

The Federal Republic of Nigeria

Data Collection Survey on Transport and Logistics Sector in the Federal Republic of Nigeria

Final Report

FEBRUARY 2026

**Japan International Cooperation Agency (JICA)
Yachiyo Engineering Co., Ltd.
Katahira & Engineers International
The Overseas Coastal Area Development Institute of Japan**

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JR
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Exchange Rate: December 2025, Monthly Exchange Rate in FY2025

USD 1.00 = ¥156.236

NGN 1.00 = ¥0.10825

Study Location Map



(Source: Edit based on OpenStreetMap)

Basic Information

■ The Federal Republic of Nigeria

Capital: Abuja

Population: 233 million (2024 World Bank)

Area: 923,773 km²

GDP: 187.76 billion USD (2024 World Bank)

GNI per capita: 1,250USD (2024 World Bank)

Major industries: Agriculture, Oil, Natural Gas, Communication, etc.

Economic growth rate: 3.4% (2024 World Bank)

Cost escalation rate: 14.5% (2024 World Bank)

Unemployment rate: 3.0% (2024 ILO estimate)

Amount of Trade

Export: 57.98 billion USD

Import: 47.48 billion USD

Major Trade Commodities (2024)

Export: Mineral fuels, cocoa, fertilizers, ores

Import: Mineral fuels, nuclear reactors and boilers, Machinery and equipment, automobiles and parts

Major trading partners:

Export: USA, Spain, India, France

Import: China, Belgium, USA, India

Source: Ministry of Foreign Affairs of Japan

<https://www.mofa.go.jp/mofaj/area/nigeria/data.html>

Pictures



Road transport covers approximately 90% of all passenger & freight in Nigeria, but almost half of the federal road network as logistics corridor are poor.



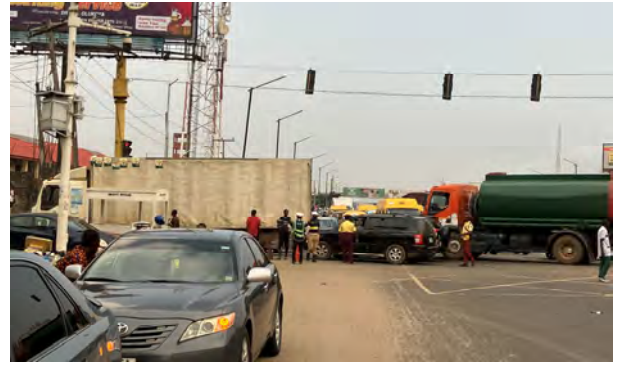
Heavy vehicles are parked at roadside on the flyover connecting to Apapa Port. Congestion in surrounding roads due to the concentration of cargo at the port is a major challenge.



At the Seme border, the X-ray scanners are out of order and all cargo is inspected and transhipped manually due to an unstable power supply and lack of forklifts.



The Ikeja in Lagos State is one of Nigeria's leading logistics hub with many factories. Construction of a new bridge in the area is currently underway, and it is expected that the new infrastructure will improve traffic congestion in this area.



Federal Highways No.1&5 are major logistics corridors in Nigeria, but some sections through the urban area in Lagos are crowded due to mixed traffic vehicles.



Railway connecting to Apapa Port is expected to shift a port cargo transport from road to rail, one of the challenges on logistics sector in Nigeria, and reduce the burden on roads.



Container transport by barge is currently operated at the KiriKiri Lighter Terminal in the Lagos Port. An expanding the use of inland waterways via lagoons and rivers is one of the challenges for Nigeria's logistics.



In Ogun State where agriculture is major industry, the Agro Cargo Airport, which will be used exclusively for air transport of agro-products that needs speed-delivery, is currently developed by state funding.

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Abbreviation

<u>Abbreviation</u>	<u>Meaning</u>
ACV	Agreement on Customs Valuation
ADP	Federal Airport Development Plan
AEO	Authorized Economic Operator
AFC	Africa Finance Corporation
AfCTA	African Continental Free Trade Area
AFD	French Development Agency
AfDB	African Development Bank
AIB	Accident Investigation Bureau
AIDI	Africa Infrastructure Development Index
ALC	Aviation Leasing Company
AMP	Abuja Master Plan
ANLCA	Association of Nigeria Licensed Customs Agents
AP & D	Appointment, Promotion & Disciplinary Committee
ARMOR	Accelerating Resource Mobilization Reforms
ASYCUDA	Automated System for Customs Data
AU	African Union
BOT	Build Operate Transfer
BRICS	Brazil, Russia, India, China, South Africa
BRT	Bus Rapid Transit
CBR	California Bearing Ratio
CCECC	China Civil Engineering Construction Corporation
CCTV	Closed-Circuit Television
CEMA	Customs & Excise Management Act
CFA	CFA Franc
CNG	Compressed Natural Gas
DMU	Diesel Multiple Unit
DX	Digital Transformation
EAC	East African Community
ECOWAS	Economic Community of West African States
EDI	Electronic Data Interchange
EIB	European Investment Bank
EPC	Engineering, Procurement, Construction
EPT	Export Processing Terminal
ERGP	Economic Recovery and Growth Plan

<u>Abbreviation</u>	<u>Meaning</u>
FAAN	Federal Airports Authority of Nigeria
FAQs	Frequently Asked Questions
FBC	Full Business Case
FCC	Federal Capital City
FCDA	Federal Capital Development Authority
FCT	Federal Capital Territory
FCTA	Federal Capital Territory Administration
FEC	Federal Executive Council
FERMA	Federal Roads Maintenance Agency
FG & P	Finance and General Purpose Committee
FIRR	Financial Internal Rate of Return
FIRS	Federal Inland Revenue Service
FMBEF	Federal Ministry of Budget and Economic Planning
FMF	Federal Ministry of Finance
FMITI	Federal Ministry of Industry, Trade and Investment
FMMBE	Federal Ministry of Marine and Blue Economy
FMT	Federal Ministry of Transportation
FMW	Federal Ministry of Works
FOB	Free on Board
FT2.0	Fast Track 2.0
FTZ	Free Trade Zone
FWD	Falling Weight Deflectometer
GATS	General Agreement on Trade in Services
GDP	Gross Domestic Product
GHG	Greenhouse Gas
GIS	Geographic Information System
GIZ	Deutsche Gesellschaft für Internationale Zusammenarbeit
GMS	Greater Mekong Subregion
GPS	Global Positioning System
GRDP	Gross Regional Domestic Product
HDMI	Highway Development Management Initiative
HS	Harmonized Commodity Description and Coding System
ICRC	Infrastructure Concession Regulatory Commission
ICD	Inland Container Depot
ICT	Information and Communication Technology
IDP	Inland Dry Port

<u>Abbreviation</u>	<u>Meaning</u>
ILT	Ikorodu Lighter Terminal
IMO	International Maritime Organization
IRI	International Roughness Index
ISO	International Organization for Standardization
ITS	Intelligent Transport Systems
JICA	Japan International Cooperation Agency
KLT	Kiri-Kiri Lighter Terminal
LAMATA	Lagos Metropolitan Area Transport Authority
LASWA	Lagos State Waterways Authority
LGA	Local Government Association
LPI	Logistics Performance Index
LPLEL	Lekki Port LFTZ Enterprise Limited
LRT	Light Rail Transit
LSDP	Lagos State Development Plan
LSMEPB	Lagos State Ministry of Economic Planning and Budget
LSMF	Lagos State Ministry of Finance
LSMPUD	Lagos State Ministry of Physical Planning and Urban Development
LSMT	Lagos State Ministry of Transportation
LSMWI	Lagos State Ministry of Works and Infrastructure
LSTMP	Lagos Strategic Transport Master Plan
LSTMMP	Lagos Strategic Transport and Mobility Master Plan
MINT	Mexico, Indonesia, Nigeria, Turkey
MITI	Master Plan for Integrated Transport Infrastructure
MRO	Maintenance, Repair and Operations
NAFDAC	National Agency for Food and Drug Administration
NAHCO	Nigerian Aviation Handling Company
NAMA	Nigerian Airspace Management Agency
NBS	National Bureau of Statistics
NCAT	Nigerian College of Aviation Technology
NCAA	Nigeria Civil Aviation Authority
NCS	Nigeria Customs Service
NDLEA	Nigeria Drug Law Enforcement Agency
NICIS II	Nigeria Integrated Customs Information System
NIMET	Nigerian Meteorological Agency
NIIMP	National Integrated Infrastructure Master Plan
NITT	Nigerian Institute of Transport Technology

<u>Abbreviation</u>	<u>Meaning</u>
NIWA	National Inland Waterway Authority
NPA	Nigerian Ports Authority
NRC	Nigerian Railway Corporation
NSC	Nigerian Shippers' Council
NSW	National Single Window
UNPRC	Nigerian Upstream Petroleum Regulatory Commission
OD	Origin - Destination
OPEC	Organization of the Petroleum Exporting Countries
OSBP	One Stop Border Post
PCS	Port Community System
PIDF	Presidential Infrastructure Development Fund
PPP	Public Private Partnership
QBC	Quality Bus Corridor
RAAMP	Rural Access and Agricultural Marketing Project
RIDRITCS	Refurbishment Investment Tax Credit Scheme
RORO	Roll-on Roll-off
RoW	Right of Way
SAHCO	Skyway Aviation Handling Company
SAPZ	Special Agro-Industrial Processing Zones
SIGMAT	Système Interconnecté de Gestion des Marchandises en Transit
SON	Standards Organisation of Nigeria
SSA	Sub-Saharan Africa
TDO	Terminal Delivery Order
TEU	Twenty-foot Equivalent Unit
TFA	Trade Facilitation Agreement
TRACON	Total Radar Coverage of the Nigerian Airspace
TRIM	Trade Related Investment Measures
TRIPS	Trade Related Aspects of Intellectual Property Rights
TRS	Time Release Study
TTP	Truck Transit Park
UNCTAD	United Nations Conference on Trade and Development
UPS	Uninterruptible Power Systems
VTA	Vehicle Transit Area
WACAM	Fifth West African Coastal Observation Mission
WAGRIC	Project on the Corridor Development for West Africa Growth Ring Master Plan
WB	World Bank

<u>Abbreviation</u>	<u>Meaning</u>
WCO	World Customs Organization
WTO	World Trade Organization

Chapter 1. Study Overview

1.1 Background of the Study

The Federal Republic of Nigeria (hereinafter referred to as "Nigeria") is a major country in Africa, boasting a population of approximately 233 million and a GDP of \$187.76 billion (2024, World Bank). It is endowed with rich natural resources, including crude oil, where it ranks seventh in production among member countries of the Organization of the Petroleum Exporting Countries (2023, OPEC), as well as abundant water resources and arable land, indicating a high potential for further economic development.

Nigeria's economic development to date has been achieved through an industrial structure centered around the oil sector. However, the promotion of the agricultural sector, which has significant potential, has been insufficient. Moving forward, a further shift towards agriculture and other manufacturing industries, which will lead to job creation, is essential. In this regard, Japan (JICA) has been implementing technical cooperation to promote market-oriented agriculture and improve rice productivity.

In this context, the increase in logistics volume related to the oil sector, agriculture, and manufacturing has highlighted significant challenges in the value chain, such as the underdeveloped logistics infrastructure and low-quality logistics services, which have become major factors contributing to rising transportation costs.

In 2020, the Nigerian government announced the National Integrated Infrastructure Master Plan (NIIMP) as a national plan for infrastructure development. This plan includes recommendations for improving roads, railways, and land and water transport services, as well as early response measures for coordination between logistics modes and inter-organizational adjustments. However, many of these projects and initiatives remain uninitiated or are significantly delayed.

1.2 Objective of the Study

Considering the current situation, this study aims to contribute to the improvement of the transportation and logistics sector by focusing on infrastructure development and service enhancements, particularly targeting ports, land transportation (roads and bridges), and water transportation (coastal shipping, inland shipping, and river ports). The study will involve the collection and analysis of information to propose project plans, including the possibility of support from Japan, aimed at strengthening facilities and infrastructure, enhancing policies, systems, and organizations, and improving service levels by operators. Additionally, it will provide recommendations for future development strategies related to logistics.

1.3 Implementation Structure of the Project

1.3.1 Project Team

The member of project team is as shown in table 1.3.1.

Table 1.3.1 Project Member

	Position	Name	Firm
1	Team Leader / Transportation, Logistics Policy and Strategy	Yasuhiro Yamauchi	Yachiyo Engineering Co.,Ltd.
2	Deputy Team Leader / Cooperation Program • Project Plan	Kiyotaka Miyake	Yachiyo Engineering Co.,Ltd.
3	Transportation and Logistics Services / Customs Clearance Improvement	Toshiyuki Iwama	Yachiyo Engineering Co.,Ltd.
4	Demand Forecast / Economic Analysis 1	Takeharu Koba	Yachiyo Engineering Co.,Ltd.
5	Demand Forecast / Economic Analysis 2	Nobuyoshi Fujiwara	Yachiyo Engineering Co.,Ltd.
6	Road Infrastructure / Transportation Planning	Toshiaki Horii	Yachiyo Engineering Co.,Ltd.
7	Port and Maritime Transportation Planning	Masahiro Yoshimi	The Overseas Coastal Area Development Institute of Japan
8	Transportation and Logistics Survey	Kazuya Umeda	Katahira and Engineers International

1.3.2 Project Schedule and Major Activities

This project was conducted from November 2023 through February 2026. The schedule is outlined in Table 1.3.2.

Table 1.3.2 Project Schedule and Major Activities

Year and Month	Major Activities
Nov. 2023 – Dec. 2024	Preparation of IC/R and submission
Jan. 2024 – Feb. 2025	1 st duty trip (explanation of IC/R for stakeholders, data collection)
Mar. 2024 – May 2025	Current status and challenges of the transportation and logistics sector, Management of transport and logistics survey
Jun. 2024 – Jul. 2024	2 nd duty trip (Additional data collection), Basic Concept and Strategy for Improvement of the Transport and Logistics Sector
Aug. 2024 – Oct. 2024	Preparation of IT/R and submission, summary of transport and logistics survey, demand forecasting
Nov. 2024	3 rd duty trip (explanation of IT/R for stakeholders, revision of IT/R)
Dec. 2024	4 th duty trip (data collection of port and maritime sector), revision of IT/R
Jan. 2025 – Apr. 2025	Updating of IT/R and submission, Consideration of cooperation program
May 2025 – Jun. 2025	5 th duty trip (data collection of road sector), Consideration of specific projects
Jul. 2025 – Oct. 2025	Selection of priority project, Preparation and implementation of official invitation to Japan
Nov. 2025	6 th duty trip (explanation of DF/R for stakeholders), Preparation of DF/R and submission
Dec. 2025 – Feb. 2026	Preparation of F/R and submission

IC/R : Inception Report, IT/R: Interim Report, DF/R: Draft Final Report, F/R: Final Report

Source: JICA Study Team

1.3.3 Related Organizations

The related organizations for this project include the federal government, state governments, donors, and other relevant entities, as outlined below. The Infrastructure Department of the Federal Ministry of Budget and Economic Planning (FMBEP), which is responsible for formulating the National Integrated Infrastructure Master Plan (NIIMP), is positioned as the coordinating body for the entire Nigerian side.

Table 1.3.3 Key Related Organizations

Government	Key Government Agencies and Organizations
Federal Government and Public Corporations	Federal Ministry of Finance (FMF) Federal Ministry of Budget and Economic Planning (FMBEP) Federal Ministry of Works (FMW) Federal Roads Maintenance Agency (FERMA) Federal Ministry of Transportation (FMT) Federal Ministry of Marine and Blue Economy (FMMBE) Nigerian Ports Authority (NPA) Shippers' Council (NSC) National Inland Waterways Authority (NIWA) Nigerian Railway Corporation (NRC) Federal Airports Authority of Nigeria (FAAN) Nigeria Customs Service (NCS) Infrastructure Concession Regulatory Commission (ICRC)
State Governments	[Federal Capital Territory]: Traffic Secretariat, Federal Capital Territory Administration (FCTA) Urban and Regional Planning Department, Federal Capital Development Authority (FCDA) [Lagos State]: Ministry of Transportation (LSMT) Ministry of Works and Infrastructure (LSMWI) Ministry of Economic Planning and Budget (LSMEPB) Ministry of Planning and Urban Development (LSMPUD) Ministry of Finance (LSMF) Lagos Metropolitan Area Transport Authority (LAMATA) Lagos State Waterways Authority (LASWA) etc.
Donors and International Organizations	World Bank French Development Agency (AFD) African Development Bank (AfDB) Economic Community of West African States (ECOWAS) World Customs Organization (WCO)
Others	Nigerian Institute of Transport Technology (NITT)

Source: JICA Study Team

1.3.4 Joint Meeting

The Federal Ministry of Budget and Economic Planning (FMBEP) has taken the lead in organizing joint meetings as a platform for reporting on project-related matters. So far, a meeting was held in Abuja in November 2024, serving as an opportunity to present content related to the interim report. This meeting was attended by approximately 60 participants, including representatives from relevant Nigerian ministries and participants from Japan.

Additionally, depending on the content of the meetings, several sub-joint meetings have been conducted with key related agencies as needed. The main sub-joint meetings held include the following:

Table 1.3.4 Major Joint Meetings

<u>Meeting Categories</u>	<u>Relevant Agencies</u>	<u>Content</u>
Joint Meeting	FMF, FMBEP, FMW, FMITI, FERMA, FMT, FMMBE, NPA, NSC, NIWA, NRC, FAAN, NCS, ICRC, FCTA (Transport Secretariat), FCDA (URP), LSMT, LSMWI, LSMEPB, LSMPUD, LSMF, LAMATA, LASWA, NITT	Group for Project Progress Reports and Related Discussions, Information Sharing
Multimodal Sub-Joint Meeting	Federal Ministry of Budget and Economic Planning (FMBEP) Nigerian Shippers Council (NSC) Private Operators (3 companies)	Group for Information Sharing and Discussion of Issues and Improvements Related to Dry Port (Railway Transshipment) Operations Across Nigeria
Lagos Road Sub-Joint Meeting	LSMT (Lagos State Ministry of Transportation) LSMWI (Lagos State Ministry of Works and Infrastructure) LAMATA (Lagos State Traffic Management Authority)	Group for Discussion on Improving Road Bottlenecks in Lagos State
Abuja Logistics Facility Sub-Joint Meeting	FCTA (Federal Capital Territory Administration - Transport Secretariat) FCDA (Federal Capital Development Authority - Urban and Regional Planning)	Group for Discussion on Planned Logistics Facilities (Dry Port, Truck Terminal) in the FCC Suburbs

Source: JICA Study Team

Chapter 2. Trends in the Transportation and Logistics Sector in Nigeria and Related High-level Plans

2.1 Socioeconomic Overview

2.1.1 Demographic Trends by State

In Nigeria, national population censuses were conducted in 1991 and 2006, with the information obtained managed by the National Population Commission of Nigeria under the Ministry of Interior. The Nigerian government had planned to conduct another census in May 2023; however, it was indefinitely postponed by the administration of former President Muhammadu Buhari.

Focusing on state-level population statistics, the development of a comprehensive database has been slow, and only estimated figures are published annually in the Demographic Statistics Bulletin by the National Bureau of Statistics. According to the Demographic Statistics Bulletin for 2020 and 2021, the total population of the country was approximately 186.12 million in 2016, reaching about 206.28 million by 2020, resulting in a population growth rate of 10.8% over the five-year period. When examining state populations, Kano State, Lagos State, Katsina State, Kaduna State, and Bauchi State have the highest populations, with both Kano and Lagos states exceeding 10 million residents.

Table 2.1.1 Population Trends by State(2016 – 2020)

No.	State	Annual					2016-2020 Growth rate (%)
		2016	2017	2018	2019	2020	
0	Total	186,121,277	191,053,912	196,042,933	201,135,262	206,283,338	10.8%
1	Kano	13,061,860	13,450,530	13,852,238	14,253,549	14,655,311	12.2%
2	Lagos	12,033,445	12,288,839	12,531,530	12,772,884	13,012,971	8.1%
3	Katsina	8,369,926	8,668,899	8,977,242	9,300,382	9,639,059	15.2%
4	Kaduna	7,678,078	7,891,256	8,105,251	8,324,285	8,549,066	11.3%
5	Bauchi	6,835,118	7,067,129	7,300,050	7,540,663	7,788,504	13.9%
6	Oyo	7,050,013	7,202,908	7,358,018	7,512,855	7,667,318	8.8%
7	Rivers	6,585,693	6,734,279	6,885,307	7,034,973	7,183,473	9.1%
8	Jigawa	6,150,337	6,354,507	6,561,451	6,779,080	7,007,317	13.9%
9	Niger	5,665,810	5,847,657	6,033,997	6,220,617	6,407,568	13.1%
10	Ogun	5,495,738	5,651,466	5,798,744	5,945,275	6,090,740	10.8%
11	Sokoto	5,336,484	5,508,650	5,686,341	5,863,187	6,039,289	13.2%
12	Benue	5,432,973	5,551,238	5,669,555	5,787,706	5,905,747	8.7%
13	Borno	5,366,703	5,491,442	5,623,677	5,751,590	5,875,471	9.5%
14	Anambra	5,233,407	5,352,877	5,477,532	5,599,910	5,720,035	9.3%
15	Zamfara	4,850,510	5,008,075	5,159,678	5,317,793	5,482,423	13.0%
16	Delta	4,985,899	5,090,103	5,198,675	5,307,543	5,416,738	8.6%
17	Imo	4,873,654	4,972,386	5,070,149	5,167,722	5,265,082	8.0%
18	Kebbi	4,525,293	4,677,379	4,834,886	5,001,610	5,178,123	14.4%
19	Ondo	4,627,488	4,743,667	4,856,143	4,969,707	5,084,330	9.9%
20	Akwa Ibom	4,576,294	4,644,867	4,712,967	4,780,581	4,847,542	5.9%
21	Adamawa	4,185,266	4,299,284	4,417,584	4,536,948	4,657,314	11.3%
22	Edo	4,140,181	4,244,511	4,353,500	4,461,137	4,567,512	10.3%
23	Enugu	4,100,649	4,188,334	4,273,288	4,396,098	4,505,928	9.9%
24	Plateau	4,103,256	4,201,252	4,300,001	4,400,974	4,504,272	9.8%
25	Osun	4,040,045	4,106,177	4,171,661	4,237,396	4,303,366	6.5%
26	Cross River	3,924,082	4,013,047	4,094,739	4,175,020	4,253,698	8.4%
27	Kogi	3,884,218	3,967,919	4,058,704	4,153,734	4,253,371	9.5%
28	Abia	3,553,752	3,646,214	3,743,568	3,841,943	3,941,279	10.9%
29	Gombe	3,307,801	3,411,323	3,516,217	3,623,462	3,733,100	12.9%
30	Yobe	3,150,002	3,232,244	3,315,082	3,398,177	3,481,567	10.5%
31	Ekiti	3,104,755	3,185,220	3,268,175	3,350,401	3,431,742	10.5%
32	Taraba	3,076,898	3,160,982	3,245,094	3,331,885	3,421,510	11.2%
33	Kwara	3,009,755	3,089,231	3,172,216	3,259,613	3,351,720	11.4%
34	Ebonyi	2,785,306	2,857,120	2,931,444	3,007,155	3,084,214	10.7%
35	FCT	2,368,558	2,477,433	2,588,192	2,702,443	2,820,261	19.1%
36	Nasarawa	2,415,158	2,484,482	2,556,350	2,632,239	2,712,349	12.3%
37	Bayelsa	2,236,872	2,290,985	2,343,687	2,394,725	2,444,028	9.3%

Source: Demographic Statistics Bulletin 2020 • 2021, National Bureau of Statistics

2.1.2 Economic Trends by State

According to estimates from the World Bank, Nigeria's GDP in 2021 was approximately \$429.2 billion, with a per capita GDP of \$2,110. Additionally, the total revenue for all states was around \$13.4 billion, while expenditures amounted to about \$17.1 billion, indicating that expenditures significantly exceeded revenues.

When examining GDP by state, Lagos State stands out, accounting for 25% of the national GDP. Lagos also has the highest per capita GDP at \$8,261, followed by Bayelsa State at \$4,947 and Akwa Ibom State at \$4,188. In contrast, states like Kano have much lower per capita GDPs, around \$748, highlighting significant disparities in economic performance across states.

Regarding the revenue and expenditure situation by state, all states except Nasarawa State have expenditures that exceed revenues, with particularly large deficits observed in Lagos State and Rivers State. Lagos State is reportedly making proactive investments to sustain and develop its economy (Source: Businessday NG, 17 October, 2025), which is reflected in the marked excess of expenditure over revenue. This trend indicates ongoing fiscal challenges for many states in Nigeria.

Table 2.1.2 Economic Condition by State (2021)

No.	State	GDP (1000\$)	GDP(\$) per capita	Revenue (1000\$)	Expenditure (1000\$)	Revenue - Expenditure (1000\$)
0	Total	429,247,607	2,110	13,361,520	17,118,201	-3,756,681
1	Lagos	107,495,276	8,261	1,993,062	2,708,494	-715,433
2	Rivers	20,782,159	2,893	814,927	1,471,816	-656,889
3	Akwa Ibom	20,301,547	4,188	873,070	919,818	-46,748
4	Imo	20,066,371	3,811	270,461	350,271	-79,809
5	Delta	16,169,363	2,985	862,140	997,532	-135,392
6	Anambra	13,431,253	2,348	239,991	343,241	-103,250
7	Ondo	13,323,003	2,620	308,175	347,809	-39,634
8	Ogun	13,126,111	2,155	373,926	603,867	-229,941
9	Bayelsa	12,089,557	4,947	568,287	612,909	-44,623
10	Niger	11,957,806	1,866	251,998	267,712	-15,714
11	Kaduna	11,251,985	1,316	381,623	616,119	-234,496
12	Benue	11,145,066	1,887	211,013	233,868	-22,855
13	Kano	10,966,892	748	418,913	462,607	-43,694
14	Cross River	10,622,003	2,497	333,572	383,439	-49,867
15	Edo	10,415,722	2,280	375,582	469,438	-93,856
16	Kogi	9,632,667	2,265	213,096	338,099	-125,003
17	Oyo	9,543,079	1,245	404,797	524,781	-119,983
18	Abia	9,208,084	2,336	227,789	320,139	-92,349
19	Katsina	8,679,336	900	307,035	384,756	-77,721
20	Sokoto	7,435,163	1,231	264,337	337,882	-73,544
21	Adamawa	6,958,600	1,494	202,666	260,812	-58,146
22	Bauchi	6,873,177	882	251,573	378,498	-126,925
23	Ekiti	6,130,414	1,786	202,309	272,696	-70,387
24	Osun	6,005,740	1,396	213,589	261,594	-48,005
25	Ebonyi	5,858,530	1,900	237,489	255,664	-18,176
26	Jigawa	5,647,721	806	324,494	347,172	-22,678
27	Gombe	5,474,012	1,466	185,473	258,119	-72,646
28	Taraba	5,336,876	1,560	209,669	236,381	-26,711
29	Borno	5,113,897	870	341,079	374,346	-33,267
30	Nasarawa	4,852,640	1,789	270,469	254,221	16,248
31	Kebbi	4,701,451	908	206,267	211,371	-5,104
32	Zamfara	4,511,091	823	188,533	240,871	-52,338
33	Plateau	3,910,375	868	186,052	222,425	-36,374
34	Enugu	3,789,515	841	233,099	293,806	-60,706
35	Kwara	3,605,535	1,076	215,617	248,929	-33,313
36	Yobe	2,835,590	814	199,346	306,698	-107,352

Source: World Bank estimate (quoted by State of States 2022 Edition, BudgIT)

*Note: Currency conversion is based on the OANDA rate as of January 1, 2021 (1 USD = 382.973 NGN).

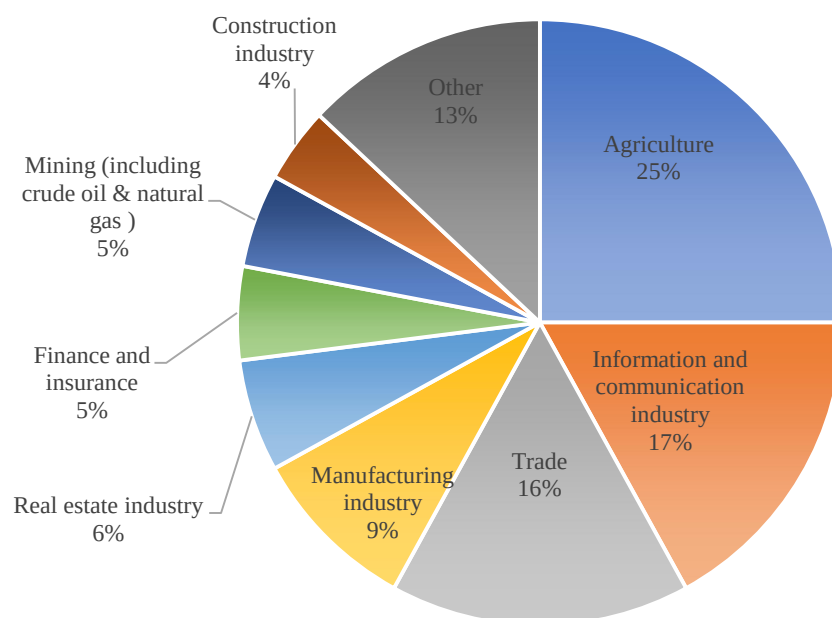
*Per capita GDP is calculated based on the population figures for 2020.

2.2 Industrial Trends in Nigeria

In 2023, the GDP composition of Nigeria shows that agriculture accounts for the largest share at 25%, followed by the information and communication sector at 17%, and trade at 16%. The mining sector, which includes oil and natural gas production, contributes only 5% to the GDP.

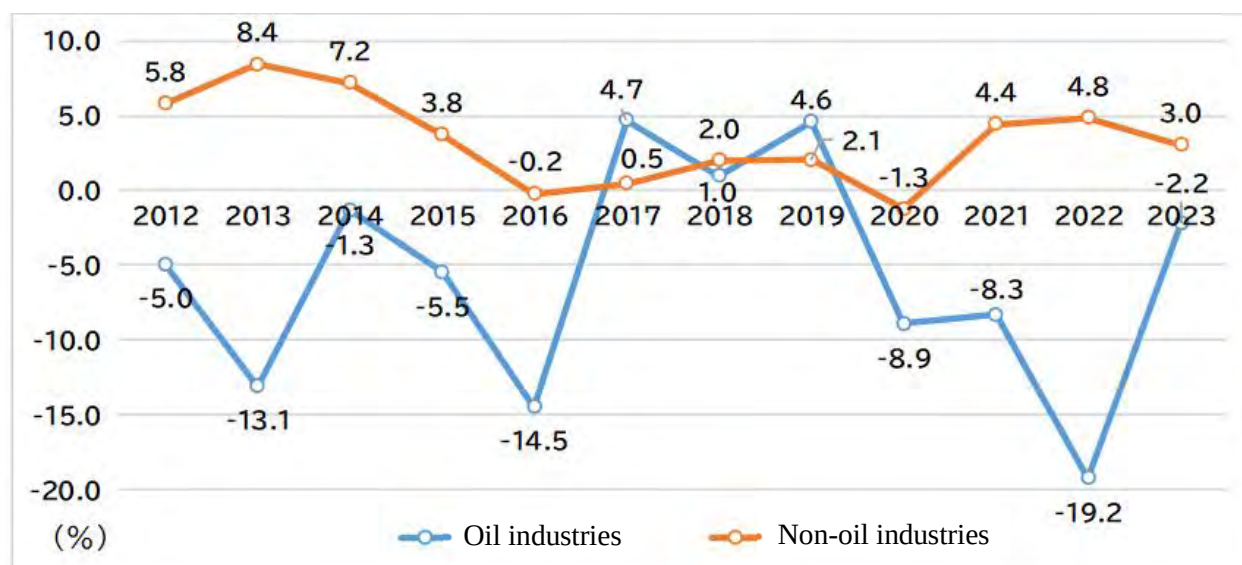
When examining the growth rates of the oil and non-oil sectors, non-oil industries have consistently shown positive growth, except during the impacts of the COVID-19 pandemic in 2020 and the decline in oil production and prices in 2016. In contrast, the oil sector has experienced significant fluctuations in its growth rates, as illustrated in the accompanying chart.

This trend highlights the resilience of non-oil industries in Nigeria, which have managed to grow despite external shocks, while the oil sector remains vulnerable to global market dynamics and internal challenges.



Source: Nigerian Gross Domestic Product Report Q4 2023, National Bureau of Statistics

Figure 2.2.1 Composition of Real GDP by Industry (2023)



Source: Nigerian Gross Domestic Product Report Q4 2023, National Bureau of Statistics

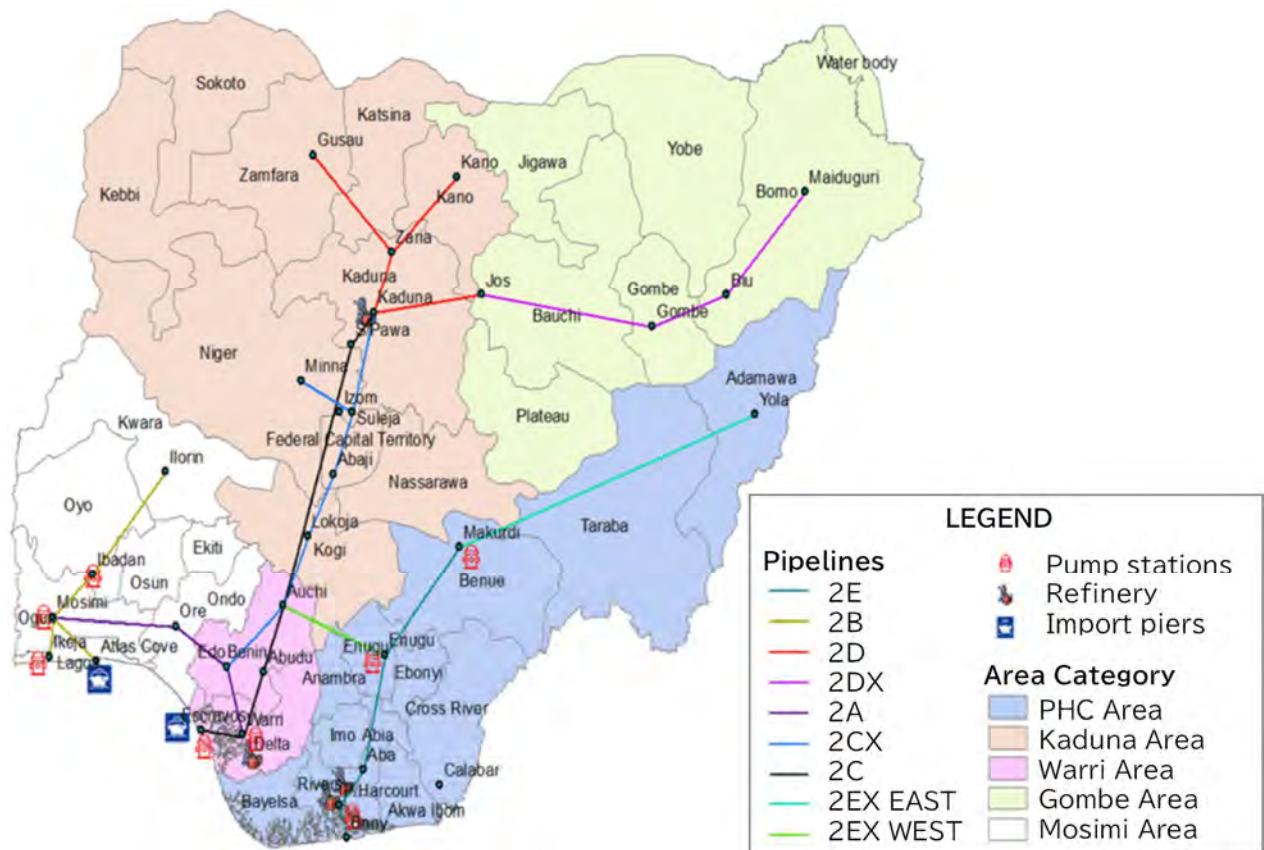
Figure 2.2.2 Trends in GDP Growth Rates of Oil and Non-Oil Industries (2012 - 2023)

2.2.1 Trends in Major Industries: Oil and Gas Sector

Oil, natural gas, and other petroleum-related products account for 90% of Nigeria's total export value (2023, NBS), with oil-related revenues constituting 68.4% of government revenue (2017, NBS). The crude oil production for the first half of 2024 is projected to be between 1.2 and 1.4 million barrels per day, according to the Nigerian Upstream Petroleum Regulatory Commission (NUPRC) report. This positions Nigeria as Africa's largest and the sixth-largest oil producer in the world. Additionally, Nigeria ranks as the eighth-largest exporter of oil globally and holds the largest natural gas reserves in Africa, ranking seventh worldwide.

While Nigeria's economy heavily relies on the oil industry, the decline in oil production has led to reduced sector profits, hindering the achievement of development goals. The Economic Recovery and Growth Plan (ERGP) set specific targets, such as increasing oil production to 2.5 million barrels per day by 2020 and reducing oil product imports by 60% by upgrading refineries by 2018; however, these targets have not been met. The National Development Plan (NDP) 2021-2025 emphasizes the importance of diversifying the economy away from dependence on the oil and gas sector. It also notes that addressing challenges such as high exploration and production costs, a weak legal framework, and the inadequate functioning of pipelines and refineries could lead to further growth.

Despite being an oil-producing country, Nigeria has very few crude oil refining facilities and relies heavily on imports for petroleum products. The state-owned refineries, the oldest of which began operations in 1965, have seen a decline in operational efficiency due to poor maintenance and aging infrastructure, leading to a complete shutdown of operations since January 2020. However, in May 2023, Dangote Industries launched the largest refinery in the country at Lekki Port. As of 2015, nine pipeline systems were operational, but there have been reports of high failure rates, particularly in the northeastern Gombe region.



Source: Additional Notes Based on NNPC Data

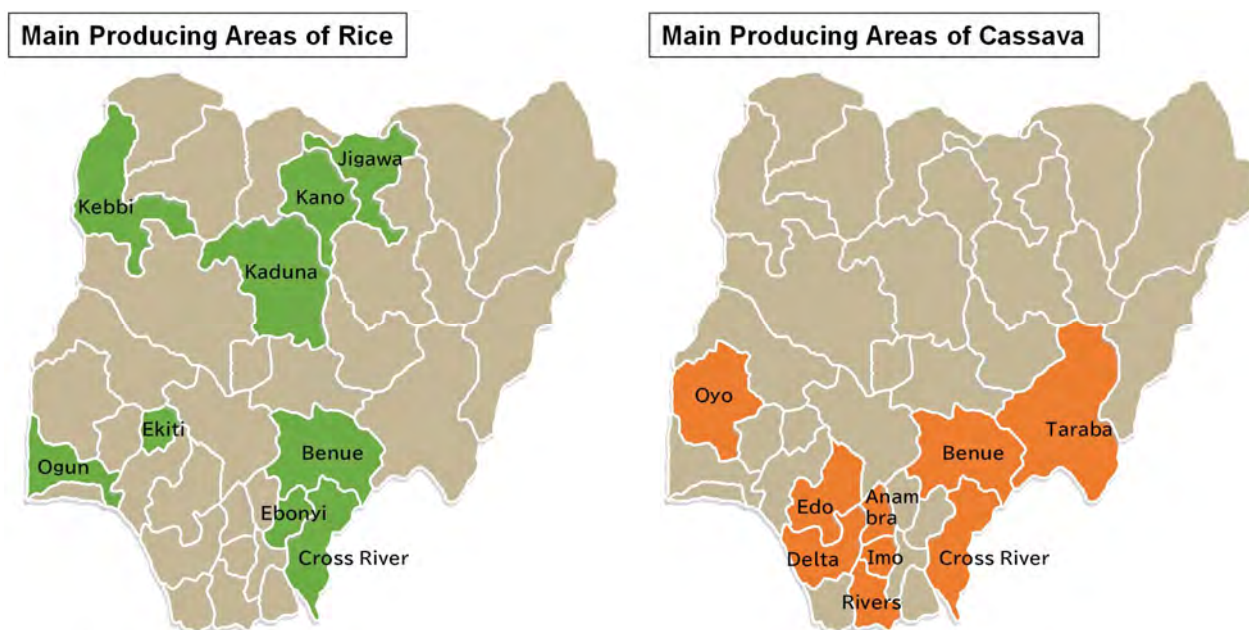
Figure 2.2.3 Pipeline Network

2.2.2 Trends in Major Industries: Agriculture Sector

Nigeria possesses vast and fertile land suitable for cultivation, covering approximately 77% of its total land area, along with abundant water resources. This positions agriculture as a key sector with significant potential to serve as an alternative to oil.

The country is particularly notable for its production of cereals, with Nigeria ranking first in the world for cassava and yam production. Additionally, Nigeria is the leading producer of rice in Africa, demonstrating large-scale agricultural production capabilities. Other major agricultural products include maize, cocoa, sorghum, palm oil, and groundnuts.

This agricultural diversity not only supports food security but also offers opportunities for economic diversification and rural development, making the sector a critical component of Nigeria's overall economic strategy.



Source: Commodity Port, Legit HP

Figure 2.2.4 Major Rice and Cassava Producing Areas

Despite having significant potential for agricultural production, Nigeria faces numerous challenges that hinder its ability to fully capitalize on this potential. One of the primary issues is the low productivity of the agricultural sector. Comparatively, Nigeria lags behind its neighboring countries in the quality of seven out of ten major cereal crops.

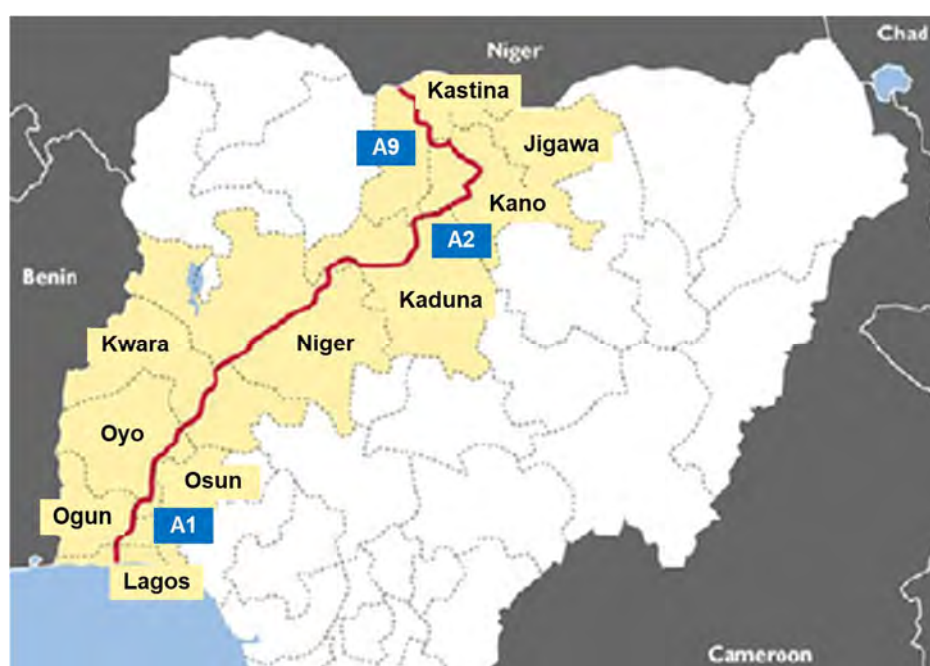
Several factors contribute to this situation, including inadequate access to quality seeds, modern farming techniques, and mechanization services. Additionally, inefficiencies in rural distribution, quality degradation due to small-scale primary processing, and insufficient investment stemming from limited access to finance are significant barriers. Logistics issues, particularly the transportation of goods from production areas to consumption centers, also play a critical role (source: Information gathering and verification survey for the formulation of Nigeria's National Agricultural Sector Cooperation Policy).

A study conducted by JICA's agricultural policy advisor in 2020 revealed that post-harvest losses amount to approximately \$10 billion annually, with 40-50% of agricultural produce losing its economic value. For instance, cassava can spoil within days if left untreated. In Nigeria, farmers face not only restricted access to large-scale processors but also limited access to storage facilities and reliable transportation. High transportation costs to large processing plants mean that about 70% of cassava processing occurs in small-scale centers with low production efficiency.

Excluding cassava, the production of major agricultural products in Nigeria is concentrated in the northern regions, while major consumption centers, such as Lagos and Ibadan, are located in the southern part of the country. This geographical disparity necessitates long-distance transportation from rural areas to consumption centers, primarily along a north-south route. The main transportation corridor from the north

to the south is the "Lagos-Kano Corridor," which primarily utilizes federal highways A1 and A2, passing through seven states (Kano, Kaduna, Niger, Kwara, Oyo, Ogun, and Lagos). This corridor is crucial not only for connecting the northern and southern regions of Nigeria but also for linking the inland areas to international markets through ports and airports.

However, within the food value chain from production to distribution, the lack of infrastructure and inefficient operations at ports and surrounding areas represent significant bottlenecks. Typically, customs procedures and inspections for exports can take around 128 hours (approximately five days), leading to further degradation of agricultural products and a decline in their market value. This inefficiency significantly undermines Nigeria's competitiveness in agricultural exports, resulting in agricultural export revenues accounting for less than 2% of the total, which is a stark contrast to the country's potential.



Source: Created based on report of World Bank by JICA Study Team

Figure 2.2.5 Lagos-Kano Corridor

2.2.3 Location of Major Industries in Nigeria: Manufacturing Sector

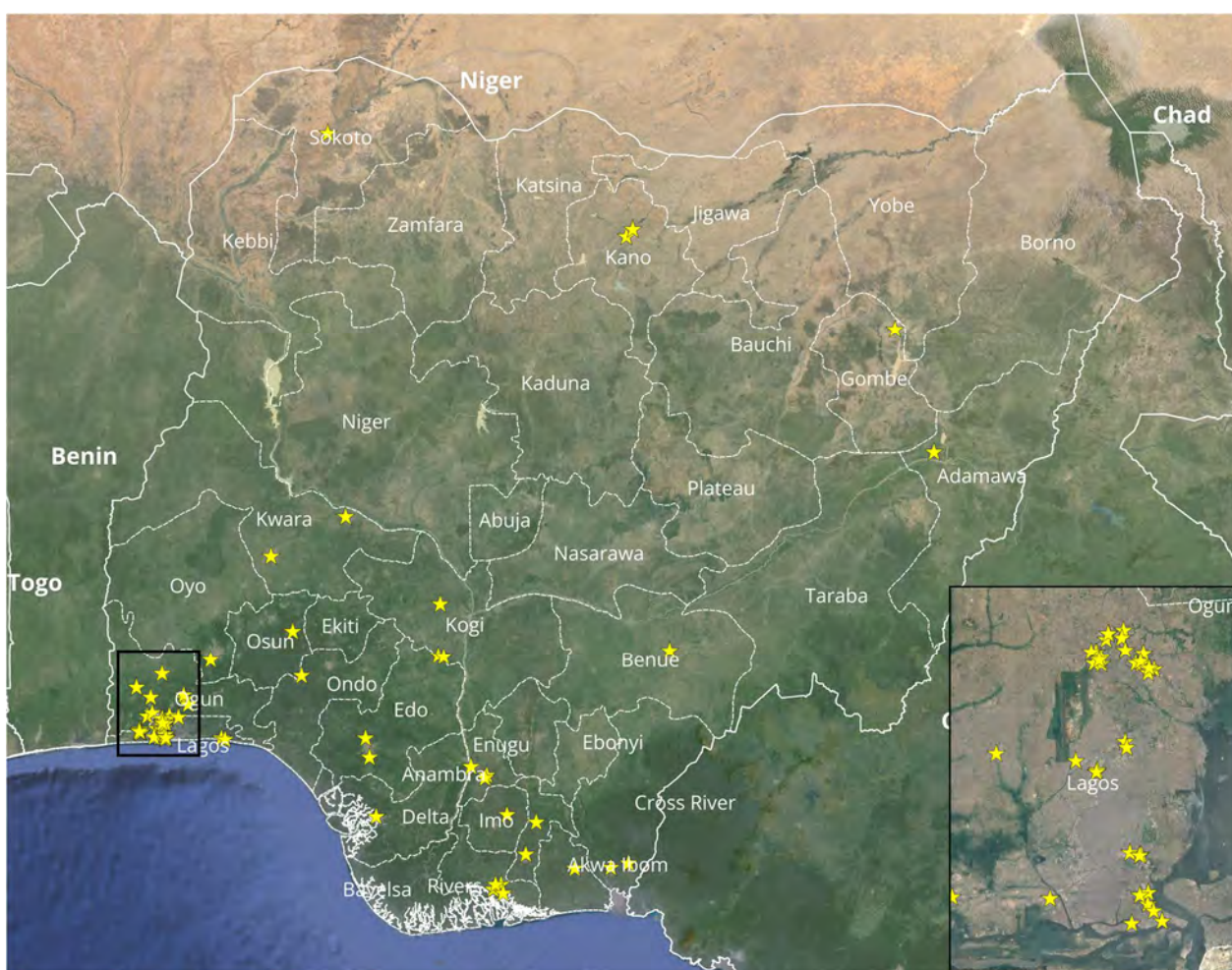
In 2017, JETRO conducted a survey titled "Major Companies in Africa: West Africa English-Speaking Edition (Nigeria)" and extracted companies classified under "Manufacturing" and "Chemical Industry." A total of 90 companies were analyzed, with a significant number being involved in food and beverage manufacturing.

The location analysis revealed that more than half of these establishments, specifically 49 companies, are situated in Lagos State. Furthermore, when including Lagos, a total of 79 companies (88% of the total) are located in coastal states. This indicates that a substantial portion of Nigeria's major manufacturing industries is concentrated in Lagos and the coastal regions.

Table 2.2.1 Major Manufacturing and Chemical Industrial Firms in Nigeria

Manufacturing Industry Categories	Number of Companies
Food	24
Beverages, Tobacco, and Feed	17
Chemical Products	13
Stone, Pottery, and Ceramic Products	12
Metal Products	6
Transportation Equipment	5
Petrochemical and Coal-related Products	3
Other Manufactured Goods	10
Total	90

Source: JETRO



Source: Created based on data of JETRO by JICA Study Team

Figure 2.2.6 Location Status of Major Manufacturing Companies in Nigeria

2.3 Trends in Foreign Trade

According to the National Bureau of Statistics (NBS) of Nigeria, the export value for 2023 reached 35.96 trillion naira, marking a significant year-on-year increase of 34.2%. Mineral products, including crude oil, accounted for a substantial portion of the exports, which grew by 35.6% compared to the previous year. This increase is believed to be influenced by the surge in crude oil prices due to the Ukraine crisis and rising energy demand.

In 2023, the import value also saw a notable rise, increasing by 40.4% year-on-year to 35.92 trillion naira, slightly surpassing the export value. Mineral products were the largest category of imports, making up 33.9% of the total. The import value of mineral products reached 12.19 trillion naira, reflecting an 18.9% increase from the previous year. Similar to exports, imports were also affected by the rising energy prices.

Nigeria's three domestic refineries, which have a combined refining capacity of 445,000 barrels per day, are currently all non-operational due to maintenance issues. As a result, the country heavily relies on imports for most petroleum products, including gasoline. The second-largest category of imports was transportation equipment and related products, which amounted to 7.80 trillion naira, representing more than a threefold increase compared to the previous year.

Table 2.3.1 Major Export and Import Items

(Unit: 1 million Naira)

Major Export Items	Amount for 2022	Amount for 2023	Composition Ratio	Growth Rate
Mineral products	24,389,951	33,075,147	92.0%	35.6%
Vegetable products	316,547	786,964	2.2%	148.6%
Products of the chemical and allied industries	844,368	631,768	1.8%	-25.2%
Prepared foodstuffs; beverages, spirits and vinegar; tobacco	405,751	612,153	1.7%	50.9%
Base metals and articles of base metals	244,618	389,857	1.1%	59.4%
Vehicles, aircraft and parts thereof; vessels etc.	364,783	118,509	0.3%	-67.5%
Articles of stone, plaster, cement, asbestos, mica, ceramic	75,177	100,120	0.3%	33.2%
Boilers, machinery and chemical appliances; parts thereof	8,804	60,792	0.2%	590.5%
Plastic, rubber and articles thereof	54,487	53,170	0.1%	-2.4%
Raw hides and skins, leather, furskins etc.; saddlery	36,707	47,202	0.1%	28.6%
Total (Including Others)	26,796,755	35,962,392	100%	34.2%

(Unit: 1 million Naira)

Major Export Items	Amount for 2022	Amount for 2023	Composition Ratio	Growth Rate
Mineral products	10,251,333	12,191,991	33.9%	18.9%
Vehicles, aircraft and parts thereof; vessels etc.	1,680,757	7,800,840	21.7%	364.1%
Boilers, machinery and appliances; parts thereof	4,336,996	5,043,325	14.0%	16.3%
Products of the chemical and allied industries	2,215,191	2,333,442	6.5%	5.3%
Vegetable products	1,313,469	1,629,759	4.5%	24.1%
Prepared foodstuffs; beverages, spirits and vinegar; tobacco	976,580	1,514,539	4.2%	55.1%
Plastic, rubber and articles thereof	1,186,873	1,299,378	3.6%	9.5%
Base metals and articles of base metals	851,394	968,079	2.7%	13.7%
Live animals; animal products	549,643	597,473	1.7%	8.7%
Paper making material; paper and paperboard, articles	412,234	573,120	1.6%	39.0%
Total (Including Others)	25,590,547	35,917,619	100%	40.4%

Source: Nigerian Gross Domestic Product Report Q4 2023, National Bureau of Statistics

When comparing export values by country for the period from October to December 2023, the Netherlands (15.1% share), India (8.7% share), and Spain (8.1% share) ranked as the top exporters to Nigeria. Notably, crude oil accounted for over 90% of the export value, with China having a lower proportion of 16.1%. This indicates that transactions other than crude oil with China are significant.

Looking at imports by country, Singapore (36.1% share), China (14.6% share), and Belgium (8.1% share) were the leading sources. In 2023, Nigeria imported 5.06 trillion naira worth of tanks and armored combat vehicles from Singapore, which exceptionally caused the import value from Singapore to surpass that from China. In 2022, the order of top import sources was China, the Netherlands, Belgium, and India.

Table 2.3.2 Export and Import Values by Country

Export Amount (October to December 2023)				
Rank	Country	Amount (Million Naira)	Percentage of Crude Oil (%)	Percentage (%)
1	Netherlands	1,910,469	91.9	15.1
2	India	1,101,468	89.9	8.7
3	Spain	1,030,086	79.1	8.1
4	Canada	907,644	99.4	7.2
5	France	799,770	87.4	6.3
6	United States	729,595	83.5	5.7
7	Indonesia	587,977	98.7	4.6
8	Italy	549,832	95.0	4.3
9	South Africa	543,713	97.7	4.3
10	China	408,988	16.1	3.2

Import Amount (October to December 2023)			
Rank	Country	Amount (Million Naira)	Percentage (%)
1	Singapore	5,092,358	36.1
2	China	2,060,590	14.6
3	Belgium	1,140,970	8.1
4	India	908,592	6.4
5	United States	512,989	3.6
6	Netherlands	482,292	3.4
7	Korea, South	304,619	2.2
8	Malta	291,980	2.1
9	Brazil	282,263	2.0
10	Italy	239,670	1.7

Source: Nigerian Gross Domestic Product Report Q4 2023, National Bureau of Statistics

When examining the transportation modes, port handling stands out significantly, accounting for 97.9% of the total export and import value. Air transport represents 1.7%, while road (land border) and other transportation modes account for less than 1%.

By major customs, airports, and ports, Apapa Port handles the largest volume for both exports and imports, with exports alone comprising approximately 94% of the total. Following Apapa Port, Tin Can Island Port and Onne Port have the next highest export and import values.

Table 2.3.3 Export and Import Values by Mode of Transport

(%) (October to December 2023)	* Domestic Exports	* Re-exports	Imports	Total Exports and Imports	*Domestic exports refer to goods that are grown, extracted, or manufactured in Nigeria and sold in other countries, while re-exports refer to goods that are exported to other countries in the same condition as when they were imported into Nigeria
MARITIME	99.4	92.4	99.4	97.9	
RAIL	0.0	0.0	0.0	0.0	
ROAD	0.2	5.8	0.2	0.3	
AIR	0.2	1.8	0.2	1.7	
MAIL	0.0	0.0	0.0	0.0	
INLAND WATERWAYS	0.0	0.0	0.0	0.0	
OTHER TRANSPORT	0.2	0.0	0.2	0.1	

Source: National Bureau of Statistics

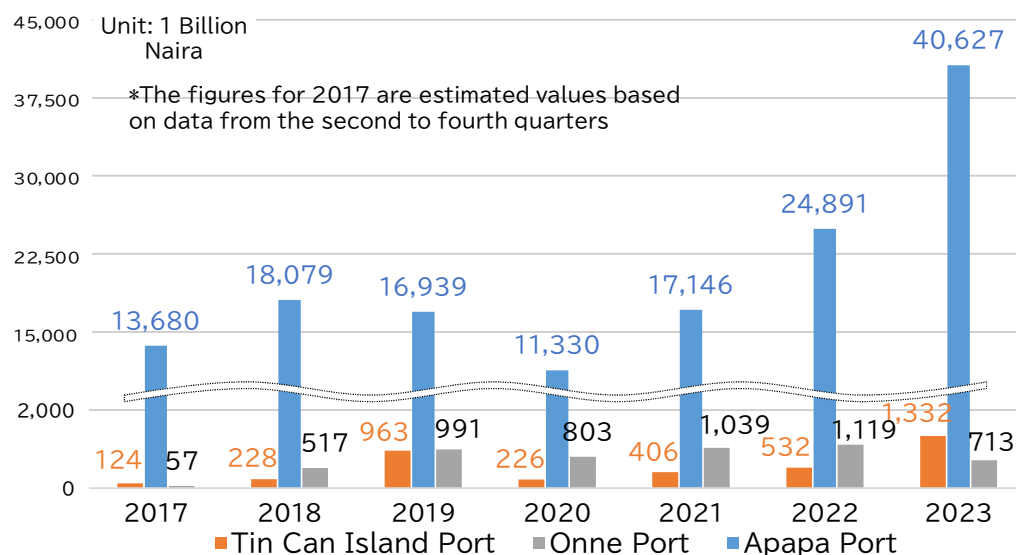
Table 2.3.4 Export and Import Values by Major Customs, Airports, and Ports

Export Amount (January to March 2024)			
Rank	Customs, Airports, Ports, etc.	Amount (Million Naira)	Percentage (%)
1	APAPA PORT	18,073,317	94.29
2	TIN CAN ISLAND	708,819	3.70
3	ONNE PORT	270,994	1.41
4	MUHAMMED MURTALA INTERNATIONAL AIRPORT	46,087	0.24
5	SEME BORDER POST	26,116	0.14
6	PORT HARCOURT Area-1	19,378	0.10
7	ABUJA AIRPORT	5,547	0.03
8	WARRI PORT	5,214	0.03
9	KANO AIRPORT	3,421	0.02
10	IDIROKO BORDER STATION	3,398	0.02

Import Amount (January to March 2024)			
Rank	Customs, Airports, Ports, etc.	Amount (Million Naira)	Percentage (%)
1	APAPA PORT	7,390,563	58.45
2	TIN CAN ISLAND	1,646,255	13.02
3	ONNE PORT	991,767	7.84
4	MUHAMMED MURTALA INTERNATIONAL AIRPORT	467,064	3.69
5	WARRI PORT	366,770	2.90
6	PTML CUSTOMS OFFICE	332,973	2.63
7	OIL AND GAS TERMINAL	269,574	2.13
8	KIRIKIRI LIGHTER TERMINAL CMD.	232,298	1.84
9	LEKKI DEEP SEA PORT	217,340	1.72
10	PORT HARCOURT Area-1	204,449	1.62

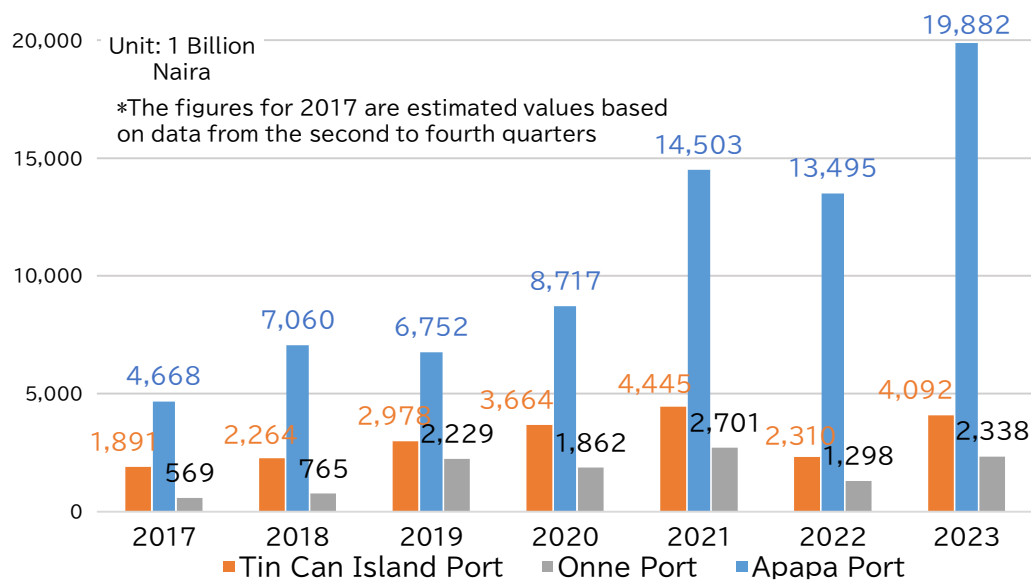
Source: National Bureau of Statistics

The trends in export and import values at the top three ports (Apapa Port, Tin Can Island Port, and Onne Port) are as follows. Export values declined in 2020 due to falling crude oil prices but have since experienced a sharp increase. This increase is particularly pronounced at Apapa Port, indicating a growing trend of concentration at this port. Import values generally increased until 2021, saw a decline in 2022, but rebounded significantly in 2023.



Source: National Bureau of Statistics

Figure 2.3.1 Trends in Export Values at the Top 3 Ports



Source: National Bureau of Statistics

Figure 2.3.2 Trends in Import Values at the Top 3 Ports

2.4 Related High-level Plans

2.4.1 High-level Development Plans in Nigeria

Nigeria's key transportation and logistics high-level plans are indicated in Table 2.4.1.

Table 2.4.1 National High-level Plans Including the Transportation and Logistics Sector
(Excluding Sector-Specific Plans)

Name	Transportation and Logistics Infrastructure	Perspectives Related to Logistics
Nigeria Agenda 2050 【Approved in 2023】	The agenda serves as a successor to Nigeria's previous overarching vision, "Vision 20:2020," and incorporates new elements such as the Fourth Industrial Revolution, regional integration and trade, the green economy, the knowledge economy, and rapid demographic changes. The agenda outlines the country's long-term economic policy aimed at becoming an upper-middle-income country, with targets including an average real GDP growth rate of 7%, a nominal GDP of \$11.7 trillion, and a per capita income of \$33,328 by the final year. As a more specific plan, a five-year plan for 2021 to 2025 has been developed in parallel, known as the National Development Plan 2021-2025.	Although it is an overarching policy, the agenda presents the transportation realities and challenges for each mode of transport (road, rail, waterways, air, and their respective terminals) within the Transportation chapter. It also succinctly proposes future policy objectives and strategies for achieving those goals.
National Development Plan (NDP) 2021-2025 【Approved in 2021】	It was formulated as the first medium-term plan corresponding to the "Nigeria Agenda 2050." The plan is based on the lessons learned from the failure to achieve the goal of being among the top 20 economies in the world, as set in "Vision 20:2020." In the context of 2021 to 2025, the National Development Plan emphasizes accelerated, sustainable, inclusive, and private sector-led growth. To achieve this, the challenges identified include economic diversification, creating fiscal space to support social spending, and establishing a stable macroeconomic environment.	In line with the fundamental policies outlined in the Nigeria Agenda 2050, the basic development policies for the entire infrastructure sector have been presented. Specifically for logistics infrastructure, the development policies are detailed for each mode of transport under the category of Transportation.
The Project on the Corridor Development for West Africa Growth Ring Master Plan (WAGRIC) 【Formulated in 2018】	A corridor development plan has been formulated, focusing on the Abidjan–Ouagadougou corridor and four other international corridors, targeting Burkina Faso, Côte d'Ivoire, Ghana, and Togo, with a timeline extending to 2040.	The implementation of a customs union to strengthen intra-regional trade, the facilitation of trade within borders, ports, and corridors, and the strategic upgrade of the Abidjan-Lagos corridor (highway) are being prioritized.

Source: JICA Study Team

(1) Nigeria Agenda 2050

As a long-term vision, the agenda emphasizes the development of a "dynamic, industrialized, and knowledge-based economic structure to ensure inclusive and sustainable development." To achieve this, a framework has been established for formulating five-year medium-term plans supported by corresponding annual budget plans.

The agenda outlines several key objectives, including:

- Implementing policies to consistently increase domestic savings and investments, thereby creating a stable macroeconomic environment.
- Establishing a strong foundation for diversification, a private sector-led economy, and a resilient business environment.
- Investing in critical infrastructure sectors, as well as financial, digital, and innovative infrastructure.
- Creating a robust framework for enhancing security and ensuring good governance, along with capacity building for these efforts.
- Fostering a vibrant, educated, healthy, and well-rounded citizenry.
- Playing a leading role in regional agreements such as the AU Agenda 2063, AFCFTA, and ECOWAS trade liberalization schemes, with the aim of becoming the economic hub of Africa.

To achieve the objectives outlined above, the agenda identifies two cross-cutting strategies:

- Investing in the socioeconomic infrastructure and services necessary for poverty reduction.
- Promoting cross-state development to rectify regional economic disparities.

The agenda states that achieving the targeted growth rates will require an increase in social capital development, proposing to raise the investment-to-GDP ratio from the current approximately 30% to about 40% by 2050. This increase in investment is expected to be funded by both domestic and foreign resources, with a significant portion anticipated to come from the private sector.

Regarding logistics infrastructure (including roads, railways, aviation, waterways, and pipelines), the agenda defines a close relationship between the "quality" and "quantity" of infrastructure and economic growth, concluding that Nigeria's economic growth cannot be discussed without infrastructure development. It also points out that well-developed infrastructure is often underutilized or wasted due to poor maintenance systems. This has led to social issues such as congestion, environmental pollution, slums, and accidents, particularly exacerbated by rapid population growth, especially from rural to urban areas.

According to the 2019 World Competitiveness Index report on Nigeria's infrastructure, the country ranks low, between 130th and 140th globally, which is considered a significant factor contributing to high logistics costs for businesses and other activities.

(2) National Development Plan (NDP 2021-2025)

The national development plan advocates for an integrated and multi-sectoral development approach, proposing sustainable and multifaceted development programs that are interrelated across various sectors. To achieve this, four strategic objectives have been established:

- **Establishing a Strong Foundation for Balanced Economic Diversification:** This aims to avoid over-reliance on specific sectors and promote a well-rounded economy.
- **Investing in Physically Significant, Scientific, and Innovative Infrastructure:** This focuses on the development of critical infrastructure that supports economic activities.
- **Building a Robust Framework for Good Governance through Enhanced Security:** This includes strengthening capacities to ensure effective governance and security.
- **Achieving a Vibrant, Well-Educated, and Healthy Citizenry:** This objective emphasizes improving the quality of life for the population through education and health initiatives.

As a result of these efforts, it is anticipated that by 2025, the country will achieve an economic growth rate of 4.6%, lift 35 million people out of poverty, create 21 million full-time jobs, increase the revenue-to-GDP ratio to 15%, and improve the health and education of the populace.

However, achieving this plan requires a total investment of 348.1 trillion Naira, with 49.7 trillion Naira expected to come from government sources (federal, state, and local), while the remaining 298.3 trillion Naira is to be sourced from the private sector.

Infrastructure development, particularly in transportation, is viewed as fundamental to all economic activities. Specific policy goals (KPIs) have been set for the development of various transportation infrastructures (roads, railways, maritime transport, and aviation), with clear target points established for achieving these goals. Each transportation infrastructure has a corresponding development strategy aimed at meeting these targets.

These strategies include creating legal frameworks and systems to attract active investment from the private sector, as well as promoting multimodal transport strategies that facilitate integration between different transportation infrastructures. In the aviation sector, there is a noticeable emphasis on compliance with international standards and the establishment of regulatory frameworks, compared to more specific infrastructure development policies.

Table 2.4.2 Examples of KPI Target Values Established for Each Mode of Transportation
Infrastructure

Objectives	Key performance indicators	Baseline	Target
Expand aviation infrastructure	Aviation Contribution to GDP	0.10 percent	0.15 percent
	Total Aviation Passenger Traffic	17.5m (2019)	45 m
	Cargo Handling Capacity	208,424 tons	276,848 tons
Expand road infrastructure to enable safe transportation of people	Road Transport Contribution to GDP	1.56 percent	1.8 percent
	Length of Nigeria's paved road network	60,000 km	70,000 Km
	Percentage of Nigeria road network under scheduled maintenance and repair	45 percent	75 percent
	Un-tarred national road network	135,000 km	125,000 km
To make Nigeria the preferred maritime destination in West and Central Africa through deliberate collaborative strategies to grow throughout, improve safety and security, leverage on technology to improve efficiency and ease of doing business.	Water Transport Contribution to GDP	0.1percent	0.1percent
	Ranking of Nigerian Ports in the sub-region	5	1
	Grow Total Throughput, by 5 percent (excluding Crude Oil)	80.2million metric tons	100million Metric Tons
	Quality of Port Infrastructure remaining	≤3.0	6.0-7.0
	Reduction in Turn-Around-time of vessels	4.5 days	2 days
	percentage Increase containers moved by rail and barges	5 percent	50 percent
Source: The Federal Ministry of Transportation and the National Bureau of Statistics (NBS) for baseline data; targets are projections.			

Source: NDP 2021-2025

Table 2.4.3 Main Development Strategies for Each Mode of Transportation Infrastructure

Transportation Infrastructures	Main Development Strategies
General	• Establish a clear regulatory framework to attract investments from investors and the private sector. • Promote multimodal transport to enhance the quality of transportation services. • Ensure the steady implementation of each transportation infrastructure project. • Strengthen governance and establish operational frameworks, while promoting the privatization of specific infrastructures. • Explore sustainable and innovative financing mechanisms that combine various funding sources. • Implement a comprehensive approach to potential funding options, such as minimum income guarantees. • Ensure alignment with the National Infrastructure Investment Master Plan (NIIMP).
Roads	• Strengthen road accessibility to ports, inland waterway terminals, and railway stations. • Improve the federal road network. • Encourage active involvement of the private sector in road funding and maintenance. • Develop roads that meet international standards and enhance international competitiveness in road transport.
Railways	• Comprehensive renovation of the existing railway network. • Establishment of a new railway network connecting agricultural, mineral resource, and manufacturing/industrial hubs. • Provide efficient transportation alternatives to road transport. • Strengthen access to the six national ports (Lagos, Port Harcourt, Onne, Calabar, Warri, and Lekki).
Maritime Transport	• Establish West and Central Africa as hub ports, including comprehensive reforms of port operations and full implementation of the WTO Trade Facilitation Agreement. • Achieve efficient port operations through the automation of port management systems. • Enhance the safety and security of inland waterways and improve connectivity with other modes of transport. • Ensure the safety of coastal and inland waterway transport.
Aviation	• Establish safe air transport in compliance with ICAO and IATA standards and regulations. • Promote comprehensive aviation sector development led by the private sector, strengthening the regulatory framework for this purpose. • Build an aviation network that comprehensively connects airports across the country. • Develop local capacities aimed at expanding the aviation value chain throughout Nigeria.

Source: NDP 2021-2025

(3) West Africa Growth Ring Corridor Development Master Plan (WAGRIC)

The West Africa Growth Ring Master Plan (March 2018) outlines a development strategy focused on four countries: Burkina Faso, Côte d'Ivoire, Ghana, and Togo. It emphasizes the development of four international corridors: the Abidjan–Ouagadougou Corridor, the Tema–Ouagadougou Corridor, the Lomé–Ouagadougou Corridor, and the Abidjan–Lagos Corridor. The plan sets short-term goals for 2025, medium-term goals for 2033, and long-term goals for 2040, with the overarching objective of "achieving inclusive and sustainable development by attracting investment through regional economic integration and spatial integration, and building a regionally competitive industrial economy."

The Master Plan aims to connect inland and coastal areas in terms of both industry and transportation infrastructure, creating a positive cycle within the economies of both regions. It proposes four key strategies: 1) Promoting industrial development, 2) Expanding the size of coastal markets, 3) Strengthening connections between coastal and inland areas, and 4) Ensuring inclusive and sustainable development.

In relation to Nigeria, the plan suggests enhancing the implementation of a customs union for inter-country trade among the four nations to promote regional economic integration, particularly in terms of expanding

coastal market size. Additionally, it proposes a "strategic upgrade of the Abidjan–Lagos Corridor (highway)" to facilitate trade at borders, ports, and corridors, thereby promoting regional economic integration.

2.4.2 Master Plans for Infrastructure Development

The Comprehensive Transport Infrastructure Master Plan established by the Federal Ministry of Transport in 2002 was developed as a pioneering initiative to promote the integration of various transport infrastructures in Nigeria. Following this, the National Integrated Infrastructure Master Plan was formulated in 2015, with the participation of relevant ministries, including the Federal Ministry of Transport, under the leadership of the Budget and Economic Planning Ministry. A review of this plan was conducted five years later.

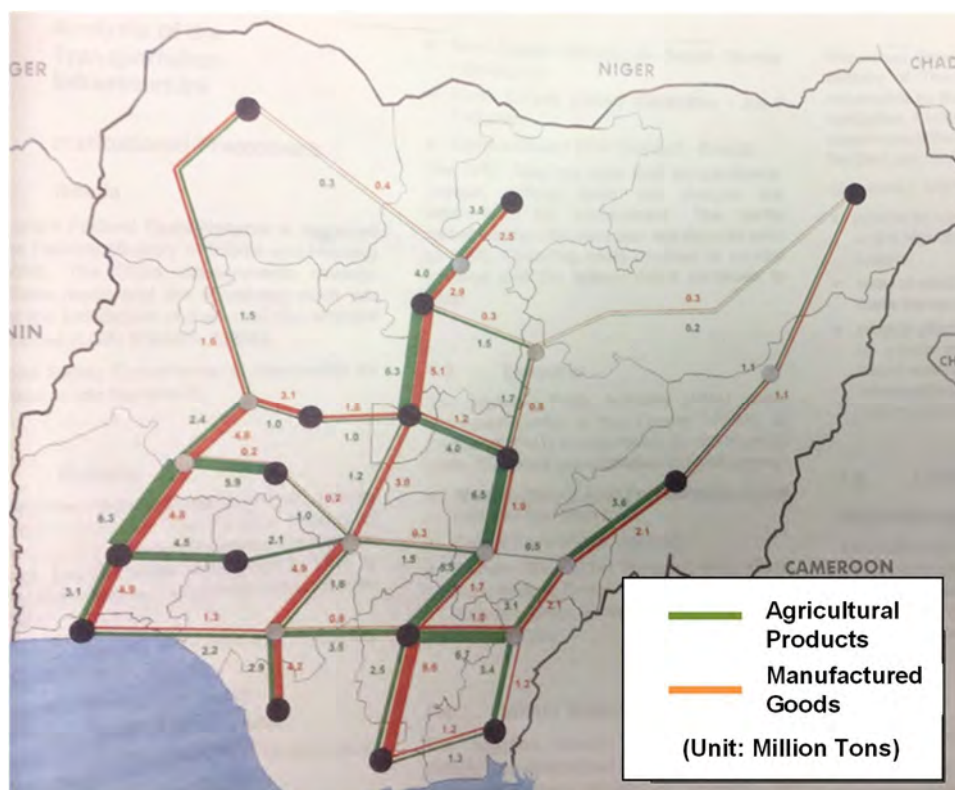
Table 2.4.4 National Plans for Infrastructure Development (Excluding Sector-specific Plans)

National Master Plan	Overview	Perspectives Related to Logistics
Master Plan for Integrated Transport Infrastructure [MITI] 【Formulated in 2002】	In 2002, the Federal Ministry of Transport developed a plan aimed at achieving the integration of the country's network. The preparation of the report was undertaken by the National Institute of Transport Technology (NITT).	The development plans for each transportation infrastructure are specified in detail (including location, sections, timing, costs, etc.). Major logistics routes are clearly outlined. The interregional logistics volumes for agricultural products and manufactured goods for the year 2020 are projected.
National Integrated Infrastructure Master Plan [NIIMP], 2015-2043 【Formulated in 2015】	This is a strategic document that outlines the direction of infrastructure investment across Nigeria. It is a master plan targeting multiple sectors, including transportation infrastructure, with a total infrastructure investment amounting to \$2.3 trillion by 2043, aiming to raise the infrastructure stock to 70% by that year. The National Planning Commission of Nigeria is responsible for formulating the report.	The transportation sector is based on the revised version of the MITI from 2002, which was updated in 2020. It clearly indicates that investment in the transportation and energy sectors is the top priority.
Reviewed National Integrated Infrastructure Master Plan [Reviewed NIIMP], 2020-2043 【Formulated in 2020】	Five years after the formulation of the NIIMP, the target values and conditions set in the roadmap were revised to align with actual development trends and economic conditions. However, there have been no changes to the target values for 2043. The Federal Ministry of Finance, Budget and National Planning was responsible for formulating the report.	Investment in the transportation sector is planned to amount to \$575 billion over the next 23 years, with \$37.5 billion allocated for the period from 2021 to 2025.
National Infrastructure Report 2022 【Formulated in 2022】	This is an overview of the infrastructure development status for each sector from 2019 to 2022. The Ministry of Budget and Economic Planning (FMBEP) formulated the report.	The trends in the development of each transportation infrastructure are organized on a project-by-project basis.
A Study of the Impacts of Road Freight on Nigerian Economy 【Formulated in 2022】	This document clarifies the current state of freight transportation (road) within Nigeria and analyzes its impact on the economy. It proposes appropriate policy strategies, including infrastructure development, to make freight transportation in the country safer and more efficient. This was developed by the National Institute of Transport Technology (NITT).	The logistics situation is organized with a focus primarily on road freight transportation. Surveys have been conducted on vehicles, types of cargo, factors influencing pricing, utilization of transit parks, and the starting and ending points of cargo transportation along major corridors nationwide.

Source: JICA Study Team

(1) Master Plan for Integrated Transport Infrastructure (MITI)

Although more than 20 years have passed since its formulation, estimates of cargo transport volumes between Nigerian states have been conducted for agricultural products and manufactured goods, with the forecast year set for 2020.



Source: MITI

Figure 2.4.1 Logistics Volume on Logistics Corridors (2020 Forecast)

(2) Reviewed National Integrated Infrastructure Master Plan (NIIMP) (Including the period before the revision)

This is a roadmap for infrastructure development aimed at achieving sustainable economic growth throughout Nigeria. The original document and its revised version, both formulated in 2015, maintain the same objectives and principles. They present a comprehensive policy for infrastructure development, assess the current infrastructure stock, set sector-specific goals, and propose necessary investment plans extending to 2043. However, significant changes in circumstances over the five years following 2015 led to a considerable divergence from the original plan, prompting the issuance of the revised version in 2020.

Table 2.4.5 Key Points of the NIIMP Review

No	Item	NIIMP	Reviewed NIIMP
1	Target years	2015-2043	2020-2043
2	Main Objectives and Significance of Formulation (Revision)	• Formulation of guidelines for balanced infrastructure development across Nigeria • Development of guidelines aimed at the economic advancement of Nigeria, particularly encouraging participation from the private sector	• Adjustment of discrepancies from reality five years after the formulation of the NIIMP • Adjustments related to the integration and reform of relevant organizations • Reflection of economic trends and resetting the future framework • Re-establishment of realistic short, medium, and long-term development goals for each ministry in the post-COVID-19 context
3	Goal Setting	• Selection of priority projects by the fifth year (2020) and estimation of the necessary investment amounts for those projects	• Establishment of projects and investment scales for each year up to the fifth year, along with the setting of long-term goals for 2043
4	Perspective on Macroeconomic Trends	• Macroeconomic trends have been largely overlooked.	• Consideration of the realistic infrastructure development situation both domestically and internationally • Consideration of realistic macroeconomic trends and the formulation of an infrastructure development roadmap up to 2043 • Planning of funding sources for infrastructure investment by 2025 (public-private partnership)
5	Priority Projects	• Rehabilitation and extension projects for international corridors (roads and railways) • Upgrading of ports (including river ports) • Upgrading of existing airports • Improvement of urban transportation systems in major cities • Construction of the Trans-Sahara Highway	• Realization of a project portfolio that can deliver early development benefits within the first five years • Concentration of approximately half of the investment scale in the energy and road sectors • For road infrastructure, emphasis on the rehabilitation of international corridors, expansion of regional road networks, and connections to other modes of transportation • For transportation infrastructure other than roads, rehabilitation and upgrading of major railway lines, major airports and systems, rehabilitation and upgrading of inland waterways, and improvement of urban transportation systems in major cities

Source: NIIMP and Reviewed NIIMP

The reviewed National Integrated Infrastructure Master Plan (NIIMP) considers a more realistic infrastructure investment plan for the next 23 years (2020–2043). It identifies funding sources for the necessary infrastructure investments, considering the expansion of the private sector in infrastructure development. The report indicates that out of the total required infrastructure investment of \$2.3 trillion over the next 23 years, approximately \$150 billion per year (from both private and public sectors) will be needed from 2021 to 2025, with the private sector accounting for 56% of the total investment amount.

In terms of sector-specific investments over the 23-year period, the transportation sector will require the largest share, with an investment of \$575 billion, representing about one-quarter of the total. Other sectors include the security sector at \$46 billion, social infrastructure sector at \$115 billion, ICT sector at \$253 billion, housing and urban development at \$253 billion, agriculture, water, and mining sector at \$299 billion, and the energy sector at \$759 billion.

Looking at the required investments for the next five years (2021–2025), the investment amount for the transportation sector is projected to be \$37.5 billion, followed by the security sector at \$3 billion, social infrastructure sector at \$7.5 billion, ICT sector at \$16.6 billion, housing and urban development sector at \$16.5 billion, agriculture, water, and mining sector at \$19.5 billion, and the energy sector at \$49.5 billion.

(3) National Infrastructure Report 2022

This report reviews infrastructure development from 2019 to 2021, providing information on the projects undertaken in various transportation infrastructures over the three-year period, including the quantity of projects implemented and the investment amounts. Overall, the progress during these three years was low due to the ongoing global spread of the COVID-19 pandemic, which affected the implementation of planned activities.

The report outlines the project plans for 2022 based on the achievements of the past three years, as well as the development strategies for 2023 and beyond. However, it does not provide a detailed analysis of transportation infrastructure. Instead, it offers some recommendations primarily focused on the ICT and energy sectors.

(4) Analysis Report on the Impact of Road Freight Transportation on the Nigerian Economy

The Nigerian Institute of Transport Technology (NITT) conducted a study to investigate the state of freight transportation in Nigeria. They selected eight key states based on population size, logistics hub status, and regional balance, and carried out interviews with truck drivers at a total of 25 truck transit parks across these states. The study aimed to understand the logistics situation and propose policies and strategies for future road freight transportation based on the findings.

The main objectives of this report are as follows:

- To assess the impact of road freight transportation on the country's socio-economy and GDP.

- To understand the realities of road freight transportation (origins and destinations, fuel usage, types of vehicles and cargo, factors influencing pricing, and the use of rest facilities).
- To identify accident-prone locations along major corridors.
- To propose policy strategies for ensuring safe and secure road freight transportation.

Based on the survey results, the following recommendations have been made:

- Relevant agencies, including the Federal Ministry of Transportation and the Federal Road Safety Commission (FRSC), should implement strict truck weight regulations.
- To minimize truck-related accidents and their socio-economic impacts, there should be improvements in the status and working conditions of truck drivers (including mandatory rest periods), along with awareness campaigns.
- Upgrading of rest facilities through Public-Private Partnerships (PPP), including functional updates and the addition of new facility features.
- Collaborate with the Federal Ministry of Transportation and the Federal Ministry of Environment to develop specific action plans for reducing GHG emissions in road freight transportation.
- The Federal Ministry of Transportation should work with the Nigerian Shippers' Council (NSC) to create a phased roadmap for truck fuel technology modifications.
- The Nigerian government needs to work towards prohibiting illegal checkpoints and robbery activities along major economic corridors.
- The Federal Ministry of Works (FMW) should accelerate the Highway Development and Maintenance Initiative (HDMI) to improve accident-prone areas along Nigeria's major corridors.
- Promote private investment to actively introduce smart monitoring technologies to curb truck overloading.
- To cultivate professionals engaged in truck transportation, the Federal Ministry of Transportation and relevant organizations should mandate the registration of truck drivers and enforce strict management.

2.4.3 Regional Development Master Plans

This report organizes the development master plans for various states (urban area) in Nigeria.

Table 2.4.6 Development Master Plans for Target Regions (States)

State	State Capital	Master Plan
Lagos State	Lagos	Lagos State Development Plan 2052, 2022 Revised Lagos Strategic Transport Master Plan (LSTMP), 2014
FCT	FCC	Abuja Master Plan (AMP), 1979
Kano State	Kano	Kano State Development Plan 2020-2025, 2020
Rivers State	Port Harcourt	Port Harcourt Master Plan 1975, 1975 Greater Port Harcourt City Master Plan, 2009
Edo State	Benin City	Edo State Regional Development Plan and Benin Urban Master Plan, 2024

Source: JICA Study Team

(1) Lagos State

Lagos State Development Plan 2052 (LSDP2052)

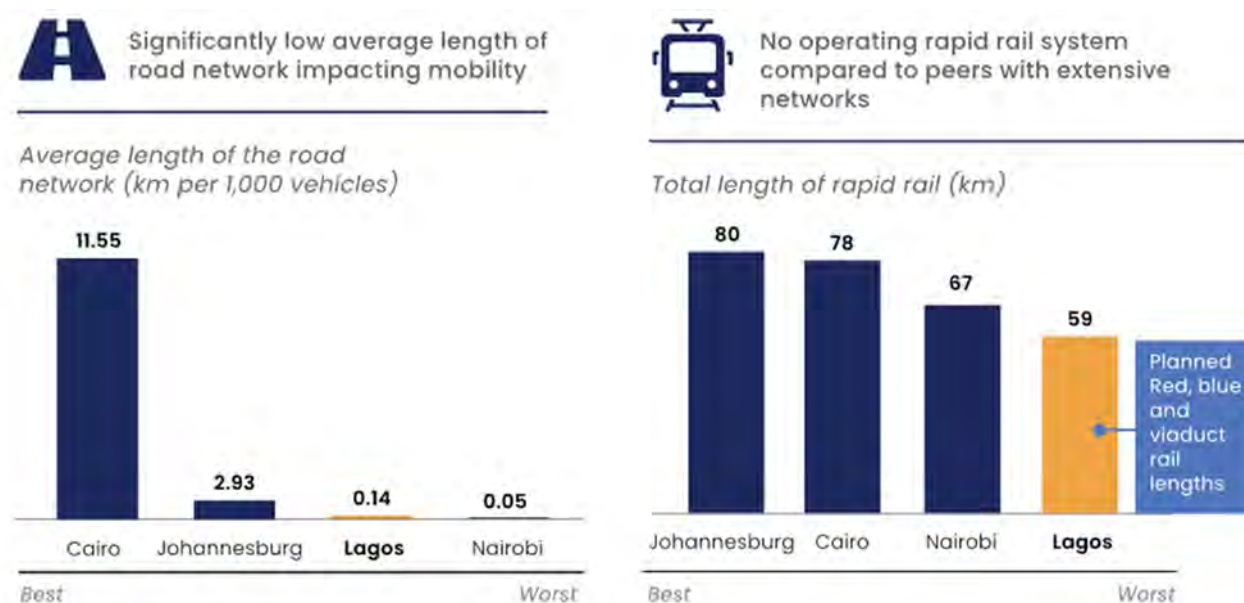
The initial development plan for Lagos State, targeting the year 2025, is the "Lagos State Development Plan 2012-2025 (LSDP2052)," which was formulated in 2012. As the target year of 2025 approaches, the challenges faced by Lagos State, such as reliance on road transportation and chronic traffic congestion, have intensified. Recognizing these issues, the state has refreshed its vision and is planning a new strategic long-term plan, the "Lagos State Development Plan 2052," which looks ahead to the next 30 years. The first edition of this plan was published in 2022.

LSDP2052 consists of four phases: an assessment of Lagos's current position (baseline), goal setting, selection of key sectors for promotion and prioritization of strategies to achieve these goals, and the development of strategic initiatives along with a roadmap for plan implementation. The formulation of the plan incorporates an analysis of best practices from 70 cities worldwide.

When the report was formulated in 2019, the Lagos region accounted for approximately 15% of Nigeria's Gross Domestic Product (GDP)—a country which, at that time, possessed the largest economies on the African continent (though its GDP currently ranks fourth in 2024, following South Africa, Egypt, and Algeria, according to the World Bank). This 15% share is equivalent to an economic area the size of an entire country like Kenya or Ethiopia. Additionally, Lagos functions as a gateway to Nigeria and West Africa. In maritime transport, Lagos Port (Apapa and Tin Can Island) handles approximately 80% of Nigeria's imports, and 50% of cargo transport from North and Central Africa passes through Lagos's borders. In aviation, over 80% of international traffic routes and more than 30% of domestic routes utilize Murtala Muhammed International Airport located in the state.

Focusing on the transportation sector in daily life, most transport relies on roads, with 67% of public transport provided by minibuses. Organized formal bus usage accounts for only 3%, while rail and water transport contribute a mere 1%. Chronic traffic congestion is prevalent throughout the city, with losses attributed to traffic congestion in Lagos State estimated at \$2.8 billion annually. The average commuting time per week is reported to be 30 hours (approximately 6 hours per day). In addition to commuting, the overall cost of transportation is generally high, with 30-40% of the disposable income of typical residents spent on transportation expenses.

Furthermore, the following figure shows the average length of the road network and the railway development status per 1,000 vehicles. Lagos has a shorter available road length and less developed railway lines compared to other major African cities, clearly demonstrating a significant lag in transport infrastructure development.



Source: Lagos State Development Plan 2052

Figure 2.4.2 Comparison of Transport Infrastructure in Major African Cities

The Lagos State Development Plan 2052 (LSDP2052) outlines five principles for its development strategy:

- **Inclusivity and Equity**

Ensure equitable access for all income levels, religious affiliations, and persons with disabilities, providing equal opportunities for disadvantaged groups in society, including women, children, youth, the elderly, and individuals with disabilities.

- **Environment and Sustainability**

Prioritize environmental considerations, considering climate risks and natural resource management, while being mindful of the risks associated with Lagos's low-lying topography.

- **Synergy**

Expand forward and backward linkages in existing sectors (for example, the emergence of packaging and can manufacturing companies in the food processing industry).

- **Private Sector Participation**

Create opportunities for private sector involvement.

- **Alignment with Global Trends**

Align with global trends, including the African Continental Free Trade Area (AfCFTA), the Economic Community of West African States (ECOWAS) trade agreements, Trade-Related Investment Measures

(TRIM), Trade-Related Aspects of Intellectual Property Rights (TRIPS), and the General Agreement on Trade in Services (GATS). This includes incorporating dynamics such as inter-state cooperation, cross-border movement, technology transfer, and the growth of emerging markets.

The development policy for the transportation infrastructure sector emphasizes the importance of creating a multimodal transport system focused on alleviating road traffic congestion. The plan prioritizes the promotion of a multimodal transport network (including road, rail, and water transport) to provide sustainable, efficient, and diverse mobility options. The goal is to reduce road transport congestion by 40%, which is expected to enhance the efficiency of road transport, including logistics.

Particular emphasis will be placed on the development of mass public transportation systems (such as Light Rail Transit - LRT), with a target of achieving a 30% share of total daily passenger movement. All planned routes are expected to be completed by 2050.

Table 2.4.7 Future Performance Indicators Related to the Transportation and Logistics Sector

Category	KPI	Currently	2052
Logistics	Container handling volume in the West Africa region (percentage of total TEU)	22%	60~65%
	Country ranking in the global liner shipping network (West Africa ranking)	6 th	1 st
	Port dwell time	71 hours (2.96 days)	23.5 hours (0.97 days)
Living infrastructure or social infrastructure	Travel time to main activity destinations such as commuting and schooling	1hour	15 minutes
	Average access rate to basic public infrastructure (electricity, internet, water supply, sanitation facilities, etc.)	60~70%	Increase from the current situation
Transportation infrastructure	Modal share of transportation used for commuting and schooling (road/rail/water transport)	98:1:0.3	50:30:20
	Average daily commuting time	4 hours	Less than 1 hour

Source: LSDP2052

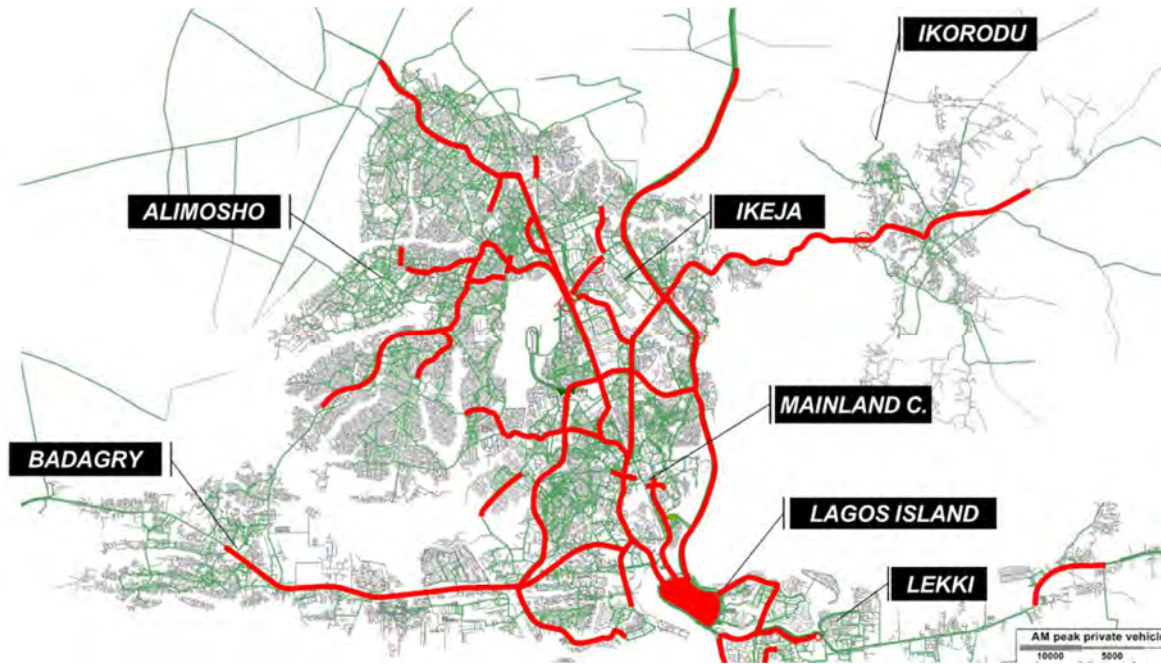
Reviewed Lagos Strategic Transport Master Plan

The Lagos State Urban Transport Authority (LAMATA) developed the "Lagos Strategic Transport Master Plan for Lagos Metropolitan Area (LSTMP)" in 2009 as a master plan for urban transportation in Lagos State. This plan aimed for a comprehensive development of Light Rail Transit (LRT), Bus Rapid Transit (BRT), water transportation, and road infrastructure by the target year of 2020.

In 2014, the scope of the plan was expanded to cover the Lagos metropolitan area, and a reviewed version (Reviewed LSTMP) was created with a new target year of 2032. This reviewed plan proposed seven key components, including plans for transportation infrastructure development such as roads and public transport, as well as associated pedestrian traffic plans and traffic safety plans.

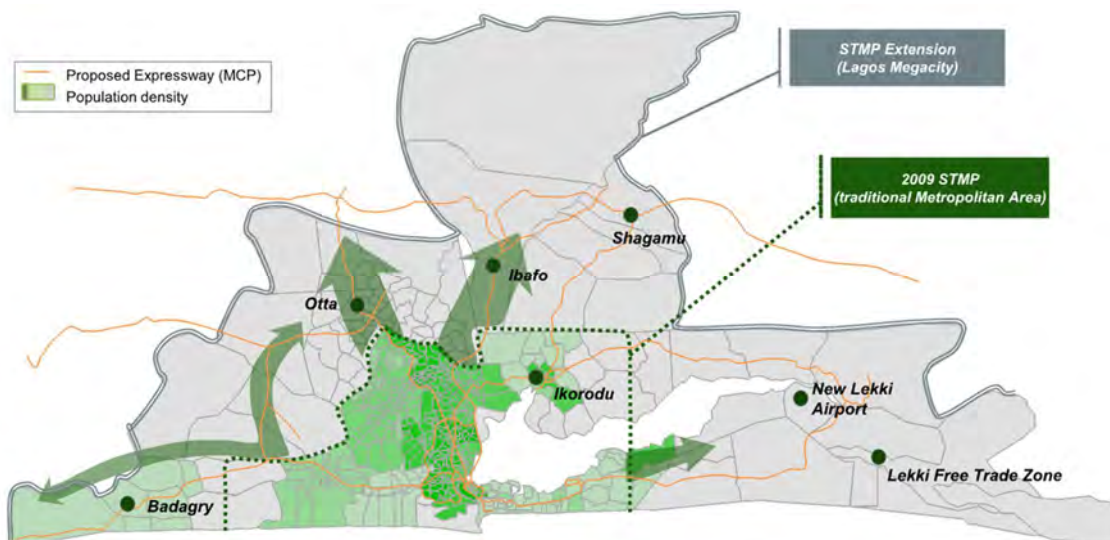
The Reviewed LSTMP divides the project period (2017-2032) into three phases: short-term, medium-term, and long-term, with specific goals and measures set for each phase. In the short term, the focus is on the smooth introduction of a new LRT line (the Blue Line). In the medium term, the goal is to expand the LRT network, and by the long-term target year of 2032, the completion of the LRT network is aimed for.

As more than ten years have passed since the formulation of the Reviewed LSTMP, changes in the transportation environment surrounding the target area and discrepancies in project progress have been observed. Currently, LAMATA is undertaking a revision of the plan, which is scheduled for completion in 2026.



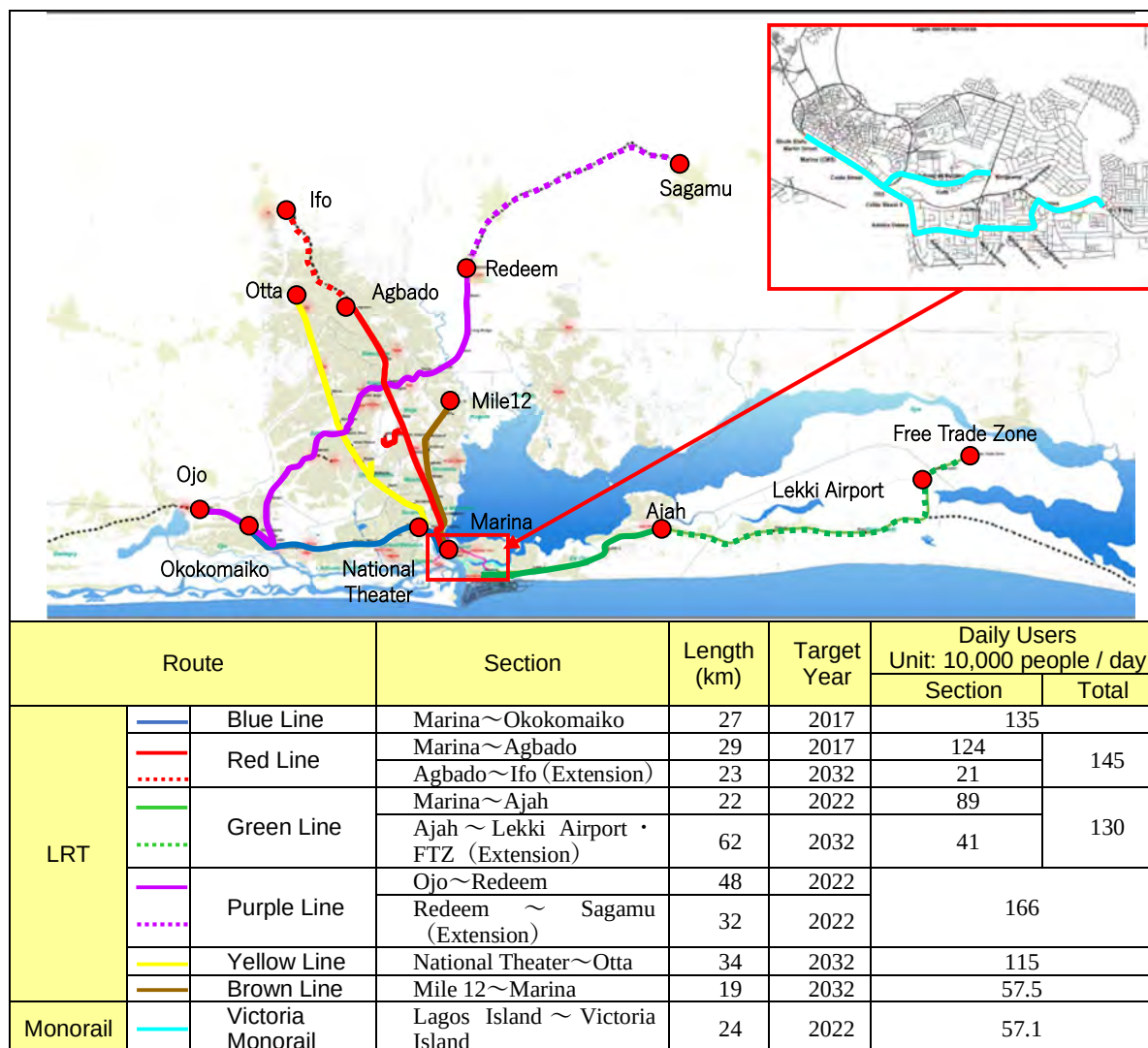
Source: Reviewed LSTMP

Figure 2.4.3 Congested Road Sections in Lagos State



Source: Reviewed LSTMP

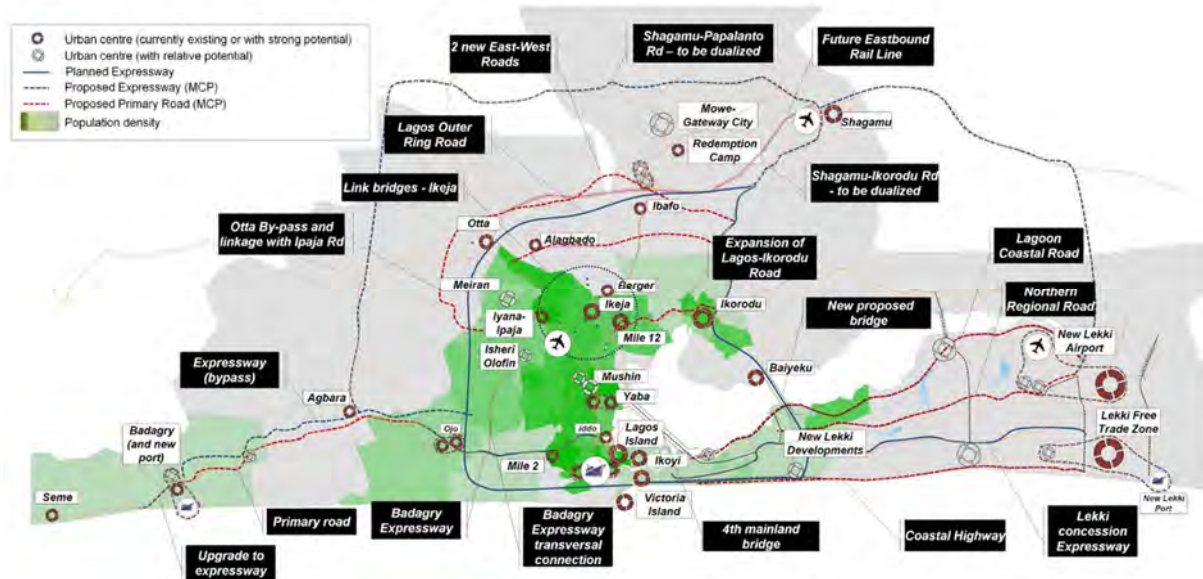
Figure 2.4.4 Target Area for Reviewed LSTMP



Source: Reviewed LSTMP

Figure 2.4.5 Lagos State LRT/Monorail Planned Route Map

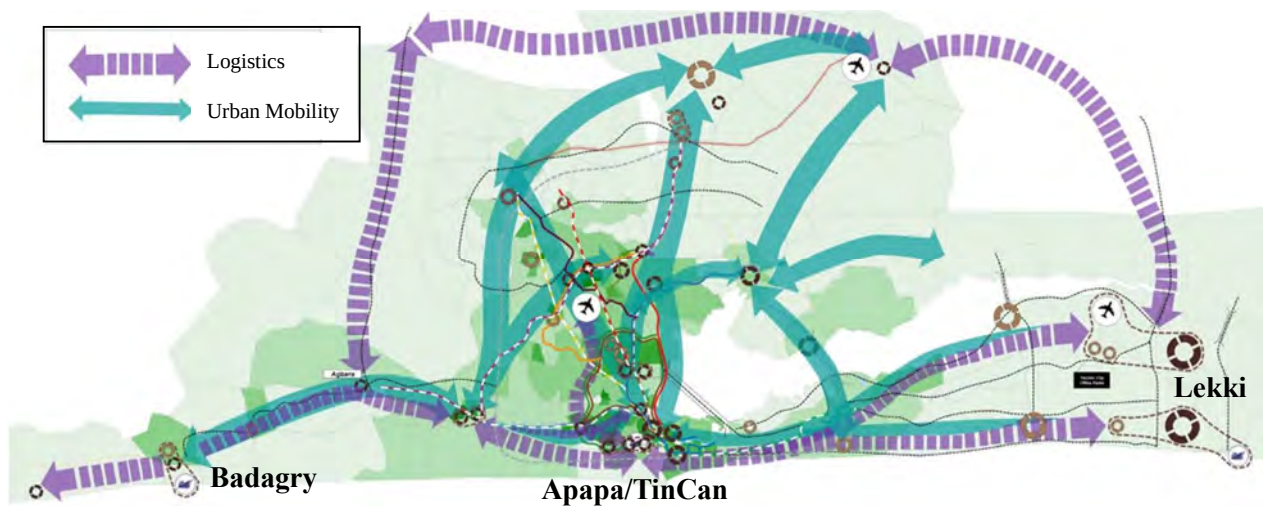
The road network development focuses on strengthening the existing radial major arterial roads leading to the center of Lagos. The goal is to create a road network that avoids the mixing of long-distance traffic passing through Lagos, primarily by constructing an outer ring road and bypasses that circumvent the Lagos coastline and metropolitan area.



Source: Reviewed LSTMP

Figure 2.4.6 Main Road Network Proposals in the Reviewed LSTMP

In response to logistics needs, a road network has been proposed that connects to existing or planned ports and airports located in Badagry, Apapa-Tin Can, Lekki, and Shagam. This network aims to regulate the entry of logistics vehicles into the central area of Lagos, thereby enhancing the efficiency of the logistics system.



Source: Reviewed LSTMP

Figure 2.4.7 Concept of Logistics Corridors

(2) FCT

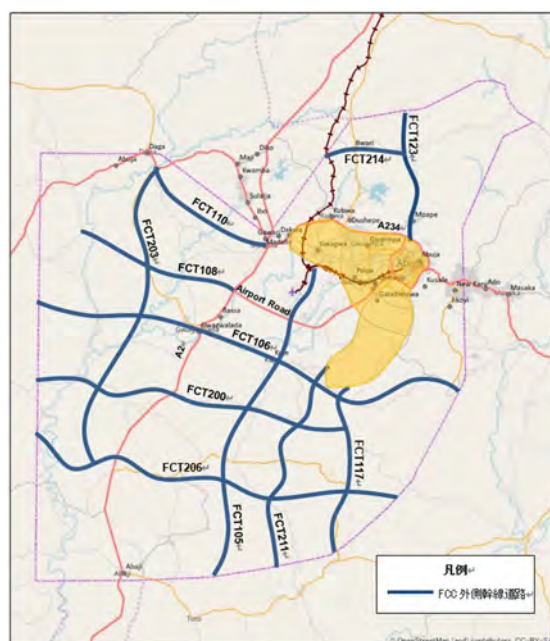
Abuja, the Federal Capital Territory of Nigeria (FCC: The central area of Abuja Municipal Area Council (AMAC) which is one of the local government in FCT), was established as the new capital in 1991, following the relocation from the former capital, Lagos. The "Master Plan for Abuja the New Federal Capital of Nigeria (AMP)" was formulated in 1979. While the AMP is a development plan specifically targeting the FCC, it also considers the potential for water resources, food (agriculture), and forest resources outside the FCC, reflecting the concept of satellite towns centered on existing settlements.

However, since the AMP was established in 1979, there has been no comprehensive review of its contents, leading to significant discrepancies between the planned objectives and the actual situation. This has been identified as a challenge, necessitating urgent comprehensive revision efforts.

In relation to the transport and logistics sector, Chapter 9 of the AMP includes "Transportation System Planning," and Chapter 12 covers "Infrastructure Planning." However, the focus of the transportation system is primarily on urban passenger systems, with little consideration given to logistics in the original master plan. As a result, the infrastructure planning only addresses power, water supply and sanitation, waste management, and communication.

In 1981, based on the AMP, the "Urban Transport Study of the New Capital City Abuja" was developed, and a review of this transport master plan began in 2016. However, as of 2025, the findings of this review have not yet been publicly disclosed (according to interviews with the FCTA Transport Secretariat).

JICA started a project to update "The Project for Review and Upgrading of Integrated Urban Development Master Plan of Abuja, Federal Capital Territory (AMP)" in 2025.



Source: Data Collection Survey for the Review and Upgrading of Integrated Urban Development Master Plan of Abuja, JICA, 2018

Figure 2.4.8 State Main Road Plans within the FCT (excluding the FCC)

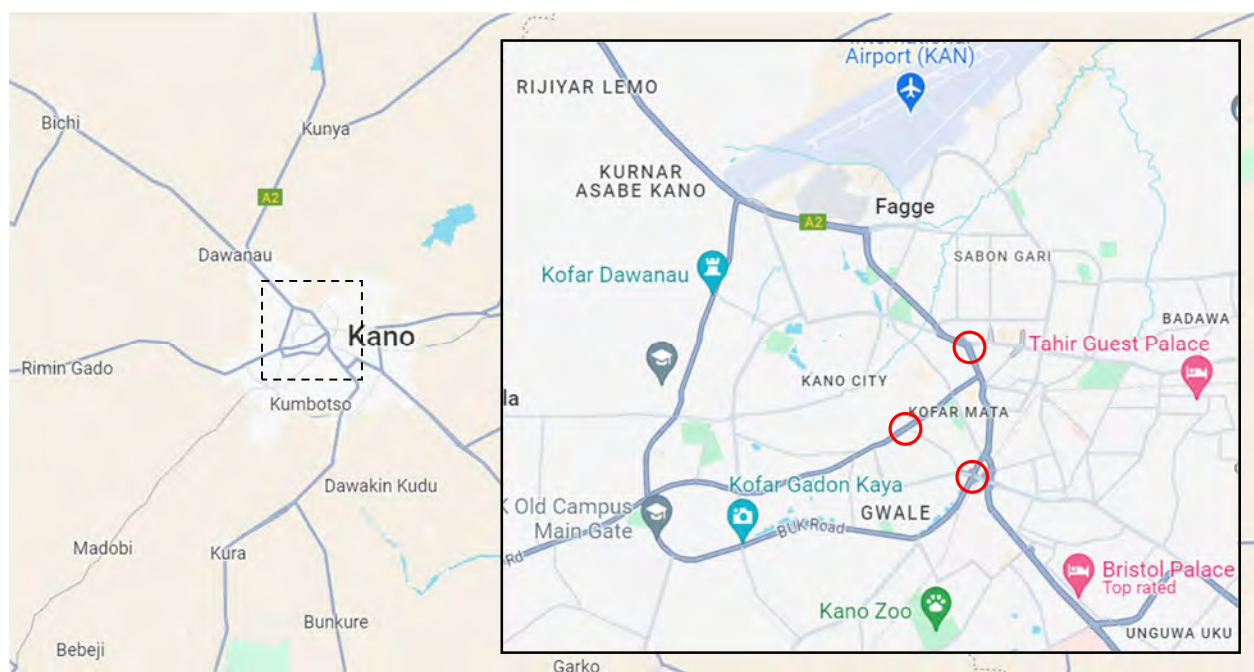
(3) Kano State

When Nigeria gained independence from Britain in 1960, Kano State developed as a significant agricultural production hub, supplying a large portion of both subsistence and commercial agricultural products, as well as agricultural exports. However, starting in the 1990s, Nigeria's primary source of foreign exchange and domestic revenue shifted to crude oil production and exports, leading to a significant decline in Kano State's economy, which was heavily reliant on agriculture as its core industry.

After the collapse of agriculture as the backbone of the state's economy, Kano transitioned to an economic structure dominated by small and medium-sized enterprises across diverse sectors. However, challenges such as high transportation costs due to its inland location and safety concerns arising from sporadic conflicts between communities have emerged.

In this context, Kano State's development master plan aims to "overcome industrial hollowing and promote economic diversification, transforming the state into a knowledge-based social structure that provides adequate living standards for all citizens." Additionally, it emphasizes the importance of developing efficient, high-quality, and reliable infrastructure to enhance Kano's status as a commercial and industrial center in Nigeria. Specifically, the plan focuses on the following transportation infrastructure improvements:

- Widening and upgrading the road network in the Kano metropolitan area. This primarily aims to facilitate logistics and the movement of people in a more affordable and convenient manner, addressing social and business needs. Specific transportation infrastructure projects include improvements to the federal trunk road A2 that passes through the center of Kano and its surrounding areas:
 - Construction of an underpass and overpass at the Dangi Roundabout (completed)
 - Construction of an overpass at the intersection of Murtala Muhammad Hospital and Rimi Market Road
 - Construction of an overpass between Kofar Mata, Kantin Kwari, Ibrahim Taiwo Road, and Singer Market (partially completed)
- Widening and upgrading major trunk roads within the metropolitan area that connect commercial and industrial clusters to transportation hubs.
- Development of rural roads connecting communities and markets, approximately 5 km in length for each of the 44 Local Government Areas (LGAs).
- Widening and upgrading roads that connect hubs outside the urban area.
- Proper maintenance of existing road stock and facilities.



Source: Created based on Google Map by JICA Study Team

Figure 2.4.9 Main Road Plan for Kano City Center

(4) Rivers State

The "Port Harcourt Master Plan" formulated in 1975 was developed following the rapid population growth and economic expansion in Rivers State, which was established in 1967. The plan targeted the central area of Port Harcourt (the inner core) and the metropolitan area extending approximately 25km in radius from the center. However, rapid urbanization continued even after the master plan was drawn up, and its implementation reportedly did not proceed as planned. Due to the widening gap between the city's reality and the plan, the "Greater Port Harcourt City Master Plan" was formulated in 2009. This master plan covers a vast area, including the existing Port Harcourt City and multiple surrounding Local Government Areas (LGAs), with the total area encompassing approximately 1,900 km². The planning horizon is 50 years (from 2009 until 2059), and the following development policies are laid out:

- The vision is to realize a "World Class City," aiming for a city that is economically vibrant, diverse, and where citizens can enjoy a high quality of life.
- Decongesting the old city by dispersing the population and economic activities to surrounding "New City" areas.
- Revitalizing the "Garden City" by restoring the aesthetics and lush green environment of Port Harcourt, which was once called the "Garden City of Nigeria."
- Enhancing infrastructure development, including roads, power, and water supply/sewerage networks.
- Promoting planned land use, with clear spatial allocation for residential areas (low, medium, and high density), commercial areas, industrial areas, parks, and open spaces.

- Aiming for economic diversification, moving away from reliance on the oil and gas industry and attracting new investments.

Regarding the transport sector, a comprehensive transport plan was considered to ensure mobility in the expanding metropolitan area and alleviate traffic congestion in the old city. It specifies the promotion of a public transport system (including rail, buses, and water transport). In particular, the "Monorail Project" was positioned as a major public transport initiative, but construction has stalled or remains incomplete due to subsequent changes in government and funding difficulties. Furthermore, the plan indicates the enhancement of key transport nodes, specifically the development of the Port Harcourt International Airport and Onne Port, and the integration of surrounding development and transport networks centered around these nodes.

(5) Edo State

The Edo State Regional Development and Benin Urban Master Plan was initiated in 2021, and its formal enactment was announced in August 2024. The master plan spans a 30-year period (from 2021 to around 2050), with the goal of positioning Edo State as a top-tier sub-national (state) economy in Africa by 2050. The plan is broadly structured around the following two pillars:

- Edo State Regional Development Plan: Targets economic, social, and infrastructural development across the entire state.
- Benin Urban Master Plan: Focuses on revitalizing the urban functions and ensuring the orderly expansion of the increasingly congested state capital, Benin City.

The main development policies incorporated are as follows:

- Economic and Industrial Development: Economic diversification through the creation and attraction of industrial parks, agri-parks (agribusiness), and technology hubs.
- Infrastructure Development: Modernization of the statewide road network, power supply, digital infrastructure, and transport systems.
- Urban Development (Benin City): Countermeasures against severe flooding and erosion problems, establishment of a waste management system, and planned allocation of residential and commercial areas with land-use regulations to prevent disorganized urban expansion (sprawl).
- Social Development: Education reform (including the continuation of the EDOBEST initiative), improvement of healthcare services, and housing provision.
- Environment: Conservation and management of forest reserves, and maintenance of a sustainable environment.
- Governance: Digitalization and efficiency improvement of administrative services.

The main focus areas for the transport sector in this master plan are the establishment of an "International Logistics Hub Centered on a Port" and the "Alleviation of Traffic Congestion in the State Capital." The key projects and policies are summarized below:

1. State-wide Logistics and Regional Transport Strategy

In the "Edo State Regional Development Plan," which aims for the state's economic self-reliance, the transport sector is positioned as the most critical core infrastructure.

✓ Benin River Port Project:

This is considered the most crucial prerequisite project for the master plan. It involves constructing a deep-sea port in the Gele-Gele area to establish Edo State as its own international trade and logistics gateway, independent of the Lagos Port. Budget allocation has been continually made in the state budget since 2021, and the project is being advanced in parallel with the master plan.

✓ Development of Industrial Parks and Access Roads:

The development of the "Iyanomo Industrial Park (Free Zone)" is proceeding, directly linked to the port functions. The master plan prioritizes and budgets for the construction of access roads connecting this industrial park and the port, aiming for integrated development of the "Port + Roads + Industrial Park."

✓ Improvement and Enhancement of Regional Road Network Linkages:

The goal is to become "one of the best-connected states between cities in Africa." To achieve this, the plan promotes the rehabilitation of existing roads connecting major cities within the state, as well as those linking the port, industrial parks, and airport, through the "Accelerated Road Development Program (ARDP)."

2. Air Transport (Focus on Logistics Hub)

✓ Enhancement of Benin City Airport Functions:

Night landing facilities have already been introduced, enabling 24-hour operation. Based on the master plan, the construction of an "Agro-allied Cargo Terminal" is planned to transform the airport into a logistics hub, not just for passenger transport. This aims to enable the direct air export of agricultural products grown within the state.

3. Urban Transport Strategy for Benin City

The "Benin Urban Master Plan," targeting the increasingly congested state capital, addresses the severe alleviation of traffic congestion as an urgent priority.

✓ Formulation of an Urban Transport Master Plan:

A more detailed "Edo State Transport Master Plan" is currently under formulation within the framework of the 30-year plan.

✓ Immediate Congestion Measures (Intersection Improvement):

Improvement work on major city intersections that cause chronic congestion is being carried out as the highest priority measure.

✓ Traffic Dispersal through "New City" Construction:

To mitigate the excessive concentration in the center of Benin City, the plan promotes the development of "New Cities," such as "CORAL City," equipped with complete infrastructure (roads, water, power, and communication networks), thereby dispersing population and traffic demand.

Chapter 3. Current Status and Challenges of the Transportation and Logistics Sector in Nigeria

3.1 Trends among Other Donors

The support policies of major donors in Nigeria and a list of projects related to the transportation and logistics sector are shown in the table below. All donors emphasize the revitalization of industries as a key pillar of their support policies. When focusing on specific sectors, it is evident that projects related to the transportation and logistics sector predominantly consist of road projects. Notably, there is a significant number of road infrastructure projects aimed at promoting the agricultural sector. On the other hand, the African Development Bank (AfDB) is also implementing projects that contribute to regional connectivity, such as the improvement of local roads, the Abidjan-Lagos Highway, and the Ebonyi State Ring Road.

Table 3.1.1 Major Donor Support Policies in Nigeria

<u>Donor</u>	<u>Support Policy</u>
AfDB	Funding for the transition to low-carbon energy Urban redevelopment Diversification of the economy and modernization of public services Revitalization of agriculture, including at the regional level Promotion of resilience in northeastern Nigeria
AfDB	Support for infrastructure development Promotion of social inclusion through agricultural business and skills development
World Bank	Investment in and utilization of human capital Promotion of employment and economic transformation and diversification Reduction of vulnerability and building resilience Strengthening the foundations of the public sector

Source: JICA Study Team

Table 3.1.2 List of Projects by Major Donors

<u>Donor</u>	<u>Sector</u>	<u>Project</u>	<u>Implementation Year</u>	<u>Detailed Explanation</u>
AfDB	Airport	Nigeria - Enugu Airport Reconstruction	1972-1978	
AfDB	Airport	Nigeria - Calabar Airport Reconstruction	1974-1979	
WB	Road	State Roads	1993-2000	
AfDB	Road	Nigeria - Rural Access & Mobility Project	2007-2015	
AfDB	Road	Nigeria - The Lekki Toll Road Project	2008	
WB	Road	Rural Access and Mobility Project	2008-2016	
WB	Road	Nigeria Federal Roads Development Project	2008-2017	
WB	Urban Transport	Lagos Urban Transport Project 2	2010-N/A	
WB	Road	Nigeria - Rural Access & Mobility Project	2012-2020	

<u>Donor</u>	<u>Sector</u>	<u>Project</u>	<u>Implementation Year</u>	<u>Detailed Explanation</u>
AFD	Road	Develop rural transport networks to support agricultural production	2013-	
AfDB	Urban Transport	Nigeria - Abuja Bus Rapid Transit (BRT) Project Study	2013-2020	
WB/AFD	Road	Nigeria - Study for Cross River State Rural Access and Mobility Project Phase 2 (CR - RAMP 2)	2013-2020	
AfDB	Road	Abidjan - Lagos Corridor Highway Development Project Study - Nigeria	2016-2019	(1)
AfDB	Road	Nigeria - Abia State Integrated Infrastructure Development Project (ABSIIDP) Preparation Studies	2019-2025	(2)
AfDB	Road	Nigeria - Ebonyi State Ring Road Project	2019-2025	(3)
AFD	Urban Transport	Lagos Strategic Transport Master Plan Project 1	2024-	(4)
WB	Custom	Accelerating Resource Mobilization Reforms (Armor) Program for Results	2024-	(5)
WB	Road	Rural Access and Agricultural Marketing Project	2024-2029	(6)
AFD	Inland Waterway Transport	Development of Inland Waterways Transportation in Lagos	2024-2030	(7)

Source: JICA Study Team

The following provides the details of seven recent projects shown in Table 3.1.2.

(1) Abidjan-Lagos Corridor Highway Development Project Study - Nigeria

Implementation Year	2016~2019
Implementing Agency	Département des infrastructures - commission de la CEDEAO
Donor Agency	Africa Development Bank (AfDB)
Loan Amount	11,080,000 UA
Overview	This study is a comprehensive survey ranging from the feasibility study to the detailed design level for the Abidjan–Lagos Corridor (approximately 1,028 km). The Abidjan-Lagos Corridor is a link in the Dakar-Lagos Corridor, which is part of the Trans-African Highway network in the ECOWAS region. Its development is positioned as one of the priorities in infrastructure development programs in Africa. This corridor connects densely populated and economically active areas by passing through Accra, Lomé, and Cotonou, and it is essential for the socio-economic development of West Africa as it interconnects with railway networks, major ports, and airports. The corridor will be constructed with six lanes in each direction, incorporating parts of existing roads as necessary.

(2) Nigeria – Abia State Integrated Infrastructure Development Project (ABSIIDP) Preparation Studies

Implementation Year	2019~2025
Implementing Agency	Abia State Ministry of Works
Donor Agency	Africa Development Bank (AfDB)
Loan Amount	1,200,000 UA
Overview	This study is a preparatory survey for the Abia State Integrated Infrastructure Development Project (ABSIIDP). It evaluates the feasibility of construction works related to roads, solid waste management, and gully erosion caused by storm water drainage in Abia State, and subsequently facilitates detailed design and the preparation of bidding documents. The outcomes of the survey include: (i) a feasibility study report, and (ii) a detailed engineering design report that encompasses the design, soil/material investigations, hydraulic/hydrological design, environmental and social impact assessment (ESMP), figures, specifications, and bidding documents for the various road and solid waste management components of the project.

(3) Nigeria – Ebonyi State Ring Road Project

Implementation Year	2019~2025
Implementing Agency	Ministry of Works
Donor Agency	Africa Development Bank (AfDB)
Loan Amount	52,567,155 UA
Overview	This project involves the rehabilitation of the circular road in Ebonyi State, consisting of 177.81 km of existing roads divided into four sections. Section I: 135 Ohaukwu - Onueke (35.48 km) Section II: Onueke - Nwezenyi (52.48 km) Section III: Nwezenyi - Ndoko (50.99 km) Section IV: Ndoko - Ezzamgbo (38.91 km) The implementation of this project will enable efficient and cost-effective transportation of passengers and goods, particularly agricultural products. This will directly promote regional agriculture and provide sustainable access to economic opportunities and social services for local residents, ultimately contributing to the economy of Ebonyi State and Nigeria as a whole.

(4) Lagos Strategic Transport Master Plan Project 1 (LSTMPP1)

Implementation Year	2024~
Implementing Agency	Lagos State Metropolitan Area Transport Authority (LAMATA)
Donor Agency	French Development Agency (AFD)
Loan Amount	N.A.
Overview	The Lagos Strategic Transportation Master Plan Project 1 (LSTMPP1) aims to update the existing Lagos Strategic Transportation Master Plan (STMP) and develop a strategic transportation and mobility master plan (STMMP) for the Lagos metropolitan area until 2040. Specifically, the project will conduct origin-destination (OD) surveys and collect GIS information to gain a detailed understanding of travel patterns and transportation modes for public transport, freight, inland water transport, and non-motorized transport. After updating the traffic demand model, the project will revise the STMP master plan, improve and expand its functions, gradually phase out inefficient transportation modes, and develop a strategic master plan that includes an action plan considering the climate environment. Subsequently, high-quality bus corridors (QBC) will be developed along several identified corridors within the state. This development aims to connect existing and unfinished transportation modes, such as the Bus Rapid Transit (BRT) and railway systems, by creating feeder routes, thereby improving the mobility and living conditions of Lagos residents. The project consists of the following three packages: Package-1: Ketu-Alapepe, Ojuelegba-Idi Araba, Yaba-Lawanson-Ijesha-Cele Package-2: Iju Ishaga-Abule Egba Package-3: Iyana Iba-Igando

(5) Accelerating Resource Mobilization Reforms (ARMOR) Program for Results

Implementation Year	2024~2028
Implementing Agency	Federal Ministry of Finance
Donor Agency	World Bank (WB)
Investment Amount	US\$1,173.50 Million
Loan Amount	US\$ 750.00 Million
Overview	This program aims to address fiscal vulnerabilities in Nigeria caused by an excessive reliance on oil and gas revenues and the lack of transparency in the governance of the Nigerian National Petroleum Company Limited (NNPCL). It seeks to expand domestic revenue mobilization and create fiscal space for social protection spending by modernizing tax and customs administration and enhancing transparency in the energy sector. Specifically, the program focuses on strengthening taxation on tobacco, alcohol, gambling, telecommunications services, and single-use plastics, while supporting the implementation of efficient customs procedures and trade facilitation. Ultimately, it aims to achieve a fundamental fiscal structural transformation through the removal of fuel subsidies.

(6) Rural Access and Agricultural Marketing Project (RAAMP)

Implementation Year	2024~2029
Implementing Agency	Federal Ministry of Agriculture and Rural Development / Ondo State Government
Donor Agency	World Bank (WB) , French Development Agency (AFD)
Loan Amount	N.A.
Overview	This project involves the improvement of existing rural feeder roads with a total length of 33.5 km in Ondo State, along with the necessary road drainage works. Lot 1: Upgrading of 15.446 km Oda – Cocoa Board - Camp 2 (Langbodo) Road in Akure South LGA, Ondo Lot 2: Upgrading of 7.973 km Ode - Omi - Iyara Road in Irele LGA, Ondo State Lot 3: Upgrading of 10.002 km Ifira-Afo Road in Akoko South East LGA, Ondo State Specifically, the project includes, but is not limited to, site preparation and earthworks, road improvements, culverts and drainage ditches, paving, and road surface treatment, along with strict implementation of social and environmental safeguards. The construction is expected to be completed within 18 months. The Federal Government of Nigeria intends to apply for financing from the World Bank through the Federal Ministry of Agriculture and Rural Development to cover the costs of the Rural Access and Agricultural Marketing Project (RAAMP), with a portion of the proceeds allocated for the payment of the construction and improvement contracts for the 33.5 km of rural roads in Ondo State. This contract will be co-financed with the Agence Française de Développement (AFD), but the procurement process will follow the World Bank's procurement regulations.

(7) Development of Inland Waterways Transportation in Lagos

Implementation Year	2024~2030
Implementing Agency	Lagos State Waterways Authority (LASWA)
Donor Agency	French Development Agency (AFD) , European Union (EU) , European Investment Bank (EIB)
Investment Amount	410,000,000 €
Loan Amount	360,000,000 €
Overview	This project aims to establish a large-scale public inland waterway transport network utilizing the lagoons of Lagos State. It comprehensively promotes the development of infrastructure, such as navigation channels and terminals, alongside the introduction of electric vessels and the modernization of operational management systems through digital technology. The project consists of two main components: Component 1 involves the establishment of 15 priority ferry routes and the development of the necessary supporting infrastructure. This includes the improvement, marking, and dredging of 140 km of ferry waterways, the construction of 25 ferry terminals and jetties, as well as the provision of power supply infrastructure for electric vessels and access roads to the terminals. Component 2 focuses on ensuring the sustainability of ferry operations. This includes the procurement of 75 electric vessels and the implementation of essential systems for operation and maintenance, such as a control room center, vessel tracking systems, CCTV, and advanced traffic management systems. Furthermore, it aims to enhance the institutional capacity of the LASWA.

3.2 Assessment Overview of Nigeria's Transportation and Logistics Sector

According to the Global Competitiveness Report 2019 published by the World Economic Forum, Nigeria ranks 130th out of 141 countries surveyed in terms of the overall quality of infrastructure, significantly trailing behind other African nations such as Egypt (52nd), South Africa (69th), and Algeria (82nd). Additionally, in the 2020 Africa Infrastructure Development Index (AIDI) created by the African Development Bank to monitor and evaluate the state and progress of infrastructure development across the continent, Nigeria's transportation sector index ranks 29th among 54 African countries. Overall, the assessment of the development level of transportation and logistics infrastructure in Nigeria is low.

Table 3.2.1 Africa Infrastructure Development Index

Rank	Country	2016	Rank	Country	2017	Rank	Country	2018
1	Egypt	55.38	1	Libya	58.71	1	Libya	58.49
2	Libya	52.84	2	Egypt	55.68	2	Egypt	56.75
3	Seychelles	50.51	3	Seychelles	50.52	3	Seychelles	50.33
4	Mauritius	36.1	4	Mauritius	37.44	4	Mauritius	38.40
5	Cabo Verde	26.59	5	Cabo Verde	26.68	5	Cabo Verde	26.56
6	Botswana	24.46	6	Botswana	22.52	6	Botswana	22.29
7	Algeria	18.21	7	South Africa	22.08	7	South Africa	21.92
8	Namibia	17.72	8	Algeria	17.35	8	Algeria	17.11
9	Comoros	15.58	9	Comoros	17.15	9	Comoros	15.65
10	Sao Tome and Principe	13.94	10	Ghana	16.26	10	Namibia	15.50
11	Lesotho	12.98	11	Namibia	15.84	11	Guinea-Bissau	14.26
12	Rwanda	12.93	12	Sao Tome and Principe	14.30	12	Sao Tome and Principe	14.17
13	South Africa	12.73	13	Rwanda	12.93	13	Rwanda	12.94
14	Zimbabwe	12.40	14	Zambia	12.14	14	Ghana	12.41
15	Djibouti	12.24	15	Kenya	12.14	15	Kenya	12.09
16	Kenya	12.19	16	Djibouti	11.97	16	Djibouti	11.85
17	Ghana	12.16	17	Zimbabwe	11.84	17	Burkina Faso	11.83
18	Burkina Faso	10.66	18	Burkina Faso	11.69	18	Zimbabwe	11.69
19	Tunisia	10.57	19	Tunisia	10.30	19	Tunisia	10.22
20	Morocco	9.90	20	Gambia, The	9.93	20	Burundi	9.54
21	Zambia	9.27	21	Morocco	9.52	21	Morocco	9.43
22	Burundi	9.00	22	Burundi	9.44	22	Swaziland	8.37
23	Uganda	8.61	23	Swaziland	8.43	23	Gambia, The	8.23
24	Swaziland	8.50	24	Togo	7.87	24	Lesotho	7.41
25	Gambia, The	8.13	25	Lesotho	7.44	25	Guinea	7.29
26	Togo	6.78	26	Guinea	7.38	26	Uganda	7.03
27	Cote d'Ivoire	6.60	27	Uganda	7.13	27	Togo	6.87
28	Guinea	5.87	28	Cote d'Ivoire	7.10	28	Cote d'Ivoire	6.66
29	Mauritania	5.28	29	Nigeria	5.10	29	Nigeria	5.09
30	Benin	4.95	30	Benin	5.01	30	Benin	4.94

*In 2016, it was outside the top 30

Source: Africa Infrastructure Development Index 2018, AfDB

The Logistics Performance Index (LPI), conducted by the World Bank, evaluates the efficiency of trade and logistics across various countries and presents the results in a ranking format. The LPI assesses several criteria, including "customs and border management efficiency," "trade and logistics infrastructure," "ease of shipment arrangements," "quality of logistics services," "cargo tracking capability," "timeliness of transportation," and an overall "composite" score. According to this report, Nigeria ranks 88th out of 139 countries in the overall assessment, indicating a low performance. The scores for each individual indicator are similarly low, reflecting a generally inefficient state of trade and logistics in the country.

Table 3.2.2 Logistics Performance Index in Nigeria

Criteria	Rank
Efficiency of customs and border management	90 th
Trade and logistics infrastructure	89 th
Ease of shipment arrangements	102 nd
Quality of logistics services	120 th
Cargo tracking capability	87 th
Timeliness of transportation	76 th
Overall	88 th

Source: Logistics Performance Index 2023, World Bank

3.3 Road Sector

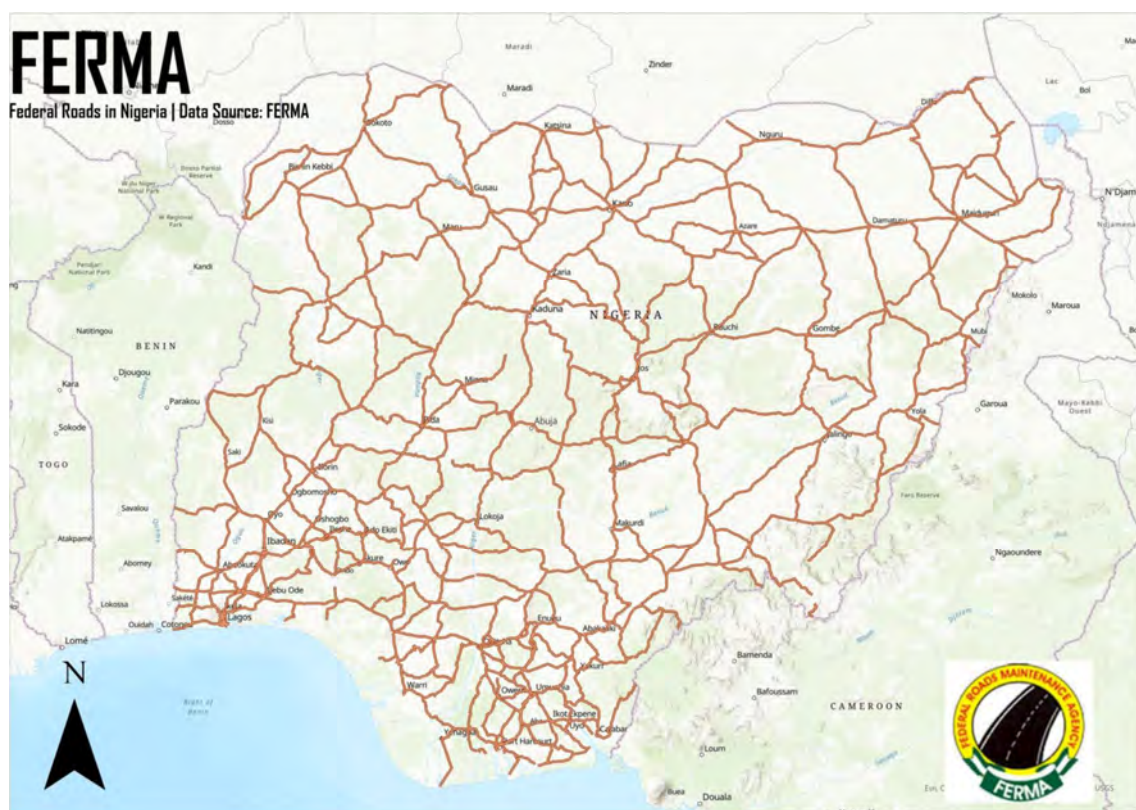
3.3.1 Trends in Infrastructure Development

The road sector section mainly summarizes information from FERMA which is in charge of federal road maintenance.

(1) Road Network

The total length of roads in Nigeria is approximately 200,000 km, which can be categorized into three main types:

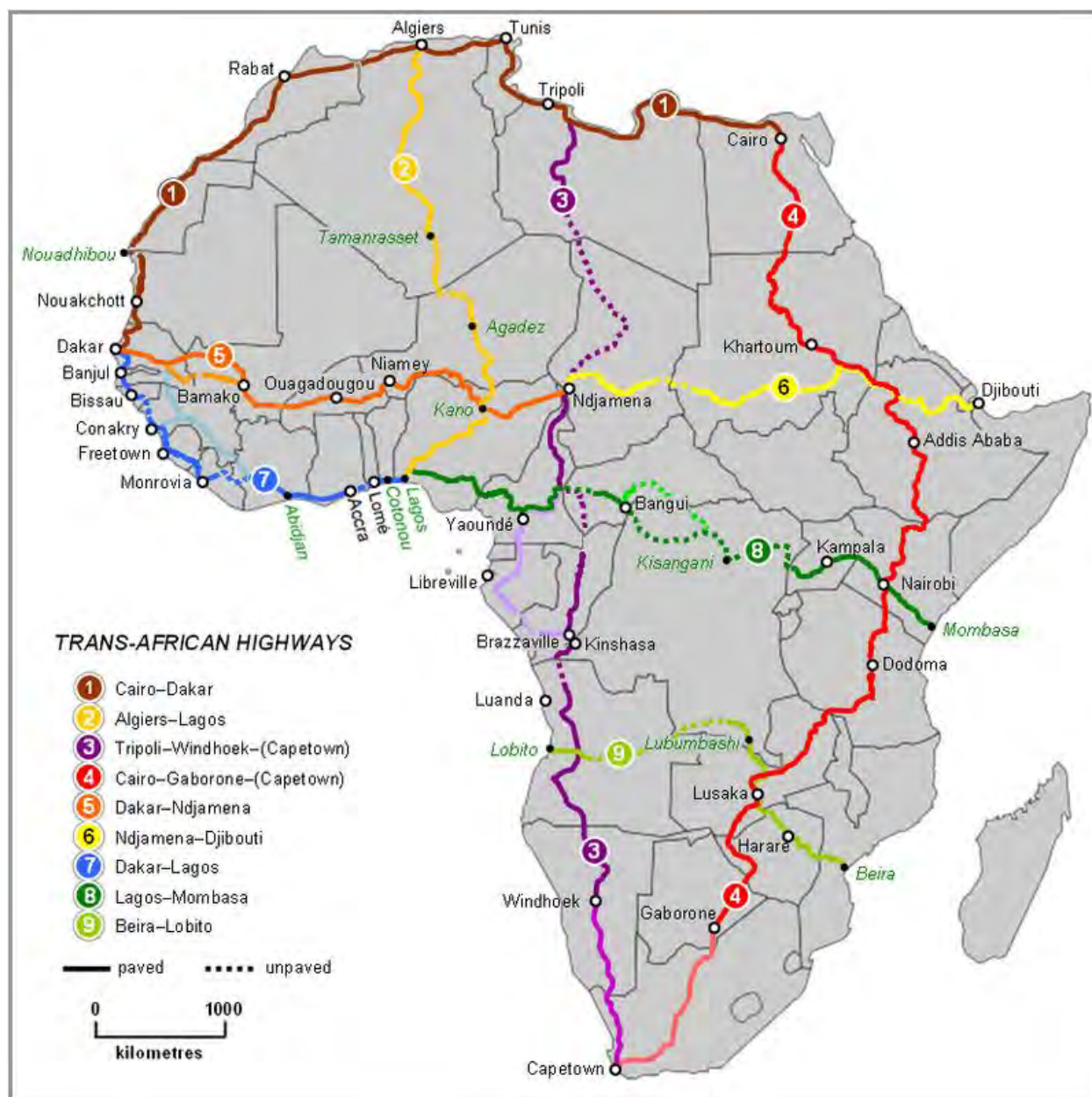
- A) Federal Roads (Trunk A): With a total length of about 35,000 km, federal roads form the backbone of the national road network (see Figure 3.3.1). These roads include international corridors that traverse states and connect to neighboring countries. The federal government is responsible for the design, construction, maintenance, and funding of these roads through the Ministry of Public Works.
- B) State Roads (Trunk B): Approximately 30,000 km in length, state roads connect major cities within each state to the state capitals. These roads are managed by the individual states, with design, construction, maintenance, and funding carried out through the state's Ministry of Public Works, Transportation, and Infrastructure.
- C) Local Roads (Trunk C): Spanning about 130,000 km, local roads serve as branch roads managed by local governments, connecting rural villages and communities. These roads are generally unpaved and are particularly susceptible to the effects of rain.



Source: FERMA

Figure 3.3.1 Federal Road Network

Some federal roads also function as part of the Trans-African Highway network, which connects various countries across the African continent. The network diagram is shown in Figure 3.2.2. Within Nigeria, there are several international corridors that facilitate connections with neighboring countries. These include the east-west route (Route 7 + Route 8) that runs from Dakar in Senegal, through Lagos, to Mombasa in Kenya along the coastal region, and the east-west route (Route 5 + Route 6) that connects Dakar to Djibouti on the eastern coast via Kano in the inland region. Additionally, there is a north-south route (Route 2) that connects Lagos to Kano and extends to Algiers, a Mediterranean coastal city. Construction of these corridors is currently being carried out in phases, playing a significant role in promoting economic development and regional interaction among African countries.

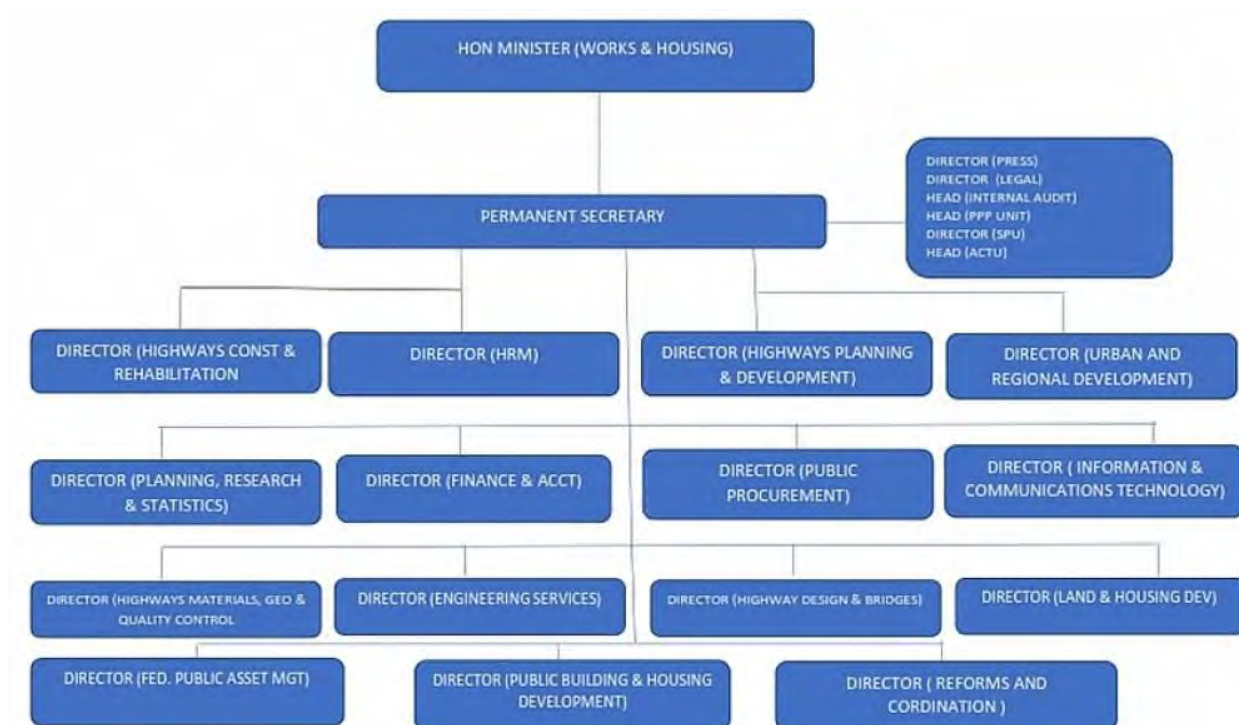


Source : https://commons.wikimedia.org/wiki/File:Map_of_Trans-African_Highways.PNG

Figure 3.3.2 Trans-African Highway Network

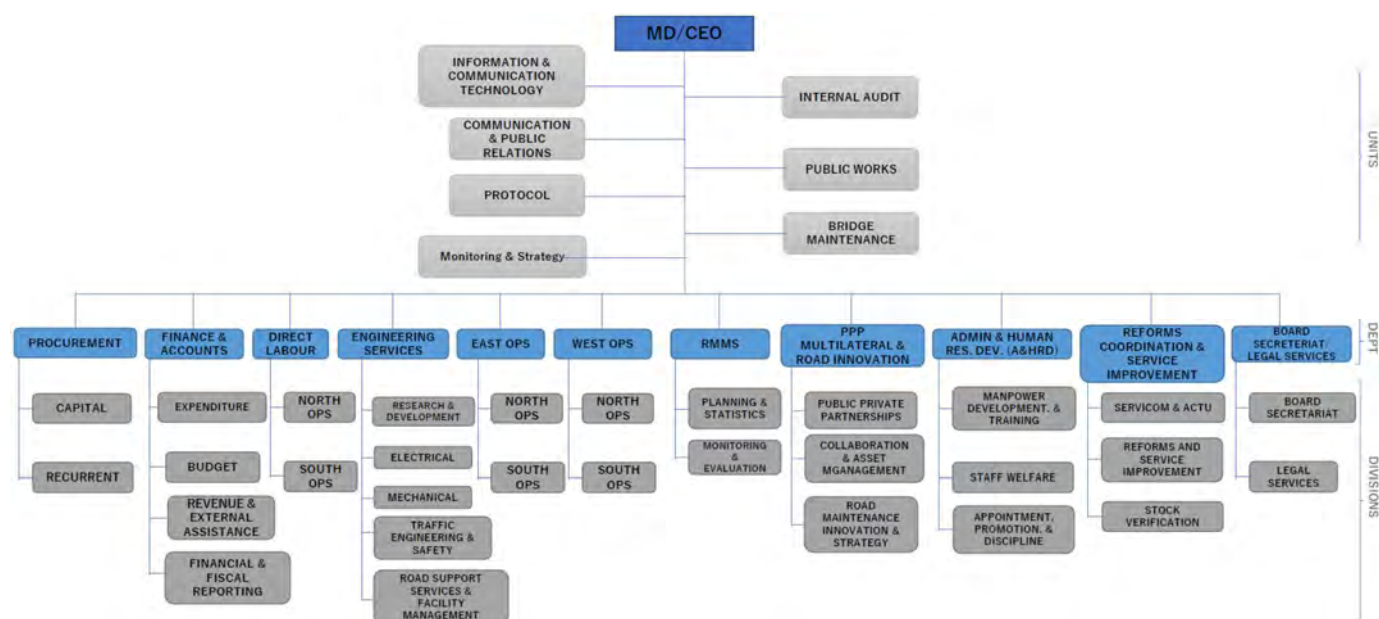
(2) Organizational Structure

The manager of federal roads is the Federal Ministry of Works (FMW), however, road inspection and maintenance are carried out by the Federal Roads Maintenance Agency (FERMA). FERMA was established in 2002 based on the judgment that the FMW alone was insufficient to handle the expanding scope of road management responsibilities resulting from increases in population and traffic volume. The organizational charts for the FMW and FERMA are shown in the next figure.



Source: FMW HP (Organization figure before separation from the Ministry of Housing)

Figure 3.3.3 Organizational Chart of FMW



Source: FERMA HP

Figure 3.3.4 Organizational Chart of FERMA

As previously mentioned, the Federal Ministry of Works (FMW) is the administrator of federal roads. However, in major cities like Lagos, severe traffic congestion and pavement deterioration are serious issues, and the federal government's response has been delayed due to insufficient funding and other reasons. Therefore, it has been a long-standing practice for the Lagos State Government to take over the maintenance of federal roads for the benefit of its citizens. In such cases, the State Government usually seeks reimbursement from the Federal Government for the funds expended. The project proposed in this study for Lagos State is also expected to have the Lagos State Government as its main implementing agency.

The Lagos State Government organizations involved in road projects are primarily two Ministries:

Lagos State Ministry of Transportation (LSMT)

- The LSMT is responsible for transportation policy, planning, and regulation. Under its umbrella are agencies such as:
 - Lagos Metropolitan Area Transport Authority (LAMATA): Responsible for public transportation.
 - Lagos State Traffic Management Authority (LASTMA): Responsible for traffic management.
 - Motor Vehicle Administration Agency (MVAA): Responsible for vehicle registration and driver's licensing.

Lagos State Ministry of Works and Infrastructure (LSMWI)

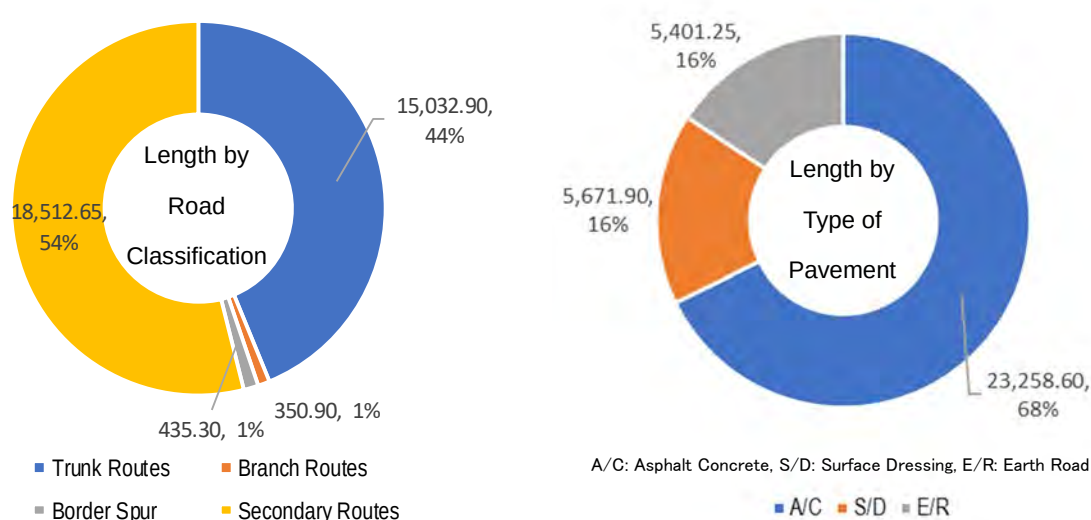
- The LSMWI is responsible for public works, infrastructure development, and maintenance. It has internal executive departments:
 - Office of Works: Responsible for construction work.
 - Office of Infrastructure: Responsible for planning, design, and infrastructure asset management.

Its subsidiary agencies include:

- Lagos State Public Works Corporation (PWC): Executes road maintenance at the operational level.
- Lagos State Infrastructure Asset Management Agency (LASIAMA): Responsible for infrastructure asset management.

(3) Current Status of Road Network

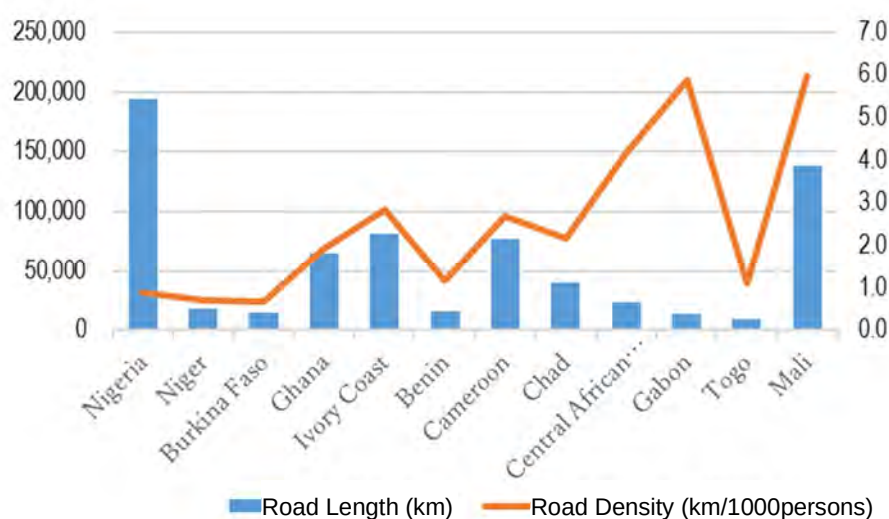
Federal roads are classified into four categories: "Trunk Route," "Branch Route," "Border Spur," and "Secondary Route," according to the Revised Inventory of Federal Highways 2016. Trunk Routes account for 44% of the total, while Secondary Routes make up 54%. Both Branch Routes and Border Spurs each represent 1% of the total. In terms of pavement conditions, asphalt pavement constitutes 68% of the total, while 16% is classified as simple pavement and 16% remains unpaved (see Figure 3.3.5).



Source: Revised Inventory of Federal Highways 2016

Figure 3.3.5 Length of Federal Roads by Classification and Length by Type of Pavement

Nigeria's road network significantly lags behind emerging countries such as MINT and BRICS in terms of total length and pavement rates. Even when compared to neighboring African countries, as shown in Figure 3.3.6, Nigeria has a longer total road length; however, it belongs to the lowest group in terms of road length per 1,000 people, indicating a low level of road infrastructure development.



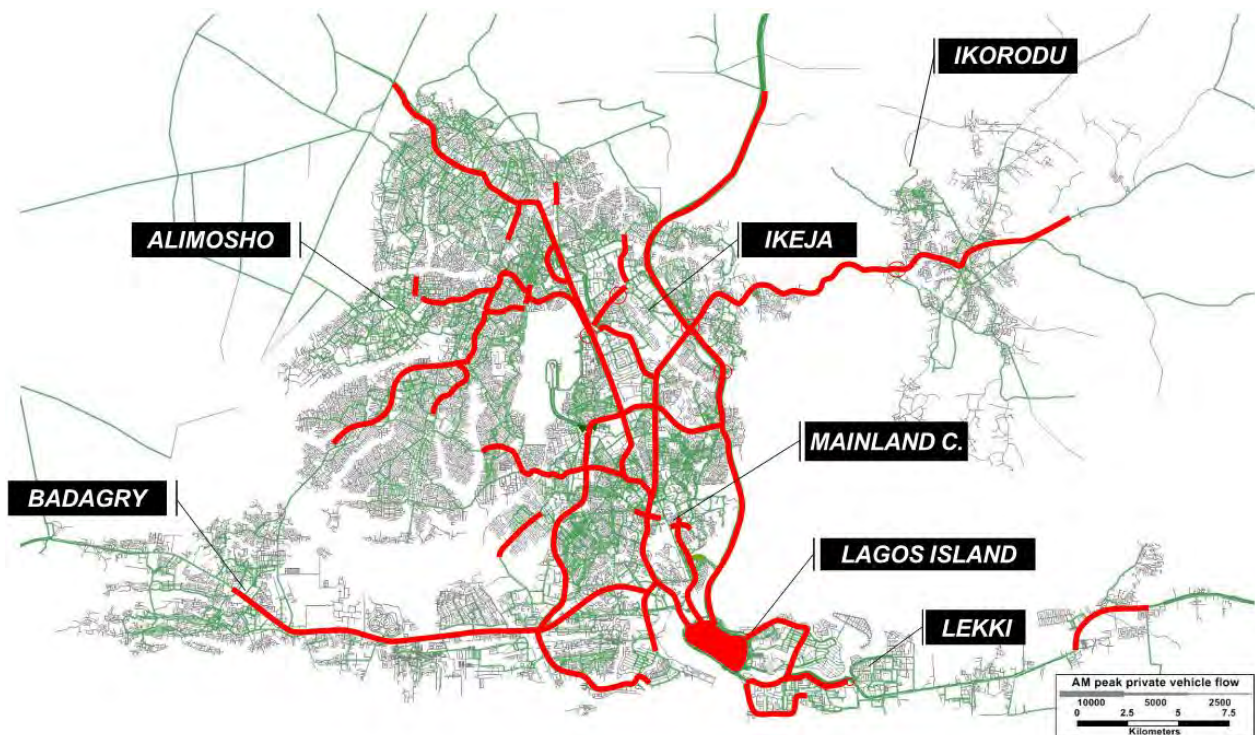
Source: Road Length (World Population Review), Population (Worldmeter)

Figure 3.3.6 Comparison of Road Length and Density with Neighboring Countries

Especially in Lagos, a mega-city characterized by a concentration of population and traffic, the rapid increase in population and traffic volume that has occurred without appropriate urban planning or transportation policy has resulted in the following problems:

- Deterioration of existing roads due to insufficient maintenance
- Lack of public transport alternatives to road traffic
- Inadequate road network
- Inadequate traffic management
- Unregulated street vending
- Shortage of parking spaces

Regarding public transportation, the city relies heavily on minibuses. However, since these minibuses have increased in an unregulated manner without sufficient control and management, they are inefficient and are a major factor contributing to the rise in private car usage. The various issues listed above have exacerbated traffic congestion in Lagos, which, in turn, has created a significant logistical bottleneck in Lagos, where logistics operations are heavily concentrated.



Source: Reviewed LSTMP

Figure 3.3.7 Major Traffic Congestion Sections (in red) on the Lagos Road Network

(4) Upper Level Plan for the Road Sector

The National Development Plan (NDP) outlines the following strategies for the road sector:

- Promote economic diversification and GDP growth by improving road connectivity to the real economy and economic centers, avoiding over-reliance on specific sectors.
- Integrate the transportation network by enhancing road connectivity to facilitate the movement of goods from ports, Inland Container Depots (ICDs), inland waterway terminals, and railway stations.
- Improve the national road network to respond to population and traffic increases, thereby promoting economic and social development through the effective movement of goods and people.
- Create an environment that allows for private sector participation in road financing and management.
- Build an internationally competitive economy by providing road infrastructure that meets international standards.
- Enhance road construction planning and the financing and implementation of projects through Public-Private Partnerships (PPP).

Additionally, the National Integrated Infrastructure Master Plan (NIIMP) outlines the following short-term, medium-term, and long-term goals for the road sector:

Table 3.3.1 Road Sector Goals

Period	Target Year	Road Sector Goals
Short-Term	2021	✓ Upscale road infrastructure with most highway roads in a good state ✓ Enhance connectivity between economic centers of the country/ Refurbish and expand cross-national highways
	2022	✓ Restore degraded sections of the Federal highway network to improve connectivity over a distance of 4,000km
Mid-Term	2023	✓ Rehabilitate/dualize all major economic routes ✓ Rehabilitate major link roads ✓ Restore 70.0 per cent of Federal and State roads
Long-Term	2043	✓ Dubaization of North-South routes ✓ Dubaization of all East-West routes ✓ Complete the construction of critical River Bridges (Ibi Bridge, Baro Bridge, Nupeko Bridge, Buruku Bridge) to improve road network connectivity ✓ Restore 100.0 per cent of Federal and State roads

Source: NIIMP

On the other hand, the reviewed Lagos State Transport Master Plan (LSTMP) centers on strengthening the development plan for public transport systems such as LRT (Light Rail Transit), BRT (Bus Rapid Transit), and Monorail. Road development is positioned as the backbone that complements public transport to improve overall traffic efficiency. An outline of the revised LSTMP related to road development is provided below.

1) Basic Policy and Strategy

The objective is to harmonize existing urban planning and construct a traffic system for the wider metropolitan area looking ahead to 2032. The proposed road network will serve as the backbone for the proposed public transport system.

Table 3.3.2 Basic Policy by Sector

Area	Policy/Vision	Recognition of Related Issues
Road Network Improvement	Improvement of network capacity, strengthening connectivity, improvement of regional accessibility, upgrading and hierarchical differentiation of the road network, improvement of traffic management, and parking strategy.	Inadequate road infrastructure (insufficient capacity, inappropriate road pavement structure, insufficient connecting roads/bridges), inadequate traffic management, and inadequate parking strategy.
Traffic Management	Improvement of traffic management is one of the main components underpinning the road network proposal, serving as a unified basis.	Worsening traffic congestion and further confusion caused by the use of public transport (especially minibuses).
Road Network Structure	Strengthening the radial connection to and from the central part of Lagos, and establishing lateral (cross-cutting) connections instead of internal connections within the metropolitan area.	Assumes a larger, grid-like land transport network that accommodates long-term population growth and mobility dynamics.
Relationship with Public Transport	The road network proposal functions as the backbone for public transport proposals such as BRT and LRT.	Lack of alternative means of transport other than roads.

Source: JICA Study Team

2) Plan for Improving Traffic Management

Regarding the improvement of traffic management, particularly Intelligent Transport Systems (ITS) and Traffic Management Systems (TMS), initiatives shown in Table 3.3.3 are intensively planned for the Short-Term Phase (2014–2017).

Table 3.3.3 Traffic Management Improvement Plan

Planning Area	Specific Actions (2014–2017)	Objective/Focus
Monitoring and Control	Definition of control technology, acquisition of control devices, and establishment of a Traffic Control Center (TCC).	Efficient management of the traffic system and coordination of the multimodal transportation system.
Fleet Tracking System	Feasibility study for the realization of a fleet tracking system, exploration of technology providers, installation (vehicles and network), and implementation of a test phase.	Efficient management and operation of fleet vehicles, including freight transport.
Traffic Signal Planning	Signal control taking BRT (Bus Rapid Transit) into account.	Ensuring the feasibility of public transport (such as BRT) and mitigating congestion.
Optimization of Existing Roads	Design of a bus lane network and implementation of BRT lanes.	Ensuring the success of BRT services and improving the efficiency of the existing network.
Information Provision Plan	Implementation of a user information system and installation of information elements at bus stops/terminals.	Provision of passenger information (including real-time incident management).

Source: JICA Study Team

(5) Current Status of Road Infrastructure Development

Many of the current road projects being implemented in Nigeria focus on the repair and improvement of existing roads, although some new road construction is also taking place. Recent road projects are funded through various sources, including the federal government budget, Public-Private Partnerships (PPP), Sovereign Sukuk Bonds (Islamic bonds), the Road Infrastructure Development and Refurbishment Investment Tax Credit Scheme (RIDRITCS), the Presidential Infrastructure Development Fund (PIDF), and funding from donors.

The Federal Ministry of Works and Housing (FMW) has also introduced a PPP model known as the Highways Development and Management Initiative (HDMI), drawing on examples from other countries. The HDMI aims to promote private investment by maximizing the use of all assets within the Right of Way (RoW) of federal roads to facilitate funding for road development.

Additionally, the Nigerian government established the Infrastructure Concession Regulatory Commission (ICRC) in 2008 to regulate PPP initiatives, managing and monitoring all concession contracts of the federal government. The ICRC's website provides a list of ongoing and procurement PPP projects in the road sector, as shown in Tables 3.3.4 and 3.3.5. A total of 12 road projects currently under contract or procurement are all HDMI projects focused on the improvement of existing federal roads. The list also includes projects for the establishment of a toll collection system for HDMI initiatives.

Table 3.3.4 Road Projects Under Contract Through PPP

S/N	PROJECT DESCRIPTION	GOVT AGENCY	CONCESSIONAIRE	DURATION	STATUS
Road Infrastructure Projects (HDMI) – Transport Sector					
84	Highway Development & Management Initiative (HDMI) Concession Contract for Route 1, Benin – Asaba 125Km	Federal Ministry of Works and Housing for and on behalf of the Federal Government of Nigeria	Concessionaire: Africa Plus Partner Nigeria Limited Consortium SPV: Benin-Asaba Expressway Concession Company Ltd	25 years May, 2023 - May, 2048	Under Implementation The Contract Management Team for the HDMI Value Added Concession has been inaugurated to drive the implementation of the contracts. The Commission has reviewed the contracts and highlighted the Obligations of the parties, KPIs and Milestones for monitoring purposes.
85	Highway Development & Management Initiative (HDMI) Concession Contract for Route 2 – (Abuja – Lokoja), 93Km	Federal Ministry of Works and Housing for and on behalf of the Federal Government of Nigeria	Concessionaire: Avia Infrastructure Services Ltd Consortium SPV: Highstream Road Networks Limited	25 years May, 2023 - May, 2048	Under Implementation The Contract Management Team for the HDMI Value Added Concession has been inaugurated to drive the implementation of the contracts. The Commission has reviewed the contracts and highlighted the Obligations of the parties, KPIs and Milestones for monitoring purposes.
86	Highway Development & Management Initiative (HDMI) Concession Contract for Route 4, Onitsha – Owerri – Aba, 161Km	Federal Ministry of Works and Housing for and on behalf of the Federal Government of Nigeria	Concessionaire: Enyimba Economic City Development Company Consortium SPV: EECDF INFRA Consortium Limited	25 years May, 2023 - May, 2048	Under Implementation The Contract Management Team for the HDMI Value Added Concession has been inaugurated to drive the implementation of the contracts. The Commission has reviewed the contracts and highlighted the Obligations of the parties, KPIs and Milestones for monitoring purposes.
87	Highway Development & Management Initiative (HDMI) Concession Contract for Route 5, Shagamu – Benin - 258Km	Federal Ministry of Works and Housing for and on behalf of the Federal Government of Nigeria	Concessionaire: Africa Finance Corporation Consortium SPV: Olumo-Bronze Corridor Concession Company	25 years May, 2023 - May, 2048	The Contract Management Team for the HDMI Value Added Concession has been inaugurated to drive the implementation of the contracts. The Commission has reviewed the contracts and highlighted the Obligations of the parties, KPIs and Milestones for monitoring purposes.
88	Highway Development & Management Initiative (HDMI) Concession Contract for Route 5 Expansion of 5.4Km of Abuja – Keffi Expressway and Dualisation of Keffi – Akwanga – Lafia – Makurdi Road, 227.2Km	Federal Ministry of Works and Housing for and on behalf of the Federal Government of Nigeria	Concessionaire: China Harbour Engineering Company Nigeria Ltd SPV: China Harbour Nigeria Operation and Maintenance Company Ltd	25 years May 2023 -May 2048	Under Implementation The Contract Management Team for the HDMI Value Added Concession has been inaugurated to drive the implementation of the contracts. The Commission has reviewed the contracts and highlighted the Obligations of the parties, KPIs and Milestones for monitoring purposes.
89	Highway Development & Management Initiative (HDMI) Concession Contract for Route 7A Kano – Maiduguri (Kano _ Shuari) 100Km	Federal Ministry of Works and Housing for and on behalf of the Federal Government of Nigeria	Concessionaire: Dafac Consortium Limited SPV: Messrs Dafac Consortium Limited	25 years May, 2023 - May, 2048	Under Implementation The Contract Management Team for the HDMI Value Added Concession has been inaugurated to drive the implementation of the contracts. The Commission has reviewed the contracts and highlighted the Obligations of the parties, KPIs and Milestones for monitoring purposes.
90	Highway Development & Management Initiative (HDMI) Concession Contract for Route 9 – Enugu Port Harcourt, 200Km	Federal Ministry of Works and Housing for and on behalf of the Federal Government of Nigeria	Concessionaire: Enyimba Economic City Development Company Consortium SPV: EECDF INFRA Consortium Limited	25 years May, 2023 - May, 2048	Under Implementation The Contract Management Team for the HDMI Value Added Concession has been inaugurated to drive the implementation of the contracts. The Commission has reviewed the contracts and highlighted the Obligations of the parties, KPIs and Milestones for monitoring purposes.
91	Highway Development & Management Initiative (HDMI) Concession Contract for Route 11, Lagos – Otta – Abeokuta, 80Km	Federal Ministry of Works and Housing for and on behalf of the Federal Government of Nigeria	Concessionaire: Africa Plus Partners Nigeria Limited Consortium SPV: Lagos -Abeokuta Highway Concession	25 years May, 2023 - May, 2048	Under Implementation The Contract Management Team for the HDMI Value Added Concession has been inaugurated to drive the implementation of the contracts. The Commission has reviewed the contracts and highlighted the Obligations of the parties, KPIs and Milestones for monitoring purposes.
92	Highway Development & Management Initiative (HDMI) Concession Contract for Route 12, Lagos – Badabry – Seme Border, 79Km	Federal Ministry of Works and Housing for and on behalf of the Federal Government of Nigeria	Concessionaire: Africa Finance Corporation Consortium SPV: Eko-Freedom Road Concession Company	25 years May, 2023 - May, 2048	Under Implementation The Contract Management Team for the HDMI Value Added Concession has been inaugurated to drive the implementation of the contracts. The Commission has reviewed the contracts and highlighted the Obligations of the parties, KPIs and Milestones for monitoring purposes.

Source: ICRC

Table 3.3.5 Road Projects Being Procured Through PPP

S/N	MDA	PROJECT / DESCRIPTION	SECTOR	STATUS	PHASE
95	Federal Ministry of Works	Concession of 12 roads under the Highway Development & Management Initiative (HDMI) 9 out of the 12 routes were bid for which have gotten to FEC approval and Commercial Close. The following 3 routes are yet to be bid for: 1. Kano-Katsina (Kano/Katsina) 2. Lokoja-Auchi (Kogi/Edo) 3. Ilorin-Jebba (Kwara/Niger)	Roads & Bridges	The Federal Executive Council had approved nine (9) out of the 12 routes of the HDMI on 18 th January, 2023 The remaining 3 routes are yet to be bid for.	Procurement
149	Federal Ministry of Works	Central Clearing House (CCH) Application System to Manage Road Tolling Platforms in the Country The project intends to implement a Central Clearing House (CCH) and Toll Software to be used by all the Toll Operators on Federal Roads in Nigeria including HDMI Operators for accountability and visibility to Federal Ministry of Works for the toll operations, in addition to ensuring uniformity, interoperability and continuity of operations.	Transport	The Commission issued Business Compliance Certificate (OBC) to the FMW&H on 18 th August, 2022 RFP has been issued to the prequalified bidders Evaluation concluded and Preferred bidder emerged. Next Step: Negotiations with the preferred bidder	Procurement

Source: ICRC

The National Integrated Infrastructure Master Plan (NIIMP) also outlines planned road projects under PPP, including those related to the Highway Development and Management Initiative (HDMI), as shown in Table 3.3.6. Among these projects are the Lagos-Abuja Expressway and the Lagos-Calabar-Kano Golden Triangle Highway, which are expected to be implemented through PPP. However, the feasibility of these PPP projects remains uncertain, and as of March 2024, funding for the Lagos-Abuja route has not yet been secured.

While the plan anticipates that nearly all road development will be carried out through PPP due to constraints on government budgets, the reality suggests that this may be challenging to achieve.

Table 3.3.6 Road Projects Planned Under PPP

S/N	ACTIVITY	LOCATION/CORRIDOR	REMARK
1	Concession of the Pilot 12 roads under the Highway Development & Management Initiative (HDMI)	Across the six (6) Geo-Political Zones	2020 - 2022.
2	Concession of the 2nd phase 12 HDMI road corridors	Across the six (6) States of the Federation	2023 - 2024
3	Development of Lagos-Abuja Direct Greenfield Road Corridor under a Design, Build, Operate & Transfer (DBOT) arrangement		2022 - 2027
4	Development of a Greenfield Golden Triangle Super Highway (Lagos-Calabar-Kano-Kongolam-Lagos) through a Design, Build, Operate & Transfer (DBOT) arrangement	Lagos-Calabar-Kano-Kongolam-Lagos	2022 - 2027
5	Development of a Greenfield Badagry-Kaiama-Babana-Kaoje-Gwambu-Fokku-Sokoto Road in Lagos, Ogun, Oyo, Kwara, Niger, Kebbi, and Sokoto States, (1,046km) under a Build, Operate & Transfer (DBOT) arrangement	Lagos, Ogun, Oyo, Kwara, Niger, Kebbi, and Sokoto	2024 - 2030
6	Development of a Greenfield Asaba-Abuja Expressway Project under a Design, Build, Operate & Transfer (DBOT) arrangement		2024 - 2027
7	Development of a Greenfield Enugu-Abuja Expressway under a Design, Build, Operate & Transfer (DBOT) arrangement		2024 - 2027
8	Development of Maiduguri-Monguno-Baga-Kauwa-abadama-Mallum Faori road in Borno State under DBOT	Maiduguri-Monguno-Baga-Kauwa-abadama-Mallum Faori	2026 - 2028
9	Development of Maiduguri-Bama-Bank under DBOT		2025 -2026

Source: NIIMP

(6) Planed Major Projects

The Federal Ministry of Works and Housing (FMW) has designated three routes as the "Renewed Hope Legacy Road Infrastructure Projects," aimed at promoting national economic development and enhancing GDP. Stakeholder meetings are being held in various states starting in June 2024 to discuss the construction of this new federal road network. A route map of the three projects is shown in Figure 3.3.8.

A) Lagos-Calabar Coastal Road (The Orange Line in the Figure)

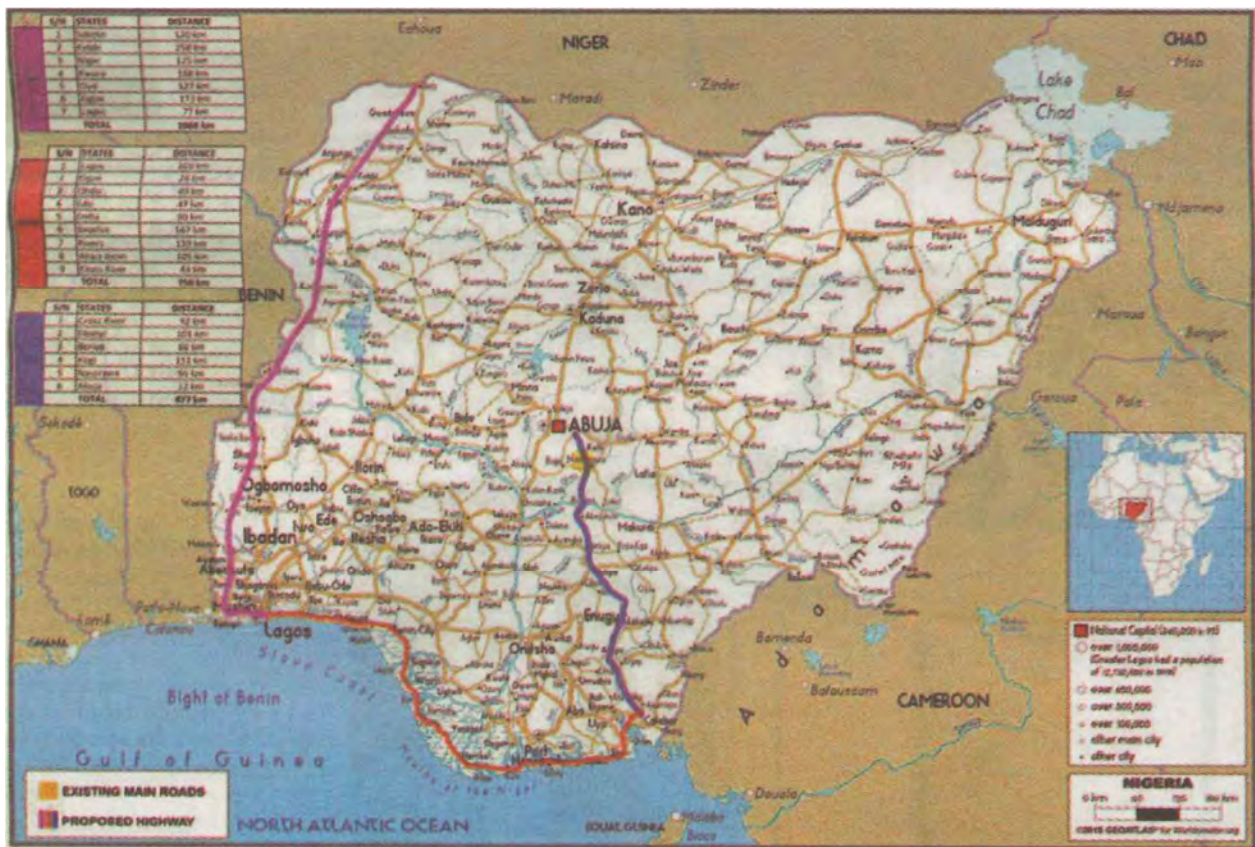
This is a major highway approximately 700 km long, starting from Ahmadu Bello Way on Victoria Island in Lagos and passing along the coastal area to Calabar. The project will be developed in phases, with construction of the first section, which spans 47 km from the starting point to the Lekki Deep Sea Port, having commenced in February 2024. Construction of the second section, starting from Lekki Deep Sea Port, is also set to begin in June 2024.

B) Sokoto-Badagry Expressway (The Pink Line in the Figure)

This is a six-lane expressway that stretches 1,068 km from Sokoto in northwestern Nigeria to Badagry in the southwest, connecting to the Lagos-Calabar Coastal Road. In April 2024, the President directed the commencement of the design, and in May 2024, the Federal Executive Council (FEC) approved the procurement. The groundbreaking ceremony for the first section, which covers 120 km from Sokoto, took place in October 2024, followed by the second section of 258 km. The project aims for completion by May 2025, with plans to collect tolls for 5 to 10 years after opening to repay construction costs. Both sections will be constructed by Hightech Construction, the same company currently working on the Lagos-Calabar Coastal Road.

C) Cross River-Abuja Expressway (The Purple Line in the Figure)

This is a 477 km expressway connecting Calabar in Cross River State to Abuja. At its starting point, it will connect with the Lagos-Calabar Coastal Road.



Source: Newspaper Article, Daily Trust 2024/7/3

Figure 3.3.8 Route Map of Renewed Hope Legacy Road Infrastructure Projects

Additionally, the Federal Ministry of Works and Housing (FMW) is planning the following road development, but since this route is not included in the Legacy Projects, it is considered to have a lower priority compared to routes A to C.

D) Lagos-Abuja Expressway

This will be a new expressway directly connecting Lagos and Abuja. According to reports from September and December 2023, the expressway will be approximately 470 km long, featuring a dual carriageway with two lanes in each direction (totaling four lanes) and a width of 14 meters, allowing for travel between Lagos and Abuja in approximately four hours. The federal government plans to initiate preparations for this project in 2024, allocating 500 million Naira in the 2024 budget proposal for this purpose. The main construction will be carried out through a Public-Private Partnership (PPP), with a target completion date set for 2027.

Moreover, the reviewed Lagos State Transportation Master Plan (LSTMP) projects extensive road infrastructure development as outlined below. However, even as of 2025, having passed the midpoint of the Medium-Term Phase, most of these projects remain untouched.

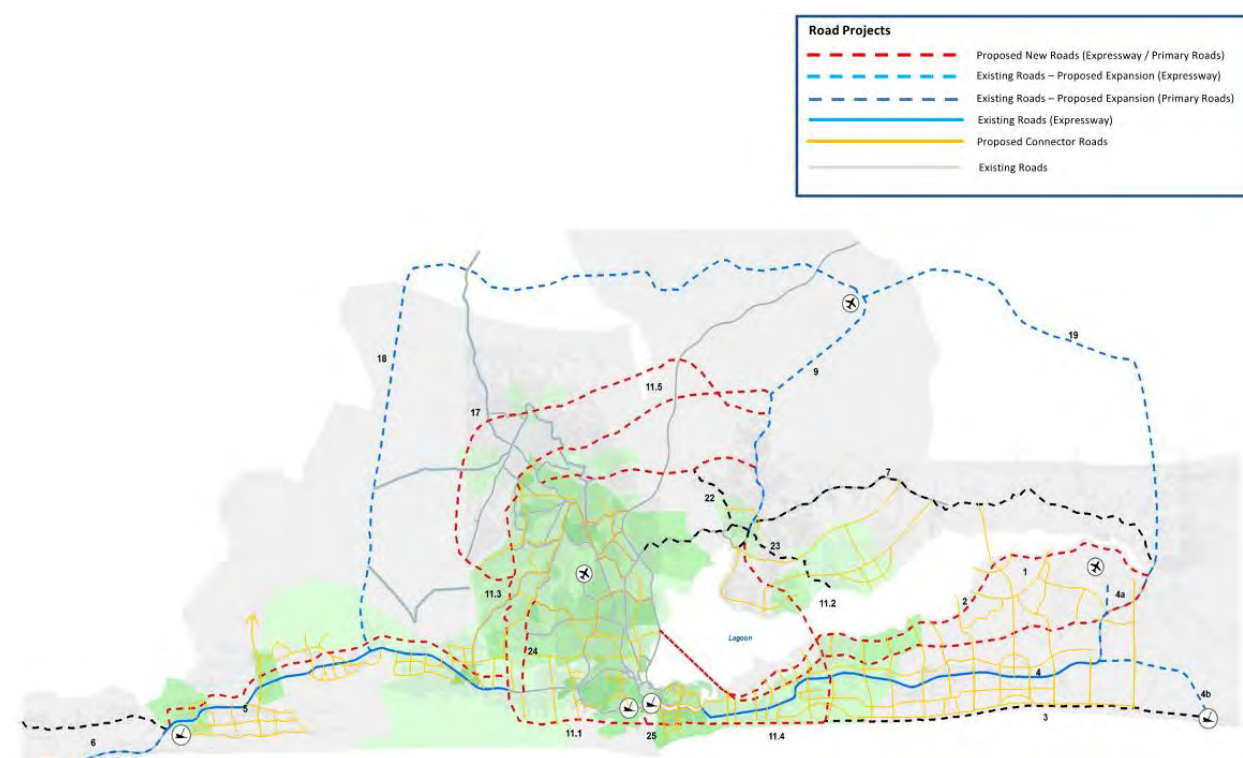
According to the LSTMP, the Short-Term Phase aims to commence the development of core public transport infrastructure (central corridors for BRT/LRT) and improvements in traffic management (ITS/TMS) to ensure their efficient operation. The large-scale expansion of the road network, which complements and supports the public transport system, will be implemented progressively over the Medium-Term and Long-Term Phases. During the Medium-Term and Long-Term Phases, the key Lagos Outer Ring Road, which forms the axis of the road network, will be completed incrementally in line with the growth of the polycentric megacity, and the public transport network (LRT expansion, monorail, etc.) will be expanded. Ultimately, the road network is planned to achieve a grid-type configuration covering the megacity, serving as the backbone for the public transport system.

Table 3.3.7 Phased Road Development

Implementation Phase	Focus of Plan (Urban Development / Transport)	Major Road Projects to be Implemented
Short-Term (~2017)	Continuation of current trends. Response to expansion into surrounding areas of the city center. Commencement of projects with the highest feasibility.	Two main sections of the Lagos Outer Ring Road: • Ojo-Acaca (11.1) • Ikorodu-Lekki (4th Mainland Bridge) (11.2)
Medium-Term (~2022)	Key changes toward the vision of a polycentric megacity. Commencement of the formation of new city centers.	Further expansion of the Ring Road: • Ojo-Alagbado (11.3) • Lekki-VI/Acaca (11.4)
Long-Term (~2032)	Establishment of a unified, well-connected megacity. Stabilization of new centers in distant areas and final expansion of the MRT system.	Completion of the Ring Road: • Alagbado-Ikorodu (11.5) Major road network connections (17), (18), (19), (24), (6), (25), etc.

Note: The numbers in parentheses () correspond to the numbers shown in Figure 3.3.9

Source: JICA Study Team



Source: Reviewed LSTMP

Figure 3.3.9 The Future Road Network of Lagos

3.3.2 Condition of Road Maintenance

(1) Pavement Condition

According to the Federal Roads Maintenance Agency (FERMA), the condition of federal roads, as shown in Table 3.3.8, indicates that a combined total of 45% of the roads are classified as either poor or very poor. This suggests that even federal roads are not receiving adequate maintenance.

Table 3.3.8 Condition of Federal Roads¹

Pavement Condition	Length	Ratio
Good	10,295km	29%
Fair	8,960km	26%
Poor	4,848km	14%
Very Poor	10,796km	31%

Source: FERMA

¹ The four-level evaluation of pavement condition is conducted subjectively by inspectors through visual assessment. As a guideline, the criteria for classification are as follows: a pothole area of less than 20 square meters per kilometer is rated as "Good," 20 to 100 square meters as "Fair," 100 to 1,000 square meters as "Poor," and over 1,000 square meters as "Very Poor."

Data on pavement conditions by section has not been obtained from FERMA, but the survey team confirmed that the pavement condition of major roads within Lagos city is far from satisfactory, and it can be easily assumed that the conditions in the suburbs are even worse. During interviews with domestic companies, it was reported that both routes connecting Lagos and Abuja—via Ibadan and via Benin City—have sections with poor pavement conditions and areas prone to flooding, raising concerns about transportation time, cargo damage, and safety.

Additionally, FERMA is conducting a survey using a smartphone application to measure the International Roughness Index (IRI) in 2024. The results of this survey are shown in Figure 3.3.10, indicating that approximately 17% of the sections are rated as poor or below. This figure diverges from the values presented in Table 3.3.8. The IRI is a very basic survey method that can only detect longitudinal irregularities along the tire tracks, suggesting that the visual inspection results shown in Table 3.3.8 are likely more reflective of the actual conditions.

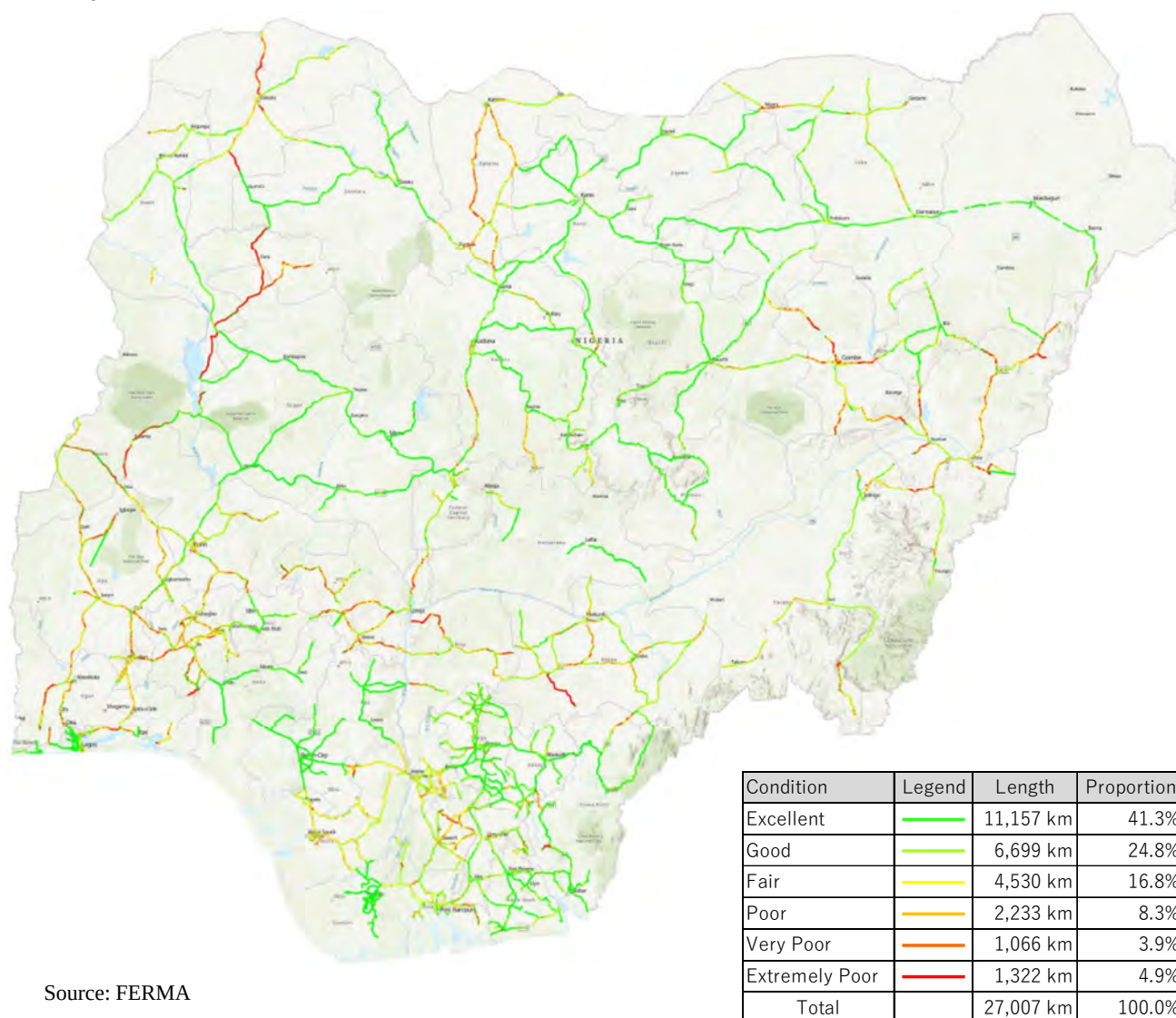


Figure 3.3.10 Results of the IRI Survey of Federal Roads (2024)

(2) Inspection Method

FERMA has established field offices in each state, with two located in Lagos, resulting in a total of 38 field offices. The states are generally grouped into 12 zones, each managed by a director. Road inspections are conducted directly by each field office, with a minimum of two inspections carried out each year, typically before and after the rainy season.

The inspection method involves visual assessments, where inspectors check the pavement from inside a moving vehicle. If any damage is detected, they exit the vehicle to document the situation by hand on an inspection form. The results are then organized into data upon returning to the office.

While the smartphone application Road Lab Pro, which measures the International Roughness Index (IRI), has been tested as an inspection tool, it has not been utilized due to its inability to provide a comprehensive understanding of pavement conditions. Although FERMA possesses a Falling Weight Deflectometer (FWD), it is currently out of service due to a malfunction.

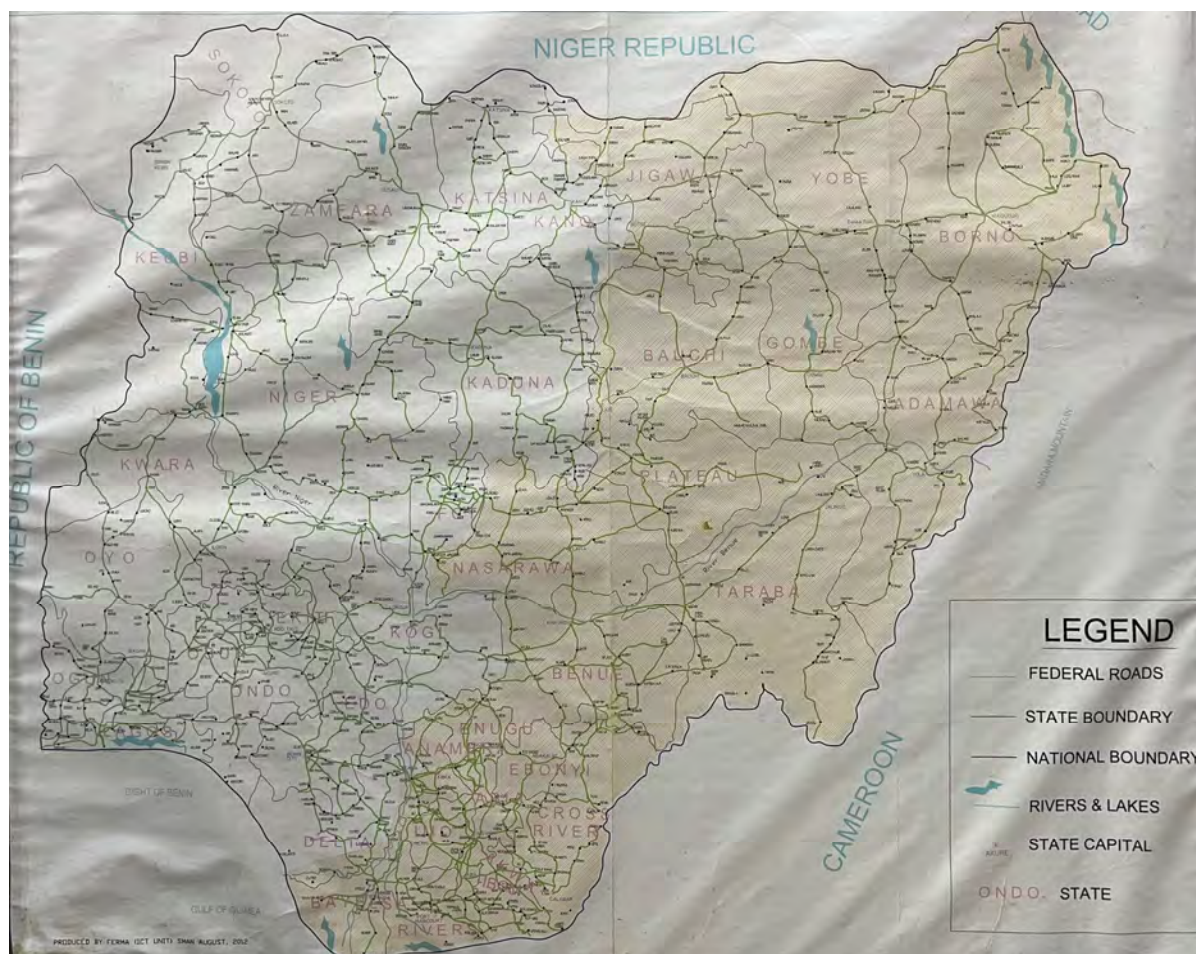
In addition to inspections conducted by field offices, there is a system in place that allows the general public to report road anomalies by taking photographs and submitting them through FERMA's website.

(3) Repair Method

Based on the inspection results submitted by each field office, FERMA headquarters prioritizes repairs by considering various factors and implements repair work starting with the highest priority items. Emergency small-scale repairs are conducted directly by FERMA's field offices, while other repairs are outsourced to private contractors. Currently, direct repairs account for approximately 15-20% of the total, but there are plans to increase this ratio to around 50% in the future to reduce repair costs and time. The introduction of Public-Private Partnerships (PPP) and performance-based maintenance contracts is also being considered for private outsourcing.

(4) Maintenance Management Database

FERMA reportedly uses a privately contracted, custom-developed system for its database; however, it is said that the data is not sufficiently organized. A GIS-based database is currently under development. A network diagram of federal roads has been created, as shown in Figure 3.3.11.



Source: FERMA

Figure 3.3.11 Current Federal Roads Network

(5) Challenges in Road Maintenance Management

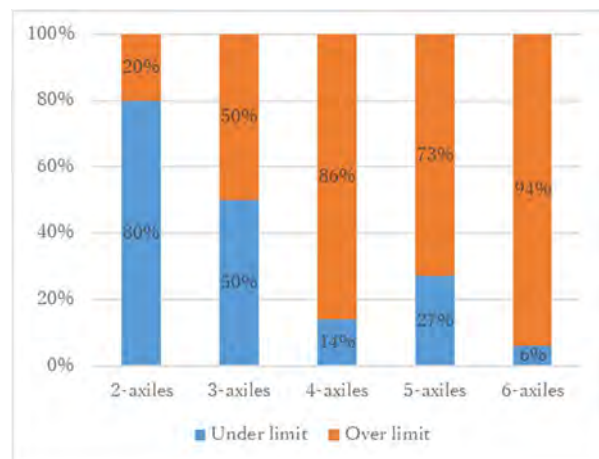
a. Budget Shortfalls

FERMA's annual budget ranges from 40 to 60 billion Naira, allowing for the repair of approximately 2,700 kilometers of roads each year. However, the total length of federal roads in poor condition exceeds 15,000 kilometers, and the pavement conditions continue to deteriorate year by year. As a result, even at the current pace of repairs, the overall pavement condition is likely to worsen.

In response to this challenge, FERMA is exploring new funding sources, such as Public-Private Partnerships (PPP) and financing from multinational organizations. However, as of now, the agency remains heavily reliant on the federal government's budget.

b. Overloading

In Nigeria, the axle weight limit is set at 11.5 tons per axle, in line with ECOWAS regulations. However, there are many overloaded vehicles that exceed this limit, causing severe damage to the pavement. According to the axle weight survey conducted in 2019 between Abuja and Lokoja, as shown in Figure 3.3.12, approximately 50% of three-axle vehicles and around 80% of vehicles with four or more axles were found to be overloaded. The trend indicates that larger vehicles are more likely to be overloaded.



Source: Interview with FERMA

Figure 3.3.12 Axle Load Survey Results

The impact of overloading on pavement is proportional to the fourth power of the axle weight, while the effect on concrete slabs is proportional to the twelfth power. Therefore, overloading has a significant impact on both pavement and bridges, making enforcement against it extremely important for road maintenance management.

In recent years, Nigeria has begun installing axle weight scales at several locations on federal roads to monitor and enforce regulations against overloaded vehicles. However, overloading remains widespread, and there is a pressing need for stronger enforcement measures.

c. Pavement Composition

The composition of asphalt pavement on federal roads is specified according to the standards set by the Federal Ministry of Works (FMW), as illustrated in Figure 3.3.13. The subgrade is improved or replaced as necessary to ensure an adequate California Bearing Ratio (CBR), but the pavement composition is not altered based on the volume of heavy vehicle traffic. Even on routes with high volumes of large vehicles, such as trailers, the pavement thickness does not exceed the specified thickness. It is evident that major logistics corridors and roads around ports, which experience significant heavy freight traffic, are clearly lacking in adequate pavement thickness.

Surface Course	40mm
Binder Course	60mm
Base Course	150–200mm
Subbase Course	150mm

* In case of low traffic volume, the base course may not be provided.

Source: Interview with FERMA

Figure 3.3.13 Pavement Structure of Federal Roads

d. Pavement Inspection Method

As mentioned in section (2) on inspection methods, FERMA conducts pavement inspections through visual assessments performed by field office personnel, using a traditional method of recording findings by hand in logbooks. To effectively and efficiently inspect and evaluate the extensive road network, there is a need for the introduction of new inspection techniques and equipment.

3.4 Port Sector

3.4.1 Administration, Finance, and Structure

(1) Federal Ministry of Marine and Blue Economy (FMMBE)

The Nigerian federal government ministry responsible for administration related to ports and inland waterways was previously the Federal Ministry of Transportation. However, as of August 2023, this responsibility has been transferred to the newly established Federal Ministry of Marine and Blue Economy (FMMBE). As of July 2024, information available on the FMMBE website indicates that the ministry's internal departments and affiliated agencies are listed in Table 3.4.1.

Table 3.4.1 Structure of the Federal Ministry of Marine and Blue Economy (FMMBE)

Department	Agency
• Fisheries and Aquaculture • Maritime Services • Maritime Safety & Security • Human Resources Management • Planning Research and Statistics • Finance and Accounts • Procurement • Special Duties • General Services • Press and Public Relations • Reform Coordination & Service Improvement • Internal Audit • Legal Services Unit	• Nigerian Maritime Administration and Safety Agency (NIMASA) • Nigerian Ports Authority (NPA) • National Inland Waterways Authority (NIWA) • Shippers Council • Maritime Academy of Nigeria • Council for Regulation of Freight Forwarding of Nigeria

Source: FMMBE HP (<https://fmmbe.gov.ng/>)

The FMMBE website outlines the ministry's mission, vision, objectives, and activities, as detailed in Table 3.4.2.

Table 3.4.2 Mission, Vision, and Activities of the Federal Ministry of Marine and Blue Economy (FMMBE)

Item	Content
Mandate	To Institutionalize Marine and Blue Economy as an important pillar for economic sustenance and growth diversification having due regards to the ecosystem.
Vision	To position Nigeria as a premier maritime nation by utilizing the potentials of its blue economy to diversify revenue, assure sustainable development, and cultivate environmental stewardship.
Mission	To formulate and implement policies, programs, and initiatives that will facilitate the development of an inclusive maritime and blue economy assets, driven by an operating environment that meets global best standards.
Achievements	• Developed guidelines for the implementation of Limitation of Liability for Maritime Claims (LLMC) Convention in Nigeria • Finalized and gazetted the Inland Waterways Transportation Regulation (2023) for safety on the inland waterways. • Commenced the implementation of Nigerian Ports Process Manual (NPPM) on Joint Boarding of Vessel, Joint Cargo Examination and Operation Free-the-Corridor Programme. • A comprehensive four-year Key Performance Indicators (KPIs) Implementation Plan was developed to guide the Ministry and its Agencies. • Adopted the National Joint Industrial (NJIC) Collective Bargaining Agreement on Conditions of Service for Nigerian Seafarers in Coastal Sector 2023. • Carried out Joint international compliance inspections with American and EU scientists on Nigerian fishing companies and vessels on TED / BRD.
Activities	Shipping, Fishing and Aquaculture, Coastal Tourism, Renewable Energy, Seawater Desalination, Submarine Cables, Seabed Mining Industry and Deep-Sea Mining, Marine Genetic Resources, Biotechnology
Future Initiatives	To promote the Blue Economy in Nigeria, the Ministry and its affiliated agencies have embarked on a comprehensive four-year implementation plan consisting of four pillars: 1. Strengthening Blue Governance The Ministry of Oceans and Blue Economy (FMMBE) aims to enhance the legal and policy framework governing this sector, strengthen the regulatory capacity of its affiliated agencies, develop the skills of Nigerians working in this field, and ensure the safety and security of coastal waters and inland waterways. The specific goals under this pillar are as follows: • Publish a national policy on oceans and the blue economy by June 2024. • Establish a National Coast Guard within the next two years. • Train 4,000 seafarers within the next four years. • Ensure that all port facilities comply 100% with the International Ship and Port Facility Security (ISPS) Code by 2026. 2. Transforming Port Operations The Ministry and its affiliated agencies will automate all port processes to ensure the efficiency of import and export handling. The goal is for Nigeria to become the preferred hub for maritime operations in West Africa. The specific goals under this pillar are as follows: • Full implementation of the Port Community System. • Achieve an average vessel turnaround time of four days. • Maintain an average container dwell time of ten days. • Operationalize the International Cargo Tracking Note (ICTN) by February 2024. 3. Strengthening Port Infrastructure The Ministry will undertake the refurbishment and modernization of existing port infrastructure while promoting the development of new deep-sea ports, inland dry ports, and river ports. The Ministry will also ensure connectivity between ports and roads, railways, and inland waterways. The specific goals under this pillar are as follows: • Dredge 2,000 km of inland waterways. • Complete two new deep-sea ports by 2027. • Operationalize the Funtua Dry Port by the first quarter of 2024 and the Jos Inland Dry Port by the second quarter of 2026. 4. Promoting Sustainable Investment To achieve Nigeria's GDP growth target of \$1 trillion, a significant increase in private sector investment is necessary. The Ministry aims to promote investments in the blue economy sectors such as fisheries, coastal tourism, seabed mining, biotechnology, and offshore renewable energy. The specific goals under this pillar are as follows: • Facilitate the establishment of at least five new fish processing plants by 2025. • Attract \$2 billion in investments for offshore renewable energy by 2025. • Promote the establishment of at least two coastal tourist destinations by 2026. • Create 3 million jobs over the four-year period.

Source: FMMBE HP (<https://fmmbe.gov.ng/>)

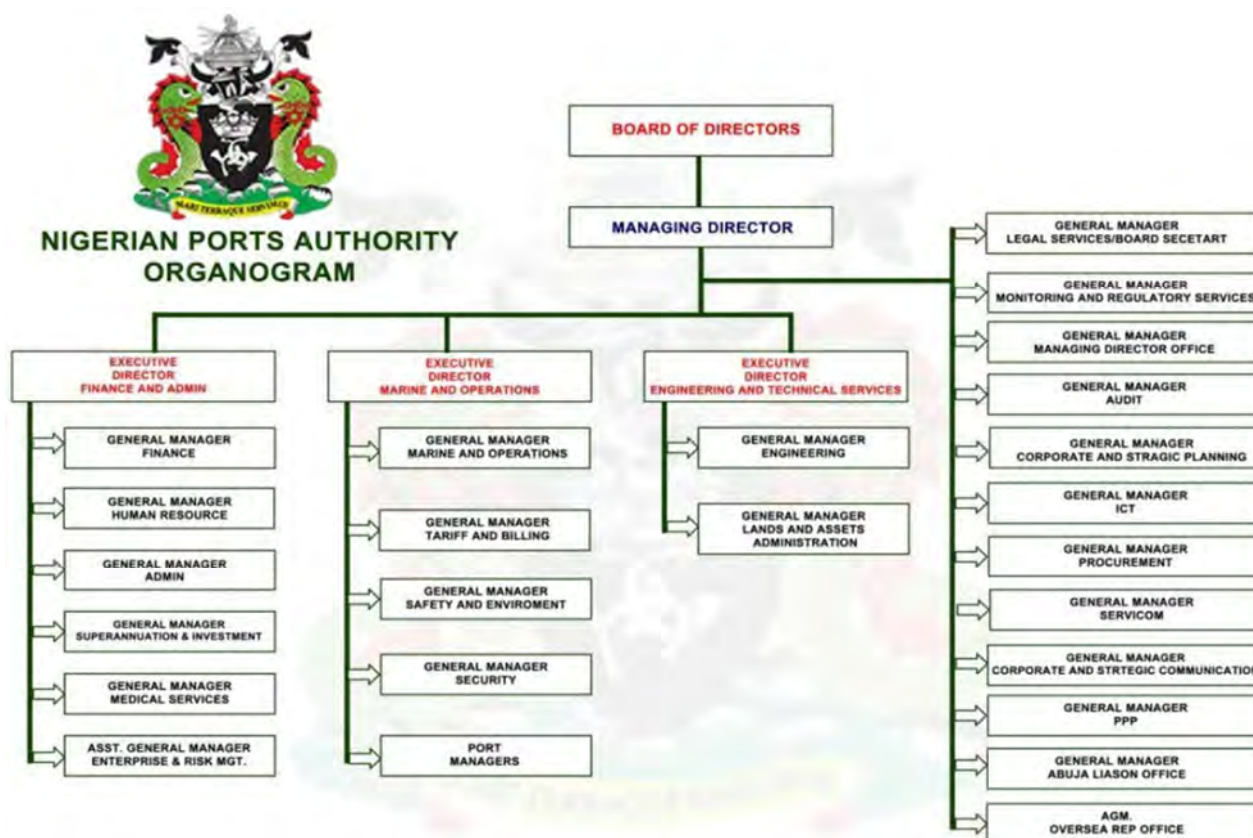
From the above, it can be stated that the FMMBE is working to enhance activities in traditional areas of administration such as improving port operation efficiency and strengthening port infrastructure, while also expanding its activities into new areas of administration, including the establishment of marine-related regulations and the promotion of investment in marine-related economic activities.

(2) Nigerian Ports Authority (NPA)

The NPA was established in 1954 by an Act of Parliament (the Ports Act, CAP 155 Laws of the Federation of Nigeria and Lagos 1955, now known as the NPA Act CAP N126 LFN 2004). Prior to its establishment, the functions were carried out by the Railway Corporation (responsible for cargo handling), the Public Works Department (responsible for the maintenance of docks), and the Maritime Bureau (responsible for the maintenance of port waterways and vessel berthing). The NPA commenced operations on April 1, 1955.

On June 17, 1992, the NPA was incorporated as a public liability company under the provisions of the Companies Act of 1990 and related legislation, becoming a wholly government-owned enterprise. In 1999, the NPA reverted to being an agency of the federal government, with the Ministry of Transportation (now FMMBE) as its supervising ministry.

The organizational chart of the NPA is shown in Figure 3.3.1. The NPA consists of four directorates, 22 divisions, and 51 departments. The Managing Director and three Executive Directors manage the execution of operations. Each of the three directorates—Finance and Administration, Marine and Operations, and Engineering and Technical Services—is overseen by one of the Executive Directors, while the fourth directorate is managed by the Managing Director. Each division is led by a General Manager, and each department is overseen by an Assistant General Manager. The activities of the NPA are managed by a Board of Directors, chaired by the Chairman, while the Federal Ministry of Marine and Blue Economy (formerly the Federal Ministry of Transportation) supervises the operations of the NPA.



Source: NPA HP (<https://nigerianports.gov.ng/history/organogram-4/>)

Figure 3.4.1 Organizational Chart of NPA

The ports in Nigeria have been developed and operated according to a division of roles established by port reforms initiated in 2003, in line with the federal government's public sector reform initiative aimed at "fostering a private sector-oriented economy." (The river ports overseen by the National Inland Waterways Authority (NIWA) will be discussed later.)

Table 3.4.3 Roles and Responsibilities of Relevant Organizations in Nigerian Ports

Organization	Major Roles
Ministry of Oceans and Blue Economy (FMMBE)	- National-level policy formulation and planning for basic marine infrastructure - Legislation - International relations
Nigerian Ports Authority(NPA)	- Ownership and management of land and water areas within the port area - Planning and development of port operational infrastructure - Leasing and concession of port infrastructure, as well as setting standards for fee structures - Navigation services and hydrographic surveying - Establishment, monitoring, and enforcement of port regulations and bylaws - Daily monitoring of operations and enforcement of relevant provisions of agreements, among others
Private Sector	- Cargo handling, warehousing, and distribution - Acquisition of cargo handling and operational-related equipment - Development and maintenance of port superstructure facilities - Maintenance of safety and security within the terminal

Source: JICA Study Team

(3) National Inland Waterways Authority (NIWA)

The National Inland Waterways Authority (NIWA) was previously known as the Inland Waterways Department of the Federal Ministry of Transportation. It was established as an agency under the National Assembly Act (CAP 47, Laws of the Federation of Nigeria (LFN), 2004 (Decree No. 13 of 1997)) with the primary mission of improving and developing Nigeria's inland waterways.

The Managing Director/CEO is responsible for the implementation of NIWA's policies and the daily operations of the agency. Each department is headed by a General Manager, who reports directly to the Managing Director/CEO.

According to the information available on NIWA's website, the authority consists of the departments listed in Table 3.4.4.

Table 3.4.4 Functions of the Departments Comprising the National Inland Waterways Authority (NIWA)

Department	Function
Engineering Services	Acquisition and processing of hydrological data, design of hydraulic structures and river improvement works, dredging, investigation of sediment sources and transportation, etc.
Marine	Shipyard services (Warri, Lokoja shipyards, and other workshops), navigation services (wreck removal, operation of river vessels, removal of water hyacinth and other weeds, pollution prevention activities)
Survey	Hydrographic surveying, cadastral surveys within the Right of Way (RoW), remote sensing, installation and recovery of navigational buoys
Port and Environment	Management and operation of river port terminals, management of river traffic, design, construction, and maintenance of river ports and structures, etc.
HR and Administration	Human resource management and general administration
Finance and Accounts	• Processing and payment of salaries • Reconciliation of bank accounts related to transactions with the authority and banks • Processing and payment of contracts and staff claims • Preparation of various monthly accounting reports • Collection and monitoring of Internally Generated Revenue (IGR) and preparation and processing of all payment vouchers in preparation for payments • Handling of all tax-related issues with the Federal Inland Revenue Service, state, and local government tax offices • Payment and remittance processing of operating surpluses and other levies imposed by the federal government • Other tasks assigned by the Executive Director/Chief Accountant of the authority
Procurement	Execution of procurement in accordance with the Public Procurement Act of 2007
Area Offices Co-ordination	Monitoring the activities of regional offices, reporting to the Managing Director, handling issues related to revenue collection in field activities (including challenges and prospects), and formulating strategies for revenue enhancement
Internal Audit	Internal auditing
Business Development	Development of business and marketing strategies to achieve service and revenue targets, acting as a liaison for Public-Private Partnership (PPP) activities, conducting market research, and identifying potential investors.
Legal Services	Legal affairs
Corporate Affairs	Overall management of NIWA's operations under the Managing Director, public relations
Project Management and Special Duty	• Monitoring all projects of NIWA as outlined in the annual budget • Coordination with relevant departments at various stages before and during budget preparation and implementation • Special assignments from the Managing Director
Research, Planning & Statistics	• Preparation of the annual budget, monitoring all projects of NIWA as outlined in the budget, and conducting regular performance evaluations • Statistical compilation • ICT support services
Inland Waterways Police Command	Protection support for NIWA management and staff

Source: NIWA HP (<https://niwa.gov.ng/about-us/>)

The NIWA website outlines its vision, mission, roles, and other relevant information as shown in Table 3.4.5.

Table 3.4.5 Vision, Mission, and Roles of National Inland Waterways Authority (NIWA)

Item	Content
Vision	To make Nigeria a leader in inland water transportation, development, and management in Africa
Mission	To demonstrate leadership in the regulatory, economic, and operational aspects of Nigeria's inland waterway system by developing infrastructure facilities for an efficient, safe, seamless, and cost-effective multimodal transport system that aligns with global best practices
Roles	Roles as Defined by the NIWA Establishment Act (NIWA ACT CAP N47 LFN 2004) • Improvement and development of inland waterways for navigation • Development of infrastructure facilities to ensure economic hubs utilizing river ports and connectivity of national inland waterways, as well as securing nodal points for inter-port exchanges • Development of indigenous technology and management capabilities to address the challenges of modern inland waterway transportation

Source: NIWA HP (<https://niwa.gov.ng/about-us/>)

(4) Budget

Table 3.4.6 is an excerpt from Appendix 2 of the Appropriation Act, 2024, which was downloaded from the website of the Budget Office of the Federation under the Ministry of Budget and Economic Planning. It summarizes the expenditure budget allocated to the FMMBE.

Looking at the breakdown of personnel costs (PERSONNEL), administrative expenses (OVERHEAD), and capital expenditures (CAPITAL), it is noted that NIWA has zero allocations for PERSONNEL and OVERHEAD, while the CAPITAL allocation amounts to 7,583,947,538 Naira. Additionally, the NPA does not appear in this table.

From this, it can be inferred that in 2024, NIWA plans to receive federal government financial support solely for CAPITAL expenditures. It is also evident that the NPA plans to carry out its operations without receiving federal government financial support.

Table 3.4.6 Summary Table of the 2024 Expenditure Budget for FMMBE

Federal Government of Nigeria						
FEDERAL MINISTRY OF MARINE AND BLUE ECONOMY						
2024 APPROPRIATION ACT						
EXPENDITURE						
NO	CODE	MDA	PERSONNEL	OVERHEAD	CAPITAL	TOTAL ALLOCATION
1.	0254	FEDERAL MINISTRY OF MARINE AND BLUE ECONOMY	1,027,564,849	299,465,367	18,923,465,787	20,250,496,003
			1,027,564,849	299,465,367	18,923,465,787	20,250,496,003
FEDERAL MINISTRY OF MARINE AND BLUE ECONOMY - HQTRS						
2024 APPROPRIATION						
NO	CODE	MDA	PERSONNEL	OVERHEAD	CAPITAL	TOTAL ALLOCATION
1.	0254001001	FEDERAL MINISTRY OF MARINE AND BLUE ECONOMY - HQTRS	0	191,086,917	10,848,512,984	11,039,599,901
2.	0254004001	NATIONAL INLAND WATERWAYS AUTHORITY	0	0	7,583,947,538	7,583,947,538
3.	0254007001	MARITIME ACADEMY OF NIGERIA, ORON	1,027,564,849	108,378,450	491,005,265	1,626,948,564
			1,027,564,849	299,465,367	18,923,465,787	20,250,496,003

Source: Budget Office of The Federation HP

Table 3.4.7 provides a breakdown of the 7,583,947,538 Naira allocated to NIWA for CAPITAL expenditures from the federal government. The budget is allocated for activities such as wreck removal, aquatic weed removal, construction of diversion dams, and the development of river ports and jetties in locations like Lokoja.

Table 3.4.7 Summary Table of the 2024 Expenditure Budget for FMMBE

CODE	PROJECT NAME	TYPE	AMOUNT
0254004001	NATIONAL INLAND WATERWAYS AUTHORITY		
ERGP1210495	GEOINFORMATICS EQUIPMENT	NEW	30,000,000
ERGP28210487	REMOVAL OF WRECKS WITHIN INLAND WATERWAYS OF SOUTH EAST, SOUTH WEST, AND SOUTH SOUTH GEO POLITICAL ZONE	NEW	800,000,000
ERGP28210488	MECHANICALS MANUAL CLEARING OF WATER HYACINTHS, FLOATING DEBRIS, WASTES, ETC. FROM THE SIX (6) GEO POLITICAL ZONES OF NIGERIAN INLAND WATERWAYS	NEW	750,000,000
ERGP29210486	DIGITIZATION OF NATIONAL INLAND WATERWAYS AUTHORITY	NEW	130,000,000
ERGP29210490	ADMINISTRATIVE/ BUDGET MONITORING SOFTWARE & ACCESSORIES	NEW	81,500,000
ERGP30210480	ENVIRONMENTAL ASSESSMENT/ENVIRONMENTAL IMPACT ASSESSMENT OF INLAND WATERWAYS & INFRASTRUCTURES	NEW	50,000,000
ERGP30210481	RIVER TRAINING WORKS FROM WARRI TO BARO	NEW	500,000,000
ERGP30210482	CONSULTANCY SERVICES FOR CRITICAL HYDRAULIC STUDIES AND MODEL FOR RIVERS NIGER AND BENUE	NEW	50,000,000
ERGP30210483	NIWA RESEARCH DEVELOPMENT AND RESOURCES CENTRE AT LOKOJA, KOGI STATE	NEW	150,000,000
ERGP30210489	RIVER TRAINING WORKS ON RIVER BENUE	NEW	300,000,000
ERGP30210494	MONITORING AND EVALUATION EQUIPMENT AND RELATED SERVICES/EXERCISE	NEW	99,176,998
ERGP30210497	CONSULTANCY SERVICES ON PUBLIC PRIVATE PARTNERSHIP (PPP)	NEW	20,000,000
ERGP30210498	HYDROGRAPHIC SURVEY OF THE WATERWAYS AND ITS RIGHT OF WAY FROM IWOPIN TO 3RD MAINLAND BRIDGE (LAGOS STATE)	NEW	100,000,000
ERGP3210475	CONSTRUCTION OF AN INLAND RIVER PORT AND SUPPLY OF CARGO HANDLING EQUIPMENT (ONGOING) AT LOKOJA	NEW	600,000,000
ERGP3210476	CONSTRUCTION OF AN INLAND RIVER PORT AT OGUTA, IMO STATE	NEW	120,000,000
ERGP3210477	ACQUISITION OF SECURITY/REVENUE PATROL BOATS	NEW	350,000,000
ERGP3210478	CONSTRUCTION OF 7 NOS. JETTIES AND 4NOS, RAMPS AND COMPLETION OF IDAH AND AGENEBODE JETTIES	NEW	250,000,000
ERGP3210479	CONSTRUCTION OF JETTIES AT ODEKPE, OGBARU LGA, ANAMBRA STATE AND EBU, OSHIMILI-NORTH LGA, DELTA STATE AND OZIZA JETTY, EBONYI STATE	NEW	52,500,000
ERGP3210484	ACQUISITION OF BARGES AND VESSELS & PROCUREMENT OF 500 METRIC TONS FLOATING DOCK	NEW	500,000,000
ERGP3210485	ESTABLISHMENT AND EQUIPPING OF SEARCH AND RESCUE STATIONS AT 15 NIWA FACILITIES	NEW	100,000,000
ERGP3210491	ESTABLISHMENT OF WATER LEVEL GAUGE, DISCHARGE MEASUREMENT AND SEDIMENT FLOW AT 12 PRIORITIZED LOCATIONS	NEW	100,000,000
ERGP3210492	MAPPING AND CHARTING OF WATERWAYS AND ITS RIGHT OF WAY NATIONWIDE (BAYELSA, KEBBI, KWARA, NIGER, LAGOS, IMO, ANAMBRA, ADAMAWA, KOGI, RIVERS AND DELTA STATES)	NEW	250,000,000
ERGP3210493	MAINTENANCE/REHABILITATION OF WORKSHOP MACHINERIES, MARINE CRAFTS AND PURCHASE OF MACHINE TOOLS AND ACCESSORIES	NEW	50,000,000
ERGP3210496	DESIGN/CONSTRUCTION OF MAKURDI RIVER PORT FACILITIES	NEW	100,000,000
ERGP3210499	REHABILITATION OF VESSELS AND DRY-DOCK/SLIPWAY	NEW	400,000,000
ERGP3210500	CONSTRUCTION OF MOORING FACILITIES AT KPAKAMA & BOMADI	NEW	50,000,000
ERGP3210501	ESTABLISHMENT OF NATIONWIDE NETWORK OF PERMANENT ELECTRONIC TIDE GAUGES (YELWA-YAURI, BAGA, OGUTA, PORT HARCOURT, MAKURDI, YOLA, IKOT-ABASI)	NEW	240,000,000
ERGP3210502	PURCHASE AND INSTALLATION OF MARINE NAVIGATIONAL AIDS, SIGNS AND SIGNALS NATIONWIDE (KEBBI, LAGOS, KWARA, NIGER, BENUE, ANAMBRA, ADAMAWA, TARABA AND DELTA STATES)	NEW	210,000,000
ERGP20241419	DISTILTING OF ONUYANG EBELE RIVERS IN (BFC) BENDE LGA, ABIA STATE (PHASE 1)	NEW	1,100,770,540
ERGP20244551	CONSTRUCTION OF JETTIES AT TAKWA-BAY JETTY, ETI-OSA LGA, LAGOS CENTRAL SENATORIAL DISTRICT, LAGOS STATE	NEW	50,000,000

Source: Budget Office of The Federation HP

(<https://budgetoffice.gov.ng/index.php/resources/internal-resources/budget-documents/2024-budget>)

Regarding the NPA's budget for 2024, there is no information available on the NPA's website. However, an article from an internet news source dated March 21, 2024, provides the following information.

- Projected Revenue for 2024: 629.89 billion Naira
- Projected Expenditure for 2024: 464.32 billion Naira
(including operational expenses of 212.03 billion Naira and capital expenditures of 252.29 billion Naira)
- Currently requesting a loan of 200 billion Naira from the African Export-Import Bank (Afrexim Bank). Additionally, the United Kingdom Export Finance (UKEF) has also been listed as a potential lender.
These funds will be used to renovate aging facilities that are hindering the efficiency of the port.

Source: Vanguard.com "NPA to generate over 6 billion naira in 2024- Bello-Koko"

The March 2024 edition of the NPA's newsletter, "NIGERIAN PORTS Today," mentions figures disclosed in the NPA's performance report for the first half of 2023.

- Revenue for the first half of 2023: 191.43 billion Naira
- Contributions to the Consolidated Revenue Fund (CRF) for the first half of 2023: 55.712 billion Naira

Source: NIGERIAN PORTS Today (Vol.7 No.36)

(<https://nigerianports.gov.ng/wp-content/uploads/2024/04/NPA-Today-March-2024.pdf>)

3.4.2 Trends in Infrastructure Development

The following table presents the major terminals and operators currently in operation. The term "port complex" used in the table refers to the designation employed by the NPA when categorizing port facilities (such as terminals and jetties) across the country by region. The operators have entered into contracts with the NPA concerning the leasing/concession of port infrastructure. The contract duration is typically between 10 to 25 years. In contrast, for large-scale new port development projects (i.e., greenfield BOT projects) like the Lekki Deep Sea Port, the concession contract period is set at 45 years, with the possibility of extending the contract for an additional 25 years upon prior notice five years before the end of the initial term.

Table 3.4.8 Main Terminals and Operators of Ports in Nigeria

Port Complex		Terminal	Operator	Contract Period
Apapa	1	A, B	Apapa Bulk Terminal Ltd.	25years
	2	C, D	ENL Consortium Ltd.	10years
	3	E	Greenview Development Nigeria Ltd.	25years
	4	Container	AP Mollar Terminals	25years
	5	Bullnose 1,2,3	Eko Support Services Ltd.	5years
Tin Can Island	1	1, 1A, 2	Josepdam Port Services Ltd.	15years
	2	3, 4, 4A, 5	Tin Can Island Container Terminal Ltd.	15years
	3	6, 7, 7A, 8	Port and Cargo Handling Services Ltd.	15years
	4	9, 10	Five Star Logistics Ltd.	15years
	5	11, 12	Ports and Terminal Multiservices Ltd.	25years
Rivers	1	A (Berths 1-4)	Ports & Terminal Operators Ltd. (PTOL)	15years
	2	B (Berths 5-8)	BUA Port and Terminals Ltd.	20years
Onne	1	FLT A (Berth 1)	Brawal Shipping Ltd.	25years
	2	FLT B (Berths 2 - 4)	Intels Nigeria Ltd.	25years
	3	FOT A (Berths 1 - 6)	Intels Nigeria Ltd.	25years
	4	FOT B (Berths 7 - 8)	West Africa Container Terminal	25years
Delta	1	Warri Old Port A	Intels Nigeria Ltd.	25years
	2	Warri Old Port B	Ocean & cargo Terminal Services Ltd.	25years
	3	Warri Old Port Canal Berth	Julius Berger Nigeria Plc.	25years
	4	Warri New Port A	Associated Maritime Services	15years
	5	Warri New Port B	Intels Nigeria Ltd.	25years
Calabar	1	Berths 1 – 2	Intels Nigeria Ltd.	25years
	2	Berths 3 – 6	ECM Terminals Ltd.	25years
	3	Old Port Berths 1-2	Shoreline Logistics Nigeria Ltd.	25years
Lekki Deep Sea Port			Lekki Port LFTZ Enterprise Ltd.	45years

Source: NPA HP (<https://nigerianports.gov.ng/ports/>)

ICRC HP (<https://www.icrc.gov.ng/projects/projects-under-custody/>)

*The Rivers Port Complex includes the port facilities around Port Harcourt

In addition to the terminals listed in Table 3.4.8, the NPA leases smaller port facilities (such as jetties) to private operators and manages port facilities that are jointly utilized by multiple small operators. The latter includes terminals such as the Kirikiri Lighter Terminal and the Ikorodu Lighter Terminal, which are used for the waterborne transportation of cargo between the Apapa and Tin Can Island terminals. Additionally, there are port facilities established and operated by private companies, such as jetties used for the loading and unloading of petroleum products.

The Apapa/Tin Can Island port complex and the Lekki Deep Sea Port are located in Lagos State. Other port complexes are situated in eastern Nigeria, primarily along rivers near the coastal areas.

The main river ports for logistics under the jurisdiction of NIWA include the Baro Port and the Onitsha Port, both of which are located along the Niger River.

The federal government, NPA, NIWA, and state governments have been considering several port development plans under Public-Private Partnership (PPP) schemes, where private operators participate as concessionaires in the development and operation of infrastructure, in addition to the Lekki Deep Sea Port. The following table lists the major port PPP projects that have already received approval from the Federal Executive Council (FEC).

Furthermore, the NPA is currently working on creating a master plan for the ports. During a site visit in June 2024, when progress was checked with the NPA, it was reported that they were reviewing the interim report, and the final completion date had not yet been determined.

Table 3.4.9 Major Port PPP Projects

	Port Project	Background
1	Bonny Deep Sea Port	On October 7, 2020, the Federal Executive Council (FEC) approved the Full Business Case (FBC). Responsible Agency: Federal Ministry of Transport (FMT) Concessionaire: China Civil Engineering Construction Corporation Ltd. (CCECC) Current Status: Pending due to disputes regarding the location
2	Ibom Deep Sea Port	On December 16, 2020, the FEC approved the FBC. Responsible Agency: FMT/Nigerian Ports Authority (NPA), Akwa Ibom State Government Concessionaire: Bolloré Africa Logistics–PowerChina International Group Ltd. Consortium Current Status: Pre-commercial close
3	Onitsha Port (River Port)	On February 2, 2022, the FEC approved the FBC. Concession period: 30 years Responsible Agency: FMT/Nigerian Inland Waterways Authority (NIWA) Concessionaire: Universal Elysium Consortium Current Status: Ongoing (in operation)
4	Badagry Deep Sea Port	On August 3, 2022, the FEC approved the FBC. Concession period: 45 years Responsible Agency: Federal Ministry of Transport (FMT)/NPA Concessionaire: Badagry Port Development Ltd. (BPDL) Current Status: Ongoing (preparing for construction)
5	Bulu Port (Rehabilitation and Expansion)	On May 17, 2023, the Federal Executive Council (FEC) approved the Full Business Case (FBC). Concession period: 40 years Responsible Agency: Federal Ministry of Transport (FMT)/Nigerian Ports Authority (NPA) Concessionaire: Akewa Colmar Terminal Limited (ACTL) Current Status: Pre-commercial close
6	Ondo Deep Sea Port	On May 17, 2023, the Federal Executive Council (FEC) approved the Full Business Case (FBC). Concession period: 50 years Responsible Agency: Federal Ministry of Transport (FMT)/Nigerian Ports Authority (NPA) Concessionaire: China Railway Eryuan Engineering Group Co. Ltd Current Status: Pre-commercial close
7	Snake Island Port	On May 17, 2023, the Federal Executive Council (FEC) approved the Full Business Case (FBC). Concession period: 45 years Responsible Agency: Federal Ministry of Transport (FMT)/Nigerian Ports Authority (NPA) Concessionaire: Nigerdock and Snake Island Integrated Free Zone Current Status: Pre-commercial close

Source: ICRC HP (<https://www.icrc.gov.ng/projects/fec-approved-ppp-projects/>) etc.



Source: Create on OpenStreetMap by JICA Study Team

*The black arrows indicate the locations of the main terminals of the port complex and the Baro River Port as shown in Table 3.4.8, while the red arrows indicate the approximate locations of the port projects (including the Onitsha River Port) as shown in Table 3.4.9

Figure 3.4.2 Port Location Map

3.4.3 Status of Maintenance and Operations of Ports

The operational status of Apapa Port, Tin Can Island Port, and Lekki Deep Sea Port (hereinafter referred to as Lekki Port) is described below.

(1) Apapa Port and Tin Can Island Port

Located in Lagos, Nigeria's largest city, Apapa Port and Tin Can Island Port serve as logistics hubs handling the majority of Nigeria's port cargo (excluding liquid bulk cargo from Onne). Apapa Port is the oldest port in Nigeria, established in 1913, with the construction of the first four berths for ocean-going vessels beginning in 1921.

Tin Can Island Port was constructed in response to the increased economic activity following the end of Nigeria's civil war, which led to congestion in the ports. Construction of Tin Can Island Port began in 1976.

Since the port reforms initiated in 2003, a so-called landlord model has been introduced, where the Nigerian Ports Authority (NPA) owns and manages the land and water areas within the port, while the private sector is responsible for the development and maintenance of port facilities, including the provision of cargo handling services at the terminals. Each terminal at Apapa Port and Tin Can Island Port is operated and maintained by respective operators under lease/concession agreements, as shown in the accompanying diagram. Investments and productivity improvement efforts by these operators have led to an increase in cargo handling volumes.



Figure 3.4.3 Satellite Images of Apapa Port and Tin Can Island Port

The following table presents the container shipping routes serving Apapa Port and Tin Can Island Port from April to August 2023. For detailed information regarding the shipping companies providing these services and examples of port calls for each route, please refer to Tables 3.4.13 to 3.4.17.

Table 3.4.10 Container Shipping Routes to Apapa Port and Tin Can Island Port

Route	Service	Vessels, Frequency
East and Southeast Asia - West Africa	4	Container ships with a capacity of approximately 3,800 to 7,100 TEU, weekly
Middle East and South Asia - West Africa	2	Container ships with a capacity of approximately 4,300 to 5,400 TEU, weekly
Europe - West Africa	3	Container ships with a capacity of approximately 2,700 to 6,700 TEU, weekly
	1	Semi-container ships with a capacity of approximately 400 to 1,000 TEU, once every 1 to 2 weeks
	1	RORO ships capable of carrying approximately 800 to 2,000 TEU, weekly
	1	RORO ships capable of carrying approximately 800 to 1,600 TEU, once every 1 to 2 weeks
North America and others - West Africa	1	RORO ships capable of carrying approximately 800 to 1,300 TEU, once every 3 to 4 weeks
	1	RORO ships capable of carrying approximately 800 TEU, once every 2 to 3 weeks
Within West and South Africa	1	Container ships with a capacity of approximately 2,100 to 2,500 TEU, weekly

Source: MDS Transmodal (2023/8)

Apapa Port and Tin Can Island Port are located in the city center, and due to the increase in cargo handling volumes without sufficient widening of the roads connecting to the ports, severe traffic congestion has occurred around the port terminals. This congestion is caused not only by trucks waiting to enter the terminals but also by various reasons that lead to trucks lingering on the roads. As a result, accessing the ports takes a considerable amount of time.

To address this issue, the following measures have been implemented:

- Introduction of the Electronic Truck Call System (Eto): However, due to exceptions granted, the system's original functionality has been compromised, and improvements are currently underway.
- Establishment of Export Processing Terminals (EPTs) (for promoting agricultural product exports, where all procedures related to exports can be completed by relevant government agencies). Currently, six locations have been designated.
- Promoting the use of water transport (barge transport) (e.g., strengthening the function of the barge terminal in Ikorodu, etc.)
- Promoting the use of rail transport (e.g., transport goods by rail to Oyingbo Station, which is outside the truck retention zone, and then delivering by truck, etc.)

(2) Lekki Port

Lekki Port is located approximately 70 km east of Apapa Port in Lagos. The container terminal commenced operations in January 2023. As of January 2024, the following regular container shipping routes have been established:

- Asia-West Africa Route: Operated by large container ships with a capacity of approximately 14,000 TEU, sailing weekly.
- Europe-West Africa Route: Operated by container ships with a capacity of approximately 3,000 TEU, sailing weekly.

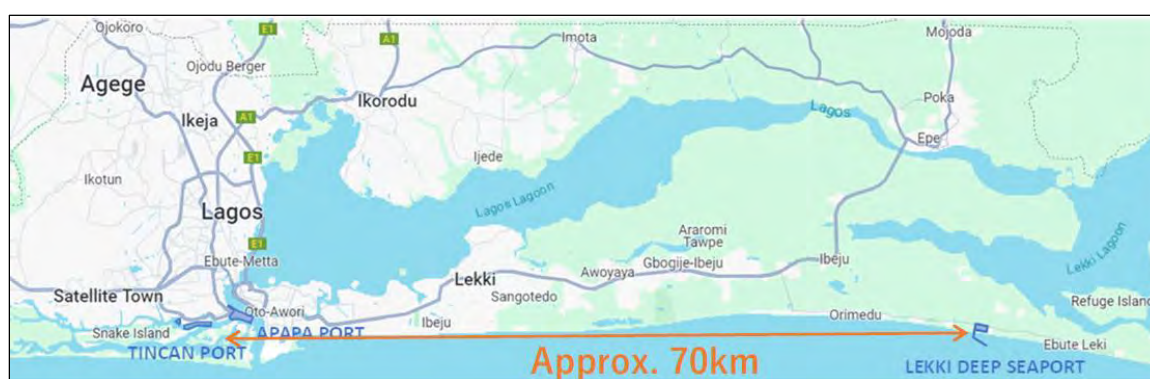


Figure 3.4.4 Location of Lekki Port

Currently, Lekki Port features a deep-water quay with a depth of 16.5 meters, large quay gantry cranes for cargo handling, and fixed container scanners for customs inspections. In the future, there are plans to extend the container terminal by an additional 1,200 meters, as well as to develop the port to include a dry bulk terminal and a liquid bulk terminal. The planned container handling capacity is 2.7 million TEU per year.

Table 3.4.11 Specifications and Details of the Main Operational Facilities and Equipment at Lekki Port

Facility/Equipment	Specifications, etc.
Quay	Current water depth: 16.5 meters (design depth: 19.5 meters) Phase 1 quay extension: 680 meters
Quay Crane	Five Super-Post-Panamax ship-to-shore cranes (capable of handling 21 rows of containers) Dual-lift capability (lifting capacity of 65 tons under the spreader)
Yard Crane	Fifteen rubber-tired gantry cranes (1 over 6 stacking configuration)
Gate	Automated gate with optical container number reading device for entry and exit
Container Scanner	Fixed customs inspection facility with a processing capacity of 200 containers per hour

Source: Lekki Port HP (<https://lekkiport.com/>), Created based on the materials obtained during the site visit by JICA Study Team



Overview of Lekki Port



Container ship utilizing the quay



Loading and unloading onto trailers on the apron



Loading and unloading onto trailers within the yard



Container scanner for customs inspection



Monitor screen of the container scanner



Automated gate for entry and exit

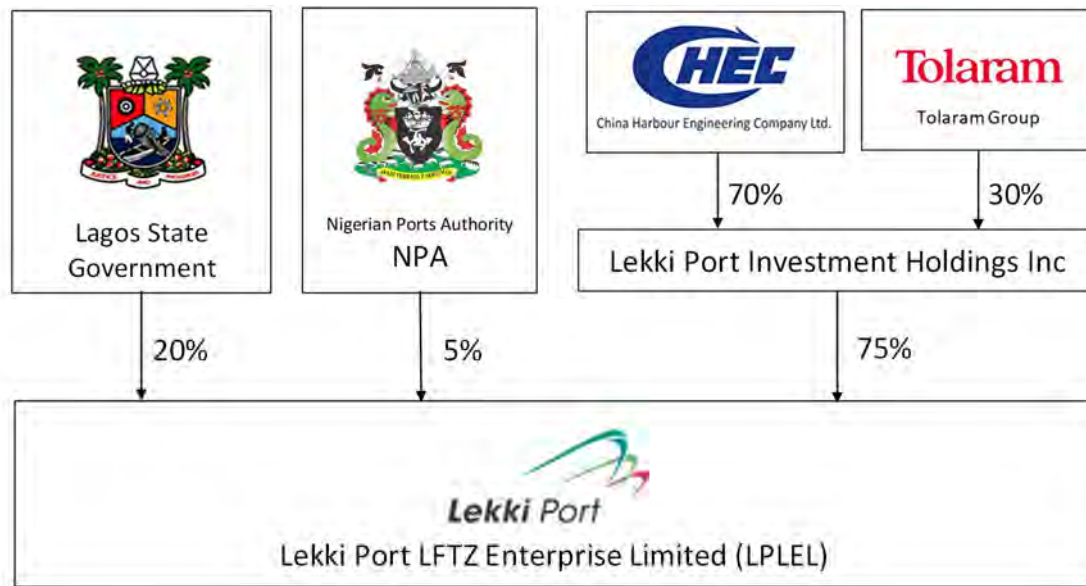


Container number reading at the gate

Source: Lekki Port HP (<https://lekkiport.com/>)

Figure 3.4.5 Operational Facilities at Lekki Port

The development and operation of Lekki Port is managed by Lekki Port LFTZ Enterprise Limited (LPLEL). LPLEL has entered into a concession agreement with the Nigerian Ports Authority (NPA). Under this concession agreement, LPLEL is required to develop, construct, and operate a multipurpose port for general users and has the right to subcontract terminal operations to other companies. The composition of LPLEL's investors is illustrated in the figure below.



Source: Based on information gathered during the site visit by JICA Study Team

Figure 3.4.6 Composition of Investors in LPLEL

Currently, LPLEL has subcontracted the operation of the container terminal to CMA Terminals, which is the terminal operating company of the major shipping group CMA CGM. According to explanations provided by LPLEL during a site survey in February 2024, the operations of other terminals are as follows:

- The dry bulk terminal will be subcontracted to the Tolaram Group.
- Discussions are ongoing with stakeholders regarding the subcontracting of the liquid bulk terminal.

As Lekki Port becomes fully operational, an increase in the volume of heavy vehicle traffic is anticipated on the roads connecting the port to the hinterland. To accommodate these demanding load conditions, improvement works are currently underway to upgrade the road structure to a concrete pavement. The accompanying diagram shows the condition of the roads as photographed during the site survey in February 2024, including the status of the improvement works.



Source: JICA Study Team

Figure 3.4.7 Condition of the Roads Connecting Lekki Deep Sea Port and the Hinterland (as of February 2024)

The Nigerian Ports Authority (NPA) is considering the implementation of the following measures at the new Lekki Port to avoid the occurrence of truck congestion around the terminals, which has been a significant issue at the existing ports (Apapa Port and Tin Can Island Port):

- Establishing Truck Transit Parks (TTP) at least 15 km away from the port.
- Allowing for the reservation of terminal entry times, enabling trucks to move from the TTP to the gates of Lekki Port.

(3) Badagry Port

The port development is currently under preparing for construction.



Source: Badagry Port Development Limited HP

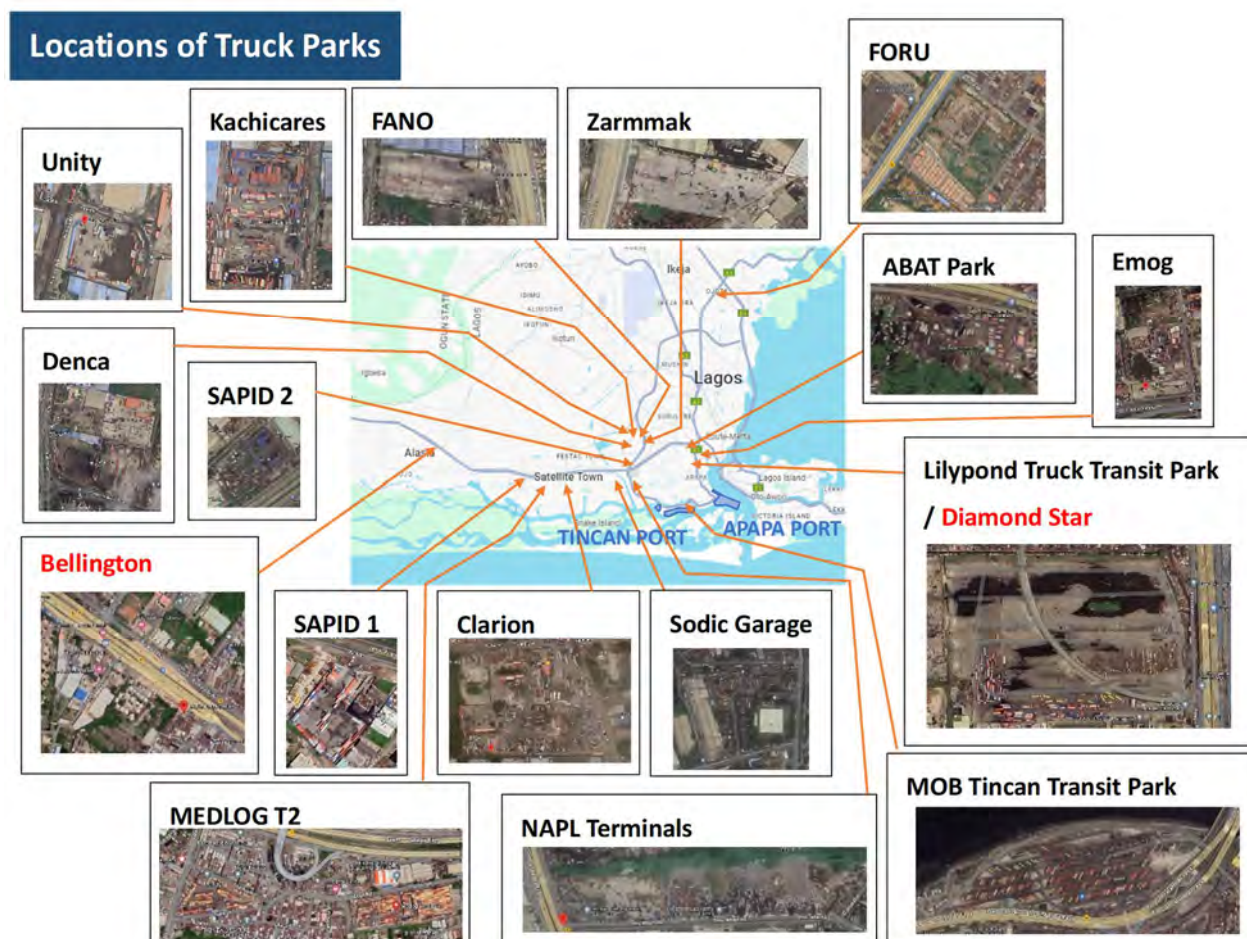
(<https://www.badagryports.com/location/> <https://www.badagryports.com/gallery/>)

Figure 3.4.8 Location and Conceptual Image of the Badagry Deep Sea Port

(4) Digitalization of Port-Related Procedures

The NPA launched an electronic truck call-up system (Ètò) in February 2021. The system is operated by Trucks Transit Parks (TTP), a private company that provides solutions to truck traffic issues. TTP was selected by the NPA through a process in 2019.

In this system, truck carriers, terminal operators, customs brokers, and parking lot owners create accounts on an online portal and register trucks, drivers, parking lots, etc. Figure 3.4.9 shows an example location of a registered parking lot. Trucks bound for the port are programmed to go from their departure point to the parking lot, then be scheduled to a waiting area and access the port.



* Note: The text in red indicates operators approved by the Export Processing Terminal (EPT)

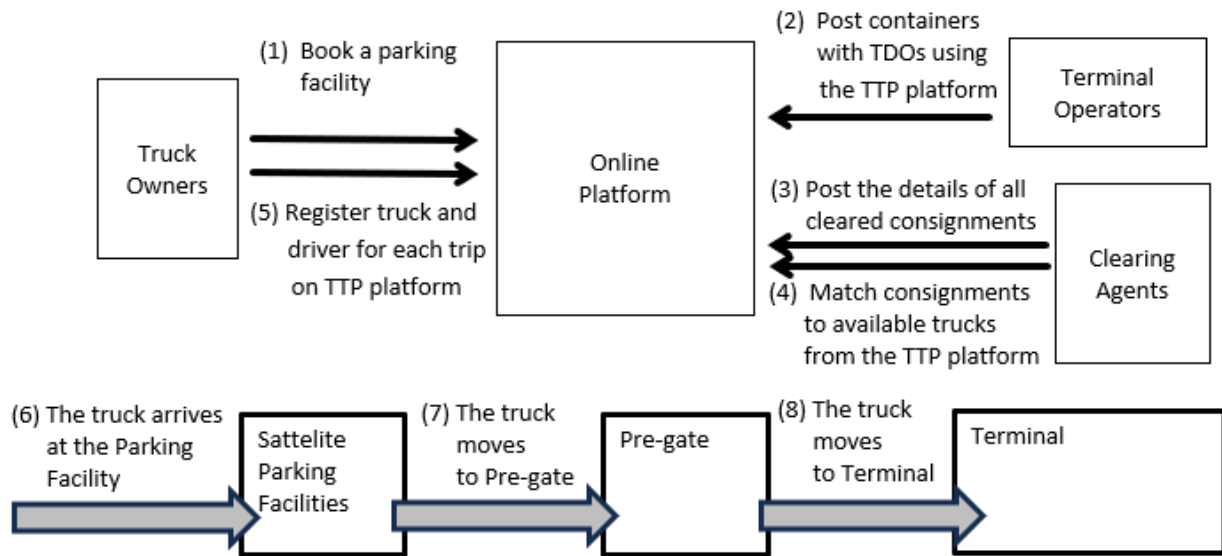
Source: Created based on Google Map by JICA Study Team

Figure 3.4.9 Examples of Parking Lots Registered in the Truck Calling System

The following outlines the process that occurs before trucks are programmed to access the port:

- i) The terminal operator issues a Terminal Delivery Order (TDO) after the cargo has arrived at the port. Containers with issued TDOs are listed on the online platform, allowing customs brokers to know which containers are available for pickup.
- ii) Customs brokers/forwarders post details of the cargo for which customs procedures have been completed on the online platform. They then match available trucks from registered parking facilities for pickup.
- iii) Truck operators match their trucks and drivers during the trip assignment process.

Figure 3.4.10 illustrates the overall flow of the truck calling system, incorporating the movement of trucks along with the processes outlined in points i) to iii).



Source: Created based on TTP HP (<https://ttp.com.ng/faqs/>) and interviewing with TTP by JICA Study Team

Figure 3.4.10 Flow of the Truck Calling System

Based on the information provided in the FAQs on the TTP website, the truck calling system appears to standardize the following schedule:

- Reservations for the satellite parking facility (1) should be made at least 24 hours prior to the arrival of the truck at the satellite parking facility (6).
- Truck itineraries should be booked at least 24 hours in advance through processes (4) and (5) to ensure that entry to the terminal (8) can be scheduled in an orderly manner for the following day.
- Trucks parked at the pre-gate (waiting area) (7) are programmed to move to their next destination within 12 hours.

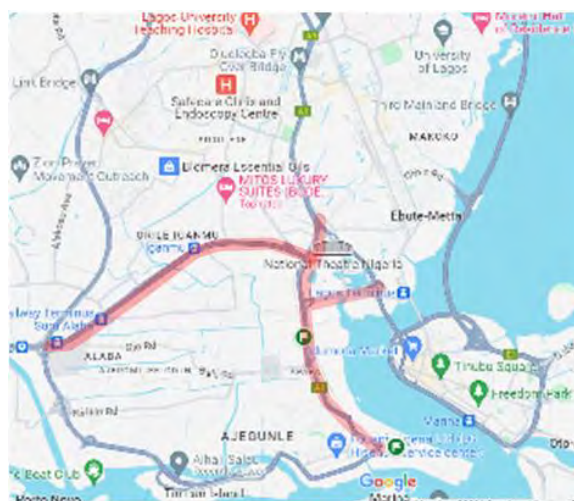
If this calling system effectively controls truck movements according to the standard schedule outlined above, it is expected to reduce congestion originating from the terminal gate. However, during the on-site investigation in February 2024, severe congestion was observed. In addition to the issues related to points B) to E) mentioned earlier, the following factors were also suspected to have contributed to the congestion:

- Exceptions to Scheduling: There were instances where exceptions were made in scheduling entry order, allowing trucks that made later reservations to be scheduled earlier. This was intended for cargo that requires rapid transport, such as fish. However, as various terminals began to apply exceptions to an increasing number of cargo types, the orderliness of the calling system was disrupted. Efforts to address this issue were initiated around January 2024, including notifications to users, leading to corrective measures.

- **Re-checking at Terminal Gates:** To facilitate exports through smoother procedures, the NPA approved five Export Processing Terminals (EPT) in November 2022 after a public recruitment and review process involving private operators (with an additional terminal approved around September 2023). The intention was for cargo that had completed export-related procedures at the EPT to enter the terminal smoothly. However, reports in April 2024 indicated that even after the EPT became operational, terminal operators continued to conduct screenings of export containers, which hindered the smooth entry of trucks into the terminal. Consequently, it was decided to relocate the export screening gate to the main gate of the port, as directed by the NPA during quarterly stakeholder meetings. This change allowed trucks to proceed directly into the terminal after processing at the main gate starting May 1, resulting in improvements.

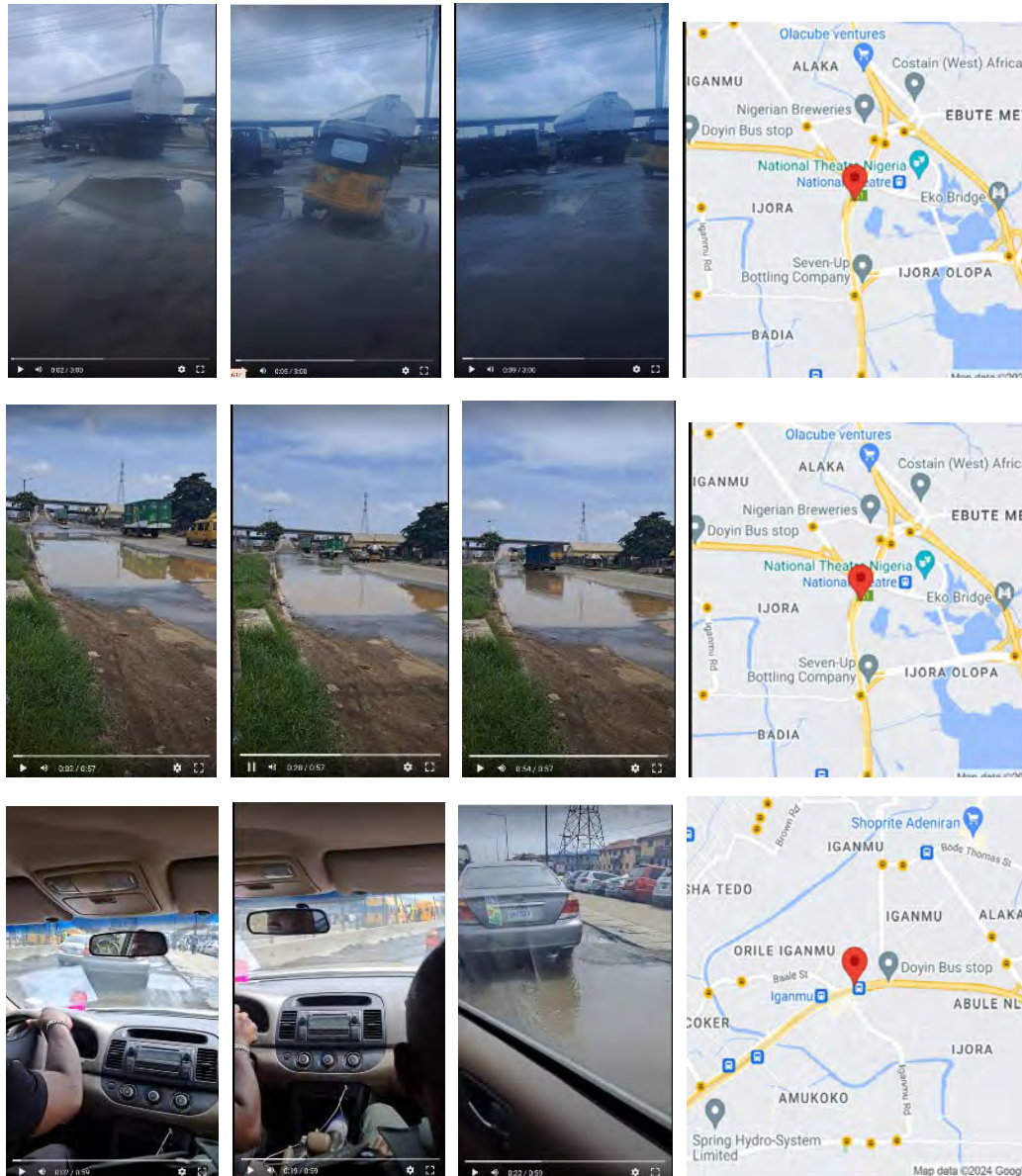
As mentioned above, the issues arising from the truck calling system are being addressed through collaborative efforts between the NPA and TTP, with a focus on resolving each problem step by step. In an interview conducted with TTP in June 2024, two key challenges regarding the current state of the truck calling system were highlighted:

- i) There are sections of the roads surrounding the port (particularly the area between the pre-gate and the terminal) where the pavement condition is poor, forcing trucks to slow down. In some cases, significant ruts can cause damage to passing vehicles, potentially leading to breakdowns. These issues contribute to traffic congestion, making it difficult to operate trucks according to the predicted schedules. Addressing this problem has become a critical priority.
- ii) Extortion by gangs occurring on the roads is another significant issue (for example, illegal checkpoints are set up where drivers are coerced into paying money to be allowed to pass). As a countermeasure, the police have established numerous checkpoints along the roads leading to the port, which has resulted in a reduction of extortion activities compared to previous times.



Source: Created based on Google Map by JICA Study Team

Figure 3.4.11 Sections should be Prioritized for Road Condition Improvement, as Indicated by TTP (Red Bold Lines)



Source (Photograph) : JICA Study Team (June 26, 2024)

Figure 3.4.12 Pavement Condition of the Sections Identified by TTP as Sections Should be Prioritized for Road Condition Improvement

The Federal Ministry of Transportation/Maritime and Blue Economy and the Nigerian Ports Authority (NPA) are advancing efforts to establish a Port Community System (PCS), a system that allows for the electronic processing of export, import, and port-related procedures through a portal. This initiative has been supported by the International Maritime Organization (IMO). The progress to date is as follows:

- IMO-led Webinar Series (August to November 2021): Aimed at raising awareness among Nigerian stakeholders regarding the PCS, this series clarified the opportunities and challenges associated with the development of the PCS at the national level. Over 60 executives participated from various organizations, including the NPA, Nigerian Maritime Administration and Safety Agency, Customs,

Immigration Service, Quarantine, Plant and Animal Health Services, the Ministry of Transportation, as well as port terminal operators, shipping companies, ship agents, and import/export businesses.

- Detailed Needs Assessment by IMO/NPA (January to June 2022): This phase involved a current situation analysis, recommendations regarding governance, business models, and technology, as well as the identification of gaps that need to be addressed.
- Submission of the Report on PCS Implementation to the Minister of Maritime and Blue Economy (February 2024): The Minister commented that the NPA would "play a central role in achieving the objectives" and urged the NPA to "expedite the procurement process for the company that will implement the PCS."

(5) Barge Transportation

Currently, barge transportation is utilized, loaded containers are being transported from Lekki Port to Kirikiri and Ikorodu, while empty containers are being transported in the opposite direction.



Source: Lekki Port HP (<https://lekkiport.com/>)

Figure 3.4.13 Barge-based Container Transportation at Lekki Deep Sea Port

Regarding this challenge, the NPA is not only approving barge transport operators but is also working on improving the functionality of the barge terminal it owns.

Figure 3.4.14 illustrates the locations of the docks that serve as destinations for barge transport from the container terminal. Among these, the Ikorodurai Terminal (hereafter referred to as ILT) and the Kirikiri Terminal (hereafter referred to as KLT) are facilities owned by the NPA, while the others are owned by private operators.

According to information gathered from the NPA, there are plans to improve the roads surrounding the Ikorodu Lighter Terminal (ILT), but detailed information regarding the implementation schedule and budget allocation has not been obtained.

The website of the Infrastructure Concession Regulatory Commission (ICRC) indicates that the Kirikiri Lighter Terminal (KLT) is intended to be operated by a private operator under a concession agreement

through a PPP scheme. The NPA anticipates that the rights granted under the concession will include terminal infrastructure development, provision of terminal operating equipment, and responsibilities for terminal operation, maintenance, and rehabilitation, with the concessionaire being fully responsible for providing services at the terminal. Since only the container operators at Apapa and Tin Can Island can provide sufficient throughput to make the container business at KLT viable, the NPA held discussions with these operators and conducted a bidding process in 2018 to select a preferred bidder. However, as of May 2024, there is no information indicating that a concession agreement has been finalized.

An article in a logistics magazine states that, currently, the cost of barge transport for containers originating from or destined for Apapa and Tin Can Island is higher than that of road transport. Given this, it is likely that barge transport is being chosen primarily when shippers are willing to incur some additional costs to avoid road congestion.

As for rail transport, standard gauge tracks have been laid on the northern side of the Apapa Container Terminal (operated by APM Terminals Apapa). Figure 3.4.15 shows the rail layout around the Apapa Container Terminal. There is a rail route that runs through the Lilypond Container Terminal, which serves as a waiting area for trucks heading to the container terminals at Apapa and Tin Can Island; however, no container loading or unloading is taking place there, and rail vehicles only pass through.

Reports from internet news articles provide the following information regarding rail freight transport:

- i) In September 2023, 30 units of 40-foot containers were transported by container train from Apapa Port to Ibadan
- ii) In June 2024, freight trains (with 18 cars) transported goods from the Dala Inland Dry Port in Kano to Apapa Port over a period of 72 hours

Both instances were associated with ceremonial events, and there is no information confirming that continuous commercial operations have taken place afterward. Notably, the report regarding point i) mentions that the cost of rail transport is higher than that of truck transport (due to costs associated with loading and unloading cargo at the terminal). This suggests that maintaining cost competitiveness for rail transport compared to truck transport remains a challenge for ongoing commercial operations.

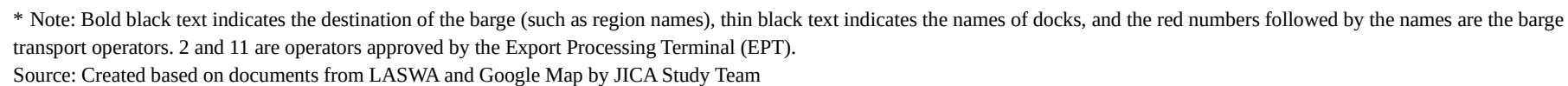


Figure 3.4.14 Location of the Dock for the Barge Transport Route



Source: Created based on Google Map by JICA Study Team (The photos taken on the ground were captured by JICA Study team during their field survey in February and June 2024)

Figure 3.4.15 Railway Installation Status of the Apapa Container Terminal and Surrounding Area

3.4.4 Port Cargo Handling Volume

Tables 3.4.12 and Figure 3.4.16 present data and graphs obtained from the Nigerian Ports Authority (NPA) regarding cargo handling volumes by type (general cargo, dry bulk cargo, and liquid bulk cargo) across different port complexes from 2009 to 2020. Additionally, Figure 3.3.10 illustrates the share of cargo handling volumes by type for each port complex in 2020.

For general cargo, there has been an increasing trend at Apapa, Tin Can Island, and Onne, while Delta has shown a decreasing trend. The share of Apapa, Tin Can Island, and Onne in the overall general cargo volume has risen from just under 70% in 2009 to approximately 90% in 2020. This increase can be attributed to the inclusion of both containerized and non-containerized general cargo in the general cargo statistics. Since 2009, the transportation of general cargo in containers has become mainstream, leading to an increase in general cargo handling volumes at Apapa, Tin Can Island, and Onne, which have efficient terminal facilities for container handling. In contrast, Delta, which can only provide traditional cargo handling services using onboard cranes, has seen a decrease in its general cargo handling volume.

For dry bulk cargo, similar to general cargo, Apapa and Tin Can Island, located in the densely populated Lagos area, account for approximately 70% of the share. Notably, Rivers, which hosts Port Harcourt, follows closely behind.

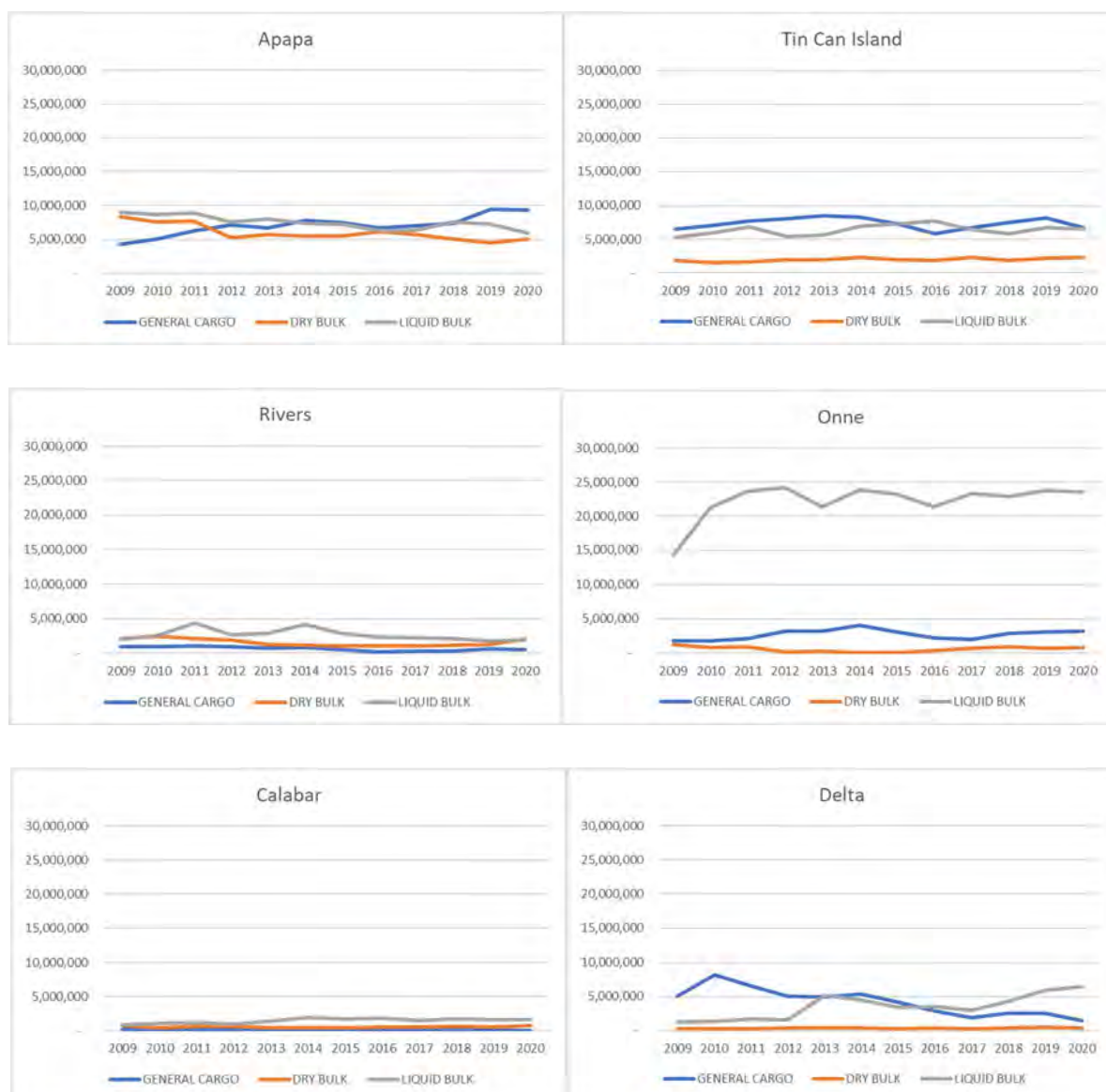
In the case of liquid bulk cargo, Onne stands out with a share of about 50%, which is significantly different from other cargo types. Onne exports oil and gas, which is likely a key factor contributing to its large share in liquid bulk cargo handling.

Table 3.4.12 Port Cargo Handling Volumes by Port Complex from 2009 to 2020

(Unit: tons)

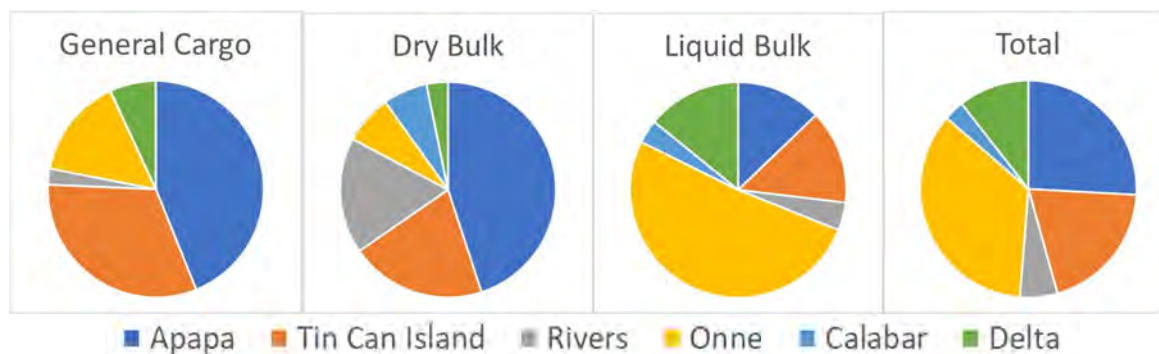
PORT	CARGO TYPE	2009	2010	2011	2012	2013	2014	2015	2016	2017	2018	2019	2020
APAPA	GENERAL CARGO	4,281,337	5,014,666	5,254,028	7,104,109	6,635,677	7,813,727	7,476,639	6,667,867	7,030,039	7,312,196	9,437,205	9,338,642
	DRY BULK	8,293,197	7,554,460	7,638,341	5,253,484	5,710,259	5,473,325	5,518,757	6,166,715	5,686,119	5,078,720	4,500,076	5,076,997
	LIQUID BULK	8,991,668	8,670,729	8,915,984	7,600,112	7,998,182	7,358,217	7,255,325	6,220,803	6,383,532	7,619,761	7,223,875	5,869,455
	SUB-TOTAL	21,566,202	21,239,855	22,808,353	19,957,705	20,344,118	20,645,269	20,250,771	19,055,385	19,099,690	20,010,677	21,161,156	20,285,094
TIN CAN ISLAND	GENERAL CARGO	6,476,573	7,078,503	7,703,403	8,030,442	8,522,391	8,269,482	7,239,866	5,819,068	6,749,805	7,462,502	8,168,041	6,761,271
	DRY BULK	1,795,789	1,494,449	1,653,161	1,892,480	1,989,131	2,305,917	1,949,187	1,805,229	2,319,578	1,797,975	2,162,883	2,300,937
	LIQUID BULK	5,268,654	5,888,686	6,874,027	5,345,975	5,622,631	6,925,405	7,218,080	7,691,947	6,395,002	5,796,995	6,704,665	6,467,152
	SUB-TOTAL	13,541,016	14,461,638	16,230,591	15,268,897	16,134,153	17,500,804	16,407,133	15,316,244	15,464,385	15,057,472	17,035,589	15,529,360
RIVERS	GENERAL CARGO	943,003	899,421	997,235	969,277	761,303	862,567	518,117	197,585	258,478	316,179	575,518	507,965
	DRY BULK	2,167,105	2,402,718	2,117,124	1,911,876	1,264,510	1,142,505	1,075,798	1,037,835	1,086,682	1,194,507	1,280,429	1,965,523
	LIQUID BULK	2,031,343	2,506,394	4,349,261	2,693,500	2,910,131	4,219,936	2,863,870	2,311,325	2,191,713	2,085,309	1,739,275	1,927,955
	SUB-TOTAL	5,141,451	5,808,533	7,463,620	5,574,653	4,935,944	6,225,008	4,457,785	3,546,745	3,536,873	3,595,995	3,595,222	4,401,443
ONNE	GENERAL CARGO	1,726,109	1,774,703	2,042,897	3,187,193	3,160,635	4,004,962	3,023,034	2,235,449	1,989,625	2,836,459	3,027,103	3,187,967
	DRY BULK	1,198,349	777,419	840,361	161,265	197,072	44,973	36,101	349,548	722,159	850,095	649,090	828,756
	LIQUID BULK	14,290,662	21,280,641	23,646,626	24,232,184	21,415,680	23,918,926	23,255,693	21,311,733	23,337,442	22,842,194	23,723,424	23,519,283
	SUB-TOTAL	17,215,120	23,832,763	26,529,884	27,580,642	24,773,387	27,968,861	26,314,828	23,896,730	26,049,226	26,528,748	27,399,617	27,536,006
CALABAR	GENERAL CARGO	149,183	140,864	107,916	153,599	53,339	117,834	43,348	2,894	156,515	37,808	20,128	12,198
	DRY BULK	765,055	437,334	615,903	613,056	346,888	367,733	353,102	450,577	521,511	592,338	450,841	752,110
	LIQUID BULK	807,011	1,016,079	1,154,934	956,540	1,332,059	1,875,910	1,730,809	1,824,006	1,509,663	1,688,559	1,565,897	1,616,378
	SUB-TOTAL	1,721,249	1,594,277	1,878,753	1,723,195	1,732,286	2,361,477	2,127,259	2,277,477	2,187,689	2,318,705	2,036,866	2,380,686
DELTA	GENERAL CARGO	5,028,312	8,131,734	6,591,744	5,038,204	4,940,779	5,305,926	4,132,150	2,860,146	1,940,074	2,532,468	2,551,149	1,468,205
	DRY BULK	292,276	302,117	246,438	331,581	322,673	361,573	273,673	340,806	308,069	369,173	487,508	363,049
	LIQUID BULK	1,269,883	1,373,810	1,700,649	1,617,748	5,098,294	4,531,670	3,424,039	3,525,559	2,949,630	4,264,266	5,934,222	6,479,780
	SUB-TOTAL	6,590,471	9,807,661	8,538,831	6,987,533	10,361,746	10,199,169	7,829,862	6,726,511	5,197,773	7,165,907	8,972,879	8,311,034
GRAND TOTAL		65,775,509	76,744,727	83,450,032	77,092,625	78,281,634	84,900,588	77,387,638	70,819,092	71,535,636	74,677,504	80,201,329	78,443,623

Source: NPA



Source: Created based on NPA data by JICA Study Team

Figure 3.4.16 Trends in Port Cargo Handling Volumes by Port Complex from 2009 to 2020



Source: Created based on NPA data by JICA Study Team

Figure 3.4.17 Share of Port Cargo Handling Volumes by Port Complex in 2020

The port routes and the locations of the ports of call for container shipping routes that were calling at Nigerian ports from April to August 2023 are presented in Tables 3.3.13 to 3.4.17 and Figures 3.4.18 to 3.4.22, categorized by route (i.e., by operating region).

Table 3.4.13 Port Call Routes for the East/Southeast Asia to West Africa Shipping Route

	Shipping Company	Example of Port Call Route (Service Name)	Vessel Type/Capacity × Number of Vessels/Frequency
1	Maersk	Xiamen - Shanghai - Ningbo - Guangzhou - Singapore - Tanjung Pelepas - Tema - Apapa - Pointe-Noire - Tanjung Pelepas - Xiamen (FEW2)	Full Container Ship Approximately 4,300 to 5,400 TEU × 12 vessels Weekly
2	Maersk	Qingdao - Gwangyang - Busan - Ningbo - Shanghai - Guangzhou - Singapore - Tanjung Pelepas - Walvis Bay - Lomé - Tema - Onne - Cotonou - Walvis Bay - Colombo - Tanjung Pelepas - Qingdao (FEW3)	Full Container Ship Approximately 4,100 to 5,300 TEU × 14 vessels Weekly
3	CMA CGM	Shanghai - Ningbo - Shenzhen - Guangzhou - Tanjung Pelepas - Singapore - Kribi - Cotonou - Tincan Island - Lekki - Abidjan - Lomé - Colombo - Singapore - Shanghai (WAX)	Full Container Ship Approximately 4,300 to 7,100 TEU × 13 vessels Weekly
4	PIL	Tianjin - Qingdao - Busan - Shanghai - Ningbo - Guangzhou - Singapore - Tema - Lomé - Apapa - Cotonou - Lomé - Port Klang - Singapore - Tianjin (SWS)	Full Container Ship Approximately 3,800 to 4,800 TEU × 12 vessels Weekly
5	COSCO/Gold Star/ONE	Qingdao - Shanghai - Ningbo - Guangzhou - Singapore - Tanjung Pelepas - Apapa - Tincan Island - Tema - Lomé - Port Klang - Singapore - Qingdao (FWAS/FAX/WA1)	Full Container Ship Approximately 4,000 to 5,000 TEU × 11 vessels Weekly
6	COSCO/Gold Star/ONE/ OOCL	Shanghai - Ningbo - Xiamen - Shenzhen - Guangzhou - Singapore - Tema - Onne - Cotonou - Abidjan - Port Klang - Singapore - Shanghai (SW2)	Full Container Ship Approximately 3,400 to 4,300 TEU × 6 vessels Once every 2 to 3 weeks

Source: MDS Transmodal (2023/8)



Source: Created based on Open Street Map by JICA Study Team

Figure 3.4.18 Locations of the Port Calls Along the East/Southeast Asia to West Africa Shipping Route

Table 3.4.14 Port Call Routes for the Middle East and South Asia to West Africa Shipping Route

	Shipping Company	Example of Port Call Route (Service Name)	Vessel Type/Capacity × Number of Vessels/Frequency
1	CMA CGM/ Maersk	Jebel Ali - Mundra - Nhava Sheva - Pointe-Noire - Tema - Cotonou - Apapa - Cape Town - Durban - Jebel Ali (MIDAS1/MESAWA)	Full container ships Approximately 4,300 to 5,400 TEU × 10 vessels Weekly
2	Hapag-Lloyd/ ONE	Jebel Ali - Mundra - Hazira - Nhava Sheva - Colombo - Durban - Tema - Tincan Island - Apapa - Durban - Jebel Ali (MIAX/AIM)	Full container ships Approximately 2,700 to 4,600 TEU × 10 vessels Weekly

Source: MDS Transmodal (2023/8)



Source: Created based on Open Street Map by JICA Study Team

Figure 3.4.19 Locations of the Port Calls Along the Middle East and South Asia to West Africa Shipping Route

Table 3.4.15 Port Call Routes for the Europe to West Africa Shipping Route

	Shipping Company	Example of Port Call Route (Service Name)	Vessel Type/Capacity × Number of Vessels/Frequency
1	MSC	Tilbury - Hamburg - Antwerp - London Gateway - Le Havre - Tema - Lomé - Tincan Island - Abidjan - Dakar - Tilbury (EUR/W AF)	Full container ships Approximately 5,600 to 6,700 TEU × 6 vessels Weekly
2	MSC	Delince - Tekirdağ - Iskenderun - Gioia Tauro - Livorno - Fos - Valencia - Las Palmas - Dakar - Abidjan - Tema - Lomé - Tincan Island - Apapa - Lomé - Abidjan - Las Palmas - Gioia Tauro - Delince (TURK/MED/W AF)	Full container ships Approximately 5,600 to 6,700 TEU × 6 vessels Weekly
3	ARKAS Line / CMA CGM/ Hapag-Lloyd	Tanger Med - Algeciras - Cotonou - Tema - Apapa - Tincan Island - Tanger Med (EURAF2/WAX)	Full container ships Approximately 2,700 to 4,300 TEU × 5 vessels Weekly
4	CMA CGM/ Marguisa	Valencia - Algeciras - Tanger Med - Lomé - Lekki - Cotonou - Bata - Malabo - Kribi - Valencia (EURAF4/MAS)	Full container ships Approximately 3,100 to 3,600 TEU × 5 vessels Once every 1 to 2 weeks
5	EuroAfrica	Gdańsk - Gdynia - Antwerp - Abidjan - Takoradi - Apapa - Douala - Bata - Gdańsk (West Africa Line)	Semi-container ships Approximately 400 to 1,000 TEU × 8 vessels Once every 1 to 2 weeks
6	Grimaldi Lines	Hamburg - Tilbury - Antwerp - Casablanca - Santa Cruz - Cotonou - Tincan Island - Tema - Abidjan - Hamburg (Central)	Container-capable RoRo ships Approximately 800 to 2,000 TEU × 6 vessels Weekly
7	Grimaldi Lines	Valencia - Marseille - Genoa - Livorno - Salerno - Casablanca - Dakar - Abidjan - Lomé - Cotonou - Tincan Island - Valencia (Med Express)	Container-capable RoRo ships Approximately 800 to 1,600 TEU × 4 vessels Once every 1 to 2 weeks

Source: MDS Transmodal (2023/8)



Source: Created based on Open Street Map by JICA Study Team

Figure 3.4.20 Locations of the Port Calls Along the Europe to West Africa Shipping Route

Table 3.4.16 Port Call Routes from North America and Other Regions to West Africa

	Shipping Company	Example of Port Call Route (Service Name)	Vessel Type/Capacity × Number of Vessels/Frequency
1	Grimaldi Lines	Freeport - Jacksonville - Savannah - Baltimore - New York - Dakar - Cotonou - Tincan Island - Lomé - Tema - Santos - Veracruz - Altamira - Freeport (USEC/W AF LP2)	Container-capable RoRo ships Approximately 800 to 1,300 TEU × 3 vessels Once every 3 to 4 weeks
2	Grimaldi Lines	Baltimore - Freeport - Jacksonville - Baltimore - New York - Dakar - Cotonou - Tincan Island - Tema - Savona - Gioia Tauro - Baltimore (USEC/W AF LP1)	Container-capable RoRo ships Approximately 800 TEU × 4 vessels Once every 2 to 3 weeks
3	Universal Africa Lines	Houston - Lobito - Luanda - Soyo - Port Gentil - Douala - Malabo - Port Harcourt - Veracruz - New Orleans - Houston (USA)	Semi-container ships Approximately 300 to 700 TEU × 5 vessels Once every 2 weeks

Source: MDS Transmodal (2023/8)



Source: Created based on Open Street Map by JICA Study Team

Figure 3.4.21 Locations of the Port Calls Along the North America and Other Regions to West Africa Shipping Route

Table 3.4.17 Port Call Routes Within West and South Africa

	Shipping Company	Example of Port Call Route (Service Name)	Vessel Type/Capacity × Number of Vessels/Frequency
1	MSC	Coega - Durban - Cape Town - Lobito - Luanda – <u>Tin Can Island</u> - Lomé - Pointe-Noire - Namibe - Walvis Bay - Coega (Angola)	Full Container Ships Approximately 2,100 to 2,500 TEU × 5 vessels Weekly
2	Maersk	Abidjan - <u>Onne</u> - Takoradi - Abidjan(WAF 5)	Full Container Ships Approximately 1,100 to 2,100 TEU × 2 vessels Weekly
3	MSC	Lomé - <u>Port Harcourt</u> - <u>Lekki</u> – Lome (East Nigeria)	Semi-Container Ship Approximately 1,000 TEU × 1 vessel Weekly
4	MSC	Lomé - <u>Onne</u> - Libreville - Lome(East Nigeria Gabon)	Full Container Ships Approximately 2,000 to 3,000 TEU × 2 vessels Weekly

Source: MDS Transmodal (2023/8)



Source: Created based on Open Street Map by JICA Study Team

Figure 3.4.22 Locations of Port Calls on West and South Africa Domestic Routes

3.4.5 Inland Dry Ports

(1) Development and Operational Status

Inland Dry Ports (IDPs) are primarily developed as facilities for the transshipment of cargo for multimodal transportation, serving as hubs that connect roads and railways to ports, facilitating the movement of cargo to inland destinations. While the functions and positioning of IDPs may vary by country, the IDP development initiatives underway in Nigeria encompass not only the transshipment of cargo but also include bonded facilities and customs services. These developments are expected to alleviate congestion in storage and customs facilities at coastal ports. The program for IDP development began in earnest in 2003.

The promotion of IDP development is overseen by the Nigerian Shippers' Council (NSC), with IDP operators constructing, owning, operating, and transferring (BOOT) facilities based on Public-Private Partnership (PPP) agreements with the NSC.

According to the NSC, there are currently seven IDPs that have either been completed or are under development in Nigeria, with operations having commenced at three of these locations.

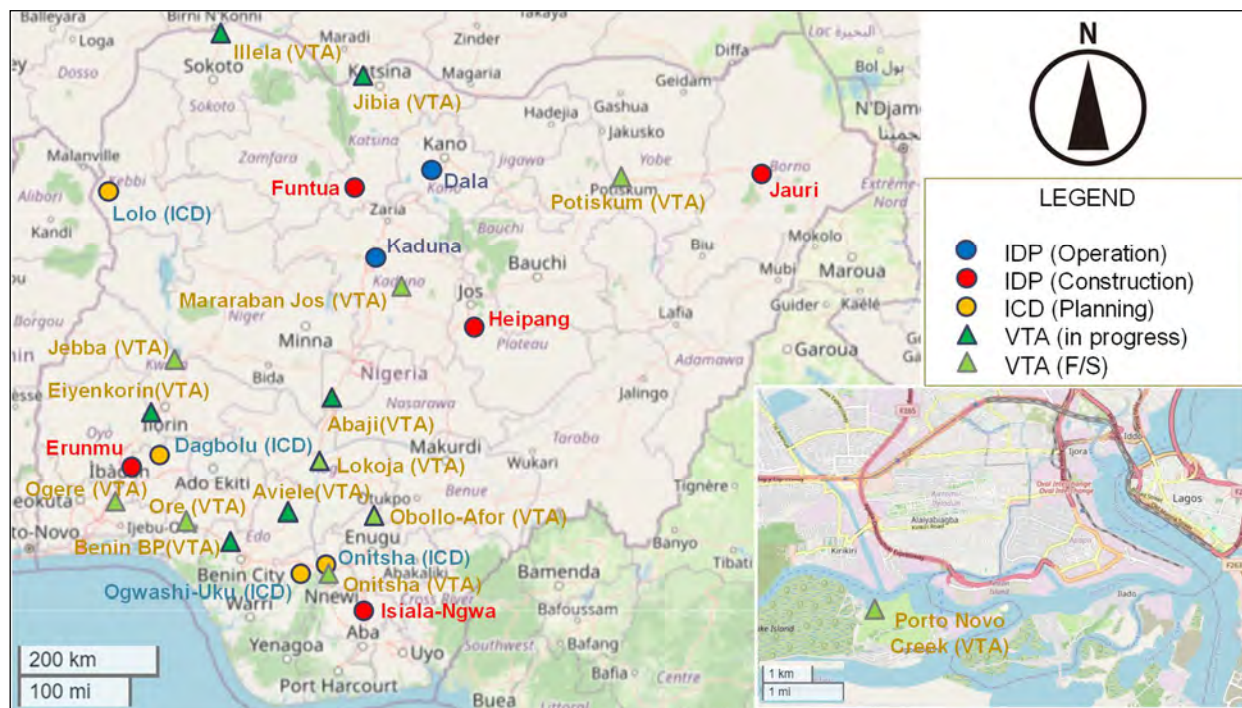
Table 3.4.18 IDPs Operating or Under Maintenance in Nigeria

S/N	STATE	CAPACITY	CONCESSIONAIRE	PERCENTAGE COMPLETION
1.	Erunmu, Ibadan- Oyo State	50,000 TEUs	Catamaran Logistics Ltd	10%
2	Isiala Ngwa, Abia State	50,000 TEUs	Eastgate Ltd	5%
3	Heipang, Jos – Plateau State	20,000 TEUs	Duncan Maritime Nig Ltd	48.40%
4	Zawachiki, Dala- Kano State	20,000 TEUs	Dala Inland Dry Port Ltd.	Completed
5	Zanfarawa, Funtua- Katsina State	10,000 TEUs	Equatorial Marine Oil & Gas LTD	93.5%
6	Jauri, Maiduguri- Borno State	10,000 TEUs	Migfo Nig. Ltd	5%
7	Kaduna Inland Dry Port	5,000 TEUs	Inland Container Nig Ltd (ICNL)	Now in operation

*According to information from November 2024, in addition to the above-mentioned 7, IDPs 4. Dala and 5. Funtua have also already begun operations.

Source: NSC HP

In addition to Inland Dry Ports (IDPs), similar facilities such as Inland Container Depots (ICDs) and Vehicle Transit Areas (VTAs) are also being developed under the supervision of the Nigerian Shippers' Council (NSC). ICDs are transshipment facilities that include bonded areas, while VTAs are primarily transshipment facilities without bonded or customs functions. The key difference between IDPs and ICDs is that IDPs are registered as trade export and import locations (export/import ports), whereas ICDs do not hold this designation.



Source: JICA Study Team

Figure 3.4.23 Status of IDPs, ICDs, and VTAs in Nigeria

(2) Cargo Handling Status

Table 3.4.18 lists the cargo capacities of each IDP; however, this capacity does not indicate the processing capability of the IDPs but rather refers to the space available for storing containers. According to interviews with operators of the three operational IDPs, the actual volume of cargo being handled is currently very limited. Particularly concerning the railway cargo function, which is most anticipated for IDPs, physical railway connections to Apapa Port have been completed from all IDPs. However, the annual handling volume remains low, ranging from a few to several dozen shipments, with most cargo relying on truck transportation. As of November 2024, some sections of the railway line are non-operational due to vandalism, resulting in no current railway cargo transport.

Several factors contribute to the low volume of railway cargo:

- **Poor Railway Service:** The frequency of operations is extremely low, with only 1 to 3 services per day. Additionally, there is a shortage of freight wagons, allowing only about 20 containers to be transported at a time, which does not meet the needs of shippers.
- **High Costs of Truck-Only Transportation:** According to interviews with IDP operators and the Nigerian Railway Corporation (NRC), the transportation costs are higher due to the need for transshipment compared to cases where trucks transport cargo directly.

- **Customs Services:** The IDPs lack the full range of services found at coastal ports, requiring some document submissions to be made at customs offices located outside the IDP facilities, which adds to the inconvenience.
- **Lack of Awareness among Shippers:** Shippers do not fully understand the realities of railway transport. While the NSC recognizes the need for promoting railway transport, the low service levels of railways and customs hinder the availability of materials to raise awareness.

The challenges facing railway transport utilizing IDPs are significant, leading to a negative spiral of declining services from related organizations and low utilization of the facilities. This underutilization of the well-developed IDP facilities is a major issue. As IDP development progresses in various regions, there is an urgent need for improvements in this situation.

3.4.6 Road Traffic Condition around Port Area

At Apapa Port and Tin Can Island Port, the congestion of trucks on the roads surrounding the ports is hindering the smooth loading and unloading of cargo from the terminals. Figures 3.4.24 and 3.4.25 illustrate the truck congestion on the roads originating from the gates of the container terminals at Apapa Port and Tin Can Island Port, respectively. These figures were created by analyzing satellite images available on Google Maps (Note: The images used were from late January 2024. According to these satellite images, trucks were congested over approximately 6.6 km at Apapa Port and about 7.4 km at Tin Can Island Port. Note: A satellite image viewed in early May 2024 showed a slight improvement in congestion compared to Figures 3.4.24 and 3.4.25).

The cause of the truck congestion waiting to enter the container terminals is believed to be the arrival rate of trucks heading to the terminal gates exceeding the processing pace of container handover operations at the terminals.

To reduce the arrival rate of trucks heading to the container terminal gates, it is necessary to address the following challenges:

- A) Distributing truck arrival times to prevent them from concentrating within a short period.
- B) Increasing the use of alternative transportation methods, such as barges and railways, to reduce the number of containers transported by trucks.
- C) Increasing the number of containers transported through other ports, such as Lekki Port, to decrease the volume of containers transported via Apapa Port and Tin Can Island Port.

To enhance the processing pace of container handover operations at the terminals, it is necessary to address the following challenge:

- D) Improving the level of preparation to ensure that containers can be handed over to arriving trucks in a short amount of time.



Source: Created based on Google Map by JICA Study Team

Figure 3.4.24 Truck Congestion Status at Apapa Port



Source: Created based on Google Map by JICA Study Team

Figure 3.4.25 Truck Congestion Status at Tin Can Island Port

In the section where trucks are waiting, there is a tank farm along the road. Tankers transporting petroleum products are also waiting on the road near the tank farm. Since tankers fall outside the jurisdiction of the NPA (National Port Authority), they are not included in the truck calling system mentioned later. To reduce the number of tankers waiting on the road, it is considered necessary to address the following challenges:

- E) To decrease the amount of petroleum products transported through Apapa Port and Tin Can Island Port, it is essential to increase the transportation of petroleum products through alternative routes.

According to interviews with terminal operators at Apapa Port, there are various reasons why trucks are parked on the road, in addition to those waiting to enter the terminal. For example, trucks may be waiting for fuel payments or undergoing repairs. Trucks that are on the road for reasons other than waiting to enter are doing so because severe road congestion prevents them from stopping outside the road. This indicates that the congestion caused by trucks waiting to enter the terminal is inducing behaviors that should ideally occur off the road, leading to further traffic disruptions and creating a vicious cycle.

To reduce the activities that should occur off the road from taking place on the road, it is necessary to address the following challenges:

- F) Improving the Environment to Ensure Off-Road Activities Occur Outside the Road

3.5 Aviation Sector

3.5.1 Trends in Infrastructure Development

In Nigeria, the Federal Airport Development Plan (ADP), formulated in 1970, outlined the development of airports in each state capital. Under the leadership of the Federal Aviation Authority, five international airports (Abuja, Lagos, Kano, Port Harcourt, and Enugu) and 18 domestic airports have been established to date.



Source: Created based on NIIMP by JICA Study Team

Figure 3.5.1 Location of Airports in Nigeria

The National Integrated Infrastructure Master Plan (NIIMP), developed in 2015 and revised in 2020, prioritizes improvements in the transportation sector, particularly in roads and railways. However, the long-term vision includes the establishment of a multimodal system that integrates facilities such as ports and airports. Challenges in the airport sector include the modernization of infrastructure such as terminal buildings, control towers, conveyor systems, landing systems, communication equipment, and runways, as well as the need for training in personnel development and equipment handling and maintenance.

To address these challenges, the government has implemented several key initiatives, including the Total Radar Coverage of the Nigerian Airspace (TRACON) project and the Mobile Tower project. Additionally, the NIIMP outlines development plans for 2021-2025, which include measures such as concession agreements for international airports, strengthening and improving safety management, and the establishment of a national airline. Below is an overview of these initiatives.

Table 3.5.1 Projects Implemented in the Aviation Sector to Date

Project	Overview	Progress
Total Radar Coverage of the Nigerian Airspace (TRACON) Project	The purpose is to cover airspace with radar and enhance civil and military surveillance of aircraft, consisting of the following items: (1) Installation of primary radar at four international airports (Abuja, Lagos, Kano, Port Harcourt) (2) Installation of secondary radar at Talata Mafara, Maiduguri, Numan, Obubra, and Ilorin (3) Establishment of an air traffic control training and simulation center at Lagos Airport	Regarding (3), the number of locations has increased from the initially planned one to 40, and approximately 65 air traffic controllers and over 30 engineers have received training on the use of TRACON. Additionally, the installation of a satellite-based integrated flight tracking system has further enhanced air traffic control capabilities.
Mobile Tower Project	To ensure emergency air traffic control, communication towers compatible with GPS will be developed.	This was established at Lagos and Abuja airports in 2021. The Nigerian Airspace Management Agency plans to develop new communication towers in the northern region.
Establishment of an aviation university	To promote research and development in the aviation sector and cultivate advanced management personnel in the industry, an aviation university will be established.	Construction has been ongoing for about six years, and the facility opened in September 2022.

Source: NIIMP

Table 3.5.2 Aviation Projects Scheduled to be Implemented From 2021 to 2025

No.	Project	Status as of 2020	Implementation goals for 2021 to 2025
1	Concession agreements for international airports (Abuja, Lagos, Kano, Port Harcourt)	- The project proposal review by the Infrastructure Concession Regulatory Commission (ICRC) has been completed. - The procurement process began in the third quarter of 2020.	Aim to complete concession agreements from 2022 to 2025.
2	Strengthening and improving safety management	Approvals have been obtained in Lagos and Abuja.	Conduct a comprehensive assessment of security threats, vulnerabilities, and security evaluations from 2021 to 2025.
3	Establishment of a national airline	- The project proposal has been prepared. - The procurement process began in the fourth quarter of 2020.	Obtain approval for the project proposal and aim for implementation within 2021 to 2025.
4	Development of agricultural cargo terminals	The project proposal has been submitted.	Aim to commence operations between 2022 and 2025.
5	Establishment of Maintenance, Repair, and Overhaul (MRO) centers	- Compliance certificates for the project proposal have been issued. - The procurement process is ongoing.	Aim to commence operations between 2022 and 2025.
6	Establishment of an Aircraft Leasing Company (ALC)	- Compliance certificates for the project proposal have been issued. - The procurement process is ongoing.	Start in 2021, undergo review in 2022, and aim for full opening between 2023 and 2025.
7	Development of airport cities (Aerotropolis)	The project proposal has been submitted.	Obtain approval for the project proposal in 2021, begin procurement in 2022, and aim for realization between 2023 and 2025.
8	Development of free zones at five airports	- Approximately 80% completed. - The feasibility study report has been submitted.	Aim to start operations in 2021 and achieve full operation between 2022 and 2025.

Source: NIIMP

Regarding Project No. 4 mentioned above, the Ogun State Agricultural Cargo Airport, which began construction in April 2021 with the cooperation of the African Development Bank (AfDB), commenced test operations in March 2023. This airport is being developed alongside the Ogun Special Agricultural Processing Zone (SAPZ), and its opening is expected to enhance the development of the agricultural value chain.

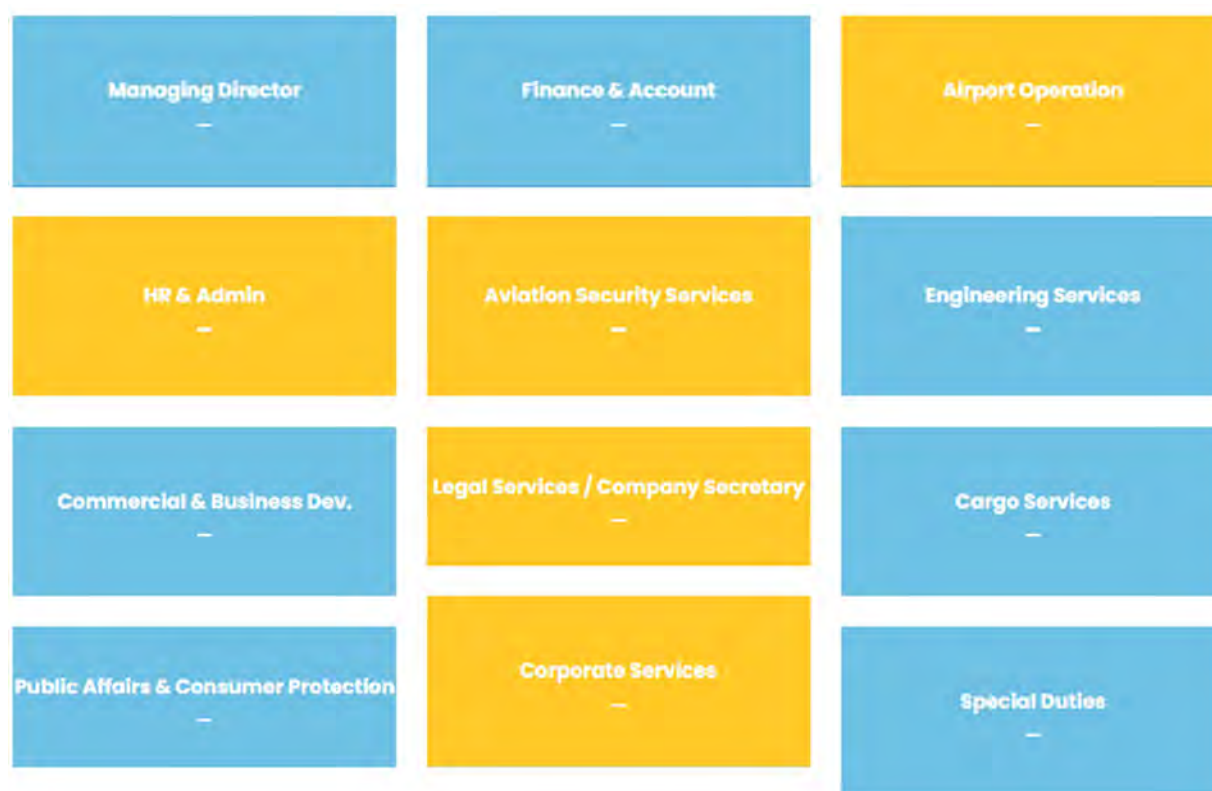
3.5.2 Status of Maintenance and Operation Related to Airports

The aviation industry in Nigeria is governed by three organizations: the Federal Airports Authority of Nigeria (FAAN), the Nigerian Civil Aviation Authority (NCAA), and the Nigerian Airspace Management Agency (NAMA).

Most airports in Nigeria are owned by the federal government and operated by FAAN. However, there are also several privately owned airports, such as Osubi Airport in Warri, Delta State, which is owned and operated by Shell Petroleum Development Company. Additionally, as previously mentioned, there are plans to advance concession agreements for international airports (Abuja, Lagos, Kano, and Port Harcourt) to private companies in the future. FAAN oversees all services, including passenger and cargo operations.

NCAA is responsible for developing legal standards and manuals, as well as promoting government policies in accordance with international standards. It issues aviation regulations, maintenance management manuals, and maintenance procedure manuals, which outline the obligations of airport operators, the procedures for obtaining operating permits, and regulations regarding the joint use of civil and military airfields. Maintenance organizations are approved by the NCAA in accordance with these regulations and manuals.

NAMA is responsible for air traffic control services and is accountable for safety aspects, including the prohibition of unauthorized aircraft incursions and the provision of rescue services. Other related organizations include the Nigerian Meteorological Agency (NIMET), the Nigerian College of Aviation Technology (NCAT), and the Accident Investigation Bureau (AIB).



Source: FAAN HP

Figure 3.5.2 Organizational Chart of FAAN

3.5.3 Cargo Handling Volume at Airports

In 2013, Nigeria designated 13 airports (Abuja, Akure, Calabar, Ilorin, Jalingo, Jos, Kano, Lagos, Makurdi, Minna, Enugu, Port Harcourt, and Uyo) as cargo handling airports. However, as of 2022, only five airports—Lagos, Port Harcourt, Kano, Abuja, and Enugu—possess the necessary functions to operate as cargo airports, including adequate storage facilities for import and export goods, runways long enough for large cargo aircraft, and nighttime takeoff and landing assistance equipment.

According to a report by the National Bureau of Statistics in 2021, the total cargo volume handled at domestic airports was 29,066 tons for exports and 188,748 tons for imports, with imports accounting for the majority. The total cargo volume handled was 217,814 tons. Regarding the trend in total cargo volume from 2018 to 2021, it can be said that the volume is on an upward trend, despite a dip in 2020. Looking at 2018, for which airport-specific cargo handling data is available, Lagos Airport handled the highest volume, with a total of 129,092 tons for both exports and imports, representing 78.3% of the total. Following Lagos, Kano Airport and Abuja Airport had the next highest volumes. While Lagos Airport accounted for a significant portion of both exports and imports, Kano Airport showed a relatively higher export volume, whereas Abuja Airport had a comparatively higher import volume.

Table 3.5.3 Cargo Volume by Airport

Cargo Volume (2018)	Exports		Imports		Total	
	(t)	Percentage (%)	(t)	Percentage (%)	(t)	Percentage (%)
Lagos Airport	19,122	74.7	109,970	78.9	129,092	78.3
Abuja Airport	396	1.5	9,979	7.2	10,375	6.3
Port Harcourt Airport	1,383	5.4	7,635	5.5	9,018	5.5
Kano Airport	3,821	14.9	11,292	8.1	15,112	9.2
Enugu Airport	882	3.4	459	0.3	1,341	0.8
Total	25,603	100.0	139,335	100.0	164,938	100.0

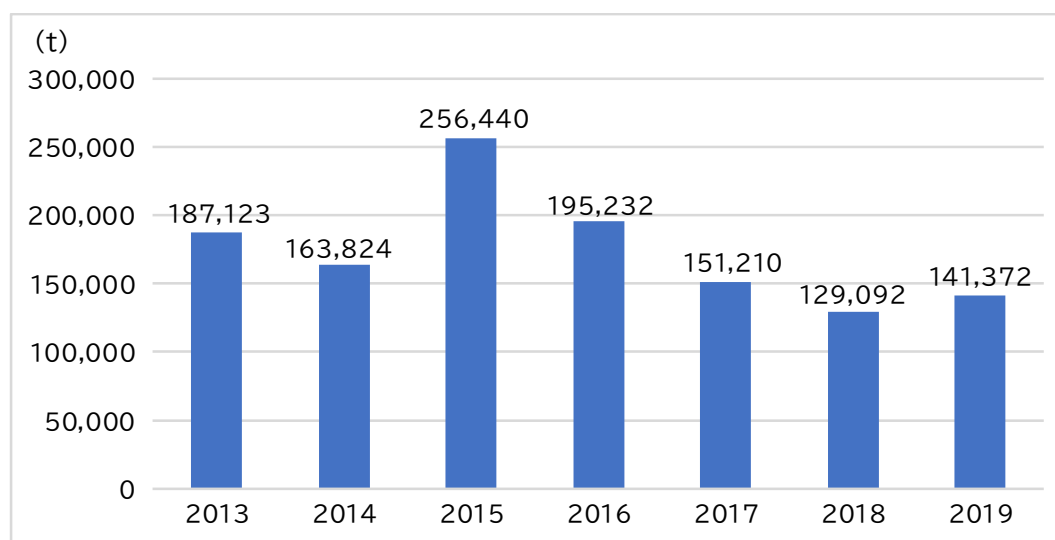
Source: Air Transportation Data - 2018, National Bureau of Statistics

Table 3.5.4 Total Airport Cargo Volume

Cargo Volume	Export (t)	Import (t)	Total (t)
2019	23,779	188,270	172,049
2020	16,094	131,376	147,470
2021	29,066	188,748	217,814

Source: Air Transportation Data, National Bureau of Statistics

Looking at the trend of cargo handling volume at Lagos Airport, the largest cargo airport in the country, it peaked in 2015 at 256,440 tons but has since declined. In 2019, the cargo handling volume increased compared to 2018, reaching 141,372 tons.



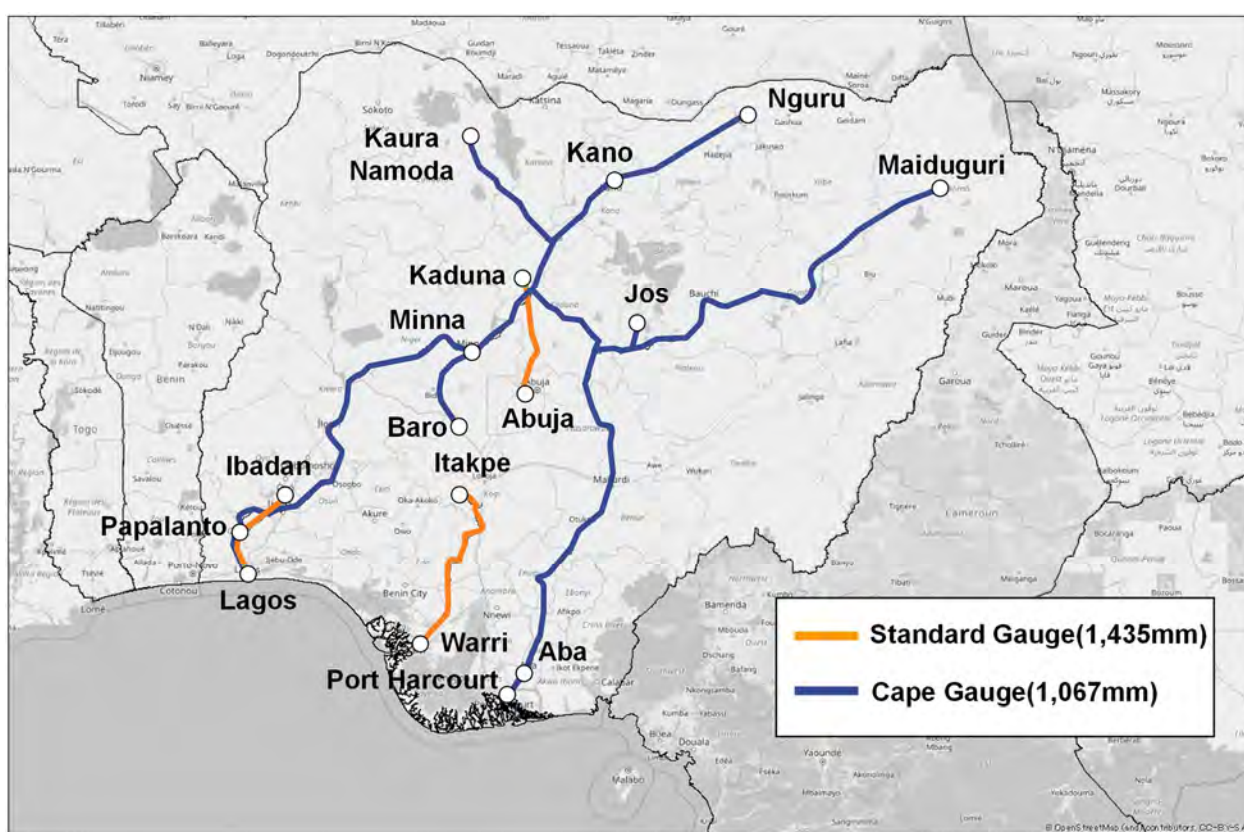
Source: Created Based on LAGOS STATE TRANSPORT STATISTICS 2020

Figure 3.5.3 Trends in Cargo Volume at Lagos Airport (2013–2019)

3.6 Railway Sector

3.6.1 Railway Infrastructure Development Trends

Nigeria's first railway was constructed in 1898 by the British colonial government, spanning 193 kilometers between Lagos and Ibadan. The railway was primarily utilized for transporting the abundant agricultural and mineral resources from the interior. Subsequently, rail lines were laid from the ports of Lagos and Port Harcourt towards the interior regions. Most of the railway lines were built with a narrow gauge of 1,067 mm, but starting from the Wari-Itakpe line, which began construction in 1986, a standard gauge of 1,435 mm has been adopted. The network of the Nigerian Railway Corporation (NRC) extends over 4,332 kilometers; however, some routes have been suspended for decades due to the rising costs of diesel fuel, and parts of the infrastructure have deteriorated due to vandalism.

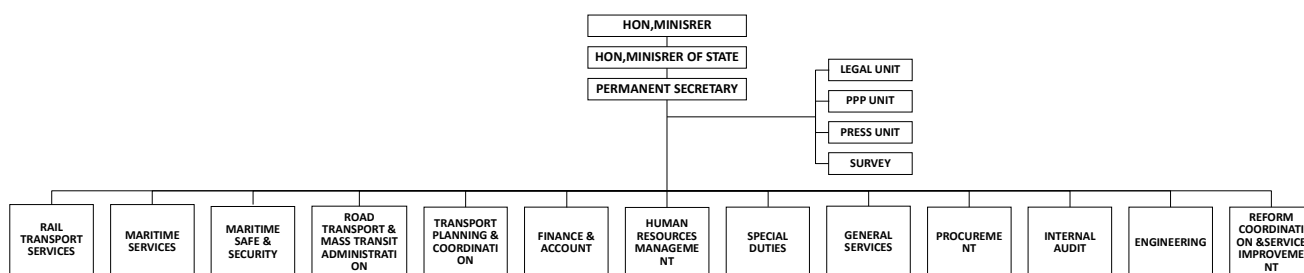


Source: JICA Study Team

Figure 3.6.1 NRC's Railway Network

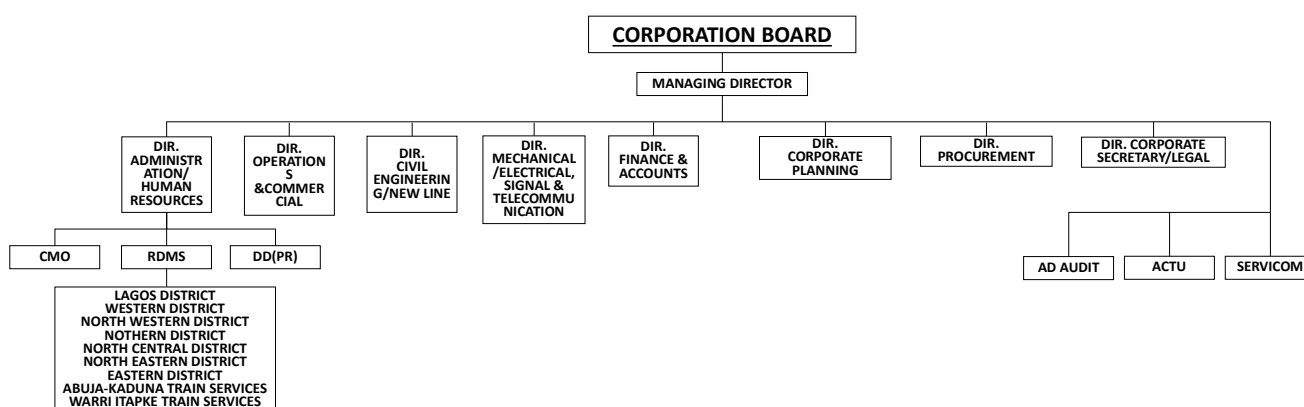
3.6.2 Operation and Maintenance of Railway Infrastructure

In Nigeria, the railway system is operated by the Nigerian Railway Corporation (NRC), with the exception of the urban rail systems established in Abuja and Lagos. The NRC is a public corporation established in 1912 and is operated by the Nigerian government. The railway policy within Nigeria is formulated by the Federal Ministry of Transportation (FMT), while the NRC is responsible for the operation and maintenance of the railways (excluding urban rail systems). The organizational structure of the FMT and NRC is illustrated in the following diagram.



Source: Created based on FMT HP by JICA Study Team

Figure 3.6.2 Organizational Chart of FMT



Source: Created Based on NRC Data by JICA Study Team

Figure 3.6.3 Organizational Chart of NRC

In Nigeria's economic hub of Lagos, the Lagos Metropolitan Area Transport Authority (LAMATA) is responsible for the planning and operation of urban rail systems. In 2023, operations began on a section of the Blue Line urban railway, covering 13 kilometers, and operations on a section of the Red Line, spanning 26 kilometers, are scheduled to commence by the end of September 2024. The Blue Line is a newly electrified route, while the Red Line operates as a non-electrified line after converting existing NRC tracks from narrow gauge to standard gauge.

In the capital city of Abuja, urban rail operations were initiated in 2018 by the China Civil Engineering Construction Corporation (CCECC). However, operations were suspended due to the outbreak of the coronavirus. As of May 2024, two lines (42.5 kilometers) are set to resume operations using Diesel Multiple Units (DMUs).

The NRC utilizes Nigeria's railway network to facilitate intercity passenger transport. The following table presents the operational status of NRC's intercity rail services.

Table 3.6.1 Operational Status of NRC's Intercity Rail Services

Route	Frequency
Abuja~Kaduna	2 Round Trips/Day
Warri~Itakpe	1 Round Trip/Day
Lagos~Ibadan	1 Round Trip/Day
Port Harcourt~Aba	1 Round Trip/Day

Source: Created Based on NRC HP by JICA Study Team

In March 2023, a significant development regarding railways occurred within the context of amendments to the Constitution of the Federal Republic of Nigeria. This amendment removed the federal government's exclusive authority over the construction, maintenance, and operation of railways, which had previously been the sole responsibility of the federal government. The constitution, as it stood since 1999, included 68 exclusive legislative items that could only be legislated by the Nigerian federal government, including railways. With the removal of this exclusive authority over railway infrastructure, the states of Nigeria are now granted the power to develop and operate railways.

This change is believed to be driven by several factors, including a lack of funding for railway infrastructure development, significant operational losses, and criticism of ineffective railway policies by the federal government, a shortage of skilled personnel, and challenges related to the maintenance of aging infrastructure.

As a result of this constitutional amendment, the federal government's regulatory powers over railways are now limited to enacting laws concerning the following matters for the federation or parts thereof:

- The construction and maintenance of inter-state railway infrastructure.
- The establishment of a national railway authority to regulate railway operations across the federation.
- The establishment and maintenance of a national railway transport operator for inter-state transportation throughout the federation.

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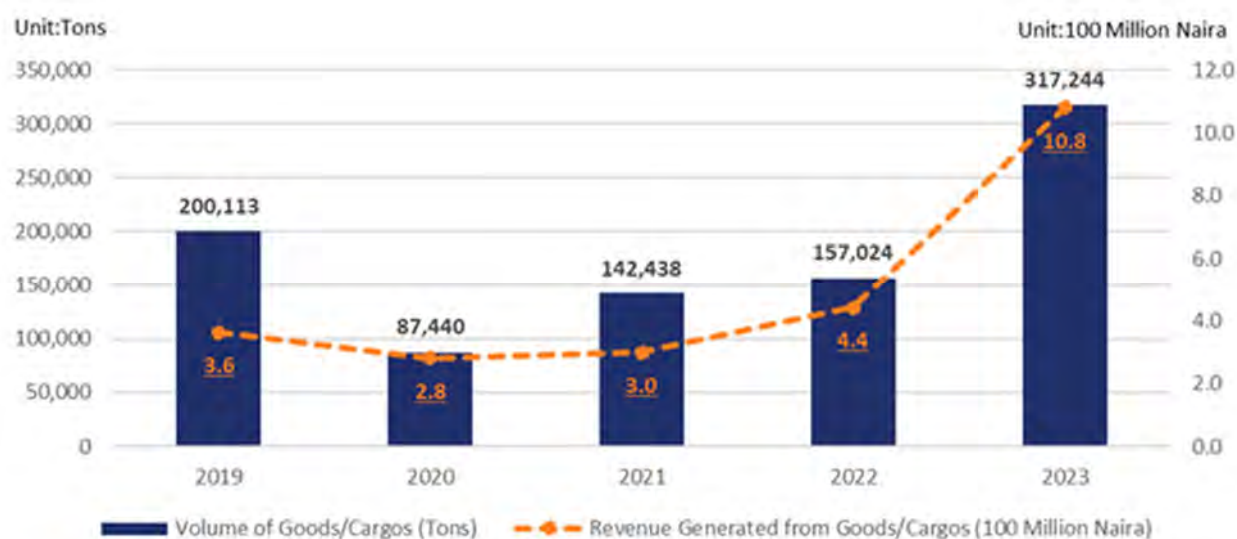
3.6.3 Freight

Nigerian Railway Corporation (NRC) commenced freight transport using standard gauge between Warri and Itakpe in 2021. Additionally, in 2023, it began operating container freight trains from Apapa Port to a dry port located in Ibadan, running one round trip per day over a distance of 157 kilometers, which takes approximately two and a half hours.

Some news sources indicate that NRC previously operated freight transport on a narrow gauge railway network but has since suspended operations on many sections for safety reasons. As of September 2023, the narrow gauge line between Lagos and Kano has been repaired, and in June 2024, freight train operations utilizing the narrow gauge line are set to commence from Apapa Port to the Dalinland Dry Port in Kano.

The freight transport performance and revenue of NRC over the past five years are illustrated in the following figure. In 2020, the freight transport volume was 87,440 tons, and the freight revenue was approximately 280 million Naira, marking the lowest figures in both categories over the past five years. However, since the start of freight transport between Warri and Itakpe in 2021, both freight transport volume and revenue have shown an upward trend. By 2023, the freight transport volume reached 317,244 tons, with freight revenue amounting to approximately 1.08 billion Naira. Notably, from 2022 to 2023, freight transport volume increased by 102% compared to the previous year, and freight revenue rose by 144%, indicating a recent surge in railway freight transport, particularly following the commencement of freight services between Apapa Port and Ibadan. According to NRC, the current freight handled includes containers, cement, and construction materials (primarily pipes), with a very limited range of cargo being managed.

Interviews with operators of inland dry ports revealed that some sections of the railway, including rails and sleepers, have been damaged, leading to interruptions in freight train operations. Ensuring the safety of freight train operations and improving security along the railway lines are significant challenges. Due to vandalism, there are situations where inland dry ports are connected to the railway but do not have operational freight trains.



Source: Created based on data of National Bureau of Statistics by JICA Study Team

Figure 3.6.4 NRC's Freight Transportation Performance and Freight Revenue

3.6.4 Future Plans in Railway Sector

(1) Nigerian Integrated Infrastructure Master Plan (NIIMP)

Nigerian government developed the Nigeria Integrated Infrastructure Master Plan (NIIMP) in 2012 to enhance private sector participation in infrastructure development. An updated version of the NIIMP was formulated in 2020, which outlines specific goals for the railway sector.

Among the short-term objectives, the restoration of the existing railway network is prioritized, along with the enhancement of the railway network centered on Lagos. The medium-term goals include further reconstruction and expansion of the railway network, while the long-term objectives focus on the development of an intercity railway network. This indicates that the Nigerian government has significant expectations for the advancement of the railway sector.

Table 3.6.2 Short, Medium, and Long-term Goals for the Railway Sector in NIIMP

Short-term(2021 - 2022)	Mid-term(2023)	Long-term(2043)
- Restore the railway network and focus on railway transportation for both freight and passengers - Complete strategic railway projects connecting major economic cities across the country. The goal is to finish the railway projects between Lagos and Kano, as well as between Lagos and Calabar	Reconstruction and expansion of the railway network	Development of an intercity high-speed railway network

Source: Reviewed National Integrated Infrastructure Master Plan 2020

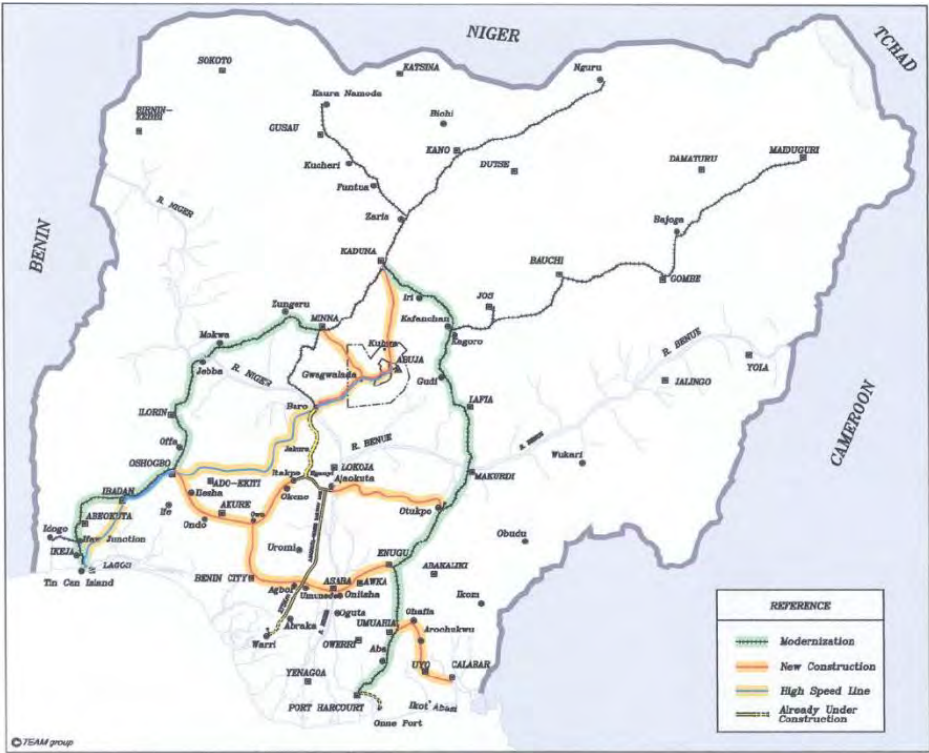
(2) 25 Year Strategic Vision for Nigerian Railway System

The Federal Ministry of Transport (FMT) developed 25 Year Strategic Vision in 2002, outlining the vision for Nigeria's railway system over the next quarter-century. This plan consists of three phases: Phase 1 (2002-2007), Phase 2 (2002-2015), and Phase 3 (2016-2027). The key strategies for each phase are summarized in the table below.

Table 3.6.3 Key Strategies for Each Phase of 25 Year Strategic Vision

Phase	Objective	Key Strategy	Target Year
Phase 1	System Transformation	- Improvement of existing facilities - Organizational review - Changes in operational methods - Training - Investment planning - Enhancement of domestic railway material production capacity - Improvement of technical capabilities	2002~2007
Phase 2	System Modernization	- Gauge conversion to standard gauge - Construction and extension of new lines - Investment by the private sector - Improvement of technical capabilities	2002~2015
Phase 3	System Stabilization	- Completion of gauge conversion to standard gauge - Completion of new line construction	2016~2027

Source: 25 Year Strategic Vision for Nigerian Railway System Executive Summary, 2002



Source:25 Year Strategic Vision for Nigerian Railway System Executive Summary, 2002

Figure 3.6.5 Projects planned for implementation in Phase 2 (2002-2015)



Source:25 Year Strategic Vision for Nigerian Railway System Executive Summary, 2002

Figure 3.6.6 Projects planned for implementation in Phase 3 (2016-2027)

As of July 2024, there has been no conversion of the existing narrow gauge lines to standard gauge, and among the sections that were planned for new line construction by 2015, only a few have been completed. The completed sections include the line between Apapa, Lagos, and Ibadan (with the Apapa to Lagos to Kajola segment constructed alongside the narrow gauge line, and the Kajola to Ibadan segment being a standalone new line), as well as the Abuja to Kaduna and Warri to Itakpe lines. According to interviews with the Federal Ministry of Transport, since over 20 years have passed since the formulation of the 25 Year Strategic Vision, a review of the plan is scheduled for the fiscal year 2025.

(3) Project Information from Federal Ministry of Transport (FMT)

According to materials obtained from the Federal Ministry of Transport (FMT), four projects are currently underway. Additionally, several other proposed projects have been suggested for various railway lines.

Table 3.6.4 Railway Project 1

Project Name	Ibadan - Minna - Abuja Standard Gauge Railway Project
Section	Ibadan - Minna – Abuja
Contractor	CCECC Nigeria Limited
Contract Date	2020/2/26
Duration	48 months
Contract Amount	\$4,311,572,654.66
Current Status	Funding for the implementation of the project has not yet been secured, but the process of land acquisition and compensation is underway.

Source: FMT

Table 3.6.5 Railway Project 2

Project Name	Rehabilitation & Reconstruction of Port Harcourt – Maiduguri Narrow Gauge Railway Project with Associated two (2) Transshipment Stations & Existing and New Branch Lines; Development of New Bonny Deep Seaport and Port Harcourt Railway Industrial Park
Section	<u>Existing Main Line</u> Port Harcourt – Aba – Umuahia – Enugu – Markurdi – Akwanga – Jos – Bauchi – Gombe – Damaturu - Maiduguri (1443 Km) and two Transshipment Centres at Asa in Aba, Abia State and Rigachukun, Kaduna State; <u>Existing Branch Lines</u> Kuru – Jos (35 Km), Kafanchan – Rigachukun (200 Km); <u>New Branch Lines:</u> Goniri – Gashua (216 Km), Elelenwa to Bonny Port (56 Km), Onne to Onne Port (8.7 Km) and Elelenwa to Owerri (85.4 Km).
Contractor	Messrs CCECC Nigeria Limited
Consultant	Khairi Consult/Jamub Global
Contract Date	2020/11/16
Contract Type	EPC + F
Duration	36 months
Contract Amount	a) Railway & Two Transshipment Stations:\$3,020,279,549 Billion b) Bonny Deep Sea Port:\$550,000 Million (Subject to further review as there is ongoing re-scoping of the project) c) Port Harcourt Railway Industrial Park:\$290 Million
Current Status	• Preliminary work: Ongoing (investigation and soil survey) • Land acquisition and compensation: Ongoing • Environmental and Social Impact Assessment (ESIA): Completed • Removal of existing rails: Existing rails along Port Harcourt-Enugu (270.4 km) have been removed • 30 culverts have been constructed, and structural integrity tests have been conducted on 34 culverts (Port Harcourt-Enugu) • New track laying has commenced from Port Harcourt. • Due to a lack of funding, CCECC has been unable to secure the loan portion for project financing. The project has been funded by the Nigerian government since its commencement in 2020.

Source: FMT

Table 3.6.6 Railway Project 3

Project Name	Kano - Katsina – Jibiya - Maradi (Niger Republic) Single Track Standard Gauge Railway Project and branch line from Kano to Dutse
Section	Kano – Dambatta - Kazaure - Daura – Mashi - Katsina – Jibiya - Maradi (Niger Republic) (283 km) and branch line from Kano to Dutse (120 km)
Contractor	Mota-Engil Nigeria Limited
Consultant	TEAM Nigeria Limited
Contract Date	2021/1/11
Contract Type	EPC + F
Duration	36 months
Contract Amount	\$1,959,744,723.71 \$47,670,247.80 (Consulting Fee)
Financing Arranger	AFC and Rand Merchant Bank of London
Capital Structure	Joint Investment (Nigeria and ECA / DFI Loan)

Source: FMT

Table 3.6.7 Railway Project 4

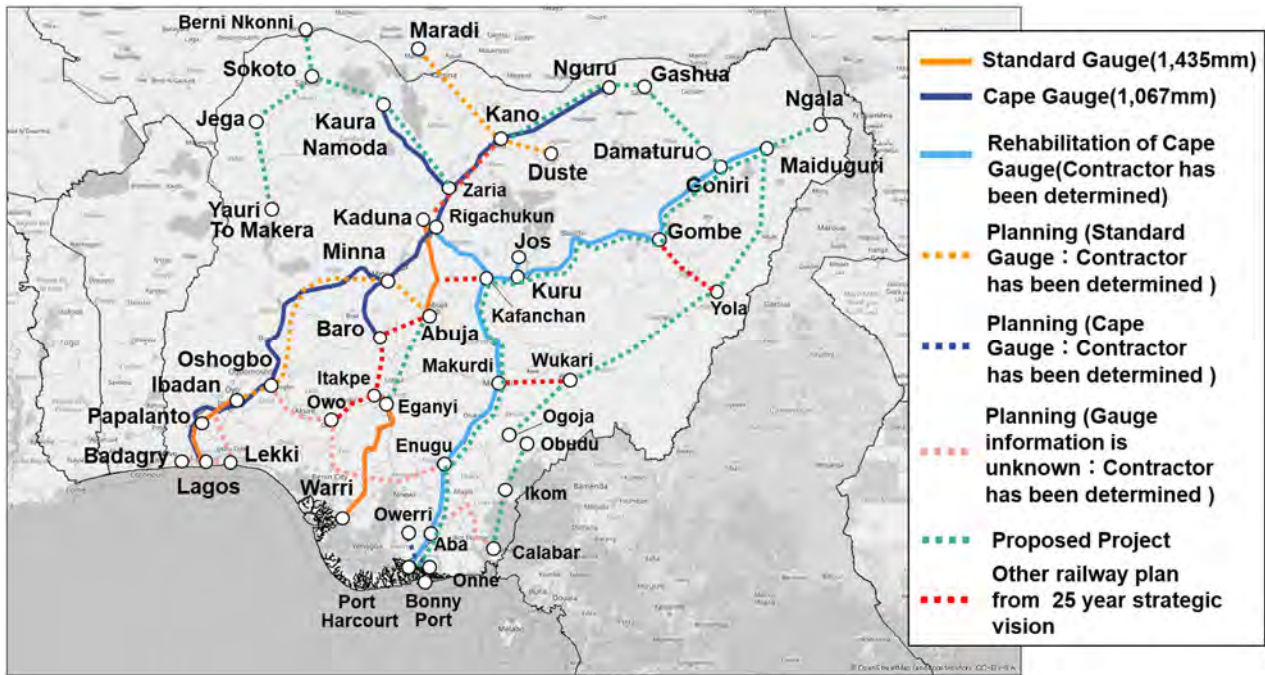
Project Name	Nigerian Coastal Railway Project
Section	Lagos – Calabar
Contractor	CCECC Nigeria Limited
Contract Date	2014/11/19
Contract Type	EPC + F
Duration	60 months
Contract Amount	\$11,174,756,680.35
Financing	100 % Commercial Loan proposed by China EXIM Bank
Current Status	Since 2014, CECC has been unable to provide funding for the project.

Source: FMT

Table 3.6.8 Other Railway Proposal Projects

Section	Port Harcourt – Aba – Umuahia – Enugu – Makurdi – Lafia – Kuru – Bauchi – Gombe – Biu – Maiduguri standard Gauge railway with branch line (2,058.838 Km)
	Calabar – Ikom – Obudu – Ogoja – Wukari – Yola – Maiduguri (1,069Km)
	Eganyi (Near Ajaokuta) – Lokoja – Abaji – Abuja (Idu) 280km
	Illela- Sokoto – Jega – Yauri – Makera (408km Approx)
	Kano – Nguru – Gashua – Damaturu – Ngala (707Km)
	Zaria – Funtua – Gusau – Kaura Namoda – Sokoto – Illela – Birnin Koni (520Km)

Source: FMT



Source: Created based on data from FMOT by JICA Study Team

Figure 3.6.7 List of Planned Routes Under Consideration by FMT (Including Existing Routes)

3.7 Custom Sector

3.7.1 Customs System and Implementation Status

(1) Organizational Structure of NCS

Nigeria Customs Service (NCS) was established in 1891 and is responsible for the collection of customs duties and the prevention of smuggling activities. The supervising authority for the NCS is the Ministry of Finance; however, from 1985 to 1992, it was under the Ministry of Internal Affairs. The NCS also holds the status of a para-military organization.

In today's context, where trade facilitation is increasingly promoted, customs operations are considered a crucial element of the government's economic policy, and the NCS has established an important position within the international supply chain of goods and services. Consequently, the NCS is required to implement systematic and effective intervention management to address complex and growing challenges in international trade, including economic crimes, money laundering, threats of terrorism, threats of weapons of mass destruction, intellectual property rights violations, and the disposal of toxic and hazardous materials.

At the same time, the NCS is also tasked with providing rapid customs clearance services. Therefore, in addition to the long-standing responsibilities of trade and border management, the NCS is compelled to promote legitimate trade in response to various threats that have emerged in international commerce in recent years. In light of this, the NCS has identified the collection of revenue from import duties and excise taxes, as well as accounting for these revenues, along with the prevention and suppression of smuggling, as its primary roles.

The vision articulated by the NCS is as follows:

- Efficient and timely collection of customs duties and appropriate accounting practices
- Contribution to and advice on the government's trade and fiscal policies
- Promotion of trade facilitation
- Protection of Nigerian society and adherence to international best practices
- Creation of accurate and precise statistical data

In its role in trade facilitation, the NCS implements bilateral and multilateral agreements, collects levies and fees, and collaborates with various government agencies, including the Central Bank of Nigeria, the police, the Nigeria Drug Law Enforcement Agency (NDLEA), the Standards Organisation of Nigeria (SON), the National Agency for Food and Drug Administration and Control (NAFDAC), and the Federal Inland Revenue Service (FIRS).

The illegal trade activities that are subject to enforcement include the following:

- Importation of counterfeit and substandard goods, as well as illegal commercial activities and trafficking of illicit products
- Intellectual property rights violations
- Illegal international trade of endangered species
- Illegal trafficking of weapons and ammunition

- Money laundering
- Trafficking of illegal drugs
- Illegal trade of cultural artifacts
- Importation of pornographic materials
- Importation of toxic and hazardous substances

The advantages highlighted by the NCS are as follows:

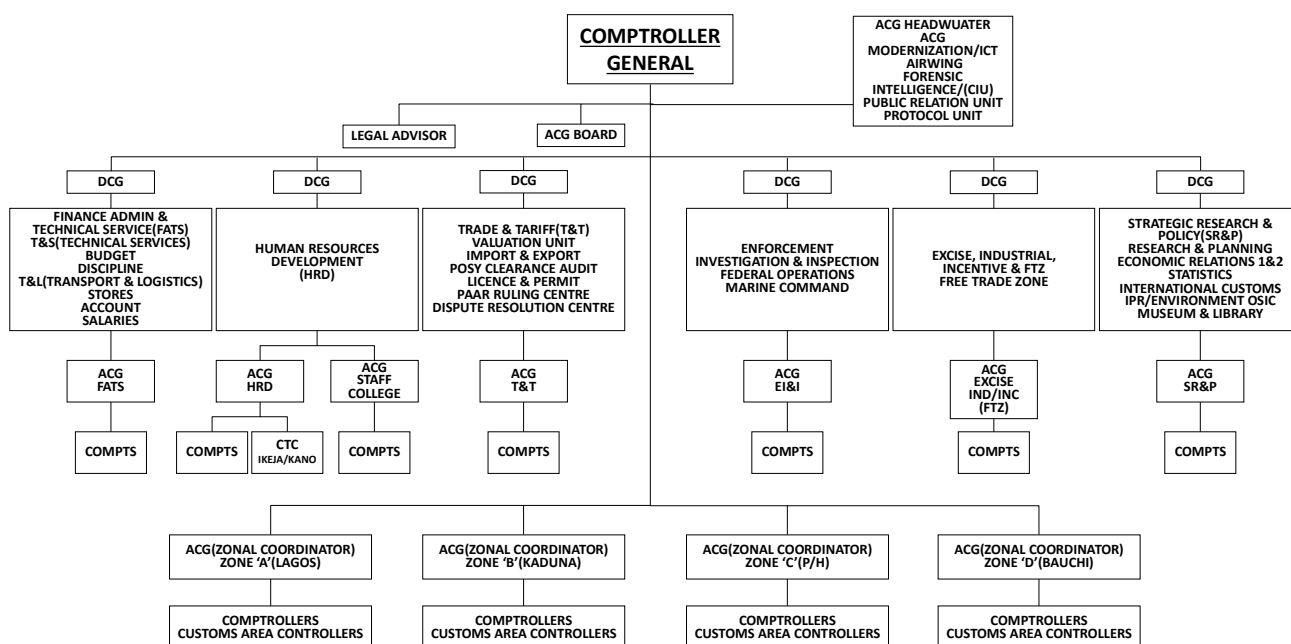
- A trained group of customs professionals
- A clear statement of mission and vision
- Application of a risk management system
- Digitization of declarations and payments
- Provision of information portals and a single window system
- Real-time accounting and proper tax collection
- Compliance with and strict enforcement of three essential customs procedures for revenue collection (HS classification, checks, and certificates of origin)
- Implementation of the Agreement on Customs Valuation (ACV)
- Collaboration with the World Customs Organization (WCO), businesses, and stakeholders
- Exchange of information and intelligence
- Sharing and utilization of international best practices

The future plans outlined are as follows:

- Effective risk management
- Full implementation of modern customs procedures
- Strengthening post-clearance management and re-engineering processes
- Effective utilization of pre-information systems through electronic data interchange (EDI) such as electronic manifests and alerts
- Elimination of outdated customs procedures that contradict advancements in transportation technology and business practices
- Seamless real-time transactions, paperless flows, and connectivity with other stakeholders
- Development of a single window for the harmonization and standardization of international trade information
- Raising awareness and enhancing the capacity of stakeholders
- More cost-effective and predictable border processing for goods and people
- Adoption of intelligent border solutions
- Utilization of biometric identification and improvement of baggage management at airports
- Refining strategic direction and capacity development to minimize operational gaps between services and stakeholders
- Developing the capacity to conduct compliance and audits among traders

- Requiring financial guarantees from all certified operators
- Building a service with integrity and a positive image

The senior management of the NCS comprises the Comptroller General and eight Deputy Comptroller Generals responsible for Financial Management and Technical Services, Human Resource Development, Trade and Customs, ICT and Modernisation, Training, Research and Policy, Tax Collection, FTZ (Free Trade Zone) and Industrial Incentives, and Inspection. These are supported by 18 Assistant Comptroller Generals heading respective departments. The organisational chart is as shown in Figure 3.7.1. Units handling special assignments comprise five: ICT and Modernisation, Legal Affairs, Public Relations, Intelligence, and Internal Audit. The total number of NCS staff is approximately 18,000.



Source: JICA Study Team

Figure 3.7.1 Organizational Chart of NCS

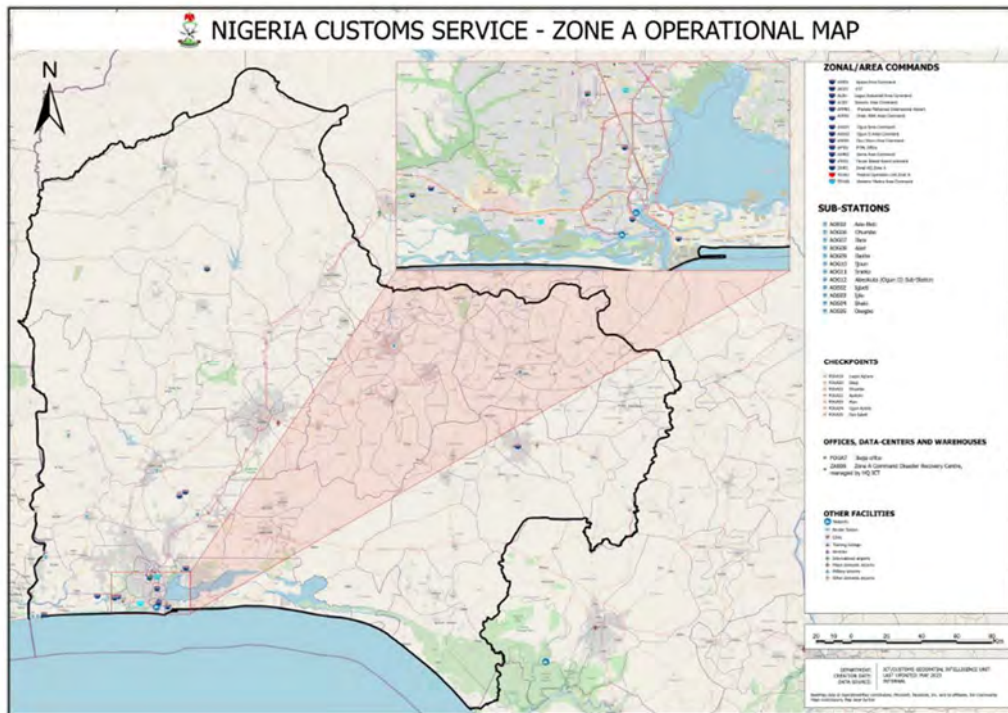
NCS Board of Directors was established on June 1, 1972, and the amendment of Decree No. 77 in 1993 stipulated the inclusion of a serving Deputy Comptroller General as a member of the Board. The Board is responsible for the appointment, promotion, and disciplinary actions of customs personnel, as well as the management of the NCS Act, and it serves as the policy-making body of the NCS. The composition of the Board is constantly changing, balancing bureaucratic and political representation. Currently, it consists of the Minister of Finance (Chair), the Comptroller General of the NCS (Vice Chair), representatives from the Ministries of Commerce, Transportation, Industry, Trade and Investment, Aviation, Foreign Affairs, the Commissioner of the Federal Inland Revenue Service, and two members from the private sector (with a term of four years), along with the Deputy Comptroller General, the Legal Advisor of the NCS, and the NCS Secretariat.

A Permanent Committee, known as the Appointments, Promotions, and Disciplinary Committee (AP & D), has been established, comprising representatives from the Federal Ministry of Commerce, the Federal Ministry of Finance, and the Federal Ministry of Transportation, as well as the Customs Trade Legal Advisor. The Finance and General Committee (FG & P) advises the Board on general policies, bidding, revenue collection, budgeting, regulations, working conditions, and matters related to officers' pensions and remuneration.

The Secretariat of the Board manages the daily operations of the Board, coordinates meetings of the Board and its committees, and monitors the implementation of the Board's decisions by the NCS management.

In addition to the headquarters organization, the country is divided into four zones, labeled A to D, with Lagos, Kaduna, Port Harcourt, and Bauchi serving as the bases for each zone. Customs clearance is possible at the locations where Area Commands have been established; however, currently, 80% of imported goods are concentrated at the Apapa and Tin Can ports in Lagos.

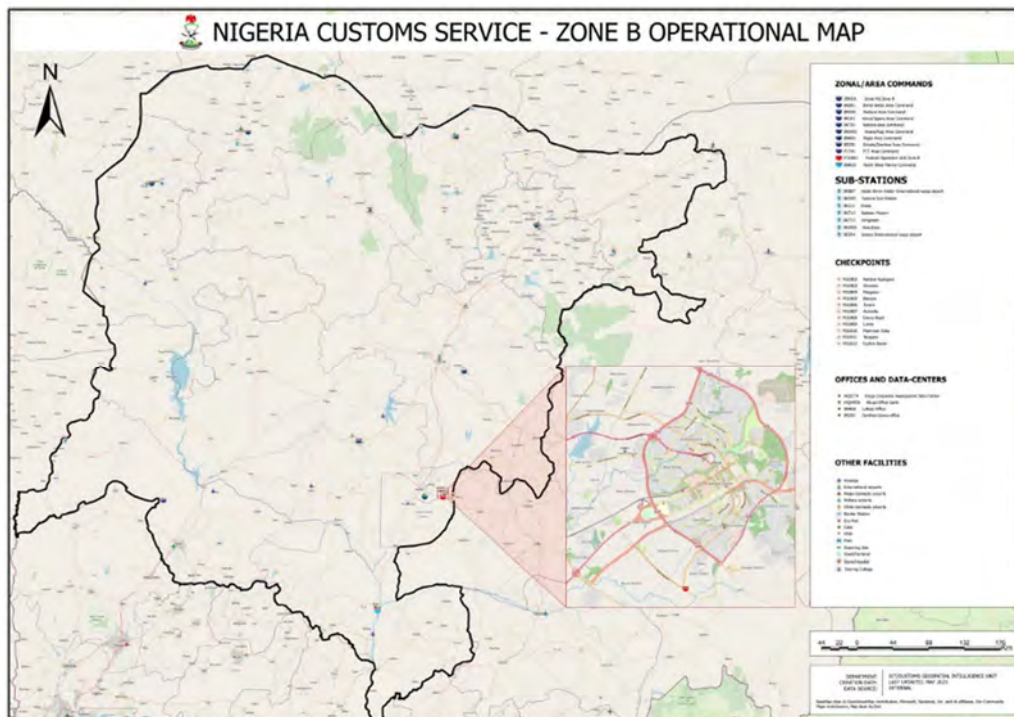
ZONE A(Lagos) , Area Commands: APAPA, MMIA, OGUN, OSUN/OYO, ONDO/ EKITI, TIN-CAN, LILYPOND, SEME, LAGOS IND. KLT, OGUN II, MMAC, LFTZ, PTML, WMC



Source:NCS

Figure 3.7.2 ZONE A (NCS)

ZONE B(Kaduna) Area Commands: KADUNA, KATSINA, KANO/ JIGAWA, SOKOTO/ZAMFARA, KOGI/ NIGER, FCT, KWARA, KEBBI, NWMC



Source:NCS

Figure 3.7.3 ZONE B (NCS)

(2) Overview of Amended NCS Act

NCS has been managed, operated, and enforced under the Customs and Excise Management Act (CEMA), which was enacted 63 years ago. Despite the expansion of government, population growth, and dynamic economic advancements and challenges, the NCS has operated without significant amendments. The recently amended NCS Act was promulgated through Government Notice No. 70 on June 9, 2023. This is a substantial piece of legislation consisting of 282 sections organized into 33 parts. The contents of each part are detailed in the table below.

Table 3.7.1 Overview of Amended NCS Act

Part1	Establishment, Scope, and Application of NCS
Part2	Functions and Authorities of NCS
Part3	Members of the Board of Directors, Functions, and Authorities
Part4	Establishment of Management, Staff, Functions, and Authorities of Management
Part5	Fundraising
Part6	Provision of Information for Customs Procedures and Customs Management
Part7	Customs Management
Part8	Import and Export of Goods and Transit
Part9	Determination of Customs Duties
Part10	Customs Debts and Payments
Part11	Customs Guarantees and Security
Part12	Customs Representatives and Authorized Economic Operators (AEO)
Part13	Status of Goods and Customs Procedures
Part14	Release of Goods
Part15	Warehousing
Part16	Economic Special Zones
Part17	Temporary Import Procedures
Part18	Drawback (Refund)
Part19	Export Procedures and Coastal Transportation of Goods
Part20	Cross-Border E-Commerce, Mail, and International Courier Services
Part21	Travelers and Duty-Free Shops
Part22	Protection of Intellectual Property Rights
Part23	Excise Tax
Part24	Distilled Spirits Manufacturing
Part25	Beer Manufacturing
Part26	Tobacco and Its Alternatives Manufacturing
Part27	Soft Drink Manufacturing
Part28	Manufacturing of Other Goods Subject to Excise Tax
Part29	General Provisions on Sales Licenses for Goods
Part30	General Operational Authorities and Offenses
Part31	Seizure and Forfeiture
Part32	Legal Procedures for Customs Offenses
Part33	Miscellaneous

Source: NCS

Under the amended NCS Act, the NCS gained the authority to collect customs duties and excise taxes and handle related accounting procedures. It levied an NCS charge equivalent to 4% of the import FOB price, earmarked for modernising and maintaining facilities and equipment, and staff salaries. However, due to opposition from importers and customs brokers, it was suspended in February 2025. It was reintroduced in August, but faced persistent industry resistance, leading the Minister of Finance to decide on its suspension again in September. Previously, the 7% port usage fee included a 1% import management fee (Comprehensive Import Supervision Scheme: CISS). The abolition of this 1% and the introduction of the new 4% fee increased total import costs to 10%. While the industry had anticipated the 7% fee being reduced to 4%, NCS explained that as port usage fees are not solely for NCS, abolishing the entire 7% was impossible. Consequently, only the 1% portion constituting NCS revenue was eliminated. Importers have expressed extremely strong opposition to this cost increase.

Additionally, the NCS will be able to receive budget allocations from the government and funding from domestic and international organizations (Part 5, Section 18). Furthermore, the Act facilitates trade, prevents smuggling activities, and enables border enforcement. The pricing basis for taxation will reference market prices (Sections 8 and 69), and the definition of origin will be clarified, with an emphasis on preferential trade agreements under ECOWAS and other bilateral agreements.

(3) Current Status of Customs-Related Systems

The ICT Modernization Unit is responsible for the development, implementation, and maintenance of information technology within the NCS, specifically managing the Nigeria Integrated Customs Information System (NICIS II). NICIS II is a computerized system designed to harmonize and standardize customs procedures in Nigeria, enhancing user convenience and leading to better management and increased productivity within the Nigerian Customs Service.

The goals of NICIS II include improving revenue collection, facilitating trade through expedited customs clearance, providing reliable and timely trade statistics for planning purposes, eliminating customs fraud, standardizing forms and procedures, particularly enhancing the management and monitoring of customs operations on the ground, and enabling the international exchange of customs data through the WCO/WTO.

Currently, NICIS II is operational at all major seaports and airports across the country. Its main functions include managing manifests, import/export permits, customs declarations, hold procedures, selectivity, accounting functions, management files, valuation, examination, customs duties and taxes, statistics, documentation, utilities, and configuration management modules.

While NICIS II takes into account all international standards, codes, and recommendations adopted by the International Organization for Standardization (ISO), the World Customs Organization (WCO), and the United Nations Conference on Trade and Development (UNCTAD) in the field of trade facilitation, it initially lacked interoperability with the SIGMAT system recommended by the Economic Community of

West African States (ECOWAS). However, compatibility with Benin has since been established, as discussed below.

ECOWAS has been working for 25 years to build an automated transport management system, and in March 2019, with the support of ASYCUDA experts, ECOWAS IT specialists successfully launched the SIGMAT system. The name SIGMAT is derived from the French "Système Interconnecté de Gestion des Marchandises en Transit," which translates to "Interconnected System for the Management of Goods in Transit" in English. The hub function of SIGMAT is located within the ECOWAS Bank for Investment and Development in Lomé.

Customs authorities in West African countries have long established cooperative relationships to enhance efficiency and reduce fraud. For instance, in the early 1990s, customs in Côte d'Ivoire would fax transit declarations to customs in Burkina Faso to confirm the arrival of goods at their destination. This cooperation led to the electronic and real-time exchange of transit data between the customs authorities of Burkina Faso and Côte d'Ivoire in February 2019, allowing both customs agencies to operate based on the same securely transmitted transit declaration. This development represents a significant simplification of transit procedures, facilitating cargo tracking, enhancing transparency, combating fraud, and reducing transit times.

In 2019, five countries—Burkina Faso, Benin, Côte d'Ivoire, Niger, and Togo—were the first to implement SIGMAT, with implementation between Mali and Senegal occurring in 2020. In September 2022, SIGMAT interconnectivity between the customs authorities of Benin and Togo was initiated, and Ghana also adopted SIGMAT in 2023. This interconnectivity has streamlined trade among the countries along the Abidjan-Lagos corridor, excluding Nigeria.

NCS requested ECOWAS to send experts to Lomé to train NCS personnel on SIGMAT, achieving interconnectivity with Benin. This allows for data exchange with ECOWAS countries utilizing SIGMAT, enabling data entered at the point of origin (e.g., Abidjan) to be accessible at the destination (e.g., Lagos), thereby expediting logistics that were previously expected to take over a week from Abidjan to Lagos. Additionally, information on cargo confirmed at the destination can also be viewed at the point of origin, facilitating tracking. According to ECOWAS, cargo valued at less than 2 million CFA francs can pass through borders without checks due to SIGMAT.

In the corridors, including the West African Growth Ring, the number of transit documents created by customs for the three corridors—Abidjan to Ouagadougou, Lomé to Ouagadougou, and Ouagadougou to Niamey—has increased from 20,828 in 2019 to 73,700 in 2022, with 87% of customs documents and goods deemed compliant upon arrival. This serves as evidence of how SIGMAT has simplified international logistics and revitalized regional trade.

In customs risk management, NISIC II automatically performs risk assessments. However, according to NCS, there is a desire to further enhance the performance of these assessments. Consequently, as part of customs modernisation, the integrated customs management system B'Odogwu was trialled in November 2024 at the PTML Customs Office in the Port of Lagos, which operates West Africa's largest roll-on/roll-

off terminal. NCS anticipates that B'Odogwu will achieve complete paperless operations and, through the use of artificial intelligence (AI) and machine learning (ML) technologies, will lead to improvements in customs risk management.

During its three-month trial period, PTML Customs achieved customs clearance for 16,000 shipments worth 120 billion naira. This surpasses the customs' 2023 performance of 100 billion naira. Building on this success, the NCS decided in March 2025 to migrate from NICIS II to B'Odogwu, integrating it with 20 domestic financial institutions and the National Single Window. Concurrently, comprehensive training for all stakeholders is being enhanced to ensure proper utilisation of this new system. B'Odogwu is a name combining “B” for border and “Odogwu”, signifying strength and leadership. It is a system developed domestically, building upon the operational experience and challenges encountered with NICIS II.

(4) Current Status of Customs-Related Systems(e-Customs)

NCS has launched the e-Customs project to promote digitization and paperlessness while addressing issues such as revenue leakage, increased revenue, inefficiencies, and inadequate security and oversight procedures. NICIS II is also expected to be integrated into the e-Customs system. The functionalities of the e-Customs project include e-clearance, e-port systems, Risk Management Centers (RCC), Logistics Management Systems (LMS), Electronic Cargo Tracking Systems (ECTS), Intelligent Gates (i-Gate), and Mobile Enforcement (ME).

The project will be implemented by e-Customs Project Limited, a special purpose vehicle (SPV) established as a limited liability company in Nigeria, under a 20-year concession. Current participating organizations include Africa Finance Corporation and First Bank of Nigeria, Bharat Electronics Ltd (an Indian military-owned company), Larsen & Toubro (an Indian firm), Paramount Group (a South African company), and Nigerian companies Bionica Technologies, Bergmans Security Consultant & Supplies, and Huawei Technologies Nigeria.

The e-Customs Project will cover the NCS's operational bases (headquarters, zonal headquarters, area commands, and borders) and facilitate data exchange with government agencies involved in the logistics chain, such as the Standards Organisation of Nigeria (SON), the Central Bank of Nigeria (CBN), the National Agency for Food and Drug Administration and Control (NAFDAC), the Federal Ministry of Finance (FMF), and the Federal Inland Revenue Service (FIRS), among others. It will also include a central data center equipped with disaster recovery capabilities.

Plans to progressively introduce 67 high-performance X-ray scanners at airports, seaports and land borders to enhance NCS customs clearance efficiency are also included. With the installation of two Nuctech FS6000 units at Apapa, the scanning capacity per unit at Apapa Customs has reached a maximum of 200 40-foot containers, equivalent to that at Lekki Port. Mobile scanners have been deployed at Tin Can, while cargo scanners have been installed at Abuja Airport, Lagos Airport, Kano, and Port Harcourt. Regarding maritime traffic, plans are in place to construct maritime base stations in the following regions.

- a. Lagos Entrance (Lagos State).

- b. Excravos Entrance (Delta State).
- c. Bonny Entrance (River State).
- d. Brass Entrance (Bayelsa State).
- e. Calabar Entrance (Cross River State).
- f. Yauri (Kebbi State).
- g. Makurdi (Benue State).
- h. Lokoja (Kogi State).

As part of the surveillance capabilities, the plan includes radar monitoring (control), visual monitoring, and long-range audio-visual cameras, along with the following equipment:

- a. Offshore patrol vessels with helipads
- b. High-speed patrol boats
- c. Interceptor boats
- d. Gunboats
- e. Security flat-bottom boats
- f. Floating docks
- g. Radar surveillance systems
- h. Aerial surveillance helicopters/patrol aircraft
- i. Armored personnel carriers
- j. Unmanned aerial vehicles (drones)

Through the e-Customs project, plans are in place to establish spare parts warehouses and maintenance facilities in Lagos, Port Harcourt, Makurdi, and Kebbi.

As part of capacity development, the project includes training programs related to all forms of maritime operations, including support and maintenance activities, targeting 520 NCS personnel. Additionally, there will be a master trainer program for 20 individuals and the use of training simulators.

Given that e-Customs is a massive project encompassing all aspects of customs duties, monitoring, enforcement, and trade facilitation, it is essential to have a system in place for tracking progress and implementation status.

(5) Authorized Economic Operator(AEO) Program

Authorized Economic Operator (AEO) program is designed to balance security and facilitation in international logistics by providing customs procedure simplifications and relaxations to operators that have established security management and compliance systems for cargo. Following the terrorist attacks on September 11, 2001, in the United States, ensuring security while facilitating international logistics has become essential. In response, the World Customs Organization (WCO) adopted an international framework in 2005 that includes the concept of the AEO program, which allows customs authorities to certify operators

with established security management and compliance systems, granting them benefits such as simplified customs procedures. This program has been implemented in over 90 countries and regions worldwide.

In Nigeria, a system similar to AEO, known as Fast Track 2.0 (FT2.0), has been introduced since 2013 with the cooperation of the World Bank. FT2.0's defining features are the use of risk assessment to achieve transparent and auditable trade facilitation, the reduction of physical inspections, and enhanced compliance aimed at improving trade facilitation and ease of doing business. Under AEO, international trade facilitation is achieved through bilateral mutual recognition agreements. The scope of FT2.0 initially covered existing manufacturers, importers of homogeneous goods, and importers of spare parts. However, AEO has been extended to all importers, provided they meet the compliance and eligibility criteria stipulated by the scheme.

There are two types of AEO: AEO-Simplified, which allows use of the Blue Channel, and for which the Pre-Arrival Assessment Report (PAAR) required for customs clearance is issued within 36 hours. On the other hand, businesses that do not meet the former assessment criteria become AEO-Security registrants and use the Green Channel. At the time of AEO introduction, six companies in the manufacturing, telecommunications equipment, and logistics sectors were registered, and NCS is calling on a wide range of companies to participate in AEO through aao.nigeriatradehub.gov.ng. The operation of the AEO system is expected to enable rapid customs clearance through the Blue or Green Channel, and trade by AEO-certified qualified operators or non-risk traders will lead to increased customs revenue through increased trade volume. In the United Arab Emirates, Kenya and Uganda, it has been confirmed that increased revenue from higher trade volumes and the freeing up of customs resources enabled customs authorities to focus on higher-value activities, reducing administrative costs. Furthermore, it reduced the time and costs borne by the private sector for exports and imports, ultimately leading to increased exports and imports.

In addition to the AEO program, the efficiency of Post-Clearance Audit (PCA) as an effective customs risk management tool is also supported by the aforementioned World Bank project. Specifically, it aims to improve the criteria for selecting declarations subject to PCA, maximizing the detection rate of fraud during customs declarations or post-clearance audits, thereby enhancing administrative efficiency and improving collected revenue. The World Bank states that strengthening the PCA process could increase collected customs revenue by 1-5%, as confirmed by similar programs in Jordan, Australia, and Japan. In Canada, PCA has added \$128 million in customs revenue. In the long term, a reduction in false declarations is expected to lead to increased revenue, along with improvements in customs governance.

(6) Implementation of Time Release Study (TRS)

Customs procedures for cargo are a crucial activity in promoting international trade. The Time Release Study (TRS) is a methodology recommended globally by the World Customs Organization (WCO) to measure the performance of customs authorities in a standardized manner. Performance is assessed based on the time taken by customs to clear cargo, measuring the duration of each step taken by customs after the cargo's arrival.

The last TRS was conducted in 2018, during which over 30 personnel from the NCS and relevant stakeholders benefited from a five-day training workshop on TRS organized by the WCO. This workshop was part of the West Africa Customs Modernization (WACAM) project, funded by the Swedish government, through which the NCS developed a series of customs procedures for cargo arriving or departing from Apapa Port, following the WCO methodology outlined in the TRS guidelines. However, the results of that study have not been published.

The current TRS is considered an important study not only for the NCS but also for the Association of Nigerian Licensed Customs Agents (ANLCA), as it aims to position Nigeria as a hub for the West and Central Africa region. The TRS is being led by the Tin Can Customs Controller and was scheduled for completion in September 2024, but the results have not yet been announced.

(7) Implementation of the National Single Window (NSW)

Nigerian Customs Service (NCS) conducted a feasibility study on the Single Window in 2012 and began the development of a system that encompasses all procedures related to customs as well as the global trade supply chain. As the first step towards establishing a Single Window, the NCS introduced paperless customs procedures and launched an online portal, www.nigeriatraderhub.gov.ng, in 2013. The main features of the portal include a classification tool, contact directory, document library, currency converter, customs procedure code search, application form simulation tool, marketplace, and trade news.

Key ministries involved in the National Single Window initiative, alongside the NCS, include the National Agency for Food and Drug Administration and Control (NAFDAC), the Environmental Standards and Regulations Enforcement Agency (ESREA), the Standards Organisation of Nigeria (SON), the Agricultural Quarantine Service, and terminal operators. This system allows traders to obtain all relevant permits and certificates required for imports with a single data submission.

Following the implementation of paperless customs, the next steps in the Single Window initiative include the integration of all logistics-related procedures and the development of a Single Window for cross-border transactions.

With the launch of the National Single Window in April 2024, a steering committee and secretariat were established, chaired by the Federal Inland Revenue Service (FIRS), and including representatives from the Government Investment Agency, Central Bank, NAFDAC, SON, the Maritime Safety Agency, the Maritime Police, and the Presidential Business Environment Council. The NSW portal serves as a single platform that allows trade stakeholders, both domestic and international, to access all resources and standardized services provided by Nigerian government agencies.

- Access trade information online, such as customs duty searches, Port Community System, and regulatory guidelines.
- Download trade-related documents, submit them online, and track the status of trade transactions online.

- Online payment functionality through electronic payment methods using credit cards (this feature is planned for future implementation).
- Online access to help desk services, troubleshooting, and other support services for registered users.
- Provision of key information from various government agencies involved in trade, along with quick access to each agency's website.
-

It appears that there are overlapping functionalities between the NSW and e-Customs systems. However, the Secretary of the NSW and the Comptroller General of the NCS are in discussions aimed at improving these systems. According to the NCS, the goal is to complete cargo import procedures within 24 hours.

3.7.2 International Cooperation Related to NCS

NCS has concluded customs mutual assistance agreements with the United States, India, South Africa, and Saudi Arabia. However, as not all partner countries are publicly disclosed, the full scope of nations with which such agreements exist remains unclear. These customs mutual assistance agreements aim not only to facilitate customs clearance but also to prevent the smuggling of weapons and drugs, as well as money laundering. The agreements also encompass human resource development through the training of trainers.

In relation to the WCO, the Comptroller-General of the NCS will serve as the WCO President for two years from July 2025. Furthermore, in 2012, a training centre (WCO Regional Training Centre) was established in Abuja to serve as a hub for human resource development in the West African region, conducting trainer training programmes including for neighbouring countries such as Ghana. WCO training involves joint projects with member countries. For example, Japan (JICA) supports customs authorities' initiatives in trade facilitation, revenue collection, social protection, and customs modernisation through the 'WCO/JICA Joint Project'. This covers 16 countries in East, Southern, and West Africa, including Nigeria. The joint project aims to build sustainable capacity in key customs areas over a two- to three-year training period. This is achieved through collaboration with customs authorities, developing highly experienced instructors (master trainers), training materials, and training programmes/course curricula. South Korea conducted a workshop on the AEO system in 2018, while the EU implemented capacity development on rules of origin and HS classification in 2024. South Africa, with UK funding support, conducted peer exchanges on post-audit activities in Pretoria in 2024 as part of its AEO system development assistance. This initiative aimed to strengthen Nigeria's risk management strategy, with a view to supporting the African Continental Free Trade Agreement (AfCFTA). Nigeria, like South Africa, is a regional trade hub.

The World Bank approved the Accelerating Resource Mobilisation Reforms (PforR) programme (Project ID: P177308, total amount US\$1.8535 billion, of which the World Bank share is US\$750 million) on 13 June 2024. This programme aims to strengthen the Nigerian government's fiscal capacity and comprises cooperation in the following three Result Areas.

Result Area 1 seeks to increase government revenue through tax system improvements, specifically focusing on the following three areas:

① Strengthening VAT (Value Added Tax) collection

- Improving VAT regulations: Making VAT regulations clearer and more efficient to facilitate taxpayer compliance.
- Public awareness campaigns for taxpayers: Thoroughly disseminating information on the importance of VAT and correct declaration methods through seminars and information provision for taxpayers.
- Establishment of a Helpdesk: A dedicated contact point will be set up to handle taxpayer enquiries, aiming to increase the number of businesses registering for VAT. This will incorporate previously unregistered businesses into the VAT system, thereby increasing the amount collected.

② Streamlining Tax Expenditures and Reducing Revenue Losses

- Reviewing Tax Expenditures: Re-evaluate the effectiveness of tax credits, tax breaks, and other measures established to support specific industries or activities. Consider abolishing or scaling back those that are inefficient or failing to achieve their objectives.
- Reducing Revenue Losses: Recover revenue previously foregone by the government through reviewing preferential measures, thereby strengthening the fiscal base.

③ Increasing Excise Duties on Products Affecting Health and the Environment

- Products Affecting Health: Raise duty rates on products detrimental to health, such as tobacco and alcoholic beverages, to curb consumption.
- Products Affecting the Environment: Increase duty rates on products with high environmental impact to encourage a shift towards environmentally friendly alternatives.

Result Area 2 aims to enhance the functions of tax offices and customs, increase tax revenue, and facilitate trade. Specifically, it focuses on the following two areas:

① Strengthening Tax Offices

- Reducing Tax Compliance Costs through ICT System Improvements: By upgrading systems to enable e-filing and e-payment, taxpayers will be spared the need to visit tax offices or prepare paperwork. This will lower the costs of filing and paying Value Added Tax (VAT) and Corporation Tax (CIT), making tax payment easier and improving compliance.
- Enhancing declaration accuracy through electronic invoicing: Mandating electronic invoicing for VAT-registered businesses ensures transaction data is electronically recorded and managed. This improves the accuracy of VAT declarations and reduces fraudulent filings.
- Streamlining tax audits through data integration and risk-based auditing: Establishing a system enabling automatic data exchange between the Federal Inland Revenue Service (FIRS) and the Nigerian Customs Service (NCS) facilitates the comparison and analysis of data across different agencies. This allows for the efficient identification of transactions suspected of fraud. Furthermore, implementing a risk-based audit system enables prioritising investigations of high-risk taxpayers, thereby efficiently increasing tax revenue.

② Strengthening customs administration

- Facilitating the flow of trade in compliance with regulations: For businesses that comply with laws and regulations, customs clearance procedures will be simplified, and the volume of cargo passing through the Green Channel (a route enabling rapid customs clearance for cargo deemed to have accurate declarations and low risk) will be increased, thereby promoting smooth trade.
- Implementation of more effective post-clearance audits: Strengthening the system for detailed auditing of documents and transaction details after customs clearance of goods will enable the detection of fraudulent declarations, secure customs revenue, and deter fraud.

Result Area 3 aims to make revenues from Nigeria's oil and gas sector, a critically important source of income for the country, more transparent and efficient. Specifically, it focuses on the following two areas:

① Enhancing the transparency of the financial and operational management of NNPC (Nigerian National Petroleum Company)

- Conducting a forensic audit to thoroughly investigate past financial and operational activities of NNPC for any irregularities or deficiencies.
- Enhancing the content of reports submitted to the Federal Allocation Committee (FAAC) and regularly disclosing more relevant information (such as oil production volumes, costs, revenues, and dividends) to increase transparency in NNPC's operations, prevent fraud and waste, and enhance public trust.

② Increasing the Net Oil and Gas Revenue Transfers to the Federal Government

- Through the above transparency and efficiency initiatives, aim to increase the net oil and gas revenue transferred by NNPC to the Federal Government.
- Maximise the oil and gas revenue ultimately flowing into the national treasury through efficient cost management, elimination of fraud, and transparent revenue reporting.

Within the three areas outlined above, the activities relevant to NCS operations are the following cooperation initiatives implemented under Result Area 2:

- The item 'Increase in the flow of trade in compliance with regulations' encourages traders to comply with laws and regulations by establishing compliance programmes. By giving preferential treatment to traders who comply with laws and regulations, trade can proceed more smoothly, thereby promoting tax revenue and economic growth. Under the Authorised Economic Operator (AEO) system, customs clearance procedures are expedited for reliable traders (those recognised as low risk). Goods from reliable traders whose procedures have been simplified can pass through the Green Channel, where normal checks are waived or simplified. This significantly reduces the time and cost of customs clearance. Furthermore, customs officials no longer need to spend time dealing with compliant traders, enabling them to concentrate their resources on higher-risk traders and suspected cases of fraud, which is expected to reduce administrative costs.
- Under the heading 'Increasing customs revenue through improved risk management and enhanced post-clearance audits (PCA)', customs authorities will improve their risk management systems and selection criteria for selecting declarations for inspection, thereby increasing the detection rate of

fraudulent declarations and illegal activities discovered through post-clearance audits. Increased compliance among traders will facilitate more efficient Post-Clearance Audits (PCA). Improving the NCS risk management system and the criteria for selecting declarations for inspection will maximise the detection rate of irregularities per customs declaration or post-clearance audit, thereby enhancing administrative efficiency and increasing tax revenue collection.

China plays a significant role in bilateral cooperation. The Chinese Customs and NCS conduct regular personnel exchanges. In 2023, cooperation with NCS included capacity development for 89 customs officers in trade facilitation, anti-smuggling measures, food hygiene, and port operations. In 2024, capacity development for 8,000 personnel was achieved using 360 types of online training. NCS and China's Shanghai Customs College continue discussions on cooperation towards customs modernisation.

3.8 Challenges Analysis by Logistics Infrastructure

3.8.1 Road Sector

Currently, the federal government is actively developing or planning logistics corridors that connect major cities. However, the overall condition of the roads is poor, leading to issues such as road flooding and delays in bridge maintenance, which negatively impact drivability.

While many future developments related to logistics corridors are planned, including large-scale projects and Public-Private Partnership (PPP) initiatives mentioned in section 3.1.1, the feasibility of these projects remains uncertain, necessitating efforts to promote their implementation.

Other factors hindering smooth logistics include deteriorating security in road transport (notably in Niger State and Kogi State), the presence of illegal checkpoints, and traffic congestion within Lagos city. Addressing these issues is an urgent priority.

In light of these challenges, there is a need for the improvement and enhancement of logistics trunk roads, as well as measures to alleviate traffic congestion in Lagos city, to ensure stable and rapid logistics operations and to accommodate the increasing volume of logistics activities.

3.8.2 Port Sector

The main issues related to ports are the concentration of cargo at ports and the resulting traffic congestion on surrounding roads. The following are some of the solutions to these issues

(1) Variance of truck arrival times

The electronic truck call system, which was launched in February 2021, has not necessarily been fully implemented due to the existence of several exceptions. The NPA and TTP are working to improve its operation, and continued improvement is essential.

It has been reported that tank trucks are not covered by the truck call system because they are outside the jurisdiction of the NPA. In that case, it would be important to ensure that tank trucks transporting cargo from oil jetties and tank farms established by private companies, etc., participate in the truck call system, just as they do for terminal operators under concession agreements with the NPA.

(2) Increasing container transport by barge and rail

The KLT which is responsible for one of the main barge transport operations had a policy of entrusting its operation to a private operator under a concession agreement through a PPP scheme, however, as of May 2024 there was no information that the concession agreement had been concluded, and the momentum for expanding barge transport is small.

An article in a logistics magazine also stated that the cost of transporting containers to and from Apapa and Tin Can Island is higher for barge transport than by land, so in this respect too barge transport is not an advantageous option for shippers.

Currently, standard gauge rails are laid on the north side of the Apapa container terminal (operated by APM Terminals Apapa). The rails run along a route that passes through the grounds of Lilypond Container

Terminal, which is a waiting area for trucks heading to the Apapa and Tin Can Island container terminals, but no containers are loaded or unloaded here; rail vehicles only pass through.

There are reports that rail transport costs are higher than truck transport costs (due to the cost of loading and unloading cargo onto freight cars at terminals), and ensuring that rail transport is cost-competitive with truck transport is a challenge for continued commercial operation.

(3) Increase in containers passing through Lekki and other ports

Use of Lekki Port is currently limited compared to Apapa and Tin Can Island ports, as it has fewer shipping routes and less frequent services, and is also far from downtown Lagos.

A short-term challenge for the public sector to tackle is to take sufficient measures to alleviate traffic congestion so that road congestion caused by increased use of Lekki Port does not hinder use of the port.

A medium- to long-term challenge is for the public sector to undertake promotional measures (for example, improving roads and other infrastructure within the free zone) so that the free zone around Lekki Port can be used as a base for investment in the renewal of industrial facilities and other equipment concentrated in Lagos' congested urban areas. The partial relocation of industrial facilities and other equipment from within Lagos city to the area around Lekki Port would have a positive effect on both the overcrowding problem (congestion, etc.) within Lagos City and the enhanced functionality of Lekki Port due to its proximity to cargo origins and destinations in the hinterland.

The Badagry Deep Seaport, which is currently in the preparatory stages of construction, is thought to have an advantage over Lekki Port in that its distance to Lagos city center is slightly shorter. (The distance to Apapa and Tincan Island from Lekki Port is about 70 km, while that to Badagry Deep Seaport is about 55 km. The distance from Badagry Deep Seaport to the industrial cluster area west of Lagos city center (along the Agabara-Atan Road) is about 30 km, and it is thought that trucks could make two round trips per day.)

(4) Improving preparation level for container handling

In container terminal yards, containers are stored stacked on top of each other, so that containers on the lower levels can only be moved after the containers on the upper levels have been moved to another location. This makes it important to load containers that are due for delivery earlier on the upper levels. For example, if the containers that a truck will pick up the next day are determined the day before, then those containers can be moved the day before so that they are as close to the top as possible, thereby shortening delivery times.

One challenge for the public sector could be to work with truck call system operators to make it easier to predict the expected arrival times of trucks at terminals (for example, by reducing the expected arrival time frame from one day to half a day and providing this information to terminal operators).

(5) Expansion of other truck services

Currently, some trucks waiting on the street are engaged in activities that should ideally occur off the road, such as waiting for fuel payments or undergoing vehicle repairs. The truck calling system includes the

registration of auxiliary service providers at parking lots. According to the FAQs on the TTP website, the following services are currently eligible for registration:

- Restaurants and catering
- Truck services and repairs
- Haircuts
- Waste management
- Fuel supply (diesel/CNG)
- Truck washing
- Fuel payment agency service

Additionally, considering that truck transport operators are required to meet NPA/TTP safety standards when registering their trucks in the truck calling system, it would be advisable to incorporate the implementation of pre-operation inspections and regular maintenance checks aimed at reducing truck breakdowns into these NPA/TTP safety standards.

3.8.3 Aviation Sector

The Federal Airports Authority of Nigeria (FAAN) has established the Aviacargo Roadmap Committee to enhance airport cargo transport capacity and is working on assessing facility conditions and identifying challenges. According to the committee, Nigeria currently ranks fifth in cargo handling volume in Africa, following Kenya, Egypt, South Africa, and Ethiopia. The goal is to elevate this ranking to first (or at least second) by 2027, targeting a year-on-year increase of 25%. Additionally, the committee plans to develop guidelines to promote public-private partnerships in the latest cargo infrastructure and facility development, as well as to include incentive programs for local airlines.

The third interim report submitted by the committee in 2023 highlighted the following key issues, primarily focusing on the improvement of cargo packaging facilities, the development of export areas, the establishment of a 24-hour operational system, and the organization of parked vehicles:

- The export areas of both major domestic cargo handling companies, NAHCO (Nigerian Aviation Handling Company) and SAHCO (Skyway Aviation Handling Company), are disorganized and chaotic.
- The packaging of export goods is inadequate and of low quality.
- Terminal operating hours are limited; a 24-hour operation system is preferable to facilitate daytime passenger transport and nighttime cargo transport.
- There is a lack of facilities for exporters to package goods at the airport if they cannot do so at their own facilities, especially for items requiring inspection and certification.
- Vehicles are indiscriminately parked throughout the terminal and the airport.

The NIIMP has identified the following infrastructural and institutional challenges:

- There is a need for modernization and improvement of infrastructure and equipment, including terminal buildings, control towers, conveyor belts, instrument landing systems, communication equipment, runway lighting, and fire trucks.
- Training and capacity building related to equipment handling and maintenance are necessary.
- While the Nigerian government provides multiple frequencies accessible to foreign airlines, facilitating their entry, local airlines and the aviation industry are not benefiting from this.
- Difficulties in accessing foreign exchange for operational entities.
- Rising prices and scarcity of Jet A1 (aviation fuel).
- Import taxes on aircraft engines and spare parts.

Given these considerations, it is essential to develop facilities necessary for cargo transport, such as packaging facilities and storage warehouses, as well as to improve equipment like lighting for nighttime takeoffs and landings. Additionally, human resource development for operational maintenance and management is also a critical issue.

3.8.4 Railway Sector

In the past, Nigeria utilized a narrow-gauge railway network for freight transport across the country. However, due to ongoing vandalism of infrastructure facilities, the existing infrastructure stock is not being effectively utilized. The development of a standard gauge railway network is still in progress, with only a very limited number of sections available for use. There is a mix of narrow-gauge and standard-gauge railways, leading to unclear responsibilities between the two systems and raising efficiency concerns regarding future equipment and vehicle upgrades.

The multimodalization of freight transport is a national priority promoted by initiatives such as the NIIMP. However, as of now, accessibility between ports and railways has not been established, and the ports that can realistically accommodate rail access are extremely limited.

Additionally, security issues along railway lines have led to acts of destruction against railway facilities, compromising the safety of freight train operations. This has significantly hindered the stable operation of freight trains. As a result, while some inland dry ports are connected by rail, there are instances where freight trains are not operating at all.

3.8.5 Custom Sector

Nigeria approved the World Trade Organization's Trade Facilitation Agreement (TFA) in January 2017, and compliance with this agreement is expected. Key items that are generally considered important in African countries include the Single Window (Article 10.4), Customs (Article 7), Customs Risk Management (Article 7.4), Trade Facilitation Measures (Article 7.6), Authorized Economic Operator (AEO) (Article 7.7), Inspection Procedures (Article 5.3), Cooperation between Customs Authorities (Article 8), and Advance Rulings (Article 3). Nigeria is currently addressing the implementation of the Single Window, AEO, Trade Facilitation Measures, and the interconnectivity of Customs systems. In particular, while there is some

overlap between e-Customs and the National Single Window (NSW), both are expected to significantly contribute to the digitization of customs processes, potentially resolving the issue of unpredictable clearance times for imported goods, which has been highlighted by many Japanese companies.

Currently, at the Apapa Port, where 70% of imports and 90% of exports are concentrated, the use of FT2.0 allows for the fastest import clearance in one week, while non-FT2.0 processes can take up to 30 days. According to statistics from the Nigeria Shipping Council, the average dwell time for container cargo in 2023 was 20 days at Apapa and 18 days at Tin Can. The issues related to the concentration of cargo at Apapa and potential solutions are discussed in section 3.6.2, but urgent measures are needed to address the volume of imports exceeding the processing capacity of Apapa Customs. Regarding Customs risk management, the WTO Director-General has noted that 90% of cargo at Nigeria Customs undergoes physical inspection, and she has requested improvements in risk management and a reduction in inspections during an online meeting with the Comptroller-General of the Nigeria Customs Service (NCS) on November 14, 2024.

On the other hand, the Lekki Deep Sea Port has two fixed scanners with a processing capacity of 200 forty-foot containers per hour. However, approximately 70% of containers are cleared at Apapa, Tin Can, and PTML, leading to an imbalance between Lekki's excess capacity and congestion at Apapa in the Lagos metropolitan area. Lekki is developed as a Free Trade Zone (FTZ) and serves not only as a transshipment point for exports but also as a hub for imported goods destined for domestic locations, with some cargo cleared at Apapa or Tin Can being offloaded at Lekki.

Additionally, dry ports in Kaduna, Dala, and Funtua are operational as domestic hubs, but they reportedly take an average of three days for customs clearance. Therefore, it is necessary to consider the efficiency of customs procedures for cargo passing through these dry ports.

The Nigerian government aims to deliver imported cargo within 24 hours, seeking to gain an advantage over neighbouring countries where delivery takes 48 to 72 hours. While the implementation of the TRS in 2024 was expected to enable objective analysis, results have yet to be published. A major challenge identified during the field survey was the absolute shortage of scanners. The scanners owned and operated by the NCS were mobile units located at the top three import ports by value: Apapa, Tin Can, and Port Harcourt. Consequently, the hourly processing capacity was limited to just 20 40-foot containers. The e-Customs project will see two new large X-ray scanners installed at Apapa, improving processing capacity to the same level as Lekki Port. However, significantly more scanners are required to achieve rapid customs clearance.

Customs risk management is automatically determined by NICIS II, which categorizes cargo into green, yellow, or red based on AEO registration status and the cargo's port of departure. Cargo from AEO-registered companies that submit accurate applications and pay duties is immediately released at Lekki, but various customs offices have pointed out discrepancies between the declared and actual contents of shipments. This has led to complicated customs inspections, and at congested customs offices like Apapa, Japanese companies have reported rough handling by inspectors during physical checks (e.g., haphazardly opening packages and removing contents).

In addition to scanner shortages, the poor conditions of border facilities have been noted. For example, at the Seme border with Benin, an EU inspection team in May 2022 pointed out the lack of water supply facilities, power outages without UPS systems, absence of nighttime lighting, malfunctioning cargo and personnel scanners, inadequate height for cargo scanners, broken weighbridges, and non-operational CCTV systems. During the January 2024 inspection, it was observed that these issues had not changed. Many trucks are waiting due to customs clearance delays, and checking paper certificates of origin takes time. As a result, crossing the border can take up to 24 hours, and officials are hoping for a pre-clearance system through digitization. Since scanners are not operational, all inspections are conducted at privately contracted inspection yards. During this process, cargo is transferred to Nigerian trucks, but due to non-functional forklifts, all transfers are done manually. There are no refrigerated containers, so for frozen goods, generators are used to supply power to refrigerated vehicles. Additionally, severe coastal erosion poses a risk of encroaching on staff housing areas. Locals can freely cross the coast, and it seems possible to smuggle or blend in with locals to cross the border, making checkpoints between Seme and Lagos necessary for maintaining security and preventing illegal immigration and trade.

Borders often lack adequate power and water supply facilities, and government infrastructure efforts tend to prioritize densely populated urban areas. However, addressing power supply issues should be a priority in the infrastructure development of borders, which is crucial for facilitating trade. According to the power transmission expansion plan developed by the Nigerian Electricity Transmission Company, a substation is planned to be built to address power shortages in the Badagry area, connecting to the power grid via two 132kV transmission lines, with yen loans also being allocated to support this expansion plan. However, it seems unlikely that power will be supplied to the Seme border, which is about 20 km away from Badagry. In recent years, mini-grid projects using solar power and batteries have been implemented in Nigeria, Kenya, Tanzania, and Sierra Leone. In Nigeria, the Rural Electrification Agency is working to promote mini-grids with the support of the World Bank and the African Development Bank. Utilizing such mini-grids to supply power for the systematization of the Seme border facilities and equipment necessary for trade facilitation is considered a practical approach.

Several Japanese companies have pointed out issues related to customs classification and HS codes. During hearings with the NCS, it was noted that many applicants intentionally submit codes with lower tax rates, and customs officials expect sincere responses from applicants. Companies have indicated that while there is a system for appealing HS code determinations, the high volume of appeals makes resolution difficult. During the appeal process, a deposit must be paid, so there is a desire for rapid processing of appeals by third-party organizations. This issue is also observed in other countries, where problems arise not only with HS codes but also with origin determinations and taxation of non-taxable items. Attention is focused on whether the ongoing digitization can resolve these issues, and it is also necessary to facilitate communication between customs and private companies, providing opportunities for the industry as a whole to express its opinions rather than relying on individual responses.

Another challenge raised by Japanese companies is that staff from the Standards Organisation of Nigeria (SON) have demanded analysis results for all materials. While it is understandable that they are concerned about environmentally hazardous substances, it has been reported that they have targeted companies even when documents do not indicate the presence of asbestos. It is unclear whether this is intentional or due to a lack of knowledge. The resolution of such issues will be crucial for the Nigerian government's goals of improving customs efficiency and transparency.

Additionally, constraints on re-export have been pointed out, with Japanese companies indicating that they cannot sell to neighboring countries and cannot return defective products or materials for inspection to their home countries.

Chapter 4. Analysis of Lessons Learned from Major Corridor Development Projects

4.1 Overview of Challenges in Corridor Development in Africa and Asia

The development of international corridors in Asia and Africa is not merely about constructing roads and ports to link countries. Its fundamental significance lies in providing landlocked nations with access to the sea, streamlining logistics across the entire region, thereby invigorating trade and promoting economic growth. Furthermore, by attracting investment to the regions along the corridor and fostering industry, it aims to transform mere transport routes into “economic corridors”, pursuing regional integration and poverty reduction.

However, many corridor development projects face serious challenges. The main issues include the following:

- Funding difficulties: Particularly in countries like Laos, where the national finances are strained by preceding mega-projects, making new infrastructure investment challenging.
- Political and security instability: Security threats unforeseen during planning, such as the spread of terrorism in West Africa or the civil war in Myanmar, pose a fundamental risk of paralysing the entire corridor's functionality.
- Lack of governance: Corruption and opaque policy management are major causes of private investor withdrawal, as seen in the Nacala Corridor, sapping development momentum.
- Disconnect between hardware and software: Even when roads and ports (hardware) are developed, cumbersome border procedures and regulations (software) remain, preventing the full realisation of infrastructure potential.
- Uneven Impacts: Development benefits tend to concentrate in urban and coastal areas, failing to sufficiently reach landlocked nations and rural regions. These risks are widening economic disparities.

To overcome these challenges and steer corridor development towards success, five corridor development case studies are presented in Table 4.1.1.

Table 4.1.1 Overview of Targeted Corridor

Corridor Name	Target Countries	Main Route	Lead/Principal Supporting Institutions	Development Phase	Challenges Faced
Northern Africa Corridor	Kenya, Uganda, Rwanda, Burundi, DRC, South Sudan	Port of Mombasa – Nairobi – Kampala – Kigali	NCTTCA, JICA, World Bank, AfDB, relevant national governments	Nearly complete (Kenya section), challenges in inland areas	Connectivity to landlocked countries, uneven impact, maintenance
Nacala Corridor	Mozambique, Malawi, Zambia	Port of Nacala – Nampula – Lilongwe – Lusaka	Transition from private sector (Vale/Mitsui) to public sector leadership, JICA	Key infrastructure completed but dysfunctional, undergoing revitalisation	Collapse of resource-dependent model, severe governance issues
West Africa Growth Ring	Côte d'Ivoire, Ghana, Togo, Burkina Faso	Abidjan – Accra – Lomé – Ouagadougou	JICA, AfDB, ECOWAS, relevant national governments	Some progress in coastal areas, stagnation inland	Spillover of security and political instability from the Sahel region
GMS East-West Economic Corridor	Vietnam, Laos, Thailand, Myanmar	Da Nang Port – Savannakhet – Bangkok – Mawlamyine Port	ADB, GMS relevant national governments, JICA	Nearly complete (excluding Myanmar section)	Risk of political instability in one country causing the entire corridor to become dysfunctional
Hanoi-Vientiane Expressway	Vietnam, Laos	Hanoi – Vientiane	Governments of Laos and Vietnam, JICA	Stalled at planning and financing stage	Difficulties in securing financing due to Laos' severe debt problems

Source: JICA Study Team

4.2 Project Case Studies of International Corridor Development in Africa

4.2.1 Northern Economic Corridor in Africa

(1) Development Overview

The Northern Africa Corridor is the most vital logistics artery in the East African region, linking landlocked nations with vast hinterlands—including Uganda, Rwanda, Burundi, the Democratic Republic of the Congo (DRC), and South Sudan—with the Port of Mombasa in Kenya serving as its international gateway. During the 2010s, freight volumes surged at an astonishing annual rate of 20% alongside the region's economic growth, with Mombasa Port's throughput projected to double by 2030. However, existing transport infrastructure proved inadequate to meet this rapidly expanding demand. An extreme trade imbalance, where imports reached nine times the value of exports, exacerbated container congestion and paralysed overall logistics. Furthermore, the corridor faced a structural issue: economic activity was

heavily concentrated in capital cities like Nairobi in Kenya and Kampala in Uganda, widening development disparities with the surrounding regions. To overcome these challenges and foster sustainable growth across the entire region, enhancing transport capacity and facilitating logistics throughout the corridor became an urgent priority.

(2) Content of major infrastructure development plans, current implementation status and challenges

Implementation status

Based on the master plan, infrastructure development has progressed steadily in both hardware and software aspects.

- **Ports:** At Mombasa Port, expansion and improvement works utilising JICA yen loans and other funding have been advanced, leading to increased cargo handling volumes and improved efficiency. Data from 2019 shows the average vessel waiting time is 12 hours and the average container dwell time is 87 hours, indicating a continuing trend of improvement.
- **Roads:** The condition of the main trunk roads within the corridor has significantly improved. Approximately 88% of roads in Kenya and 93% in Rwanda are now in good condition. Construction also progressed on the Northern and Southern Bypass roads around Nairobi, aimed at alleviating traffic congestion.
- **Railways:** Development of the Standard Gauge Railway (SGR), primarily within Kenya, has advanced, contributing to enhanced freight transport capacity from the port to inland areas.
- **Border Facilitation:** One of the most significant achievements has been the introduction of One Stop Border Posts (OSBP). This system consolidates immigration and customs procedures for two neighbouring countries within a single facility, enabling completion in a single stop. The introduction of OSBPs has dramatically reduced border crossing times. For example, the average time required, which was 2.5 days in 2013, has now improved to an average of 6 hours. At the Malaba OSBP on the Kenya-Uganda border, remarkable results have been achieved, with 75% of imported goods now able to pass through within 1.5 days.

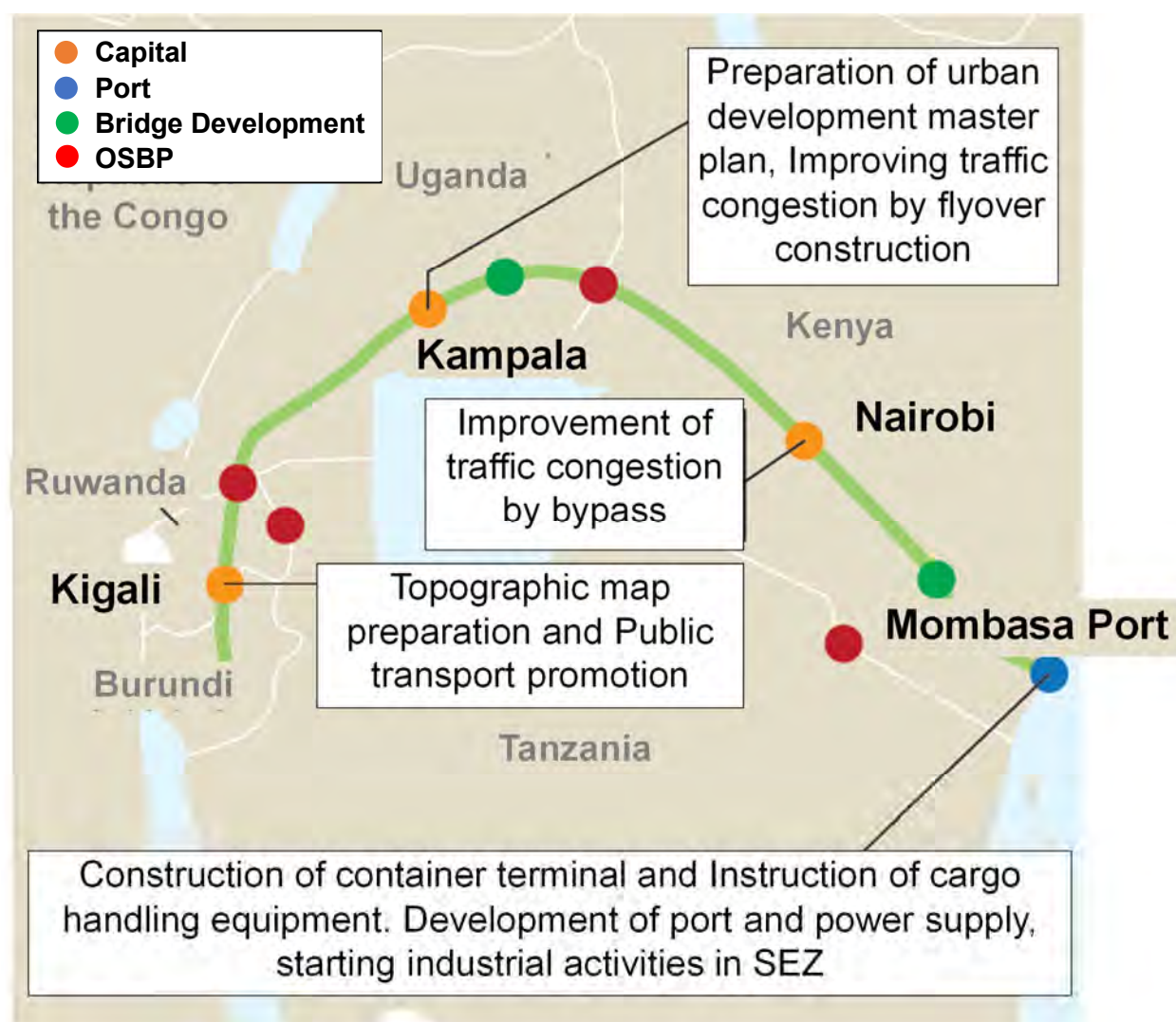
Challenges

However, when viewed as a whole, the corridor still faces significant challenges. According to JICA's impact assessment, these challenges can be categorized as 'five barriers'.

- **Distance and time barriers (inland bottlenecks):** The logistical challenges envisaged in the master plan have largely been resolved within Kenya, particularly along the Mombasa to Nairobi section. However, the focus of the problem has shifted to transport for landlocked countries west of Nairobi. In this section, border crossings remain time-consuming, and transport infrastructure is still largely underdeveloped, creating a severe logistical bottleneck.
- **The Infrastructure Quality Barrier:** Inadequate maintenance of developed infrastructure and poor user behaviour, such as overloading, are leading to premature deterioration and obsolescence of the

infrastructure. This suggests inadequate mechanisms for securing sustainable funding that accounts for post-construction lifecycle costs.

- **Border and Gateway Barriers (Soft Aspect Challenges):** While the introduction of the OSBP has been largely successful, unofficial police checkpoints and road harassment of truck drivers persist as factors causing transport delays and increased costs.
- **Regional Disparity Barrier:** Development benefits are concentrated in coastal nations and urban areas with developed infrastructure, while spillover effects to landlocked countries and rural regions remain limited. This risks widening the gap between “cities on the path to prosperity” and “regions neglected by growth investment”.
- **Barriers of People and Mindset:** During the COVID-19 pandemic, prejudice and discrimination against truck drivers at borders became problematic. Furthermore, deeper-rooted societal challenges persist, such as the slow progress of women's participation in society and a lack of environmental awareness.



Source: JICA HP

Figure 4.2.1 Key JICA Projects in the Northern Economic Corridor in Africa

(3) Lessons Learned from Corridor Development

Positive aspects

- **Clear outcomes and robust implementation framework:** Northern Corridor development has delivered clear, direct and measurable outcomes in transport and logistics, specifically reducing transit times and costs. This success stems not merely from individual infrastructure projects, but from the presence of a strong specialized agency, the NCTTCA. Throughout its long history since establishment, the NCTTCA has accumulated expertise, functioning as an engine for continuous improvement by leading data-driven monitoring of corridor performance (the Transport Observatory) and proposing enhancements. This institutional framework was crucial in enabling complex soft reforms like the introduction of the OSBP and in unifying the actions of diverse donors and member countries towards a common direction.
- **Signs of economic spillover effects:** The outcomes of logistics improvements are gradually beginning to stimulate economic activity. Along the corridor, particularly within Kenya, nascent signs of industrial clustering are visible, confirming indications of progress towards the “economic corridor” envisioned by the Master Plan.

Points for reflection

- **Uneven impact and entrenched disparities:** Development has entered a new phase of its “maturity cycle”. As initial hardware bottlenecks – such as Mombasa Port and Kenya's major trunk roads – were resolved, more complex second-generation challenges came to the fore. The most prominent of these is the geographical imbalance in development outcomes. Benefits have concentrated in coastal Kenya and urban areas, with slow spillover effects reaching landlocked nations west of Uganda and rural regions. This demonstrates the risk that corridor development may inadvertently entrench or even widen existing economic disparities. Future development requires a more inclusive approach, focusing on ensuring last-mile connectivity and promoting local industrial development.
- **Inadequate Addressing of Negative Externalities:** While increased traffic volume brings economic benefits, it also generates negative environmental and social costs, such as rising traffic accidents and air pollution. The failure of mitigation measures and responses to these negative externalities to keep pace with infrastructure development is a point requiring reflection in future planning.
- **Existence of geopolitical risks:** Within East Africa, Kenya and Tanzania are competing with corridor development projects originating from their respective ports. Conflicts of national interest could hinder regional optimisation. It is essential to recognise that corridor development is not purely an economic project but is always situated within geopolitical dynamics.

4.2.2 Nacala Corridor

(1) Development Overview

The Nacala Corridor is an economic corridor originating from the Port of Nacala, one of Africa's finest natural deep-water ports located in northern Mozambique, and connecting to the landlocked nations of Malawi and Zambia. The development potential of this region is exceptionally high, particularly in

Mozambique's Tete Province, which holds one of the world's largest undeveloped coalfields, while vast, fertile agricultural lands stretch along the corridor. The Nacala Corridor was conceived as strategic infrastructure to link these resources to international markets and revitalise the regional economy. It was also anticipated to serve as an alternative and complementary route to the existing Beira Corridor and Tanzania's Dar es Salaam Corridor.

(2) Content of major infrastructure development plans, current implementation status and challenges

Implementation status

- **Ports:** With JICA support, modernisation works at Nampula Port have been completed, establishing port infrastructure equipped with state-of-the-art cargo handling facilities. However, its potential remains underutilised. Handling volumes for general cargo and containers, excluding coal, remain low and stagnant, placing it at a competitive disadvantage against neighbouring ports such as Beira and Dar es Salaam.
- **Railways:** A new railway line and major upgrades from the Moatize coal mine to Nampula Port were constructed by Vale and others. While technically high-quality infrastructure, it was designed exclusively for coal transport, limiting its use for general cargo. With low demand for general cargo, return trains from inland areas to the port often run empty, resulting in relatively high transport costs.
- **Roads:** Connectivity within the corridor remains severely inadequate. While the section from Nampula Port to the major city of Nampula has improved roads and increased traffic, the roads westwards towards the landlocked countries (Malawi, Zambia) contain many unpaved sections, posing a significant obstacle to transport. Particularly, the Luangwa Bridge within Zambia is severely deteriorated, imposing strict weight and speed restrictions on passing vehicles, making it a major bottleneck for the entire corridor.

Challenges

The challenges facing the Nacala Corridor are deep-rooted and complex.

- **Withdrawal of private investment and loss of momentum:** The departure of core investors Vale and Mitsui & Co. signifies the loss of the engine driving corridor development. This withdrawal stemmed not only from deteriorating coal market conditions but also from heightened country risks, including worsening security due to Islamic extremist activity in northern Mozambique and attacks on the railway by rebel forces.
- **Severe Governance Deficiencies:** At the root of the Nacala Corridor's failure lies the Mozambican government's governance weaknesses. Firstly, there is a lack of a clear national-level strategy regarding the division of roles between ports and promoting their utilisation. Secondly, persistent domestic and international criticism highlights the pervasive corruption and patronage structures among the elite of the ruling FRELIMO party, which impedes sound development and undermines the confidence of private investors.

- **Limited economic impact and lack of inclusivity:** Development has been heavily skewed towards the single objective of mineral resource exports, resulting in minimal broader economic benefits such as agricultural development or the cultivation of local industries. Rather, development has concentrated wealth among small elite and foreign companies, while failing entirely to address the severe poverty in affected regions (the poverty rate in Nampula Province stands at 81%). This has heightened concerns over resource and land grabbing, as well as environmental degradation.

(3) Lessons Learned from Corridor Development

Positive aspects

- **Formation of high-quality infrastructure assets:** Whilst the development approach had numerous problems, the fact that high-quality port and railway infrastructure was ultimately established cannot be denied. These infrastructures possess potential asset value that could become a crucial foundation for regional development if operated under appropriate governance and strategy in the future.

Points for reflection

- **Challenges Regarding Dependence on Resources and Specific Enterprises:** The Nacala Corridor case suggests that a development model reliant on a single resource (coal) and a specific consortium is vulnerable to changes in the external environment. Fluctuations in commodity markets, strategic shifts by investing companies, or global trends such as decarbonisation can introduce significant uncertainty for such models. Careful consideration is required on how to reconcile a nation's long-term infrastructure development with the short-term business viability of private enterprises.
- **The importance of a coordinated approach to hard and soft infrastructure:** It has been noted that in this corridor development, efforts to establish the soft infrastructure environment linking physical infrastructure construction to socio-economic development may not have kept pace sufficiently. There is concern that without accompanying initiatives such as trade facilitation, ensuring legal transparency, and strengthening governance, the infrastructure's potential may be difficult to fully realise. How to effectively integrate “hard” infrastructure development with “soft” policy measures is a key challenge for the future.
- **Ensuring a Comprehensive Perspective and Sustainability:** How to broadly return the benefits of development to local communities and link this to poverty reduction is a crucial issue for the project's sustainability. It is desirable to incorporate a perspective that considers benefits to local communities and environmental impacts even more thoroughly from the development planning stage. Considering frameworks that enable local communities to utilise infrastructure and address social and environmental challenges even after corporate management decisions (e.g., withdrawal) are made is an important consideration for both the social aspects of corporate infrastructure development and the governance of the receiving government.



Source: Data Collection Survey on Nacala Corridor Integrated Development in Southern Africa

Figure 4.2.2 Nacala Corridor

4.2.3 West Africa Growth Ring

(1) Development Overview

The West Africa Growth Ring (WAGR) is a regional development initiative linking three coastal states bordering the Gulf of Guinea – Côte d'Ivoire, Ghana and Togo – with the landlocked nation of Burkina Faso in a ring configuration. It aims to foster economic integration and invigorate trade across the entire region. While this region possesses significant potential in agriculture and mineral resources, inadequate infrastructure and inefficient cross-border logistics had hitherto hampered economic growth. This initiative aligns with the regional integration agenda promoted by the Economic Community of West African States (ECOWAS). It was anticipated that linking coastal economic hubs with inland markets and production centres would generate synergistic effects.

(2) Content of major infrastructure development plans, current implementation status and challenges

Implementation Status

At the individual project level within the overall vision outlined in the master plan, some progress is evident, particularly in coastal countries where security is relatively stable.

- **Ports:** Expansion works to increase handling capacity are underway at ports serving as gateways to landlocked countries, such as Lomé Port in Togo and Abidjan Port in Côte d'Ivoire.
- **Roads:** Projects to alleviate traffic congestion in major cities and upgrade trunk roads are underway in various countries. For example, in Abidjan, Côte d'Ivoire, a project to construct grade-separated junctions,

supported by JICA, is progressing. In Ghana, rehabilitation works have been carried out on the major trunk road, National Highway 8. In Togo, construction of a bypass road around the city of Sokodé, located on an international trunk road, has commenced with Japanese grant aid.

- **Border:** An OSBP (One Stop Border Post) has been established at the Togo-Burkina Faso border (Sankansé), improving the efficiency of border crossings.

Challenges

However, despite these individual advances, the Growth Ring as a whole faces extremely serious challenges that fundamentally threaten the realisation of its vision.

- **Severe security and political instability:** The most significant and decisive challenge is the frequent occurrence of terrorism and coups d'état in the Sahel region, including Burkina Faso in the northern part of the Ring, and the accompanying rapid deterioration in security. This instability no longer remains confined to the Sahel region but is spreading southwards, affecting coastal states such as Benin and Togo, thereby jeopardising the security of the entire corridor. This dramatic escalation in geopolitical risk was not anticipated at the time the master plan was formulated, fundamentally undermining the plan's very premises. Consequently, infrastructure construction and logistics activities in conflict-affected countries such as Burkina Faso have become extremely difficult, forcing many development projects to stall or halt.
- **Fragile Governance:** Beyond security issues, fragile governance – characterised by corruption, opaque policy implementation, and cumbersome administrative procedures – is hindering development outcomes and worsening the business environment. Japanese companies also highlight the 'mismatch between their own compliance standards and local business practices' as a major challenge.
- **Macroeconomic Instability:** Many countries carry high public debt exceeding ECOWAS standards (70% of GDP), leaving them with extremely limited fiscal capacity for new infrastructure investment. This, combined with increased military spending for security measures, further complicates the mobilisation of development funds.

(3) Lessons Learned from Corridor Development

Positive aspects

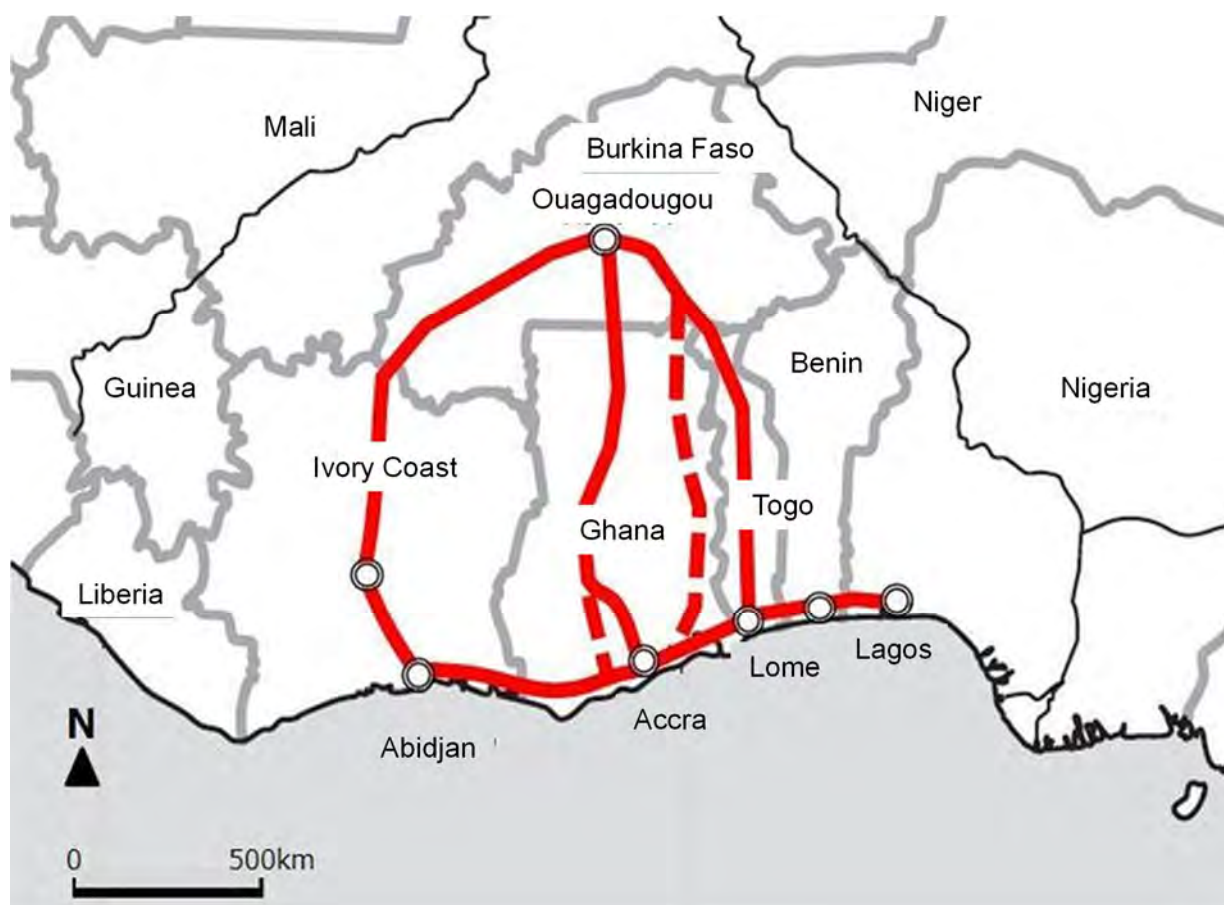
- **Improvements in coastal transport and logistics:** In the relatively stable coastal regions of Côte d'Ivoire, Ghana, and Togo, port and road infrastructure development has yielded tangible improvements in transport and logistics. This demonstrates the importance of advancing development through selective prioritisation tailored to local conditions, even in unstable areas.
- **The concept of a regional development approach:** The very concept of the "Ring" regional development approach, which transcends individual national interests and views multiple countries as a single economic zone, is advanced and should be commended for promoting regional integration.

Points for reflection

- **A critical underestimation in geopolitical risk assessment:** During the planning phase, the security threats emanating from the Sahel region were not sufficiently or realistically evaluated. The corridor,

designed based on economic rationality, has transformed from a corridor of growth into a security frontline due to subsequent dramatic shifts in the security situation. This demonstrates that infrastructure planning must incorporate geopolitical and security vulnerability analysis as an essential element, alongside economic and technical feasibility.

- **Significant Variation and Fragmentation in Outcomes:** Development progress and effectiveness vary dramatically between countries and regions, effectively fragmenting the ring into northern and southern segments. Politically unstable landlocked Burkina Faso risks being left behind in development, with the economic gap to coastal states likely to widen.
- **Absence of “Peace and Stability” as a Development Prerequisite:** The case of the West Africa Growth Ring starkly demonstrates that “peace and stability” are absolute prerequisites for sustainable economic development. Even if “hard” infrastructure is built, without the underlying security to sustain it, investment becomes wasted and people cannot reap its benefits. This experience highlights the limitations of the traditional transport and economy-centred development model. Corridor development in regions affected by conflict and fragility must no longer be merely an infrastructure project. It must be based on a more comprehensive “human security” approach, integrating elements such as security, governance strengthening, and humanitarian assistance.



Source: JICA HP

Figure 4.2.3 Routes Targeted by the West Africa Growth Ring

4.3 Project Case Studies of International Corridor Development in Asia

4.3.1 GMS East-West Economic Corridor

(1) Development Overview

The East-West Economic Corridor of the Greater Mekong Subregion (GMS) is one of the flagship initiatives forming the core of the Greater Mekong Subregion Economic Cooperation Programme, launched in 1992 under the leadership of the Asian Development Bank (ADB). This corridor denotes a land route stretching approximately 1,450 kilometres, commencing at the port of Da Nang in central Vietnam in the east and terminating at the port of Mawlamyine on Myanmar's Andaman Sea coast in the west, traversing Laos and Thailand. Its purpose was to accelerate regional economic integration by linking production bases and markets, and connecting the Pacific and Indian Oceans, thereby traversing the logistics network of the Indochina Peninsula, which had previously been divided north-south, in an east-west direction

(2) Content of major infrastructure development plans, current implementation status and challenges

Implementation status

- **Hard Infrastructure:** Along the majority of the corridor, specifically the sections traversing Vietnam, Laos, and Thailand, the development of key hard infrastructure such as roads and bridges is largely complete. This has dramatically enhanced physical connectivity. For instance, freight transport between Bangkok and Yangon (Myanmar), which previously took two to three weeks via sea transport through the Strait of Malacca, now has the potential to be reduced to approximately three days in theory by utilising this corridor.
- **Soft Infrastructure (CBTA):** Although the CBTA has been ratified by all member states, its full implementation remains incomplete. Currently, an initial implementation phase known as the 'Early Harvest' is underway, allowing 500 authorised vehicles issued by each country to operate across borders. Additionally, single-stop, single-window inspections to streamline border procedures are being introduced in phases at borders such as Lao Bao (Vietnam) and Dan Sawan (Laos).

Challenges

Whilst physical infrastructure development has progressed, serious challenges remain that constrain the corridor's overall potential.

- **Complete dysfunction of the Myanmar section:** The most significant challenge is the stagnation of development in the Myanmar section, located at the western end of the corridor, which has effectively become dysfunctional. Myanmar, particularly Kayin State through which the corridor passes, has long endured conflict with ethnic armed groups, delaying infrastructure development. Furthermore, the severe political turmoil and intensified civil war following the 2021 military coup have decisively worsened the situation. Deteriorating security makes ensuring safe logistics impossible, and there is no prospect of Myanmar connecting to the corridor network.

- **Delays in soft implementation and institutional barriers:** A significant gap persists between the CBTA's ideals and reality. Even with the agreement ratified, delays in domestic legal frameworks across countries and insufficient operational capacity at the field level mean smooth cross-border traffic is far from fully realised. Furthermore, more fundamental barriers persist, such as differences in traffic lane allocation between Thailand (left-hand drive) and other countries (right-hand drive), and language barriers.
- **Worsening Environmental and Social Impacts:** Corridor development has also brought negative consequences. Environmental problems are intensifying, including large-scale deforestation associated with road construction and water pollution caused by increased economic activity along the routes. Furthermore, rising traffic volumes and speeds are heightening the risk of traffic accidents, prompting calls from local residents for enhanced safety measures.

(3) Lessons Learned in Corridor Development

Positive aspects

- **Establishing a development model for an “economic corridor”:** The GMS East-West Economic Corridor is highly regarded as a successful model for an approach that advances both the development of hard infrastructure and soft reforms, exemplified by the CBTA, in parallel. Furthermore, by strategically locating industrial parks and special economic zones along its route, it has evolved from a mere “transport corridor” into an “economic corridor” that generates added value. Particularly in Thailand and Vietnam's corridor regions, new industrial sites have advanced, visibly invigorating economic activity.
- **A robust and enduring framework for regional cooperation:** The existence of the strong institutional framework of the GMS Programme, with the ADB consistently serving as coordinator for over 20 years, was the primary factor enabling the coordination of cross-border interests and the long-term advancement of projects. Without this stable framework, projects would likely have faltered, buffeted by changes in the political and economic circumstances of each country.

Points for reflection

- **Exposure of the “connectivity trap”:** This corridor, precisely because of its success, exposed the vulnerability inherent in connectivity – the “connectivity trap”. The political and social collapse of one constituent country (Myanmar) rendered the entire network dysfunctional, significantly diminishing the impact of substantial infrastructure investments made by other participating nations (Vietnam, Laos, Thailand). This demonstrates that regional connectivity initiatives constitute a community of shared destiny, where all participating countries share the domestic political risks. It confronts us with the harsh reality that the strength of the corridor is determined by the strength of its weakest link (country).
- **Limitations of Top-Down Development and the Challenge of Inclusivity:** The top-down development approach led by the ADB and national central governments proved effective for efficiently constructing large-scale infrastructure. However, it also resulted in insufficient participation of local communities in the development process, meaning their needs and concerns were not adequately reflected. Consequently,

conflicts over land acquisition and the aforementioned environmental degradation have emerged in some areas. As the corridor enters its maturity phase, the challenge has shifted from merely pursuing logistics efficiency to the more complex governance issue of how to equitably distribute development benefits and ensure environmental and social sustainability.



Source: White Paper on Development Cooperation 2012, Japan Ministry of Foreign Affairs

Figure 4.3.1 Routes of the East-West Economic Corridor

4.3.2 Hanoi-Vientiane Expressway Corridor

(1) Development Overview

The Hanoi-Vientiane Expressway is an infrastructure project of immense strategic importance, directly linking Vietnam's capital Hanoi with Laos' capital Vientiane. For Laos in particular, this project holds significance that could determine the nation's future. It aims to overcome the geographical constraint of being a landlocked country by securing the shortest access route to Vietnam's deep-water ports (particularly the ports of Vung Ang and Haiphong), thereby stimulating trade and reducing transport costs. This forms the core of Laos' national strategy to transform itself from merely a transit country into a regional logistics hub, a "land link".

This expressway holds the potential to form a new industrial corridor stretching from Bangkok, Thailand, via Vientiane to Hanoi. It is explicitly designated as a key route within the master plan to enhance connectivity across the entire ASEAN region.

The design speed is 100km/h on flat sections and 60-80km/h in the mountainous terrain that constitutes the majority of Laos, depending on the topography. Upon completion, it is expected to significantly reduce travel and transport times between the two capitals.

(2) Content of major infrastructure development plans, current implementation status and challenges

Implementation status

The project remains at the planning and funding stage, with full-scale construction yet to commence. Initial surveys conducted by JICA identified numerous technical and environmental challenges. These include substantial construction costs, particularly due to the route traversing rugged mountainous terrain within Laos; issues concerning the performance of large vehicles; and environmental impacts arising from the route passing through valuable nature reserves.

Challenges

The challenges facing this project are structural and profound, far exceeding mere technical difficulties.

- **Funding and Laos' debt situation:** One major challenge to the project's progress is securing funding. The Lao side, in particular, finds it difficult to bear the necessary substantial costs itself or to secure new loans. This stems from the impact of preceding projects such as the China-Laos Railway, which has driven Laos' external debt, particularly its debt to China, to levels relative to GDP that are cause for concern. This debt burden is straining Laos' finances and has been assessed by the IMF as posing a high risk to debt sustainability. Under these circumstances, international financial institutions and bilateral aid agencies are likely to be cautious about providing new large-scale loans.
- **Project viability and private investment trends:** With securing public funds difficult, efforts are being made to utilise private capital through public-private partnerships (PPP). However, the current limited population along the route and restricted transport demand mean it is considered challenging to recoup the substantial investment solely through toll revenues. Ensuring project viability remains a key challenge. Concerns about risk among private investors make it difficult to attract interest in the project.
- **Project progress status:** As a result of the above, the project has effectively stalled, with no clear path forward to resolve the fundamental challenge of securing financing.

(3) Lessons Learned in Corridor Development

Positive aspects

- **Shared recognition of strategic importance:** Although the project itself is currently stalled, a high level of shared recognition regarding its geopolitical and economic significance has been established among the countries involved – Laos, Vietnam, and development partners including Japan. This shared

recognition could form a crucial foundation for restarting the project in the future, should Laos's fiscal situation improve.

Points for reflection

- **Consistency with national finances:** This case demonstrates that even projects of high strategic importance may prove difficult to realise if infrastructure plans are insufficiently aligned with constraints such as the nation's overall debt repayment capacity and macroeconomic soundness. It highlights the crucial perspective that, in addition to the technical and economic evaluation of individual projects, assessing consistency with national finances is essential.
- **Sequencing of Infrastructure Investment and the “Crowding-Out” Effect:** Within its limited fiscal capacity, Laos prioritised resource allocation towards the large-scale China-Laos Railway project. Consequently, the country's fiscal capacity diminished, significantly constraining its ability to implement the subsequent (and potentially economically important for diversification) expressway project. This can be seen as an example of the “crowding-out” effect, where one large-scale project constrains opportunities for other development investments. It highlights the importance of strategic prioritisation of infrastructure investment at the national level and prudent financial planning.
- **Wider implications of debt sustainability:** This case suggests that the implications of debt sustainability issues arising from large-scale financing extend beyond concerns over infrastructure operating rights. More significantly, excessive debt can constrain a country's development options by affecting its creditworthiness and fiscal flexibility, potentially making it difficult to secure new support from other development partners. This situation also suggests a geopolitical dimension, where traditional development partners may find their activities constrained by the macroeconomic realities created by specific initiatives.

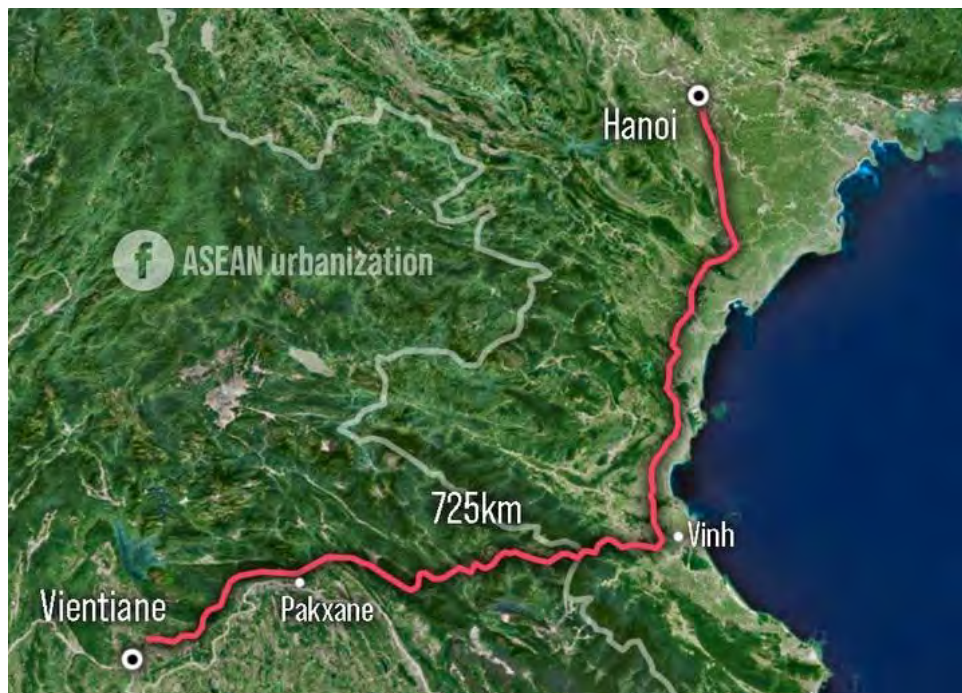


Figure 4.3.2 Route of Hanoi-Vientiane Corridor

4.4 Summary and Lessons for Nigeria's Logistics Corridor Development

Analysis of five diverse case studies has revealed the factors distinguishing success from failure in international corridor development. These are not attributable to any single factor but are the complex product of institutional, technical, financial, and political elements throughout the entire project lifecycle, from planning to maintenance. Below, lessons drawn from these cases are systematically organised into four aspects – (i) planning, (ii) development content, (iii) project implementation, and (iv) maintenance – to provide practical guidance for future corridor development projects.

Table 4.4.1 Summary of Lesson Learned from Other Corridor Development

Theme	Key Principles for Success	Best Practices (Lessons Learned)	Common Pitfalls and Lessons Learned
Institutional and Organisational Aspects during Planning	Establish a strong, permanent promotion and coordination body to secure ownership among participating countries.	Northern Corridor: NCTTCA led sustained improvements based on data, demonstrating the importance of long-term institutional development.	Nacala Corridor: Privately led with weak public sector involvement. Lost momentum after investor withdrawal, lacking a national strategy.
	Develop a flexible master plan capable of adapting to changes in the external environment, including geopolitical risks.	Northern Corridor: Master plan functions as a compass for diverse donors.	West Africa Growth Ring: Failed to respond to rapid security deterioration, causing plan premises to collapse.
Content of Effective Corridor Development	Advance hard infrastructure development and soft reforms (e.g., border procedure facilitation) as an inseparable whole.	Northern Corridor: Dramatically reduced border crossing times through OSBP implementation, maximising hard infrastructure value.	GMS East-West Corridor: Prioritising hard infrastructure delayed full CBTA implementation, hindering the corridor's potential.
	From the outset, incorporate an “economic corridor” strategy aiming for industrial development and job creation beyond mere logistics efficiency.	GMS East-West Corridor: Attracted industrial parks along the corridor, stimulating economic activity.	Nacala Corridor: Over-specialisation in coal exports resulted in negligible spillover effects on the regional economy. Lack of diversification strategy.
Project Implementation Strategies	Strictly assess national fiscal capacity, combine diverse funding sources such as PPPs, and appropriately share risks.	(No clear success cases)	Hanoi-Vientiane Expressway: Funding collapsed due to plans exceeding the state's debt capacity.
	Establish sound governance to attract private investment through transparent legal systems and stable policy implementation.	Northern Corridor: Transparent information disclosure by NCTTCA contributed to building trust.	Nacala Corridor: Severe corruption and vested interest structures deteriorated the investment environment, leading to private investor

Theme	Key Principles for Success	Best Practices (Lessons Learned)	Common Pitfalls and Lessons Learned
			withdrawal.
Efficient project maintenance and management strategies	Calculate not only construction costs but also life-cycle costs, and institutionally secure stable funding sources (e.g., road funds) for this purpose.	(No clear success cases)	African corridors: Insufficient maintenance budgets lead to premature infrastructure deterioration (quality barrier).
	Continuously monitor corridor performance based on objective data to identify and improve bottlenecks.	Northern Corridor: The 'Transport Observatory' functions as an excellent model for data-driven policy decisions.	Many other corridors lack established systems for systematic data collection and analysis.

Source: JICA Study Team

Nigeria boasts Africa's largest population and economy, and its logistics network constitutes critical infrastructure that influences not only the domestic economy but that of the entire West African region. However, its development and operation face numerous challenges, including severe traffic congestion, ageing infrastructure, and security issues.

To overcome these challenges and build a sustainable, efficient logistics network, it is vital to apply the following lessons learned from other international corridor development experiences.

4.4.1 Institutional and Organizational Aspects During Planning

(1) Establishment of a Robust Driving and Coordinating Body

As demonstrated by the successful case of the Northern Corridor Transport and Trade Coordination Agency (NCTTCA) in the Northern Africa Corridor, large-scale infrastructure development involving multiple ministries, state governments, and the private sector necessitates a “command centre” with strong coordinating functions. Nigeria is a federal state, and collaboration between the central government and local governments is vital, particularly as economically significant states like Lagos State possess their own transport master plans. To effectively link national-level trunk road and railway plans with transport plans within the Lagos metropolitan area, it is desirable to establish a specialised agency that eliminates vertical divisions between ministries and state governments, managing and overseeing overall progress based on data. This would prevent duplication and inefficiency in planning, promoting consistent development.

(2) Flexible Planning Incorporating Geopolitical and Security Risks

The collapse of the West Africa Growth Ring project due to deteriorating security in the Sahel region highlights the critical importance of assessing security risks. Nigeria faces severe domestic security challenges, particularly in the northeast, where the risks of terrorism and kidnapping pose significant obstacles to business operations. When planning logistics corridors, security risks must be one of the

paramount evaluation criteria, alongside economic viability and efficiency. Contingency plans must be prepared in advance to address unforeseen circumstances, such as considering routes that bypass conflict-affected areas and incorporating infrastructure defence measures into the plans.

4.4.2 Content of Effective Corridor Development

(1) Integrated Promotion of Hard Infrastructure and Soft Reforms

Merely developing roads and ports (hard infrastructure) is insufficient; unless accompanied by reforms addressing cumbersome administrative procedures and inefficient operations (soft aspects), the effects will be limited. Nigeria has been noted as having particularly severe soft issues, such as ‘cumbersome administrative procedures’ and ‘demands for bribes’, even compared to neighbouring countries. Even if a state-of-the-art deep-sea port (Lekki Port) is built in Lagos, it will be a wasted asset if the goods delivery to the final destination is time-consuming or expensive. Learning from the success of the One-Stop Border Post (OSBP) in the Northern Corridor, it is essential to vigorously promote soft reforms – such as the digitisation and acceleration of port and customs procedures, and the abolition of informal checkpoints – as an integral part of infrastructure construction projects.

(2) The “Economic Corridor” Strategy Beyond Logistics Efficiency

By incorporating industrial development and job creation along the route into the planning from the outset, rather than merely improving transport routes, development impacts can be maximised. Nigeria's longstanding economic challenge lies in moving away from dependence on crude oil and diversifying its economy. Developing logistics corridors presents an excellent opportunity to contribute to this national objective. For instance, the development of the Lagos-Kano railway should not be viewed merely as transport infrastructure construction. It should be planned as an integrated part of an ‘Agricultural Value Chain Development Project’ that connects the agricultural belt in the north with the vast consumer markets and export ports in the south, thereby promoting the processing and export of agricultural products. This approach will lead to increased local incomes and job creation, contributing to the correction of regional disparities.

4.4.3 Project Implementation Strategies

(1) Realistic Funding Plans Considering National Fiscal Capacity

The case of Laos' Hanoi-Vientiane Expressway project, which stalled due to funding difficulties arising from excessive debt, demonstrates the precariousness of plans exceeding a nation's repayment capacity. Nigeria's infrastructure needs are immense and cannot possibly be met by government finances alone. Over-reliance on borrowing from specific donor countries carries the risk of future fiscal rigidity. It is crucial to adopt a “blended finance” approach, combining diverse funding sources such as JICA, the World Bank, the African Development Bank, and Public-Private Partnerships (PPPs), while consistently prioritising the sustainability of national finances in the funding plan.

(2) Governance for Attracting Private Investment

The case of the Nacala Corridor, where development stalled after private investors lost confidence due to corruption and opaque policy management, highlights the critical importance of governance. In Nigeria too, opaque policy management and corruption may constitute major barriers to private investment. To maximise the utilisation of private capital and expertise through Public-Private Partnerships (PPPs) and similar arrangements, it is absolutely essential to establish a business environment where domestic and international investors can confidently undertake long-term investments. This requires enhancing the transparency of legal frameworks, ensuring contract compliance, and streamlining administrative procedures. Establishing sound governance is the most effective investment attraction strategy for achieving sustainable infrastructure development.

4.4.4 Strategies for the Efficient Maintenance and Management of Operations

(1) Securing Funding Sources Considering Lifecycle Costs

Infrastructure is not a “build-and-forget” proposition. In many African corridors, insufficient maintenance budgets are causing premature deterioration of infrastructure. In Nigeria, the problem that “maintenance and repairs of existing roads are not keeping pace” has been clearly identified. Alongside plans to construct new roads and railways, it is essential to calculate the future maintenance costs (life-cycle costs) over the coming decades and establish stable funding sources as part of the system. Examples include establishing a road fund sourced from fuel taxes or vehicle weight taxes, and toll revenues based on the principle of user pays.

(2) Data-driven performance monitoring

By continuously monitoring corridor performance based on objective data, as exemplified by the Northern Africa Corridor's “Traffic Observatory”, it becomes possible to swiftly identify emerging bottlenecks and implement effective countermeasures. Resolving complex issues such as Lagos' traffic congestion necessitates a data-driven approach rather than reliance on experience or intuition. Systems should be implemented to collect and analyze key performance indicators (KPIs) such as traffic volume, transit times, and waiting times in real time, by installing sensors and other equipment on major arterial roads and port facilities. This enables the scientific identification of root causes and allows limited budgets to be concentrated on the most effective countermeasures.

Chapter 5. Basic Concept and Strategy for Improvement of the Transport and Logistics Sector in Nigeria

5.1 Challenges, Causes and Solutions of Transport and Logistics Sector

Based on the results of the previous chapter, basic concept and strategy for improving the transport and logistics sector in Nigeria is proposed. The major challenges in logistics activities for each sector are listed up and followed by their causes and probable solutions.

Table 5.1.1 Challenges, Causes and Solutions of Transport and Logistics Sector

Sector	Challenges	Causes	Solutions
1. Roads	Covering over 90% of all Nigerian freight	Insufficient development of other transport modes	Development of other modes and transshipment hubs
	Federal roads connecting major cities are still in poor condition (insufficient ROW, poor pavement and drainage, construction delay for bridges, etc.)	Lack of road development/maintenance budget and poor maintenance (inappropriate planning, insufficient budget, lack of maintenance capacity, inadequate implementation structure, inadequate fundamental road database)	- Early improvement of major logistics corridors (Federal roads) - Development of road planning and maintenance planning capabilities - Preparation of road inventory database
	Traffic congestion in urban areas (specifically Lagos Metropolitan Area)	- Rapid population and economic growth, and the resulting increase in automobile traffic, have slowed the development of road infrastructure (low level of road development per unit population) - Difficulty (high cost) in developing road due to topographical constraints (e.g., Lagos) - Inefficient traffic management/processing and signal control at intersections	- Construction of ring roads, bridges, and bypass - Preparation of the Lagos Metropolitan Transport Master Plan as soon as possible, and cooperation partnership for early project implementation - Optimize traffic signal control over a wide area (or: network) by introducing smart traffic signals.
	Although there are many road construction plans using PPP, the outlook for their feasibility is unclear.	Although there are many road construction plans using PPP, the outlook for their feasibility is unclear.	Strict review of PPP project plans and appropriate division of roles among sovereign development partners
	Illegal checkpoints on major corridors	Insufficient customary regulations and enforcement	Strengthening regulations and control for illegal check
2. Ports and Maritime	97% of import and export cargo passes through sea ports, and approximately 80% of the port cargo concentrates in Lagos (Apapa Port and Tin Can Island Port).	- Demand (manufacturing hubs and consumption market) is concentrated in the Lagos. - Expensive cost in Onne and Calabar due to poor infrastructure maintenance and customs. - High security risk in ports located in south-east area. - Expensive cost of ships and	- Removing bottlenecks on roads around Apapa Port and Tin Can Island Port - Construction of ring roads and bypass to remove bottlenecks and ease traffic congestion in Lagos. - Early construction of Badagry deep seaport.

Sector	Challenges	Causes	Solutions
		port agents due to few competition.	
	• Access roads to Apapa and Tin Can are limited and narrow.	• There is no space for development in the hinterland of the existing port of Lagos.	• Early development of international corridors (Lagos-Abidjan Corridor)
	• Limited impact of ETO ¹ , EPT ² and TTP ³ .	• Poor management of the Eto system (many exceptions are allowed)	• Improvement of the Eto system (including operational improvements)
	• Although the Lekki deep seaport has started operations, its utilization is limited.	• Poor access condition between Lagos CBD and Lekki	• Early construction of the Lekki Express linking the Lagos CBD and Lekki, and the development of alternative routes
3. Railway	• Insufficient railway network	• Project delay • Lack of awareness for multimodal transport concept	• Early construction of new standard gauge section and early completion of rehabilitation of existing lines
	• Some of the existing routes connecting coastal areas and inland areas have been out of service for decades.	• Lack of technical knowledge to ensure safety	• Improving capacity in railway maintenance and management, and efforts to improve quickly by a small-scale project scheme
	• Limited operation in standard gauge tracks between Warri and Itakpe, and between Apapa Port and Ibadan.	• Insufficient standard gauge network	• Early development of a standard gauge network linking inland areas and coastal areas
	• Linkages between rail transport and other modes are extremely limited.	• Lack of awareness for multimodal transport concept	• Promoting port and road connections
	• Stable operation of freight trains	• Improving public safety and ensuring safety along railway lines	• Utilizing local governments and private security services
4. Airports	• Many airports do not have the necessary functions as cargo airports (only five airports have the necessary functions). Lagos Airport accounts for 80% of the total cargo volume.	• There is no future development vision for air cargo (absence of an aviation sector master plan)	• Formulation of a nationwide aviation sector master plan
	• Air cargo volume has stagnated since 2015.	• Insufficient air cargo network, facilities and operational management systems with international standards	• Promoting privatization of airports (currently being implemented little by little)
	• Deterioration of logistics facilities (warehouses, refrigerated storage facilities, etc.) and lack of access roads to airports (especially airport access from agricultural product collection areas).	• Low competitiveness with other transport modes (roads)	• Expanding the aviation network based on the sector master plan, modernizing logistics facilities, and strengthening road access to airports
	• There is no accurate cargo statistical data. There is a lack of	• Lack of awareness for statistical analysis and	• Human resource development and capacity

¹ Truck call-up system. Under improving due to operational issues

² Export Processing Terminal. Single window for export processing

³ Truck Transit Park

Sector	Challenges	Causes	Solutions
	measuring equipment, systems and knowledge.	planning	building
5. Customs	Import customs clearance takes a lot of time	NICIS II⁴, the import clearance system, meets all international standards but is not compatible with SIGMAT⁵, the standard within ECOWAS.	- Introduction of SIGMAT (Compatibility will be achieved in the future) and training support - Reduction of customs clearance time by digitizing and simplifying procedures
	Fast Track⁶ has been introduced, but bilateral mutual recognition is not possible	Fast Track Mutual Recognition Agreement not concluded	Promoting mutual recognition of fast tracks (ensuring consistency with the AEO⁷ system)
	The time required for customs clearance is unpredictable due to capacity shortage of X-ray scanners and risk management is not implemented.	Lack of capacity and budget for proper maintenance of X-ray equipment	- Conducting and analyzing TRS⁸ surveys - Increasing the number of X-ray scanners and strengthening maintenance and management capabilities
	In recent years, the NCS⁹ Act has been amended to include provisions for funding the operation of the organization and strengthening its powers (border enforcement), but its effectiveness is unclear.	Inadequate monitoring system	Regular monitoring
	Deterioration of customs office and facilities, and immigration control facilities	Lack of budget	Flexibility in application of the revised NCS Act to budgetary issues
	Check system of HS code¹⁰, certificate of origin, etc. is unclear	Insufficient capacity of customs officials, arbitrary applicants in some countries	Improving the capabilities of customs officials and strengthening penalties for violations
	Rough opening and inspection of luggage by customs officials	Lack of skills among customs officials, the widespread practice of bribery, and poor treatment of customs officials	Improving the capabilities of customs officials and improving employee conditions using the amendment of the NCS Act

Source: JICA study Team

5.2 Policy and Framework for Development or Planning by Nigerian Government

To address the challenges in each infrastructure sector selected in Chapter 5.1, the Nigerian government has launched several policies (e.g., sectorial development goals in the NIIMP) and planning frameworks

⁴ NICIS (an acronym for the Nigeria Integrated Customs Information System).

⁵ SIGMAT (an acronym for the Système Interconnecté de Gestion des Marchandises en Transit, meaning the Interconnected System for the Management of Goods in Transit).

⁶ A scheme to expedite cargo clearance procedures for highly compliant importers.

⁷ The Authorized Economic Operator (AEO) scheme, which is an international best practice.

⁸ TRS (an acronym for Time Release Study), a survey of customs clearance time recommended globally by the World Customs Organization (WCO).

⁹ NCS (an acronym for the Nigeria Customs Service).

¹⁰ The globally common classification number for import and export goods.

(e.g., sectorial master plans, however only a limited sector is available) related to infrastructure development as listed in Chapter 2. The key points to determine a strategy for development in transport and logistics sectors in Nigeria are summarized as shown in below table.

Table 5.2.1 Development Policy and Planning Framework of Nigerian Government

Sector	Description
Roads	(Short-term) Rehabilitation of the federal road network, particularly corridors connecting major cities and urban area, international corridors, and spot rehabilitation for deteriorated sections (rehabilitation means to recover original functions and improve minor functions). (Mid-term) Widening of major corridors, and rehabilitation of federal and state roads (around 70% of all sections). (Long-term) Widening of North-South routes (E1, A1-A4) and East-West routes (A12x, A23x, A34x), completion of important river bridges, and 100% rehabilitation of federal and state roads. (source NIIMP)
Ports and Maritime	New port development; construction of two deep seaports (source NIIMP). Rehabilitation of damaged port infrastructure for 5 international sea ports (namely, Lagos Port Complex, Port Harcourt, Onne, Calabar, and Warri) (source NPA). Improvement of port management by entire automation system including truck management system. Dredging waterways and improving inland ports to increase inland freight transport. (source NIIMP)
Railway	Rehabilitation of the all existing railway network Construction of new lines improving accessibility to economically important hubs (i.g., manufacturing and industrial cities) Railway connection to 6 international sea ports (namely, Lagos, Port Harcourt, Onne, Calabar, Warri, and Lekki). (source NIIMP and NRC)
Aviation	Overall infrastructure upgrading of 11 existing key airports. Upgrading of cargo handling facilities to comply international standards. A regulatory framework to encourage private sector initiative in operations, etc. Capacity development to expand the nationwide aviation value chain. (source NIIMP)
Customs	Full implementation of the WTO Trade Facilitation Agreement (source NIIMP)

Source: JICA team

5.3 Development Concept and Strategy for the Transport and Logistics Sector

Based on the Nigerian government's policies and frameworks, supporting policies and implementation status from other donors, challenges on logistics infrastructure and so far, the following development concept (ultimate goal) in terms of a comprehensive perspective that includes balanced development of the country, improving logistics efficiency, and reducing environmental impact is established.

In addition, five strategies under the ultimate goal and a direction for priority projects linked to each strategy are proposed as below.

Development Concept (Ultimate Goals)

To support the diversification of the economy and promote industry by comprehensive improvement the logistics infrastructure which is the foundation for sustainable economic growth in nationwide Nigeria

Strategy

Strategy1 : Development of Nationwide Logistics Corridors (roads) & International Gateways (ports) , and Strengthening of Port Function

The strategy aims to build a logistics infrastructure which can adequately meet the increasing logistics demand by developing a federal road network, which is the main logistics network in Nigeria, and strengthening port facilities.

Road transport accounts for 90% of all logistics in Nigeria, and 97% of import and export cargo is through the sea ports. The role of roads and ports infrastructure is not changed significantly in the future, and it is essential to develop infrastructure that can meet the increasing logistics demand that continues with the significant population and economic growing. However, new infrastructure development is slow speed due to budget constraints and deterioration is progressing due to lack of proper maintenance as well.

According to higher-level national policy, the rehabilitation of the federal road network, especially corridors between major cities and within cities, international corridors, and quite damaged sections on certain federal corridor, are listed as short-term road projects. Also the rehabilitation of quays and other infrastructure for five international sea ports is also indicated for port infrastructure. Furthermore, in order to increase the importance of Nigerian ports as hub function in the West African region, it is important to improve the efficiency of port operations and management, and one of the solution for enhancing port management is to automate the entire system including truck management.

The following directions are expected to improve the bottleneck under the strategy.

- ✓ Development/Rehabilitation of nationwide logistics corridors (Federal trunk roads)
- ✓ Strengthening of port facilities and connectivity improvement of port access by roads
- ✓ Upgrading of port truck management
- ✓ Decentralization of Lagos port (Apapa/Tin Can Island) complex cargo

Strategy2 : Elimination of Logistics Bottlenecks and Development / Rehabilitation of Infrastructure to Improve Traffic Congestion in Urban Area

The strategy aim is to eliminate bottlenecks on the corridors which pass through the city and connect ports and major logistics facilities. It also involves the development of new roads and public transport infrastructure which contributes to improve traffic congestion within the city.

The Lagos area is extremely important in terms of logistics hub function in whole Nigeria. That is, among ports that handle imports and exports, 80% of the port cargo in Nigeria is concentrated in Lagos Port, and more than half of the major manufacturing hubs are located in Lagos State. As a consumer market in the country, it also has an extremely important position since the population in metropolitan area reaches more

than 20 million. For this reason, the concentration of logistics demand in Lagos causes critical issues such as chronic traffic congestion on roads within the city and delays in handling and customs procedures due to the concentration of cargo at Lagos Port.

The following directions are expected to improve the bottleneck under the strategy.

- ✓ Construction of ring roads, bypasses and missing links (lagoon crossing, etc.) and improvement of road traffic bottlenecks in LMA (support LSTMP to be revised)
- ✓ Development of urban public transportation system (Mass transportation) in LMA (support LSTMP to be revised)

Strategy3 : Improving Customs and Trade Procedures to Facilitate Trade through International Standardization and Harmonization of Import and Export Procedures

The strategy aim of this initiative is to facilitate trade by improving customs procedures and inspection times at borders through streamlining procedures based on the WTO Trade Facilitation Agreement (TFA), which was effective since January 2017.

Delay in customs procedures at ports and border facilities causes to increase logistics costs, which have a negative impact (high costs) on economic activity in general for shippers and others, declining international competitiveness globally, negatively impacting investment in Nigeria, and obstacle for economic growth. The country's higher-level policy also clearly indicates the necessity of full implementation of the WTO Trade Facilitation Agreement.

The following directions are expected to improve the bottleneck under the strategy.

- ✓ Promotion single window (TFA 10.4)
- ✓ Reduction of custom clearance time through customs risk management (TFA 7.4)
- ✓ TRS and formulating/implementing countermeasures based on the survey results
- ✓ Introduction of AEO system including bilateral mutual recognition (TFA 7.7)
- ✓ Transparency of inspection procedures (TFA 5)
- ✓ Dispersal of custom-cleared cargo by bonded transport, tracking system and dry port development

Strategy4 : Promotion of Modal Shift for Efficiency, Global Competitiveness, and Environment

The strategy aim is to shift from the road transport to other modes to expand the development of non-road transport infrastructure to promote intermodal transport, and develop seamless transshipment facilities. It also aims to optimize logistics costs by considering various transport methods, and to improve the efficiency of logistics.

Currently, most of logistics in Nigeria is covered by road transport, however, the system is not global standard in terms of the environment and transport efficiency (cost). A balanced system would be the system by mass transport such as railways for the main logistics corridors, and trucks should be used for small-lot delivery. Following the global standard and improving environmental situation and efficiency, it is expected to lead to improved international competitiveness, and ultimately contribute to the economic development

of Nigeria. The multimodal concept is also a strategy that is frequently indicated in the country's higher-level policies.

The following directions are expected to improve the bottleneck under the strategy.

- ✓ Enhancement of rail freight capacity
- ✓ Development of inland waterway network
- ✓ Renovation of facilities to increase airport cargo
- ✓ Development of integrated terminals for transship
- ✓ Study and implementation for optimizing logistics cost

Strategy5: Strengthening of Relevant Organizations and Legal Framework for Various Logistics Services and Business, Support for Strategic Planning

The purpose of this initiative is to strengthen the legal system, including private businesses, to promote the improvement of logistics systems and to revitalize the entire logistics business by providing a wide variety of logistics services. It also supports the formulation of sectorial master plans.

In terms of various logistics services and businesses, for example, in the port sector, many port operations are outsourced to private companies, and the sophistication and automation of facilities to improve efficiency are promoted. In the aviation sector, there is an aggressive movement to establish a regulatory framework to encourage private initiative in operations, etc., and private operation of airports is expected to progress further in the future. In recent years, the promotion of DX has become essential to improve the efficiency of various operations, and the development of DX human resources to lead this field is also an important element.

On the other hand, while each sector develops its business based on a future master plan, many sectors have not formulated a master plan (aviation sector) or have been in the process of formulating one for a long time (port sector), and there is a concern that individual plans will be decided and businesses will be implemented without clear goals being set. In some sectors, there is a need for support in the formulation of such master plans.

The direction for priority projects under the strategy is expected to be as follows.

- ✓ Promotion of trade agreement and international agreements on cross-border transport facilitation
- ✓ Modernization of the logistics sector (promotion DX) and development of DX human resource in each sector
- ✓ Promotion of deregulation for new logistics businesses
- ✓ Consideration of measures to regulate checkpoints on major corridors and strengthen security
- ✓ Formulation of sectorial logistics master plan

5.4 Direction for Improving the Logistics Sector in Nigeria

5.4.1 Identification of the Direction of Priority Projects for Improving the Logistics Sector

There are several of "direction for priority projects for improving logistics sector" under each 5 strategy. In order to identify the direction for priority projects for improving logistics sector, eight evaluation criteria are defined and the "proposed directions" with higher scores are selected as shown in below table. As for the development needs of the Nigerian side, the related higher-level plan indicates "promotion of multimodal," but on the other hand, it still indicates a focus on investment for road infrastructure. In this regard, as shown by the current situations of the road sector, a road network in Nigeria could not cover the entire area yet, and the road conditions remain poor. Therefore, it is recognized that the minimum requirement functions are not provided as road infrastructure. The results of the evaluation include the development of infrastructure for logistics networks (particularly roads) and logistics hubs (particularly ports) throughout the country and in cities, various improvements (systems) associated with improvements to customs clearance and trade facilitation for import/export logistics hubs, the development of logistics nodes (transshipment facilities, etc.) connecting each logistics transport infrastructure, and support for the formulation of sector logistics master plans. For each of the directions identified here, specific priority projects will be formulated in the next step.

Table 5.4.1 Evaluation of the Direction of Priority Projects for Improving Logistics Sector

Strategy	Direction of Priority Project for Improving Logistics Sector	Needs from Nigerian Side					Japanese Support Policy			Total
		Key Infrastructure (Roads)	Physical Bottlenecks Improvement	Promotion of Multi-modal	Impact	Capacity Development	No Duplication with Donors	Japanese Advanced Technology	Consistency with Support Policy	
Development of Nationwide Logistics Corridors (roads) & International Gateways (ports), and strengthening of port function	Development/Rehabilitation of nationwide logistics corridors (Federal trunk roads)	1	1		1		1	1	1	6
	Strengthening of port facilities and connectivity improvement of port access by roads	1	1	1				1	1	5
	Upgrading of port truck management		1		1	1	1	1	1	6
	Decentralization of Lagos port complex cargo		1	1	1		1		1	5
Elimination of Logistics Bottlenecks and Development/Rehabilitation of Infrastructure to Improve Traffic Congestion in Urban Area	Construction of ring roads, bypasses and missing links (lagoon crossing, etc.) and improvement of road traffic bottlenecks in LMA	1	1	1	1		1	1	1	7
	Development of urban public transportation system (Mass transit) in LMA		1	1	1		1	1	1	6
	Promotion single window		1	1	1	1	1	1		6
Improving Customs and Trade Procedures to Facilitate Trade through International Standardization and Harmonization of Import and Export Procedures	Reduction of custom clearance time through customs risk management		1	1	1	1	1	1		6
	TRS and formulating/implementing countermeasures based on the survey results		1		1	1	1	1		5
	Introduction of AEO system including bilateral mutual recognition		1	1	1	1	1	1		6
	Advance instructions on applications		1			1	1	1		4
	Transparency of inspection procedures		1		1	1	1	1		5
	Dispersal of custom-cleared cargo by bonded transport, tracking system and dry port development		1	1	1		1	1	1	6
Promotion of Modal Shift for Efficiency, Global Competitiveness, and Environment	Enhancement of rail freight capacity		1	1	1				1	4
	Development of inland waterway network			1	1		1		1	4
	Renovation of facilities to increase airport cargo			1	1				1	3
	Development of integrated terminals for transship			1	1		1	1	1	5
	Study and implementation for optimizing logistics cost			1		1	1	1	1	5
Strengthening of Relevant Organizations and Legal Framework for Various Logistics Services and Business, Support for Strategic Planning	Promotion of trade agreement and international agreements on cross-border transport facilitation				1	1	1			3
	Modernization of the logistics sector (promotion DX) and development of DX human resource in each sector				1	1	1	1		4
	Promotion of deregulation for new logistics businesses					1	1	1		3
	Consideration of measures to regulate checkpoints on major corridors and strengthen security		1		1	1			1	4
	Formulation of sectorial logistics master plan			1		1	1	1	1	5

Source: JICA Study team

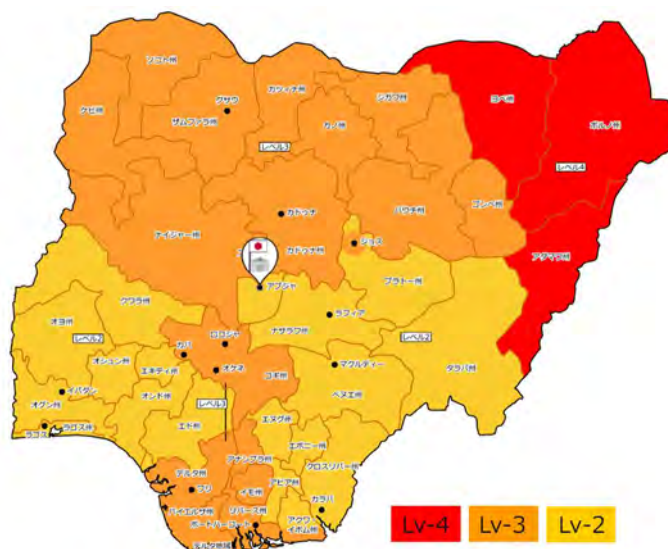
5.4.2 Targeted Areas and Corridors

Figure 5.4.1 shows the major corridors with the requests for improvement through an interview survey for relevant ministries and agencies, and it is the sections which are frequently used in logistics activities. All these corridors are federal roads, and stipulated in the NIIMP as routes that should be addressed in the short-term improvement project in the road sector.

From the aspect of the multimodal concept which is the quite important national policy on logistics, it is important to select areas and corridors connecting between six international sea ports and railways. Also, from the viewpoint of promoting the usage of ports in the south-eastern part of Nigeria in order to correct the over concentration of logistics demand in Lagos Port Complex, it is important to develop and improve the corridors that connect between these ports except Lagos and major cities in Nigeria.

Reference to the safety levels, on the other hand, is also necessary for considering the targeted area.

Another key point to consider is the security situation of the project implementation location, which should be considered when selecting the target area.



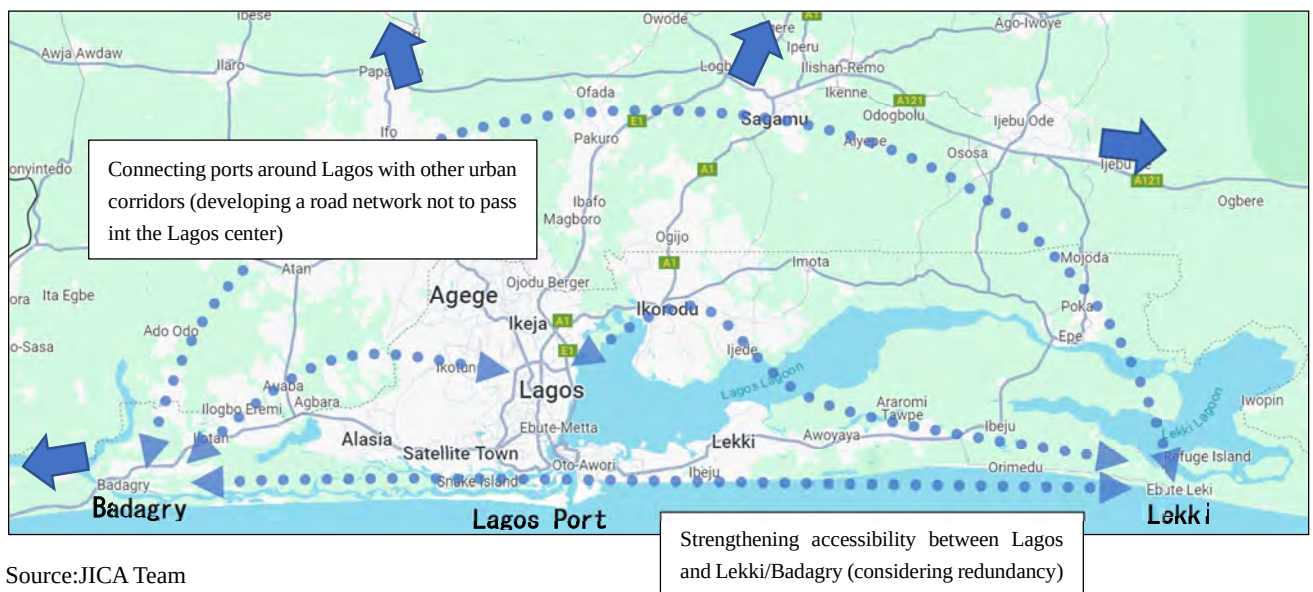
Source: Safety guideline by Japanese ministry of foreign affairs

Figure 5.4.1 Safety Instruction Map of Nigeria



Source: JICA Team

Figure 5.4.2 Corridors with high utilization needs identified through interviews with the Nigerian ministries and agencies and Japanese companies



Source: JICA Team

Figure 5.4.3 Strengthening and Improving Logistics Functions in LMA

Considering the potential overlap with projects already planned by other donors or through PPPs, as well as the security of the target regions among the areas and routes envisioned above, the proposed projects would be various infrastructure projects in the Lagos metropolitan area, technical cooperation to promote port reorganization and multimodal shift.

Chapter 6. Demand Forecasts

6.1 Overview of Related Studies

In May 2022, the Nigerian Institute of Transport Technology (NITT) published a report titled "Sustainable Transport Research 2021: A Study on the Impact of Road Freight Transport on the Nigerian Economy." According to this report, despite numerous issues such as delays in transportation, accidents, loss of cargo, poor transport services, and lack of transparency in freight rates, road freight transport remains the primary mode of transportation, surpassing rail and inland waterway transport. The study was conducted for the following purposes:

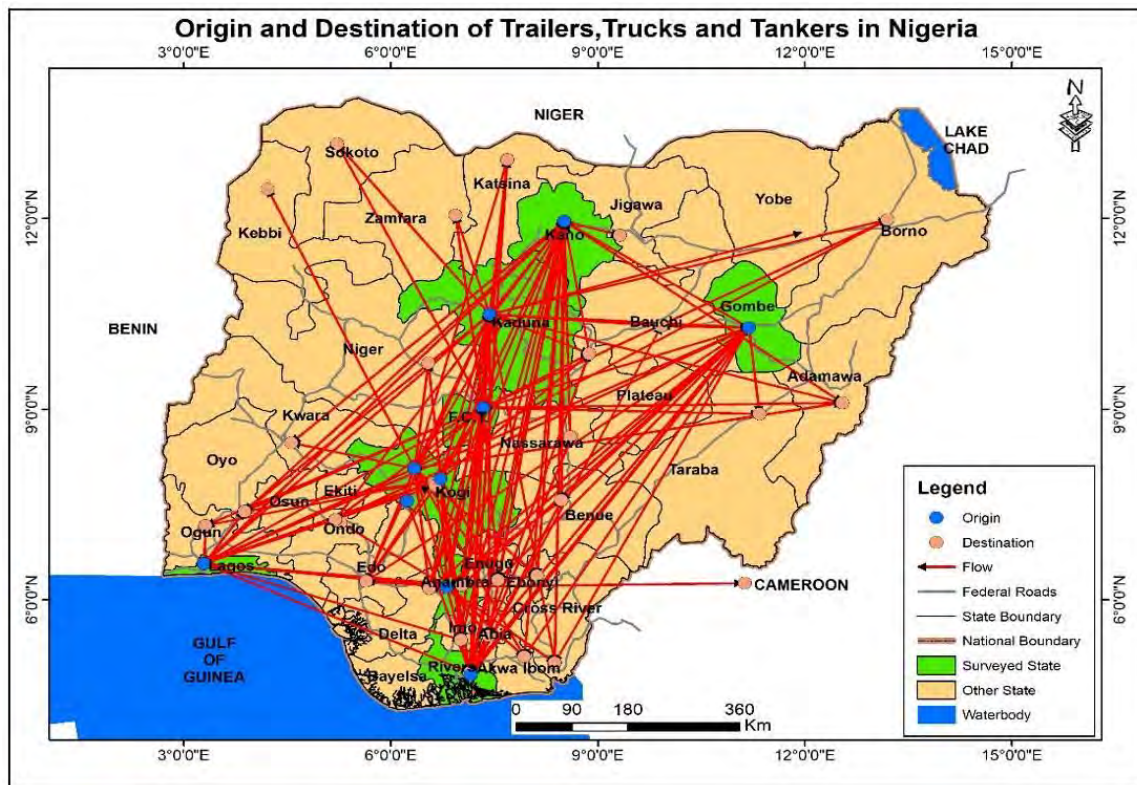
- To assess the contribution of road freight transport to GDP and its socio-economic impacts.
- To analyze traffic accidents.
- To collect baseline data on freight transport (types of vehicles, types of cargo, customs factors, transit park activities, etc.).
- To identify the origins and destinations of cargo.
- To propose policy strategies for road freight transport in Nigeria.

From the findings of this study, the following key points regarding road freight transport were identified:

- 43% of the cargo transported by trucks consists of agricultural products.
- There is a high prevalence of overloaded trucks.
- The peak season for truck operators is from January to March during the dry season.
- There is a high incidence of traffic accidents along the Lagos–Lokoja–Abuja–Kaduna–Kano route.
- 61% of drivers reported that the travel time from the point of departure to the destination exceeds 16 hours.

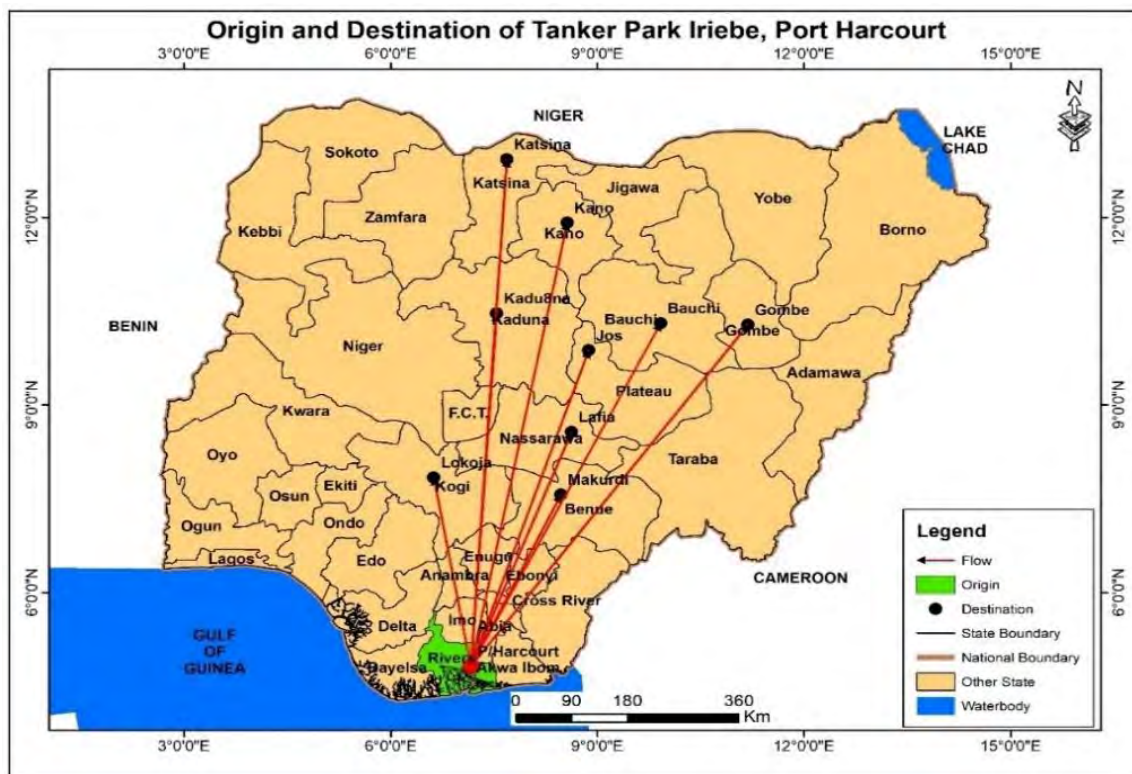
In addition, while the following information indicating the flow of goods is available, it will only be used for reference in this survey because the calculation methods were not clear. The figure illustrating the flow of goods is shown on the next page.

- Truck Origin-Destination (OD) desire line diagram for all domestic items.
- OD desire line diagram for petroleum products originating from the Tanker Park in Port Harcourt.
- OD desire line diagram for yams from Benue State.
- OD desire line diagram for all domestic items departing from and arriving at Apapa (Lagos).
- OD desire line diagram for all domestic items departing from and arriving at the Federal Capital Territory (FCT).



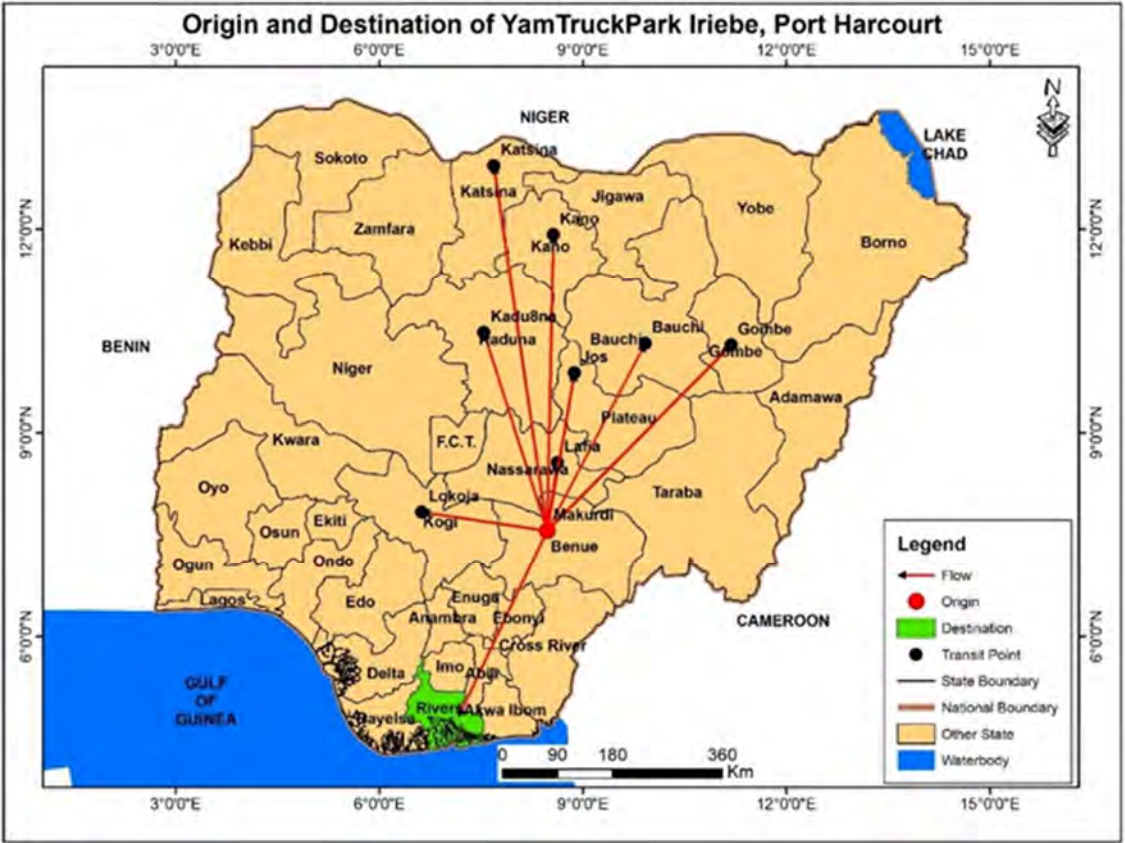
Source: NITT

Figure 6.1.1 Truck Origin-Destination (OD) Demand Map for All Commodities in Nigeria



Source: NITT

Figure 6.1.2 Origin-Destination (OD) Demand Map for Petroleum Products Starting From the Tanker Park in Port Harcourt



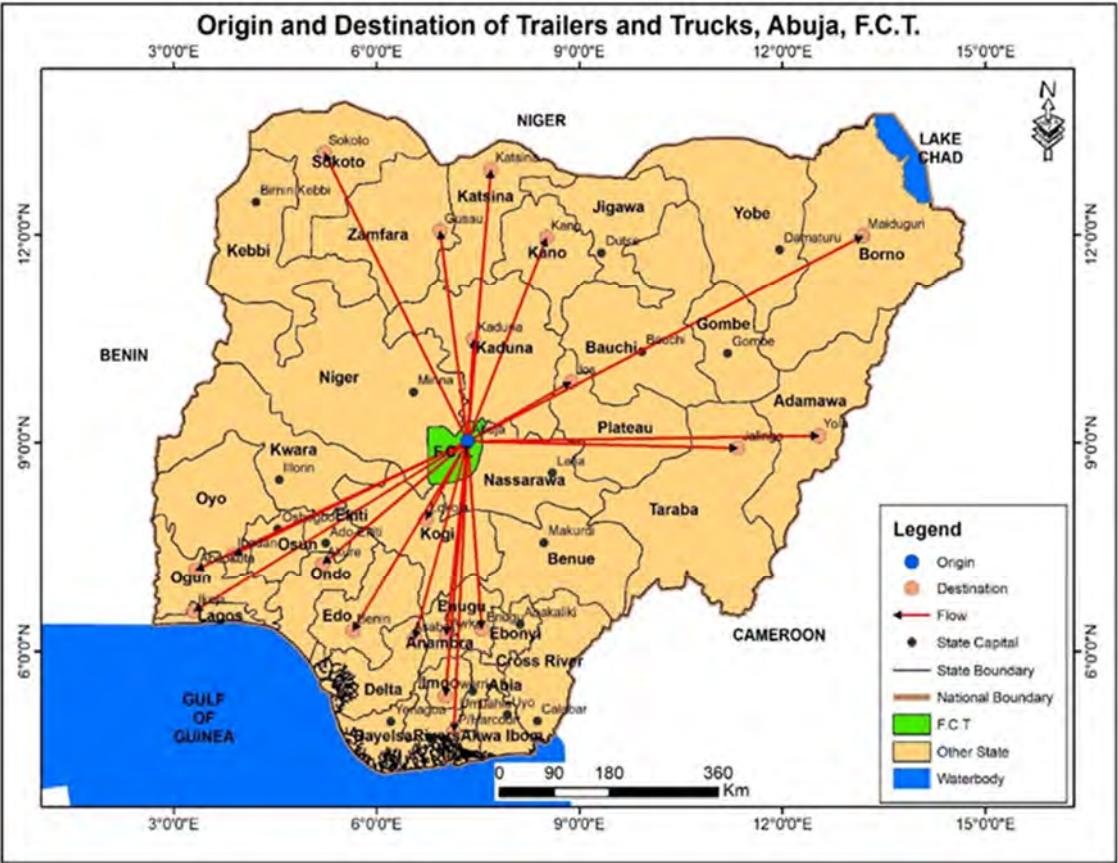
Source: NITT

Figure 6.1.3 Origin-Destination (OD) Demand Map for Yam Truck From Benue State



Source: NITT

Figure 6.1.4 Origin-Destination (OD) Demand Map for All Goods Transported by Truck From and to Apapa (Lagos)



Source: NITT

Figure 6.1.5 Origin-Destination (OD) Demand Figure for All Goods Transported by Truck From and to the Federal Capital Territory (FCT)

6.2 Conducting Transportation and Logistics Surveys

6.2.1 Purpose and Overview of the Survey

To quantitatively understand the logistics situation within Nigeria, a survey was conducted focusing on road transport, which accounts for over 90% of logistics activities. The survey targeted major trunk roads, including Lagos–Ibadan–Kano, Lagos–Benin City–Port Harcourt, Benin City–Abuja, and Abuja–Kano. Traffic volume observations and Origin-Destination (OD) surveys for trucks were carried out along these routes. Additionally, to identify challenges related to logistics activities, interviews were conducted with logistics providers and key shippers to gather insights on issues they face in their logistics operations. The survey items and an overview are presented in Table 6.2.1.

Table 6.2.1 Survey Items and Overview of Each Survey

	Survey Item	Survey Overview
1	Traffic Count Survey	- Traffic volume observations were conducted at nine locations nationwide (six along major corridors and three on arterial roads within Lagos). One of these locations was surveyed during both the dry and rainy seasons. - Continuous 24-hour surveys were conducted for one week at two locations along the corridors, while 24-hour surveys were conducted on weekdays for three days at the remaining seven locations.
2	Roadside Origin-Destination (OD) Interview Survey	- The survey locations are the same as those for traffic volume observations, except for the three arterial road locations in Lagos. - The survey focused exclusively on truck vehicles as part of a sample survey. - The goal was to achieve over 400 samples at each location or to extract samples from more than 20% of the trucks. The surveys were conducted only during daytime hours.
3	Interview Survey with Logistics Operators	The target participants included truck transport operators, water and maritime transport operators, and railway freight transport operators.
4	Interview Survey with Major Shippers	Interviews were conducted with major companies located in factories and industrial parks around Lagos and Abuja.

(1) Traffic Count Survey

1) Survey Methodology

The traffic count survey employed a vehicle detection method using rubber tubes. As illustrated in the photo below, two rubber tubes were laid across the lane where traffic volume was to be measured. The pressure from the tires of passing vehicles was detected by the rubber tubes, which allowed for the identification of vehicle types based on the intervals of detection. This method does not require the presence of survey personnel and enables remote, real-time data collection.

In this survey, the decision to adopt this method was influenced by security conditions that prevented the placement of survey personnel in the vicinity of the observation points at night, as well as considerations regarding the ease of conducting the survey.

The types of vehicles that can be observed using this method are shown in Figure 6.2.3, which includes 12 vehicle categories.

However, this measurement method does not allow for the aggregation of trucks (class 6 to class 12) into specific categories such as medium trucks, trailers, containers, and tankers. Therefore, survey personnel stationed at the observation points visually classified the vehicles into medium trucks, trailers, containers, and tankers, and recorded the number of trucks for each vehicle type. The methods for distinguishing between trailers, containers, and tankers are outlined in Table 6.2.2.

Initially, an AI-based traffic volume survey was planned, and tests were conducted using footage captured in Abuja. The test results, shown in Figure 6.2.2, indicated that the AI-based traffic volume survey could achieve sufficient accuracy in measuring traffic volume by vehicle type. However, after discussions with subcontractors, it was determined that due to security concerns, it would be difficult to install cameras at the observation points. As a result, the decision was made to proceed with the vehicle detection method using rubber tubes as described above.



Source: JICA Study Team

Figure 6.2.1 Vehicle Detection Sensors Installed on the Road (Metrocount)



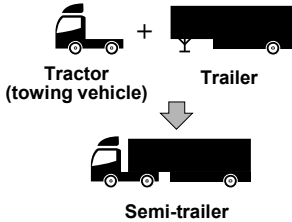
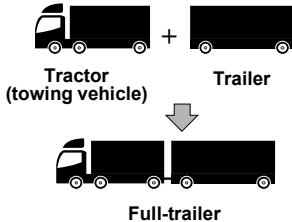
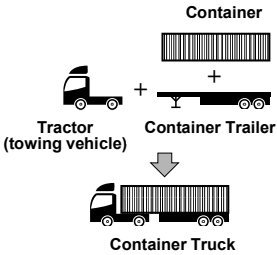
Figure 6.2.2 AI Traffic Count Survey Test Results

Class	Description	Dominant Vehicle	Traffic Count Survey	OD Survey
1	Bicycle or Motorcycle		Motorcycles	Excluded
2	Tricycles (keke)		Tricycles	
	Sedan, Wagon, 4WD, Utility, Light Van		Light Vehicles	
3	Trailer, Caravan, Boat, etc.			
4	2 axle truck		Medium Goods Truck	Medium Goods Truck
5	3 axle truck			
6	4 axle truck		Heavy Goods Vehicles	Heavy Goods Vehicles Trailer Container Tanker
7	3 axle articulated vehicle			
8	4 axle articulated vehicle			
9	5 axle articulated vehicle			
10	6 (or more) axle articulated vehicle			
11	B-Double or Heavy truck and trailer			
12	Double or triple road train			

Source: JICA Study Team

Figure 6.2.3 Vehicle Classification

Table 6.2.2 Types of Freight Vehicles and Their Structures

Type of Freight Vehicle		Overview	Figure	Reference Photo
Medium Truck		It is a cargo vehicle where the cargo section and the driving section are combined.	 Truck (2-axle to 4-axle)	
Large Truck	Trailer	A trailer typically refers to a towed vehicle that does not have its own engine and cannot move independently. However, the term "trailer" is often used to collectively describe the combination of a tractor (the towing vehicle) and the trailer (the towed vehicle). Trailers can be broadly classified into two categories based on the structure of the towing and towed vehicles: semi-trailers and full trailers. A semi-trailer carries cargo on the towed vehicle, while a full trailer can carry cargo on both the towing vehicle and the towed vehicle.	 Semi-trailer	
			 Full-trailer	
Large Truck	Container	A type of trailer, where the towed vehicle consists of a container chassis and a container, is commonly referred to as a container. The containers that are loaded onto these chassis are typically "dry containers," which are used for maritime transport.	 Container Truck	
	Tanker	A cargo vehicle designed to transport solids, liquids, and gases is known as a tank truck, also referred to as a tank lorry. It is primarily used for the transportation of petroleum, gas, and other similar materials.	 Tanker	

Source: JICA Study Team

2) Survey Locations and Duration

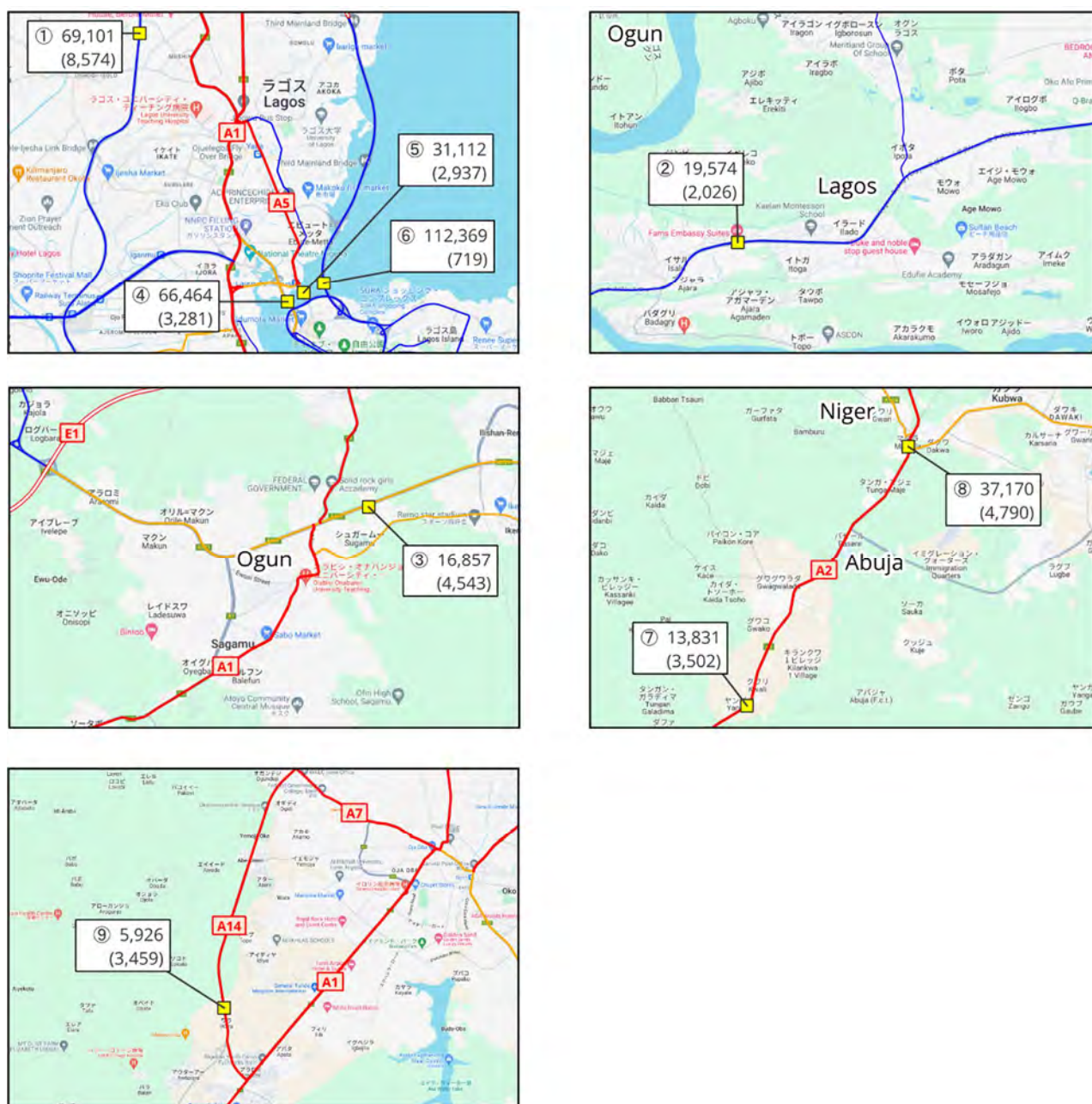
The duration of the traffic count survey and other relevant details are presented in Table 6.2.3, while the survey locations are illustrated in Figure 6.2.2. The traffic count observation survey was conducted at a total of nine locations. At survey locations ① and ⑦, a continuous survey was conducted over a period of seven days to capture the fluctuations in traffic volume, while the other survey locations were monitored for three days, from Tuesday to Thursday. Additionally, to understand seasonal variations in traffic volume, survey location ⑨ was examined during both the dry season and the rainy season. The survey was conducted continuously over a 24-hour period.

Table 6.2.3 Traffic Count Survey Locations and Survey Periods

No.	Survey Date and Time			Survey Location
	Survey Date	Period	Season	
①	May 13 (Monday) to May 19, (Sunday), 2024	1 week	Dry	Ikeja, Lagos State (F265: Apapa-Oshodi Expressway)
②	May 13 (Tuesday) to May 16 (Thursday), 2024	3 days		Badagry, Lagos State (F100: Lagos-Badagry Expressway)
③	May 21 (Tuesday) to May 23 (Thursday), 2024	3 days		Sagamu, Ogun State (A121: Sagamu-Benin Expressway)
④	June 24 (Sunday) to July 4 (Thursday), 2024	3 days		Ikeja, Lagos State (A1-2: Eco Bridge)
⑤				Ikeja, Lagos State (A5: Carter Bridge)
⑥				Ikeja, Lagos State (F265: Third Mainland Bridge)
⑦	April 21 (Sunday) to April 27 (Saturday), 2024	1 week		Yangoji, Federal Capital Territory (A2: Kaduna-Lokoja Road)
⑧	April 30 (Tuesday) to May 2 (Thursday), 2024	3 days		Madala, Federal Capital Territory (A2: Lomi-Gidan Bassa-Dagwa Road)
⑨	May 21 (Tuesday) to May 23 (Thursday), 2024	3 days	Dry	Ilorin, Kwara State (A14: Ilorin-Jebba Road)
	July 9 (Tuesday) to July 11 (Thursday), 2024	3 days	Rainy	

Source: JICA Study Team





*The number next to the survey location number indicates the average daily traffic volume, while the number in parentheses represents the average daily traffic volume of freight vehicles (medium trucks, trailers, containers, tankers)
Source: JICA Study Team

Figure 6.2.4 Traffic Count Survey and Roadside Origin-Destination (OD) Interview Survey Locations

3) Survey Content

The traffic count survey focused on collecting data on the volume of traffic categorized by vehicle type and direction (upstream and downstream) on an hourly basis.

(2) Roadside OD Interview Survey

1) Survey Methodology

The roadside OD interview survey (hereinafter referred to as "OD Survey") involved stopping logistics vehicles on major corridors and conducting direct interviews with the drivers of these vehicles, as illustrated in Figure 6.2.4. The target vehicles for the roadside OD interview survey included four types of logistics vehicles: medium trucks, trailers, containers, and tankers, as shown in Figure 6.2.3.



Figure 6.2.5 The Scene of the Roadside Origin-Destination (OD) Survey

2) Survey Locations and Duration

The survey locations for the roadside OD interview survey are detailed in Table 6.2.4, and the surveys were conducted at the same locations as the traffic volume observation survey. The survey was carried out on one day during the traffic volume observation survey period (Tuesday to Thursday), with the survey hours set during the daytime (approximately from 7 AM to 5 PM). The survey was conducted only during the dry season.

Table 6.2.4 Survey Locations and Dates for the Roadside Origin-Destination (OD) Interview Survey

No.	Survey Date and Time		Survey Location
	Survey Date	Survey Time	
①	Wednesday, May 15, 2024	Daytime (from sunrise to sunset)	Lagos State, Ikeja (F265: Apapa-Oshodi Expressway)
②	Wednesday, May 15, 2024		Lagos State, Badagry (F100: Lagos-Badagry Expressway)
③	Wednesday, May 22, 2024		Ogun State, Sagamu (A121: Sagamu-Benin Expressway)
⑦	Wednesday, April 24, 2024		Federal Capital Territory, Yangogi (A2: Kaduna-Lokoja Road)
⑧	Wednesday, May 1, 2024		Federal Capital Territory, Madala (A2: Lomi-Gidan Bassa-Dagwa Road)
⑨	Wednesday, May 22, 2024		Kwara State, Ilorin (A14: Ilorin-Jebba Road)

3) Survey Content

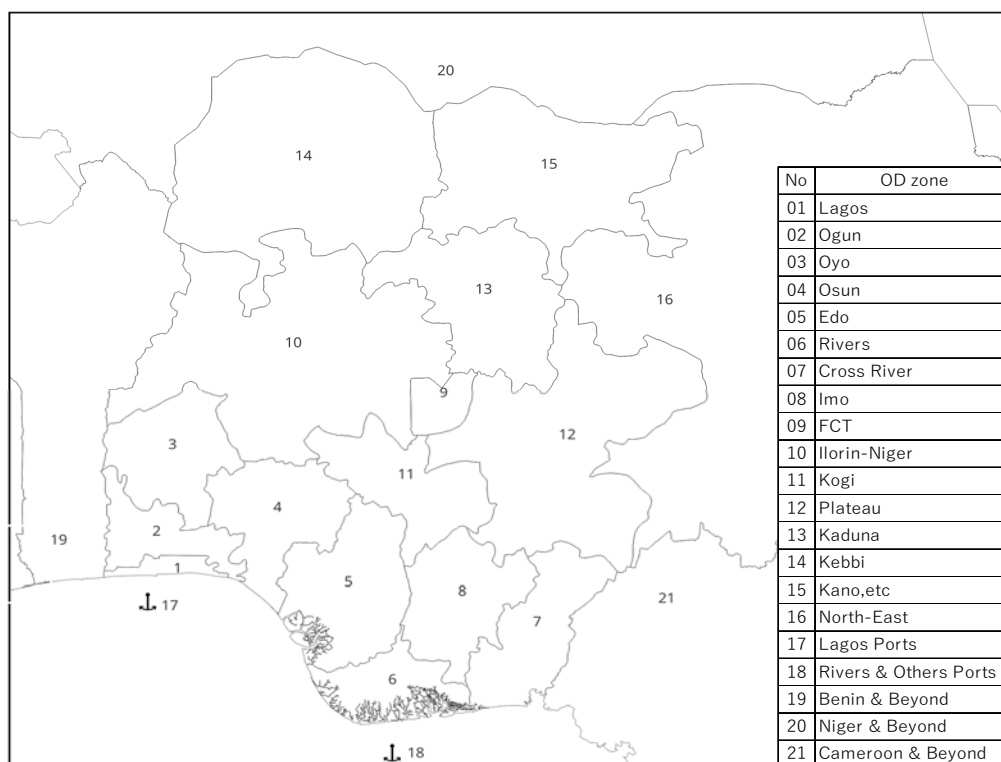
The main content of the roadside OD interview survey included the following items:

- Survey location, name of the surveyor, and date and time of the survey

- Identification of inbound or outbound traffic
- Number of occupants (driver, assistant)
- Driver's demographic information (age, gender, years of experience)
- Truck attributes (type, age of the vehicle, maximum load capacity, and load factor)
- Type of cargo (crops and agricultural products, solid minerals, petroleum and gas products, manufactured goods, livestock, etc.)
- Origin and destination (specific facility names such as Apapa Port, Murtala Muhammed International Airport, etc.)
- Travel route (names of roads taken, etc.)
- Travel time from origin to destination
- Frequency of refueling from origin to destination
- Use, effectiveness, and appropriateness of transit villages and truck parks
- Transportation-related challenges

4) Zoning

As illustrated in Figure 6.2.6, zoning was conducted by dividing Nigeria and its neighboring countries into 19 regions. Additionally, two zones were added for the major ports in Lagos (Apapa Port, Tin Can Island Port, and Lekki Port) and the major ports in the eastern region (Rivers Port and other ports), resulting in a total of 21 zones.



Source: JICA Study Team

Figure 6.2.6 Zoning Map and Zoning Table

(3) Interview Survey with Logistics Operators

1) Survey Methodology

The interview survey with logistics operators was conducted through on-site visits to logistics companies that are presumed to utilize Nigeria's major corridors as logistics routes.

2) Target Companies

The logistics operators that participated in the interview survey are three companies listed in Table 6.2.556. After visiting their offices and explaining the purpose and objectives of the survey, the interviews were conducted based on the content outlined in section 3).

Table 6.2.5 Target Logistics Operators for Interview Survey

Logistics Type	Target Operators	Location	Visit Date
Trucking Company	ABC Transport Office	Ikeja, Lagos State	July, 2024
	CISCO LOGISTICS NIG LTD		
Rail Freight Transport Company	NIGERIAN RAILWAY CORPORATION	Ebute Metta, Lagos State	

Source: JICA Study Team

3) Survey Content

The main content of the interview survey with logistics operators included the following items:

- Business activities
- Methods of raw material procurement
- Methods of product transportation
- Types and weights of cargo (monthly, annually)
- Transportation-related challenges

(4) Interview Survey with Major Shippers

1) Survey Methodology

The interview survey with major shippers involved on-site visits to companies located in factories and industrial parks around Lagos and Abuja, which are presumed to utilize Nigeria's major corridors for the inbound of raw materials and the outbound of finished products.

2) Target Companies

The major shippers that participated in the interview survey are four companies listed in Table 6.2.6. The interviews were conducted based on the content outlined in section 3).

Table 6.2.6 Target Companies for Interview Survey with Major Shippers

Location (Industrial Park Name)		Target Businesses (Industry Type)	Visit Date
Lagos State	Ogba	Freisland Campina WAMCO NigPlc (Dairy Products Manufacturing)	July, 2024
	Ilupeju	PZ Cussons Nigeria Ltd (Consumer Goods Manufacturing)	
	Apapa	Flour Mills Nigeria Limited (Food Manufacturing)	
FCT	Ido	Zeberced Group (Construction Materials Manufacturing and Others)	

Source: JICA Study Team

3) Survey Content

The main content of the interview survey with major shippers included the following items:

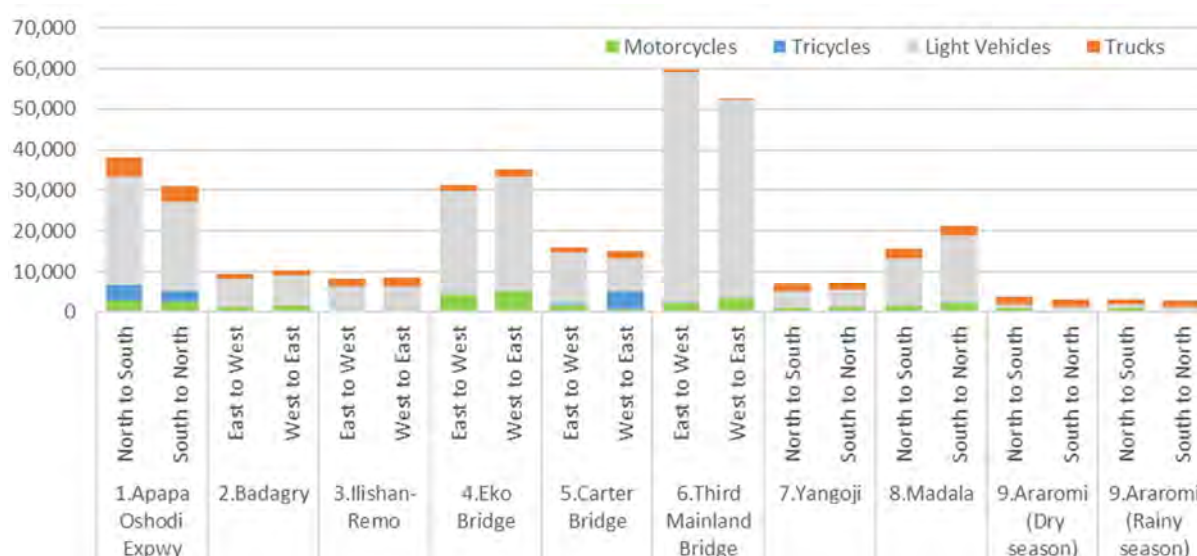
- Business activities
- Methods of raw material procurement
- Methods of product transportation
- Types and weights of cargo (monthly, annually)
- Transportation-related challenges

6.2.2 Summary of Survey Results

(1) Traffic Count Survey Results

1) Average Daily Traffic Volume(Weekdays)

The average daily traffic volume on weekdays at each survey location is shown in Figure 6.2.7.



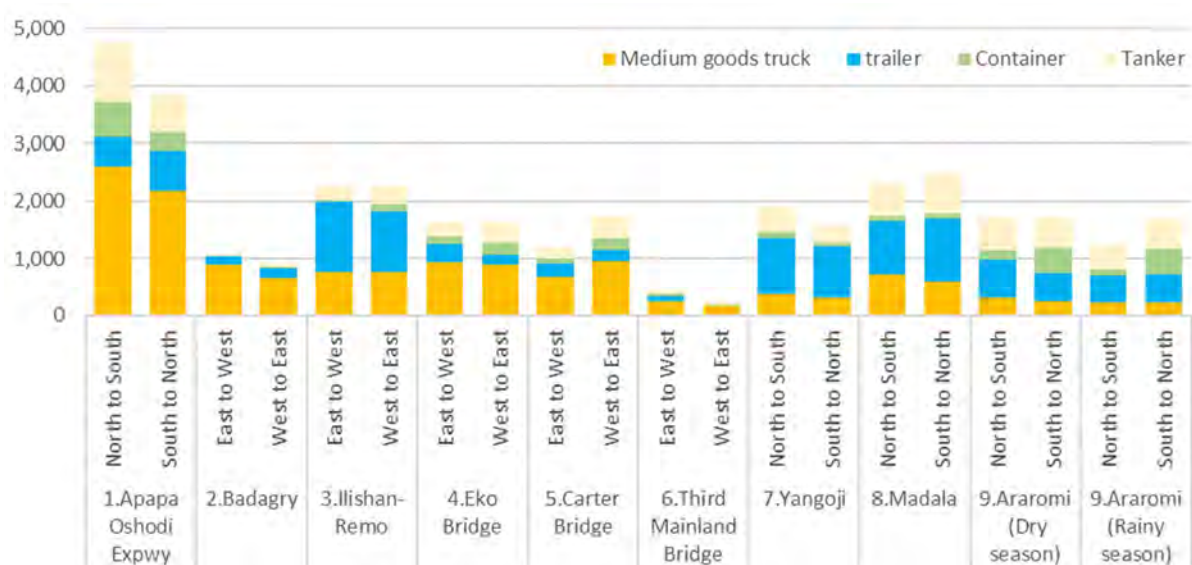
Source: JICA Study Team

Figure 6.2.7 Average Traffic Volume by Survey Location (Weekdays)

2) Average Daily Traffic Volume (Weekdays) (Logistics Vehicles)

Among the average daily traffic volume on weekdays at each survey location, the traffic volume of logistics vehicles (medium trucks, large trucks including trailers, containers, and tankers) is shown in Figure 6.2.8.

Logistics vehicles are most prevalent at survey location ① (F265: Apapa-Oshodi Expressway), while survey location ⑥ (F265: Third Mainland Bridge), which has the highest overall average daily traffic volume, has the fewest logistics vehicles. This is due to the restriction on logistics vehicles from 5 AM to 9 PM.



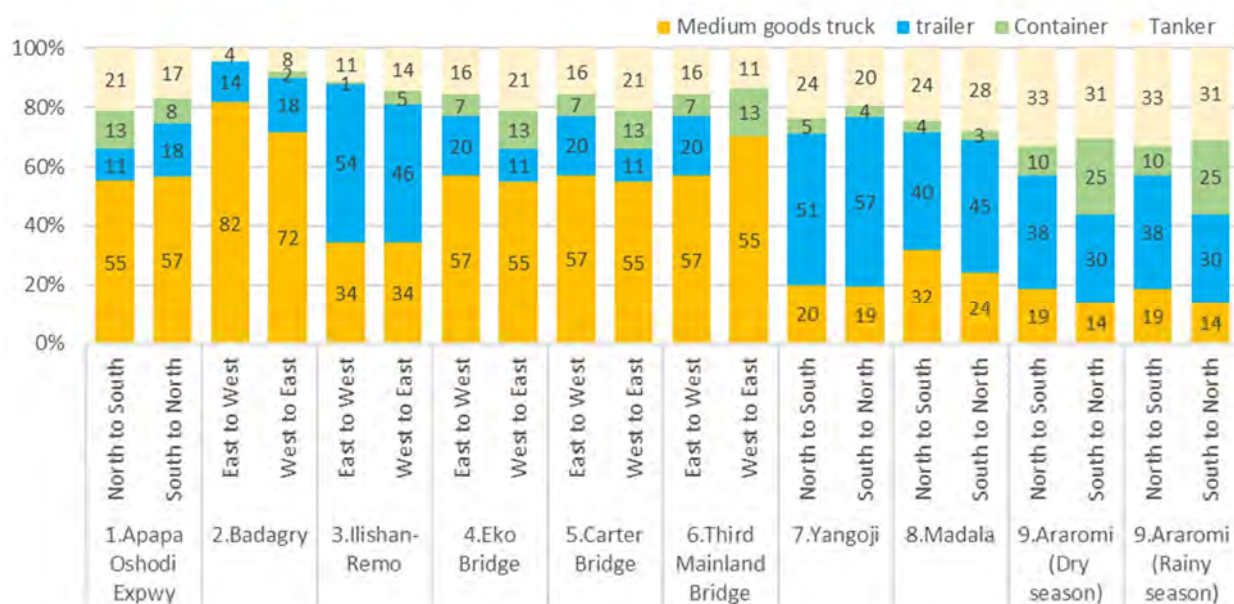
Source: JICA Study Team

Figure 6.2.8 Number of Logistics Vehicles by Survey Location

3) Proportion of Logistics Vehicles by Type (Weekdays)

The proportion of logistics vehicles (medium trucks, large trucks including trailers, containers, and tankers) by type is shown in Figure 6.2.9.

In Lagos State (survey locations ①, ②, ④, ⑤, and ⑥), medium trucks account for more than half of the logistics vehicles. In contrast, outside of Lagos State (survey locations ③, ⑦, ⑧, and ⑨), the proportion of trailers is the highest.



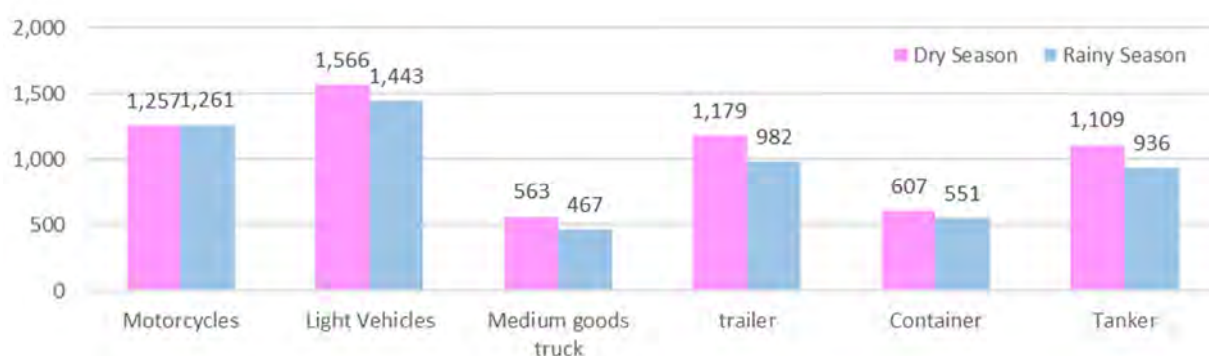
Source: JICA Study Team

Figure 6.2.9 Proportion of Logistics Vehicles by Survey Location

4) Seasonal Traffic Volume

Among the traffic volume surveys, the average daily traffic volume for the dry season and rainy season at survey location ⑨ (A14: Ilorin-Jebba Road) is shown in Figure 6.2.10.

Excluding motorcycles, the traffic volume during the rainy season is approximately 10-20% lower compared to the dry season.



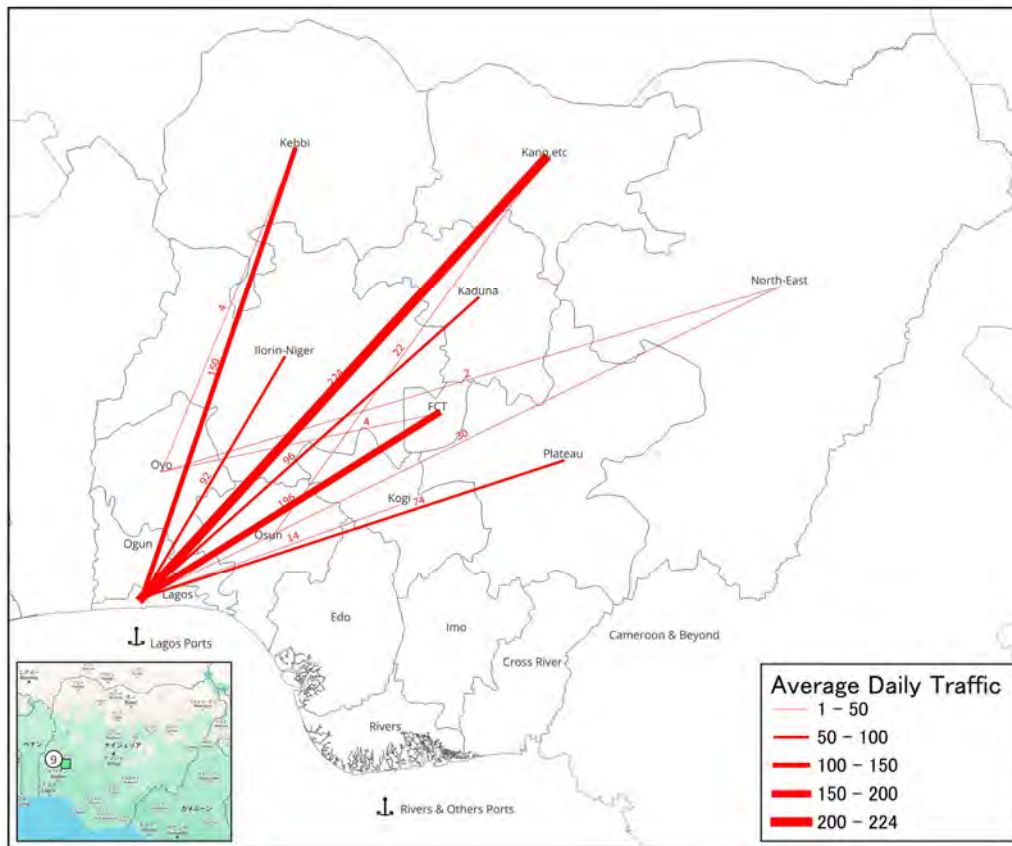
Source: JICA Study Team

Figure 6.2.10 Seasonal Variation in Traffic Volume (Survey Location 9)

(2) OD Survey Results (Origin-Destination of Freight Vehicles)

The current OD survey is a sample survey, so it is necessary to extrapolate the sample data back to the population (all vehicles passing through the survey location). The process of extrapolating the sample data to the population is referred to as "expansion." In this survey, expansion factors were calculated based on the effective number of vehicles collected by type and direction at each survey location, as well as the cross-sectional traffic volume.

Here, the results from survey location ⑨ are presented as representative findings. Results from other survey locations are compiled in the appendices. The Ilorin-Jebba Road at survey location ⑨ has many origins and destinations in Lagos, and the flow pattern indicates that it is used as a transport route between Lagos State and the Federal Capital Territory (FCT) and Kaduna State, as well as Kano.



Source: JICA Study Team

Figure 6.2.11 Average Daily Number of Logistics Vehicles Passing Through the Survey Location (Survey Location 9)

(3) Interview Survey with Logistics Operators

In the interview survey conducted with logistics operators, responses were obtained from two road transport companies and one railway company. The challenges faced by road transport operators and railway freight operators, as identified in the survey results, can be summarized as "poor road conditions," "rising fuel costs," "difficulty in procuring parts," and "substandard fuel." This indicates that there are numerous logistical challenges across various sectors in Nigeria. The specific logistics challenges faced by each logistics operator are summarized in Table 6.2.7.

Table 6.2.7 Results of the Interview Survey with Logistics Operators

Company Name	ABC Transport Office	CHISCO TRANSPORT	NIGERIAN RAILWAY CORPORATION
Main Business Activities *Including subsidiaries/affiliated companies' activities	•Transportation operations for the cement factory UNICEM located in Calabar, Cross River State, Nigeria. •Passenger transportation throughout Nigeria and the West African region (Togo, Benin, Ghana). •Vehicle assembly (Forlan, Shackman)	•Engaged in logistics and passenger transportation operations throughout West Africa. •Resale of automotive parts. •Storage and sale of diesel fuel.	•A state-owned enterprise that holds the operating rights for railways in Nigeria.
Location	Lagos Industrial Park	Lagos Industrial Park	Ebute Metta, Lagos
Main Logistics Challenges	•Procurement of trucks and vehicles. •Due to pressure on Nigeria's middle class, there is a need to introduce minibuses to cater to the lower classes of Nigerian society. •In light of recent changes in the macroeconomic environment, there is a search for more affordable options for vehicle procurement (such as purchasing Chinese-made vehicles). •Although Chinese vehicles are less durable compared to European and Japanese cars, there is a gradual shift towards them due to their lower cost and reduced investment requirements. •The road conditions throughout Nigeria are poor. •Procurement of spare parts (especially lubricants and tires) is challenging. •Rising fuel/energy costs account for 70% of business costs. •Damage to vehicle engines due to impurities in fuel. •Fluctuations in energy prices complicate business planning.	•The depreciation of the Naira, rising import duties, and the exchange rate of the US dollar have made it difficult to procure genuine spare parts for vehicles. •Parts are being sourced from Germany and Turkey, but the quality is inconsistent. •Rising fuel and energy costs. •Poor-quality fuel affects the vehicle's injector system, with a more pronounced impact on Chinese-made vehicles. •Deteriorating road conditions lead to wear and damage of vehicle parts, affecting both durability and operation. •Due to security issues on Nigerian roads, there has been a 50% decrease in foot traffic over the past decade (2014-2024), resulting in a shift towards safer air transportation.	•The rising cost of diesel fuel is making train operations increasingly difficult. •Railway tracks, level crossings, outdoor signaling equipment, and telecommunications facilities are prone to acts of vandalism, leading to train stoppages and cancellations. •There are rebellions and acts of piracy occurring in various parts of the country. •There is a shortage of locomotives, passenger cars, and freight cars, and machinery and workshop equipment are aging. •There is a lack of funding for the installation of safety equipment at major stations and for managing entries and exits. •Over 90% of all cargo in Nigeria is transported via road infrastructure, and other modes of transport, such as railways and inland waterways, are unable to carry the potential volume of cargo.
Other Comments	•ABC takes benefits in collaborating with the Japanese government and companies, as there is much Nigeria can learn from Japan, such as vehicle design, financing, and the use of technology in logistics operations.	•Port operations have improved in recent years as a result of administrative reforms. •There is a need to procure high-quality vehicles and parts for competition and service provision, and there is a desire to build partnerships with Japanese stakeholders and vehicle manufacturers.	•There is a specific planning document for the railway sector, the NRC's 25-Year Master Plan, but it is over 20 years old and may require some revisions. •To promote international trade, it is necessary to connect railway lines to major seaports and inland dry container ports.

Source: JICA Study Team

(4) Interview Survey with Major Shippers

The results of the interview survey conducted with major shippers indicate that the logistical challenges they face can be summarized as "rising fuel costs," "poor road conditions," and "widespread corruption," among others. This shows that major shippers, like logistics operators, are also confronted with various challenges across different sectors. The specific logistics challenges faced by major shippers are summarized in Table 6.2.8.

Table 6.2.8 Results of the Interview Survey with Major Shippers

Company Name	Flour Mills of Nigeria Plc	PZ Cussons Nigeria Ltd	Freisland Campina WAMCO Nig Plc	Zeberced Group
Main Business Activities *Including subsidiaries/affiliated companies	•Manufacturing and sales of flour, pasta, bags, chemicals, animal feed, fertilizers, etc.	•Manufacturing and sales of chemicals, machine parts, plastics, cartons, polyethylene, peanuts, etc.	•Dairy products (liquid milk, condensed milk, yogurt)	•Manufacturing of plastic products •Production of sesame •Construction •Concrete manufacturing
Location	Apapa Industrial Park	Ilupeju Industrial Park	Ogba Industrial Park	Idu Industrial Park
Methods of Procurement for Raw Materials, etc.	•Most agricultural materials are locally sourced. Wheat is primarily imported from Europe (mainly Russia). Most chemicals are imported from China, India, and Europe.	•Most electronic components are sourced from China, chemicals from India and Europe, plastics are locally produced, and most peanuts and agricultural products are sourced locally and from West Africa. •Most imports are transported by sea and then delivered to our facilities by truck.	•Raw milk, protein, polyethylene, plastics, and tin cans are sourced by truck from all over Nigeria.	•Cement is sourced from the Obajana Dangote factory.
Main Logistics Challenges	•Taxation on large trucks •Very poor road conditions •Rising costs of diesel fuel •Increased truck purchase costs due to the depreciation of the naira •Unreliable local logistics providers •Bottlenecks at ports due to an excess of freight forwarders •Delays in the government's introduction of CNG •Security issues for drivers and products, especially in the northern regions.	•Rising costs of foreign currency payments •Delays at Lagos port •Increasing costs of truck transportation •Harassment of truck drivers by touts and local government agents •Poor road conditions •Unreliable insurance •Insufficient quality of drivers •Rising fuel costs and increasing truck purchase costs, among other issues.	•Increasing costs •Traffic issues •Multiple road taxes •Robbery •Poor road conditions •Delays in delivery times •Aging vehicles •Shortage of diesel fuel	•Power supply •Expansion of access roads to industrial estates •Maintenance and management of truck vehicles •Improvement of roads
Other Comments	•There is a hope that the above challenges will be	•Interest rates on loans should be significantly reduced	•It is believed that the above logistics	•Improvement of roads •There is a

Company Name	Flour Mills of Nigeria Plc	PZ Cussons Nigeria Ltd	Freisland Campina WAMCO Nig Plc	Zeberced Group
	resolved urgently.	to allow for the purchase of more trucks. •The government should take the transition to CNG more seriously. •Police and touts should stop harassing drivers and extorting them.	challenges should be addressed.	desire for improvement in power supply.

Source: JICA Study Team

6.3 Freight Flow Forecast

6.3.1 Forecasting Method

To understand the freight flow within Nigeria, roadside OD interview surveys and traffic volume count surveys were conducted on major roads. From these survey results, traffic between Lagos and the FCT/Kano was captured at locations 1 and 9 (refer to the previous section), traffic between Lagos and Port Harcourt was captured at locations 1 and 3, traffic between Port Harcourt and the FCT, as well as between the FCT and Kano, was captured at locations 7 and 8, and traffic between Benin and the west and Nigeria was captured at location 2. Appropriate data processing was conducted (including the expansion of sample data and the removal of duplicate data), resulting in the creation of a freight OD table (origin-destination) for key regions.

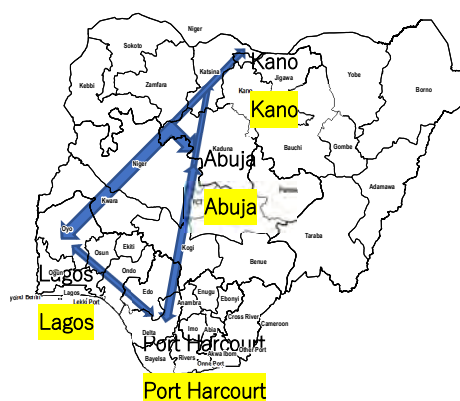


Figure 6.3.1 Focus Area of the Study

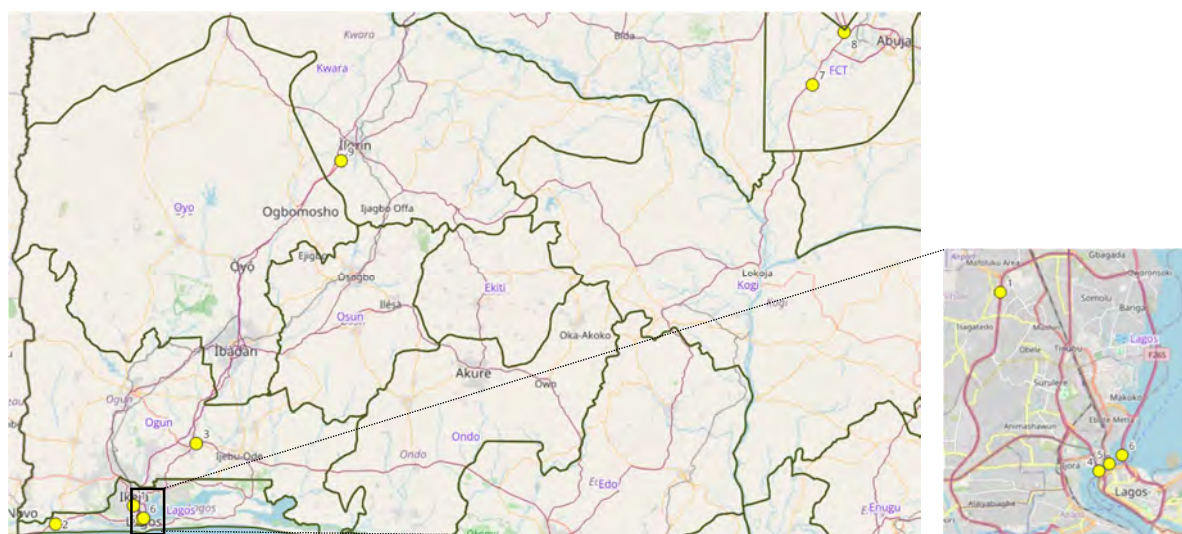


Figure 6.3.2 Traffic Survey Sites

6.3.2 Analysis of Traffic Characteristics by Survey Location

After data processing, the freight flow situation at each survey location will be analyzed.

(1) Survey Location 1 (F265:Apapa-Oshodi Expressway)

- A) Survey Location: Approximately 2.7 km southwest of Oshodi Interchange on the Expressway (F265), and 700 meters south of the junction with Airport Road
- B) Number of Lanes: 5 lanes in one direction (3 main lanes + 2 service lanes)
- C) Average Daily Traffic Volume

On weekdays, an average of 70,535 vehicles pass through, while on weekends, the average is 47,923 vehicles. Of these, the percentage of freight vehicles is 12% on weekdays and 11% on weekends. The weekend traffic volume decreases to 68% of the weekday traffic. Among the freight vehicles, 64% are medium trucks and 59% are large trucks.

Table 6.3.1 Traffic Volume Count Survey Results for Location 1

(Unit: vehicles/day)

Unit: vehicles/day

	Direction	Road type	Motorcycle	Car, Taxi, Danfo	Medium Truck	Large Truck				M+L Trucks	Total
						Truck	Container	Tank Lorry	Sub total		
Weekdays	South → North	Main	1,863	15,942	1,874	384	260	504	1,148	3,022	20,827
		Service	831	9,007	704	80	43	110	233	937	10,775
	North → South	Main	2,268	19,948	2,286	509	359	660	1,528	3,814	26,030
		Service	699	11,172	787	87	44	114	245	1,032	12,903
	Total		5,661	56,069	5,651	1,060	706	1,388	3,154	8,805	70,535
			8%	80%	8%	4%				12%	100%
Weekends	South → North	Main	458	12,018	1,147	261	171	343	775	1,922	14,398
		Service	152	4,366	213	34	22	49	105	318	4,836
	North → South	Main	1,180	16,227	1,749	265	190	356	811	2,560	19,967
		Service	424	7,608	512	62	36	80	178	690	8,722
	Total		2,214	40,219	3,621	622	419	828	1,869	5,490	47,923
			5%	84%	7%	4%				11%	100%
Percentage of weekend traffic to weekday traffic			39%	72%	64%	59%	59%	60%	59%	62%	68%

Source: JICA Study Team

D) Transport Tonnage and Freight Vehicle Count by Item

The average transport tonnage and freight vehicle count by item on weekdays are shown in the table below. Out of a total of 8,805 freight vehicles per day, 7,175 vehicles (81%) were empty trucks. This high percentage of empty trucks is attributed to the large number of waiting trucks at the Apapa-Tin Can Island Port. Among the non-empty trucks, the largest proportion of transported goods was manufactured goods, followed by cargo and agro products, and oil & gas. The average transport tonnage per vehicle was 19 tons.

Table 6.3.2 Itemized Transport Volume and Traffic Volume at Survey Location 1

	Crops&Agro	Solid Minerals	Oil&Gas	Manufact.goods	Other Products	Unknown	Empty	Total	Net total
Ton/day	9,804	0	5,587	7,423	1,453	6,448	0	30,715	30,715
Veh/day	458	0	224	528	98	320	7,175	8,805	1,628
Gross%	5%	0%	3%	6%	1%	4	81%	100%	19%
Net%	20%	0%	14%	32%	6%	20%	-	-	100%
Avg. ton/veh	21	-	25	14	15	20	0	3	19

Source: JICA Study Team

E) Percentage of International Freight

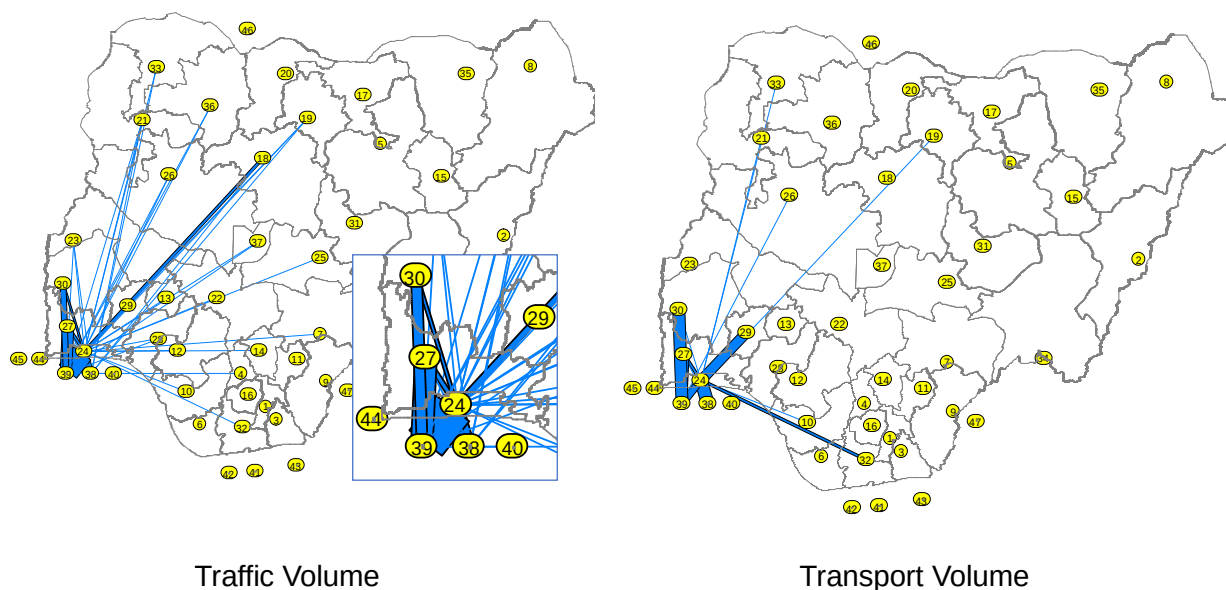
The total number of international freight vehicles passing through Survey Location 1 (including traffic to and from Apapa, Tin Can, and Lekki ports, as well as traffic crossing the Seme border) is 4,801 vehicles per day, which accounts for 54% of the overall traffic.

F) Major Origin-Destination (OD) Traffic

Among the traffic passing through Survey Location 1, the highest volume is within Lagos State (Zone 24) with 3,910 vehicles per day, followed by traffic between Lagos State and Oyo State (Zone 30) with 394 vehicles per day, Lagos State and Ogun State (Zone 27) with 380 vehicles per day, and Lagos State and Kaduna State (Zone 18) with 348 vehicles per day.

When examining traffic between key regions, there are 140 vehicles per day between Lagos State and the Federal Capital Territory (FCT) (Zone 37), 84 vehicles per day between Lagos State and Rivers State (Zone 32) where Port Harcourt is located, and 22 vehicles per day between Lagos State and Kano State.

In terms of freight volume, the highest amount is within Lagos State at 11,479 tons per day, followed by 2,655 tons per day between Lagos State and Osun State (Zone 29), 1,636 tons per day between Lagos State and Rivers State (Zone 32), and 1,014 tons per day between Lagos State and Ogun State (Zone 27).



Source: JICA Study Team

Figure 6.3.3 Origin and Destination of Traffic Passing Through Survey Location 1

(2) Survey Location 2 (F100, Lagos-Badagry Expressway)

A) Survey Location: Approximately 25 km east of the Seme border with Benin on the Lagos-Badagry Expressway (F100)

B) Number of Lanes: One lane in each direction (currently undergoing widening)

C) Average Daily Traffic Volume

On weekdays, an average of 19,629 vehicles per day passed through, while on weekends, the average was 18,006 vehicles per day. The proportion of freight vehicles was 11% on weekdays and 8% on weekends. Weekend traffic volume decreased to 92% of weekday traffic. Among these, medium trucks accounted for 64%, and large trucks for 74%.

Table 6.3.3 Traffic Volume Count Survey Results for Location 2

(Unit: vehicles/day)

	Direction	Motorcycle	Car, Taxi, Danfo	Medium Truck	Large Truck				M+L Trucks	Total
					Truck	Container	Tank Lorry	Sub total		
Weekdays	West → East	1,039	7,222	866	193	5	58	256	1,122	9,383
	East → West	1,388	7,911	670	210	8	59	277	947	10,246
	Total	2,427	15,133	1,536	403	13	117	533	2,069	19,629
		12%	77%	8%	3%				11%	100%
Weekends	West → East	1,201	6,594	498	143	9	40	192	690	8,485
	East → West	1,530	7,297	491	158	2	43	201	694	9,521
	Total	2,731	13,891	989	301	11	83	393	1,384	18,006
		15%	77%	6%	2%				8%	100%
Percentage of weekend traffic to weekday traffic		113%	92%	64%	75%	92%	71%	74%	67%	92%

Source: JICA Study Team

D) Transport Tons and Freight Vehicle Counts by Item

The average weekday transport tons and freight vehicle counts by item are shown in the table below. Out of a total of 2,069 freight vehicles per day, the number of empty trucks was 710 per day (34%).

When examining the types of cargo carried by the trucks, the highest proportion was for Other Products (54%), followed by Manufactured Goods (25%), and Crops & Agro (10%). The average transport tons per vehicle was 22 tons.

Table 6.3.4 Itemized Transport Volume and Traffic Volume at Survey Location 2

	Crops&Agro	Solid Minerals	Oil&Gas	Manufact.goods	Other Products	Unknown	Empty	Total	Net total
Ton/day	4,718	0	2,741	6,580	12,096	3,352	0	29,487	29,487
Veh/day	135	0	69	336	730	89	710	2,069	1,359
Gross%	7%	0%	3%	16%	35%	4%	34%	100%	66%
Net%	10%	0%	5%	25%	54%	7%	-	-	100%
Avg. ton/veh	35	-	40	20	17	38	0	14	22

Source: JICA Study Team

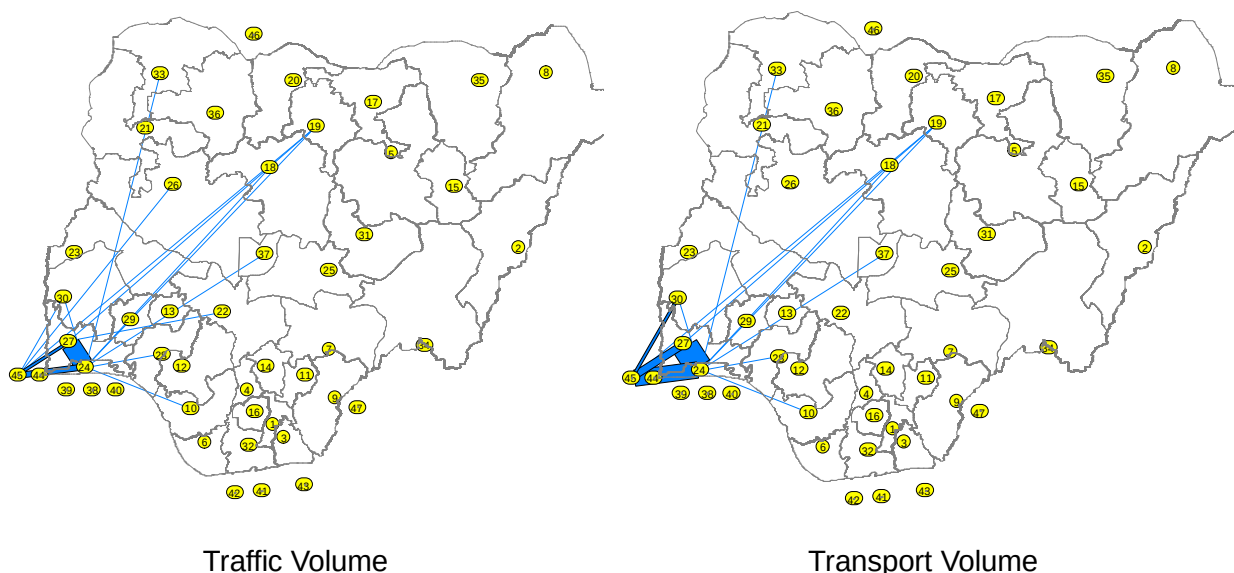
E) Proportion of International Freight

The total number of international freight vehicles (traffic crossing the Seme border only) passing through Survey Location 2 is 384 vehicles per day, which accounts for 19% of the overall traffic.

F) Major Origin-Destination (OD) Traffic

Among the traffic passing through Location 2, the highest volume is within Lagos State at 1,030 vehicles per day, followed by traffic between Lagos State and Ogun State (Zone 27) with 536 vehicles per day, Lagos State to the west of Togo (Zone 45) with 190 vehicles per day, and Ogun State to the west of Togo with 142 vehicles per day.

In terms of transport volume, the highest freight volume is within Lagos State at 13,806 tons per day, followed by 6,071 tons per day between Lagos State and Ogun State (Zone 27), 4,250 tons per day between Lagos State and the west of Togo (Zone 45), 2,043 tons per day between Ogun State and the west of Togo, and 1,219 tons per day between Oyo State (Zone 30) and the west of Togo.



Source: JICA Study Team

Figure 6.3.4 Origin and Destination of Traffic Passing Through Survey Location 2

(3) Survey Location 3 (A121, Sagamu-Benin Expressway)

A) Survey Location: Approximately 13 km east of the interchange with E1 on the Benin-Sagamu Expressway (A121-1), and about 3 km east of the intersection with A1

B) Number of Lanes: Two lanes in each direction

C) Average Daily Traffic Volume

On weekdays, an average of 16,910 vehicles per day passed through, of which the number of freight vehicles was 4,586 (27%).

Table 6.3.5 Traffic Volume Count Survey Results for Location 3

(Unit: vehicles/day)

	Direction	Motorcycle	Car, Taxi, Danfo	Medium Truck	Large Truck				M+L Trucks	Total
					Truck	Container	Tank Lorry	Sub total		
Weekdays	West → East	220	5,862	1,220	798	51	230	1,079	2,299	8,381
	East → West	296	5,946	1,128	864	48	247	1,159	2,287	8,529
	Total	516	11,808	2,348	1,662	99	477	2,238	4,586	16,910
		3%	70%	14%	13%				27%	100%

Source: JICA Study Team

D) Transport Tons and Freight Vehicle Counts by Item

The average weekday transport tons and freight vehicle counts by item are shown in the table below. Out of a total of 4,586 freight vehicles per day, the number of empty trucks was 1,763 per day (38%).

When examining the types of cargo carried by the trucks, the highest proportion was for Manufactured Goods (38%), followed by Other Products (22%), Solid Minerals (17%), and Oil & Gas (12%).

The average transport tons per vehicle was 25 tons.

Table 6.3.6 Itemized Transport Volume and Traffic Volume at Survey Location 3

	Crops&Agro	Solid Minerals	Oil&Gas	Manufact.goods	Other Products	Unknown	Empty	Total	Net total
Ton/day	5,683	10,882	13,060	27,339	11,313	2,714	0	70,991	70,991
Veh/day	216	467	332	1,097	607	103	1,763	4,586	2,822
Gross%	5%	10%	7%	24%	13%	2%	38%	100%	62%
Net%	8%	17%	12%	38%	22%	4%	-	-	100%
Avg. ton/veh	26	23	39	25	19	26	0	15	25

Source: JICA Study Team

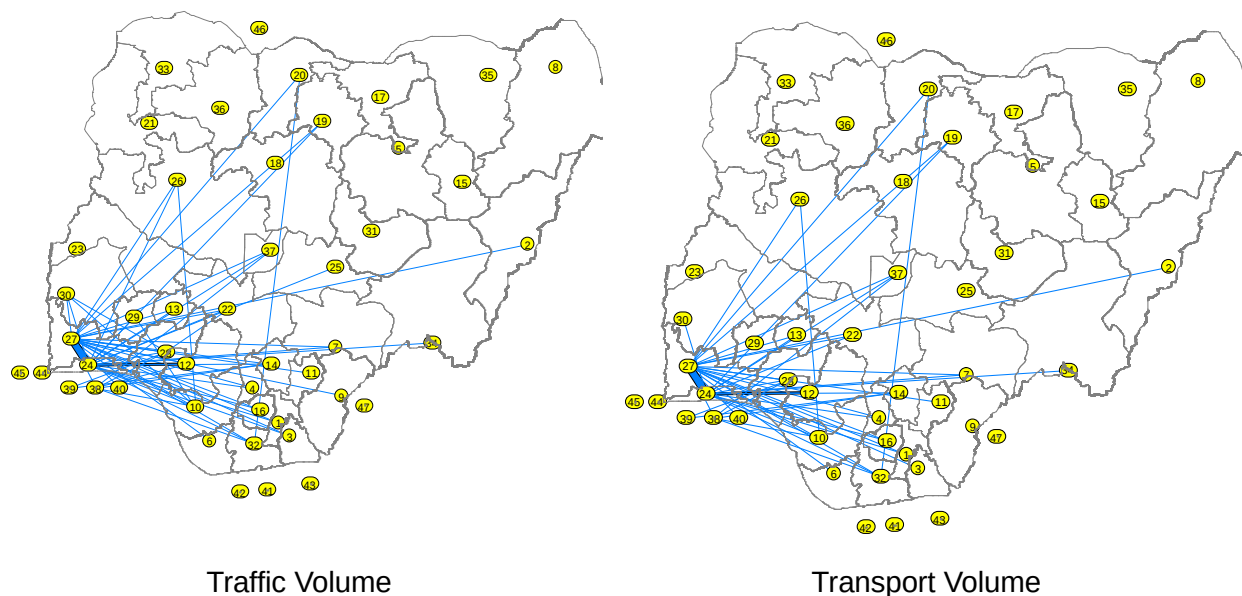
E) Proportion of International Freight

The total number of international freight vehicles (traffic entering and exiting Apapa, Tin Can, and Lekki ports) passing through Location 3 is 198 vehicles per day, which accounts for 4% of the overall traffic.

F) Major Origin-Destination (OD) Traffic

Among the traffic passing through Location 2, the highest volume is from within Ogun State (Route 27) with 1,304 vehicles per day, followed by traffic between Ogun State and Lagos State (Route 24) with 814 vehicles per day, Lagos State to Edo State (Route 12) with 360 vehicles per day, and Lagos State to Ondo State (Route 28) with 200 vehicles per day.

In terms of transport volume, traffic within Ogun State is the highest at 17,886 tons per day, followed by traffic between Ogun State and Lagos State at 12,929 tons per day, and Lagos State to Edo State at 7,162 tons per day.



Source: JICA Study Team

Figure 6.3.5 Origin and Destination of Traffic Passing Through Survey Location 3

(4) Survey Location 4 (Eko Bridge)

A) Survey Location: On the Eko Bridge (A1-2) connecting Lagos Mainland and Lagos Island

B) Number of Lanes: 3 lanes in each direction

C) Average Daily Traffic Volume

On weekdays, an average of 66,454 vehicles per day passed through, while on Saturdays, the traffic volume was 63,754 vehicles per day. Of this, the number of freight vehicles averaged 3,276 on weekdays (5%) and 3,134 on Saturdays (5%). The Saturday traffic is nearly the same as the weekday traffic at 96%, but the number of large freight vehicles is slightly lower at 91% compared to weekdays.

Table 6.3.7 Traffic Volume Count Survey Results for Location 4

(Unit: vehicles/day)

	Direction	Motorcycle	Car, Taxi, Danfo	Medium Truck	Large Truck				M+L Trucks	Total
					Truck	Container	Tank Lorry	Sub total		
Weekdays	South → North	4,154	25,549	1,160	163	108	211	482	1,642	31,345
	North → South	5,035	28,440	964	222	172	276	670	1,634	35,109
	Total	9,189	53,989	2,124	385	280	487	1,152	3,276	66,454
		14%	81%	3%	2%				5%	100%
Saturday	South → North	4,491	23,635	1,141	159	104	207	470	1,611	29,737
	North → South	5,401	27,104	948	191	143	241	575	1,523	34,028
	Total	9,892	50,739	2,089	350	247	448	1,045	3,134	63,765
		16%	80%	3%	2%				5%	100%
Percentage of weekend traffic to weekday traffic		108%	94%	98%	91%	88%	92%	91%	96%	96%

Source: JICA Study Team

(5) Survey Location 5 (Carter Bridge)

A) Survey Location: On the Carter Bridge (A5) connecting Lagos Mainland and Lagos Island

B) Number of Lanes: 2 lanes in each direction

C) Average Daily Traffic Volume

On weekdays, the average traffic volume is 35,944 vehicles per day, while on Saturdays, it is 34,055 vehicles per day. In terms of vehicle types, buses and passenger vehicles account for over 70% of the total traffic, while motorcycles make up about 20%. Notably, both on weekdays and Saturdays, the traffic of motorcycles heading from north to south is greater than that in the opposite direction.

Among this traffic, the number of freight vehicles averages 2,918 on weekdays (8%) and 3,275 on Saturdays (9%). The Saturday traffic volume is nearly the same as that on weekdays at 95% for all vehicle types, but the number of medium trucks has increased by 17% compared to weekdays, while the number of large trucks has decreased by 8%.

Table 6.3.8 Traffic Volume Count Survey Results for Location 5

(Unit: vehicles/day)

	Direction	Motorcycle	Car, Taxi, Danfo	Medium Truck	Large Truck				M+L Trucks	Total
					Truck	Container	Tank Lorry	Sub total		
Weekdays	South → North	1,835	13,202	904	93	61	125	279	1,183	16,220
	North → South	5,120	12,869	1,461	90	46	138	274	1,735	19,724
	Total	6,955	26,071	2,365	183	107	263	553	2,918	35,944
		19%	73%	7%	1%				8%	100%
Saturday	South → North	1,789	12,535	895	86	53	120	259	1,154	15,478
	North → South	4,936	11,520	1,872	78	39	132	249	2,121	18,577
	Total	6,725	24,055	2,767	164	92	252	508	3,275	34,055
		20%	71%	8%	1%				9%	100%
Percentage of weekend traffic to weekday traffic		97%	92%	117%	90%	86%	96%	92%	112%	95%

Source: JICA Study Team

(6) Survey Location 6 (Third Mainland Bridge)

A) Survey Location: On the Third Mainland Bridge (F265) connecting Lagos Mainland and Lagos Island

B) Number of Lanes: 6 lanes in each direction

C) Average Daily Traffic Volume

On weekdays, the average traffic volume is 112,368 vehicles per day, while on Saturdays, it is 102,397 vehicles per day. In terms of vehicle types, passenger vehicles account for 94% of the total traffic on both weekdays and Saturdays, while motorcycles make up 5%, and freight vehicles represent a small proportion at 1%. The Saturday traffic volume is approximately 91% of the weekday traffic for all vehicle types.

Table 6.3.9 Traffic Volume Count Survey Results for Location 6

(Unit: vehicles/day)

	Direction	Motorcycle	Car, Taxi, Danfo	Medium Truck	Large Truck				M+L Trucks	Total
					Truck	Container	Tank Lorry	Sub total		
Weekdays	South → North	2,194	57,036	364	24	14	36	74	438	59,668
	North → South	3,233	49,189	257	5	2	14	21	278	52,700
	Total	5,427	106,225	621	29	16	50	95	716	112,368
		5%	94%	1%	0%				1%	100%
Saturday	South → North	1,742	51,572	511	24	14	38	76	587	53,901
	North → South	3,142	44,920	404	7	4	19	30	434	48,496
	Total	4,884	96,492	915	31	18	57	106	1,021	102,397
		5%	94%	1%	0%				1%	100%
Percentage of weekend traffic to weekday traffic		90%	91%	147%	107%	113%	114%	112%	143%	91%

Source: JICA Study Team

(7) Survey Location 7 (A2, Abuja-Lokoja Road)

A) Survey Location: On the Abuja-Lokoja Road (A2), approximately 26 km south of the interchange with Umaru Musa Yar'Adua Road (Airport Road) passing through Yangoji

B) Number of Lanes: 2 lanes in each direction

C) Average Daily Traffic Volume

On weekdays, the average traffic volume is 13,832 vehicles per day, while on holidays, it is 14,710 vehicles per day. The proportion of freight vehicles is 23% for both weekdays and holidays. The holiday traffic volume increased to 106% of the weekday volume; however, the number of freight vehicles remained nearly the same at 98% of the weekday level, while motorcycles and passenger vehicles increased by 113% and 108%, respectively.

Table 6.3.10 Traffic Volume Count Survey Results for Location 7

(Unit: vehicles/day)

	Direction	Motorcycle	Car, Taxi, Danfo	Medium Truck	Large Truck				M+L Trucks	Total
					Truck	Container	Tank Lorry	Sub total		
Weekdays	West → East	1,147	4,228	660	632	48	239	919	1,579	6,954
	East → West	748	4,204	758	813	59	296	1,168	1,926	6,878
	Total	1,895	8,432	1,418	1,445	107	535	2,087	3,505	13,832
		14%	61%	10%	15%				25%	100%
Weekends	West → East	1,290	5,018	698	675	59	252	986	1,684	7,992
	East → West	850	4,128	678	734	63	205	1,062	1,740	6,718
	Total	2,140	9,146	1,376	1,409	122	517	2,048	3,424	14,710
		15%	62%	9%	14%				23%	100%
Percentage of weekend traffic to weekday traffic		113%	108%	97%	98%	114%	97%	98%	98%	106%

Source: JICA Study Team

D) Transport Tons and Freight Vehicle Counts by Item

The average weekday transport tons and freight vehicle counts by item are shown in the table below. Out of a total of 3,505 freight vehicles per day, the number of empty trucks is 633 per day (18%).

When examining the types of cargo carried by the trucks, the largest proportion is for Crops & Agro (29%), followed by Manufactured Goods (29%), Solid Minerals (13%), and Oil & Gas (13%), among others. The average transport tons per vehicle is 31 tons.

Table 6.3.11 Itemized Transport Volume and Traffic Volume at Survey Location 7

	Crops&Agro	Solid Minerals	Oil&Gas	Manufact.goods	Other Products	Unknown	Empty	Total	Net total
Ton/day	23,142	11,909	13,326	35,663	9,194	2,675	0	95,909	95,909
Veh/day	843	384	380	834	345	86	633	3,505	2,872
Gross%	24%	11%	11%	24%	10%	2%	18%	100%	82%
Net%	29%	13%	13%	29%	12%	3%	-	-	100%
Avg. ton/veh	27	31	35	43	27	31	0	27	31

Source: JICA Study Team

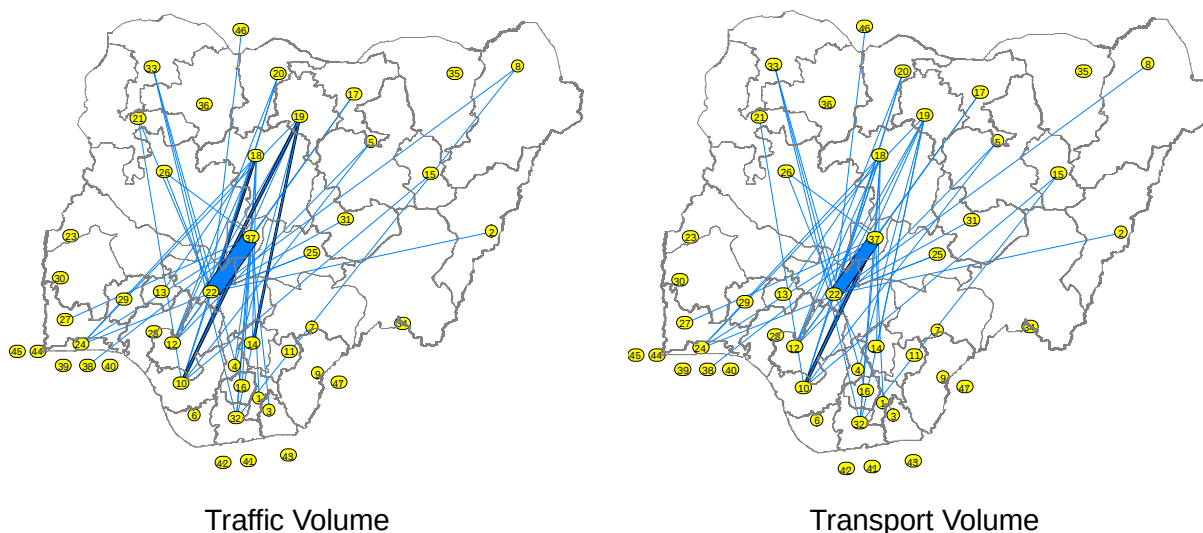
E) Proportion of International Freight

The total number of international freight vehicles passing through Survey Location 7 is 50 vehicles per day, accounting for 1.4% of the overall traffic. Most of the traffic in this section consists of domestic freight.

F) Major Origin-Destination (OD) Traffic

Among the traffic passing through Survey Location 7, the highest volume is between the Federal Capital Territory (FCT) and Kogi State, with 668 vehicles per day. This is followed by traffic within the FCT at 261 vehicles per day, and between Kano State and Kogi State at 198 vehicles per day.

In terms of transport volume, the highest is between FCT and Kogi State, with 17,406 tons per day, followed by traffic within the FCT at 6,533 tons per day, between Delta State and FCT at 4,221 tons per day, and between Kano State and Kogi State at 3,943 tons per day.



Source: JICA Study Team

Figure 6.3.6 Origin and Destination of Traffic Passing Through Survey Location 7

(8) Survey Location 8 (A2, Abuja-Kaduna Highway)

A) Survey Location: On the Abuja-Kaduna Highway (A2), approximately 1 km north of the interchange with Murtala Mohammed Expressway (A234) passing through Madalla

B) Number of Lanes: 2 lanes in each direction

C) Average Daily Traffic Volume

On weekdays, the average traffic volume is 37,219 vehicles per day. The proportion of freight vehicles in the total count is 13%.

Table 6.3.12 Traffic Volume Count Survey Results for Location 8

(Unit: vehicles/day)

	Direction	Motorcycle	Car, Taxi, Danfo	Medium Truck	Large Truck				M+L Trucks	Total
					Truck	Container	Tank Lorry	Sub total		
Weekdays	West → East	1,489	11,955	1,017	740	82	490	1,312	2,329	15,773
	East → West	1,954	16,994	1,204	731	79	484	1,294	2,498	21,446
	Total	3,443	28,949	2,221	1,471	161	974	2,606	4,827	37,219
		9%	78%	6%	7%				13%	100%

Source: JICA Study Team

D) Transport Tons and Freight Vehicle Counts by Item

The average weekday transport tons and freight vehicle counts by item are shown in the table below. Out of a total of 4,124 freight vehicles per day, the number of empty trucks is 703 per day (15%).

When examining the types of cargo carried by the trucks, the largest proportion is for Oil & Gas (26%), followed by Crops & Agro (22%), Manufactured Goods (21%), and Other Products (20%), among others. The average transport tons per vehicle is 30 tons.

Table 6.3.13 Itemized Transport Volume and Traffic Volume at Survey Location 8

	Crops&Agro	Solid Minerals	Oil&Gas	Manufact.goods	Other Products	Unknown	Empty	Total	Net total
Ton/day	24,108	6,173	37,778	34,425	12,165	7,031	0	121,680	121,680
Veh/day	898	182	1,085	869	794	296	703	4,827	4,124
Gross%	19%	4%	22%	18%	16%	6%	15%	100%	85%
Net%	22%	4%	26%	21%	20%	7%	-	-	100%
Avg. ton/veh	27	34	35	40	15	24	0	25	30

Source: JICA Study Team

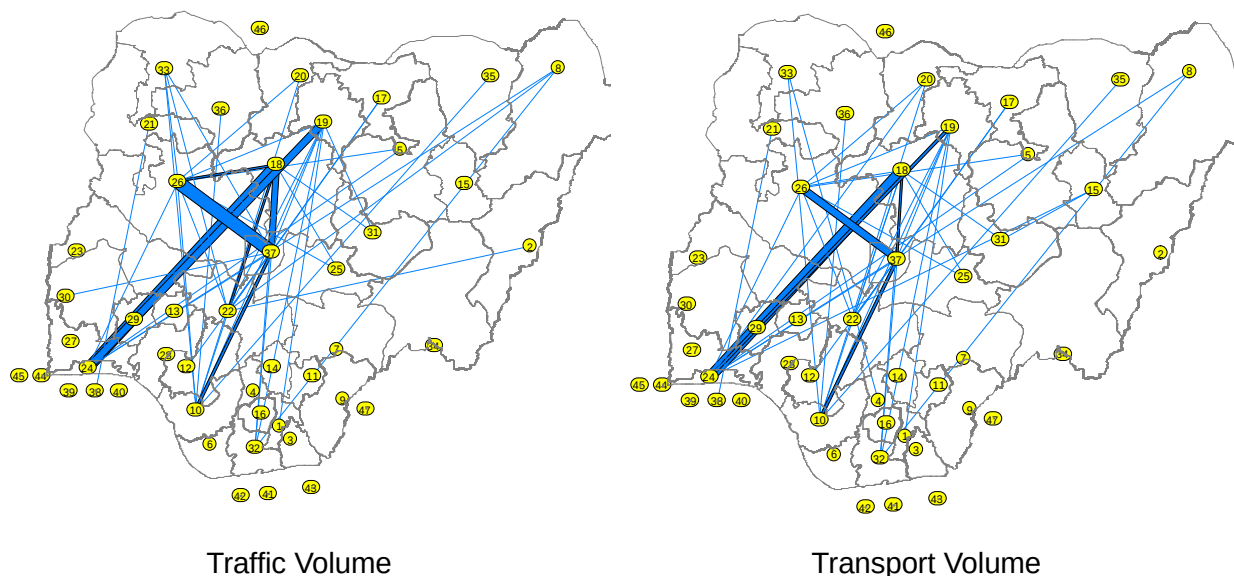
E) Proportion of International Freight

The total number of international freight vehicles passing through Survey Location 8 is 34 vehicles per day, accounting for 0.7% of the overall traffic. Most of the traffic in this section consists of domestic freight.

F) Major Origin-Destination (OD) Traffic

Among the traffic passing through Survey Location 8, the highest volume is between Niger State and the Federal Capital Territory (FCT), with 746 vehicles per day. This is followed by traffic between Kaduna State and Lagos State at 510 vehicles per day, between Kaduna State and FCT at 466 vehicles per day, and between Kano State and Lagos State at 448 vehicles per day.

In terms of transport volume, the highest is between Kaduna State and Lagos State, with 15,576 tons per day, followed by traffic between Niger State and FCT at 12,055 tons per day, between Kano State and Lagos State at 9,326 tons per day, and between Delta State and FCT at 9,251 tons per day.



Source: JICA Study Team

Figure 6.3.7 Origin and Destination of Traffic Passing Through Survey Location 8

(9) Survey Location 9 (A1, Ogbomoso-Ilorin Road)

- A) Survey Location: On the Ogbomoso-Ilorin Road (A1), approximately 4 km south of Ilorin International Airport
- B) Number of Lanes: 2 lanes in each direction
- C) Average Daily Traffic Volume

On weekdays, the average traffic volume is 5,918 vehicles per day during the dry season and 5,684 vehicles per day during the rainy season. The proportion of freight vehicles is 52% in both the dry and rainy seasons. The traffic volume during the rainy season is 96% of that during the dry season, with a 2% to 7% decrease in traffic for almost all vehicle types, excluding motorcycles.

Table 6.3.14 Traffic Volume Count Survey Results for Location 9

(Unit: vehicles/day)

	Direction	Motorcycle	Car, Taxi, Danfo	Medium Truck	Large Truck				M+L Trucks	Total
					Truck	Container	Tank Lorry	Sub total		
Weekdays	West → East	244	826	359	595	272	500	1,367	1,726	2,796
	East → West	1,012	737	292	467	215	399	1,081	1,373	3,122
	Total	1,256	1,563	651	1,062	487	899	2,448	3,099	5,918
		21%	27%	11%	41%				52%	100%
Weekends (Rainy Season)	West → East	269	766	332	581	283	516	1,380	1,712	2,747
	East → West	995	684	309	409	192	348	949	1,258	2,937
	Total	1,264	1,450	641	990	475	864	2,329	2,970	5,684
		22%	26%	11%	41%				52%	100%
Percentage of rainy season traffic to dry season traffic		101%	93%	98%	93%	98%	96%	95%	96%	96%

Source: JICA Study Team

D) Transport Tons and Freight Vehicle Counts by Item

The average weekday transport tons and freight vehicle counts by item are shown in the table below. Out of a total of 3,099 freight vehicles per day, the number of empty trucks is 529 per day (17%).

When examining the types of cargo carried by the trucks, the largest proportion is for Manufactured Goods (40%), followed by Oil & Gas (21%), and Crops & Agro (18%), among others. The average transport tons per vehicle is 32 tons.

Table 6.3.15 Itemized Transport Volume and Traffic Volume at Survey Location 9

	Crops&Agro	Solid Minerals	Oil&Gas	Manufact.goods	Other Products	Unknown	Empty	Total	Net total
Ton/day	12,347	4,182	23,710	27,338	7,228	6,336	0	81,141	81,141
Veh/day	470	96	526	1,019	250	209	529	3,099	2,570
Gross%	15%	3%	17%	33%	8%	7%	17%	100%	83%
Net%	18%	4%	21%	40%	10%	8%	-	-	100%
Avg. ton/veh	26	44	45	27	29	30	0	26	32

Source: JICA Study Team

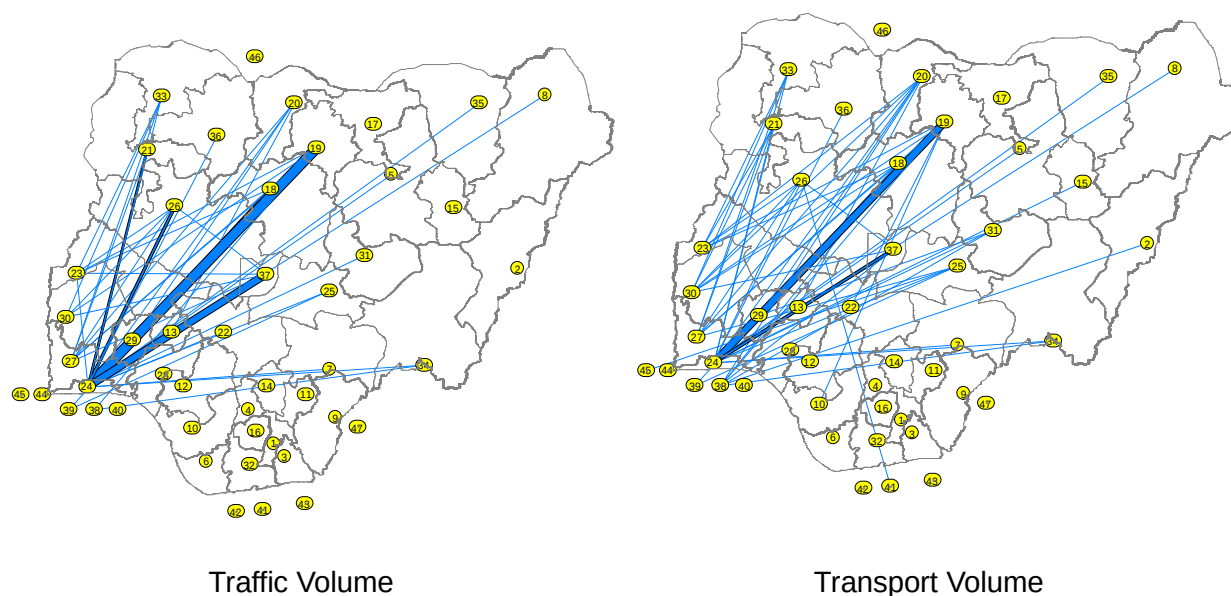
E) Proportion of International Freight

The total number of international freight vehicles passing through Survey Location 9 is 158 vehicles per day, accounting for 5.0% of the overall traffic. Most of the traffic in this section consists of domestic freight.

F) Major Origin-Destination (OD) Traffic

Among the traffic passing through Survey Location 9, the highest volume is between Kano State and Lagos State, with 628 vehicles per day. This is followed by traffic between Lagos State and the Federal Capital Territory (FCT) at 488 vehicles per day, and between Lagos State and Kaduna State at 254 vehicles per day.

In terms of transport volume, the highest is between Kano State and Lagos State, with 17,699 tons per day, followed by traffic between Lagos State and FCT at 11,443 tons per day, and between Lagos State and Niger State at 5,966 tons per day.



Source: JICA Study Team

Figure 6.3.8 Origin and Destination of Traffic Passing Through Survey Location 9

6.3.3 Creation of Current Freight OD Table

The freight OD tables calculated for each survey location in the previous section were aggregated to create a national OD table. To correct for potential double counting of traffic that passes through survey locations 7 and 8, such as the traffic between Kaduna and Kogi, we retained the traffic from the location with the higher volume and removed the traffic from the location with the lower volume, thereby eliminating duplicates.

The created OD table is based on estimates derived from data collected at limited survey locations. Therefore, while it is believed that a significant portion of international freight passing through Lagos State and traffic heading from Lagos State to other states has been captured, there may be insufficient capture of traffic connecting southern Nigerian states and ports with the FCT, northern, and eastern states, as well as inter-state traffic between adjacent states. However, it is considered that the traffic between the locations designated as key areas has been adequately captured.

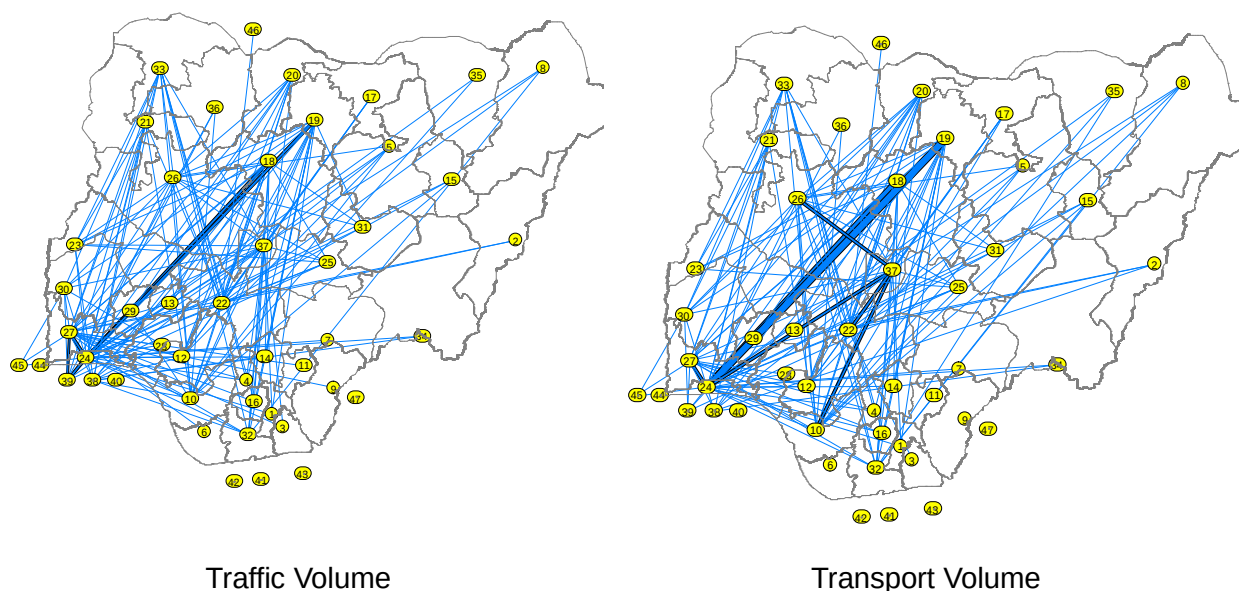
The total estimated current OD table indicates a volume of 27,197 vehicles per day, of which international freight accounts for 5,212 vehicles per day related to Apapa and Tin Can Island ports, and 390 vehicles per day related to traffic from west of Togo, resulting in a total of 5,654 vehicles per day (21%) for international freight.

Additionally, an analysis of the origin-destination points in the estimated current OD table shows that the highest traffic volume is within Lagos State at 2,985 vehicles per day, followed by Lagos State to Apapa and Tin Can port-related traffic at 1,968 vehicles per day, Lagos State to Ogun State at 1,730 vehicles per day, traffic within Ogun State at 1,355 vehicles per day, and Kaduna State to Lagos State at 1,226 vehicles per day.

In terms of transport volume, the highest transport volume is between Kano State and Lagos State at 29,079 tons per day, followed by traffic within Lagos State at 25,285 tons per day, between Kaduna State and Lagos State at 24,360 tons per day, and between Lagos State and Ogun State at 20,014 tons per day.

Based on the above, the key points regarding the current freight flow are as follows:

- The freight flow related to the key areas has a demand of approximately 27,000 vehicles per day.
- About 20% of the total (approximately 5,600 vehicles) consists of international freight, with over 90% of this traffic passing through Apapa and Tin Can Island ports.
- The freight flow line between Kano, Kaduna, FCT, Ogun, and Lagos functions as a major artery.
- Lagos accounts for approximately 64% of the origin-destination points in freight flow, significantly higher than FCT at about 17%, Kano at about 11%, and Kaduna at about 9%.
- Currently, the freight flow volume from Lagos to the southeastern region (PHC) is not particularly high.



Source: JICA Study Team

Figure 6.3.9 Origin and Destination of Freight Traffic Flow in Nigeria

6.3.4 Setting the Future Framework

(1) Population

The future population of Nigeria, both nationally and by state, is estimated using the results of the population census conducted in 2006 and the estimated population figures published by the National Population Commission of the federal government for the years 2017 to 2022. For the period from 2023 to 2050, population projections are made by fitting a logarithmic approximation curve to the population trends up to 2022.

As of 2023, Nigeria's population is projected to be 217 million. The estimated populations for 2030, 2040, and 2050 are expected to be 253 million, 301 million, and 348 million, respectively (see Table 6.3.16). The

population growth rates are estimated to be 2.3% per year until 2030, 1.7% per year until 2040, and 1.5% per year until 2050.



Source: JICA Study Team

Figure 6.3.10 Future Population of Nigeria

Table 6.3.16 Population Forecast Results

Year	Population	Annual Growth rate
2022	216,783,381	
2030	253,333,476	2.3%
2040	300,566,857	1.7%
2050	347,569,266	1.5%

Source: JICA Study Team

The population of Nigeria by state was projected for the years 2030, 2040, and 2050 using logarithmic approximation curves set for each state. After these projections were made, adjustments were carried out to ensure that the total population aligns with the national population forecasts.

As a result, until 2030, the Federal Capital Territory (FCT) shows the highest population growth, with an average annual growth rate of 2.9%, followed by Ogun State at 2.5% and Zamfara State at 2.4%. Beyond 2040, while the FCT continues to have the highest population growth rate, the subsequent rankings shift to Bauchi State and then Katsina State.

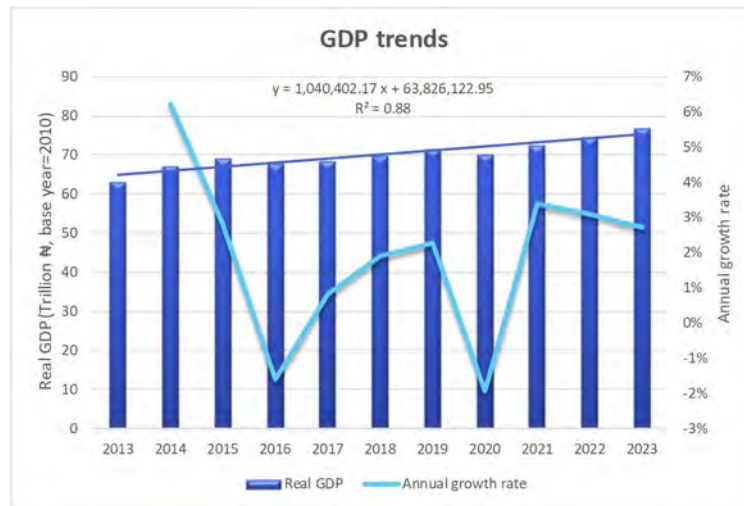
Table 6.3.17 Population Forecast Results by State

No.	State Name	2022	2030	2040	2050	Annual growth rate		
						2022-2030	2030-2040	2040-2050
1	Abia	4,143,092	4,730,161	5,526,169	6,318,136	1.67%	1.57%	1.35%
2	Adamawa	4,902,062	5,715,757	6,779,640	7,838,318	1.94%	1.72%	1.46%
3	Akwa-Ibom	4,979,425	5,517,082	6,191,705	6,862,413	1.29%	1.16%	1.03%
4	Anambra	5,953,514	6,813,900	7,917,875	9,016,163	1.70%	1.51%	1.31%
5	Bauchi	8,308,784	10,042,266	12,295,869	14,539,114	2.40%	②2.05%	②1.69%
6	Bayelsa	2,537,373	2,963,762	3,486,669	4,006,966	1.96%	1.64%	1.40%
7	Benue	6,141,278	7,078,453	8,255,778	9,427,100	1.79%	1.55%	1.34%
8	Borno	6,111,464	7,077,568	8,289,963	9,496,243	1.85%	1.59%	1.37%
9	Cross-River	4,406,208	5,208,847	6,164,145	7,114,745	2.11%	1.70%	1.44%
10	Delta	5,636,148	6,349,973	7,291,407	8,227,817	1.50%	1.39%	1.22%
11	Ebonyi	3,242,526	3,736,391	4,392,171	5,044,674	1.79%	1.63%	1.39%
12	Edo	4,777,044	5,516,717	6,473,744	7,425,967	1.82%	1.61%	1.38%
13	Ekiti	3,592,171	4,166,367	4,906,496	5,642,941	1.87%	1.65%	1.41%
14	Enugu	4,690,053	5,371,691	6,256,391	7,136,562	1.71%	1.54%	1.32%
15	Gombe	3,960,112	4,714,934	5,698,754	6,677,944	2.20%	1.91%	1.60%
16	Imo	5,459,335	6,215,051	7,169,934	8,119,794	1.63%	1.44%	1.25%
17	Jigawa	7,499,055	8,927,815	10,847,377	12,757,996	2.20%	1.97%	1.64%
18	Kaduna	9,016,628	10,312,022	12,086,778	13,852,598	1.69%	1.60%	1.37%
19	Kano	15,462,176	18,398,592	22,156,784	25,897,165	2.20%	1.88%	1.57%
20	Katsina	10,368,478	12,427,579	15,215,945	17,991,496	2.29%	③2.04%	③1.69%
21	Kebbi	5,563,906	6,582,157	7,985,460	9,382,207	2.12%	1.95%	1.62%
22	Kogi	4,466,799	4,943,882	5,640,269	6,332,859	1.28%	1.33%	1.16%
23	Kwara	3,551,025	4,071,846	4,793,487	5,511,534	1.73%	1.65%	1.41%
24	Lagos	13,491,793	15,764,767	18,516,787	21,255,024	1.97%	1.62%	1.39%
25	Nasarawa	2,886,029	3,328,810	3,946,464	4,561,091	1.80%	1.72%	1.46%
26	Niger	6,783,321	8,155,122	9,908,746	11,654,199	2.33%	1.97%	1.64%
27	Ogun	6,379,527	7,741,570	9,391,244	11,033,210	②2.45%	1.95%	1.62%
28	Ondo	5,316,599	6,238,772	7,394,918	8,545,399	2.02%	1.71%	1.46%
29	Osun	4,435,804	4,934,164	5,569,173	6,200,581	1.34%	1.22%	1.08%
30	Oyo	7,976,087	9,150,556	10,641,337	12,124,454	1.73%	1.52%	1.31%
31	Plateau	4,717,309	5,434,853	6,368,526	7,297,495	1.79%	1.60%	1.37%
32	Rivers	7,476,802	8,592,698	10,010,751	11,421,549	1.75%	1.54%	1.33%
33	Sokoto	6,391,052	7,701,409	9,369,915	11,030,666	2.36%	1.98%	1.65%
34	Taraba	3,609,850	4,196,059	4,988,979	5,778,040	1.90%	1.75%	1.48%
35	Yobe	3,649,603	4,306,437	5,133,236	5,956,033	2.09%	1.77%	1.50%
36	Zamfara	5,833,489	7,065,852	8,644,679	10,216,240	③2.42%	2.04%	1.68%
37	FCT Abuja	3,067,460	3,839,594	4,859,292	5,874,533	①2.85%	①2.38%	①1.92%
Total		216,783,381	253,333,476	300,566,857	347,569,266	1.97%	1.72%	1.46%

Source: JICA Study Team

(2) Real GDP

Looking at the trends in Nigeria's real GDP over the past decade, there have been significant declines in 2016 and 2020 due to factors such as the impact of oil prices and the COVID-19 pandemic. However, over the entire ten-year period, there has been an average annual increase of 1.9%. In 2023, Nigeria's GDP was recorded at 76.7 trillion naira, with an annual growth rate of 2.7%.



Source: JICA Study Team

Figure 6.3.11 Trends in Real GDP

Future GDP growth rates, according to the long-term national development plan (Nigeria Agenda 2050) announced by the Nigerian government in 2023, aim for an average annual growth rate of 7% by 2050 to address various development challenges. The target growth rates are set at 8.78% for the period from 2025 to 2030 and 8.10% for the period from 2030 to 2035.

However, considering the growth rates over the past decade and the recent performance in 2023, it is deemed unrealistic to achieve a sustained growth rate of over 7% annually starting from 2024. Therefore, this study establishes a scenario where the growth rate is projected to be 3% in 2024, increasing by 0.5% each subsequent year until it reaches 8% by 2034. This 8% growth rate is expected to be maintained until 2040, after which it will gradually decrease by 0.5% every five years.

As a result, per capita GDP is estimated to rise from 348,360 naira in 2023 to 728,705 naira in 2040 (a 2.1-fold increase compared to the current figure) and to 1,268,858 naira in 2050 (a 3.6-fold increase).

Table 6.3.18 Future Real GDP and Per Capita GDP of Nigeria

Year	Real GDP (million ₦)	Growth rate	Target rate	Estimated GDP (million ₦)	Population	GDP per Capita (₦)	Ratio to 2023 GDP	
2013	63,218,722	-			171,704,412	368,183		
2014	67,152,786	6.2%			176,438,990	380,601		
2015	69,023,930	2.8%			181,248,792	380,824		
2016	67,931,236	-1.6%			186,121,277	364,984		
2017	68,496,918	0.8%			191,053,912	358,521		
2018	69,810,023	1.9%			196,042,933	356,096		
2019	71,387,827	2.3%			201,135,262	354,924		
2020	70,014,372	-1.9%			206,283,338	339,409		
2021	72,393,673	3.4%			211,493,324	342,298		
2022	74,639,469	3.1%			216,783,381	344,304		
2023	76,684,941	2.7%			220,131,462	348,360	0	1
2024			3.0%	78,985,489	224,881,634	351,231	1	1.01
2025			3.5%	81,749,981	229,629,460	356,008	2	1.02
2026			4.0%	85,019,980	234,374,942	362,752	3	1.04
2027			4.5%	88,845,879	239,118,082	371,557	4	1.07
2028			5.0%	93,288,173	243,858,883	382,550	5	1.10
2029			5.5%	98,419,023	248,597,347	395,897	6	1.14
2030			6.0%	104,324,164	253,333,476	411,806	7	1.18
2031			6.5%	111,105,235	258,067,272	430,528	8	1.24
2032			7.0%	118,882,601	262,798,739	452,371	9	1.30
2033			7.5%	127,798,797	267,527,877	477,703	10	1.37
2034			8.0%	138,022,700	272,254,690	506,962	11	1.46
2035			8.0%	149,064,516	276,979,179	538,180	12	1.54
2036			8.0%	160,989,678	281,701,348	571,491	13	1.64
2037			8.0%	173,868,852	286,421,198	607,039	14	1.74
2038			8.0%	187,778,360	291,138,731	644,979	15	1.85
2039			8.0%	202,800,629	295,853,950	685,475	16	1.97
2040			8.0%	219,024,679	300,566,857	728,705	17	2.09
2041			7.5%	235,451,530	305,277,454	771,271	18	2.21
2042			7.5%	253,110,395	309,985,744	816,523	19	2.34
2043			7.5%	272,093,674	314,691,729	864,636	20	2.48
2044			7.5%	292,500,700	319,395,410	915,795	21	2.63
2045			7.5%	314,438,253	324,096,792	970,199	22	2.79
2046			7.0%	336,448,930	328,795,874	1,023,276	23	2.94
2047			7.0%	360,000,355	333,492,661	1,079,485	24	3.10
2048			7.0%	385,200,380	338,187,154	1,139,015	25	3.27
2049			7.0%	412,164,407	342,879,355	1,202,068	26	3.45
2050			7.0%	441,015,915	347,569,266	1,268,858	27	3.64

Source: JICA Study Team

6.3.5 Future Freight Vehicle OD Forecast

The future freight vehicle origin-destination (OD) table will be generated by first forecasting the generated traffic volume. This volume will then be allocated to different zones based on the population composition ratios, allowing for the calculation of future generation and attraction volumes by zone. These volumes will be adjusted to align with the current OD table.

(1) Generated Traffic Volume

In forecasting future freight vehicle OD volumes, in addition to predicting each OD pair, the total generated traffic volume represented by the OD table will be forecasted separately. Adjustments will be made to ensure that the sum of the predicted results for each OD pair matches the generated traffic volume.

The generated traffic volume for freight vehicles has a high correlation with real GDP. Typically, the growth rates of generated traffic volume and GDP between two reference points are calculated in advance, and the GDP elasticity is derived from the ratio of these growth rates. This elasticity is then applied to the growth rates of GDP at the reference point and in the future to estimate the future growth rate of traffic volume.

However, due to the lack of historical data on freight vehicle generated traffic volumes in Nigeria, an alternative approach was considered using the growth rate of operational freight vehicles (approximately equivalent to the number of registered vehicles). Unfortunately, the database managed by the National Bureau of Statistics, known as the E-library, only contains vehicle count data for three years (2016-2018), and there is no specific classification for freight vehicles. Therefore, assuming that the number of registered vehicles will increase with economic growth, the growth rate of freight vehicle traffic will be directly aligned with the growth rate of real GDP.

As a result, the generated traffic volumes for freight OD in 2030, 2040, and 2050 are forecasted to be 36,000, 75,000, and 152,000 vehicles per day, respectively, which correspond to 1.3 times, 2.8 times, and 5.6 times the current generated traffic volume of 27,000 vehicles per day in 2024.

Table 6.3.19 Future Freight Vehicle Generation Traffic Volume

Year	Estimated GDP (million ₦)	Ratio to 2024 GDP	Truck Volume (veh/day)
2024	78,985,489	-	27,197
2030	104,324,164	1.32	35,922
2040	219,024,679	2.77	75,417
2050	441,015,915	5.58	151,855

Source: JICA Study Team

(2) Creation of Future Freight Vehicle OD Table

The future freight vehicle origin-destination (OD) table was created using the following methods:

For the current freight vehicle OD table's attraction volumes, the attraction volumes for zones 38 to 47, which correspond to port and overseas zones, were multiplied by the future GDP growth rates relative to the 2024 GDP as shown in Table 6.3.19. For domestic zones 1 to 37, the attraction volumes were adjusted by multiplying them by the future population growth rates relative to the 2024 population of each state. This adjustment ensured that the total matched the future generated traffic volume indicated in Table 6.3.19.

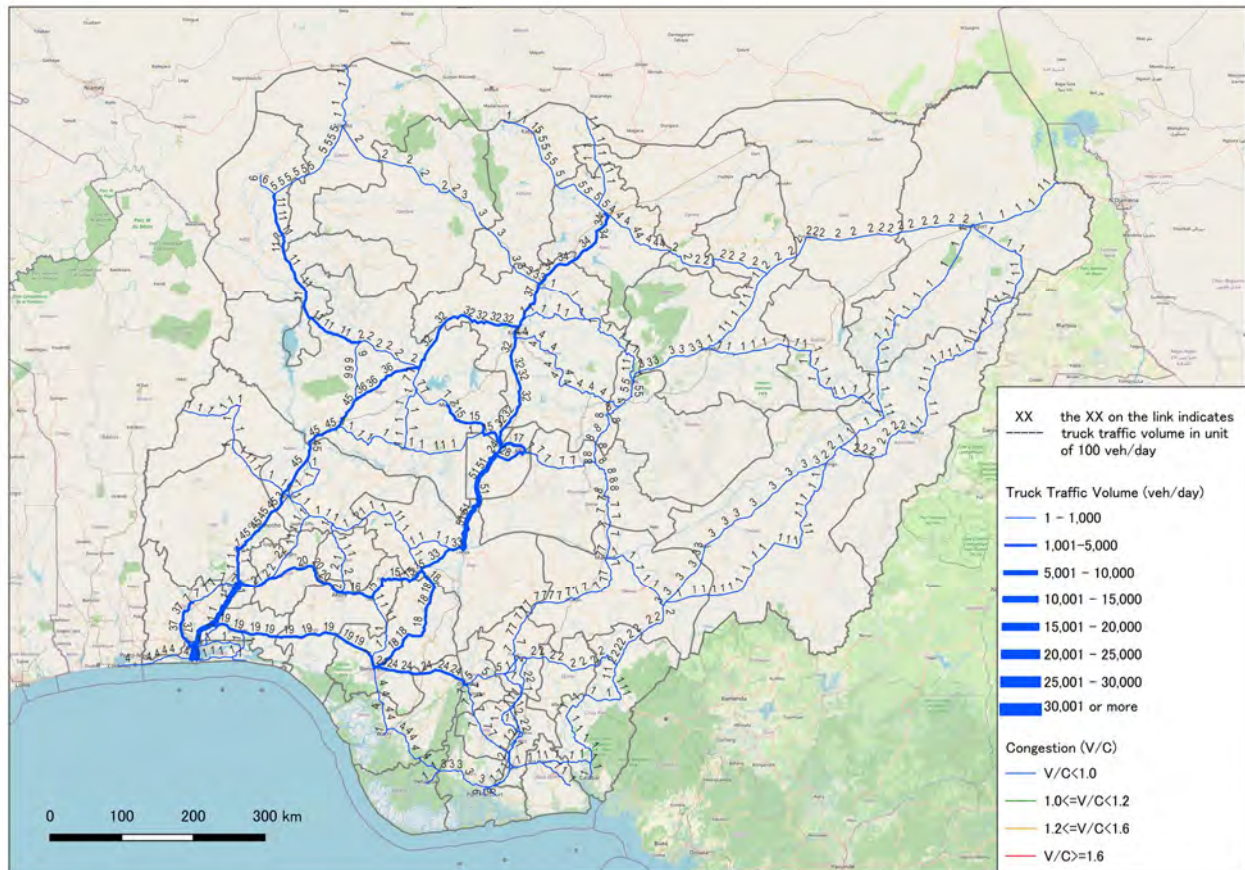
The future zone-specific attraction volumes obtained from the above calculations were then used, along with the current OD table, to compute the future OD table using the Fréchet method (convergence calculation).

6.3.6 Traffic Volume Forecast Simulation

The results of all-or-nothing assignment of freight OD demand from 2024 to 2050 to the current road network is illustrated in the figure below. The all-or-nothing assignment refers to the method of exploring the shortest routes for each OD pair in the absence of any road congestion and then assigning 100% of the traffic volume for each OD pair to these shortest routes. The roads that receive a high volume of assigned traffic indicate a significant demand for those routes.

For 2024, the key routes with high truck traffic demand are as follows:

1. Route from Lagos to Ibadan via E1/A1: This route travels north through Oyo, Okubomosho, Ilorin, and Mokwa, with a traffic volume of 4,500 vehicles per day. Of this traffic, 100 vehicles per day head towards Abuja via A124, while the majority continues northward. Specifically, 3,600 vehicles per day travel via A125 towards Kaduna, and further on A2 towards Kano. This route is the most critical connection between Nigeria's key regions (Lagos, Abuja, and Kano).
2. Route A5 from Lagos to Abeokuta (the capital of Ogun State): This route sees a traffic volume of 3,700 vehicles per day.
3. Route A2 between Lokoja and the Federal Capital Territory (FCT): This route is utilized by 5,100 vehicles per day and serves as an important connection between Nigeria's key regions (Port Harcourt, Abuja, and Kano).
4. Route A232 between Benin City and Asaba: This route has a traffic volume of 2,400 vehicles per day.
5. Route A122 between Ibadan and Akure: This route sees 2,000 vehicles per day.
6. Route A121 between Sagamu and Benin City: This route has a traffic volume of 1,900 vehicles per day and connects the key regions of Lagos and Port Harcourt.



Source: JICA Study Team

Figure 6.3.12 Assignment of Freight Demand in 2024 to the Current Road Network

The truck traffic demand in 2030 is expected to increase to 1.3 times that of 2024. Therefore, if all truck traffic were to utilize only the shortest routes, there would be approximately 6,000 vehicles per day demanding traffic at the Mokwa junction of A1 and A1/A10-A125. This would lead to road congestion at that point.

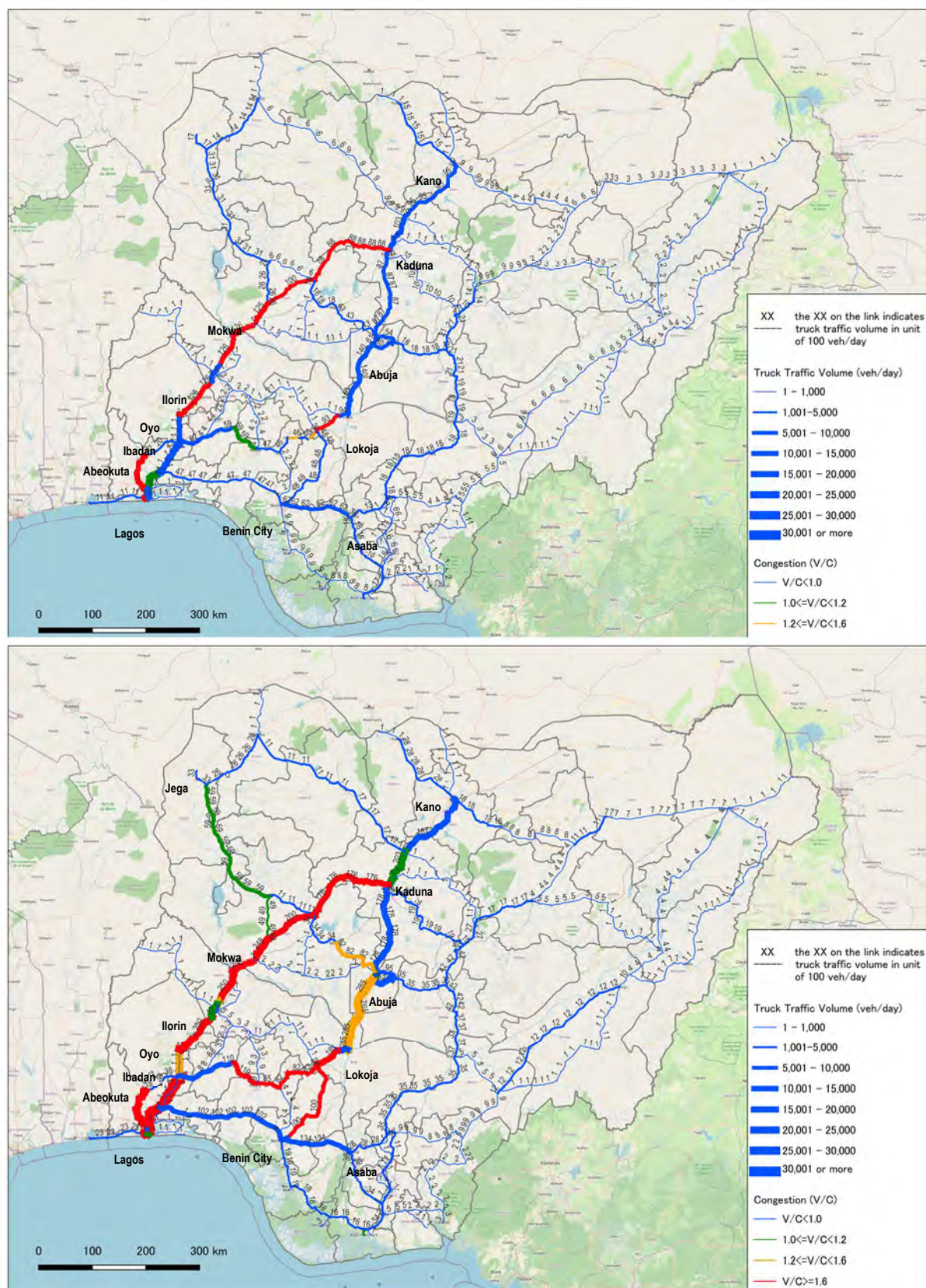


Source: JICA Study Team

Figure 6.3.13 Assignment of Freight Demand in 2030 to the Current Road Network

By 2040, truck traffic demand is expected to increase to 2.8 times that of 2024. If all truck traffic were to utilize only the shortest routes, congestion levels exceeding 1.6 would occur along the A1 route between Oyo and Kaduna (A125). Additionally, truck congestion would also arise on the A5 route between Lagos and Abeokuta, as well as on the shortest route connecting Ibadan to Lokoja (A122-F215-F117-A2).

By 2050, truck traffic demand is projected to increase to 5.6 times that of 2024. If all truck traffic continues to use only the shortest routes, the congestion experienced in 2040 would worsen. Furthermore, continuous congestion would develop on the route connecting Ibadan to Lokoja (A122-F215-F117-A2) and between Benin City and Abuja. Additionally, congestion would also occur between Mokwa and Jega.



Source: JICA Study Team

Figure 6.3.14 Assignment of Freight Demand in 2040 (Upper) and 2050 (Lower) to the Current Road Network

6.3.7 Evaluation of Major Logistics Arterial Roads

In addition to the ongoing road improvements listed below (1 to 3), the following roads (4 to 8) have been identified as needing upgrades based on the projected future freight demand discussed in the previous section.

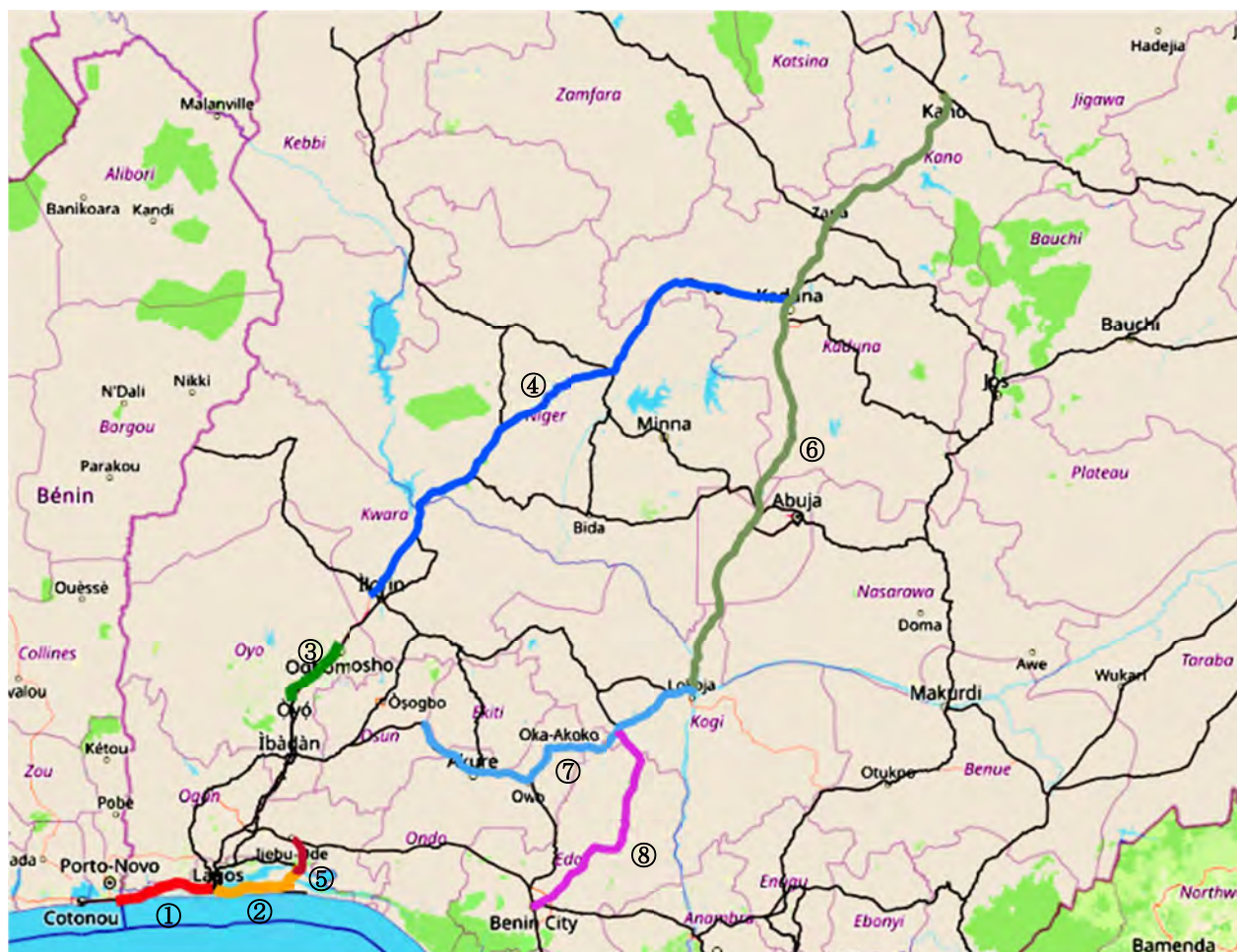
(1) Currently Undergoing Road Improvements

- ① Completion of Full Four-Lane Expansion of Lagos-Badagry Expressway: This section connects the Seme border to Lagos.
- ② Completion of Full Four-Lane Expansion of Lekki-Epe Expressway: This section connects Victoria Island to Epe.
- ③ Completion of Full Four-Lane Expansion of Ibadan-Ilorin Expressway: This section connects Oyo to Ilorin.

(2) Roads Requiring Upgrades (Improvements) for Future Freight Demand

- ④ Six-Laning of the Road between Ilorin and Kaduna: The projected truck traffic on the A1, A10, and A125 roads connecting Ilorin to Kaduna in 2050 is estimated to be between 17,700 and 25,400 vehicles per day, which translates to 41,800 to 60,700 passenger car unit¹¹ (pcu) per day. Given that the traffic capacity per lane is 12,000 pcu per day, at least four lanes of road capacity will be necessary to accommodate this truck traffic. Therefore, it is desirable to widen this section to six lanes.
- ⑤ Four-Laning of the Road between Epe and A121-1 (Benin-Sagamu Expressway): With the completion of the four-lane expansion of the Lekki-Epe Expressway, it is also desirable to upgrade the F101 road connecting this section to four lanes.
- ⑥ Six-Laning of A2 Road between Lokoja and Kano: The truck traffic in this section is projected to be 28,200 vehicles per day (67,100 pcu/day) between Lokoja and the southern side of Abidjan, and 17,400 vehicles per day (40,000 pcu/day) between the northern side of Abidjan and Kaduna. The traffic between Kaduna and Kano is estimated to be between 19,300 and 21,000 vehicles per day (45,600 to 49,900 pcu/day). Therefore, it is desirable to expand the number of lanes between Lokoja and Kano to six.
- ⑦ Four-Laning of the Road between Iwaraja and Lokoja: The A122 road extending east from Ibadan is already four lanes up to Iwaraja. Therefore, it is desirable to upgrade the section of the A122 road from Iwaraja to Owo, as well as the F215 and F117 roads connecting Owo to the A2 road, and the section from the intersection of A2 and F117 to Lokoja to four lanes.
- ⑧ Four-Laning of the Road between the Intersection of A2 and F117 to Benin City: Following the four-lane expansion of the section from the intersection of A2 and F117 to Lokoja, it is also desirable to upgrade this section to four lanes.

¹¹ The passenger car equivalent factors (PCEFs) for medium-size and large truck are set at 2.0 and 2.5, respectively.



Source: JICA Study Team

Figure 6.3.15 Candidate Routes for Improvement (Upgrades)

(3) Results of Future Freight Demand Distribution

The results of simulating the freight demand for 2050, assuming the improvements (upgrades) listed in items 1 to 8 are implemented, are presented on the following page. The traffic demand between Lagos and Kano is expected to increase due to the enhanced traffic flow along the E1/A1 road to A125 and A2. Additionally, the route between Lagos and Abuja will benefit from smoother connectivity via E1/A1 to A121-1/A122 to A2, and the road capacity between Benin City and Kano will also improve. This is anticipated to facilitate smoother freight traffic between key regions.

However, there are ongoing concerns regarding insufficient road capacity to meet freight demand on certain major arterial roads around Lagos State (specifically between Lagos and Ibadan).



Source: JICA Study Team

Figure 6.3.16 Assignment of Freight Demand in 2050 to the Future Road Network

Chapter 7. Consideration of Cooperation Program and Specific Projects

7.1 Proposal for a Collaborative Program based on the Logistics Improvement Strategy

The collaborative programs that the survey team proposes, based on the Logistics Improvement Strategy established in Chapter 5, have been systematically organized as shown in the table below.

Table 7.1.1 Program based on the Logistics Improvement Strategy

Ultimate Goals	Basic Concept (Purpose)	Strategy	Direction of improvement and current condition	Proposal Collaborate Programs
To support the diversification of the economy and promote industry by comprehensive improvement of the logistics infrastructure which is the foundation for sustainable nationwide economic growth in Nigeria	Develop a nationwide logistics network to meet the logistics demand Correcting the concentration of logistics demand in Lagos Facilitating trade and customs procedures Promoting a green logistics	Development of Nationwide Logistics Corridors (roads) & International Gateways (ports), and Strengthening of Port Function To build a logistics infrastructure that can adequately accommodate the increasing logistics demand by developing a nationwide road network which is the main logistics network in Nigeria, and strengthening port facilities	• Development/Rehabilitation of nationwide logistics corridors (federal trunk roads) • Strengthening of port facilities and connectivity improvement of port access by roads • Upgrading of port truck management • Decentralization of Lagos port complex for cargo	• New construction and improvement of national logistics trunk roads • Partial renovation of Lagos Port • Capacity building for the maintenance and management of national trunk roads
		Elimination of Logistics Bottlenecks and Development/Rehabilitation of Infrastructure to Improve Traffic Congestion in Urban Area To eliminate bottlenecks on corridors in urban area and connect ports and major logistics facilities, and to develop new roads and public transport infrastructure that will mitigate traffic congestion in the urban area	• Construction of ring roads, bypasses, and missing links (lagoon crossing, etc.) and improvement of road traffic bottlenecks in LMA (support LSTMP to be revised) • Development of urban public transportation system (mass transportation) in LMA (support LSTMP to be revised)	• Development of logistics trunk roads in the Lagos Metropolitan Area • Facilitation of logistics traffic in the Lagos Metropolitan Area
		Improving Customs and Trade Procedures to Facilitate Trade through International Standardization and Harmonization of Import and Export Procedures To facilitate trade by reducing customs procedures and inspection times at borders through efficient trade procedures based on the WTO Trade Facilitation Agreement (TFA) in January 2017	• Promotion of single window (TFA 10.4) • Reduction of customs clearance time through customs risk management (TFA 7.4) • TRS and formulating/implementing countermeasures based on the survey results • Introduction of AEO system including bilateral mutual recognition (TFA 7.7) • Transparency of inspection procedures (TFA 5) • Distribution of customs-cleared cargo by bonded transport, tracking system and dry port development	• Improvement of customs inspection capacity
		Improving Customs and Trade Procedures to Facilitate Trade through International Standardization and Harmonization of Import and Export Procedures To facilitate trade by reducing customs procedures and inspection times at borders through efficient trade procedures based on the WTO Trade Facilitation Agreement (TFA) in January 2017	• Enhancement of rail freight capacity • Development of inland waterway network • Renovation of facilities to increase airport cargo • Development of integrated terminals for transship • Study and implementation for optimizing logistics cost	• Capacity building for the optimization of port functions and improvement of the user environment in the Lagos Metropolitan Area • Capacity building for the promotion of logistics multimodal transport • Development of logistics-related facilities
		Strengthening of Relevant Organizations and Legal Framework for Various Logistics Services and Business, Support for Strategic Planning To strengthen the legal framework, including private businesses, in order to revitalize the logistics industry as a whole by strengthening organizational structures to promote improvements in logistics and providing a wide variety of logistics services, and also to provide support for the formulation of higher-level plans	• Promotion of trade agreement and international agreements on cross-border transport facilitation • Modernization of the logistics sector (promotion DX) and development of DX human resource in each sector • Promotion of deregulation for new logistics businesses • Consideration of measures to regulate checkpoints on major corridors and strengthen security • Formulation of sectorial logistics master plan	• Revision of the National Railway Master Plan • Formulation of the National Aviation Master Plan

Source: JICA Study Team

7.2 Consideration of Individual Projects (Long List)

In line with the policy of the proposed project, and as a result of hearings and consultations with various infrastructure organizations regarding specific project needs, we have established 14 individual project proposals, listed below, as a long list. The project information for setting this long list was selected primarily based on the content proposed by the respective organizations, derived from the hearings and consultations conducted with the Federal Ministry of Works (FMW), Federal Ministry of Transportation (FMT), Federal Ministry of Marine and Blue Economy (FMMBE), Federal Road Maintenance Agency (FERMA), Nigerian Ports Authority (NPA), Federal Airports Authority of Nigeria (FAAN), Nigeria Customs Service (NCS), Nigerian Shippers' Council (NSC), FCTA Transportation Secretariat (TS-FCTA), Lagos State Governor's Office (LSGO), Lagos State Ministry of Transportation (LSMT), and Lagos State Ministry of Works and Infrastructure (LSMWI).

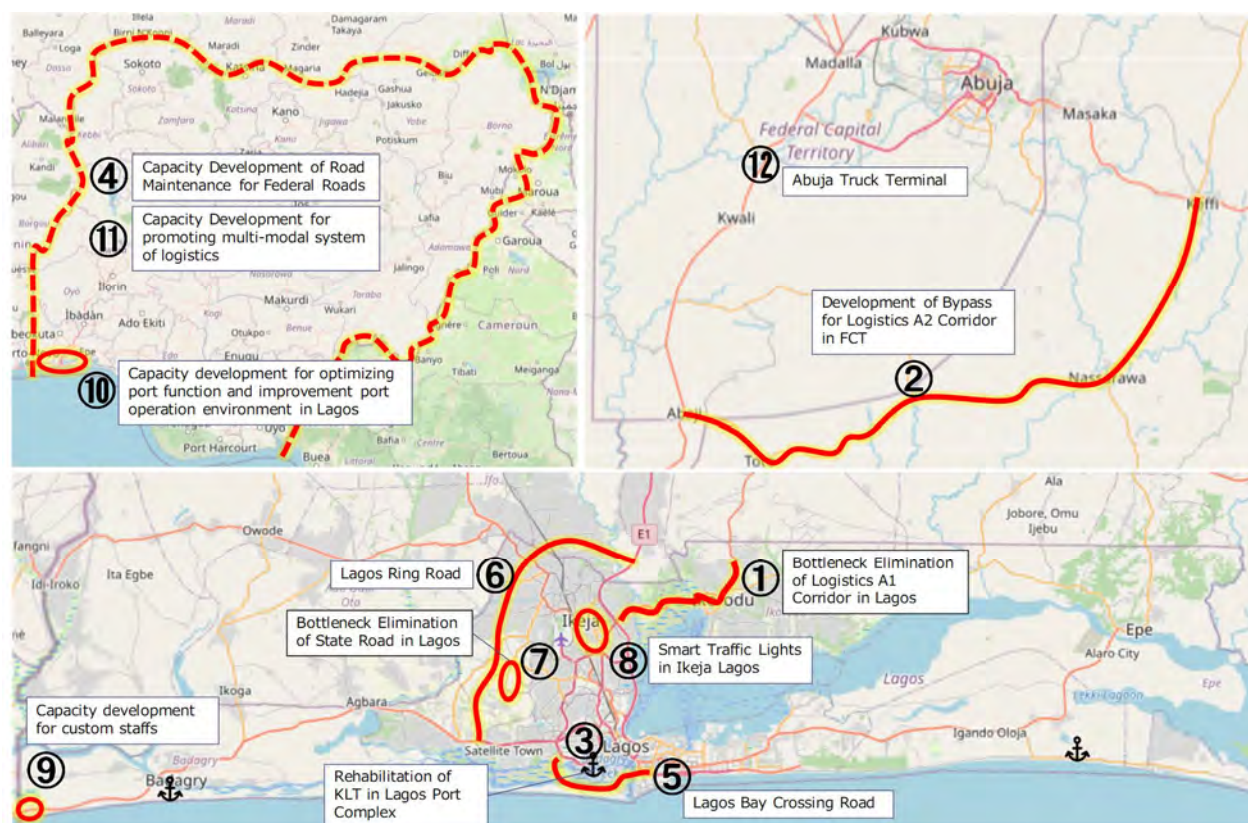
Table 7.2.1 Individual Project Long List

No.	Project Name
1	Bottleneck Elimination of Logistics A1 Corridor in Lagos (FMW • LSMWI)
2	Development of Bypass for Logistics A2 Corridor in FCT (FMW)
3	Rehabilitation of KLT in Lagos Port Complex (NPA)
4	Capacity Development of Road Maintenance for Federal Roads (FMW • FERMA)
5	Lagos Bay Crossing Road (LSMWI • LSMT)
6	Lagos Ring Road (LSMWI • LSMT)
7	Bottleneck Elimination of State Road in Lagos (LSMT)
8	Smart Traffic Lights in Ikeja Lagos (LSMT)
9	Capacity Development for Customs Staffs (NCS)
10	Capacity Development for Optimizing Port Function and Improvement Port Operation Environment in Lagos (NPA)
11	Capacity Development for Promoting Multi-modal System of Logistics (FMT • NSC)
12	Abuja Truck Terminal (TS-FCTA)
13	National Railway Master Plan (FMT)
14	National Aviation Master Plan (FAAN)

The text in parentheses () next to the project name indicates the main implementing organizations currently assumed

Source: JICA Study Team

An index map of the proposed locations for the individual projects suggested in this study (12 projects, excluding the two sector master plans (13 and 14) from the 14 project proposals) is shown below.



Source: JICA Study Team

Figure 7.2.1 Location Map of Individual Project Proposals Based on the Logistics Improvement Strategy

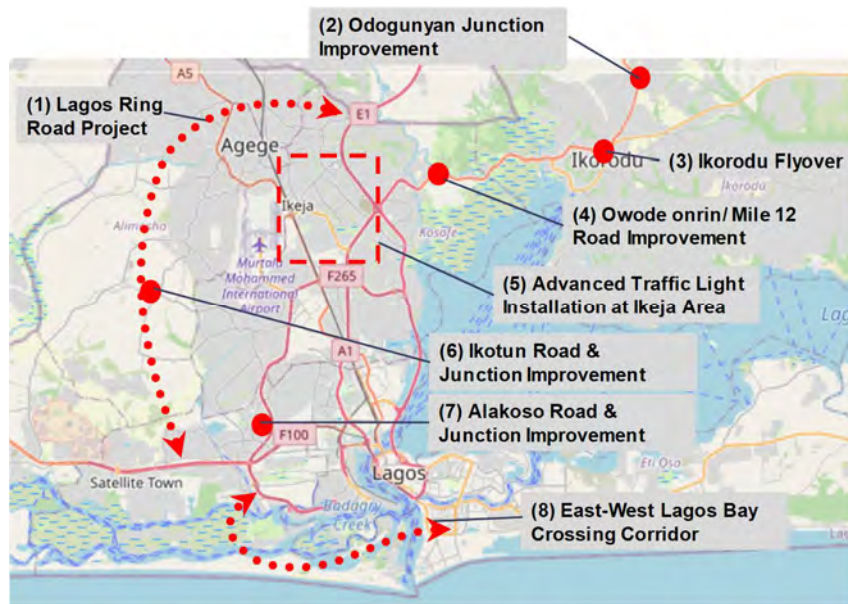
7.3 Selection of the Short List

From the long list proposed in the preceding section, five individual projects were selected as a short list (highlighted) based on three criteria: high interest and commitment from implementing and relevant organizations, expected positive impact on logistics improvement, and the absence of institutional issues for implementation. For the projects not selected, the challenges to shortlisting them are described. Furthermore, while shortlisting certain projects is difficult at the time of this study, their implementation may become possible depending on future circumstances. The project outlines for these potential candidates have been compiled in Chapter 7.4 in preparation for the future.

Table 7.3.1 Selection of the Short List

No.	Project Name	Commitment from Relevant Organizations and Issues in Project Formulation
1	Bottleneck Elimination of Logistics A1 Corridor in Lagos (FMW • LSMWI)	Although verification of the development effects will be necessary, there is high interest from the Nigerian Government (Lagos State).
2	Development of Bypass for Logistics A2 Corridor in FCT (FMW)	Although the necessity of social consideration regarding land acquisition exists, there is high interest from the Nigerian Government (FMW).
3	Rehabilitation of KLT in Lagos Port Complex (NPA)	The positioning and future utilization model of KLT are unclear. Future project formulation can be anticipated, however, depending on the clarification of the role sharing with Apapa and Tin Can Island Terminals, and the resulting funding needs on the NPA side.
4	Capacity Development of Road Maintenance for Federal Roads (FMW • FERMA)	As the implementing organization for federal road maintenance, FERMA's scope of jurisdiction is limited, thus restricting the content of the project.
5	Lagos Bay Crossing Road (LSMWI • LSMT)	Although this will be a large-scale project, there is high interest from the Nigerian Government (Lagos State).
6	Lagos Ring Road (LSMWI • LSMT)	Although this will be a large-scale project, there is high interest from the Nigerian Government (Lagos State).
7	Bottleneck Elimination of State Road in Lagos (LSMT)	The function as a logistics trunk road is limited.
8	Smart Traffic Lights in Ikeja Lagos (LSMT)	Although this will not lead to drastic/improvement, there is high interest from the Nigerian Government (Lagos State).
9	Capacity Development for Customs Staffs (NCS)	The introduction of customs inspection equipment at Lagos Port is relatively advanced. The customs inspection capacity at the Seme border could also become a candidate for project formulation, depending on future needs.
10	Capacity Development for Optimizing Port Function and Improvement Port Operation Environment in Lagos (NPA)	Coordination among ports with different management structures is difficult, and the implementation management of the proposed project is unclear. Future project formulation can be anticipated if coordination proceeds among port operation players under the leadership of the NPA.
11	Capacity Development for Promoting Multi-modal System of Logistics (FMT • NSC)	PPP scheme has been legalized and several private-sector-led facility development projects have been put forward. For this reason, priority on the category shall be evaluated for the time being.
12	Abuja Truck Terminal (TS-FCTA)	The effect of logistics improvement is limited.
13	National Railway Master Plan (FMT)	A separate development plan different from the existing M/P has been formulated, making the positioning of the M/P unclear.
14	National Aviation Master Plan (FAAN)	Donors with past experience are expected to be involved.

Source: JICA Study Team



Source: JICA Study Team

Figure 7.3.1 Location Map of Shortlisted Projects

7.4 Non-Shortlisted Projects

The content of projects currently not selected for the short list but which have the potential to be shortlisted depending on future circumstances—namely, Rehabilitation of KLT in Lagos Port Complex, Capacity Development for Customs Staffs, and Capacity Development for Optimizing Port Function and Improvement Port Operation Environment in Lagos—is outlined below.

7.4.1 Rehabilitation of KLT in Lagos Port Complex

(1) Project Background

a. Current Situation and Challenges

In Nigerian ports, a Landlord Port management and operation system was introduced through port reforms initiated in 2003. Under this model, the Nigerian Ports Authority (NPA), a federal government agency, owns the land and infrastructure. Terminal operators, private companies, operate the terminals and invest in the superstructure (such as cargo handling equipment) under lease/concession agreements concluded with the NPA. This Public-Private Partnership (PPP) approach has led to improvements in operational efficiency.

On the other hand, approximately 85% of the infrastructure under the NPA's responsibility (including quays and other port structures) has exceeded 40 years since its construction. This severe aging has led to collapses in highly deteriorated sections, which currently poses a bottleneck regarding cargo handling capacity.

b. Nigerian Government Initiatives to Address the Challenges

To raise the necessary funds (estimated by the NPA to be approximately USD 800 million to 1.1 billion) for the renovation of dilapidated port infrastructure nationwide, the NPA started consultations with public financial institutions, etc., around 2003. As of December 2024, when the site survey was conducted,

procedures within the Nigerian Federal Government were advancing to secure funding from UK Export Finance (UKEF) for the rehabilitation project of the Lagos Port terminals. (Following approval by the Federal Ministry of Marine and Blue Economy, the Federal Executive Council had approved the project. Approval from the Debt Management Office (DMO) regarding disbursement is currently awaited.)

c. Remaining Challenges (Current situation/issues still unresolved by the initiatives)

According to the NPA, the facilities determined by the NPA to be in urgent need of rehabilitation and to require external funding due to their large scale are as follows:

- Calabar Port: ECM Terminal
- Delta Port (Warri): Julius Berger/Intels Terminal
- Escravos Breakwater
- Rivers Port (Port Harcourt): PTOL Terminal
- Kirikiri Lighter Terminal: KLT1, KLT2

d. Alignment with Nigerian Government Policy

As described in (a) above, the Nigerian government has been working to improve port operational efficiency through the PPP model based on the Landlord Port model. The repair of defects caused by the aging of port infrastructure is the responsibility of the NPA, and the repair of the sections listed in (c) above is particularly urgent. The NPA intends to implement the rehabilitation of KLT in the master plan currently under formulation.

(2) Project Objective

The aging port infrastructure is to be renovated in Nigerian ports that have adopted the PPP system based on the Landlord Port model. This renovation aims to maximize operational efficiency through collaboration between the public and private sectors by fulfilling the NPA's responsibility to provide sound port infrastructure free of defects.

Specifically, the Kirikiri Lighter Terminal (KLT) will be rehabilitated. KLT conducts container operations in conjunction with the container terminals in the Lagos city ports (Apapa and Tin Can Island) that handle most of the Nigeria's container cargo (these terminals are scheduled for rehabilitation with funds secured through the UK Export Finance scheme).

(3) Project Scope

The content of the "Rehabilitation of KLT in Lagos Port Complex" project is shown in Table 7.4.1.

Table 7.4.1 Content of the “Rehabilitation of KLT in Lagos Port Complex” Project

Target Area	Kirikiri Lighter Terminal (KLT), Lagos State
Project Content	Quay wall rehabilitation (new construction for some severely damaged sections), Pavement rehabilitation/strengthening, Drainage facility rehabilitation (partial new construction), Fences/Gates, Lighting, Office building
Implementing Organizations	Nigerian Ports Authority (NPA) Federal Ministry of Marine and Blue Economy (FMMBE)
Estimated Project Cost	KLT 1 Rehabilitation (partial new construction): USD 70 mil. KLT 2 Rehabilitation (partial new construction): USD 43 mil. Total Construction Cost: USD 113 mil. Contingency (20% of Construction Cost): USD 22 mil. Consulting Fee (10% of Construction Cost + Contingency): USD 14 mil. Total Project Cost: USD 149 mil.
Project Effects	(1) Beneficiaries - Domestic shippers in Nigeria, Domestic residents in Nigeria (2) Project Outcomes - Increase in overall cargo handling capacity of the Lagos Port Complex - Mitigation of congestion at both ports through role sharing with Apapa and Tin Can Island Ports, promotion of diversification of transport methods (Mitigation of congestion around port terminal gates through barge transport at KLT) - Preparation of the environment for establishing an infrastructure maintenance cycle by ascertaining the initial state of newly constructed structural components
Prerequisites/External Conditions	Confirmation of the necessary response if repair costs fluctuate due to the determination of the scope of repair and methods based on detailed studies (including the range of facilities subject to repair and the repair methods)
Related Projects	Apapa and Tin Can Island Port Rehabilitation Project (Rehabilitation financed by funds secured from UK Export Finance: UKEF)

Source: JICA Study Team



Source: Due Diligence Appraisal Report, Transaction Advisory Services for the Concession of the Kirikiri Lighter Terminals I & II, 2014, Prepared for Infrastructure Concession Regulatory Commission, Prepared by CPCS

Figure 7.4.1 Proposed Location Map for the “Rehabilitation of KLT in Lagos Port Complex” Project

7.4.2 Capacity Development for Customs Staffs

(1) Project Background

a. Current Situation and Challenges

The Seme border, which adjoins Benin on the Abidjan-Lagos corridor, is located on the Benin side and serves as a Joint Border Post with Benin. It is a critical junction for land transport between Nigeria and West African countries, ranking fifth in terms of export value in the first quarter of 2024 (following Abuja International Airport). However, Seme's customs revenue accounts for only about 0.1% of Nigeria's total customs collections. There are no official records regarding the actual number of trucks passing through, but the volume is reportedly between 30 and over 100 trucks per day.

The border area lacks a stable power supply, rendering mobile X-ray inspection machines, weighbridges, freezers, and forklifts non-operational. Furthermore, the shift to a paperless system has not progressed. Consequently, all customs inspections and transshipments are carried out manually, leading to a maximum required time of 100 hours for import clearance, according to an ECOWAS trade facilitation study. Given

the anticipated increase in land logistics with the future development of the Abidjan-Lagos corridor, streamlining customs inspection processes is urgently needed, alongside measures against smuggling and money laundering. For example, the average road freight cost from Cotonou to Lagos is \$15.3 per kilometer, which is approximately double the cost of \$7.9 per kilometer from Cotonou to Lomé.

b. Nigerian Government Initiatives to Address the Challenges

To streamline customs procedures, electronic application systems such as B'Odogwu and NSW have been introduced. This has enabled paperless procedures, and trade facilitation is currently progressing. Furthermore, the introduction of the Authorized Economic Operator (AEO) scheme simplifies procedures for highly compliant businesses, achieving faster customs clearance.

For the facilitation of international trade and assurance of security, collaboration with neighboring countries is also being strengthened. Interconnection with Benin's SIGMAT system enables the sharing of customs information, allowing for the efficient management of cross-border logistics. Additionally, there are plans to sequentially interconnect systems with countries along the Abidjan-Lagos corridor by 2027, which is expected to strengthen the overall trade network in the West African region.

As part of the e-Customs project, the modernization of customs inspection is also progressing, and X-ray inspection machines have already been installed at major ports and airports, including Apapa, Tin Can, Abuja International Airport, Lagos International Airport, Kano, and Port Harcourt. Furthermore, to improve domestic logistics, customs posts have been established in locations other than ports and borders, and the development of Inland Dry Ports (IDPs) is also progressing. This aims to ease congestion at Lagos ports and streamline freight transport to the interior regions.

c. Remaining Challenges (Current situation/issues still unresolved by the initiatives)

The system for pre-clearance examination and post-clearance audit is inadequate, leading to the physical opening and inspection of many containers. This causes delays in customs procedures, hindering logistics efficiency. The background to this issue is the shortage and insufficient capacity of customs officials capable of handling pre-clearance examination and post-clearance audit. The necessary system for efficiently carrying out these tasks, which require a high level of expertise, is not yet fully in place. As a result, customs must rely on physical inspection.

Furthermore, Nigeria faces significant challenges with the rampant smuggling of a wide variety of goods, including fuel, rice, weapons, and illegal drugs. Money laundering associated with these illicit transactions is also a major concern, posing a risk to the soundness of the financial system.

d. Alignment with Nigerian Government Policy

To address ECOWAS trade facilitation, Nigeria is promoting the mutual interconnection of customs data with ECOWAS member states utilizing the SIGMAT system. This enhances the transparency of cross-border logistics, aiming to prevent illicit trade and expedite customs procedures. Furthermore, by advancing infrastructure development along the Abidjan-Lagos Corridor, Nigeria seeks to improve the efficiency of a key trade route in West Africa and contribute to the revitalization of the regional economy.

To further streamline domestic customs procedures, an ICT Modernization Unit has been established within the Nigerian Customs Service (NCS), promoting the digitalization of various logistics-related processes. This is leading to paperless operations and automation of customs work. Through these initiatives, Nigeria aims to strengthen its role as a hub for regional trade and enhance its international competitiveness.

(2) Project Objective

The objective of the project is to install large-scale X-ray scanners at the Seme border to reduce the physical inspection rate, and to procure equipment such as weighbridges, freezers, and forklifts to contribute to the smooth flow of logistics along the Abidjan-Lagos Corridor. It also aims to ensure security through the installation of night lighting facilities.

To resolve the issue of unstable power supply that prevents the online customs clearance system from functioning and to ensure the stable operation of the large-scale X-ray scanners, a system equivalent to the mini-grid power supply implemented by the local power authority in cooperation with the World Bank will be included in this project.

Furthermore, by introducing appropriate risk management methods, including pre-clearance examination and post-clearance audit, and by conducting capacity development for customs officials to shorten customs clearance time, the project will contribute to the Nigerian Customs Service's (NCS) goal of completing inspection within 24 hours and achieving a minimum 40% Green Lane (non-physical inspection) rate, as well as counter-smuggling efforts.

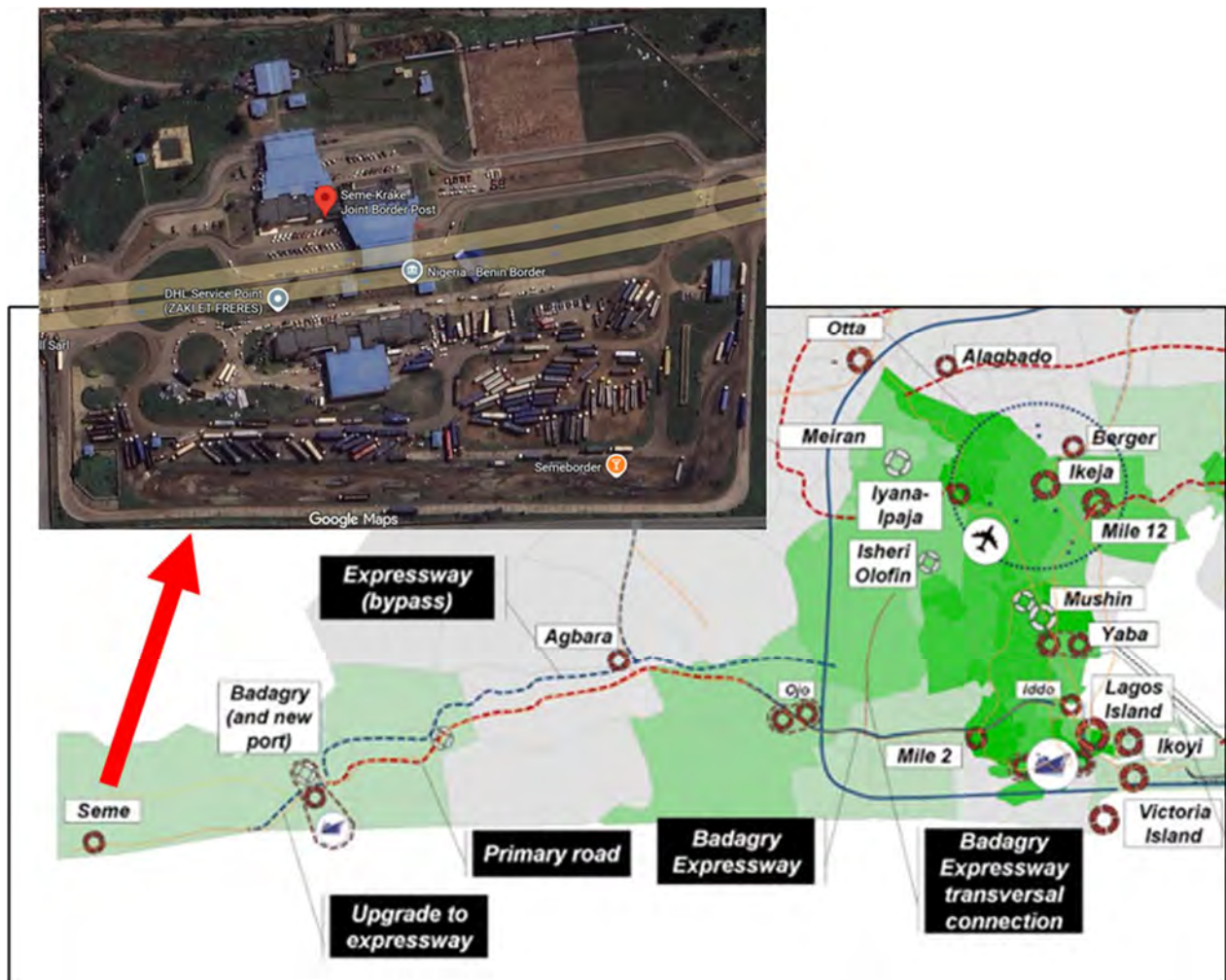
(3) Project Scope

The content of the "Capacity Development for Customs Staffs" project is shown in Table 7.4.2.

Table 7.4.2 Content of the “Capacity Development for Customs Staffs” Project

Target Area	Seme Border (Refer to the Proposed Project Location Map)
Project Content	Procurement of Large-scale X-ray Scanners, Weighbridges, Freezers, Forklifts, and Night Lighting Facilities, and Soft Components related to Customs Risk Management
Implementing Organizations	Nigeria Customs Service (NCS) Regarding the Solar Mini-Grid: Rural Electrification Agency
Estimated Project Cost	(1) Hard Components - Installation of Large-scale X-ray Scanners, Weighbridges, Freezers, Forklifts, and Night Lighting Facilities at the Seme Border - Introduction of a Solar-Powered Mini-Grid System at the Seme Border Total Equipment Cost: USD 8 mil. Consulting Fee: USD 1 mil. Soft Component Cost: USD 1 mil. Total Project Cost: USD 10 mil. (2) Soft Components - Lecture on Risk Management (ToT: Training of Trainers) - Setting of Appropriate Inspection Targets using Large-scale X-ray Scanners (Analysis of Green, Yellow, and Red Ratios) - Training for General Staff by Instructors Developed through ToT - Study of System Setting Parameters - Study of Campaigns to Encourage Sincere Applications from Customs Applicants
Project Effects	(1) Beneficiaries - Nigeria Customs Service officials - Logistics Operators in Nigeria - General residents (approximately 65 million people) and businesses residing in the Abidjan-Lagos Corridor and Southern Nigeria (2) Project Outcomes - Reduction of transport costs through the shortening of lead time for import/export cargo passing through the Abidjan-Lagos Corridor. - Increase in customs revenue through accurate and reliable customs duty collection
Prerequisites/External Conditions	- Coordination and agreements regarding the implementation of this project with ECOWAS and Benin Customs. - Arrangement and coordination between the e-Customs project and this specific project. - Efficient and fair customs clearance operations by customs officials. - Outreach to the industry and training for businesses to reduce insincere customs declarations/applications. - Effective counter-smuggling measures.
Related Projects	- Development/Procurement of Customs Facilities, Equipment, and Surveillance Gear through a PPP Project under the e-Customs initiative - Development of Inland Dry Ports

Source: JICA Study Team



Source: JICA Study Team

Figure 7.4.2 Proposed Project Location Map

7.4.3 Capacity Development for Optimizing Port Function and Improvement Port Operation Environment

(1) Project Background

a. Current Situation and Challenges

Over 90% of Nigeria's import and export cargo is handled through seaports, and approximately 70% to 80% is handled by the Apapa Port and the Tin Can Island Port in the LMA. The majority of cargo transport between the ports and their hinterlands relies on road transport, and the heavy concentration of import/export cargo in this area is the major factor of the long queue of cargo vehicles (trucks and tankers) on the roads around the port gates.

The resolution of the problem on roads around the port gates has become the most critical priority for facilitating the logistics of Nigeria's import and export cargo as well as the challenges related to customs clearance.

b. Nigerian Government Initiatives to Address the Challenges

The Federal Government of Nigeria (FMMBE, NPA, etc.), in cooperation with the Lagos State Government and other relevant authorities, has been advancing the following initiatives to improve this issue.

- ✓ Development of Lekki Port
- ✓ Rail connection to Apapa Port
- ✓ Introduction of an electronic truck call-up system
- ✓ Introduction of container barging (barge transport)

c. Remaining Challenges (Current situation/issues still unresolved by the initiatives)

● Promotion of Barge Transport Utilization

The promotion of container barge transport has been advanced under the initiative of the Nigerian Ports Authority (NPA) since around 2018 (e.g., establishing licenses and rules for barge transport). As a result, in addition to the NPA-owned Kirikiri Lighter Terminal (KLT) and Ikorodu Lighter Terminal (ILT), barge terminals by private entities have been developed and utilized for container barging. Around 2018, this coincided with the concrete pavement work on the main access roads to Apapa and Tin Can by a private entity (the Dangote Group). It is presumed that many shippers opted for container barge transport to avoid the road congestion caused by that construction. Since this construction was completed in 2024, the underlying circumstances favoring the utilization of barge transport are believed to be changing.

Information suggests that barge transport is more costly than truck transport, partly due to the increased number of loading and unloading operations involved in the movement of cargo between the port and the origin/destination in the hinterland.

Nevertheless, i) while the vehicular gridlock problem on roads stemming from the port is showing improvement, it is still only partially resolved and requires further enhancement, and ii) from the perspective of reducing CO₂ emissions, barge transport must continue to be a transportation mode available for shippers to select.

● Promotion of Rail Transport Utilization

Plans to connect railways to Tin Can Island Port and Lekki Port, in addition to Apapa Port, are currently being considered by the Nigerian government. While taking the implementation schedule into account, it is necessary to improve the cost and frequency of rail services so that rail transport is selected by shippers.

● Promotion of Lekki Port and Others

Lekki Port has commenced operation but its full operation is still forthcoming. Functional enhancements around the port, such as improving connectivity to the hinterland and implementing a truck call-up system, must be advanced in a timely manner, without behind the pace of cargo volume increase. This is necessary to distribute the excessive cargo handling currently concentrated at Apapa and Tin Can Island Ports and to fully leverage Lekki Port's characteristics as a high-functional port equipped with deep-water berths and high-efficiency cargo handling equipment. In this process, the management of vehicles (tankers) transporting petroleum products from the Dangote Refinery, which has commenced operation in the vicinity, must also be considered.

Badagry Port, for which development preparations are underway, also needs to be enabled to fully exercise its port functions in accordance with the progress of its development.

- **Improvement of Road Transport**

Even after the launch of the electronic truck call-up system, segments of the roads around the port (especially the sections from the pre-gate to the terminal, which are not the main roads where concrete paving or other surface improvements have been carried out) still have poor pavement conditions remaining. These sections are considered a major cause of pavement deterioration because they are frequently traversed by numerous heavy-axle-load vehicles, such as trucks transporting cargo to/from the port.

However, the maintenance of roads outside the port premises is the responsibility of the road authorities (FERMA, state government road departments, etc.), not the port authorities (NPA, etc.). Due to the extensive length of roads they manage and constraints on their maintenance budgets, the road authorities are compelled to prioritize repairs and upgrades sequentially. Consequently, even when the road pavement around the port is damaged, prompt action is often impossible. As a result, the roads surrounding the ports show advanced pavement damage, including deep ruts, widening potholes, the formation of puddles, or even sections that have deteriorated to a nearly unpaved state.

In these substandard sections, driving speeds are significantly reduced (especially during heavy rainfall), and they become a source of unpredictable congestion—caused by vehicle accidents or breakdowns—that cannot be controlled by the truck call-up system. To resolve these issues occurring at the jurisdictional boundaries of different facility management bodies, it is essential to first build a common consensus within the Nigerian government regarding the logistics policy priority of this challenge. Following this, a mechanism must be established for the port and road authorities to cooperate and jointly resolve these bottlenecks.

Regarding the electronic truck call-up system, further functional expansion and enhancement must be pursued in line with technological innovation, such as expanding the scope of eligible vehicles (to include tankers), expanding the operational area (to Lekki Port), and linking with customs-related systems (e-customs, NSW), to ensure it remains a user-friendly system for everyone.

(2) Project Objective

To facilitate port logistics in the LMA and to improve the over-concentration of cargo transport on road traffic between Apapa Port/Tin Can Island Port and the hinterland, technical cooperation to optimize the functions of each port located in LMA, including Lekki Port, and to improve the operating environment to promote the diversification of transport modes used between each port and the hinterland shall be recommended.

(3) Project Scope

The content of the “Capacity Development for Optimizing Port Function and Improvement Port Operation Environment” is shown in Table 7.4.3.

Table 7.4.3 Content of the "Capacity Development for Customs Staffs" Project

Output	Formulation of a policy package consisting of a series of measures to improve the over-concentration of cargo transport on road traffic between Apapa Port/Tin Can Island Port and the hinterland, aimed at facilitating port logistics in the LMA, and capacity development for the implementation
Activities	1. Activities Related to the Current Status, Challenges, and Future Outlook of Lagos Metropolitan Area Ports and Hinterland 1.1 Review of Nigeria's Current Status and Logistics-Related Strategies, Policies, and Plans 1.2 Review of Lagos State's Current Status and Logistics-Related Strategies, Policies, and Plans 1.3 Grasping the Current Status and Analysis of Challenges and Future Outlook for Ports (Apapa Port, Tin Can Island Port, Lekki Port, etc.) and Barge Terminals 1.4 Grasping the Current Status and Analysis of Challenges and Future Outlook for Roads (Port vicinity, Main arteries) 1.5 Grasping the Current Status and Analysis of Challenges and Future Outlook for Railways (Port vicinity, Main arteries) 1.6 Grasping the Current Status and Analysis of Challenges and Future Outlook for Customs (Port vicinity, Inland Dry Ports) 1.7 Grasping the Current Status and Analysis of Challenges and Future Outlook for the Production and Transport of Petroleum Products 2. Activities Related to the Formulation of the "Lagos Metropolitan Port Logistics Improvement Policy Package" <u>Developing Measures to Promote the Shift from Road Transport to Other Modes at Apapa Port and Tin Can Island Port</u> 2.1 Developing Measures to Promote Barge Transport Utilization 2.2 Developing Measures to Promote Rail Transport Utilization 2.3 Developing Measures to Promote Utilization of Lekki Port and Other Ports <u>Developing Measures for Road Transport Improvement</u> 2.4 Developing Measures to Disperse Truck Arrival Times 2.5 Developing Measures to Disperse Tanker Arrival Times 2.6 Developing Measures to Improve Port Gate Processing Capacity 2.7 Developing Measures to Improve External Truck Processing Capacity at Port Terminals 2.8 Developing Measures to Optimize Functionality of Roads in the Port Vicinity <u>Developing Implementation Plans Considering the Time Axis</u> 2.9 Developing a Roadmap for the Implementation of the Policy Package 3. Activities Related to "Capacity Development for the Implementation of the Policy Package" 3.1 Training 3.2 Workshops 3.3 Seminars

Source: JICA Study Team

Chapter 8. Selection of Priority Projects

8.1 Selection Method

The selection of projects that should be prioritized for implementation was conducted from the Shortlist compiled in Chapter 7. The "Priority Projects" referred to here are defined as those for which it is desired to promptly conduct further studies and move forward with project implementation.

The evaluation of each project on the Shortlist was conducted across four major categories: "Project Necessity," "Consistency with Higher-Level Plans," "Ease of Project Implementation," and "Project Effectiveness". For "Ease of Project Implementation" and "Project Effectiveness," more detailed evaluation items were set, and each shortlisted project was assessed against the Evaluation Criteria (Scoring Standards).

Table 8.1.1 Evaluation Criteria and Weighting

Category	Index	Viewpoint	Weight
Needs of Project		Whether the impact on logistics activities is expected to generate widespread benefits across Nigeria	20
Consistency with master plans		Whether the project is positioned or will be positioned in national or state-level master plans	10
Feasibility	Initial cost scale	The lower the initial project cost, the lower the implementation barriers	10
	Land acquisition	The smaller the scale of additional land acquisition required, the lower the implementation barriers	10
	Impact on natural environment	The presence and extent of impacts on the natural environment within or adjacent to the project area	10
	Technical difficulties/ Maintenance ability	Whether construction or maintenance can be handled using existing Nigerian technology (local companies)	5
	Political View	Whether high-level decision-makers within the primary implementing organization demonstrate strong commitment to the project	20
Impact	Traffic demand	The scale of demand for the target infrastructure. Higher traffic demand lead to greater project effectiveness	10
	Synergy effect with other projects	Whether related projects exist, enabling synergies through coordination and integration.	5
	Benefit Cost Ratio (BCR)	The magnitude of the benefit-cost ratio (BCR). Benefit is expected to be travel time saving due to infrastructure development	20
Overall Evaluation		Projects with a weighted score exceeding 80% of the total will be selected as priority projects.	120

Source: JICA Study Team

Table 8.1.2 Scoring Criteria

Category	Index	Scoring Criteria
Needs of Project	3	Large scaled development/improvement of federal roads or arterial roads formulating city framework
	2	Small scaled development/improvement of federal roads or except federal roads
	1	Others
Consistency with Master Plan	3	Authorized in the any master plan and priority project in the ministry level
	2	Authorized in the any master plan of priority project in the ministry level
	1	Idea level
Feasibility	Initial cost scale	3 ~ 20 million USD
		2 ~ 200 million USD
		1 200 million USD ~
	Land acquisition	3 Land is already secured or almost nothing
		2 Land acquisition equal to category B is required
		1 Large scaled land acquisition equal to category A is required
	Impact on natural environment	3 Nothing impact and development/improvement outside of nature conservation area
		2 Small Impact on natur and developmetn/improvement outside of nature conservation area
		1 Significant impact on nature or development/improvement inside of nature conservation area
	Technical difficulties /maintenance ability	3 Compatible with existing technologies for development and maintenace
		2 Basically compatible with existing technologies except a part of development or maintenace
		1 Techonologies beyond localization are required for core development or maintenace
	Political View	3 Strong intent of the high-level or decision-maker has been confirmed
		2 Some intent of the high-level or decision-maker has been confirmed
		1 Intent of the High-level or decision-maker is not necessarily
Impact	Traffic volume	3 Large traffic volume is expected (50,000 vehicles per day ~)
		2 Middle traffic volume is expected (10,000 vehicles per day ~)
		1 Not expected to see much use (~ 10,000 vehicles per day)
	Synergy effect with other projects	3 Relevant specific projects is under construction or commencement soon and synergy effect is expected
		2 Relevant specific projects is udner consideration for future and synergy effect is expected
		1 Almost nothing of relevant specific project
	Benefit Cost Ratio (BCR)	3 $B/C \geq 3.0$
		2 $B/C \geq 1.0$
		1 $B/C < 1.0$

Source: JICA Study Team

8.2 Selection of Priority Projects

The results of scoring each shortlisted project against the evaluation criteria set in the previous section are as follows. Based on the evaluation, two projects were selected as priority projects: the "Bottleneck Elimination of Logistics A1 Corridor in Lagos" and the "Smart Traffic Lights in Ikeja Lagos".

Table 8.2.1 Evaluation of Shortlisted Projects

Evaluation Criterias			Bottleneck Elimination of Logistics A1 Corridor in Lagos									Development of Bypass for Logistics A2 Corridor in FCT		
Category	Index	Weight	Odogunyan Junction and Industrial Zone			Ikorodu Flyover			Road Improvement in Owode Onrin/ Mile 12			Abaji-Nasarawa-Keffi Road		
Estimated Cost (mill. USD)			108 22 (Only improvement of A1)			68			3.8			245		
Needs	Contribution to nationwide logistics	20	3	Bottle neck elimination by small scaled interchange improvement on nation wide North-South A1 logistics corridor	60	3	Bottle neck elimination by flyover construction at crowded area on nation wide North-South A1 logistics corridor	60	3	Bottle neck elimination by small scaled interchange improvement on nation wide North-South A1 logistics corridor	60	3	It is development of a part of Abuja ring road as well as bypass of A2 corridor to contribute logistic activities around FCT and central/northern states of Nigeria	60
Relevance to MP	Stipulation in MP	10	2	Both E1 and A1 are placed as major North-South freight corridors between Lagos and other Nigeria region and necessity of A1 improvement is shown due to poor road conditions in the Lagos Strategic Transport Master Plan	20	2	Both E1 and A1 are placed as major North-South freight corridors between Lagos and other Nigeria region and necessity of A1 improvement is shown due to poor road conditions in the Lagos Strategic Transport Master Plan	20	2	Both E1 and A1 are placed as major North-South freight corridors between Lagos and other Nigeria region and necessity of A1 improvement is shown due to poor road conditions in the Lagos Strategic Transport Master Plan	20	1	No outline and alignment of the project is found in any master plan for time being	10
Realization	Initial cost scale	10	2	Lange from 20 million USD to 200 million USD	20	2	Lange from 20 million USD to 200 million USD	20	3	Within 20 million USD	30	1	Beyond 200 million USD	10
	Land acquisition	10	3	Land acquisition for wideing is slightly necessary	30	3	Flyover will be constructed within existing ROW and land for parking is already secured by the Lagos government	30	3	Land acquisition for service road is slightly necessary along the existing A1 corridor	30	2	Land acquisition for road widening at several settlement is necessary	20
	Impact on natural environment	10	3	Small scaled road improvement of widening and no impact on nature	30	3	Flyover project within ROW and no impact on nature	30	3	Small scaled road improvement of widening and no impact on nature	30	3	Road widening project along existing road but no impact on nature	30
	Technical difficulties/maintenance ability	5	3	Simple civil work of at-grade road widening	15	2	Special construction supervision is necessary for both open traffic situation including BRT operation	10	3	Simple civil work of at-grade road widening	15	3	Simple civil work of at-grade road widening	15
	Political View	20	3	Lagos Governor and relevant ministries already acknowledged the project necessity and priority for logistics improvement	60	3	Lagos Governor and relevant ministries already acknowledged the project necessity and priority for logistics improvement	60	3	Lagos Governor and relevant ministries already acknowledged the project necessity and priority for logistics improvement	60	3	Parmanent Secretary of Federal Ministry of Works and Federal Ministry of Budget and Economic Planning already acknowledged the project necessity and priority	60
Impact	Traffic volume	10	2	Around 20,000 pcu per day traffic in 2040 is expected on this section of A1 corridor	20	2	Around 20,000 pcu per day traffic in 2040 is expected on this section of A1 corridor	20	2	Around 20,000 pcu per day traffic in 2040 is expected on this section of A1 corridor	20	1	Around 7,000 pcu per day traffic in 2040 is expected on this road	10
	Synergy effect with other projects	5	3	Synergy effect with other improvement project on A1 corridor (No.2 and No.4) is expected and 4th mainland bridge project will be crossing near the location	15	3	Synergy effect with other improvement project on A1 corridor (No.1 and No.4) is expected and 4th mainland bridge project will be crossing near the location	15	3	Synergy effect with other improvement project on A1 corridor (No.1 and No.2) is expected and 4th mainland bridge project will be crossing near the location	15	2	This section becaomes a bypass of A2 corridor arounde FCT and Kaduna state, otherwisefunction as ring orad around FCT, however, nothern part of the section is under consideration	10
	B/C	20	1	B/C=0.27 B/C=1.33 (Only improvement of A1)	20	2	B/C=1.46	40	3	B/C=14.79	60	3	B/C=5.82	60
Total Score		120		Priority Project (One Package of A1 Corridor project)	290 81%		Priority Project (One Package of A1 Corridor project)	305 85%		Priority Project (One Package of A1 Corridor project)	340 94%			285 79%

Refer to score definition

Scoring 3: Good, 2: Fair, 1: Poor, (Maximum Score 360)

Evaluation Criterias			Development of Logistics Corridor in Lagos Metropolitan Area (LMA)						Facilitation for Logistics Corridor in LMA		
Category	Index	Weight	Lagos Ring Road			Lagos Bay Crossing Road			Smart Traffic Lights in Ikeja Lagos		
Estimated Cost (mill. USD)			829			698			13.6		
Needs	Contribution to nationwide logistics	20	3	Large scaled ring road development to soround lagos metropolitan area and connecting	60	3	Large scaled bridge development crossing lagos creek and conneting between Lagos port complex and eastern area (Lekki and further east states)	60	2	Traffic lights instruction for specific crowded area near Lagos airport and government block on A5 which is major corridor between Lagos and Abeokuta/Ibadan in West-South state in Nigeria	40
Relevance to MP	Stipulation in MP	10	3	Rough alignment of Lagos ring road is stipulated in the current effective Lagos Strategic Transport Master Plan published in 2014	30	3	Rough alignment of Lagos creek crossing is stipulated in the current effective Lagos Strategic Transport Master Plan published in 2014	30	2	Lagos Ministry of Transportation has intent that smart traffic signal shall be stipulated in the next Lagos Strategic Transport Master Plan which is under revising	20
Realization	Initial cost scale	10	1	Beyond 200 million USD	10	1	Beyond 200 billion USD	10	3	Within 20 million USD	30
	Land acquisition	10	1	Large scaled land acqusition for wider ROW and long distance along the existing road is necessary	10	1	Large scaled land acquisition, especially starting/ending point at Victoria Island and Apapa area, is necessary for aproach road of bridge	10	3	Only installation of traffic light poles at roadside. Small scaled land acqusition may be required for improvement of roundabaout	30
	Impact on natural environment	10	1	Large scaled ring road development may cross into green area according to the alignment	10	1	Road and bridges are developed across the Lagos creek and Badagry creek	10	3	Only installation of traffic light poles at roadside.	30
	Technical difficulties/maintenance ability	5	2	Technical attachments for both wide lane flyovver/interchange and supervision while open traffic situation are necessary	10	1	Construction technology with high tall and long span type brige and its maintenace for vessel crossing clearance such as cable-stayed bridge should be considered	5	1	Advance signal control technology is necessary even after installation of equipment for operation and maintenace	5
	Political View	20	2	Lagos Governor and relevant ministries already acknowledged the project necessity and priority for logistics improvement	40	3	Lagos Governor and relevant ministries already acknowledged the project necessity and priority for logistics improvement	60	3	Lagos Governor and relevant ministries already acknowledged the project necessity and priority	60
Impact	Traffic volume	10	3	More than 50,000 pcu per day traffic in 2040 is expected on A1 corridor	30	2	Around 24,000 pcu per day traffic in 2040 is expected on this bridge	20	3	More than 50,000 pcu per day traffic in 2040 is expected on A1 corridor	30
	Synergy effect with other projects	5	3	This section becaomes a western part of Lagos outer ring road with the eastern part of 4th mainland bridge project	15	3	This section becomes nation wide east-west corridor in nigeria with the Lagos-Calabar corridor under construction	15	1	No major infrastructure project around the targeted area l expected	5
	B/C	20	3	B/C=3.09	60	2	B/C=1.75	40	3	B/C=6.61	60
Total Score		120	/		275 76%	/		260 72%	/	Priority Project	310 86%

Refer to score definition

Scoring 3: Good, 2: Fair, 1: Poor, (Maximum Score 360)

8.3 Overview of the Priority Projects

8.3.1 Bottleneck Elimination of A1 Logistics Corridor in Lagos

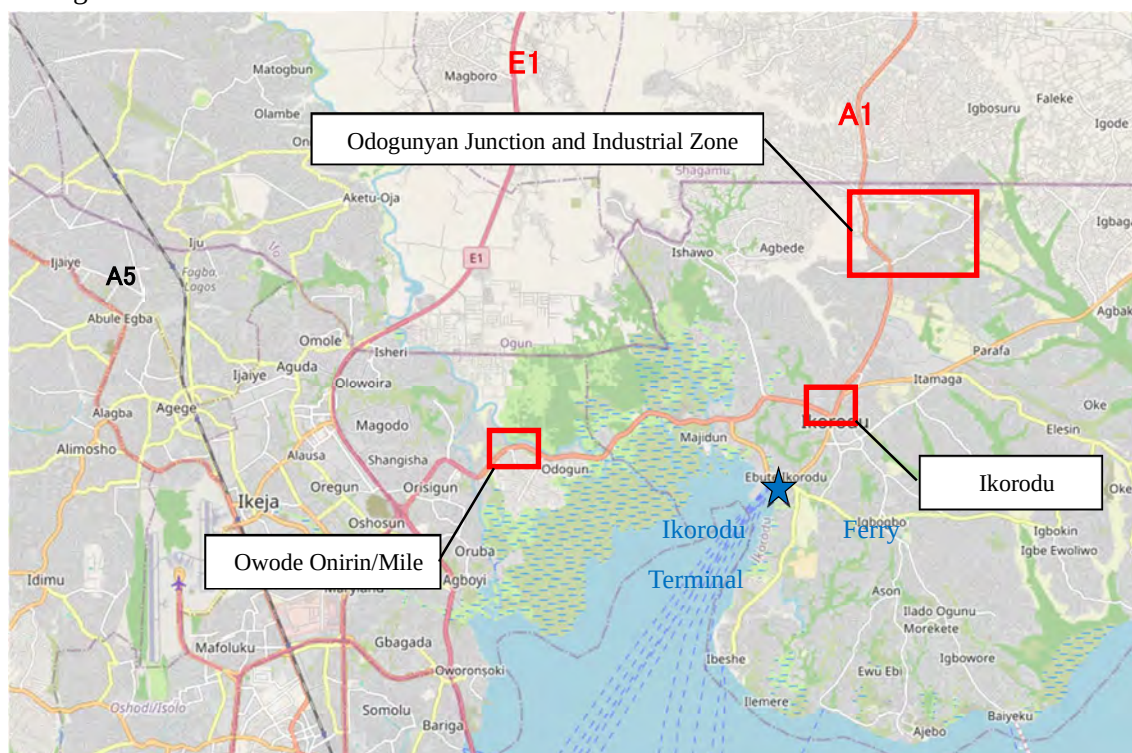
(1) Project Background and Necessity

1) Current Situation and Challenges

Federal Road 1 (A1) is a major North-South trunk road in Nigeria, originating in Lagos and passing through major cities like Ibadan and Ilorin, and extending towards Abuja and Kano. Consequently, numerous industrial estates and factories are located along the A1 between Ikeja and Ikorodu, in Lagos State, which is an area with a concentration of manufacturing industries. The A1 thus plays an important role as a major logistics corridor in Nigeria.

For the section with high traffic demand between Lagos and Ibadan, the Expressway (E1), the only one in Nigeria, runs parallel to the A1 to mitigate congestion and ensure redundancy. However, the E1 frequently experiences closures or heavy congestion due to traffic accidents or large church events located along the route, in which case the A1 becomes the sole North-South trunk road, leading to concentrated traffic load.

Nevertheless, the A1 also suffers from bottlenecks in sections where markets are located or where there is frequent entry/exit traffic from roadside areas, which obstructs smooth traffic flow. The bottlenecks on the A1 are scattered across three locations: the Odogunyan Intersection, the Ikorodu Intersection, and the Owode Onrin area. Implementing improvements at these three locations simultaneously, rather than as individual projects, will resolve the A1 bottlenecks and secure its function as a logistics corridor.



Source: JICA Study Team

Figure 8.3.1 Location Map of the Bottleneck Elimination of Logistics A1 Corridor in Lagos

The current status and challenges at the following three locations are shown below.

【Odogunyan Intersection】

Traffic is significantly impeded by numerous roadside vendors along the route, along with associated taxi pickups/drop-offs and pedestrians crossing the road. While the traffic capacity ratio for the section including this intersection is reported as 0.72 (Ikorodu Sub-Region Master Plan, 2020), queue length at the junction is more 200 m and average travel speed for the section is less than 10 km/h (source from a traffic survey conducted in November 2025, refer to the appendix) during morning and evening peak hours.

Furthermore, the "Odogunyan Industrial Park," Nigeria's largest industrial park, is located northeast of the Odogunyan Intersection. While future development of the industrial park raises concerns about increased traffic load around this intersection, the existing congestion in the area is also hindering the promotion of the industrial park's development. Furthermore, the access road connecting A1 and the industrial park suffers from extremely poor road conditions due to heavy vehicle traffic and flooding caused by inadequate drainage. Large freight vehicles can only travel at low speeds, and the poor road surface also causes damage to raw materials and products during transport.

【Ikorodu Intersection】

This intersection is a major transportation hub, adjacent to the BRT terminal station. The road south from the intersection serves as the access route to Ikorodu Port (including the ferry terminal). Due to its high convenience, the largest market within the LGA is located here. Numerous street vendors operate along the roads surrounding the intersection. The associated taxi pickups/drop-offs and pedestrian crossings significantly impede traffic on A1. While the traffic capacity ratio for the section including this intersection is reported as 0.72 (Ikorodu Sub-Region Master Plan, 2020), queue length at the junction is around 300 m and average travel speed for the section is less than 10 km/h (source from a traffic survey conducted in November 2025, refer to the appendix) even during daytime except morning and evening peak hours. Within the aforementioned Sub-Region Master Plan, this intersection is assessed as a location experiencing traffic dysfunction.

【Owode Onrin Area】

Although the A1 in this area already has four lanes plus a dedicated BRT lane, it is a major commercial area with numerous shops located nearby. Consequently, taxi pickups/drop-offs, pedestrian crossings, and vehicle U-turns are hindering the smooth flow of traffic on the A1. Freight traffic volume near this road is high at approximately 2,000 vehicles per day (as of 2016, Lagos Region Freight Study, LAMATA) and traffic congestion is heavy during morning and evening peak hours. The queue length at the Mile 12 junction is around 400 m and average travel speed is less than 10 km/h (source from a traffic survey conducted in November 2025, refer to the appendix), and significantly impacting not only logistics vehicles but also general vehicle traffic.

2) Nigerian Government Initiatives Addressing the Challenges

The Ikorodu Local Government Area (LGA) in Lagos State formulated a Sub-Regional Master Plan in 2020, establishing land use policies for the entire area, including the section in question (covering the adjacent Kosofe LGA where Owode Onrin area is located). Based on this higher-level plan, the Lagos State Ministry of Transportation and the Ministry of Works and Infrastructure are planning the following initiatives.

【Odogunyan Intersection】

Plans include upgrading the intersection, improving access roads within the Odogunyan Industrial Estate, and securing space for open-air activities and taxi pick-up/drop-off points.

【Ikorodu Intersection】

Lagos State has already acquired land near the intersection and plans to develop market facilities there to relocate street vendors.

【Owode Onrin Area】

Plans are underway to improve traffic flow at this location by modifying U-turn points and upgrading side roads.

3) Remaining Challenges

Lagos State has been advancing improvements to the A1 road starting from sections closer to the city center. Alongside the development of BRT lanes, improvements up to the Ikorodu Intersection, the BRT terminus, are largely complete. However, the Ikorodu Intersection itself remains unimproved, and the section north of it has not been upgraded. At present, the three aforementioned bottlenecks exist, and there is no clear budgetary outlook for addressing them.

4) Consistency with Nigerian Government Policy

As stated above, the Lagos State Government and the Ikorodu Local Government Area (LGA) have planned improvements for these three bottlenecks and have prioritized them as key projects within Lagos State.

(2) Project Objectives

Ikorodu LGA, located along Nigeria's major logistics artery A1 connecting central Lagos, the coastal area, and the interior, is one of the most populous districts in Lagos State. Consequently, the BRT public transport system was developed here, with expectations for congestion relief. However, traffic flow along A1 is significantly impeded by these three bottlenecks, which this project aims to improve.

As the A1 is a vital north-south corridor for the movement of people and goods for Japanese companies operating locally, this project is also expected to benefit them. The elevated construction at the Ikorodu intersection requires work to proceed while maintaining traffic flow on the A1. Should Japanese companies participate, the application of Japanese technologies such as the launching method for bridge erection, precast construction methods, and curved bridge construction techniques are expected.

(3) Project Location

Odogunyan Area and Ikorodu Intersection within Ikorodu LGA, Lagos State; Owode Onrin Area within Kosofe LGA.

(4) Project Scope

The project details for each of the three locations are as follows:

【Odogunyan Intersection】

The project involves widening and improving the A1 road, which serves as the entrance to the Odogunyan Industrial Estate. It also aims to eliminate the bottleneck and improve traffic flow by consolidating and securing space for street vendors and taxi pick-up/drop-off points, which currently significantly impede traffic flow. Furthermore, it seeks to improve manufacturing industry activities by upgrading the access roads within the industrial estate, which suffer severe damage from heavy vehicle traffic. The main scope is as follows.

Odogunyan Intersection Improvement: Widening around the intersection, and constructing U-turn points and collector drain

- Continuous median strip with traffic management at the front and rear U-turn points.

Industrial Estate Access Road Improvement: The following 5 routes totaling approximately 10.8 km of concrete-paved roads (including side ditches, sidewalks, and streetlights)

- Port of Old Ikorodu-Shagamu Road: 2.68 km
- Link between Old Ikorodu-Shagamu Road and Odonic Road: 1.10 km
- Construction of Odonla Road: 2.95m
- Construction of Industrial Estate Road: 2.01 km
- Construction of Lagos-Ogun Boundary Road: 2.05 km

Development of a market to relocate street vendors and bus park

【Ikorodu Intersection】

This project involves creating a grade-separated intersection by elevating the primary traffic flow, the A1 main line, into an overpass structure (flyover). Concurrently, it consolidates and secures nearby spaces for street vendors and taxi pick-up/drop-off areas, which currently significantly impede traffic flow. The main scope is as follows.

Flyover Construction

- Bridge section: 4 lanes + service road: 4 lanes + BRT lane
- Bridge section: 580m + Approach section: 200m
- Three-span continuous steel box girder bridge (curved section): 3@60=180m
- 10-span continuous steel plate girder bridge: 10@40=400m
- 22 piers, 2 abutments, reinforced earth wall construction

Relocation of street vendors, development of taxi and passenger drop-off/pick-up areas

【Owode Onrin Area】

By establishing a side road around the BRT bus stop where an existing pedestrian overpass is located, securing taxi boarding/alighting space, installing anti-crossing barriers, and modifying nearby U-turn points, traffic obstruction on A1 Main Line will be reduced. This aims to alleviate congestion on A1, including for large vehicles.

Installation of anti-crossing barriers: 650m in length

U-turn point removal and lane realignment (Owode)

- U-turn point removal: 2 locations
- Narrow the median strip, including the BRT lane, to move lanes inward.
- Install 12m-wide sidewalks and boarding/alighting spaces.

Improve side roads and boarding/alighting areas for taxis, etc. (Idera/Oterubi)

- Side road width: 7.3m, Length: 140m on river side, 280m on market side (access to Oterubi Road)
- Change Oterubi Road to one-way entry only to eliminate traffic congestion.
- Increase boarding/alighting space from 875m² to 8,850m².
- Open the Idera pedestrian bridge, previously restricted to BRT users, for general use to cross the road.

(5) Implementing Agencies

The primary implementing agencies are expected to be the following two ministries of the Lagos State Government. However, since A1 is a federal highway, approval from the Federal Ministry of Works is required to implement projects within its right-of-way.

- Lagos State Ministry of Transportation (LSMT)
- Lagos State Ministry of Works and Infrastructure (LSMWI)

※For this project, the access road to the industrial park in the Odogunyan area and the project in the Ikorodu area are assumed to be implemented by the LSMWI. All other projects are assumed to be implemented by the LSMT.

Other Related Agencies

- Federal Ministry of Works (FMW)
- Ikorodu LGA
- Kosofe LGA

(6) Estimated Project Cost

The project cost for the Odogunyan Intersection and Owode Onrin area was based on estimates previously calculated by the Lagos State Government. For the Ikorodu Intersection, the survey team estimated the cost by referencing similar projects. The results are shown in the table below.

Table 8.3.1 Estimated Project Cost

Location	Type of Work	Amount (mil. USD)
Odogunyan Intersection	Intersection Improvement (Including Collector Drain)	11.5
	Market and Bus Park	8.3
	Industrial Park Access Road Improvement	78.7
	Total Construction Cost	98.6
	Consulting Fees	9.6
	Total Project Costs	108.2
Ikorodu Intersection	Bridge	42.9
	Earthwork, Retaining Wall, Paving	3.2
	Market and Taxi Stand	3.2
	Adjustment/Contingency Funds	12.2
	Total Construction Costs	61.4
	Consulting Fees	6.4
	Total Project Cost	67.8
Owode Onrin Area	Service Road Improvement (Including U-Turn Lane and Anti-Crossing Barrier)	3.2
	Total Construction Cost	3.2
	Consulting Fee	0.6
	Total Project Cost	3.8
Total Project Cost		179.9

(7) Project Effects

1) Beneficiaries

- Residents of Ikorodu LGA, Lagos State (approx. 1.8 million)
- Logistics operators active nationwide in Nigeria (approx. 1,700 transport companies, 2013 Cargo Regulation and Freight Forwarders Forum of Nigeria (CRFFN)), and shipper manufacturers (approx. 2,500 major companies (Manufacturers Association of Nigeria (MAN) members) and approx. 8.9 million small and medium-sized manufacturing companies (2021 MSME (Micro, Small and Medium Enterprises) Survey by the Small and Medium Enterprises Development Agency of Nigeria (SMEDAN) and the National Bureau of Statistics (NBS))

2) Project Impact

- Reduced travel time and transportation costs through streamlined logistics and general traffic (Approx. 1,300 person-hours/day saved in intersection crossing time during the first year of operation)
- Improved accessibility for logistics cargo to the Ikorodu area, where numerous manufacturing plants are located
- Enhanced alternative functions for E1

- Ensuring safety for residents along the route by separating vehicles and pedestrians (market-related, BRT-related, taxi boarding/alighting)
- Contribution to improving global environmental conditions through enhanced transportation energy efficiency by eliminating bottlenecks and alleviating congestion

(8) Prerequisites and External Conditions

Although this project is a federal road project, it is located within Lagos State. Based on past practice, the Lagos State Government is expected to be the primary implementing agency. In that case, if a sovereign loan is applied, it will be necessary to transfer funds from the federal government to the state government and to ensure effective coordination between the federal and state governments.

(9) Related Projects

Projects related to this project are as follows.

- The 4th Mainland Bridge road, which is scheduled to intersect between the Odogunyan Intersection and the Ikorodu Intersection, is expected to significantly increase traffic volume in the area.
- The federal government is developing the section up to the Ikorodu Intersection on A1 and has plans to extend development further north, but specific plans and implementation timelines are undetermined.

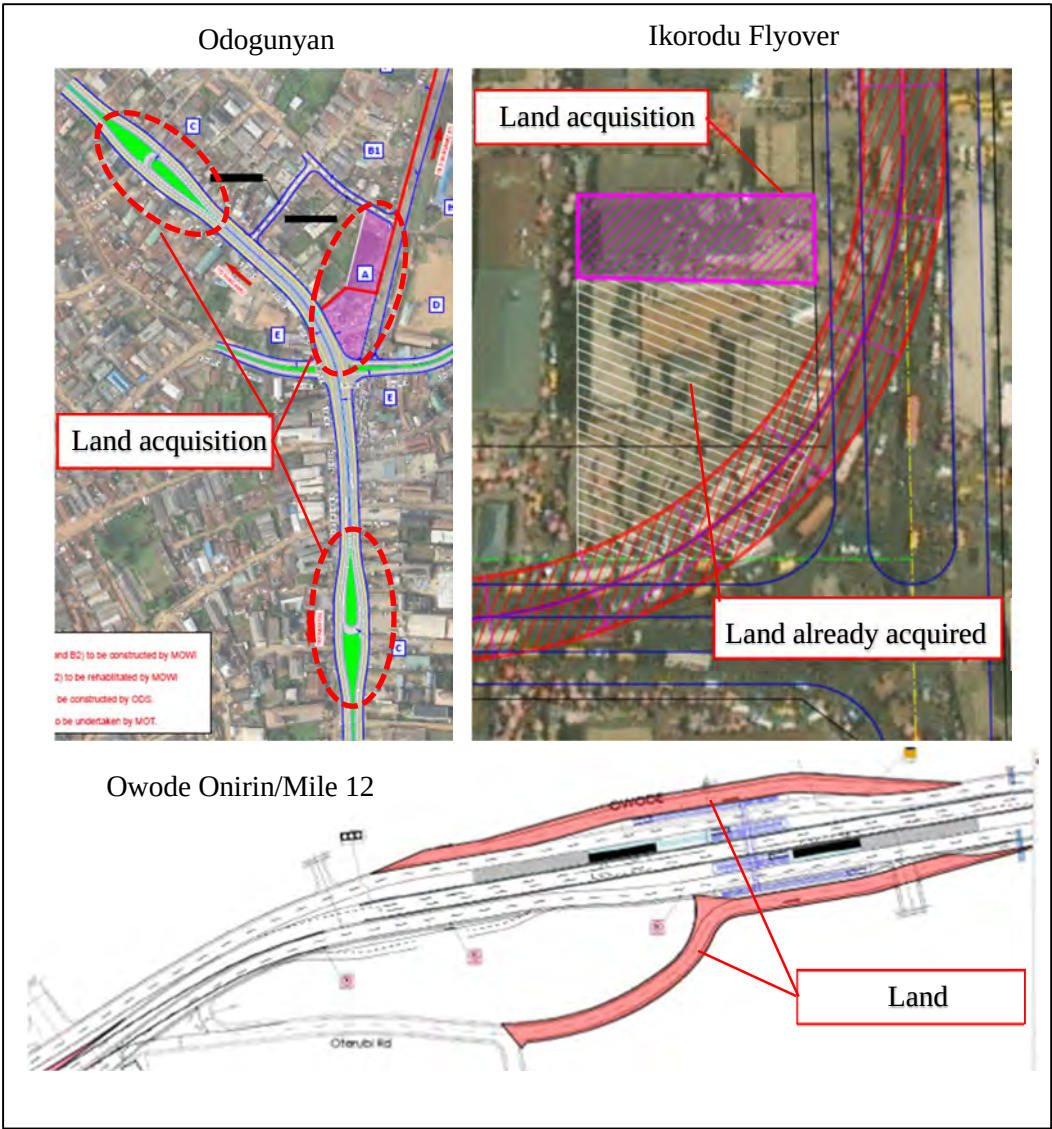
(10) Environmental and Social Considerations

Land acquisition and resident relocation will occur in certain areas as shown below. Approximately 30 homes will be affected.

Odogunyan Intersection: Space for market/taxi stand development and U-turn lane widening section

Ikorodu Intersection: Lagos State has already acquired the land for the market and taxi stand, but as it is somewhat small, the adjacent land will also be acquired.

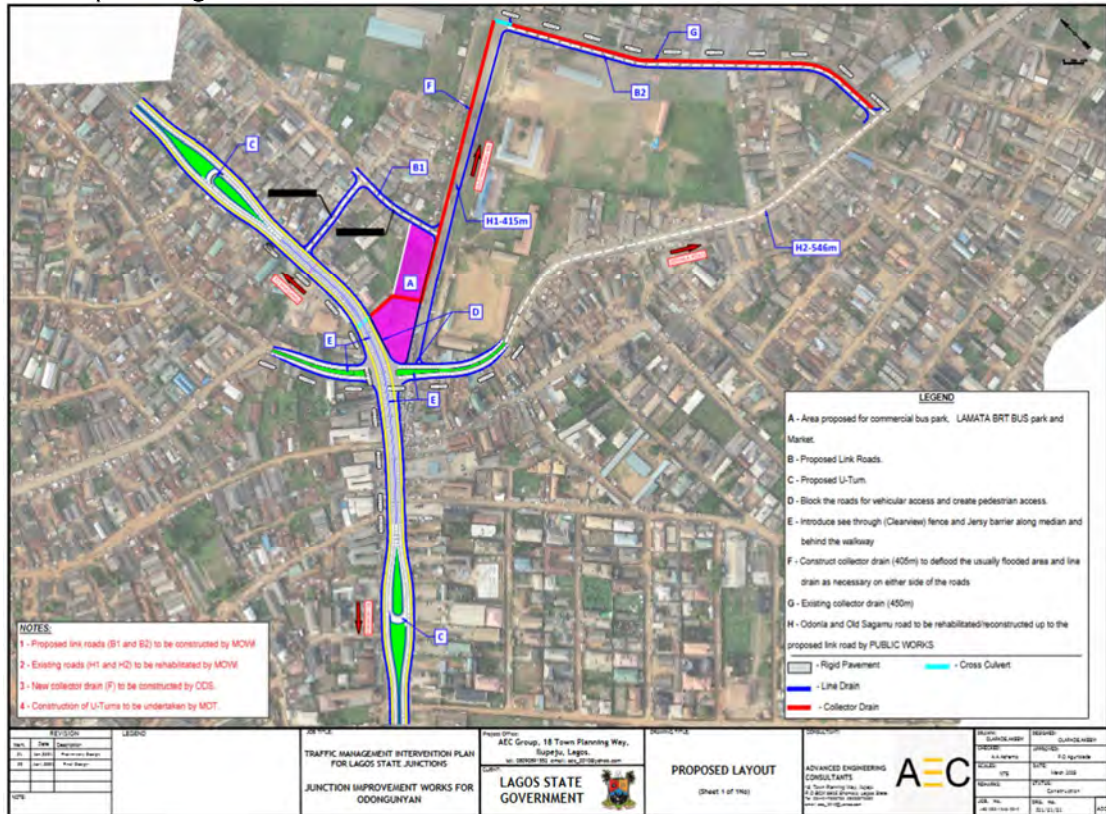
Owode Onirin Area: Land acquisition will occur in the area designated for side road and parking lot development.



Source: JICA Study Team

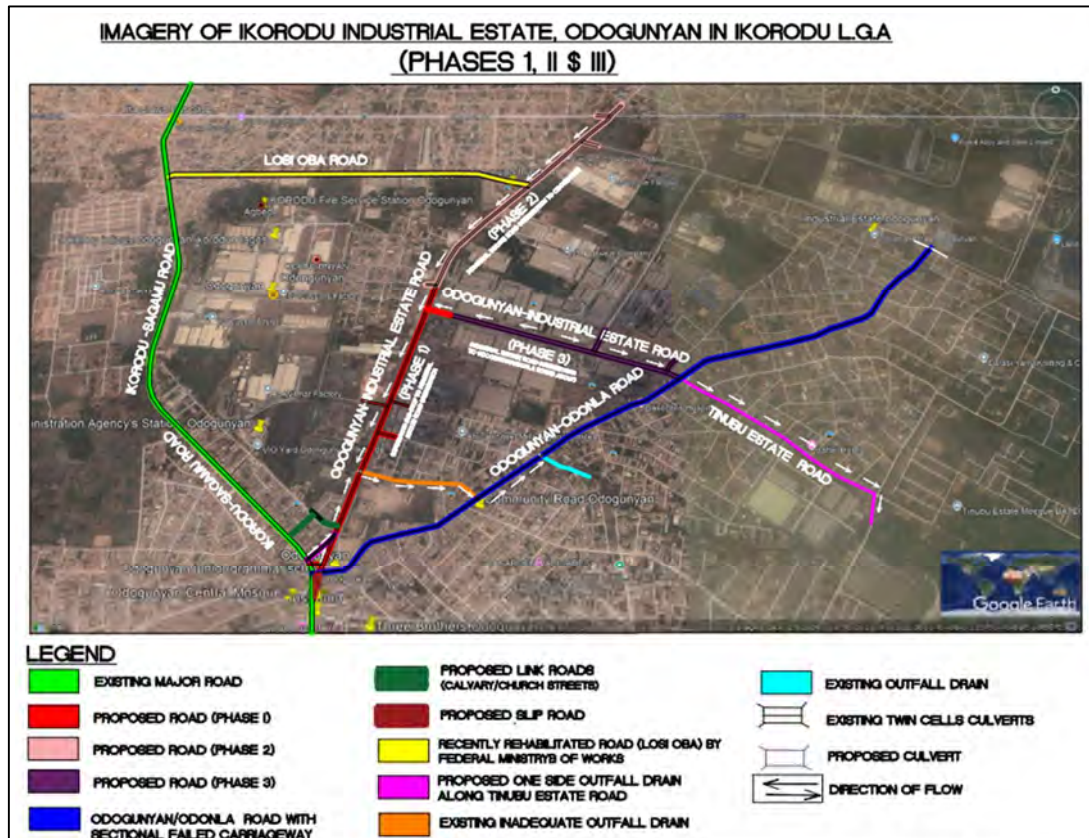
Figure 8.3.2 Land Acquisition Area

(11) Conceptual Figure



Source: Lagos State Government

Figure 8.3.3 Odogunyan Intersection Plan



Source: Lagos State Government

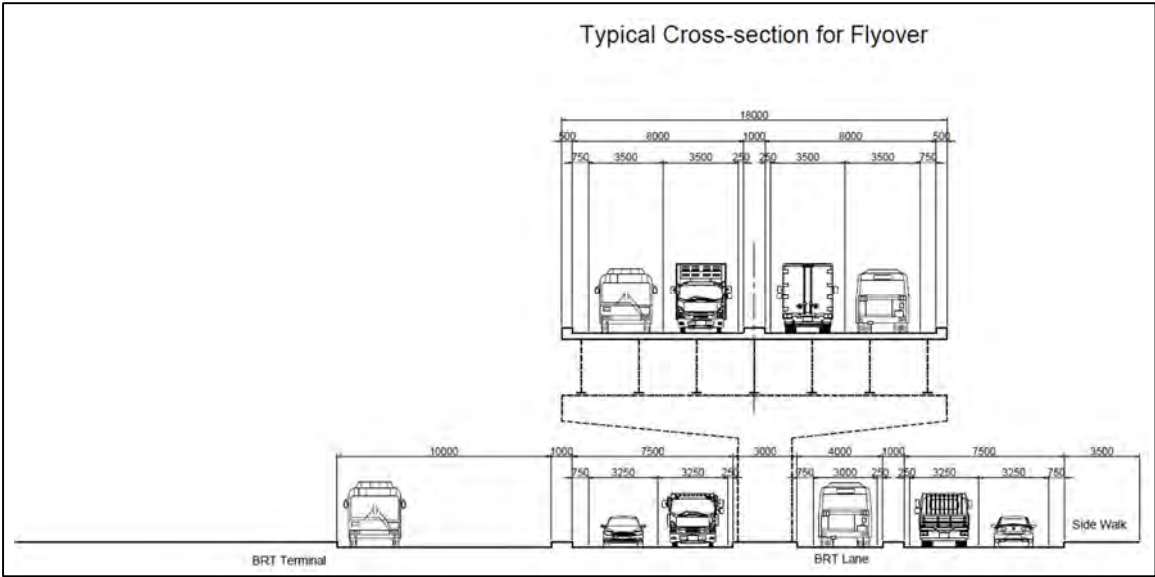
Figure 8.3.4 Odogunyan Industrial Park Access Roads Plan

【Ikorodu Intersection】



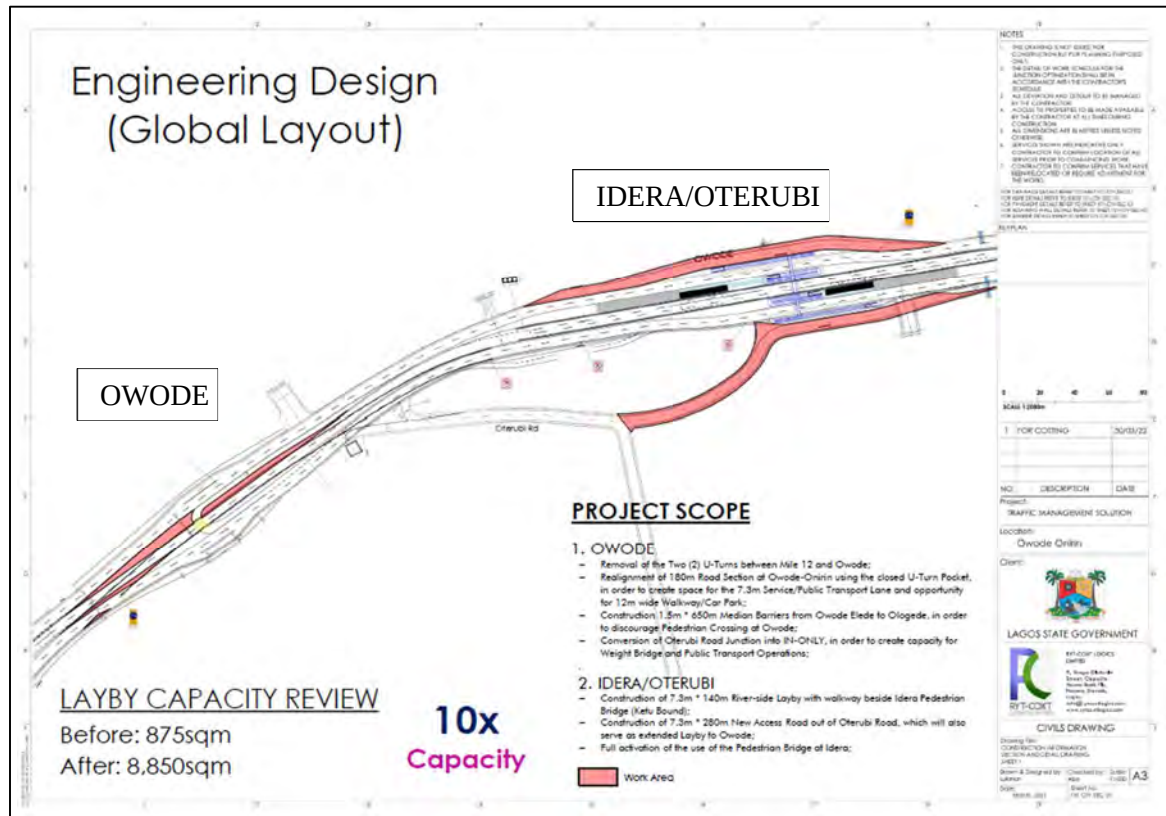
Source: JICA Study Team

Figure 8.3.5 Ikorodu Flyover Plan



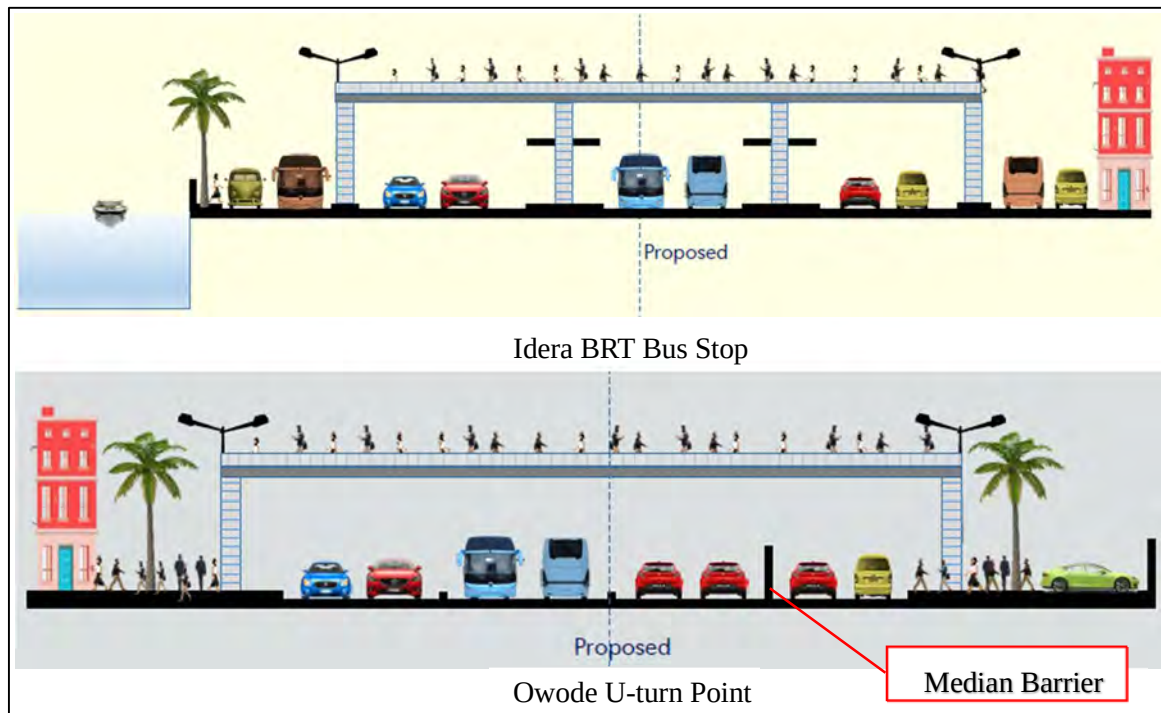
Source: JICA Study Team

Figure 8.3.6 Ikorodu Flyover Typical Cross-Section



Source: Lagos State Government

Figure 8.3.7 Owoode Onrin Area Improvement Plan



Source: Lagos State Government

Figure 8.3.8 Owoode Onrin Area Improvement Typical Cross-Section

(12) Packaging

There are three bottleneck improvement sites along Federal Highway 1. Each site individually scored over 80% in evaluations, indicating high priority. However, implementing all three simultaneously presents the issue of high project costs. Therefore, we examined how to package the improvements for these three sites. Three package options were considered. From the perspectives of project cost scale and investment effectiveness, the option excluding certain components in the Odogunyan area (pavement improvement within the industrial park) based on investment effectiveness (Option 2 in the table below) was set as the optimal package proposal.

Table 8.3.2 Proposed Packages for Bottleneck Eliminations at Three Locations on A1

Items	Option 1	Option 2	Option 3
Precondition	The Ikorodu Flyover Project presents technical challenges, including bridge construction maintaining general traffic flow within the existing right-of-way and the construction of curved bridge with small radii. Therefore, this Flyover Project requires Japan's advanced technology, and is considered essential for all options. It is also important to prioritize resolving the traffic bottlenecks on A1.		
Scenario	Major bottleneck clearance on A1 corridor through a Lagos Metropolitan Area. It is package of the all shortlisted projects (3 locations) on A1 corridor and expected to improve freight transport in the industrial zone as well.	Major bottleneck clearance on A1 corridor through a Lagos Metropolitan Area. It is package of the all shortlisted projects (3 locations) on A1 corridor.	Major bottleneck clearance on A1 corridor through a Lagos Metropolitan Area as much as possible. It is package to maximize investment efficiency (B/C) from the all shortlisted projects (3 locations) on A1 corridor.
Components	①Odogunyan Junction and Industrial Zone ②Ikorodu Flyover ③Owode onrin	①Odogunyan Junction ②Ikorodu Flyover ③Owode onrin	②Ikorodu Flyover ③Owode onrin
Project Cost	180 million USD	93 million USD	72 million USD
Benefit Cost Ratio (BCR)	1.02	1.56	1.89
Evaluation	All three bottlenecks will be resolved. Furthermore, by simultaneously upgrading the internal roads within the Odogunyan Industrial Park, one of the largest in the country, activities within the industrial park will also be supported. However, the BCR is low level indicating some challenges regarding the socioeconomic investment effectiveness.	All three bottlenecks will be resolved. Furthermore, the BCR exceeds 1.0, confirming the project's socioeconomic investment effectiveness.	This option is the most cost-effective and offers the highest socioeconomic return on investment, but the challenge remains that one bottleneck at Odogunyan persists.
	Bad	Good	Fair

Source: JICA Study Team

8.3.2 Smart Traffic Lights in Ikeja, Lagos

(1) Project Background and Necessity

1) Current Situation and Challenges

Nigeria handles over 90% of its import and export cargo through its ports. Approximately 80% of this cargo is concentrated at the Apapa Port and the Tin Can Island Port, both located in central Lagos. These ports are adjacent to central Lagos, Nigeria's commercial hub. Large freight vehicles accessing the Lagos Port must inevitably traverse the city's urban areas via the road network. Within the city center, the area around Ikeja, the state capital, is particularly congested. It is a chronically congested zone due to the mix of international airports, railway stations, commercial facilities, government offices, manufacturing plants, and other uses. Congestion stems from commercial and business traffic within the city, logistics traffic from manufacturing hubs, and gateway access traffic to ports, railways, and airports. Congestion on the Federal Highways A5 and E1, which serve as key logistics arteries connecting Lagos Port to Ibadan in Oyo State, Abeokuta in Ogun State, and major cities in Nigeria's

northern states, has a severe impact not only on the daily lives of those living in the Lagos metropolitan area but also on economic activities throughout Nigeria.

2) Nigerian Government Initiatives Addressing the Challenges

This area combines logistics (port-wide logistics, manufacturing hubs around Ikeja) and urban transportation (airports, railway stations, commercial and administrative institutions). To achieve an appropriate functional division of traffic between these two sectors, large-scale road infrastructure development, such as ring roads and bypasses that divert traffic away from the city center, is necessary. Therefore, LAMATA formulated the Lagos Strategic Transport Master Plan (LSTMP) in 2014, targeting the year 2032, which outlines a future transportation network vision including these road networks (Note: The LSTMP is currently under revision).

3) Remaining Challenges

Although the LSTMP presents a vision for the future road network, it does not specify concrete projects for ring roads or bypasses, and there is no clear timeline for project implementation. Commuting times across Lagos State are reported to exceed three hours per day (Lagos State Development Plan 2052). Travel speeds on arterial roads during morning and evening peak hours remain extremely low, below 10 km/h, with no prospect of improvement currently in sight. With no immediate prospect for fundamental large-scale infrastructure development at this stage, traffic management measures to operate existing road infrastructure as efficiently as possible are crucial. Currently, 145 intersections in Lagos State are equipped with traffic signals. However, these signals operate independently at each intersection and are not part of a system that monitors traffic flow along routes or across entire areas to optimize signal cycles. Consequently, drivers often encounter situations where they must stop at every intersection due to red lights, hindering smooth traffic flow.

4) Consistency with Nigerian Government Policy

The Lagos State Transport Policy, published in May 2024, lists the use of ITS to manage traffic efficiently in real time as a key traffic management policy.

The Ikeja area is one of the most heavily congested areas in the Lagos metropolitan area, as confirmed in a series of discussions with the Lagos State Government (Lagos State Ministry of Transportation and Lagos State Ministry of Public Works), and is an area with a high need for such efficient traffic management. According to the Lagos State Ministry of Transportation, the Lagos Strategic Transport and Mobility Master Plan (LSTMMP), currently being formulated as a revised version of the LSTMP, plans to position the introduction of smart signals in a manner consistent with this higher-level policy, making it in line with the State government's policy.

(2) Project Objectives

By introducing high-performance traffic signals in Ikeja, Lagos State, this project aims to alleviate road congestion along the A5 and E1 corridors—key logistics corridors connecting Apapa and Tin Can Island Ports to northern Lagos State, and the airport vicinity. Ensuring smooth traffic flow along these logistics corridors will contribute to the development of economic activities throughout Nigeria.

Additionally, it will facilitate commuter demand within the Lagos Metropolitan Area and improve traffic flow around the international airport, thereby enhancing the quality of life.

(3) Project Location

Ikeja, Lagos State

(4) Project Scope

Central Control Center Installation: 1 location

- The Central Control Center building will utilize an existing structure; this project only involves the provision and installation of control equipment.

Intersection Improvements: 4 intersections (AP-1, M1, OP-1, OP-2)

Introduction of Smart Traffic Lights: 22 intersections (A5: 6 locations, E1: 1 location, A1: 1 location, Other roads: 14 locations) ※Locations marked in red on the overview map below (12)

- For high-performance signals, signal control systems MODERATO developed in Japan, which optimize signal cycles in real time according to traffic conditions, are feasible for consideration.

(5) Implementing Agencies

Primary Implementing Agency

- Lagos State Ministry of Transportation (LSMT): The Department of Transport Engineering in LSMT manages the operation and maintenance of all traffic signals in Lagos State. This department has approximately 25 staff members and manages the 145 signalized intersections currently in operation, divided into five zones.

Other Related Organizations

- Lagos State Ministry of Works and Infrastructure (LSWI)
- Federal Ministry of Works (FMW): Since some of the target intersections are located on federal highways, prior approval from the FMW Minister is required for any changes to the federal highways.

(6) Estimated Project Cost

Estimated based on project costs of similar projects as shown in the table below.

Table 8.3.3 Estimated Project Cost

Work Item	Amount (mil. USD)
Intersection Improvements	2.0
Traffic Signal	4.2
Traffic Detector	0.8
Wall Map	1.9
Adjustment/Operation Guidance/Management	0.3
Indirect Costs	3.2
Total Construction Cost	12.4
Consulting Fees	1.2
Total Project Costs	13.6

(7) Project Effects

1) Beneficiaries

- Residents of the Lagos Metropolitan Area (approx. 20 million)
- Visitors residing outside Lagos State arriving via Lagos International Airport (Domestic: approx. 2.1 million passengers/year (Nigerian National Bureau of Statistics "Air Transportation Data (Full Year 2021)"), International: approx. 1.2 million passengers/year (Nigerian Civil Aviation Authority (NCAA)))
- Logistics operators active throughout Nigeria (approx. 1,700 transport companies, 2013 Cargo Regulation Council of Nigeria (CRFFN)), and shipper manufacturers (approx. 2,500 major companies (Manufacturers Association of Nigeria (MAN) members) and approx. 8.9 million small and medium-sized manufacturing companies (2021 MSME (Micro, Small and Medium Enterprises) Survey by the Small and Medium Enterprises Development Agency of Nigeria (SMEDAN) and the National Bureau of Statistics (NBS))

2) Business Impact

- Approximately 2,250 person-hours/day reduction in travel time
- Reduced transportation costs through smoother freight transport in long-distance logistics connecting Lagos Port to Nigeria's interior
- Reduced transportation costs through smoother cargo transport in short-distance logistics connecting the Ikeja area, where many factories are located, with Lagos Port
- Reduced travel time and improved punctuality for daily mobility such as commuting to work or school
- Reduced travel time and improved punctuality for long-distance travelers using airports, long-distance buses, etc.
- Improved transportation energy efficiency and environmental benefits through congestion reduction
- Reduction in road traffic accidents through congestion reduction

(8) Prerequisites and External Conditions

- Although some target intersections are located on federal roads, they are within Lagos State. Based on past practice, the Lagos State Government is expected to be the primary implementing agency. In that case, if the application of a sovereign loan is anticipated, it will be necessary to facilitate the transfer of funds from the federal government to the state government and ensure effective coordination between the federal and state governments.
- Confirmation of the Lagos Ministry of Transportation's intention to position the introduction of smart signals within the revised LST&M MP, currently under revision.
- Status of existing traffic control systems in the Lagos metropolitan area and system integration with existing signal systems
- The intersection improvements (4 locations) are planned to be accommodated within the existing

road right-of-way, and no new land acquisition or resident relocation is anticipated.

(9) Related Projects

- Revised LST&M MP (currently being prepared by LAMATA)

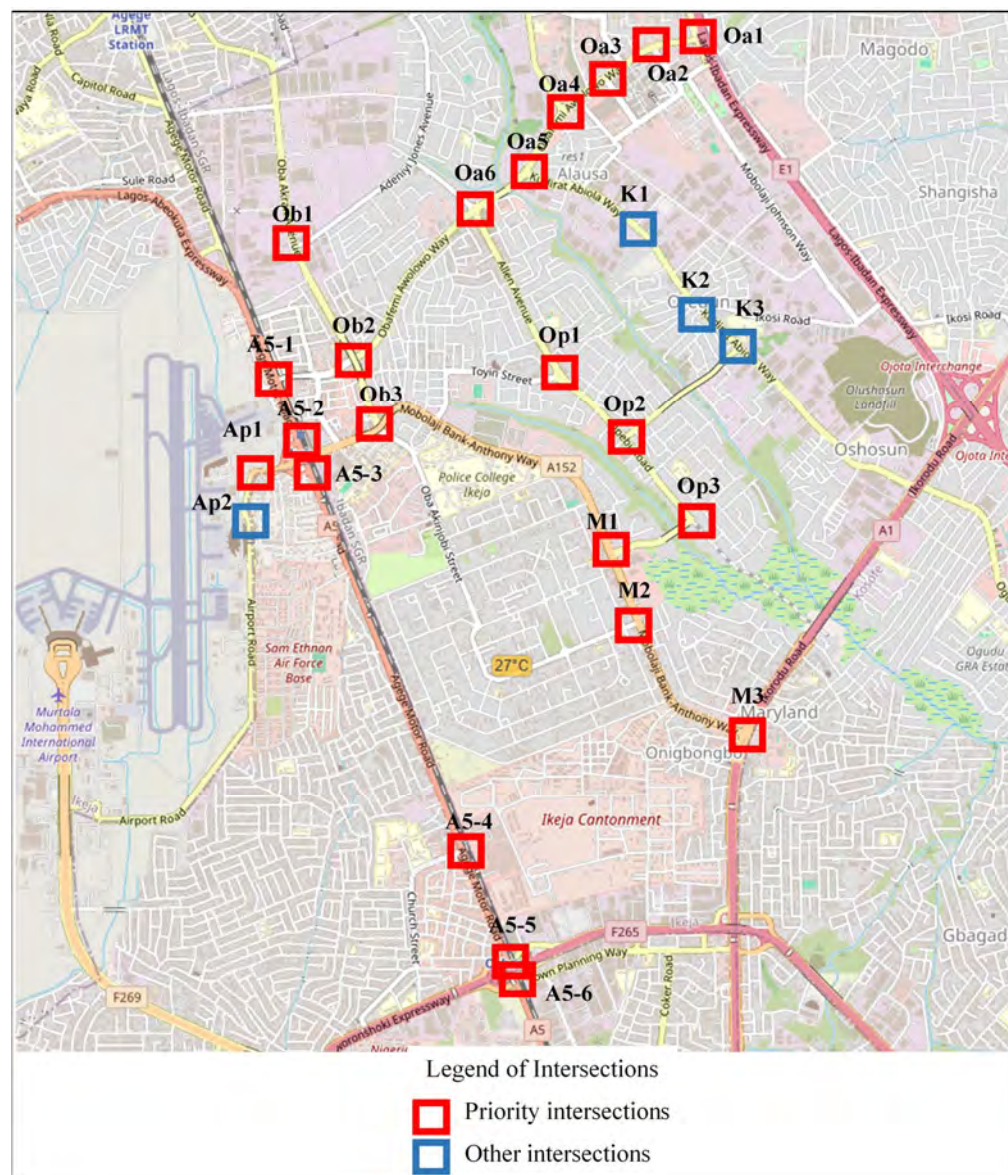
(10) Environmental and Social Considerations

The four intersection improvements involve simple modifications, such as converting roundabouts to signalized intersections as shown in the figure below. Since all improvements will be within existing road right-of-way, no land acquisition or resident relocation will be required. There will be no significant alteration to the natural environment. Conversely, traffic congestion is expected to be alleviated, leading to positive environmental impacts.



Figure 8.3.9 Example of Target Intersection (Op1)

(11) Conceptual Figure



Source: JICA Study Team based on OpenStreetMap

Figure 8.3.10 Location Map of Target Intersections

	
Traffic Signal Light	Pedestrian Signal Light
	
Image Traffic Detector	Ultrasonic Traffic Detector
	
Signal Controller	Central Control Center

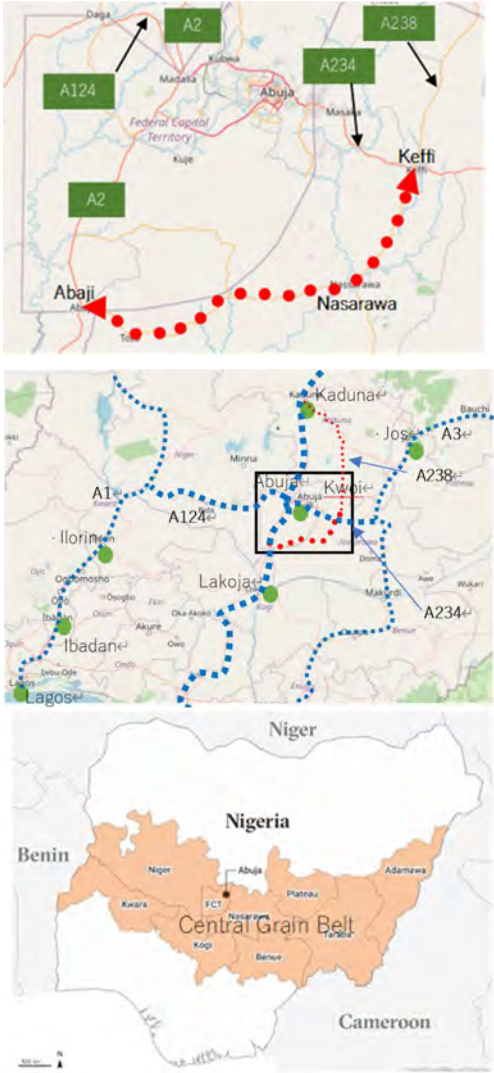
Source: JICA Study Team based on materials from Nippon Signal Co., Ltd.

Figure 8.3.11 Equipment Images

8.4 Project Overviews for Other Shortlisted Projects

The project overviews for the three projects other than the priority project are summarized below.

Development of Bypass for Logistics A2 Corridor in FCT	
Project Background and Necessity	Estimated Project Cost
1. Current Situation and Challenges In the central area of Nigeria's capital, Abuja (FCC), multiple satellite cities have formed in the suburbs, leading to rapid population growth. Consequently, while the road infrastructure within the FCC is relatively well-developed, the points where traffic flows into the FCC from surrounding areas have become bottlenecks. This is particularly evident at the junctions where Federal Highway 2 (A2), Route 124 (A124), and Route 234 (A234) connecting to the FCC. Traffic congestion is chronic not only during morning and evening peak hours but also during off-peak periods, significantly impacting citizens' lives and economic activities. A2 is one of Nigeria's most vital north-south corridors, connecting major cities like Port Harcourt, Benin City, FCT, Kaduna, and Kano. Similarly, A124 and A234 function as major east-west corridors linking A1, A2, and A3. The existence of bottlenecks along these corridors causes major disruptions to national logistics and passenger transport, including for Japanese and Japanese-affiliated manufacturing companies operating in Nigeria, a country with a vast market. Furthermore, the Federal Capital Territory (FCT) and surrounding states—Nasarawa, Plateau, and southern Bauchi—form Nigeria's central grain belt, creating particularly high demand for transporting agricultural products, a core Nigerian industry. However, for logistics and passenger transport, including agricultural products around the FCT, the current limited federal road network centered on the FCT forces vehicles to pass through bottlenecks near the FCC and through the heavily trafficked FCC itself, resulting in low transport efficiency.	Road Widening: 227 mil. USD Total Construction Cost: 227 mil. USD Consulting Fees: 18 mil. USD Total Project Cost: 245 mil. USD
2. The Nigerian Government's Approach to Addressing the Challenge The Federal Ministry of Works (FMW) is planning to widen the A2 and A234 routes and is proceeding with the projects sequentially. Furthermore, the existing Abaji-Nasarawa-Keffi Road, located in a concentric circle approximately 50 km south and east of the FCC, is considered a section with FCC ring road functionality. By upgrading this route as a federal highway, the intention is to divert some of the traffic demand that currently only passes through the FCC center. The section north of Kufi on this road becomes Federal Highway A238, merging with Federal Highway A235 near Kwai and connecting to the major city of Kaduna. Therefore, upgrading the Abaji-Nasarawa-Kufi Road to federal highway status is also expected to enable it to function as a bypass (alternative route) for the A2 connecting Abaji and Kaduna.	Expected Implementation Schedule
	Feasibility Survey: 1st year Consulting Contract: 2nd year Detailed Design & Bidding: 3rd year Construction: 4th-6th years
	Project Effects
3. Remaining Challenges (Current Issues and Challenges Not Yet Resolved by the Above Initiatives) While FMW is advancing the A2 widening project, improvements in areas like Madara—a bottleneck near the intersections with A124 and A234—have stalled due to issues such as land acquisition. The Abaji-Nasarawa-Keffi Road, which is expected to serve as the A2 bypass, is designated as a priority project but its development has not progressed.	a) Beneficiaries - Residents living in states along the A3-A234 corridor in Northeast Nigeria (Northeast FCT, Nasarawa State, Plateau State, Bauchi State, Yobe State, Kano State, Borno State, etc.) (approx. 26 million people) - Approximately 170,000 farming households in the Central Belt (east of FCT) (2022 National Agricultural Sample Census (NASC)) - Logistics operators active nationwide in Nigeria (approx. 1,700 transport companies, 2013 Cargo Regulation Council of Nigeria Freight Forwarders (CRFFN)), and shipper manufacturers (approximately 2,500 major companies (Manufacturers Association of Nigeria (MAN) members) and approximately 8.9 million small and medium-sized manufacturing companies (2021 MSME Survey conducted jointly by the Small and Medium Enterprises Development Agency of Nigeria (SMEDAN) and the National Bureau of Statistics (NBS)) (excluding most companies based in Northwest Nigeria) b) Business Impact - Reducing congestion by decreasing traffic volume through bottlenecks such as A2, A124, and A234 near the Federal Capital Territory (FCT), and shortening commuting times from satellite cities to the FCT - Efficient transportation of agricultural products from the Central Belt (e.g., Nasarawa, Plateau, Southern Bauchi States) and reduction in transportation costs - Reducing travel times between the FCT Northeast (e.g., Nyanya area), Northeast Nigeria (e.g., Nasarawa State), and Southwest Nigeria (e.g., Lagos) - Alleviating urban road congestion by reducing freight vehicles passing through FCC, improving traffic-related environmental conditions and ensuring resident safety - Contributing to improved global environmental conditions by enhancing transport energy efficiency through eliminating bottlenecks and reducing congestion
4. Alignment with Nigerian Government Policy The Nigerian government strongly recognizes the necessity of developing routes with bypass functionality that can circumvent bottlenecks near the FCT and the heavily trafficked FCC central area.	

These routes are crucial for logistics connecting northeastern and southwestern Nigeria, including transporting agricultural products. Consequently, the government has prioritized the development of the Abaji-Nasarawa-Keffi Road as a federal highway.	Prerequisites and External Conditions - Land acquisition required in relatively compact urban areas (Abaji [starting point], Nasarawa, Keffi [end point]) and small settlements along the route Related Projects - A2 Widening Project - A234 Widening Project
Project Objectives This project aims to improve the existing road from Abaji in the south of the FCT through Nasarawa to Kufi. This will eliminate the need to pass through the bottlenecks near the FCC and the heavily trafficked central FCC area, enabling direct access between the northeast of Nigeria (northeastern FCT, Nasarawa State, Plateau State, etc.) and the southwestern region (Lagos, etc.). It will function as a new bypass for transporting agricultural products from Nigeria's central grain belt, including Nasarawa and Plateau States. This will alleviate congestion at current bottlenecks while supporting improved civic life around the FCT and promoting agriculture in surrounding states. Project Area FCT (Abaji Area Council), Nasarawa State Project Scope Road Widening: Approximately 139 km (from two lanes to four lanes) Implementing Agency - Federal Ministry of Works - Federal Capital Territory Administration (FCTA) - Nasarawa State	Conceptual Figure  Source: The New Humanitarian

Lagos Bay Crossing Road	
Project Background and Necessity	Estimated Project Cost
1. Current Situation and Challenges Nigeria handles over 90% of its import and export cargo through ports. Approximately 80% of this cargo is concentrated at Lagos Port, located in central Lagos. The roads surrounding both ports are severely congested due to queuing trailers entering and exiting the ports, negatively impacting not only logistics efficiency but also Lagos' economic activities. To alleviate cargo concentration at Lagos Port, the Nigerian government developed Lekki Port, located approximately 70 km east of Lagos Port, which commenced operations in 2023. As Lekki Port's operations fully ramp up, increased traffic on access roads is anticipated. However, the primary destinations for these goods—factories and warehouse clusters within Lagos city—are scattered across the northern part of Lagos Port. Currently, accessing the mainland from Lekki Port via Lagos Island requires crossing three Mainland Bridges (Eko Bridge, Carter Bridge, Lagos-Ojo Expressway), with these bridge sections forming the traffic bottleneck. 2. Nigerian Government Initiatives Addressing the Challenges The Nigerian government is currently prioritizing the development of three major arterial roads, collectively known as the "Renewed Hope Legacy Road Infrastructure Projects," which form key national corridors. One of these routes connects the coastline from Badagry through Lagos to Calabar. Construction has already started on the Lagos-Calabar section of this coastal road. Section 1, from Ahmadu Bello Way on Victoria Island to Lekki Port, is under construction, and Section 2, further east, has recently commenced. Plans for the remaining section from Victoria Island to Badagry have not progressed. 3. Remaining Challenges (Current Issues and Challenges Not Yet Resolved by the Above Initiatives) The section of the planned coastal road west of Ahmadu Bello Way on Victoria Island remains in the planning stage, with no clear funding source secured. Particularly challenging is the section crossing the Lagos Lagoon estuary. This route serves as a navigation channel for large vessels entering Lagos Port and is also used by oil drilling rigs. Consequently, constructing a large-scale bridge with sufficient clearance is essential, making the development of this section a significant challenge. Consequently, there is currently no foreseeable solution to alleviate road congestion around Lagos Port or improve access to Lekki Port. 4. Consistency with Nigerian Government Policy As mentioned in section 2 above, this project aligns with government policy in terms of being part of the Coastal Highway, a priority road being developed by the Nigerian government, promoting the use of Lekki Port (to alleviate congestion at Lagos Port), and reducing traffic congestion within Lagos City.	Road Section: 132 mil. USD Bridge Section: 514 mil. USD Total Construction Cost: 646 mil. USD Consulting Fees: 52 mil. USD Total Project Cost: 698 mil. USD Expected Implementation Schedule Feasibility Survey: 1st-2nd years Consulting Contract: 3rd year Detailed Design & Bidding: 4th year Construction: 5th-9th years Project Benefits a) Beneficiaries - Residents of the Lagos Metropolitan Area (approx. 20 million) - Logistics operators active nationwide in Nigeria (approx. 1,700 transport companies, 2013 Cargo Regulation and Freight Forwarders Forum of Nigeria (CRFFN)), and shipper manufacturers (approx. 2,500 major companies (Manufacturers Association of Nigeria (MAN) members) and approx. 8.9 million small and micro manufacturing enterprises (2021 MSME Survey by the Small and Medium Enterprises Development Agency of Nigeria (SMEDAN) and the National Bureau of Statistics (NBS)) b) Project Impact - Reduced transportation costs for logistics operators using Lekki Port and Snake Island Port through shorter transit times - Future reduction in transportation costs for logistics operators by shortening travel time between Lagos and domestic ports upon full opening of the coastal road - Reduced transportation costs by alleviating congestion at Lagos Port - Reduced travel time for daily mobility such as commuting and school travel due to congestion relief - Improved transportation energy efficiency and environmental benefits through reduced congestion - Promoting Snake Island development and fostering regional economic growth Prerequisites and External Conditions - Alignment with the Badagry-Lagos-Calabar Coastal Highway development plan (specifically the section from the western side of Victoria Island to the planned Badagry deep-sea port) - Alignment with the Snake Island development plan - The maximum height above sea level should be set at approximately 48 meters, considering data such as the tonnage of vessels that have entered each route where the target road crosses rivers. Confirmation of this condition is necessary. - Confirm that the connection with the cloverleaf interchange at the entrance of the Kirikiri Lighter Terminal (KLT), which is scheduled to connect at the western end, poses no operational issues for KLT Related Projects - Badagry-Lagos-Calabar Coastal Highway - Snake Island Port and Integrated Free Zone Development
Project Objectives	Conceptual Figure
The project aims to alleviate congestion on surrounding roads by dispersing traffic concentration at Lagos Port through increased utilization of Lekki Port. This will be achieved by constructing a coastal highway providing direct access from the western tip of Victoria Island to the mainland. Furthermore, as part of the planned coastal highway, it will eventually serve as an access road between Badagry Port and Lagos city center. Additionally, development of a new port and free zone is underway on Snake Island, for which it will function as the sole access road.	

Project Area Lagos State Coastal Area	 
Project Scope New Road Construction 6 lanes, concrete pavement - Total length: 16.4 km, including 6.1 km of bridge sections (including 2 cable-stayed bridges)	
Implementing Agency Federal Ministry of Works	

Lagos Ring Road	
Project Background and Necessity	Estimated Project Cost
1. Current Situation and Challenges The Lagos Metropolitan Area holds a critically important position for logistics activities throughout Nigeria. It functions as a major manufacturing hub where nearly 70% of the country's major manufacturing-related companies are concentrated, as well as a massive consumer market with a metropolitan population exceeding 20 million. This is in addition to its location as the site of the Port of Lagos, which handles approximately 70% of the country's total imports and exports. Access to the Port of Lagos from across Nigeria relies primarily on Federal Highways E1, A1, and A5 from the northern inland regions (Kano, Abuja, etc.). However, as all these routes pass through central Lagos, this section suffers from chronic congestion due to the mix of port-related vehicles, general traffic, and public transport such as buses and taxis.	Road widening: 373 mil. USD Bridges: 24 mil. USD Grade-separated intersections: 299 mil. USD Interchange: 72 mil. USD Total Construction Cost: 768 mil. USD Consulting Fees: 61 mil. USD Total Project Cost: 829 mil. USD
2. Nigerian Government Initiatives Addressing the Challenges The Lagos Metropolitan Area Transport Strategy Master Plan (LSTMP) includes plans for a ring road encircling central Lagos. While the master plan does not specify exact route locations, the eastern section is slated for development via a PPP as the 4th Mainland Bridge Road (the solid light blue section in the schematic diagram) by the Chinese consortium (CCECC-CRCCIG Consortium). Additionally, the coastal section forming part of the ring road is being planned by FMW as a legacy project (Badagry-Lagos-Calabar Coastal Highway), with construction already underway on the eastern section from Victoria Island.	Expected Implementation Schedule
3. Remaining Challenges (Current Issues and Challenges Not Yet Resolved by the Above Initiatives) There is no operationalized plan equivalent to the western section of the planned ring road (the proposed section: red section). Furthermore, the section of the Badagry-Lagos-Calabar Coastal Highway west of Victoria Island remains in the planning stage, with no clear funding source secured. Consequently, accessibility between the east and west sides, particularly between Lagos Port and Lekki, remains unimproved due to the division by Lagos Lagoon.	Feasibility Survey: 1st year Consulting Contract: 2nd year Detailed Design/Bidding: 3rd year Construction: 4th-8th years
4. Consistency with Nigerian Government Policy As a ring road, this road will greatly contribute to alleviating congestion in the city center by eliminating unnecessary through traffic in downtown Lagos. The ring road is planned in the Lagos Metropolitan Area Transport Strategy Master Plan (LSTMP), and the section in question corresponds to the western section. In the LSTMP, this section is positioned as a medium-term priority following the 4th Mainland Bridge Road (short-term development). This road will also form part of the Badagry-Lagos-Calabar Coastal Highway (short-term development), which is currently being developed by the Nigerian government, and will serve as an important logistics corridor providing improved access to the Port of Lagos and the planned new deep-sea port at Badagry. Based on its position in the LSTMP, this project is in line with government policy, and meetings with the Lagos State Government have confirmed their full understanding of the necessity of this section.	Project Benefits
	a) Beneficiaries - Residents of the Lagos Metropolitan Area (approx. 20 million) - Logistics operators active nationwide in Nigeria (approx. 1,700 transport companies, 2013 Cargo Regulation and Freight Forwarders Forum of Nigeria (CRFFN)), and shipper manufacturers (approx. 2,500 major companies (Manufacturers Association of Nigeria (MAN) members) and approx. 8.9 million small and micro manufacturing enterprises (2021 MSME Survey by the Small and Medium Enterprises Development Agency of Nigeria (SMEDAN) and the National Bureau of Statistics (NBS)) b) Project Impact - Accessibility between ports and inland areas in Lagos State will be greatly enhanced (mainly through improved access to the Port of Lagos and the planned Badagry Deep Sea Port). - It is expected that large trucks using the Port of Lagos will be diverted from the federal roads (E1, A1, A5) running inside the ring road, thereby alleviating traffic congestion on the E1, A1, and A5 routes. - It will function as a main road for the urban area continuing to expand west of Lagos, improving access to the area west of the airport and driving development in line with the development policy for the area (redevelopment centered on the modernization of residential infrastructure) outlined in the Lagos State Development Plan 2052 (LSDP 2052). - The 4th Mainland Bridge Road project (light blue route on the schematic diagram) connecting Mainland and Lekki is planned. This will form an integrated part of the Lagos Middle Ring Road, strengthening the network for the entire Lagos metropolitan area and contributing to the alleviation of traffic congestion within the inner city areas of the ring road.
	Prerequisites and External Conditions
	- This project connects with the 4th Bridge Road and E1 to form a ring road, but construction of only the western section is feasible. However, adjustments to the E1 connection point are required. - Ground conditions in areas passing through low-lying terrain require confirmation. - Resident relocation will occur due to the widening of the existing road (expected to be Category A).
	Related Projects
	4th Mainland Bridge Road - Badagry-Lagos-Calabar Coastal Highway
Project Objectives	Conceptual Figure
The western section (red section) of the ring road (red and light blue solid lines on the overview diagram), which serves to divert through traffic passing through the center of the Lagos metropolitan area (e.g., from the interior to the Benin border) and to disperse traffic flowing into the city center, will be developed. The target section is a high-standard road extension of approximately 35 km connecting Federal Highway E1 (Lagos-Ojo Express) and Federal Highway F100 (Lagos-Badagry Express), and the development will mainly involve widening the existing road. This project will	

form an integral part of the ring road together with the 4th Bridge Road (scheduled to be developed through a PPP), and in addition to the ring road function, it is expected to improve and strengthen access to Lagos Port and the planned new Badagry Deep Sea Port, thereby contributing to the facilitation of logistics throughout Nigeria.

Project Area

Lagos State (partly (approx. 2-3 km) passing through Ogun State)

Project Scope

Road widening: Widening of the main road from two lanes to three lanes in each direction and construction of a two-lane side road on each side for approximately 35 km

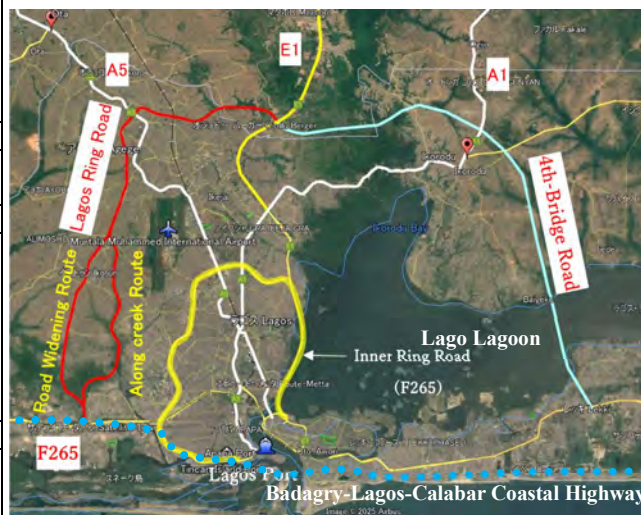
Bridge: L=approx. 150m (1 bridge), L=approx. 30m (5 bridges)

Grade-separated intersections: 9 intersections

Interchanges: 2 locations (intersections with E1 and A5; the intersection with E1 is shared with the separate 4th Bridge Road project)

Implementing Agency

- Lagos State Ministry of Transportation
- Lagos State Ministry of Works and Infrastructure
- Federal Ministry of Works



Chapter 9. Overview and Outcomes of the Official Invitation to Japan

9.1 Objective of the Official Invitation to Japan

The purpose of the invitation to Japan is to share the development image of the proposed projects in Chapter 8, including the possibility of utilizing Japanese technology, and to increase understanding among key persons from the main implementing agencies and related organizations through lectures on Japan's infrastructure development and logistics measures related to the proposed projects.

9.1.1 Key Points of Lectures and Site Visits

- Road infrastructure and logistics facilities are interconnected to support Japan's logistics, which in turn sustains the Japanese economy and daily life. This demonstration is intended to facilitate reflection on Nigeria's logistics policies.
- Japan's strength lies in its high-quality infrastructure (roads) and high-performance logistics facilities functioning as an integrated whole. The program illustrates the reality of highly efficient road transport and how logistics facilities enhance the value of roads. The aim is for participants to gain an understanding of this dynamic relationship.
- Logistics constitutes a "chain" of activities. Therefore, program of lectures and tours are organized to introduce the connection between logistics hubs (ports, airports, etc.) and the expressway network, particularly in the metropolitan area.

9.1.2 Examples of Linkage Models

The following two linkage models were proposed, and of these, a tour to the "Gateway Linkage" model was included in the program for this invitation to Japan. As for the ring road that will serve as the "Distribution Hub Linkage" model, a visit to the Central Circular Route of Metropolitan Expressway, which is located close to the CBD in the Tokyo metropolitan area, was included.

(1) "Gateway Linkage" Model for Enhancing International Competitiveness

The function of Japan's gateways (ports and airports) and their connecting to major cities by expressways is to serve as a unified system to support the international supply chain by facilitating smooth transport between the gateways and expressway.

- **Key Point:** Understanding the system through which container ships and air cargo from overseas are swiftly cleared, sorted, and processed at state-of-the-art logistics facilities adjacent to ports and airports, and then distributed across Japan via the Metropolitan Expressway and National Expressways.
- **Site Visit Area:** Expressway through the Tokyo Port - Keihin Coastal Area and Haneda Airport Area

(2) "Distribution Hub Linkage" Model for Transforming the Supply Chain

The completion of the metropolitan loop roads has changed corporate logistics strategies and successfully established a more disaster-resilient supply chain.

- **Key Point:** The program focuses on understanding why numerous companies choose to establish massive logistics hubs along the Ken-Ō Expressway, away from the city center. It aims to comprehend the value of the "wide-area accessibility" and "BCP (Business Continuity Planning)" benefits provided by the Ken-Ō Expressway, and to study case examples where road infrastructure itself has transformed corporate inventory and distribution strategies.
- **Site Visit Area:** Metropolitan Expressway Central Circular Route and surrounding areas

9.2 Program of the Official Invitation to Japan

9.2.1 Invitees

The total number of invitees to Japan is six. Their names, organizations, and titles are listed below.

Table 9.2.1 List of the Invitees

No.	Organization	Position
1	Federal Ministry of Works	Director
2	Federal Ministry of Budget and Economic Planning	Acting Director
3	Federal Ministry of Finance	Principal Administrative Officer
4	Lagos State Ministry of Transportation	Permanent Secretary
5	Lagos State Governor's Office	Deputy Director
6	Lagos State Ministry of Works and Infrastructure	Deputy Director

Source: JICA Study Team

9.2.2 Program

The schedule and program details for the official invitation to Japan are as follows:

Table 9.2.2 Schedule and Program for the Official Invitation to Japan

Date	Time	Schedule	Purpose
18 Oct (Sat)	-	Dep. Lagos / Dep. Abuja Dep.	—
19 Oct (Sun)	-	Arr. Narita	—
20 Oct (Mon)	AM	JICA HQ	Courtesy, Discussion on priority project proposed in on-going JICA study
	PM	Institute of Science Tokyo, Professor Hanaoka, School of Environment and Society Department of Transdisciplinary Science and Engineering	Lecture of Japan's logistics strategy/ policy, challenges, and the promotion for modal shift
21 Oct (Tue)	AM	Tokyo Metropolitan Expressway Co.,Ltd. (MEX), Kanagawa Bureau	Lecture of expressway Network and its role in logistics, tour for traffic control center and facility management center
	PM	Nippon Signal Co.,Ltd.	Lecture of Japanese traffic signal technology
22 Oct (Wed)	AM	Ministry of Land, Infrastructure, Transport and Tourism (MLIT),	Lecture of Japan's logistics strategy, policy, infrastructure, and the challenges

		International Logistics Office, Logistics and Road Transport Bureau	
	PM	Site (MEX Bayshore Line, Tokyo Bay Aqua-Line, Umihotaru P.A.)	Tour of infrastructure for logistics hub and expressway integration
23 Oct (Thu)	AM	JICA HQ	Wrap-up and Discussion of reflections on the visit and applying insights to Nigeria's logistics challenges
	-	Dep. Narita	—
24 Oct (Fri)	-	Arr. Lagos / Arr. Abuja	—

Source: JICA Study Team

9.3 Outcomes and Future Developments Resulting from the Official Invitation to Japan

The program of official invitation to Japan is summarized below, including an overview of lectures, points of interest to the Nigerian side, lessons learned, points of discussion, suggestions and future developments.

9.3.1 Briefing in JICA

The agenda for the briefing in JICA H.Q. is as shown in Table 9.3.1. After the explanation of the purpose and overall schedule of the program, JICA Study Team made presentation of the Draft Final Report (DF/R) of the study. The explanation mainly focused on and discussed the individual proposed projects (long list and short list).

Table 9.3.1 Agenda of Instruction in JICA

Time	Program	Responsibility
10:00-10:10	Opening Remarks	JICA H.Q.
10:10-10:20	Courtesy Remarks	Nigeria Side
10:20-10:40	Official Invitation Briefing	JICA/Nippon Travel
10:40-10:50	Explanation of Lectures & Site Visit	JICA Project Team/JICA
10:50-11:00	Break	
11:00-11:30	Presentation of DF/R on Transport and Logistics Study in Nigeria	JICA Project Team
11:30-11:50	Q&A and Discussion	All
11:50-12:00	Closing Remarks	JICA/Nigeria Side

Source: JICA Study Team

Regarding the proposed projects described in Chapter 8, the study team explained the methodology to select two projects deemed particularly high priority based on the evaluation criteria defined by the team for the shortlisted projects. Both projects are in the Lagos metropolitan area, and the Federal Ministry of Works (FMW) stated that Lagos is a quite important region for logistics activities in Nigeria, and that FMW would support the two proposed projects. Regarding the A2 Bypass Road in FCT / Nasarawa State, one of the shortlisted projects, a question was raised as to why it was not selected as a high priority project. The explanation given was that quantitative analysis indicated low traffic volume and the huge project cost is negative factor, and the response appeared to be satisfactory.

Because the prioritized project included a federal road, Lagos State confirmed the need for a Right of Way (ROW) permit application to the Minister of Works (FMW). It was confirmed that the main implementing bodies for the two projects in Lagos will be the Lagos State Ministry of Transportation (LSMT), the Lagos State Ministry of Public Works and Infrastructure (LSMWI), and the Federal Ministry of Works (FMW), with LSMT playing a main role as the implementing agency.

As the two proposed projects move forward in Nigeria, it is considered a significant achievement that Lagos State and the Federal Ministry of Works and Works were able to hold discussions at the same table during this Japan invitation. However, with the state government (LSMT) playing the central role as the implementing body, JICA and other organizations raised concerns about the project management capabilities of LSMT and LSMWI. In response, both organizations stated that they have implemented multiple infrastructure projects with international donors and have no concerns about their implementation management capacities.

9.3.2 Lectures

(1) Institute of Science Tokyo

The contents of the lecture were as follows:

- ✓ Japan's logistics situation
- ✓ The country's long-term logistics policy changed with the times and conditions
- ✓ Challenges in improving logistics efficiency (measures to address issues such as a declining drivers)

The participants acknowledged the significance of logistics policy changes over time. At the same time, they noted that Japan's current labor shortage differs from Nigeria's current situation. However, they showed strong interest in solutions related to improving logistics efficiency, and the Nigerian side asked questions, particularly about the use of electric and CNG vehicles and articulated truck technology. While articulated truck technology is still in the development stage in Japan, its practical application will likely be limited to expressway sections for the time being. Furthermore, they emphasized the importance of developing high-quality infrastructure that enables autonomous driving.

(2) Tokyo Metropolitan Expressway Co.,Ltd.

The lecture contents were as follows:

- ✓ Company Overview
- ✓ Key Points for Optimizing the Metropolitan Expressway Network
- ✓ Strategies for Reducing Transportation (Travel) Time

The participants asked questions about topics such as "expressway accident response," "traffic violation enforcement," and "cooperation between road management company and traffic police." The participants' questions seemed to be focused on the physical time it takes for police to arrive at the destination and the operational structure. At the same time, they were also interested in measures to ensure enforcement of traffic violations, likely driven by the need to ensure the collection of fines.

In the planning and toll setting of urban expressways, participants seemed interested in the kind of bickering that occurs between road management companies and local governments (national and local) regarding the development of important infrastructure for the national and metropolitan areas. They expressed surprise when

they heard that the Metropolitan Expressway Company formulates the plans in Japan, but confirmed that the Ministry of Land, Infrastructure, Transport and Tourism approves the plans. They seemed to reaffirm the differences with Nigeria regarding the appropriate division of roles between the national government and road management companies. They also confirmed that the Metropolitan Expressway Company is responsible for construction management and quality control during road construction. The existence of "urban expressway management companies" is relatively unfamiliar in Nigeria, so the presence of a professional organization responsible for planning, constructing, and managing metropolitan expressway infrastructure was impressive.

Furthermore, in relation to the electricity situation which is one of the major issues in Nigeria, there were questions about securing electricity for road facilities, backup functions, etc. However, the Japanese side's answers, which stated that backup functions are steady and that there is a high level of interest in energy-saving technologies, did not take into account the fact that the essential of Nigeria's electricity problem is its power supply capacity, and it seemed that there were limited lessons to be learned from these answers.

Following the lecture, participants toured the following facilities:

- ✓ Traffic and Accident Control System
- ✓ Facility (Tunnel and Power Facility) Management Control System
- ✓ Disaster Prevention and Maintenance Exhibition Hall

The same question was made about cooperation between traffic police and other authorities in the event of traffic accidents or disasters from the Nigerian side. The interest in the issue likely stems from the vertical division of government in Nigeria. While road management at least recognizes the importance of close cooperation with the police in road management (MLIT), in reality, cooperation is lacking in the field and management structure. It remains to be seen what approach will be taken in the future. For example, each management bureau of the Metropolitan Expressway has a system in place where police are on standby within the control center, and it appeared that the participants learned a lesson from observing this system.

(3) Nippon Signal Co.,Ltd.

The lecture contents were as follows:

- ✓ Company Profile
- ✓ Traffic Signal Control System Overview
- ✓ Case Study (Kampala Traffic Signal Installation Project)
- ✓ Traffic Signal System Utilizing Mobile Communications

The smart traffic signal installation project in the Ikeja area of Lagos has been proposed as one of two high-priority projects, and the visit was intended to provide training on the overall system expected to be introduced. The host company has experience installing traffic signals in Kampala, Uganda, through a JICA grant aid project, and the training included an introduction to that project.

The Nigerian side was particularly concerned about compatibility with the existing traffic light system. The Japanese side pointed out that there was a fundamental lack of compatibility between the existing system and the newly installed system (control center), and the Nigerian side confirmed this point. One way to confirm compatibility is to check whether the existing system has communication function and whether the

communication interfaces shall match. However, given that all existing systems lack standalone communication capabilities, it was concluded that compatibility would be impossible.

The Nigerian side also asked questions regarding security measures for equipment against theft and vandalism, and introduced measures taken in the Kampala case. The Nigerian side also introduced the current situation of traffic signals in Lagos, and expressed their expectations for the high effectiveness of the proposed system.

(4) Ministry of Land, Infrastructure, Transport and Tourism

The lecture contents were as follows:

- ✓ Current State and Challenges of Logistics in Japan
- ✓ Logistics Innovation
- ✓ Transport Efficiency in Road Logistics

A comprehensive lecture on the current state of logistics was given by the Japan government responsible for Japan's logistics policy, including the content of the lectures received at Institute of Science Tokyo. The lecture introduced an example of the effective use of Ibaraki Port, located a suburban from the CBD, to avoid overcapacity at ports neighboring the CBD (Tokyo, Yokohama) and road traffic congestion around the ports. The overcapacity issue at ports adjacent to the CBD is very similar to the situation in Lagos (Lagos Port Complex), and the lecture appears to have provided lessons that suggest part of a solution.

Japan has established a scheme for regularly and continuously developing long-term logistics strategies, and participants showed great interest in the members and functions of the expert panel for formulating such long-term logistics strategies.

As in the lecture at Tokyo University of Science, there continued to be high interest in policies to limit the total number of private cars and promote the use of vehicles with low environmental impact, and the Ministry of Land, Infrastructure, Transport and Tourism introduced transport demand management (TDM) and policies to promote the electric vehicles.

Regarding the situation in Nigeria, where infrastructure development often progresses very slowly due to difficulties in acquiring land in urban areas, questions were raised about innovative ways of acquiring land in urban areas in Japan. While these issues are common worldwide, there was also mention of making the most of the space above rivers and waterways, and of utilizing deep underground spaces 40 meters or deeper (legislation for this is important).

9.3.3 Wrap-up in JICA

The wrap-up agenda is as shown in Table 9.3.2. In the second half of the agenda, a product introduction was given to road pavement reinforcement materials, which are a Japanese technology expected to be utilized in Nigeria and have features such as low cost, long life, and low environmental impact, and the possibility of future development was discussed.

Table 9.3.2 Agenda of Wrap-up in JICA

Time	Program	Responsibility
09:30-09:40	Wrap-up Briefing	JICA Project Team
09:40-10:10	Feedback and Comments on official invitation program	All Nigeria Side
10:10-10:30	Discussion	All
10:30-11:00	Feedback and Comments on DF/R taking official invitation into consideration	All Nigeria Side
11:00-11:20	Discussion	All
11:20-11:30	Break	
11:30-12:20	Presentation of Fiber Reinforced Concrete and its contribution for the Nigeria	HAGIGHARA Industries Inc.
12:20-12:30	Q&A and Discussion	All
12:30-12:40	Closing Remarks	JICA/Nigeria Side

Source: JICA Study Team

During the wrap-up session, each invitee shared their impressions of the program as a whole and how they plan to use it in the future. The following points were cited as particularly helpful and informative observations. The comments were based on the individual roles and organizations to which each invitee belongs, and were made from technical perspectives such as planning and maintenance, budgetary perspectives, and organizational collaboration and coordination perspectives. We hope that the knowledge gained from this visit to Japan will be used to provide useful feedback to each organization in Nigeria, ultimately leading to future improvements in the country's logistics environment.

- ✓ Specific knowledge for planning and strategically setting for expressway networks in the metropolitan area (e.g., goal setting)
- ✓ Toll roads and their road maintenance schemes using the funding
- ✓ Enhancement and effectiveness of remote monitoring functions for traffic conditions and accidents on the expressways
- ✓ Practical collaboration between road operation & maintenance companies and traffic police in road and traffic management sector
- ✓ Urban expressway networks providing access to airports and seaports and experience of driving on the roads
- ✓ Understanding of smart signal functions expected to be introduced in the Ikeja area of Lagos
- ✓ The importance and necessity of a inter-government, expert committee on infrastructure development

	
Discussion at JICA HQ	Lecture at Institute of Science Tokyo
	
Lecture at Metropolitan Expressway Co. (MEX)	Exhibition corner of maintenance at MEX

Chapter 10. Conclusion and Recommendations for Promoting Project Implementation

10.1 Conclusion

This study was conducted with the objective of implementing a comprehensive environmental improvement of logistics infrastructure, which serves as the foundation for sustainable economic growth across Nigeria, thereby supporting the country's industrial promotion and economic diversification. The study first systematically organized the current status and challenges of logistics in Nigeria by sector and established five improvement strategies:

- Development of logistics corridors (roads) connecting international logistics gateways (ports) with various regions across the country, and enhancement of port functions.
- Development and improvement of infrastructure contributing to the resolution of urban logistics bottlenecks and the alleviation of congestion on major logistics roads.
- Improvement of customs and trade procedures for trade facilitation through international standardization and harmonization of import/export processes.
- Promotion of modal shift to improve environmental considerations and logistics efficiency, thereby contributing to increased international competitiveness.
- Strengthening of organizational structure and legal framework to enable the expansion of diverse logistics services and businesses, and support for planning.

Based on these strategies, a cooperation program expected for development was considered, and a long list of 14 individual projects was created through hearings with relevant organizations. Next, an evaluation was conducted based on the high interest of Nigerian government agencies, the feasibility of project implementation, and collaboration with other development partners, resulting in the selection of five projects with particularly high urgency and effectiveness as a short list. Furthermore, after an evaluation based on four assessment categories—necessity of the project, consistency with higher-level plans, ease of implementation, and project effectiveness—the following two projects were finally proposed as priority projects.

Bottleneck Elimination of Logistics A1 Corridor in Lagos

The project aims to resolve the three major remaining bottlenecks (ODOGUNYAN Junction, Ikorodu Junction, and Owode Onrin area) along Federal Road 1 (FR1), a key north-south logistics corridor in Nigeria, within the Lagos metropolitan area, thereby facilitating the smooth flow of both commercial logistics and general traffic. This project will also contribute to enhancing the alternative function of the primary north-south logistics artery (E1 and A1) that serves as Nigeria's main lifeline, as well as improving accessibility to the Ikorodu region in Lagos State, which is a major industrial cluster in the country.

Smart Traffic Lights in Ikeja Lagos

An advanced traffic signal system will be introduced to address the chronic traffic congestion in the Ikeja district of Lagos State, which is a hub for ports, the airport, administrative areas, and manufacturing bases. In this area, where the development of new road infrastructure is challenging, this system will alleviate traffic congestion by maximizing the traffic capacity potential of the existing road network, thereby contributing to improved logistics efficiency and a better living environment for citizens.

Detailed Project Implementation Plans (PIPs) summarizing the project background, objectives, scope of work, estimated project costs, implementation structure, and expected effects were formulated for these priority projects.

Furthermore, to support the promotion of these projects, an Official Invitation to Japan program targeting key personnel from the Nigerian implementing agencies was planned and implemented. The program provided opportunities for lectures and site visits focusing on examples where Japan's high-quality road infrastructure and logistics facilities collaborate to support the economy, thus fostering a deep understanding of the significance and expected impact of the priority projects.

Through this study, a clear direction for the improvement of Nigeria's logistics sector has been established, following meticulous analysis and a phased narrowing down of solutions to address the complex challenges facing the sector. It is confidently believed that the two priority projects proposed herein will resolve the bottlenecks hindering Nigeria's economic development and represent a crucial step towards realizing sustained long-term growth. Their steady implementation is strongly anticipated.

10.2 Recommendations for Promoting Project Implementation

In order to maximize the effects of the priority projects proposed in this study and improve Nigeria's logistics environment, prompt and coordinated action by the Nigerian government and relevant agencies is indispensable. The following recommendations are presented for the early implementation of the projects.

10.2.1 Formal Positioning of the Projects in National Plans

It is important to formally position the two priority projects identified in this study within the Federal Government's infrastructure development plan and the Lagos State development plan, thereby officially authorizing them as government priority projects. This authorization is expected to facilitate necessary budget measures, inter-ministerial coordination, and approval procedures on the Nigerian side.

10.2.2 Establishment of the Implementation Structure and Clarification of Roles and Responsibilities

Although the two identified priority projects are Federal Roads, they are located in Lagos State, and based on past practice, the main implementing agency is assumed to be the Lagos State Government. Within Lagos State, however, both the Ministry of Transportation (LSMT) and the Ministry of Works and Infrastructure (LSMWI) exist. Therefore, the specific roles, scope of responsibilities, and authority of each agency should

be determined early to establish a robust implementation structure. Especially for matters requiring cross-agency coordination, such as land acquisition, resettlement, and connection to related infrastructure, establishing a clear coordination mechanism in advance is crucial for smooth project execution. Furthermore, if the Lagos State Government is to be the implementing agency, adjustments will be necessary to ensure the secure transfer of funds from the Federal Government to the State Government, particularly in cases where a sovereign loan is applied.

10.2.3 Prompt Initiation of Domestic Procedures for Project Implementation

The prompt initiation of the domestic approval process, centered around the Federal Ministry of Finance (FMF) and the Federal Ministry of Budget and Economic Planning (FMBEP), is required. Furthermore, regarding environmental and social considerations necessary for project implementation, while no significant adverse impacts are foreseen, it is desirable to promptly commence the confirmation of relevant Nigerian legal frameworks and local fact-finding work.

Appendix

1. Traffic Volume by Location and Time Period (Weekdays)
2. Traffic Volume by Day of the Week
3. OD Survey Results (Attributes, Freight Characteristics)
4. Supplemental Traffic Survey Results (Federal Road No.1 in the Lagos Region)

1. Traffic Volume by Location and Time Period (Weekdays)

The traffic volume by time period for each survey location on weekdays is shown below. Note that the traffic volume by time period for survey locations ① and ⑦ is the average from Monday to Friday, while for the other survey locations, it is the average traffic volume from Tuesday to Thursday.

Survey Location ① (F265: Apapa-Oshodi Expressway)

At survey location ①, there are peak traffic volumes for motorcycles and cars in the morning and evening, while the traffic volume during the late-night hours is almost nonexistent. In contrast, logistics vehicles do not exhibit as pronounced peak hours as regular cars, but a certain number of vehicles continue to pass through during the late-night to early-morning hours.



Traffic Volume by Time Period (Survey Location ①)

Survey Location ② (F100: Lagos-Badagry Expressway)

At survey location ②, all vehicle types experience peak traffic volumes in the morning and evening. Additionally, logistics vehicles tend to follow this pattern, with a certain number of vehicles also passing through during the late-night to early-morning hours.



Traffic Volume by Time Period (Survey Location ②)

Survey Location ③ (A121: Sagamu-Benin Expressway)

At survey location ③, there are peak traffic volumes in the morning and evening. In addition to this trend, logistics vehicles tend to have a certain number of vehicles passing through during the late-night to early-morning hours, with this tendency being particularly pronounced in the early morning (from 5 AM to 7 AM).



Traffic Volume by Time Period (Survey Location ③)

Survey Location ④ (A1-2: Eco Bridge)

At survey location ④, motorcycles and cars experience peak traffic volumes in the morning and evening, while the traffic volume during the late-night hours is almost nonexistent. In contrast, logistics vehicles show a consistent traffic volume throughout the day, with a notable increase in logistics vehicles observed during the early morning hours, particularly around 5 AM.



Traffic Volume by Time Period (Survey Location ④)

Survey Location ⑤ (A5: Carter Bridge)

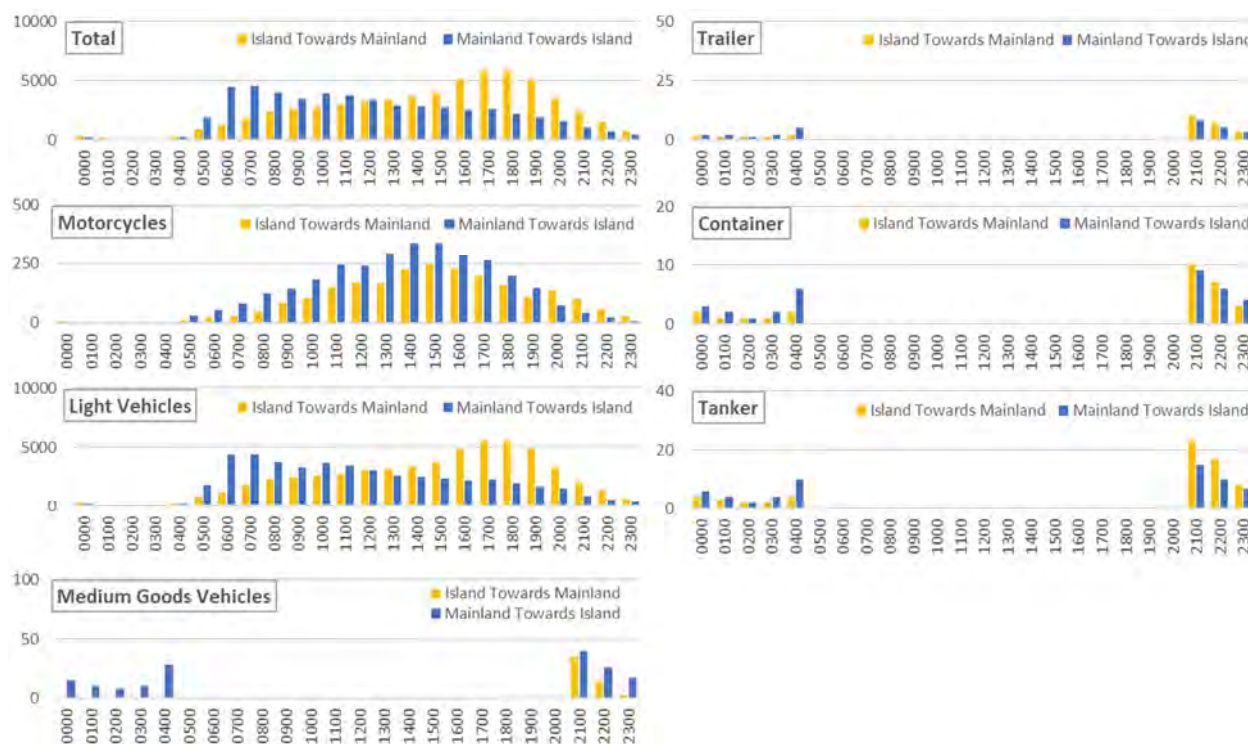
At survey location ⑤, there is a recorded peak in traffic from the mainland to Lagos Island in the morning, and a peak in traffic from Lagos Island to the mainland in the afternoon. All vehicle types show low traffic volumes during the late-night to early-morning hours. Additionally, there is a noticeable difference in traffic volumes for containers and tankers in both directions, suggesting that these vehicle types may be using different routes for outbound and return trips.



Traffic Volume by Time Period (Survey Location ⑤)

Survey Location ⑥ (F265: Third Mainland Bridge)

At survey location ⑥, logistics vehicles are prohibited from passing through between 5 AM and 9 PM, resulting in a peak in traffic volume for logistics vehicles during the 9 PM hour.



Traffic Volume by Time Period (Survey Location ⑥)

Survey Location ⑦ (A2: Kaduna-Lokoja Road)

At survey location ⑦, motorcycles and cars experience peak traffic volumes in the morning and evening. In contrast, logistics vehicles show little variation in traffic volume by time of day, with a significant number of vehicles observed during the late-night to early-morning hours.



Traffic Volume by Time Period (Survey Location ⑦)

Survey Location ⑧ (A2: Lomi-Gidan Bassa-Dagwa Road)

Similar to survey location ⑦, at survey location ⑧, motorcycles and cars have peak traffic volumes in the morning and evening, while logistics vehicles exhibit little variation in traffic volume by time of day, with many vehicles also observed during the late-night to early-morning hours.



Traffic Volume by Time Period (Survey Location ⑧)

Survey Location ⑨ (A14: Ilorin-Jebba Road)

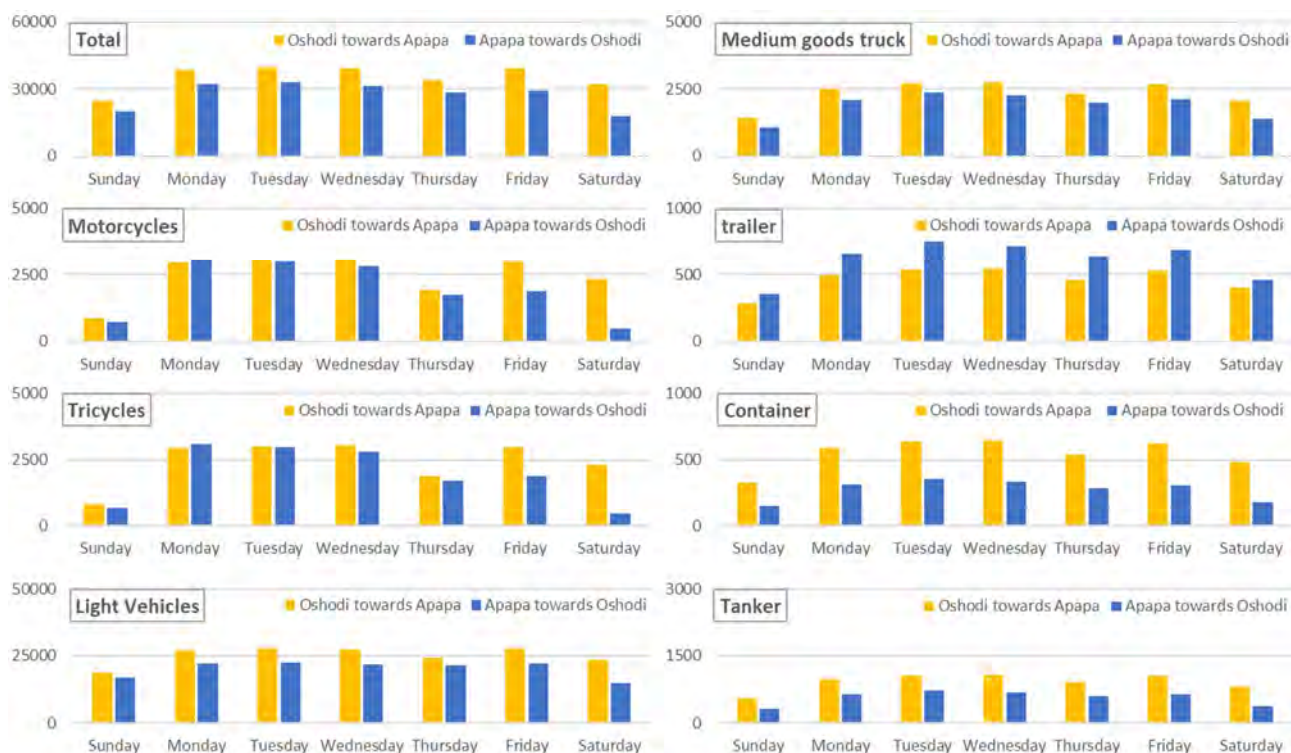
At survey location ⑨, while motorcycles and cars experience peak traffic volumes in the morning and evening, logistics vehicles record a peak in traffic volume during the 7 AM hour. However, compared to cars, logistics vehicles show less variation in traffic volume by time of day.



Traffic Volume by Time Period (Survey Location ⑨)

2. Traffic Volume by Day of the Week

The traffic volume by day of the week at survey locations ① (F265: Apapa-Oshodi Expressway) and ⑦ (A2: Kaduna-Lokoja Road), where a week-long survey was conducted, is presented below. At survey location ①, traffic volume is lower on holidays compared to weekdays, while at survey location ⑦, no significant difference between weekdays and holidays was observed.



Traffic Volume by Day of the Week (Survey Location ①)



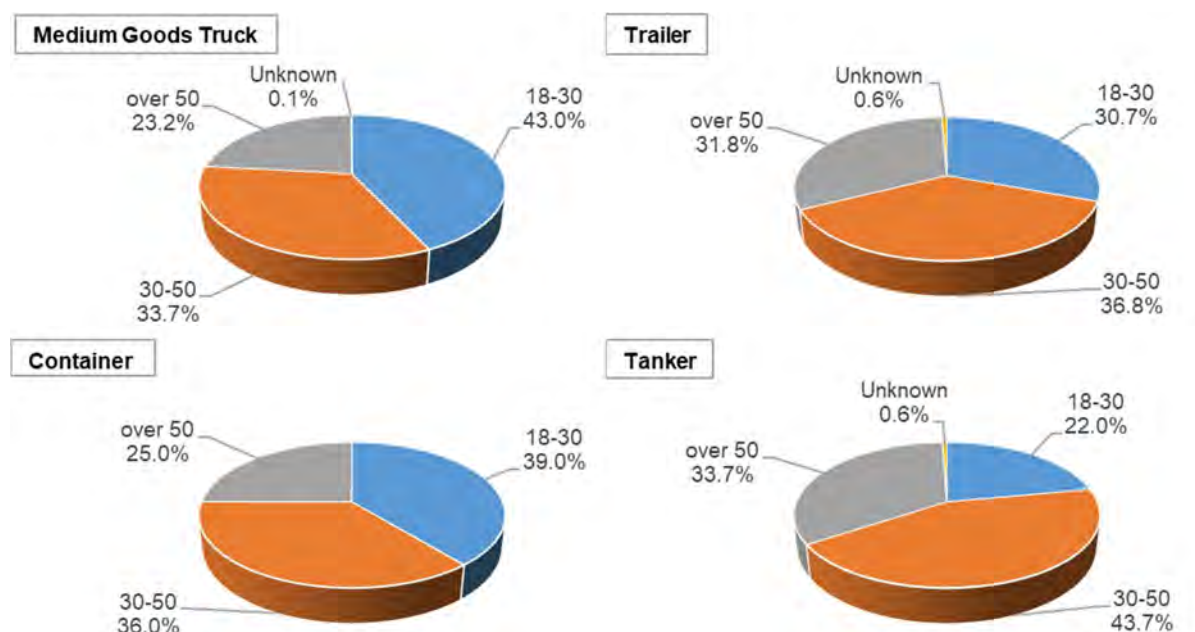
Traffic Volume by Day of the Week (Survey Location ⑦)

3. OD Survey Results (Attributes, Cargo Characteristics)

(1) Attributes of Drivers and Assistants

i. Age Distribution of Drivers

The age composition of drivers for logistics vehicles (medium trucks and large trucks) is presented below. The majority of drivers for medium trucks and containers are in their 18 to 30s, while the most common age group for trailer and tanker drivers is between 30 and 50 years old.

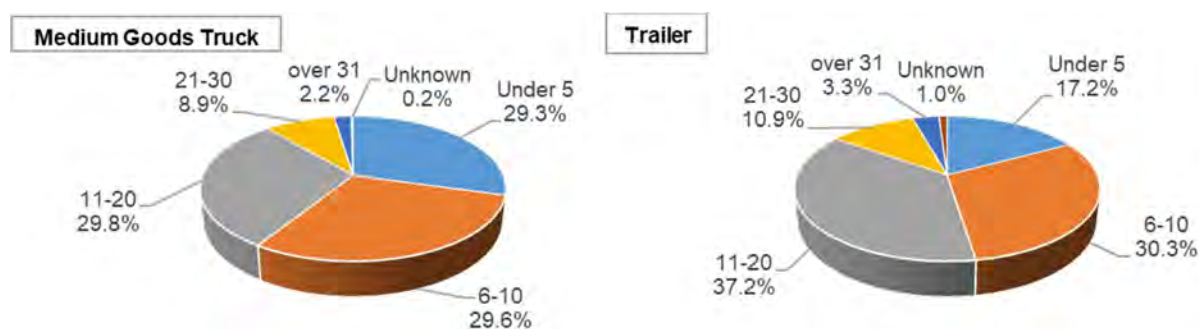


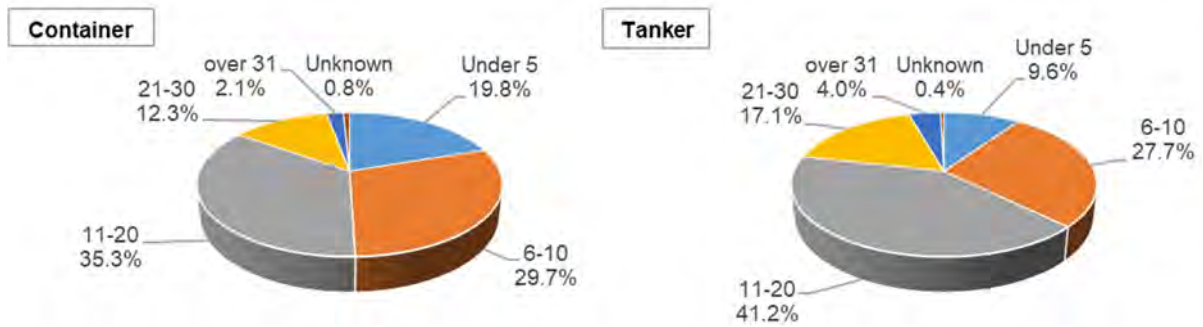
Source: JICA Study Team

Age Distribution of Drivers for Logistics Vehicles

ii. Years of Experience of Drivers

The years of experience of drivers by type of logistics vehicle are shown below. For medium trucks, a significant number of drivers have less than 10 years of experience, whereas for large trucks, most drivers have more than 11 years of experience, with tanker drivers showing this trend most prominently.





Source: JICA Study Team

Years of Experience of Drivers for Logistics Vehicles

iii. Gender of Drivers and Assistants

The gender of drivers for logistics vehicles is presented below. All drivers and main assistants for logistics vehicles are male, and no female drivers or assistants were identified.



Gender of Drivers for Logistics Vehicles

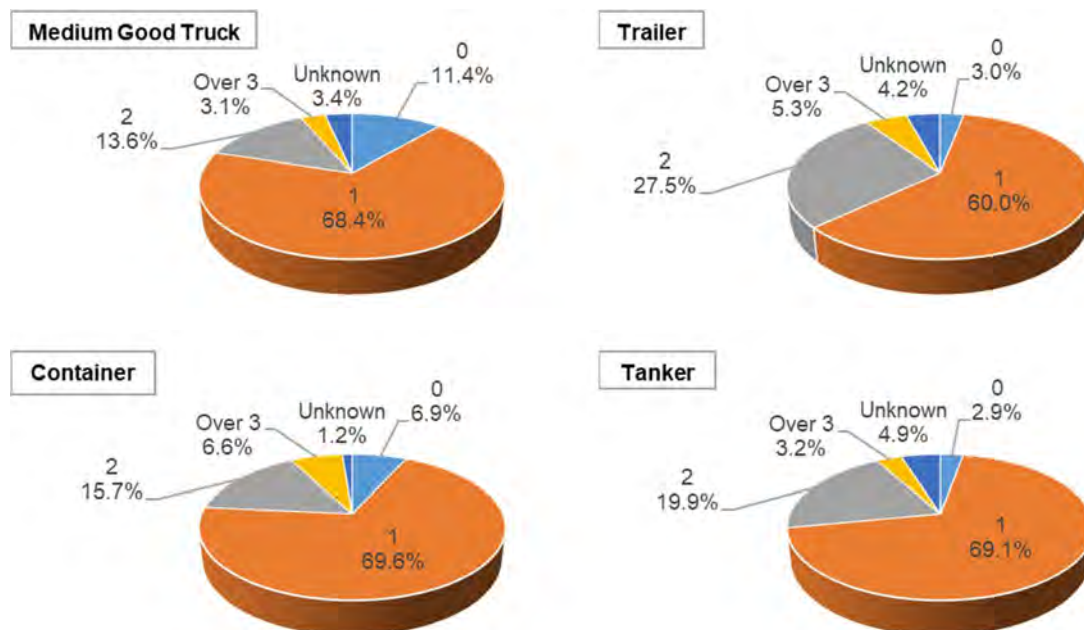


Gender of Main Assistants for Logistics Vehicles

Source: JICA Study Team

iv. Number of Assistants

The number of assistants by type of logistics vehicle is shown below. In logistics vehicles, there is generally at least one assistant accompanying the driver, with trailers tending to have a slightly higher number of assistants compared to other types of logistics vehicles.



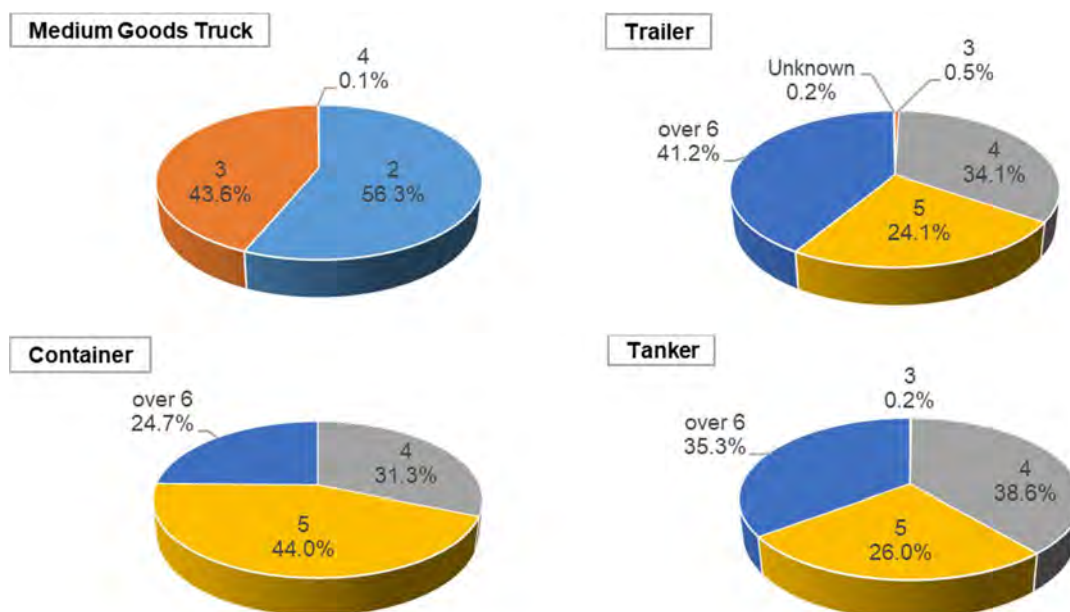
Source: JICA Study Team

Number of Assistants for Logistics Vehicles

(2) Characteristics of Trucks

i. Number of Axles by Vehicle Type

The number of axles by type of logistics vehicle is shown below. In large trucks, 4-axle and 5-axle trucks make up a significant portion, while trailers and tankers tend to have more vehicles with 6 axles or more compared to containers.

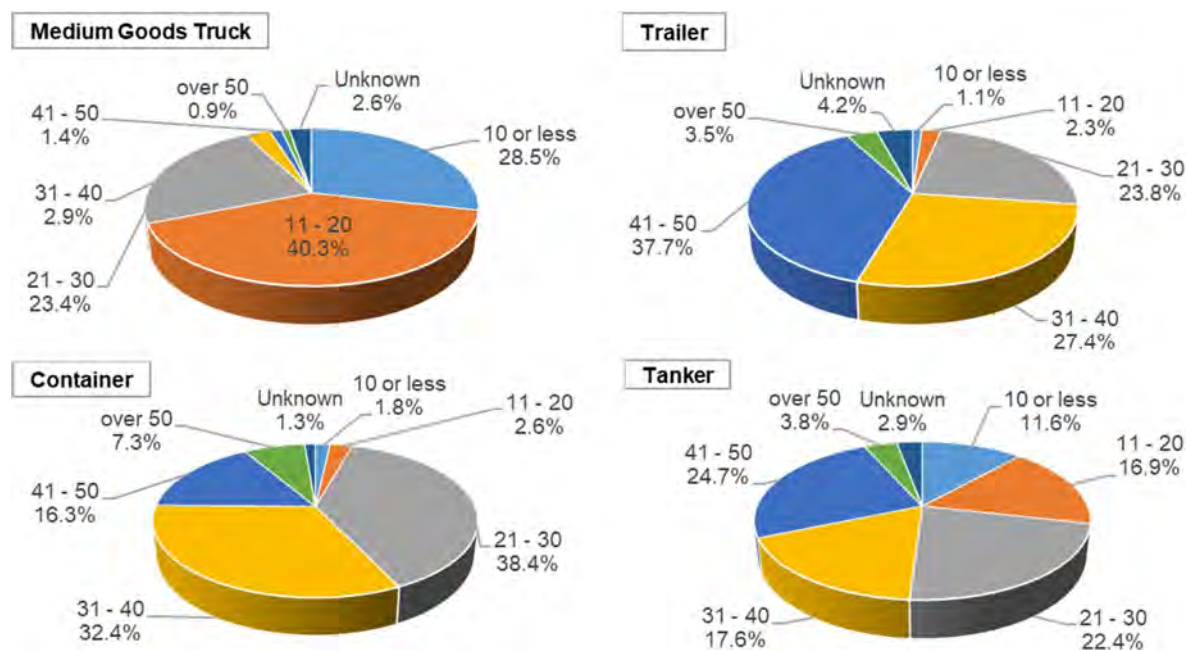


Source: JICA Study Team

Number of Axles by Type of Logistics Vehicle

ii. Maximum Load Capacity by Vehicle Type

The maximum load capacity by type of logistics vehicle is shown below. For large vehicles, approximately 30% of containers and tankers have a maximum load capacity of over 40 tons, while trailers have about 40% with a maximum load capacity exceeding 40 tons, indicating a tendency for trailers to have a larger maximum load capacity compared to other vehicle types.

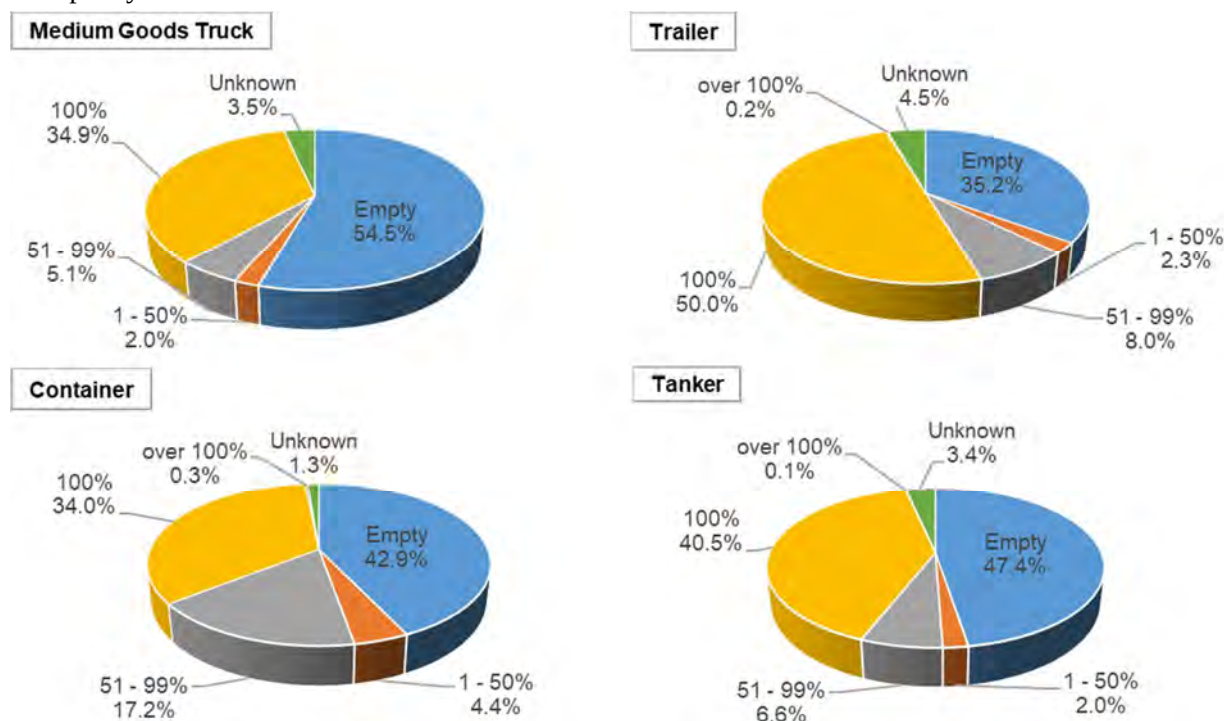


Source: JICA Study Team

Maximum Load Capacity by Type of Logistics Vehicle

iii. Load Factor by Vehicle Type

The load factor by type of logistics vehicle is shown below. More than half of medium-sized vehicles are in an empty state, while containers and tankers have a load factor of slightly over 40% to just under 50%. On the other hand, large vehicles have a load factor of over 50%, with more than half of trailers operating at full capacity.

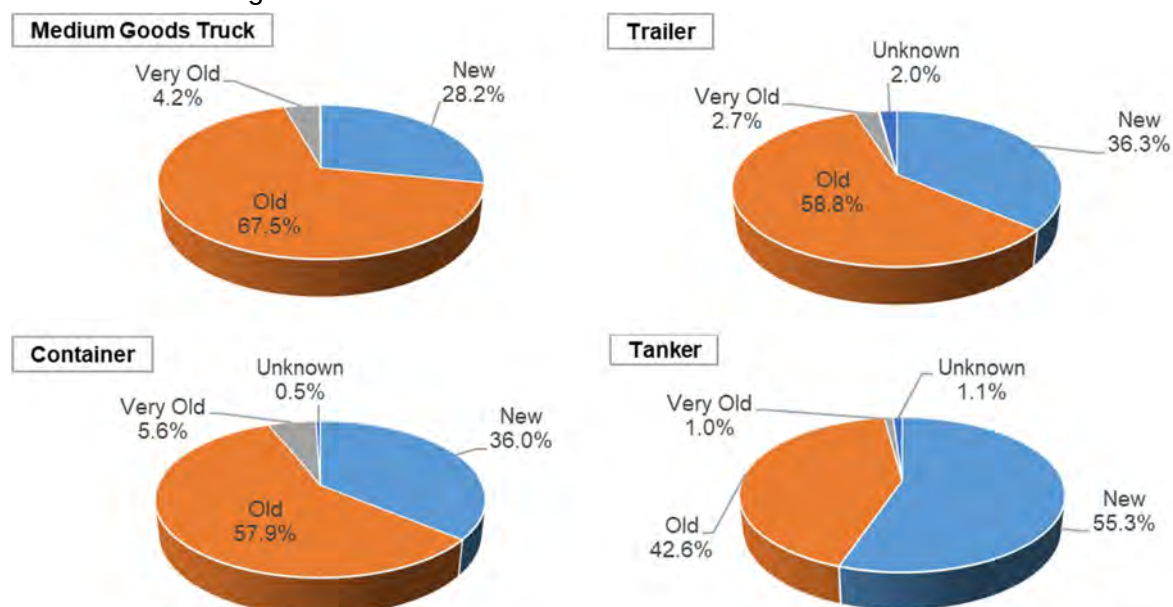


Source: JICA Study Team

Load Factor by Vehicle Type

iv. Vehicle Age by Type of Logistics Vehicle

The vehicle age by type of logistics vehicle is shown below. Over 60% of medium-sized vehicles, containers, and trailers are older vehicles, while approximately 44% of tankers are older vehicles, with about 55% being newer vehicles.



Source: JICA Study Team

Vehicle Age by Type of Logistics Vehicle

(3) Types and Items of Cargo Being Transported

In this survey, the cargo transported by freight vehicles has been classified into the following five categories. An overview and items for each type of cargo are outlined below.

Types and Items of Cargo Being Transported

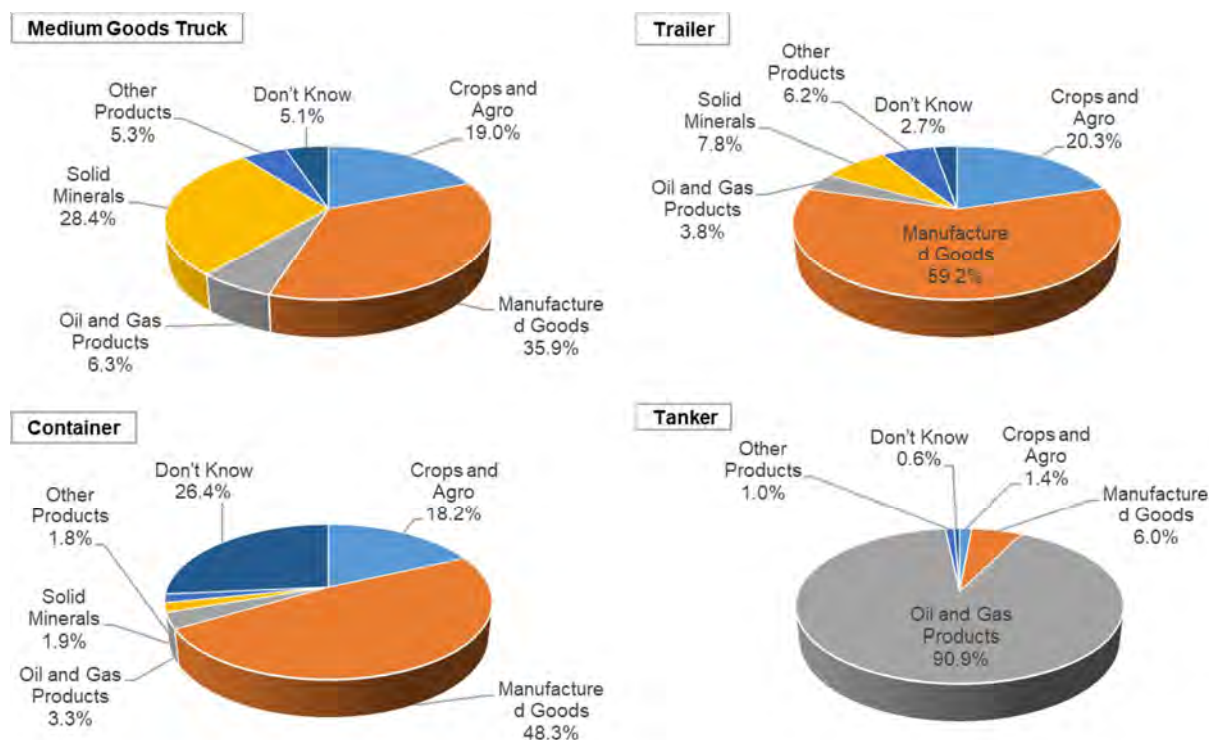
Type of Cargo	Overview of Cargo	Items
Crops and Agro	Mainly unprocessed agricultural and marine products, including livestock and poultry	Tomatoes, beans, cattle, timber, onions, hibiscus, etc.
Manufactured Goods	Items that are processed and refined from raw materials	Cement, water (in bags and bottles), beer, flour, construction materials, water, and other beverages (excluding beer), etc.
Oil and Gas Products	Products made primarily from the refining of crude oil	Gasoline, kerosene, diesel, heavy oil, LPG (liquefied petroleum gas), asphalt, etc.
Solid Minerals	Materials that are processed into products before they are finished	Sand, coal, granite, marble, quartz, etc.
Other Products	Items that do not fall into the above categories	Waste, etc.

Source: JICA Study Team

i. Types of Cargo by Vehicle Type

The types of cargo transported by logistics vehicles are as follows: Medium-sized trucks transport a variety of goods, including agricultural products, manufactured goods, and mineral resources. In contrast, containers and trailers are primarily used for transporting manufactured goods, while tankers are predominantly used

for transporting petroleum products. It is also noteworthy that one-quarter of container drivers are unaware of the contents of the containers they are transporting.



Source: JICA Study Team

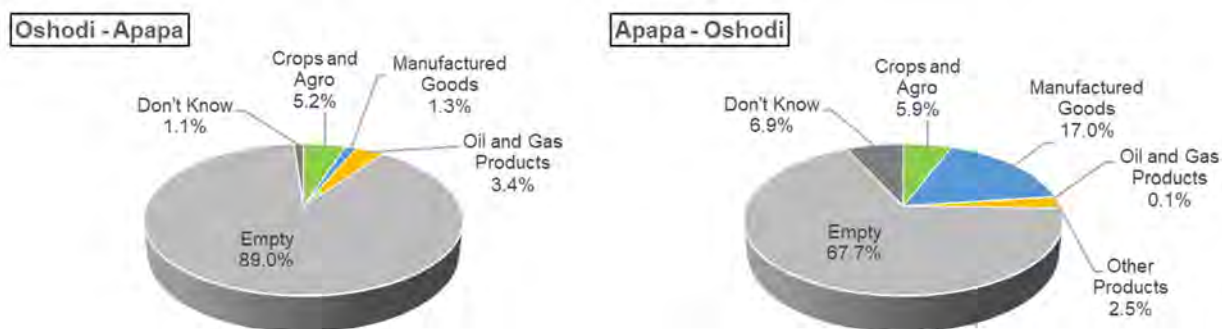
Types of Cargo by Vehicle Type

ii. Types of Cargo Transported by Direction at Survey Locations

The types of cargo primarily transported by direction at the survey locations are as follows:

Survey Location ① (F265: Apapa-Oshodi Expressway)

From Oshodi to Apapa (towards the northern direction and Apapa Port), there are many vehicles transporting "agricultural products" and "petroleum products." In contrast, from Apapa to Oshodi (from Apapa Port towards the northern direction), there are more vehicles transporting "manufactured goods." On the other hand, many vehicles on this road are traveling empty. This is likely because vehicles carrying cargo are avoiding this road, which is chronically congested, and are using alternative routes instead.



Source: JICA Study Team

Types of Cargo Transported by Direction at Survey Location ①

Survey Location ② (F100: Lagos-Badagry Expressway)

Both from Badagry to Lagos and from Lagos to Badagry, there are many logistics vehicles transporting "mineral resources" and "manufactured goods." Among these cargo types, the mineral resources are primarily "sand."

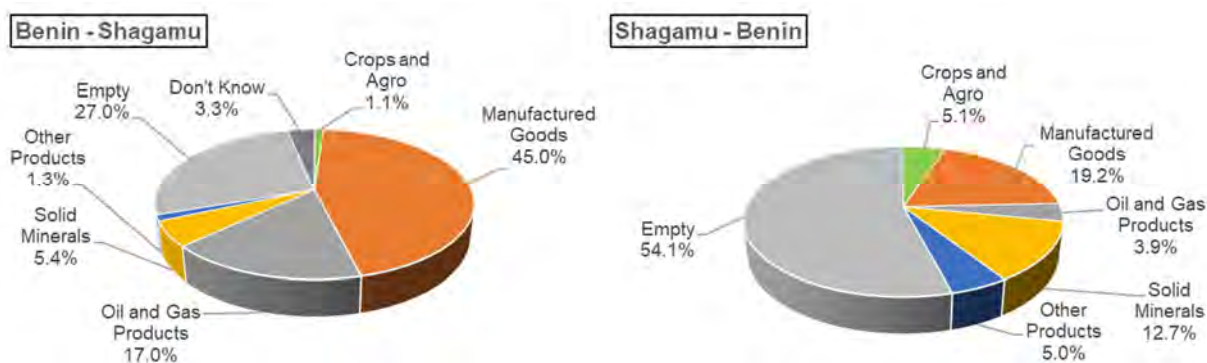


Source: JICA Study Team

Types of Cargo Transported by Direction at Survey Location ②

Survey Location ③ (A121: Sagamu-Benin Expressway)

From Benin to Sagamu, there are many vehicles transporting "manufactured goods" and "petroleum products." In the direction from Sagamu to Benin, there are many vehicles transporting a variety of cargo, including "agricultural products" and "manufactured goods." On the other hand, more than half of the vehicles heading towards Benin from Sagamu are traveling empty.

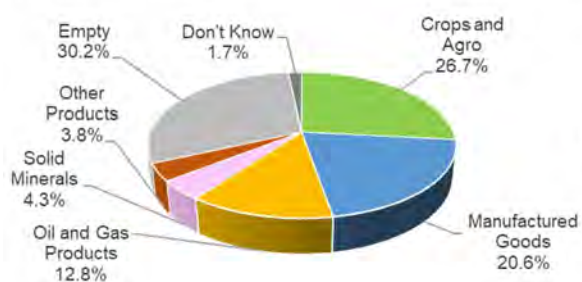
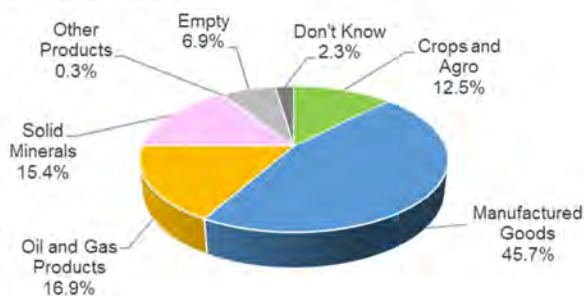


Source: JICA Study Team

Types of Cargo Transported by Direction at Survey Location ③

Survey Location ⑦ (A2: Kaduna-Lokoja Road)

At Survey Location ⑦, vehicles transporting a wide variety of cargo can be seen in both directions. When looking at the directions, there are many vehicles transporting "agricultural products" and "manufactured goods" from Abuja to Yangogi. On the other hand, from Yangogi to Abuja, there are many vehicles transporting "manufactured goods," and the number of empty vehicles is lower compared to other roads.

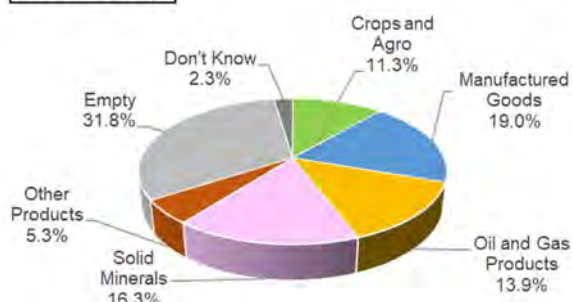
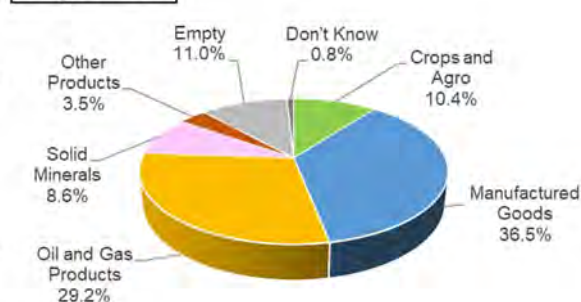
Abuja - Yangoji**Yangoji - Abuja**

Source: JICA Study Team

Types of Cargo Transported by Direction at Survey Location ⑦

Survey Location ⑧ (A2: Lomi-Gidan Bassa-Dagwa Road)

Similar to Survey Location ⑦, Survey Location ⑧ also sees vehicles transporting a wide variety of cargo in both directions. When examining the directions, there are many vehicles transporting "mineral resources" and "manufactured goods" from Madala to Yangoji. From Abuja to Madala, there are many vehicles transporting "manufactured goods" and "petroleum products," and, like the route from Yangoji to Abuja at Survey Location ⑦, there are few empty vehicles.

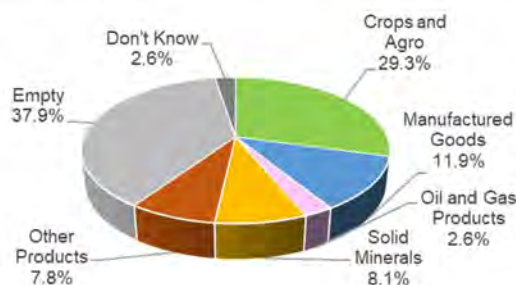
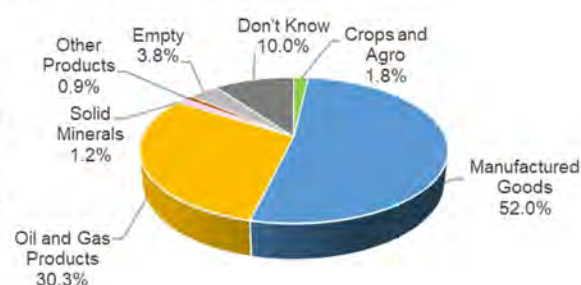
Madala - Abuja**Abuja - Madala**

Source: JICA Study Team

Types of Cargo Transported by Direction at Survey Location ⑧

Survey Location ⑨ (A14: Ilorin-Jebba Road)

From Oyo to Ilorin, vehicles transporting a wide variety of cargo, including "agricultural products," can be observed. On the other hand, from Ilorin to Oyo, the transportation of "manufactured goods" and "petroleum products" accounts for over 80% of the total, and there are few empty vehicles.

Oyo - Ilorin**Ilorin - Oyo**

Source: JICA Study Team

Types of Cargo Transported by Direction at Survey Location ⑨

iii. Detailed Breakdown of Transported Cargo by Survey Location and Direction

Regarding the types of cargo transported by logistics vehicles, excluding empty vehicles, we will organize what specific items are being transported. Below are the top five items transported by direction at each survey location.

Survey Location ① (F265: Apapa-Oshodi Expressway)

From Oshodi to Apapa, there are many vehicles transporting "legumes" and "gasoline." Conversely, from Apapa to Oshodi, there are many vehicles transporting manufactured goods such as "plastic and rubber products," "beer," and "water."

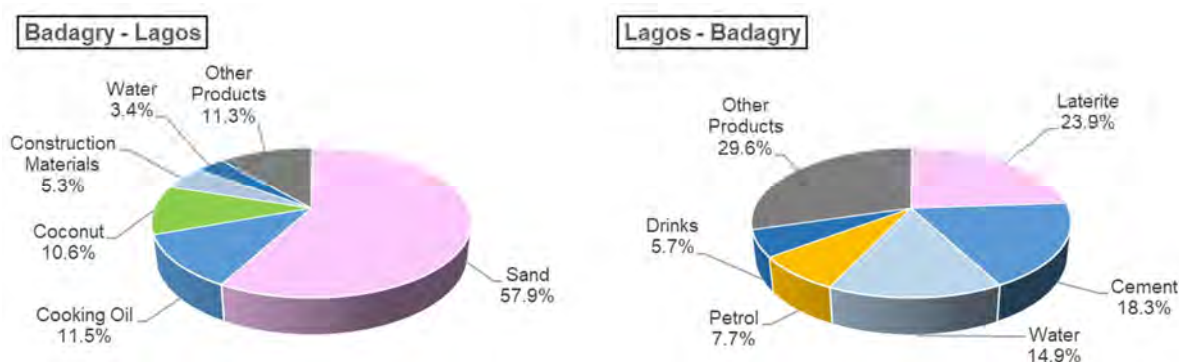


Source: JICA Study Team

Detailed Breakdown of Transported Cargo by Survey Location and Direction (Survey Location ①)

Survey Location ② (F100: Lagos-Badagry Expressway)

From Badagry to Lagos, the most commonly transported cargo is "sand." Conversely, from Lagos to Badagry, many vehicles are transporting manufactured goods primarily used as construction materials, such as "laterite," "cement," and "water."



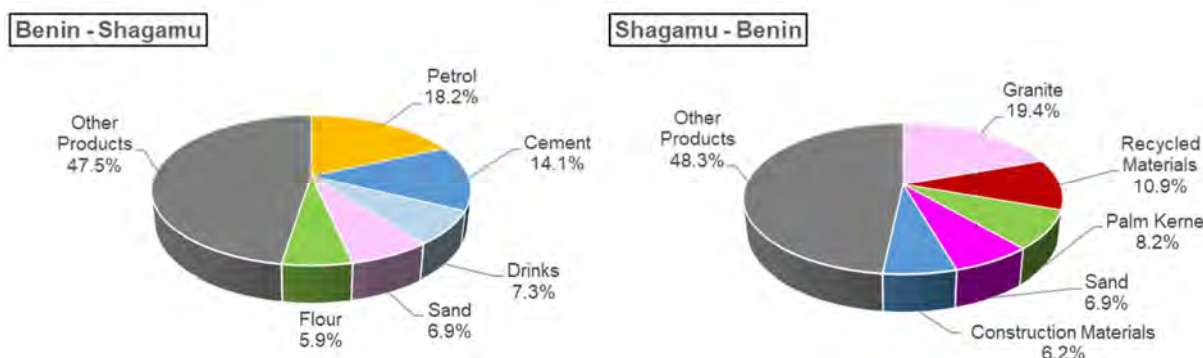
Source: JICA Study Team

Detailed Breakdown of Transported Cargo by Survey Location and Direction (Survey Location ②)

Survey Location ③ (A121: Sagamu-Benin Expressway)

From Benin to Sagamu, there are many vehicles transporting "gasoline," "cement," "beverages," and "wheat," but there are also many vehicles transporting various other items. In the direction from Sagamu to

Benin, many vehicles primarily transport "granite," "recycled materials," "palm kernel oil," and "sand," along with various other items. Thus, at Survey Location ③, it appears that a wide variety of cargo is being transported rather than specific items.

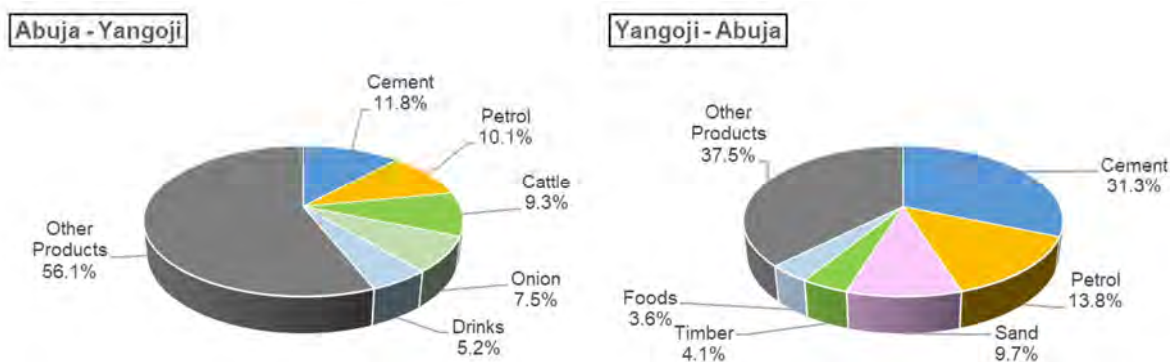


Source: JICA Study Team

Detailed Breakdown of Transported Cargo by Survey Location and Direction (Survey Location ③)

Survey Location ⑦ (A2: Kaduna-Lokoja Road)

At Survey Location ⑦, from Abuja to Yangogi, there are many vehicles transporting "cement," "gasoline," "cattle," and "onions," but there are also many vehicles transporting various other items. Conversely, from Yangogi to Abuja, many vehicles are seen transporting "cement," "gasoline," "sand," and "timber." From this, it can be inferred that a variety of items are transported from Abuja to the southern regions, while primarily construction-related items are transported from the south to Abuja.

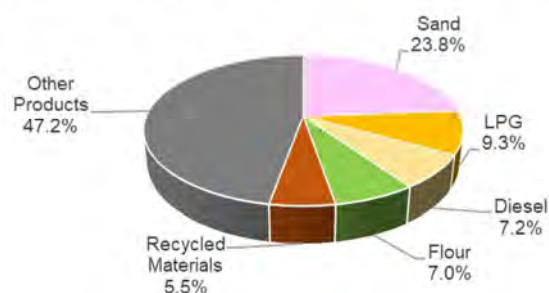
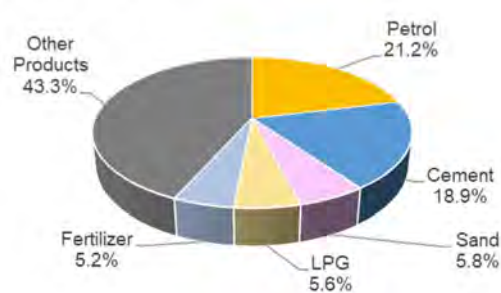


Source: JICA Study Team

Detailed Breakdown of Transported Cargo by Survey Location and Direction (Survey Location ⑦)

Survey Location ⑧ (A2: Lomi-Gidan Bassa-Dagwa Road)

At Survey Location ⑧, similar to Survey Location ⑦, vehicles transporting a wide variety of cargo can be observed in both directions. However, in both directions, there is a notable presence of vehicles transporting petroleum products such as "gasoline" and "liquefied natural gas," as well as construction-related items like "cement" and "sand."

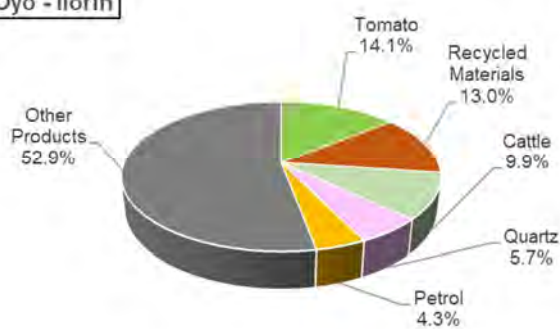
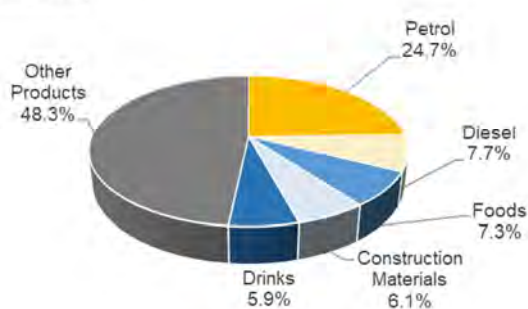
Madala - Abuja**Abuja - Madala**

Source: JICA Study Team

Detailed Breakdown of Transported Cargo by Survey Location and Direction (Survey Location ⑧)

Survey Location ⑨ (A14: Ilorin-Jebba Road)

From Oyo to Ilorin, vehicles can be seen transporting a variety of items, including agricultural products such as "tomatoes" and "cattle," as well as "recyclable materials" and "quartz." On the other hand, from Ilorin to Oyo, there are many vehicles transporting "petroleum products" such as "gasoline" and "diesel," along with manufactured goods like "food" and "beverages."

Oyo - Ilorin**Ilorin - Oyo**

Source: JICA Study Team

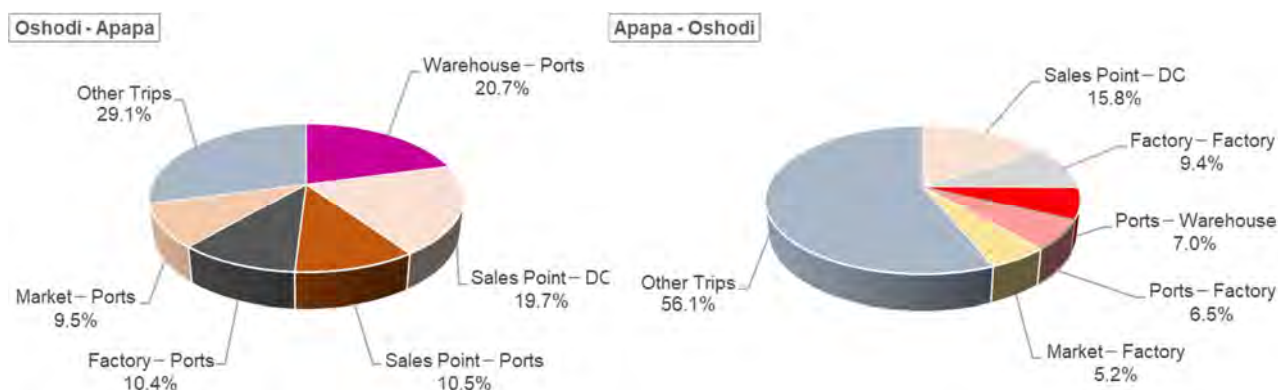
Detailed Breakdown of Transported Cargo by Survey Location and Direction (Survey Location ⑨)

(4) Loading/Unloading Facilities

This section organizes the types of facilities where cargo vehicles perform loading and unloading operations. The loading/unloading facilities for cargo vehicles by survey location and direction are as follows:

Survey Location ① (F265: Apapa-Oshodi Expressway)

From Oshodi to Apapa, there are many vehicles unloading cargo at "ports," such as "warehouses to ports" and "factories to ports." On the other hand, there are not many vehicles that have loaded cargo at the "port" when traveling from Apapa to Oshodi. This indicates that while vehicles transporting cargo to Apapa Port or Tin Can Port frequently use this road, there are not as many vehicles that have loaded cargo at the port.



Source: JICA Study Team

Loading/Unloading Facilities by Survey Location and Direction (Survey Location ①)

Survey Location ② (F100: Lagos-Badagry Expressway)

From Badagry to Lagos, half of the vehicles are engaged in loading/unloading "from one facility to another." Conversely, from Lagos to Badagry, in addition to "from one facility to another," there are also many vehicles that are loading at "factories to distribution centers" and "factories to markets," unloading cargo at various facilities. According to interviews conducted by the surveyors, "other facilities" often refer to cargo transfer points located in Badagry.

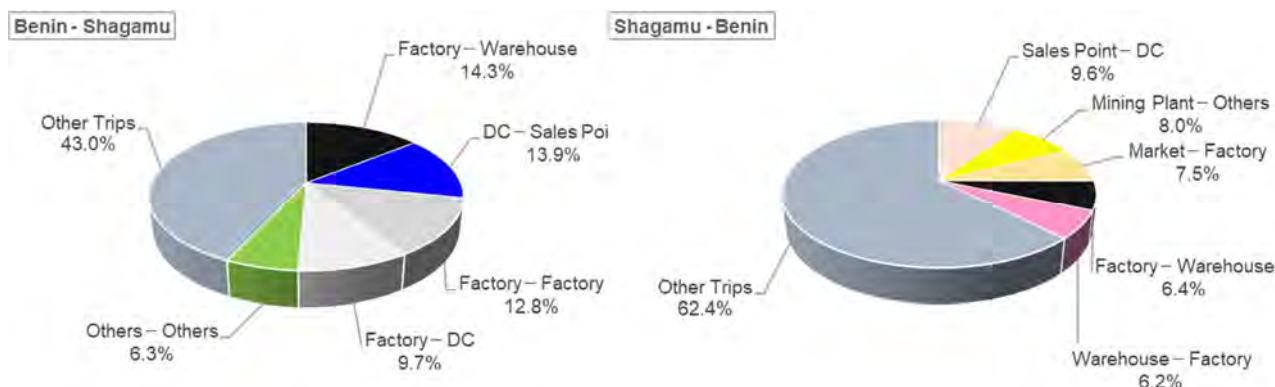


Source: JICA Study Team

Loading/Unloading Facilities by Survey Location and Direction (Survey Location ②)

Survey Location ③ (A121: Sagamu-Benin Expressway)

From Benin to Sagamu, there are many vehicles loading at factories, with common routes including "factories to warehouses," "factories to factories," and "factories to distribution centers." Additionally, vehicles transporting from "distribution centers to sales points" are primarily thought to be those carrying gasoline from oil storage facilities to gas stations. On the other hand, from Sagamu to Benin, there are many vehicles engaged in loading/unloading at various facilities, including "sales points to distribution centers" and "mining sites to other facilities." Given this information and the high volume of transportation of "gasoline" and "cement" from Benin to Sagamu, it can be inferred that there are many logistics vehicles transporting goods from factories and oil storage facilities in eastern Nigeria to distribution points in the west along this road.



Source: JICA Study Team

Loading/Unloading Facilities by Survey Location and Direction (Survey Location ③)

Survey Location ⑦ (A2: Kaduna-Lokoja Road)

At Survey Location ⑦, from Abuja to Yangoji, there are many vehicles unloading at "markets," "farms," and "factories," with common routes including "market to market," "farm to market," and "factory to market." Conversely, from Yangoji to Abuja, there are many vehicles engaged in loading/unloading at various facilities, including "factory to market" and "market to market."



Source: JICA Study Team

Loading/Unloading Facilities by Survey Location and Direction (Survey Location ⑦)

Survey Location ⑧ (A2: Lomi-Gidan Bassa-Dagwa Road)

At Survey Location ⑧, in both directions, there are many vehicles transporting goods from "distribution centers to sales points," "market to market," and "factory to market."



Source: JICA Study Team

Loading/Unloading Facilities by Survey Location and Direction (Survey Location ⑧)

Survey Location ⑨ (A14: Ilorin-Jebba Road)

From Oyo to Ilorin, a variety of items are being transported, and the loading/unloading facilities are diverse. On the other hand, from Ilorin to Oyo, there are many vehicles transporting "petroleum products" and "manufactured goods." As a result, there are a significant number of vehicles transporting from "distribution centers to sales points" (such as from oil depots to gas stations) and from "factories to markets."

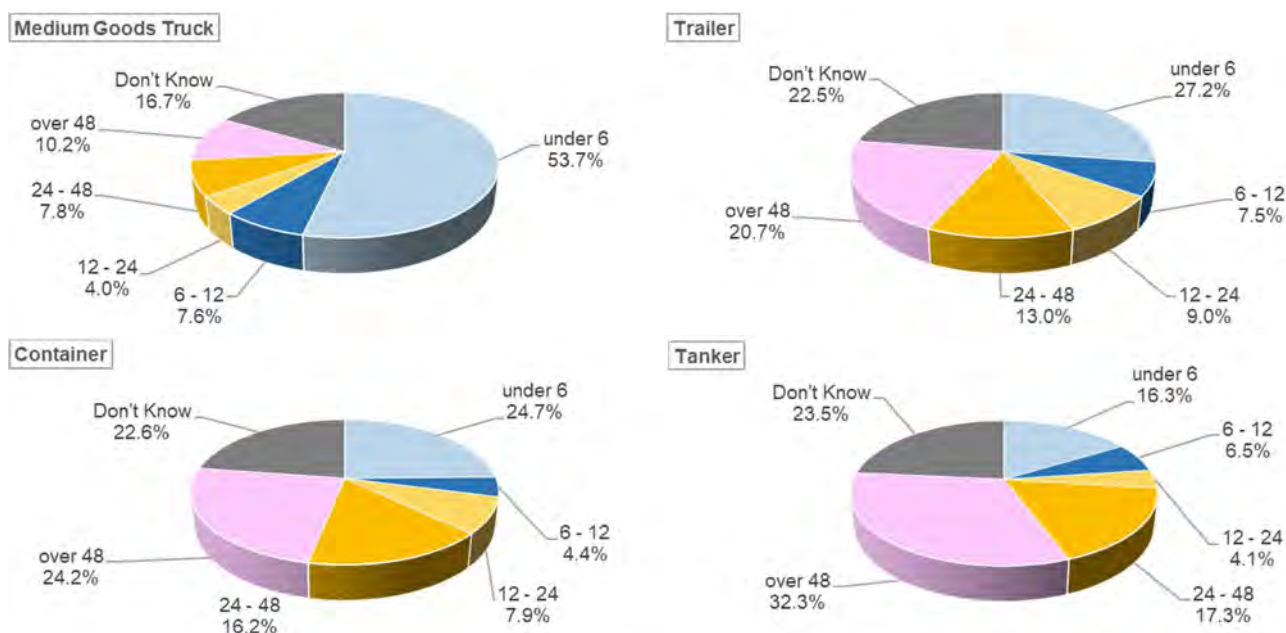


Source: JICA Study Team

Loading/Unloading Facilities by Survey Location and Direction (Survey Location ⑨)

(5) Travel Time from Departure Point to Destination

The travel times from departure points to destinations for different types of logistics vehicles are as follows. More than half of the medium-sized trucks take less than 6 hours to reach their destinations, whereas only about 1/4 of large trucks have a travel time of less than 6 hours. Additionally, just over 20% of large trucks are in a situation where the required travel time is not clearly understood.



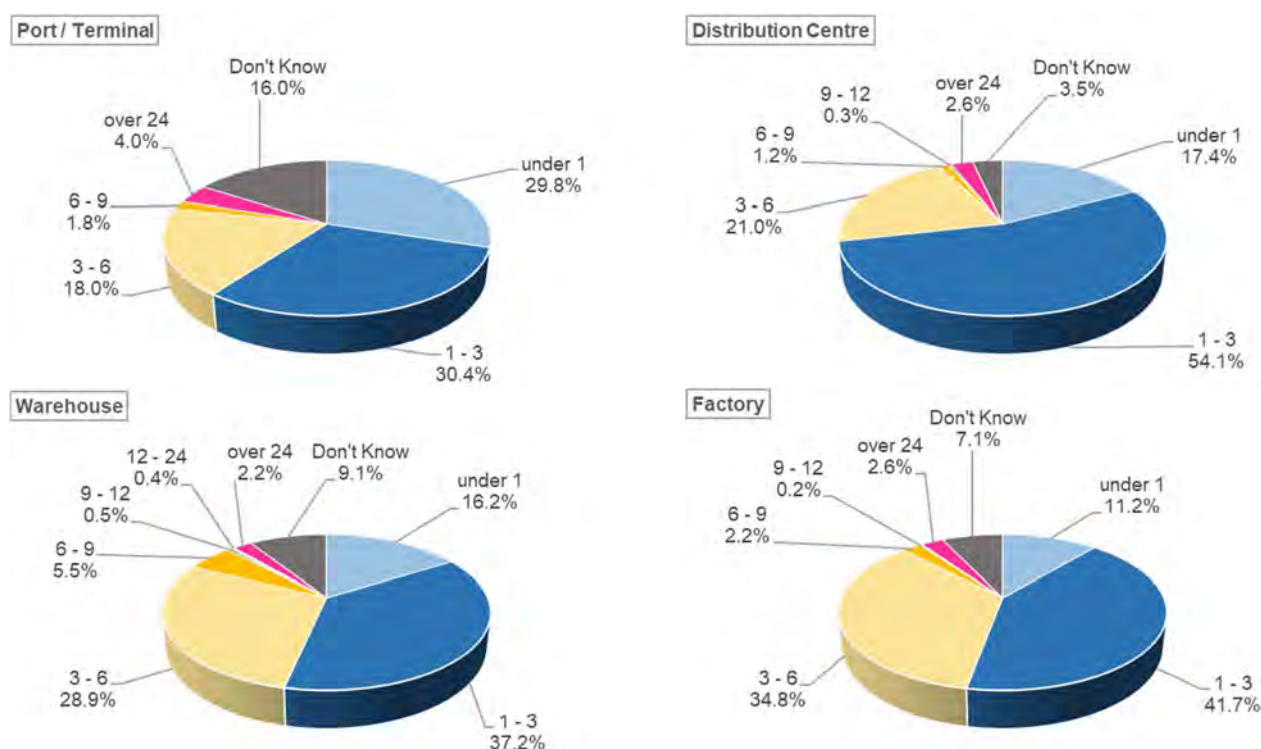
Source: JICA Study Team

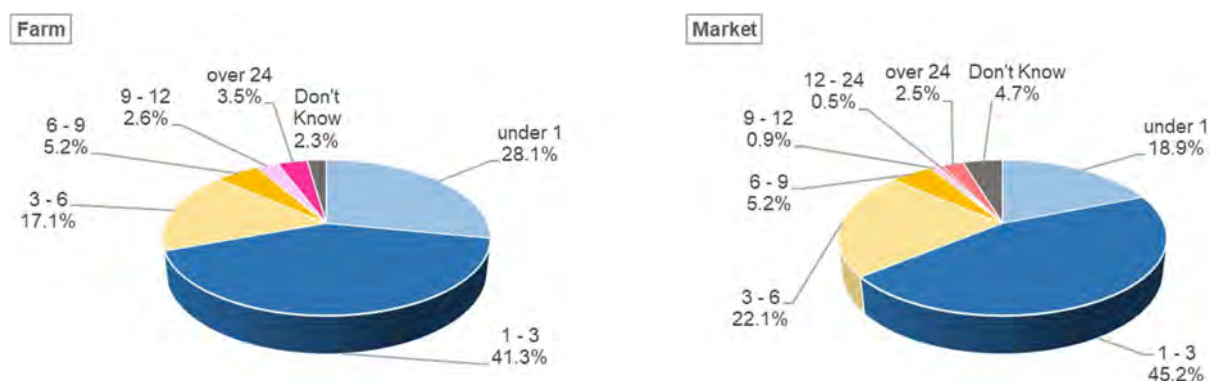
Travel Time from Departure Point to Destination

(6) Cargo Handling Time at Each Logistics Facility

i. Time Required for Loading Cargo

The time required for loading cargo at major logistics facilities is as follows. For all logistics facilities, the most common time required for loading cargo is between 1 to 3 hours. On the other hand, at ports/terminals, the proportion of cases where the time required for loading cargo cannot be predicted (labeled as "Don't Know") is significantly higher compared to other logistics facilities.



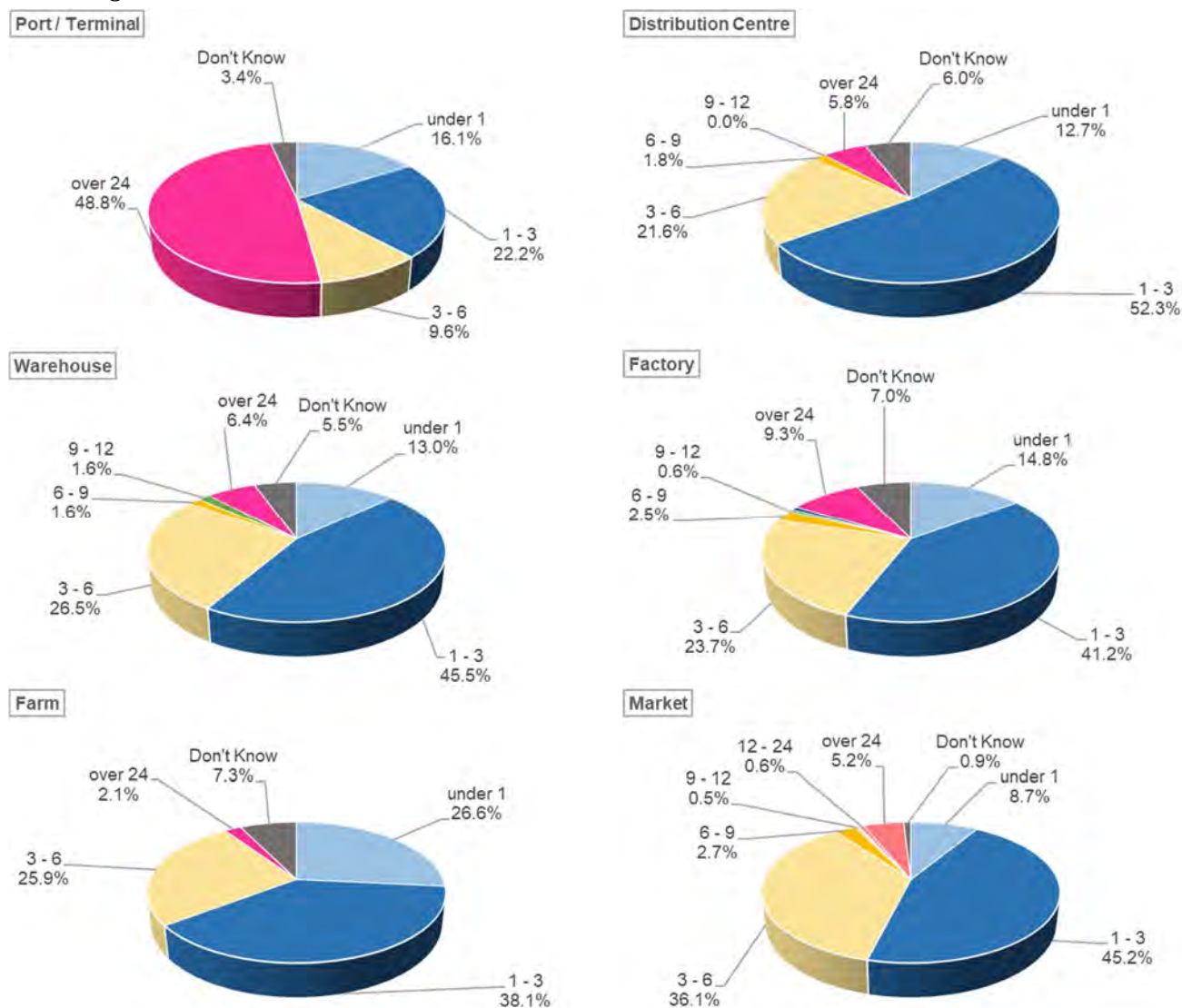


Source: JICA Study Team

Time Required for Loading Cargo by Each Logistics Facility

ii. Time Required for Unloading Cargo

The time required for unloading cargo at major logistics facilities is as follows. With the exception of ports/terminals, the most common time required for unloading cargo at logistics facilities is between 1 to 3 hours. On the other hand, at ports/terminals, nearly 50% of logistics vehicles take more than 24 hours to unload cargo.



Source: JICA Study Team

Time Required for Unloading Cargo by Each Logistics Facility

(7) Other Logistics Challenges

The logistics challenges faced by drivers of logistics vehicles are as follows. Nearly 70% of drivers reported issues related to roads or traffic congestion. Additionally, some drivers mentioned challenges related to security and demands for bribes from staff at logistics facilities. Other challenges identified include "rising fuel costs," "increased vehicle maintenance costs," and "distrust towards the government."

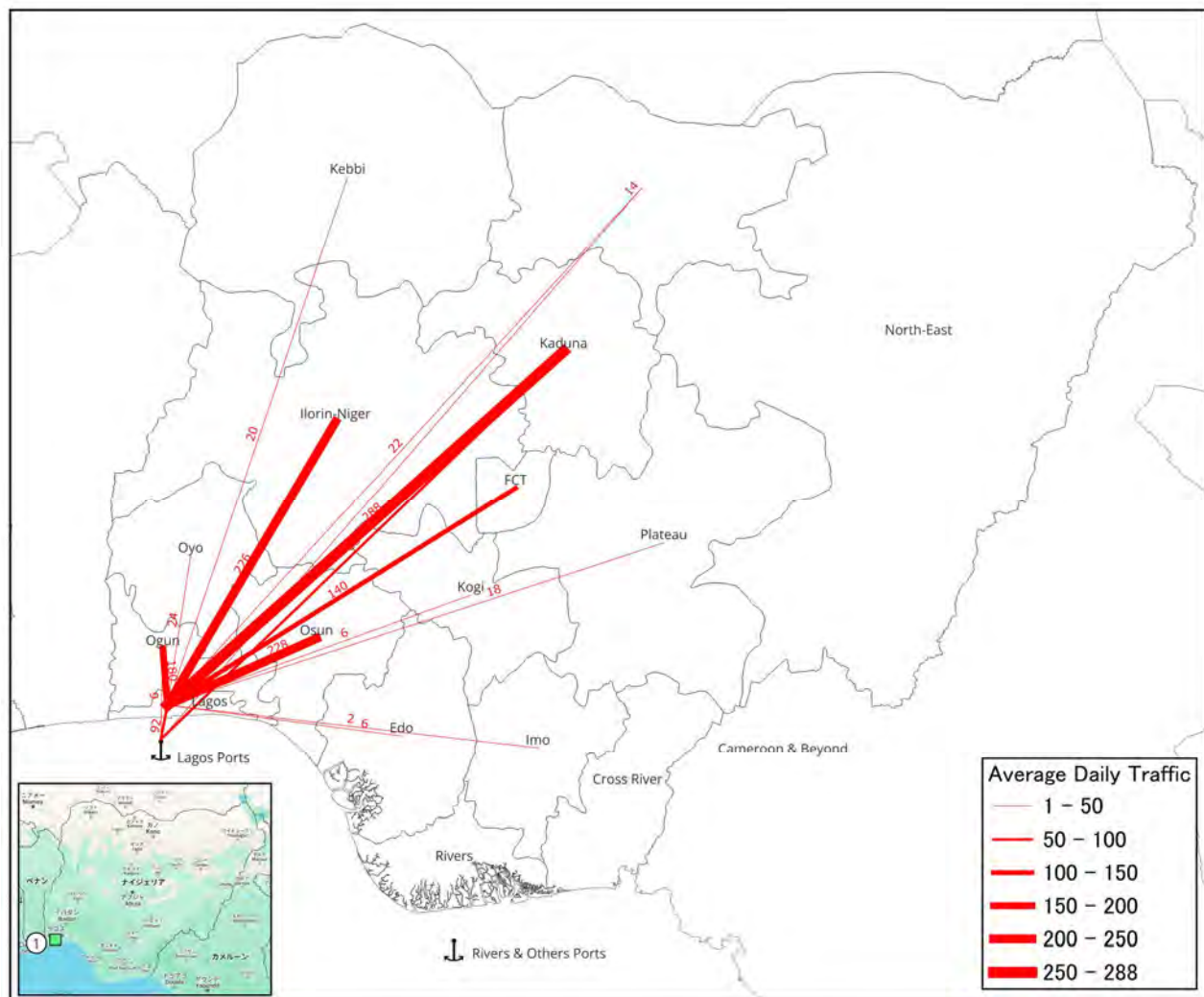


(8) Cargo Vehicle Origin and Destination

The average number of logistics vehicles passing through each survey point between zones is as follows, and the trends at each survey point are as follows.

Survey Location ① (F265: Apapa-Oshodi Expressway)

Survey Point ①, the Apapa-Oshodi Expressway, is frequently used as a transportation route between Tin Can Island Port and Lagos State, and it is also utilized as a transportation route connecting Lagos with northern Nigeria, such as Kaduna State.

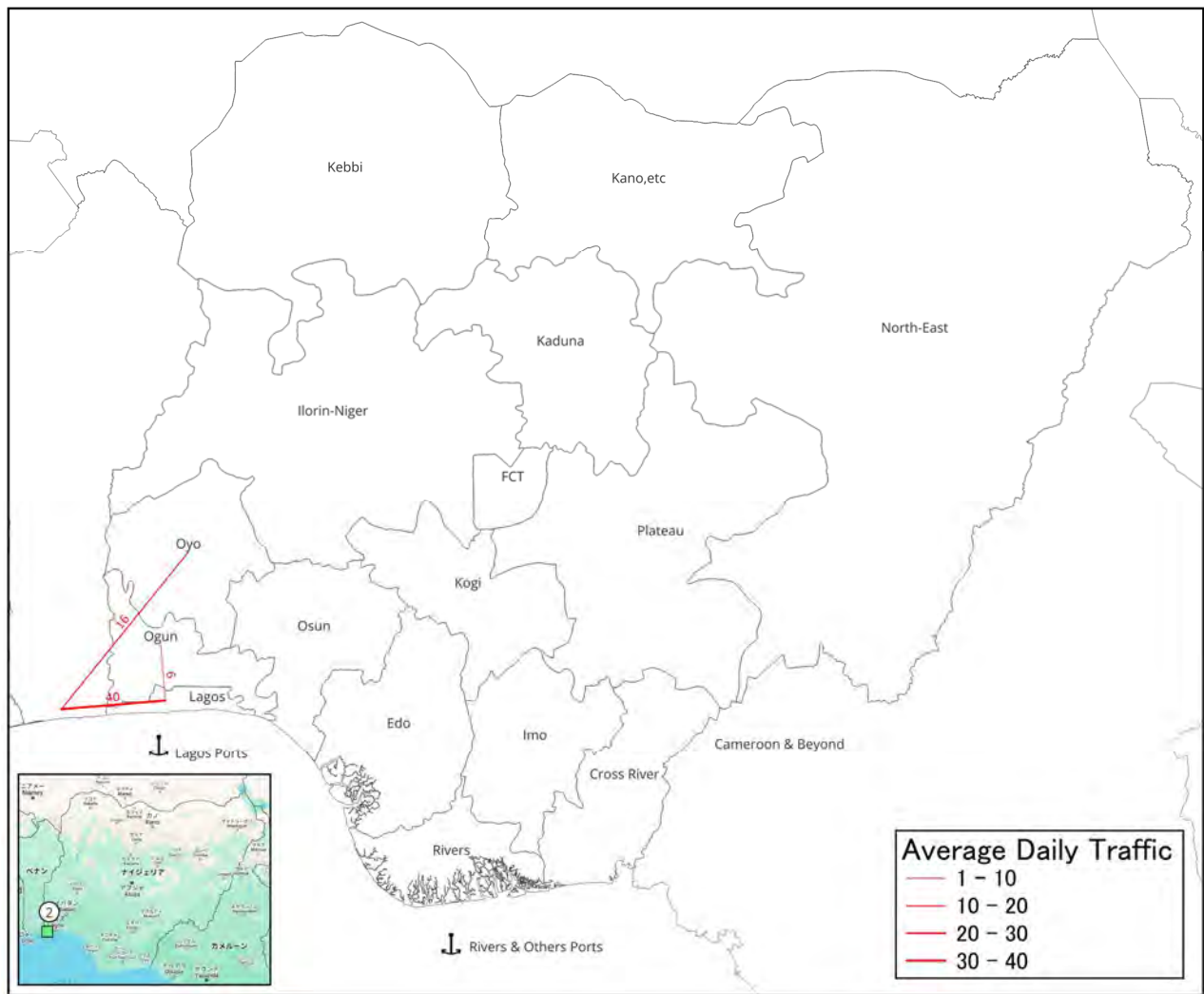


Source: JICA Study Team

Average Daily Number of Logistics Vehicles Passing Through the Zone at Survey Point ①

Survey Location ② (F100: Lagos-Badagry Expressway)

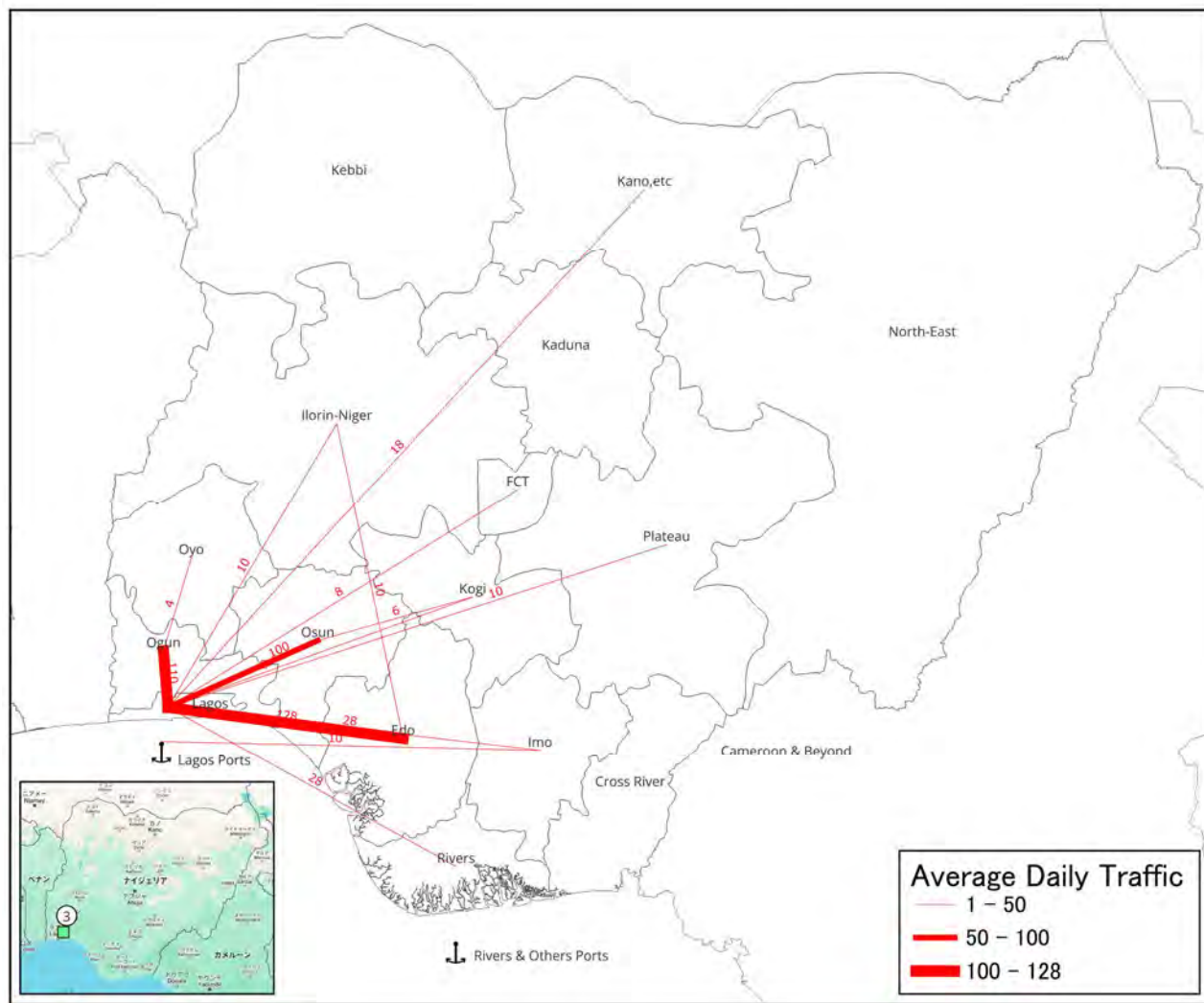
Survey Point ②, the Lagos-Badagry Expressway, is primarily used for cross-border logistics involving countries such as Benin and Togo, as well as for transportation to Lagos State and Oyo State.



Source: JICA Study Team
Average Daily Number of Logistics Vehicles Passing Through the Zone at Survey Point ②

Survey Location ③ (A121: Sagamu-Benin Expressway)

Survey Point ③, the Sagamu-Benin Expressway, is frequently used as a transportation route between Lagos State and Ogun State, and it is also utilized as a transportation route for east-west goods movement in southern Nigeria, connecting Lagos State with Edo State.

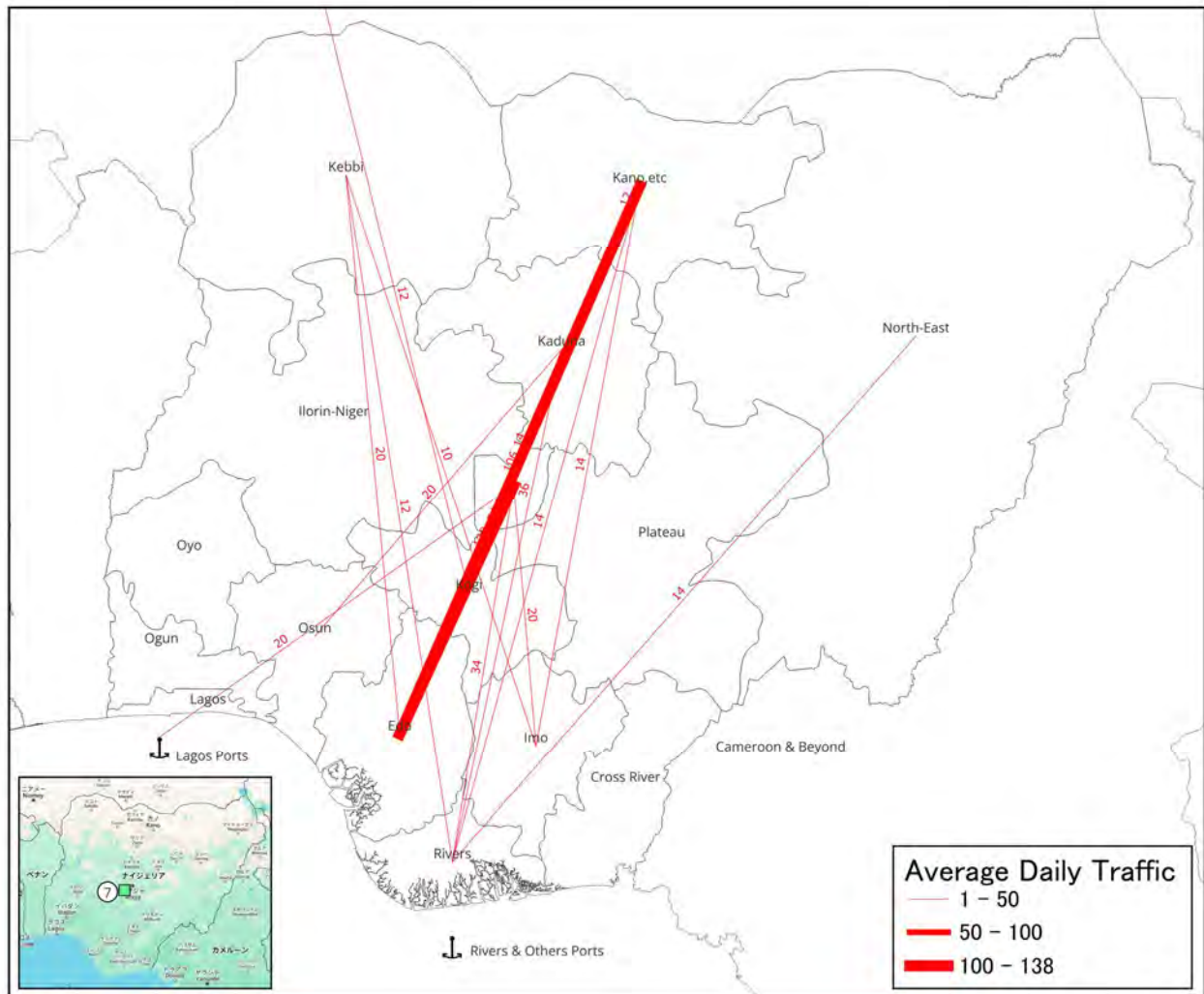


Source: JICA Study Team

Average Daily Number of Logistics Vehicles Passing Through the Zone at Survey Point ③

Survey Location ⑦ (A2: Kaduna-Lokoja Road)

Survey Point ⑦, the Kaduna-Lokoja Road, is used as a transportation route between various regions, primarily serving as a north-south transportation route in Nigeria, connecting Kano State to Edo State and the Federal Capital Territory (FCT) to Edo State.

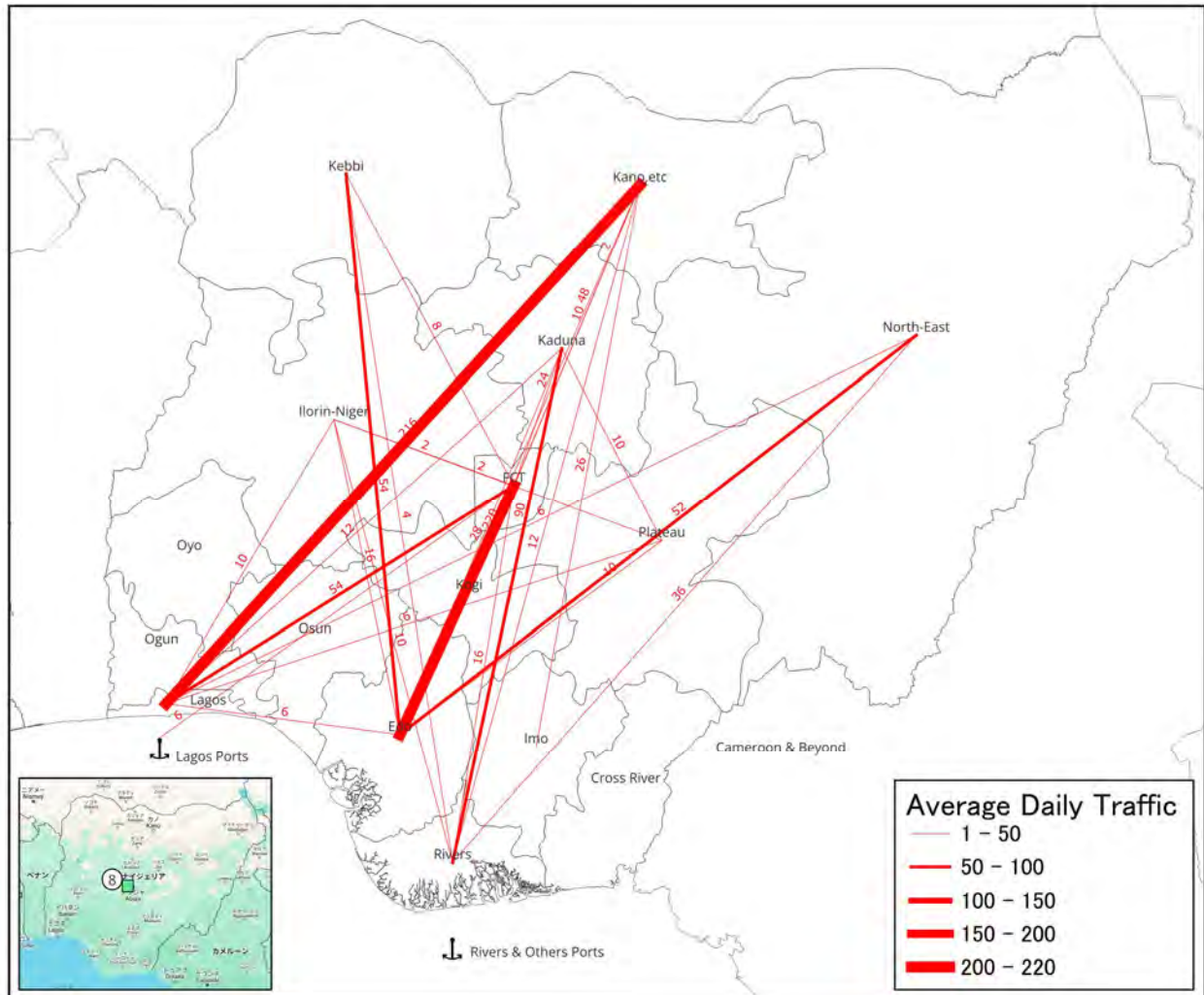


Source: JICA Study Team

Average Daily Number of Logistics Vehicles Passing Through the Zone at Survey Point ⑦

Survey Location ⑧ (A2: Lomi-Gidan Bassa-Dagwa Road)

Survey Point ⑧, the Romi-Gidan Bassa-Dagwa Road, is used as a transportation route between various regions. Among these, the route from Kano State to Lagos State is not observed in Survey Point ⑦, suggesting that for travel between Kano State and Lagos State, the Kaduna-Lokoja Road (A2) is not utilized, and instead, routes via A124 and A1 are likely being used.



Source: JICA Study Team

Average Daily Number of Logistics Vehicles Passing Through the Zone at Survey Point ⑧

4. Supplemental Traffic Survey Results (Federal Road No.1 in the Lagos Region)

Queue Length Survey (Unit: m)**Odogunyan**

Hour	Traffic Jam Length (Number of vehicles per hour)					
	U1	D1	T1	T2	T3	
8:00	36	59	18	80	U/Construction	
9:00	50	129	16	43	U/Construction	
10:00	11	66	5	22	U/Construction	
11:00	12	111	6	46	U/Construction	
12:00	16	88	2	68	U/Construction	
13:00	14	88	10	104	U/Construction	
14:00	22	81	4	86	U/Construction	
15:00	17	120	4	78	U/Construction	
16:00	54	86	16	21	U/Construction	
17:00	19	85	0	11	U/Construction	
18:00	32	134	6	3	62	
19:00	164	224	62	116	U/Construction	

Ikorodu

Hour	Traffic Jam Length (Number of vehicles per hour)					
	U1	D1	T1	U2	D2	T2
8:00	19	69	37	Slow moving	109	62
9:00	62	138	32	Slow moving	136	96
10:00	68	166	74	96	203	173
11:00	90	233	124	6	170	125
12:00	205	284	105	45	220	144
13:00	243	248	184	Slow moving	234	133
14:00	173	231	127	4	159	86
15:00	240	151	222	Slow moving	198	114
16:00	195	266	137	Slow moving	246	139
17:00	94	211	65	6	198	118
18:00	84	262	199	9	218	117
19:00	246	253	175	9	248	161

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Hour	Traffic Jam Length (Number of vehicles per hour)					
	D1	D2	T1	U1		
8:00	391	slow moving	24	283		
9:00	slow moving	slow moving	69	slow moving		
10:00	slow moving	slow moving	16	slow moving		
11:00	slow moving	slow moving	12	slow moving		
12:00	slow moving	slow moving	10	slow moving		
13:00	slow moving	slow moving	slow moving	slow moving		
14:00	slow moving	slow moving	slow moving	slow moving		
15:00	slow moving	slow moving	18	slow moving		
16:00	slow moving	117	57	28		
17:00	slow moving	123	21	35		
18:00	slow moving	260	240	225		
19:00	slow moving	409	157	37		

The map displays the Odogunyan area with several bus routes and landmarks. The routes are labeled as follows:

- U1**: A route starting from the top left, passing through Landcraft Industries Limited and Dayley Event Centre, and ending at GLOHILS FASHION ACADEMY.
- T1**: A route starting from the top right, passing through Dayley Event Centre, and ending at GLOHILS FASHION ACADEMY.
- T2**: A route starting from the right, passing through Lush Hair, and ending at the intersection of Odongun Rd and Tenibegiloju St.
- T3**: A route starting from the left, passing through GLOHILS FASHION ACADEMY, and ending at the intersection of Odongun Rd and Tenibegiloju St.
- D1**: A route starting from the bottom, passing through DHL Ikorodu logistic and courier services Lagos, and ending at the intersection of Odongun Rd and Tenibegiloju St.

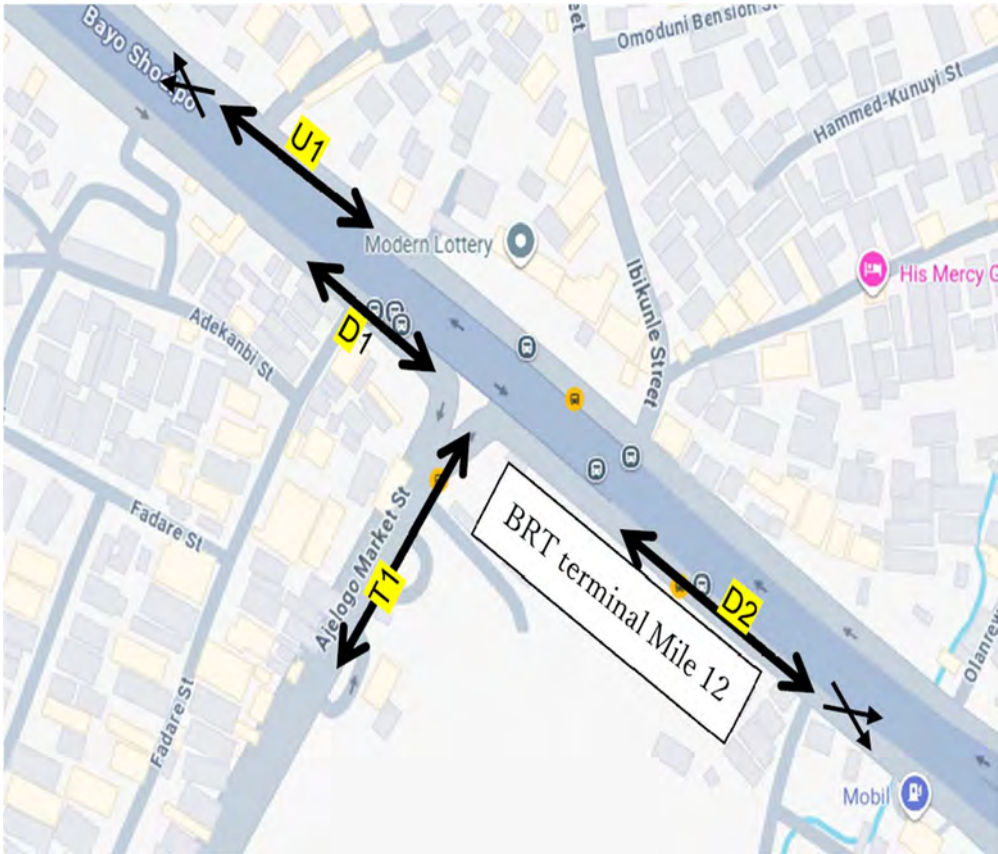
Landmarks and locations include:

- Landcraft Industries Limited
- Dayley Event Centre
- Al Hameed Catering Services
- GLOHILS FASHION ACADEMY
- DHL Ikorodu logistic and courier services Lagos
- Lush Hair
- Enyo Service Station Odogunyan

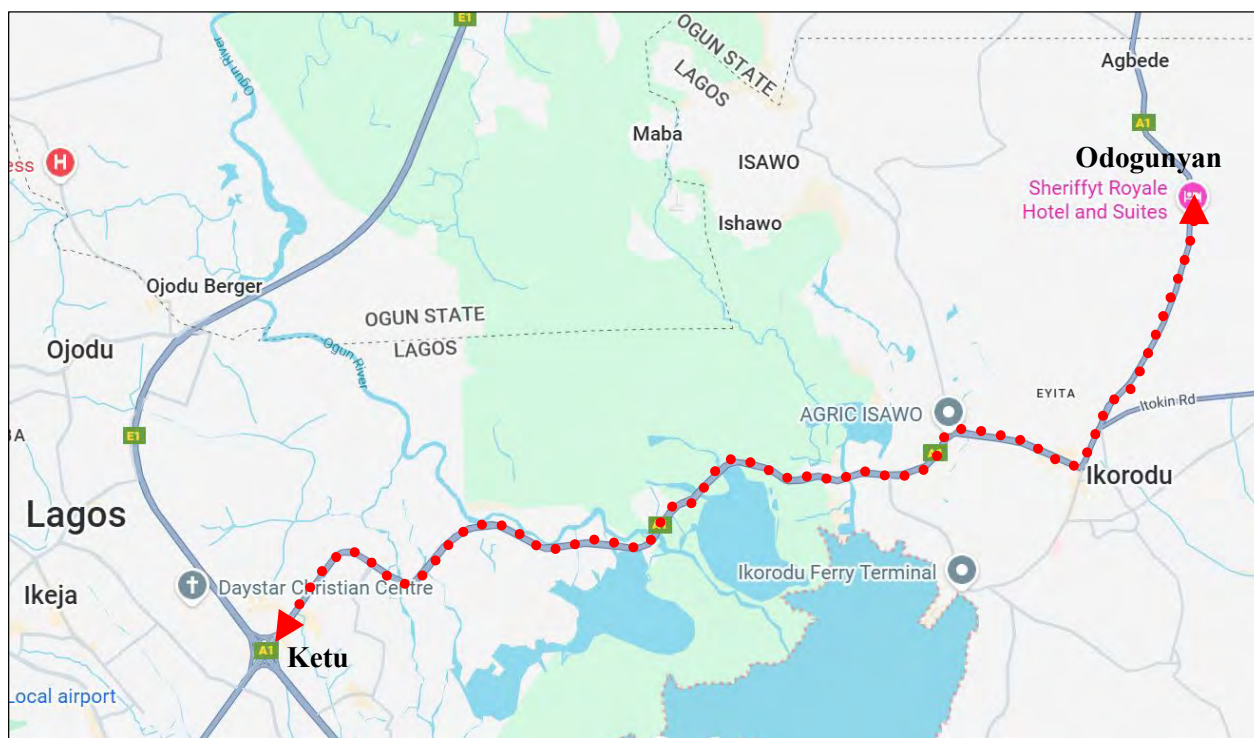
Roads shown are Odongun Rd and Tenibegiloju St.

Appendix-32

Queue Length Survey (Location Map, Queue Direction)



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Travel Speed Survey (Travel Route Map)

Travel Route (Odogunyan~Ketu, 21km)

Travel Speed Survey (Results)

Direction	Departure Time	Arrival Time	Travel Time (min)	Average Speed (km/h)
Ikorodu~Ketu	07:00	07:48	48	26.3
	07:00	08:22	82	15.4
	07:45	08:43	58	21.7
	07:58	08:50	52	24.2
	16:55	17:40	45	28.0
	18:00	18:43	43	29.3
	18:13	19:04	51	24.7
	20:20	20:57	37	34.1
Ketu~Ikorodu	07:00	07:58	58	25.7
	07:05	07:43	38	33.2
	07:53	08:31	38	33.2
	08:23	08:59	36	35.0
	17:00	18:04	64	19.7
	18:00	20:03	123	10.2
	18:02	19:39	101	12.5
	18:43	20:22	99	12.7