



The untapped, huge economic opportunities abound in Nigeria's inland waterways and its coastal belt

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Abstract

Inland waterways navigation have been used since people first sailed up over river estuaries as a means of transporting goods, passengers and services from one place to another. It offers the most economical, efficient, cheaper, safety means in area with water transportation. Water transportation has aid the economic development of many developed nation and sustained their growth. Nigeria has over 853 kilometers of coastline, 460 kilometers inland waterways with a sovereign right to 200 nautical miles exclusive economic zone. In spite of this water transport has a share of 1.5% of Nigeria domestic products. This research examines the Untapped huge economic opportunities resources abound in Nigeria's inland waterways and its coastal water belt. It examined the contribution of water ways to passenger and freight movement. The impact of waterways to socio-economic development, The develop of small scale industries location along the waterway. Data were collected from both primary and secondary sources. Descriptive and inferential statistical methods were used. Factor analytical procedure, and regression methods analysis was evaluated in a submit comprising three developed international countries with fully developed inland and coastal waterways for economic, social and industrial development of their nations. Questionnaires were used in all the 36 states in Nigeria, while interviews and community meeting for opinion on the expectation of the developed rivers, inland waterways and coastal system for distribution of goods, services, passengers, commerce trade and exchange of resources for a better life management. Both the information collected from the government Agents and the respond from the field research were used to decide on the effect of neglected water ways transportation in the country and it untapped huge economic opportunities. The finding indicate that there are needs for the following;- Coordination of allocation of resources for the development, Adequacy and efficiency development of resources management. Affordability, Safety and Environmental friendliness system. Market driven transport system operations, Jobs creation opportunities, Commercial activities, Relaxation Centre, Multimodal transportation system, setting up of small scale business Industries.

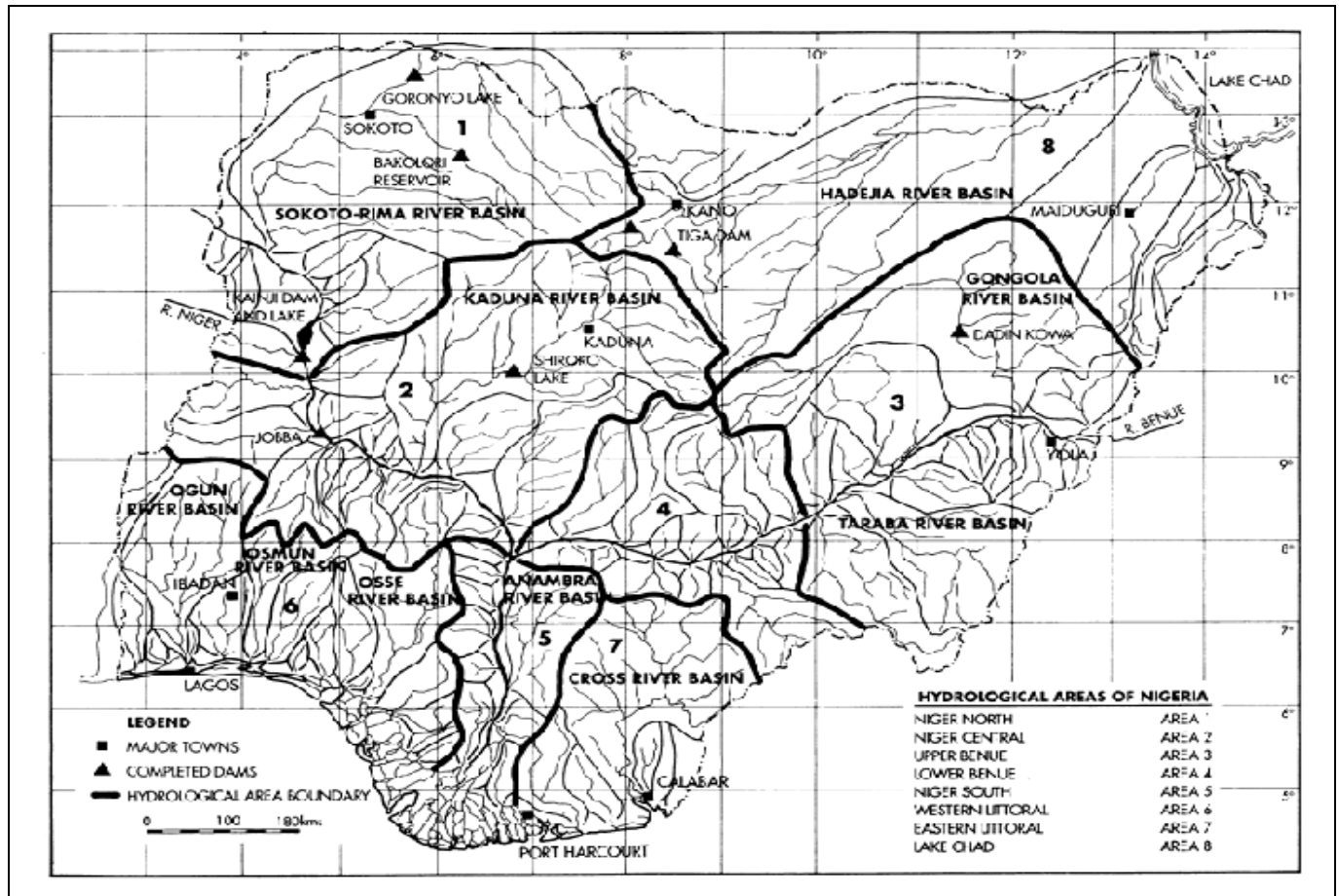
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Introduction

Inland waterways navigation have been used since people first sailed up over river estuaries as a means of transporting goods, but the development of road and rail networks over the past few years have now made the primary transport function redundant. The untapped huge economic opportunities abound in Nigeria's inland waterways and its coastal water system. The vitality is waiting to be converted into highly rewarding and profitable ventures. Vast and extensive is the entire waterways which is reputed to be one of the longest in the world by the sheer size of its length which is put at over 3000kms. This represents less than 40% of the nation's inland waterways prospect which is put at over 8000kms. Beside the advantage of colossal magnitude there exists other economic treasures lying in the waterways numerous rivers and tributaries that crisscrossed the entire Nigerian land scape (Dele Badejo) The potential of the coastal inland waterways as a multi-use tourism, trade, shipment alternative and complementary transport mode as

an amenity for their local communities, job creation, revenue generation for both government and operators (Owoputi 2017) ^[10].

There is probably in existence over sixty rivers, big and small, major and minor, such as Rivers Niger, Benue, Cross, Kaduna, Ogun, Sokoto, Osun, Ogbese, Owena, Ona, Oueme, Okwa, Mada, Katsina, Ankwe, Donda, Wase, Taraba, Kam, Pai, Gongola, Hawal, Faro, Garara, Mariga, Tubo, Moshi, Teshi, Oli, Malendoetc, No State in the Country is without one or more rivers with enormous prospects to sustain inland water transportation and economic opportunities. Convincingly, the important potential for nature conservation and the industrial archaeology of waterways can add value to the economic, political, socio, international and communication needs of the people among other potential benefits from international investors in the export processing zone along the coastal waterways due to easy shipment of raw materials and manufacturing equipment to the site for industrial location.



Source: www: Theodora.com/maps

Fig 1: Map of Nigeria showing Inland Rivers

Within Nigeria, the river Niger is fed by rivers flowing into it from all directions with headwaters originating from the central plateau in the North, from the Yoruba highland in the south, from Benin Republic to the west and from the eastern highland. A significant flow outside Nigeria comes from the watersheds stretching westwards right up to the Fouta Djallon mountains of Guinea. The river Benue is fed by rivers emanating both from the high central plateau and also from the Cameroon mountains and Ogota hills of the other rivers flowing to the Atlantic, the cross river is fed by many tributaries originating in the Cameroon mountains. It flows east and then turns Southwards empties into the Atlantic Ocean with Limited Delta formation. Both the Ogun and Osun rivers are fed by rivers originating from the Yoruba Highland. They flow slowly from north to south into the Lagos lagoons before discharging through creeks and swamps into the Atlantic Ocean. Other rivers flowing

into the Atlantic ocean in the south include; Imo, Akwa-Ibom, Ase, Orashi, Benin and numerous creeks in the Delta and Rivers states areas. Nigeria lies between longitudes 2° 49'E and 14°37'E and latitudes 4°16'N and 13°52'N of the Equator. The climate is tropical, characterized by high temperatures and humidity as well as marked wet and dry seasons though there are variations between the South and the North. Total rainfall decreases from the coast northwards. The South (below latitude 8°N) has an annual rainfall ranging between 1,500 and 4,000 mm and the extreme North between 500 and 1000mm. Nigeria is blessed with a vast expanse of inland freshwater and brackish ecosystems. Their full extent cannot be accurately stated as it varies with season and from year to year depending on rainfall. However, as show in figure 1, the water resources are spread all over the country from the coastal region to the arid zone of the lake Chad basin.

Table 2: Major Inland water resources of Nigeria.

| A | |
|---|-------------------------------|
| Types of Water Bodies | Approximate surface area (ha) |
| Major Rivers | |
| i. Anambra Rivers | 1,401,000 |
| ii. Benue Rivers | 129,000 |
| iii. Cross Rivers | 3,900,000 |
| iv. Imo Rivers | 910,000 |
| v. Kwa Iboe Rivers | 500,200 |
| vi. Niger River(less kanji & jebba lakes) | 169,000 |
| vii. Ogun River | 2,379,000 |
| viii. Osun River | • 1,565,400 |
| Sub-total | • 10,812,400 |

| A. Major lakes and Reservoirs | B |
|---|------------|
| a. Lake Chad(Natural) | 550,000 |
| b. Kaniji Lake(man-made) | 127,000 |
| c. Jebba lake(man-made) | 35,000 |
| d. Shiroro lake(man-made) | 31,200 |
| e. Gorongo Lake(man-made) | 20,000 |
| f. Tiga lake(mad-made) | 17,800 |
| g. Chalawa Gorge(man-made) | 10,100 |
| h. DadinKowa(man-made) | 29,000 |
| i. Kiri (man-made) | 11,500 |
| j. Bakolori(man-made) | 8,000 |
| k. Lower Anabra | 5,000 |
| l. Zobe (man-made) | 5,000 |
| m. Oyan (man-made) | 4,000 |
| Sub-total | 11,666,000 |
| Total of A+B as % of total area of Nigeria (94,185,000ha) | 12.4% |

Sources: National Inland waterways Authority (N I W A),

The country has an extensive mangrove ecosystem of which a great proportion lies within the Niger Delta and are also found mostly in River, Delta, Cross River, Akwalborn, Lagos and Ondo States. They lie between latitudes 3'' and 7''6'' North and are estimated to cover between 500,000 and 885,000 ha. Freshwaters started at the northern limit of the mangrove ecosystems and extend to the Shelbina region. The approximate extent of the major inland water system is

given in Tables1. The major rivers estimated at about 10,812,400 hectares, make up about 11.5% of the total surface area of Nigeria, which is estimated to be approximately 94,185,000 hectares. Thirteen lakes and reservoirs with a surface area of between 4000, and 550,000, hectares, have a total surface area of 853,600 ha and represent about one percent of the total area of Nigeria. Bathy metric characteristics of the study area.

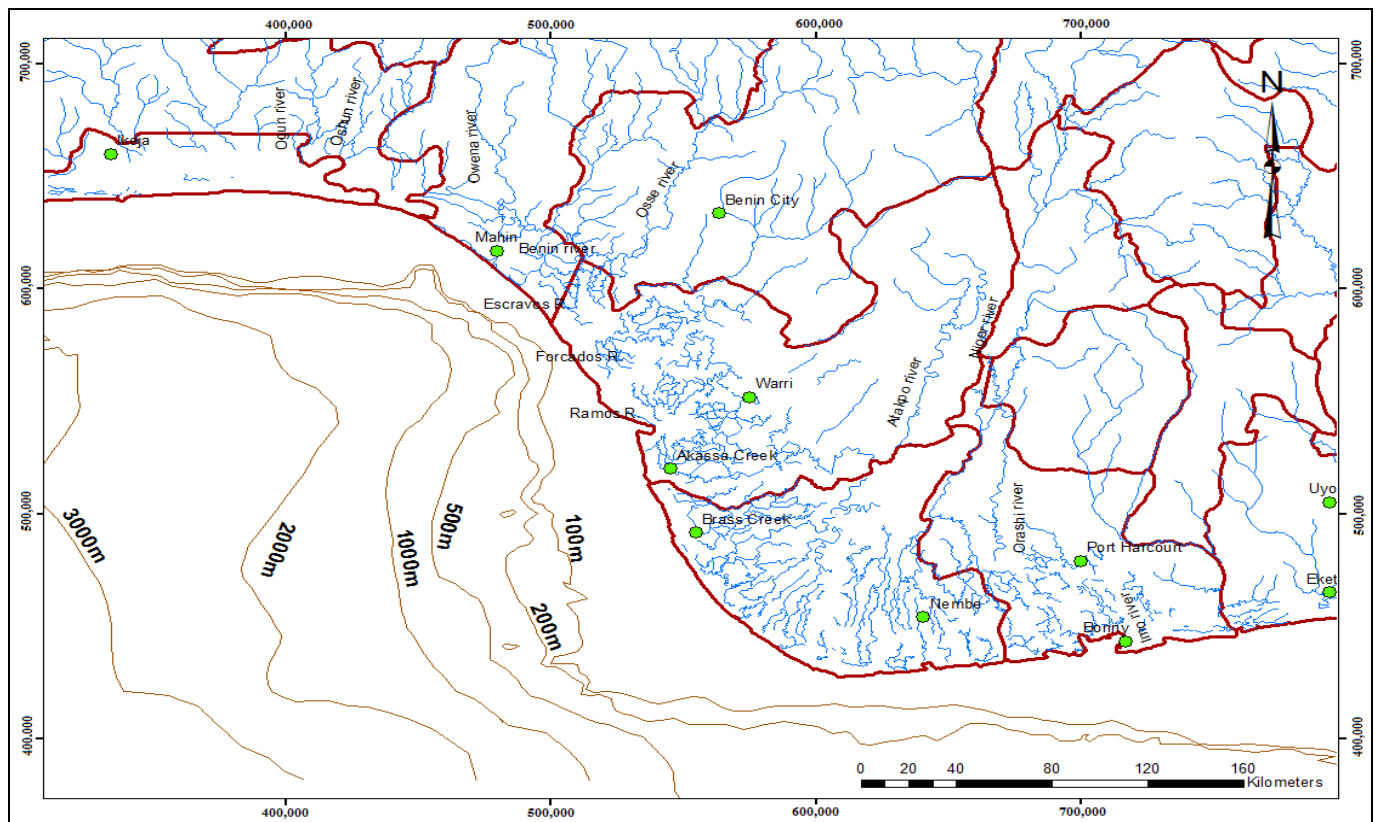


Fig 2: Bathymetric characteristics of Southwest coast, Nigeria. (Source: Nwilo&Badejo 2006)

The total surface area of water bodies in Nigeria, excluding deltas, estuaries and miscellaneous wetland suitable for rice cultivation and suitable for fish cultivation or inland

waterways is estimated to be about 14,991,900 ha or 149,919 km² and constitutes about 15.9% of the total area of Nigeria.

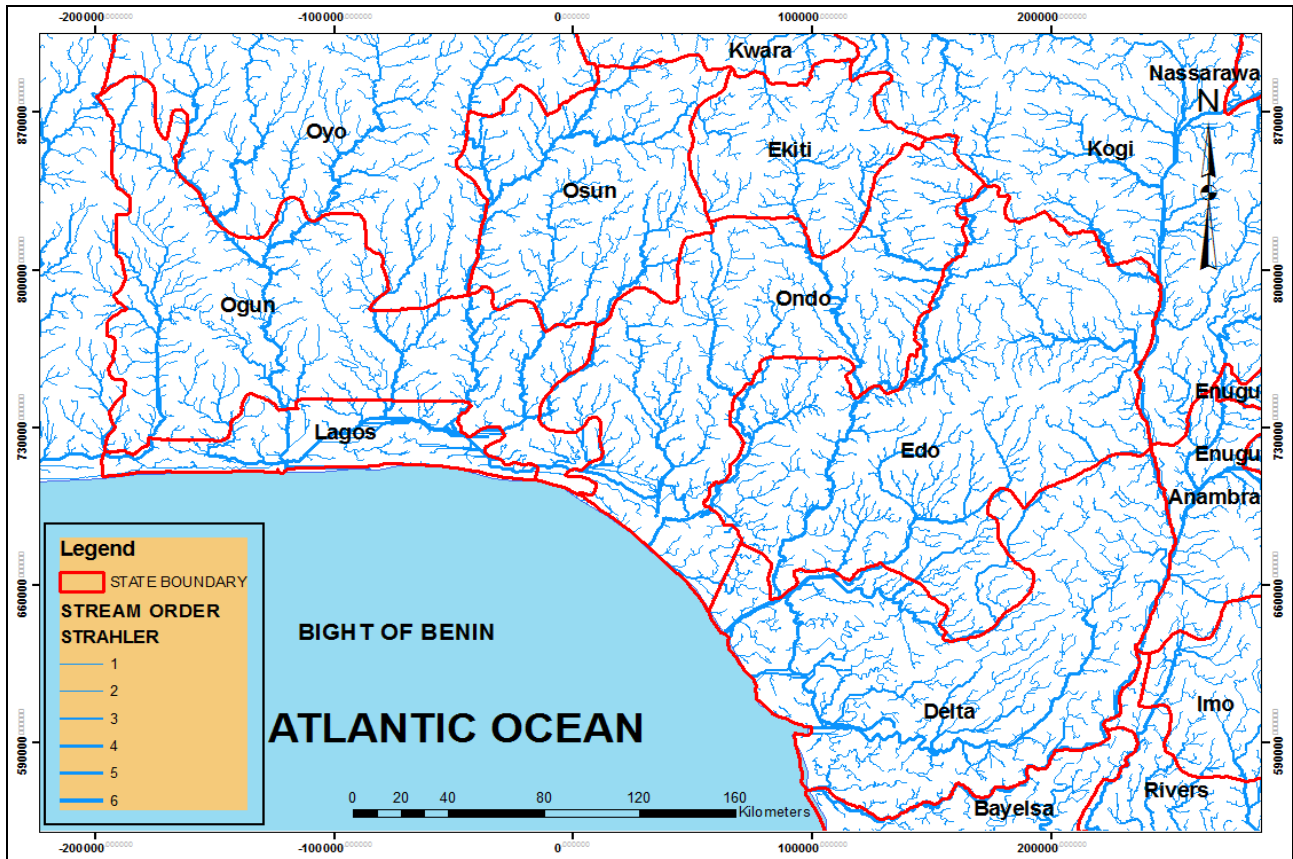


Fig 3: Map of Southern Nigeria Coastal water belt.

The significance of this natural resources is great and should not be in doubt if properly and functionally harnessed. These activities acknowledge the changing uses of the coastal and inland waterways and it points to the need for a wider focus in planning for the future development of the waterways, A case in point is the intra- Coastal Lagoon network, multimodal network, which is capable of supporting both national and international commercial navigation.

In Lagos State for example, it runs from the mouth of Yewa river, stretching for about 6kms west of Badagry through Lagos ports to Epe. This waterway is at present navigated by small crafts powered by outboard engines for passengers. Furthermore, along the Epe –Lagos corridor, there are reasonable amount of intra-state and inter-state traffic, they come mainly from Delta, Edo and Ondo state bringing down to Lagos products like Plantain, Gin, Fish, Palm oil, Vegetables and other Farm products.

There are many communities in Nigeria whose means of transportation and the only means of communication with the outside world are through water transportation. The benefits, Potentialities and inherent attributes of the inland waterways are not only vast but indicate limitless, an endless opportunities for investments. It is unfortunate that these potentialities and investment opportunities are yet to be fully harnessed for economics sustainable development. Development is related at improving the welfare of a society through appropriate social, political and economic conditions. The expected out comes are quantitative and qualitative improvements in human capital (e.g. Income and education level) as well as Physical capital such infrastructures (Utilities, transport, telecommunications etc.). In the previous decades, development policies and strategies tended to focus on physical capital, recent years

has seen a better balance by including human capital issues. Irrespective of the relative importance of physical versus human capital, development cannot occur without both as infrastructures cannot remain effective without proper operations and maintenance while economic activities cannot take place without an infrastructure base, (Jean- Paul Rodrigue). In China’s Belt and Road Initiatives (BRI) is an effort to create jointly – built trade routes that emulate to promote regional cooperation in Asia, Europe and Africa, this has improved transport connectivity on international trade and has impact that improves multimodal transport, connectivity which have on multilateral trade and economic growth in that countries and regions across the BRI. The BRI is an effort to create jointly built trade routes using rivers-road, coastal waters and overland.

Given the focus of this research which is about widening the frontiers of Nigeria’s inland / coastal waterways for maritime industry and it sustainable development, tapping the huge economic opportunities. It is very appropriate and timely to reveal the treasures and investment opportunities available in the nation’s coastal and inland waterways system. There is need for a deliberate commitment, encouragement and courage for the opening of the treasures hidden in the nation’s river business for those intending to tap the benefits of the economically rewarding insightful opportunities therein, for a country like Nigeria who has natural gift of rivers endowment, in all the states, some of the accruing benefits include multiplication of the existing job opportunities in the sector, this emphasizing the indispensability of inland waterways transportation system. Small size industrial development, fishing, Agriculture, farming, Tourism, shipping, Warehousing, freight, Export Products development, Forwarding etc.

The Government Coastal Agency

The Government Coastal Agency (GCA) was founded in 1954 with the main objective of handling all travel arrangement of government personnel and to act as clearing and forwarding agency for the government. This noble role of the agency has placed it on the threshold of operating at the gateways of the National economy, with large-scale diversification of the company's operations into other viable economic activities at both the seaports and the airports. The GCA, which started operating only at Apapa in 1954, later established branches in Port-Harcourt in 1956, in Sapele in 1965, in Kano airport in 1970, in Calabar in 1970, at Ikeja Airport in 1970, in Warri in 1972, in Burutu in 1972 and in Tin-can Island in 1977.

The Importance of Inland / Coastal waterways in the Nigerian Economy.

Maritime transport which is called water borne transport is one of the modes of transport for carrying of goods and people. Maritime is a vital part of a nation's transport infrastructure which can aid in the development and growth of the Nigerian economy in several ways. It is a key section of the Nigerian economy. The significant importance of the Maritime transport in the Nigerian economy can be identified in the following areas of its contribution:-

1. Transportation
2. Facilitation of Trade and Commerce
3. Revenue generation and Availability of Finance
4. Promotion of Tourism
5. Development of Related economic activities, recreations
6. Employment and job opportunities
7. Enhancement of industrial growth and development
8. Institutional development
9. International relations and peaceful co-existence
10. Socio-political harmony
11. Defense and security
12. Territorial protection.
13. Exchange of goods and Services
14. Export trade and Foreign Services
15. Provide Water Vehicles services and Its development.

These are some likely problems in the maritime system

- a. Malfunctioning maritime system.
- b. Government's interventions and interferences.
- c. Inadequate infrastructural facilities for efficient and fast services.
- d. Complicated tariff structure and implementation
- e. Misunderstanding of the usage and current function of maritime transportation.
- f. Proliferation of government agencies operating at the sea/water port, terminals or jetty.
- g. Cumbersome documentation and delivery procedure
- h. Insecurity of cargo and lives
- i. Manpower and labour problems (Lack of Professional.)
- j. Lack of financial autonomy for maritime authority
- k. Environmental pollution problem in maritime industry
- l. Lack of inland waterway development as feeder for maritime business
- m. Corruptions and Miss- Management of Funds.
- n. National Policy Problems
- o. Lack of Private / Public Corporation and Management.

Presently, apart from private operators of canoe and ferry services, government agencies such as the Lagos state ferry services corporation, the central water transport company and the national inland waterways authority also provide skeletal inland water transport services in few locations across the country, but recently, governments are refocusing attention on the development of inland rivers and the dredging of a portion of river Niger, as well as the development of river ports in Lokoja, Borno, Idah, Nembe, Patani and Calabar which was killed by corruption.

The basis for inland water transportation was borne out of the desire for inland locations to enjoy the same commercial advantages as the ports, which were more fortunately situated at the sea. It enjoys the singular advantage of transporting goods and people to the interior places far away from the sea. It is cost effective, and can transport large volumes over great distances. The modes involves the use of lakes, creeks, naturally navigable inland rivers, boats, ferries among others as means of transportation.

The initial impetus for the development of the inland waterways as it is true of other modes such as rail and road was the colonial interest in opening up the interior for resources exploitation and to ease administration.

With huge deposit of Untapped Bitumen in Ondo state coastal area which is an impetus for a large and numerous different Industries to be developed would bring economic break through, usage of coastal waterways and inland rivers in Nigeria with many industries been set-up for production of both semi-finished and raw material for finished products from Bitumen yet to be explored and developed into useful product for industries, Revenue generations, and employment, Job creation, with allied business services for economic growth in the nation, communities, Agents, operator, investors, consumers with environmental development.

Indeed, as initially conceived by the British, the rivers were expected to be part of the multimodal system with rail, road and air acting as tributaries to one another. The efforts by the Federal government to develop the country inland waterways transportation through the National Inland Waterways Authority (NIWA) with the dredging of the lower river Niger, has yielded little or no positive results after 54years of conception, this is due to Corruption in the system The situation has become worrisome as experts and other Nigerians harp on the opportunities in the inland waterway transportation sector, which could have been a money-spinner for the country. Tourists, the world over, love fun and have come to believe that cruising on the rivers could be indeed, pleasurable and thrilling. Others see it as a fabulous experience navigating on water as a means of transporting both goods and human passengers from one town to another, inter-state and across borders.

Over the years, the maritime sector of the Nigerian economy has grown to become one big industry with many separate yet inter-related activities being undertaken by different agencies to keep the hub of the business of haulage through the sea in perpetual motion. Among this broad range of activities are those involving shipping operation, stevedoring activities, clearing and forwarding, Insurance, ware housing, logistics. (Dele Badejo 2017) ^[5] The development of the maritime/shipping trade in Nigeria has experienced monumental growth and changes over the period, not without some formidable challenges characterized by lack of systematic planning approach to

development and resource constraints. At independence, all growth indices favored Nigeria to be described as one of the fast developing economies in the world. With a teeming population supported by enormous and varied natural resources, the growth potential was indeed limitless, as it was intimidating to attract global envy, still the country is further endowed with vast stretch of coastline subtended by flourishing hinterland. All these equated to shipping simply translates to unparalleled possibilities to attain maritime power with proper planning and systematic development and political will, with professional skilled manpower.

Inland waterways play a vital role in the economic development of remote rural areas and in the welfare of their inhabitant, who are usually among the lowest of low-income groups in the community or state. In the absence of river and other forms of inland waterway transport, many remote underprivileged communities would be inaccessible or too costly to service by other means.

There are many countries where IWT plays a significant role in their system. transportation. There are other nations which have low relative usage of their inland waterways for freight transport as compared with other modes, but have enormous volumes of freight transported on their inland waterway system each year.

Methodology and Materials.

Information for the research was obtained from both primary and secondary data collection. The inland and coastal waterways, was evaluated in a submit comprising three International countries with fully developed inland and coastal waterway for economic, socio and development of their nations, also questionnaires were used in all the 36 States of the country while interviews and community arrange meeting for Opinion on the expectation of the population on developed coastal / inland waterway system for both passengers and distribution of goods which will improve commerce, trade, exchange of resources and a better life management. The respond from the questioner was also used in measuring the expectation of the respondents. The information collected from the government agents on the issues was also used to decide on the effect of neglected water ways transportation in the country and it impact on economic development, trade and distribution of goods and it prices. The data collected from developed nations where inland waterways was fully utilized like Bangladesh, China, India and Europe etc. shows that there are more advantages in developing inland waterways / coastal waters for full utilization in terms of trade, employment, industrialization, income generation, tourism Export Zone development etc. Independent reports and studies from government academic institutions research institutes, foreign and local consultancy groups were used to supplement investigation and fill gaps that exit in government documents.

1. The 1965 statement of policy on transport:- This was the first attempt by the Federal government of Nigeria to express concern about the operating condition of the Nigeria's transport system, This was an outcome of the Stanford Research Institute Study commission by the Federal government in 1961.
2. The 1993 transport policy for Nigeria Titled "Moving out of crisis", The extreme malfunctioning of the Nation's transport system and the complexities of problems in it operations.

3. The 2003 Draft National Transport policy document, This is to address the competition between transport modes, this does not see the light of the day.
4. The 2008 Draft National Transport Policy Document: This was the decision of government to withdraw from provision of services including transport, like the 2003 document, it does not see the light of the day. This did not allow waterways to have any development. From the research the above Policy documents were obtained,

Finding and Conclusion

This study therefore focused on the comparison of nation's inland waterways/ coastal contribution to development. The evaluation elements used on the importance and impact of a developed waterway transportation to the growth and economic advantages in investing on the numerous waterways in Nigeria to be able to tap all commercial, trade, business, inter-relationship and global distribution of goods and communication. This shows the goals of achievement in waterways, e.g. Coordination of allocation of resources, (ii) Adequacy and efficiency development of resources, (iii) Affordability, safety and environmental friendliness, (iv) Market driven transport system, (v) Encourage professionalism in global trade (Export Practice) (vi) Cargo sourcing from inter-land (rural area) (vii) Encourage private sector participation in inland waterways investment. (viii) Development of allied business industry along the river / waterway sides. (ix) Encourage it use for transportation of both goods and persons. (x) For revenue generation to both government and operators. (xi) As a source of relaxation center and it increase multimodal transportation system. (xii) Creating of job opportunities and commercial activities (xiii) Improve value for local products and initiates more products for export to other nations, (xiv) Modernized the locomotives and vehicles on the waterways.

To sustain and enhance that economic vitality and growth, and the productivity of commerce, the nation needs a healthy and responsive transportation system. Consequently, it has been the policy of governments to make investments that will allow transportation system, to be the engine of tomorrow's growth and prosperity, and to take full advantage of new and emerging transportation technologies. Ensuring that its transportation system that supports safety, security, cheap, conservation of energy and environmental quality. To identify the role of each mode of transportation and its contribution to the economy. The efficient freight system, both in the economic life of industrialized area and the daily lives of its citizen. The substantial economic benefits to be realized from inland waterway that can transport range of commodities over long distance. Reduction in the other transportation mode pollution, it will reduce over usage of other mode's infrastructure e.g. Road infrastructure. Reduce traffic growth and congestion on the road, Encourage tourism, reduce accidents on the road and develop new jetty along the waterways as terminals. The waterways will be able to meet the increase in cargo demand, not by building more towboats of the same size but fewer ones with greater horsepower that are capable of pushing more barges at one time. Bigger tows are advantageous because they increase the capacity of the waterway system by reducing the total number of tows. Locks will be used more efficiently up to the lock's capacity (usually 15 barges.)

This safe, quiet, virtually invisible water transportation system has the unique capability to carry tremendous amounts of cargo. Easy communication and interrelationship within the communities and neighbors. It expands market frontiers, exchange of Agricultural product with industrial product, different services will be made available, Governance will be more easy, commercial activities and revenue generating to both government and individual in the community.

Economic Importance of Inland waterways / coastal belts area.

1. Irrigation along the water for Agriculture
2. Food production e.g. fish and farmers grow-product:- wheat, citrus fruits, sugar-cane and various legumes.
3. Ferries and barges carry people across at various points, sightseeing boats and cruise ships transport tourists to and from the water ways, forestry.
4. Government's commitment to development of the society, improve treatment of ethnic, minorities, expand press freedoms, strengthen law enforcement, and improvement of record.
5. Mining, Manufacturing. Tourism and Foreign trade, Transportation, Communication, Government and Private participation.
6. Policy execution, Legislature, Judiciary, Political information,
7. Operators, Local - government, social services,
8. Defense, Education, Industrial - development, Communities and Small scale industries
9. The need to have some Forum that will accommodate private and public interaction on cooperation in some areas of waterway Funding, usage, protection, development and management with lay down rules and regulations to guide the association or body and management.
10. There should be a consultation process with the communities, users, operators and government, a process for the monitoring should be mounted to speculate on the way forward.
11. The transportation system in the country will be more accessible and cheap, for the inclusion of inland waterway as link and part of multimodal transportation system.

Summary and Research Gaps

From the above, it can be seen that the research has concentrated on some areas, the conceptual/ theoretical issues, many researcher's investigation on maritime transportation, including inland waterways, did not address the Nigeria multimodal transportation in relation to inland waterways transportation system.

Even the Agency in charge of inland waterways and maritime safety and Administration only want to link the two major rivers alone to the hinterland.

Majority of the research work did not detailed the high dependence on environmental conditions. Water transportation also suffers from the pronounced influence of current hydro-meteorological conditions, as navigable waterways dramatically reduce in many regions during the dry season. The issue of safety is often compromised because IWT tends to be ignored by existing government transport regulations and environmental safety standards. Institutions often biased against the sector, as hidden

subsidies disguise the costs of road transport and create the illusion of IWT as unviable alternative. Inland waterway users and operators lack the organizational and lobbying power to influence government decision. Likewise environmental concerns problems and risk associated with IWT include canalization, dredging, shipping, operations and import of invasive species e.g pollution, risks of accidents, dangerous cargoes, bacteria of various species, ship ballast, ship hulls and via other vectors.

They did not note the inherent challenges facing the sectors like:- Research/Data deficiencies, prevailing perception of policy makers. Regulations, investments, rural backwardness, planners, operator, management system to be adopted. Also the limitations in speeds and geographical reach, lack of public investment In docking facilities, increases the inefficiency, Such as much time maybe wasted in loading and off- loading passengers and cargo. Where some researcher examine an aspect of the maritime industry, it does not consider the network as an aspect of multimodal transportation. Where such is done it was not for Nigeria case study.

Researchers should focus on the under-listed gaps for their research projects.

These are:

1. Inland waterways dredging impacts on Local Community and its Environments
2. Inland waterways development, Operations and management in Nigeria.
3. Inland waterways transportation potentials as an aspect of multimodal transportation system in Nigeria.
4. Impacts of Cabotage policy on Inland Waterways freight operation and maritime transportation development in Nigeria.
5. Coastal / inland waterways / rivers users and operator's safety and security management.

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