from off-shore anchorage every time).

The access channel through the bar has a width of around 700 meters, which is sufficient for several vessels to pass each way simultaneously, and in the Commodore Channel the width is around 400m up to Apapa. From Apapa and west towards Tin Can Island the channel width is only around 200m which does not allow vessels to pass both ways simultaneously. Along most of Tin Can Island the channel width is even less, approximately 150m, but vessel traffic at this point is significantly less than in the 200m passage near Apapa. Apapa (Lagos Port) and Tin Can Island Ports share a common access channel from the sea. Lagos Port Complex is approached directly via the main access channel, and is situated around 5 km from the channel entrance. Tin Can Island Port Complex is approached via the Lagos Harbour and via Badagry Creek and lies approximately 5 km from Apapa port..

(22, Section 5.1 of the report outlines Security problems relating to risk of hijacking of slow moving vessels travelling to and from the ports at night together with the presence of slow moving and often unlit fishing canoes and sand barges in the harbour shipping channels as well as anchored vessels obstructing the harbour approaches, result in the vast majority of vessel movements having to be made during daylight hours when the shipping channels are most congested. This results in unproductive berth occupancy being higher than would be necessary if vessel movements were able to be made on a 24 hour basis.)

The necessary patrol boats in the Nigerian waters has been compromised with minimal supervision coupled with the inability to deploy enough armed officers against the surge of piracy as practiced by the neighboring seaports. Hence as a result of the nation's water's porousness and volatility, shippers have diverted vessels to neighboring country's seaports to avoid the regular and rampant scourge of piracy in the region. Although a joint collaborative operation has been initiated recently by the nations in the Gulf for a seamless and professional operations thereby containing the menace.

(23, Section 5.1.3 of the report outlined on hinterland connections stating that although there is a rail line into the Lagos port, the predominant mode of land transport into and out of the Lagos Port Complex is by road. However the rail line has

come into use, for containers and some dry bulk, and it is expected that this use will be developed further in future.The main access roads to the port, the two dual carriageways: the Apapa – Oshodi expressway and the Ijora Causeway, are barely in acceptable condition and at the same time heavily congested at times. The access roads within the port to the quays area are undergoing maintenance and are mostly in acceptable condition. There is no rail connection to the TCIP Complex, although the federal government and the Authority have contemplated developing a rail connection systems to the Island. Some RoRo cargo, namely cars and small trucks, is evacuated out of TCIP by barge to a site beyond the Kirikiri Channel.

Looking at the berth productivity and capacity, containers and general cargoes are moved to and from the vessels by cranes. The cargo is lifted over the quayside from the vessel to the quay or the other way. General cargoes are also referred to as break bulk (BB) and is measured in tons (metric tonnes). Container cargo (CC) is measured in TEU, which is 20' equivalent units. RoRo cargo is cargo on wheels, usually vehicles, but occasionally also containers or other goods on trailers. These cargoes are driven/rolled over ramps to the quay. RoRo cargo (RR) is reported in metric tons. Bagged dry bulk (DB) is usually moved over the quayside either by cranes or conveyors. In some cases it may happen that it is carried from the vessel hold to the quay or to a warehouse next to the quay. Loose dry bulk (DB) in the vessel hold can be moved by conveyors or by dedicated unloaders. Liquid bulk (LB) is usually pumped from tanks in the vessel, but can also be transported in drums or cans. Capacity productivity for the types of crane as follows :

- Ships gear: 12 moves per working hour, equivalent to 17.0 TEU/hr
- MHC: 16 moves per working hour, equivalent to 22.7 TEU/hr
- STS: 21 moves per working hour, equivalent to 29,8 TEU/hr.

(Section 5.2.4 opines out the basic Planning Model assumptions for 2017 which are sharply defined in the previous section. Improvements in quayside productivity are possible by: (i) improving work operations; (ii) introducing more efficient equipment; and (iii) improved cargo unitisation (e.g. palletising or containerisation). In the Planning Model these measures in combination are accounted for by increase of cargo handling capacity by 5% to 2027 and 10% to 2037.)

3.5 Port Master Planning Model and Scenarios 2017 – 2037 Requirements and Concepts

(24, Section 6.2 of the report outlines the Port Master Planning shall assess and describe adequate concepts for the physical port development meeting the future port traffic requirements in NPA's six ports – Apapa, Tin Can Island, Delta, Rivers, Onne and Calabar - up to year 2037. The planning methodology used in this study describes adequate project concepts for physical port development units designed to provide the sufficient capacity for cargo handling and storage according to the traffic projected for the ports. The first step of the planning methodology is an analysis of the main key performance indicators (KPIs) for optimal cargo handling and storage expected at the existing port infrastructure assuming optimisation of the present handling methodology and use of equipment. The optimal capacity derived from this analysis is thus considered the maximum available ship to shore handling capacity at the berths and storage throughput capacity at the land areas for the baseline 2017 year of the Master Plan period. The second step of the planning methodology is an assessment of the expected possibilities for future improvements of the KPIs and thereby improved possible utilisation of the existing port infrastructure and its cargo handling capacity as well as assessment of the future KPIs for new infrastructure development. The traffic projections and the assessment of capacity development for the physical port units are broken down into five geographical NPA Ports complex e.g. Lagos (Apapa + Tin Can Island) at Nigeria West and Delta, Rivers, Onne and Calabar at Nigeria East. Further, the projections and capacity assessment are specified for each of the main categories of commodities e.g. Containers, RoRo, Break Bulk, Dry Bulk, Liquid Bulk (excluding petroleum products) and Petroleum Products. Development requirements expressed as the need for additional BHU and Storage Area capacity are used as the two guiding parameters in the planning and dimensioning of Port Master Plan development concepts.

For cargo traffic in West Africa, the present tendency is that terminal operators are establishing a limited number of deep sea ports with water depths up to 16.6 m. These ports will be used as hubs for large capacity vessels coming from the Americas and especially from the Far East. Cargo is then distributed along the African coasts on feeder vessels of a suitable size that can enter the individual ports like in the Port of New York. Usually in West Africa, the import of full containers is much higher than export, so vessels will call at larger ports first to be lightered and then call at smaller ports with less water depth. It is believed that this modus will also be valid in future, but probably with gradually increasing vessel sizes matching to growing traffic numbers. Although the presently planned Greenfield ports near Lagos are planned with water depth of around 16.6 m, the operators

are not presently considering transshipment at these ports, the reason being that traffic to Nigeria is enough to support an economical usage of these developments. At present (2016/2017) the berth occupancy at all of the NPA ports is significantly lower than the possible occupancy rate due to reduced cargo throughput compared to previous years as previous analyzed in the freight flow above and also due to quay side efficiency improved by concession operators. Usually it is assumed that an overall berth occupancy of up to 70% of time is optimal for cost effective utilisation of the combination of berths and vessels. If the occupancy is increased beyond 70%, increasingly unsatisfactory waiting times for vessels will occur. The worldwide tendency is for ever increasing vessel sizes, especially for long haul transport and high cargo volumes, provided that the harbour infrastructure, i.e. water depth etc., can handle the vessels . All of these must be envisaged in port planning.

(25, Section 6.2, This section further outlined the second step of the planning methodology as an assessment of the expected possibilities for future improvements of the KPIs and thereby improved possible utilisation of the existing port infrastructure and its cargo handling capacity as well as assessment of the future KPIs for new infrastructure development. The traffic projections and the assessment of capacity development for the physical port units are broken down into five geographical NPA Ports complex e.g. Lagos (Apapa + Tin Can Island) at Nigeria West and Delta, Rivers, Onne and Calabar at Nigeria East. Further, the projections and capacity assessment are specified for each of the main categories of commodities e.g. Containers, RoRo, Break Bulk, Dry Bulk, Liquid Bulk (excluding petroleum products) and Petroleum Products.)

When the number of berths in a port complex or terminal is increased the possible berth occupancy may also increase a little automatically, towards around 75%, without incurring significant vessel waiting times. It is therefore assumed in the Planning Model that the Overall Operational time can be increased to 60% by 2027, but no more after that. Increased vessel size will only contribute slightly to berth productivity.

(26, Section 6.2.3 in the Development Planning Scenarios states, Based on request from NPA the Planning Model has been applied to 6 different traffic scenarios in order to identify the associated development investments necessary to make each traffic flow scenario possible. The philosophy is that cargo should flow to the port nearest its final destination point because land transport cost more than vessel transport. It has been assumed that bulk cargo already flows to the nearest destination Port, but that container cargo at present is severely restricted by insufficient access channel depths to Delta Ports and to Calabar Ports and restricted to Rivers (Port Harcourt) due to insufficient berthing and storage capacity. For Warri and Calabar port to come into play as significant container cargo destinations it is necessary to dredge the river channels and the Sea approach access channels through the coastal bars. At Port Harcourt there is presently not capacity for container cargo, so new container berths and storage areas need to be constructed if this port shall be available for significant container cargo. Apapa and Tin Can Island are treated as one Port Region: Lagos. The involved port/regions are: Lagos, Warri, Rivers, Onne, and Calabar.)

The 6 traffic scenarios investigated under the development planning are:

- **Scenario 1**. Status quo. The Business as usual scenario. Except for maintenance of present depths to Lagos Ports and to Onne and Rivers Ports, no incremental dredging will be done. Very low container flow to Warri and Calabar will prevail. No containers will go to Rivers, due to lacking capacity for container handling.

  Conceptual development is proposed for Scenario 1, based on the output of the Master Planning Model. Scenario 1 is the one with the highest volume of container cargo and hence requires most development of all the examined scenarios.

  - Scenario 1 container forecast is 9.7 million TEU in 2037
  - Scenario 1 requires 76 additional BHUs by 2037
  - Scenario 1 requires 238 ha additional storage area.
  - Scenario 1, and indeed all scenarios lead to conclude that with the projected cargo traffic a greenfield port will be required for Scenario 1 at the latest around 2022, that is if the demand is only related to traffic numbers, if shippers for commercial reasons need a draft of 16 - 18 m, then a greenfield port would be required sooner. The early development of a Greenfield port would also alleviate traffic problems around the existing ports sooner.

- **Scenario 2**. Optimised Unconstrained. Capital dredging and development of infrastructure for all ports is assumed, allowing containers to flow to nearest port of destination. Firstly Warri access water ways are dredged to 8 m and Calabar access to 9.5 m, allowing 1000 TEU feeder vessels to call at the ports. Later the channels are deepened to 12 m as traffic increases, allowing 2500 TEU vessels to call. At the time of dredging to 12 m it will be necessary to construct berths with 12 m draft.
- **Scenario 3**. Rebalanced – Onne. This scenario will be almost identical to Scenario 1 as presently there is practically only significant container cargo to Lagos and Onne. With time the container traffic to Onne should gradually evolve from Scenario 1 to this scenario. (making Scenario 1 somewhat un-interesting). The channel to Onne may be dredged to 15 m depth if traffic demands; that will allow fully laden WAFMAX vessels and some even larger lightered vessels to call at the port.
- **Scenario 4**. Rebalanced – Onne/Rivers. Berth and storage infrastructures are constructed in Port Harcourt and incremental dredging there from present 9 m to 12 m will be done later. At the time of dredging to 12 m it will be necessary to construct new berths with 12 m draft.
- **Scenario 5**. Rebalanced – Onne/Delta. Access channel and river to Warri is dredged, first to 8 m to allow feeder vessels with around 1000 TEU to call at the ports, later to 12 m when traffic increases, to allow 2500 TEU vessels or lightered WAFMAX vessels. Initially existing berth and storage infrastructure can be utilized, but new 12 m draft berths have to be constructed at the time of dredging to 12 m. Considering the proximity of Port Harcourt to Onne, where capacity availability is abundant, this may be a political, rather than technical/economical disposition.
- **Scenario 6**. Rebalanced – Onne/Calabar. Access channel and river to Calabar is dredged, first to the original design depth of 9 m, later to 12 m allowing 2500 TEU vessels or lightered WAFMAX vessels. Existing berth and storage infrastructure can be utilized, but at the time of dredging to 12 m it will be necessary to construct new berths with 12 m draft.

Conceptual developments are proposed for the Outputs of the Master Planning Model for the different Scenarios 2 to 6. Lagos region will have 2 different development scenarios based on the container traffic projections:

- Scenarios 2, and 5 have 7,5 mill. TEU in 2037
- Scenarios 2, and 5 require 62 additional BHUs by 2037
- Scenarios 2, and 5 require 188 ha additional storage area by 2037
- Scenarios 3, 4 and 6 have 7,8 mill TEU in 2037
- Scenarios 3,4 and 6 require 64 additional BHUs by 2037
- Scenarios 3, 4 and 6 require 197 ha additional storage area by 2037.

All Scenarios 2-6 lead to conclude that with the projected cargo traffic, a greenfield port will be required at the latest around 2024,– that is if the demand is only related to traffic numbers, if shippers for commercial reasons need a draft of 16 - 18 m, then a greenfield port would be required sooner. The early development of a greenfield port would also alleviate traffic congestion problems around the existing ports sooner.

The ultimate choice of a Master Plan scenario is usually based on several considerations, such as:

- Financial feasibility for NPA and port operators
- National Economical Feasibility
- Regional development or support
- Socio-economic impact
- Environmental impact
- Truck cargo traffic out of Lagos Ports in 2037, with the proposed developments, is projected to:
  - 8123 trucks/day from ApapaTCI/KLT for all scenarios
  - 8097 trucks per day from greenfield port, Scenario 1, ‘business as usual’
  - 5950 trucks/day in Scenarios 2 and 5,
  - 6309 trucks/day in Scenario 3, 4 and 6.

(27, Section 9.1 of the Masterplan 2037 requirements outlines, the feasibility analyses will provide information on the financial and economic feasibility for the different development proposals of scenarios 1 to 6. The final selection of which scenario shall form the basis of a final Master Plan for NPA's ports will depend on the financial and economic feasibility in combination with competitiveness, political and regional development considerations. The Final Master Plan shall appear and be described as a flexible tool for a continuously evolving and optimised planning of developments of each of the NPA ports. The development plan and investment schedule can for example be adjusted/updated annually when new traffic figures are available on the actual development and distribution of traffic. The implementation schedule for the individual investment projects can be adjusted to provide the additional necessary capacity type and volume where the recorded growth in traffic development indicates the requirement.)

Therefore, basic requirements for all ports included in final selected Scenario for Dredging to ports with present inadequate navigation depth is an imperative action to be taken for the ports in question of future development. The ports for which capital dredging is required are Delta Ports and Calabar Ports. The remaining Ports need to continue their presently good maintenance standard. For KPI improvements, all of the Conceptual Master Plans to 2037 assume that the cargo handling capacity is increased through improvement of key performance indicators such as the productivity at berth, increased berth occupancy and reduction of the dwell time for cargo at the storage areas and that these improvements shall be completed by 2017, or later as necessary, to meet the demand created by traffic quantities.

For Cargo evacuation, Cargo flows in and out of all of NPA Ports to varying degree hampered by inadequate roads leading to the ports. In some instances, (Lagos Ports) the roads are in fair condition, but the traffic gets congested due to too much traffic and for the remaining ports the roads are simply not in good condition. It is therefore necessary to improve the road conditions to handle the future traffic.

As road improvements are outside the direct scope and responsibility of the NPA, it is recommended that NPA requests state governments or ministry of roads to take on the responsibility to conduct a study into this matter, in order to have the roads improved. Cargo evacuation by road can also be reduced by focusing on developing railways and inland waterways transport, to a higher extent than present day. Alternatives like rail lines must be incorporated with the present mode to evacuate cargos and convey export bound cargos in and out of the Seaports.

The finally adopted NPA Master Plan 2037 shall be able to handle the projected cargo in the selected ports in 2037. The associated handling capacity requirements up to 2037, expressed as need for berth handling units (BHU) and cargo storage areas (ha) shall be developed as and when the traffic demand requires. Dredging to accommodate these developments is a prerequisite to development in ports that do not have adequately dredged access waterways.

The final NPA Master Plan shall outline the optimised options for utilization of the existing cargo handling infrastructure together with a phased investment plan for new infrastructure as required. A final Master Plan 2037 shall seek to satisfy the needs of the nation as a whole, and not only focus on individual ports. Therefore a master plan must be part of a holistic approach, taking into consideration all of the ports.

3.6 DEVELOPMENT COST AND ANALYSIS

The cost estimates for infrastructure development applied in the financial and economic feasibility study, are based on actual unit cost from similar projects adapted to Nigeria conditions.

(28, Section 8.1 outlines the unit cost estimates applied in the feasibility studies as shown in Table10-1. These unit costs are applied to the planned no of units given in the scenario development plans in the previous sections. Dredging costs are strictly unique for each port as a result of widely different access waterways to each port. Construction cost estimates for quays are focused on container quays with front walls capable of carrying STS-crane loads. The cost estimates are based on actual costs of recent (<10 years) quay construction projects in West Africa. Maintenance cost has been estimated to 1% p.a.

of the initial investment cost. Based on consultations with individuals familiar with the Lagos Harbour, as well as a review of chart datum from Admiralty, capital dredging of approximately 1 million m3 to bring the draft to 13.5m for the Lagos Ports has been estimated to cost a lump sum figure of USD6 million. The incremental annual maintenance dredging and channel management fee associated with 13.5m draught is USD 500,000. And MHC, Mobile Harbour Crane $5 500 000 USD (2016) STS, Ship-To-Shore rail mounted gantry cranes $11 000 000 USD (2016) Maintenance cost has been set at 5% p.a. of investment cost.)

3.7 FINANCIAL VIABILITY ANALYSIS

This chapter considers the relative efficiency of capital and recurring financial costs expended, and the resulting financial benefits accrued from the perspective of NPA at a 'port system level' – per scenario. Under a standard landlord port model whereby the Port Authority is responsible for quayside investments and private terminal operators are responsible for landside investments, at the feasibility level, consideration should be given to implementing a BOT model for developments at the Lagos Ports, regardless of which development scenario is selected and implemented.

(29, Section 11.3 outlines, estimating royalty and lease dues over the planning period requires developing individual business cases for each port complex (per development scenario) from the perspective of prospective terminal operators, in order to derive dues that balance maximizing revenue generation for the NPA with sufficiently attracting private sector participation. Thus, the approach to this master planning financial assessment commences with ananalysis of financial costs and benefits expended by prospective private terminal operators over the master planning period for each port in question (by scenario). Based on a framework whereby private actors are engaged, commercially, to handle landside development expenditures (e.g., developing storage areas, installing ship-to-shore (STS) gantries and crane rails, installing mobile harbour cranes, etc.), we have derived royalty and lease dues owed to NPA for providing the necessary quayside infrastructure to handle discharging containers.Individual port level dues owed to the NPA are then aggregated to a port system level (based on the scenario that is being considered) and added to this, are system level NPA port tariff revenues. These total financial benefits accruing to NPA are then compared to the quayside infrastructure expenditures (capital and re-occurring) thatare described in Chapter 10 in order to determine and rank the development scenarios based on financial viability metrics described in Section 11.4.2. of the report.)

In-line with the development scenario schedules described in Chapters 7 and 8, of the report and for modelling purposes, the consultants have assumed that the planning start and end year are 2016 and 2037, respectively.

NPA's capital cost is assumed to be 10% so that its financial costs and benefits can be discounted to present terms; and based on their experience in developing business cases in Nigeria's maritime sector, they have assumed the terminal operators' cost of capital is 15% which informs the royalty and lease dues analysis; Yearly inflation is assumed to be 2% which is based on OECD's *Economic Outlook: Statistics and Projections.* The currency used for the financial assessment is the United States dollar (USD). This report focuses on the Lagos Ports and since developments for this port complex are triggered in each scenario, individual business cases were developed – from the perspective of private terminal operators – for each development scenario. In total, six business cases were developed for the Lagos Ports in order to derive lease and royalty dues owed to NPA from the Lagos Ports for each scenario.

(30, In Section 11.4, Tin Can Island Container Terminal (TCIT)'s tariff schedule (published January 1, 2014) was used as a starting point for estimating indicative terminal operator dues for the NPA Master Plan. Downward adjustments to TCIT's tariff schedule were made based on the following:

1. As per Section 6.2 of Chapter 6, the first two steps described in the planning methodology assumes the optimisation of the port system's current container handling methodology and use of related equipment in order to derive maximum available ship-to-shore handling capacity at the berths and storage throughput capacity at the land areas. As a consequence of optimising current handling methodologies, one would expect higher asset utilization rates thus leading to a decrease in average costs. We have assumed that these costs would be passed on to shippers in the form lower dues.

2. Rebalancing traffic alleviates pressure from the Western Ports of Nigeria by making ports in Eastern Nigeria viable options. As a consequence, additional port options provide shipping lines with a greater selection, thus spurring competition

amongst port terminals in the country. At the same time, we also understand that ports in neighbouring countries (namely, Cotonou and Douala) handle traffic destined for Nigeria whereby, throughput is handled over the quayside and subsequently transported to Nigeria by road. As port developments across the ECOWAS region continue (e.g., US$1.5 billion container terminal expansion at Tema Port commencing in 2016 and expected to increase throughput to three times its current capacity), we expect that regional competition in the maritime sector will continue to intensify, resulting in a cascading affect across the West African regional port system, thus putting downward pressure on dues and tariffs paid by shippers to handle container import traffic in Nigeria.

3. TCIT's tariff schedule is a function of its own cost structure, inclusive of both direct and indirect costs. As mentioned previously, at the master planning level, only direct costs have been taken into consideration for the financial cost-benefit analysis. Accounting for a prospective terminal operator's indirect costs for the NPA master plan has been done by revising TCIT's dues downward. Table 11-6 of/in the report summarises the indicative terminal operator dues used in the financial cost-benefit analysis for the NPA Master Plan. Refer to Appendix B of the report for a graphical summary of dues paid by shippers to terminal operators over the planning period.

4. It is assumed that Lagos Ports would continue to handle >85% of container import traffic.)

3.8 ECONOMIC NET BENEFIT ANALYSIS (DIRECT BENEFITS)

When assessing and quantifying the economic costs and benefits of a particular infrastructural project, greater attention is put on making assessments at a societal or national level. This is particularly true for a port master plan where recommendations typically involve multiple projects across multiple ports. Thus, it is not meaningful to conduct an economic assessment per project (or per port in Nigeria). Additionally, the freight rebalancing exercise described has resulted in five development scenarios, each with a number of Greenfield and Brownfield initiatives across the various ports in Nigeria, depending on how freight is re allocated from the Lagos Port Complex to the Eastern ports of Nigeria.

Therefore, in order to rank the scenarios in terms of economic feasibility, the assessments in this chapter are conducted at the scenario level, by looking at the economic costs and benefits of each Greenfield and Brown field port project - *per scenario* - in aggregate.

(*31, Section 12.3 outlines although Nigeria's economy has grown at an average real GDP growth rate between 6% and 7% over the last five years, the year 2015 saw a significant decline in the economy and estimates suggest that the rate of growth in 2015 was about 3% - 4%.This decline has been attributed to a number of factors including low crude oil prices,political uncertainties and unfavourable trade and fiscal policies. According to the World Bank, Nigeria's GDP per capita growth rate averaged at 4.4% for 2006-2010,and 2.4% for 2011-2014 – reflecting this recent economic downturn.)*

The economic assessment of each development scenario is then analysed and compared to the Status Quo Scenario, whereby proposed projects in this particular scenario are based on the port system's ability to handle container import traffic given prevailing inland routings.

As it relates to this 25-year Ports Master Plan and the resulting scenarios, one can expect that as the supply (or capacity) of Nigeria's eastern ports' infrastructure increases, this could result in more shippers patronizing the country's Eastern ports as they become viable port options based on the development scenario in question.

4 COMMENTS ON CPCS, PREVIOUS REPORT / WAY FORWARD BY NPA

The Nigerian Ports Authority has also continued to remain focused in making its ports efficient and customer friendly. This resolve has seen the Authority take giant stride to establish a part complement of port community system (PCS) through integrated information flows of logistic process by the introduction of Electronic Ship Entry Notice (e-SEN) which has been integrated on an online payment platform, Electronic payment, oracle financials, Oracle HR as major initiatives that

will further drive with great speed the wheel of shipping in Nigerian ports. More notes on PCS below.

After a careful review of the Draft Final Report and presentation to Management, it was observed that the report needed revisions.

Major observations were that:

- CPCS statements are misleading, because the submission of the Draft Final Report did not convey the message or indicate that the report was intended for only discussion and not a Draft Final Report.
- There have been noticeable changes in the assumptions and parameters upon which the analysis in the report is predicated given the shift in the take off period from 2012 to 2017.
- The report did not adequately factor in its analysis the emergence of Deep Seaports and the impact on the existing ports and infrastructure.

Its request that NPA select's a preferred development scenario at this stage negates the objective of the Draft Final Report, which should have been dealt with at earlier stages of the document preparation, needless to say that the document is not an Interim Report.

During a comprehensive evaluation of the assignment, the Management observed that CPCS has been a drawback in the wheel of progress having not made much headway in the production of this vital document. Even though its services were engaged with a view to getting an articulated document that will guide the development of the Nigeria maritime industry in the short and long term, the company is yet to complete the assignment four (4) years after commencement.

In view of the observations stated above, the executive management realised the need to;

- Ensure that CPCS complies fully with the Terms of Reference (ToR) in the preparation of the Draft Final Report.
- Inject required expertise which CPCS has failed to provide into the project to optimize the output.
- Fast track the completion of a 25 Year National Port Masterplan that meets the expectation of the Maritime world and the demand of our economy without further delay.

Accordingly, the NPA Management, in a move to address its concerns on the output of CPCS and to put the preparation on the 25 Year National Port Masterplan on track, engaged INROS LACKNER, to undertake a review of the submitted CPCS Draft Final Report and advise the authority appropriately. CPCS states the purpose of the report in Section 1.2 as follows :

- Presentation of CPCS recommendations for the physical development of the infrastructure of the Lagos Port Complex.
- CPCS's physical development recommendations cover both the construction of new infrastructure as well as the rehabilitation and upgrading of existing facilities.
- CPCS's analysis and recommendations take into consideration private-sector led port developments being carried out in the Lagos area, as well as other regions in Nigeria, which can impact the throughput forecasted for the Lagos Port Complex.
- CPCS also outlined necessary improvements in the transport evacuation infrastructure that will complement the infrastructure development.
- The recommendations of the CPCS Team are based on (i) the infrastructure due diligence findings; and (ii) their assessment of the future traffic potential of the Nigerian Ports, as presented in their Interim Report. And their master planning approach consists of :

  - CPCS traffic forecast for Nigeria, for the various types of cargo (liquid bulk, dry bulk, containers) has been prepared for the 25-year period of the Master Plan, up to 2037.

- This forecast is for the country as a whole, and in order to proceed with master planning for the six port complexes, the forecasted flows have to be distributed between each of the ports.
- Typically, unless there is a condition or constraint, such as a port reaching full capacity without any expansion potential left, or a new port development is already underway, traffic distribution between ports should remain similar to the existing situation.
- Given the current dominance of the Lagos and Tin Can Island port complexes, and the inefficiencies associated with the existing distribution of freight across NPA seaports, consideration must be given to different cargo flow scenarios, whereby future traffic flows through the various NPA port complexes in a pattern that differs from the existing distribution.

In order to determine the prospective scenarios upon which the Master Plan can then be designed, a 6-step analytical approach was employed.

5 PORT PERFORMANCE (Regulatory Framework)

The primary aim of performance benchmarking studies is to measure and compare productive efficiency across time and/or between firms or Decision Making Units (DMUs). Broadly, efficiency can be defined as the ability of a DMU to produce a given output in a manner that is economic and efficient (Bichou et al 2013). Based on the proposed new legal and regulatory framework, a Ports Authority Bill and a Ports Commission Bill were drafted. Following stakeholders consultation, the Ports Authority Bill was amended to form two Port Authorities, namely, Lagos Ports and Harbour Authority and the Nigeria-Delta Ports and Harbour Authority. The Ports Commission Bill was also amended to a National Transport Commission Bill (NTC bill), which would form a National Transport Commission to act as the economic regulator and overseer of other regulations for Ports, Inland Water Transport, Roads and Rail sub-sectors. Later, the "aviation" sector was also included in the draft NTC bill to be supervised by the NTC.

As of April 2008, the Ports and Harbour Authority bills are with the National Assembly for enactment. Looking at the industry dynamics, the study looks at how infrastructure supports the revenue streams in smarter ways. Ports make their money from a variety of sources. Every port's business model is slightly different from even its near neighbours (Ghana Ports & Harbours Authority (GAPOHA), LOME, BENIN.) Whilst it is obvious that most ports obtain the bulk of their revenues from automated handling of the vessels and their cargoes, what is less intuitive is that the mix of services offered and the revenues obtained is changing. Many ports have been established close to major urban densities. This means that the value of the real estate continues to rise as the pressure for housing and office accommodation increases. It also means that people are closer to ports than ever before. People have increasingly more disposable income than ever before.

This has seen the development of accommodation, retail outlets, restaurants and the like on land owned by or on long term lease to the port. San Diego port's change in revenue mix is a classic example being repeated in Australia, Northern Europe and elsewhere. First, one needs to tackle the infrastructure riddle. Approximately 90% of all exported cargo moves by sea. As container ships are getting bigger, capacity of more than 4,000 TEU has risen. Today container vessels are nearly 400m in length, 58m wide that draw 14.5m of water and hold in excess of 20,000 TEU, the pinnacle of efficiency per TEU and currently the longest cargo vessels afloat. These numbers may be too big to comprehend but a fully laden vessel would hold cargo valued around USD1.8Bn or what would be more than the GDP of each of the smallest 20 countries.

It may be hard also to fathom the infrastructure needed to support these behemoths;

Channels dredged. Elongated berths. More cranes. Cranes with 23 container reach. Although the new acts are required to govern the reformed Nigerian Ports sector in an optimal manner, the present Ports Act (1999), provided an adequate legal basis to go ahead with the concession program.

Thus, following the necessary approval from the National Council on Privatisation (NCP) and the President of the Republic, BPE initiated the concession process in October 2004.

- The key features of the new institutional structure for the port sector in Nigeria include:
  - Creation of the two Autonomous Ports and Harbours Authorities
  - Creation of the National Transport Regulatory Commission (NTC)
  - Limiting the role of the Government (i.e Ministry of Transport)
  - Private Operators to perform the Port Operations.

  The functions of the new port authorities include day-to-day technical and safety regulatory functions, primary rights to the basic and operational infrastructure within their respective jurisdictions, power to coordinate marine activities, general responsibility for overall port planning and development, power to issue licenses (as authorised by and subject to guidelines set by NTC), authority to lease and concession port infrastructure, authority to collect port authority tariffs, etc. Although, as per the present arrangement, the Port Authorities will, at least initially, be performing the marine services (i.e. pilotage, mooring, vessel management etc.), the draft bill has provisions to "outsource" such services from the private sector.

  Under the new structure, the role of the Ministry would be limited to the development of port policies, creation of a suitable legal environment, master planning, etc. Currently, there is a significant imbalance in containerized traffic flows, with the Lagos and Tin Can Island port complexes handling in excess of 85% of the NPA's total containerised traffic flows.

  Liquid and dry bulk cargoes are also fairly concentrated, though not to the same extent. When looking at the various cargo flows (liquid and dry bulk, containers) and their ultimate destinations, it can be determined that while bulk cargoes usually call at the nearest port, this is not the case for containers. A rebalancing analysis aimed at improving the distribution of freight must therefore be conducted for container flows, though it is not necessary for other types of cargo. There is the need to ascertain how smarter port management becomes more critical than ever.

  It is well understood from the above that this is a dynamic industry. Whether a port aspires to be the regional trans shipment hub or a significant gateway for the country or hinterland, it will need some or all of the following focus areas to achieve that strategy. Given the dynamics of the challenges mentioned above, one can see broad areas of opportunity for smarter and more efficient ports

  (Looking back at the Section 2.2 of the draft reports on port development masterplan, the current state of Nigeria's transport infrastructure; and the concentration of production, warehousing and distribution facilities in a very small number of geographic pockets—otherwise known as "logistics clusters, has been identified as Factors influencing the existing flow of cargoes handled at the Lagos Port Complex.)

  Although a modest amount of data exists on the consigned origins and/or destinations of cargoes presently handled at the Lagos Port Complex, this data does not fully capture the realities of freight handled at the Port. Many imported cargoes for instance, are stripped at warehouses within the Lagos area, and subsequently reloaded on flatbed trucks which transport them to various parts of the country. Rather than the destination of these cargoes being identified as the location where they are ultimately delivered (e.g. a shop in Kano), the destination is identified as a warehouse in Lagos. This has resulted in an overstatement of "anchor traffic" in Lagos.

	Port	Volume 2014 (Million TEU)	Volume 2013 (Million TEU)	Volume 2012 (Million TEU)	Volume 2011 (Million TEU)	Website
1	**Shanghai, China**	35.29	33.62	32.53	31.74	www.portshanghai.com.cn
2	**Singapore**	33.87	32.6	31.65	29.94	www.singaporepsa.com
3	**Shenzhen, China**	24.03	23.28	22.94	22.57	www.szport.net
4	**Hong Kong, S.A.R., China**	22.23	22.35	23.12	24.38	www.mardep.gov.hk
5	**Ningbo-Zhoushan, China**	19.45	17.33	16.83	14.72	www.zhoushan.cn/english
6	**Busan, South Korea**	18.65	17.69	17.04	16.18	www.busanpa.com
7	**Qingdao, China**	16.62	15.52	14.50	13.02	www.qdport.com
8	**Guangzhou Harbor, China**	16.16	15.31	14.74	14.42	www.gzport.com
9	**Jebel Ali, Dubai, United Arab Emirates**	15.25	13.64	13.30	13.00	www.dpworld.ae
10	**Tianjin, China**	14.05	13.01	12.30	11.59	www.ptacn.com
11	**Rotterdam, Netherlands**	12.30	11.62	11.87	11.88	www.portofrotterdam.com
12	**Port Klang, Malaysia**	10.95	10.35	10.00	9.60	www.pka.gov.my
13	**Kaohsiung, Taiwan, China**	10.59	9.94	9.78	9.64	www.khb.gov.tw
14	**Dalian, China**	10.13	10.86	8.92	6.40	www.dlport.cn
15	**Hamburg, Germany**	9.73	9.30	8.89	9.01	www.hafen-hamburg.de
16	**Antwerp, Belguim**	8.98	8.59	8.64	8.66	www.portofantwerp.com
17	**Xiamen, China**	8.57	8.01	7.20	6.47	www.portxiamen.gov.cn
18	**Tanjung Pelepas, Malaysia**	8.50	7.63	7.70	7.50	www.ptp.com.my
19	**Los Angeles, U.S.A.**	8.33	7.87	8.08	7.94	www.portoflosangeles.org
20 *	**Keihin Ports, Japan**	7.85	7.81	7.85	7.64	www.city.yokohama.lg.jp/en

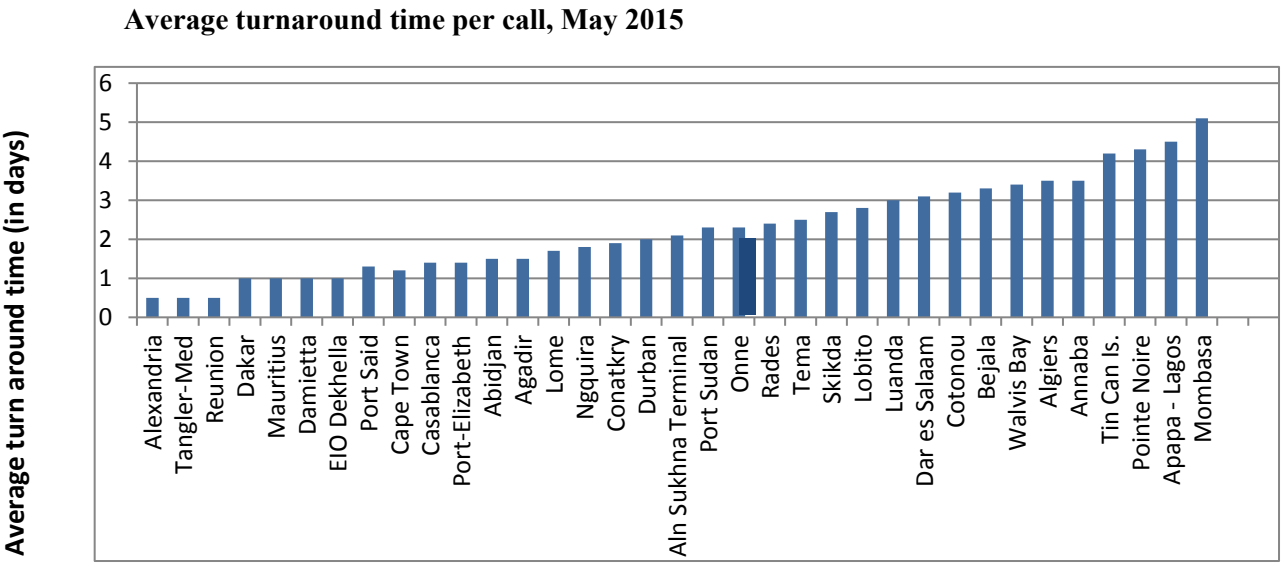
Table 3. **Top 20 World Container Ports Source: Japan International Freigh forwarders Assosiation Inc.**

The TEU which is a Twenty-foot total equivalent unit is used to describe the capacity of container terminals globally. From previous (2013) records, Port Said in Egypt seemed to be the busiest in Africa with a total of 2.9 million TEU's recorded in 2013. This is closely followed by the Port of Durban, South Africa with a TEU capacity of 2.6 million. Port Tangier in Morroco came third with a total TEU 2.5 million. Africa has been known to be the final frontier for trade growth, the only place in the global community where exponential economic and cargo growth is still possible and still developing with major trade still evolving. Yet not one African country had a place in the global/world 20 as in above table. (See Table 3, Page 32). The ever rising African container volumes are increasingly showing/exhibiting the limits of freight infrastructure on both the West and East African coasts, where the seaports in these areas are experiencing trouble dealing with the rise in vessel calls and freight volume.

Africa's answer to Infrastructure problems however, seems to be a position that is becoming more popular in the developing regions around the world. The Asia countries on the other hand are strategically placed in the forefront of the Shipping (cargo throughput/ship turnaround) industry in tandem with their population. In the case of Africa, Nigeria with the highest population in the continent should be in the forefront of the Shipping Industry considering its vast export potentials as endowed with numerous natural resources in the midst of the ever improving economic environment of the continent. Yet this does not reflect in her average turnaround time of ships below (Figure 10, Page 33) in comparison with other African nations.

Note in Bar Graph below (See Figure 10) that two Nigerian and Mombasa ports fall into the category of the longer days between 4 and 6 days. The Authority is required to consolidating and entrenching the gains of the port reform by facilitating and synergizing the activities of the Private Terminal Operators, Shipping Lines, Freight Forwarders and other stakeholders, as well as on the long run create the enabling environment to improving the existing port infrastructure. Continued attention need be paid to first and foremost improving existing port infrastructures in the areas of rehabilitation of port quay walls and aprons, secondly deepening channels and thirdly the upgrading and renovation of common user facilities, wrecks removal from channels as well as other necessary engineering and marine works to ensure the efficiency of service delivery and basically create channels to meeting the expectation of stakeholders and numerous ports users.

As globally accepted seaports accounts for over 80 per cent by volume of International trade and commerce, emphasising that for a seaport to be competitive, it must have a robust infrastructural base amongst other requirements. And the Authority must encourage any effort designed to change the trade orientation of the nation from import dependent to export. Thereby encouraging the private sector to facilitate export activities through the nation's seaports in order to enhance regional or even global competitiveness with the global seaports. Major infrastructural improvements are needed in ports and harbour in all four pilotage districts, together with the impending 25 year Port Master Plan which has reached an advanced stage, to properly meet the demand of all port users for both imports and exports.



Source : LMIU. AVERAGE TURNAROUND TIME PER CALL.

Figure 10. Calculations and elaborations of OECD secretariat based on data of Lloyd's Marine Intelligence Unit (LMIU).

6 METHODOLOGY

In this report, we rely on the documentary secondary sources of data collection. In other words documentary method is a secondary source of data or an indirect method of data. The data obtained shows the documented operational statistics from the output of the Nigerian Port Authority before and after the introduction of the landlord administrative model. The model is therefore an important factor in analysing the relationship between the concessionaires and the Nigerian Port Authority as utilized in the analysis. It is characterised by a mixture of public private orientation, and data were sourced from NPA Handbooks (Hard and Soft Copy), textbooks, stakeholder's visitations and the Internet. Comparative analysis will be utilized for this study. And the study population was made up of the following ports : Lagos Ports Complex, (Apapa/Tincan Port), Rivers Port Complex, Delta Port Complex, Onne Port Complex, and Calabar Port Complex. The method of data analysis employed under this study were :

- Graphical Descriptions (Tables. Charts, Bar Graphs, Histograms and graphical illustrations) to make comparison in different years under study (2012– 2015)

• STUDY OBJECTIVES

Based on the recently shared TOR by UK Aid's PDF II, the following are the key objectives of this study :

- To conduct an in-depth review of the findings of the previous study with a view to determining the degree to which recommendations suggested therein have been adopted and implemented by the NPA. (2008 -2011 TO RESULTS OBTAINED BETWEEN 2012 – 2015)
- To conduct a performance benchmarking analysis comparing performance results obtained between 2008 – 2011 to results obtained between 2012 – 2015.
- Others.

- **Analytical Procedural Objective**
  - The analysis of the relationship between the concessionaires and the Nigerian Port Authority in relations to the service provided by the nation's seaport to the global community was done by comparing the cargo throughput and gross registered tonnage of vessel before and after the introduction of the concession agreement in the year 2006. This was employed as a pointer in analysing the relationship between the service providers, before and after its introduction with the difference in value of Cargo throughput and GRT of vessels between these two periods.

7 THE PRESENT SITUATION (Initial Challenges on Concessions)

The Port Concessionning as economical as the system is, is not without some challenges. These include :

- Initially, the Authority was unable to deliver vacant possession to terminal operators in view of the occupation of the premises by lessees who sought the intervention of the Court to restrain the Authority from ejecting them from the premises. The Authority has however been able to resolve a substantial number of such cases leaving only a few outstanding and pending resolve.
- The various Lease Agreements did not make provision for a specific period for review of the Agreement even though it allow for amendments to the Agreement subject to mutual consent of the parties. (Although Information derived from stakeholders and contract Agreement states this was meant to be reviewed every two years).
- NPA is hindered in the rehabilitation of common user infrastructure in the existing ports. Concessionaires are also hindered due to uncertainties in optimal use of port facilities in the future.
- Lack of fund has impacted on the ability of the Authority to meet its full Dredging obligations, particularly the envisaged draught of the channels in Port Harcourt, Warri and Calabar Ports.
- Payment of Lease fees- The Lessees are advocating for the payment of the fees in Naira as against the United States Dollars. This can only be achieved after an amendment is effected to the Act. Notwithstanding the provision of the CBN Act, which provides that monetary transaction in Nigeria should be denominated in Naira, the Act allows for exemption for certain agencies of government, one of which is the NPA.
- The non-review of the Agreement is also affecting the value addition post concession made by parties. The improvements made by the Authority to facilities has not resulted in the lease fees accruing to it, as same was projected on the old state of the facilities. After looking at the concession challenges, a realistic review on the operational challenges to Port efficiency as a whole is needed.
- Several of the recommendations advocated in the last study of 2013 has not been implemented or holistic approach to implementation has not commenced till date.

Additional salient issues negatively impacting on Corridor Operations reflected in the Regional Infrastructure Development Master Plan are also identified i.e. there are no accessible interfaces or sound level of interconnectivity. Poor reliability of Infrastructures, high accident and failure rates; Sometimes, theft of operating equipment; Poor or no locomotive and wagon availability; High operating costs and low freight volumes, thus not financially sustainable; Road transport competition; Gauge and method of locomotive propulsion not standardised; Lack of continuity and interregional connectivity; Lack of maintenance and investment; Damage as result of conflict; and Operating below design capacities due to poor track condition. Poor Road networks/Conditions; High transport costs;

High cost of maintenance; Missing links between key origins and destinations (O D's); Occasional congestion between major nodes; Delays at cities where by-passes have not yet been built; Capacity and safety constraints due to lack of climbing lanes; Delays at border posts; and High accident rates (road safety). Poor maintenance and lack of funding; Most currently operate close to capacity; Poor

modal interface management; Poor materials handling capabilities, equipment and related infrastructure; Trade and transport facilitation delays; Poor location and layout hampers expansion opportunities; Poor access; Insufficient berths; Depth constraint; Sharp corrupt practices, huge Congestion and minimal or no available pipelines links for liquid/wet cargoes.

7.1 OPERATIONAL CHALLENGES TO PORT EFFICIENCY

The operational challenges the Authority needs to tackle to enhance efficiency include the following:

- Draft Limitations: Nigerian Ports with the exception of Lagos ports are river ports with the challenge of frequent siltation that require continuous capital and maintenance dredging to enable the Authority serve the needs of customers responding to economies of scale by operating bigger vessels.
- Need to reconstruct/improve the quay walls. There is the challenge with the quay walls, pilings and the quay surfaces especially at APMT and GDNL terminals.
- Unreliable Marine services as a result of insufficient Tugboats and pilot cutters. For example, Calabar port has only one Tugboat and no pilot cutter.
- Security and safety concerns especially along the channels. This is more prominent at the eastern ports. There are also complaints of people from Ogogoro village in Lagos coming to attack vessels at Tin Can Island Port and surrounding jetties.
- Access control is another challenge. Lagos ports are generally porous. This is underscored by the presence of multiple entry points.
- The presence of critical wrecks and derelicts along the channels especially at Onne port hampers efficient marine services and by extension port operations. This constitutes safety and security risks to efficient marine navigation and the port environment. Consequently, this will exacerbate the other problems associated with collision, pollution and other MARPOL-related perils.
- Access roads to the ports as well as the common user road inside the ports are in a deplorable condition. They are the major cause of traffic gridlock at the port approaches especially Tin Can and Apapa ports which make the movement of cargo into and out of the ports difficult.
- Inconsistent government policy/unfavorable fiscal policy. The non-approval of foreign exchange on about fourty items and increase in customs tariff on some imported items will actually affect the volume of cargoes being handled at the port. Up till date, it is difficult to source the United States dollars (USD$) to buy equipment to meet up operational needs.
- The biggest challenge will be how the growth in road and rail traffic will be handled and met. Even large, well-established ports were rarely established with the vision of the volumes that will likely be handled in the next 10 to 15 years up till 2037. Wholesale change of road and rail infrastructure to feed these ports can rarely be added optimally after the fact. When one adds the development of free trade zones; terminal to terminal transfers and the increased urbanization of major cities, this will act as a growth limiter for many ports, especially where the democratic process of consultation with the people will take many years to reach the necessary compromises. One example of a major port starting to make this adjustment is Singapore. Transport Minister, Lui Tuck Yew, announced in October 2012 a SGD3.6Bn investment in a radical shift of the five existing terminals into one terminal at Tuas in the West of the island state will nearly double the current 35m TEU capacity whilst freeing up the current sites which are closer to the main business district. The current operating leases expire in 2027.
- The proliferation of government agencies in the ports, each of which has its own bureaucracy combine to slow the cargo clearing process. The non-implementation of the 24 hours scanning of cargo at all the port locations is another factor.
- Power supply is another general challenge to operations. Virtually all port operators are permanently on generators with the attendant high cost of diesel which on the long run add up to ports costs.

- Poor multi-modal connectivity. Over ninety percent of cargoes are being transported by road.
- Internet connectivity is very essential in the operations of the Revenue Invoicing Management System (RIMS) of the Authority. This infrastructure should be integrated so as to be in its take off stage by fall of 2017 with the server to commence 24/7 operation.
- The last pillar of infrastructure relates to the hinterland development. For whilst specialist transshipment ports will handle sea to sea throughput capacity, even that will be fraught with challenges. Cargo moving to the port by land, feeder and barge will represent another set of challenges altogether.
- Absence of management succession. The Authority is being faced with the challenge of not being able to replace outgoing experienced hands. There is the need for recruitment and capacity building for the authority to keep pace with current trends in operations and be able to better monitor and enforce compliance.

- **FURTHER IDENTIFIED PROBLEMS** :
  - Turn around time for ships was too long, and usually calculated in weeks, sometimes months, depending on the cargo being loaded or discharged even at present dispensation. Although the post concession period and incessant port efficiency has reduced turnaround time to 5 and 7 days.
  - Cargo-handling plants and equipment owned by the NPA were few and mostly unserviceable, leading to shipping companies hiring these machines from private sector sources after having paid NPA.
  - Dwell time for goods in ports was prolonged due to poor port management. As a result, overtime cargo filled the most active seaports leading to port congestion. It should be noted that the Ports area and environs must not be utilized as a storage area in order to conform with global best practice.
  - Prior the concession, labour for ship work was held in the vice-grip of wharf overlords who controlled dockworker unions and supplied less than the manpower paid for. This fraud, which became accepted by the maritime community lasted for years and was usually perpetrated to extract maximum revenue from helpless ship owners and their agents without care of how this impacted on the Nigerian economy and the already dented reputation of Nigerian seaports.
  - Nigerian seaports were, as a result of the compounded problems, rated as one of the costliest seaports in the world. See the note on port charges in other West African seaports for a comparison.
  - Many port premises and quay aprons had fallen to disuse and failed road sections inside the ports made movement of goods within port grounds cumbersome and very slow.
  - Following the seaport congestion, complaints of untraceable or missing cargoes were being regularly lodged against the NPA, recovery and recompense have been all to no avail.
  - Security inside Nigerian seaports remains compromised. Unauthorized persons continue to have accessto the ports.

8 THE PREMISE

Back in 2009, NPA advertised for expression of interest (EOI) for the provision of consultant services for the development of national Port Master Plan At least 18 bids were received for the tender. In February, 2009, a stakeholders meeting was held in Lagos which included concessionaires, Shipping lines and others to discuss the need for a comprehensive port development master plan, that would improve the capacity of the nation's seaports, as envisaged in the proposed 25 year port development Master Plan for the Nigerian Ports Authority. It is the best permanent solution to solving port congestion problems.

(Also looking back at the Section 3.3.5 of the report states Firms which re-routed their cargoes and relocated their activities to Lagos during the period of the militancy in the Niger Delta for instance, continue to operate from Lagos, despite a significant improvement in the security situation within the Delta. The cost of gathering information pertaining to the state of their former routing, they say, is too high, particularly since there is no guarantee that the earlier issues with militants won't resurface).

The delay in the rapid implementation of the Port Masterplan, has impacted investments in Port Infrastructure in several ways,:

Firstly, NPA is hindered by incessant change of Administration, personnel skill gaps and delayed succession planning. Secondly, Concessionaires are also hindered due to uncertainties in optimal use of port facilities.

Countries and ports served by monopolistic cargo carriers record high share of freightcost in foreign trade, often higher than tariffs. Also, many land-locked countries face serious network problem, with weak or insufficient linkages between national and international systems.

It is important to remember that the maritime sector, cannot be restricted to the operation of shipping and vessels. Seaports and all the different kinds of services that are provided in and near these port are an/as important aspect of shipping. Shipping is not a stand-alone activity but a combination of shipping, port operations and all the service operations necessary to secure the operation, including road and railway access to ports.

During the privatisation process, there was close consultation between the Nigerian Ports Authority, the Bureau of Public Enterprises, the transaction advisers. Some of the meetings also included Transport specialists from the World Bank and other stakeholders. This consultation process proved highly useful in disseminating information to the NPA about the modalities of the concessioning and restructuring programs.

Presently, few terminal operators that were awarded a concessionhave contributed to developing the port. As an example, APM Terminals Apapa, GDNL and Grimaldi have simplified the work of freight forwarders in terms of cargo clearance. The turnaround time of vessels has improved tremendously while cargo throughput at Nigerian ports has also doubled. (See Table 1, Page 11 and Figure 7, Page 14 on Cargo throughput).

Port capacity and value of trade in Africa

Country	Total TEU Capacity	Ranking (1 to 16)	Trade: Impts + Expts (US$ mn)	Ranking (1 to 16)
Algeria	189,848	13	87,794	3
Angola	407,609	5	58,057	4
Cameroon	200,254	12	6,727	12
Djibouti	294,902	10	531	16
Egypt	4,755,879	1	56,324	5
Ghana	513,204	4	12,268	10
Morroco	3, 185,367	3	13,070	9
Libya	44,202	16	54,720	6
Mozambique	62,516	15	6,000	15
Namibia	144,993	14	6,442	13
Nigeria	235,846	11	95,550	2
Senegal	375,876	6	6,123	14
South Africa	3,781,403	2	158,234	1
Sudan	359,537	7	17,654	8
Tanzania	301,579	9	7,508	11
Tunisia	349,507	8	34,009	7
China	101,963,351		1,760,430	
Brazil	6,798,200		287,217	

Table 4. **Port capacity and value of trade in Africa.** ***Sources: WTO database; Containerisation International Yearbook, 2014. (Note: Brazil and China are given for comparative purposes.)***

8.1 EXPORTATION POTENTIAL IN RELATIONS TO THE TORS

According to WTO Economic Report (WT/TPR/S/247), the trend in doing business in Nigeria is challenging as the country ranks 140th out of 190theconomies. Between 2005 and 2009, real GDP growth averaged 6.4% annually and is estimated to have been 8.4% in 2010. Growth has been driven

by the non-oil sector, mainly services such as wholesale and retail trade and communications. As a result, real incomes have risen and poverty levels have partly declined. During the 2005-10 period, growth in oil and gas sector was subdued due to production shortfalls and, in some years, lower international prices. Under the then Vision 20:2020 Nigeria's official development plan, the government aimed to make Nigeria one of the world's top 20 economies by 2020. Currently, the country ranks 48th according to the World Bank. To achieve this development goal, a growth rate of over 14% per annum would be required. It would be difficult to sustain the current growth rate of over 8% and would require further diversification of the economy away from oil, a significant increase in private-sector investment (both domestic and foreign), and far-reaching legal, structural, and institutional reforms focused on improving the business and regulatory environment. These would include, interalia, putting an appropriate regulatory framework in place for utilities as well as removing infrastructure bottlenecks, most notably provision of electricity, road transport, and the high cost of financing, all of which raise the cost of trade and doing business.

Nigeria's trade and business environment is also affected by the exchange rate. An overvalued exchange rate can erode the international competitiveness of exports, while making imports more attractive and thereby worsening the trade balance. According to the IMF, the naira is overvalued by approximately 15%. Although the Central Bank of Nigeria's stated goal is price stability, it appears that in recent years the focus has been on exchange rate stability. The Naira has depreciated from N150/USD$ IN 2015 to N500/USD$ (officially N400/USD$) as at December 2016. In order to keep the exchange rate stable, the authorities intervened in the market and sold/released the U.S. Dollar currency/Foreign Exchange to the banks/market recently. Consequently, foreign exchange reserves slightly declined. However the Authorities are of the view that inflation is influenced mainly by structural factors, such as limited supply response and uncompetitive market structures, and not exactly by monetary policy. Oil revenue accounts for nearly all of Nigeria's export earnings and a significant proportion of total government revenue. Any windfall gains from increases in global oil prices appear to have been disbursed in an ad-hoc manner and not utilized for development or stabilization purposes.

Although some diversification has taken place, fuel continues to dominate Nigerian's exports, accounting for over 90% of total merchandise exports in 2009 compared with 98% in 2003. The shares of manufacturing and agriculture in exports have risen during the period under consideration; agricultural exports are dominated by cocoa beans. The share of primary products in total merchandise imports more than halved between 2003 and 2009 from nearly 34% to approximately 16%. The decline was due to a fall in fuel imports. In contrast, the share of manufactures rose, with machinery and transport equipment being the most important component. The shares of iron and steel imports and of chemicals declined during the period.

Nigeria continues to be perceived as highly corrupt. Several steps have been taken to address this image, including through legislative measures in the Corrupt Practices and other Related Offences Act, No. 5, 2000, and institutional reform in the Corrupt practices and Other Related Offences Commission. In addition, other governments have pursued cases where individuals and enterprises resident in their countries have been involved in corrupt practices in Nigeria. However, despite progress, the perception continues that Nigeria remains corrupt; It ranks 150th out of 180th. In view of the prevalent Corruption in the Nation which has been accepted as a way of life and which is not subsiding and to the detriment of the masses presently entrenched In poverty, starvation and death, there need be advocating a National Cemetry for Corrupt Leaders as a result of the overall consequential effect of Corruption on the Nation's Population, Economy coupled with marred reputation, persistent devastation and downward trending GDP as a whole.

Nigeria's main Export destination in 2009 were the United States, EU-27, India and Brazil. Despite a considerable decline, the United States remains Nigeria's largest export market. During the period under review, the shares of the EU-27, Brazil, and Africa showed an increase. The shares of Equitorial Guinea and Barbados showed a significant increase between 2008 and 2009 but this appears to be a statistical anomaly and is not reflected in Import data for these two countries. The then Vision 20:2020 sets out the overall objective of making Nigeria one of the top 20 economies in the world by

2020, reducing poverty, improving wealth distribution, and a number of other social and economic development objectives.

9. CONCLUSION

Port efficiency is one of the main determinants of international transport costs. It was found to be most important among six different port characteristics, including port infrastructure, private sector participation and inter port connectivity. Various studies have quantified the relation between increased port efficiency on the one hand, and decreased transport costs and increased trade volumes on the other hand, with substantial effects varying with the extent of port efficiency improvement (The important role of port efficiency for reducing costs of trade is confirmed by other studies. To make a country competitive in international trade its export products must be able to reach their destination at competitive prices and with a reliable frequency. This becomes increasingly important as there is a clear logistic tendency to hold ever lower levels of inventories in all lines of business. As a consequence there are general concerns about the robustness of supply chains that include Africa because of the lack of capacity and alternatives as Exportation orientation is imminent.

It was noticed without doubt that Sub-Saharan Africa witnessed in 2008, a year when cargo handling fell in Nigeria. A year of port congestion that lingered till the end of the year. Practically every terminal has been congested during parts of the year with delay up to two weeks, and sometimes more. This adversely impacted the Nigerian economy with higher costs for demurrages paid to the shipping companies and indirectly passed on to cargo owners or consumers. The pressure on the ports is also being upheld by the fact that Nigeria imports 70-80% of refined oil products and with the near non-existence of railway lines connecting the port, the number of trucks needed increased dramatically.

Two factors that are often referred to as causing the problem are roads and multiple clearing agents. On the Customs side a 48 hours electronic cargo clearance and payment process was meant to go into operation on August 4, 2009. The ports had also set a 48-hours cargo clearance limit, but with multiple clearing agents handling the paperwork in ports, the effectiveness remains questionable. As for roads, access roads to ports need major resurfacing. It causes accidents, loss of lives and properties as well as delays in cargo delivery. In the areas around ports like Apapa, and other western ports, there is huge loss of revenue due to traffic congestion. Truckers also demand 0%-import tax on spare parts as the bad roads lead to astronomic maintenance costs.

Falling containers off trucks have become a regular problem and hazardous to passer-by . As ports in Western Nigeria are congested, ports in Eastern Nigerian are facing economic hardship caused by lower than expected turnover. Ports in the eastern part of the country, like Warri, Port Harcourt, Onne and Calabar have seen turnover figures remain low in spite of the investments by private operators, who won concessions here. There are two problems that are being blamed for this situation; dredging of the canals and no tugboats available. Both are the responsibility of the Nigerian Port Authority (NPA). With evermore shallow waters in the canals many ship owners/shippers/operators do not want to call at these ports for the fear of running aground.

With few or no tugboats available in the area, risks increase and the chance for grounded ship to get assistance is minimal. The Federal Government has showed a proactive approach in commencing the re dredging of the Calabar port channel before the end of June 2017. Previously in 2006, USD$ 56 million dollars was spent on a dredging project, but the dredging has yet to be completed. Based on the section on dredging in the report, this project is a very high capital intensive venture. In spite of this, The whole of the 84 km channel to the Calabar port will now be dredged. Due to the shallow waters in the channel, shippers have refused to follow state directives to divert traffic from ports in the west to ports in the east, due to draught restrictions and fear of militant activities. APM Terminal's investment in port infrastructure surpasses USD$200 million and resulted in a doubled

turnover since the takeover of the Apapa port in 2006. Out of this sum, over half has been invested in equipment, construction works, IT systems and people training.

10. RECOMMENDATIONS

These recommendations, based on input from the port community, and external influence/output indicate a need for increased efficiency, measurement, communication of data in a timely and meaningful manner, with transparency. By design, there is an overlap and connection among several recommendations. None of the recommendations in this report should be viewed independent of the others. The connections between all recommendations must be examined together and a logical sequence for implementation must be developed. The recommendations are not in priority order within the evaluation criteria. Recommendations are both long and short term and will incrementally contribute to the overall performance of the port at both the administrative and operational level. Some will be pursued immediately, while the (soon to be integrated) "Taskforce" will pursue some recommendations opportunistically unless they are "quick fixes." The Task Force (to be integrated) will examine the connections between some recommendations and develop a logical sequence for suggested implementation. The cost and time frame for implementation as well as identification of the responsible party (is) should be developed. The CPP will continue to monitor progress toward implementation.

- ✓ **Establish Port performance and price review**
- ✓ **Freight Stations**
- ✓ **Duplication of Government Agencies**
- ✓ **Insecurity**
- ✓ **CRFFN Operations**
- ✓ **Greenfield Ports Project**
- ✓ **Exportation Potential**
- ✓ **Information Management**
- ✓ **Fleet Management**
- ✓ **Labor Relations**
- ✓ **Supply Efficiency**
- ✓ **Contract Expiration**

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