

Sustainable Transport Development Options for Nigerian Lakes

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ABSTRACT

The work assessed development options in general and transport development options in particular, open to governments and states surrounding lakes. The methodology applied in the study includes random sampling through interviews of major companies in the region. For lakes situated in a desert environment the sustainable development pathway would be the avoidance and prevention of desertification through policies that favour lake expansivity. Processes that favour the expansivity of lake volume through dredging and channeling of rivers to the lake environment should be sought. The work suggested that installation of boundaries or moles to prevent building of sand dunes by lake boundaries be applied where possible. States utilizing such lakes should develop sustainable development policies to be applied in the process of utilizing the marine resources existing in the lakes. In the area of renewable resources like fishes, the commodity should be designed to be harvested to an optimum sustainable level. For non-renewable resources, like under water minerals the number of contractors accepted into the region should be limited to an optimum sustainable level approved by the states concerned. Other lakes not suffering from desertification as well as all lakes should be made to adopt the new environment standards of the oceans that emphasize prevention of oil spills such as MARPOL 73/78 (International Convention on Marine Pollution Prevention from Ships 1973 and the protocol thereto 1978) etc. Furthermore, the renewable energy resources of the lakes where it is made open to interested firms should be made to be tapped in a sustainable manner. Major Nigerian lakes such as the Oguta lake of Nigeria, Lake Chad situated between Nigeria, Niger and Cameroon were made the major focus of this study. Sustainable transportation

strategies necessary for the future development of these lakes were identified and recommended.

Keywords: sustainable development, lake sustainability, Nigerian lakes, sustainable transport, intermodalism

1. 0 INTRODUCTION

Sustainable development generally and transport sustainable development in particular, seek to improve the environment through two major dimensions. The first has to do with education of air pollution while the second seeks to increase intermodalism or transportation across the modes. In line with the global commitment to mitigating climate change most states including states encompassing lakes have formulated policies towards this direction. Ghana which harbours the Volta lakes for instance have a sustainable development strategy for the inclusion of the Volta lake towards sustaining transport development.

The use of lakes to achieve sustainable transport in cities is not new. The evolution of the motorway of the sea concept in the European Union transport document is aimed at this concept. However, for the lake to remain a sustainable transport instrument, sustainability must be achieved in the overall management of the lake. Overall sustainability of a lake region involves all parties concerned with the future development of the lake region such as property owners by the lakeside, and the government. Moreover, the physical and cultural characteristics of the Lake District are also important.

Up to the present time, Nigerian lakes have remained neglected in the development master plan of Nigeria. Achieved development in the sector has been sectoral, instead of holistic. Development plans

conceived only at the state level is insufficient for Nigeria's future development. For proper development, Nigerian lakes must be integrated into the development master plan of Nigeria with special emphasis on sustainability.

1.1 Objective

The purpose of this work is to create a sustainable development pathway for Nigerian lakes generally as well as integrate Nigeria's transportation network with her lakes and **international sea lanes**.

1.2 Significance of Study

This study is positively significant to the development of not only Imo state but all the states in the Eastern Nigerian geopolitical zone who use the Lagos Benin Onitsha road as their major freight and passenger transit. The sustainability of Nigeria's coastal transportation network through the adequate use of her lake and river network as well as the sustainable use of her available lake resources was captured in this work. This work is thus essential in highlighting a development pathway for Nigeria's economic development.

2.0 LITERATURE REVIEW

Ships using lakes should conform to all climate change regulations. The lake regions should be made to adopt the carbon footprint estimation rule aimed at improving air quality in the shipping sector. The carbon footprint estimation is executable through the environmental ship index ESI law. The ESI rule demands ships to show all relevant emissions to the air, useful from both the environmental and health points of view. Some of these include CO₂ NO_x, PM₁₀ and Sox. Misra and Kannan [1]. Other regulations approved by the IMO for the reduction of green house gas emissions include the following:

- (i) Energy Efficiency operational indicator (EEOI). It measures how much cargo a ship moves given the fuel it consumes.
- (ii) Energy Efficiency Design Index (EEDI). It express for new ships the emission of CO₂ from a ship under specified conditions of engine load, wind and waves in relation to transport work.
- (iii) Ship Energy Efficiency management plan. (SEEMP). This provides a framework for ships to address energy efficient operations.
- (iv) Ship Efficiency Management Plan (SEMP). This provides for fuel efficient operation of ships resulting in better speed management with significant reduction of fuel consumption and CO₂ emission

Vessel contribution of CO₂ to world CO₂ emission is 1.8%. Likewise, international shipping contribution of green house gas emission to world total is just 2.7%.

Technical and operational measures can reduce this volume by 25% to 75%. Ker [2]. Ships operating in lakes should be made to abide by these rules in other to maintain transport sustainability.

Other documents on lake sustainability includes the city of South lake Tahoe city council document which sets out six major steps towards attaining overall sustainability. The six steps includes inter alia:

- i) Green infrastructure- energy reduction which aims at reducing the city's green house emission (GHG) and carbon foot print by 2012. This they hope to achieve by reducing energy use in the city by 15%.
- ii) Green building using the build it green scoring system.
- iii) Environmentally friendly transit through the use of compressed natural gas (CNG) and or alternative fuels.
- iv) Green infrastructure- waste reduction and recycling; under this method, recycling containers will be required in all city buildings surrounding the lake.
- (v) Green infrastructure waste reduction and recycling/ energy reduction: Under this scheme a programme was designed to reduce the use of plastic bags and Styrofoam in the community surrounding the Lake District.
- (vi) Sustainability conference hosting. The document recommended the hosting of a conference to review the draft sustainability vision.

Inland lakes have been found to contribute to ease traffic congestion in cities. EFIP[3]. Thus where they lie in position to accommodate inland ports such as Oguta in Imo state Nigeria, they become a natural asset for road decongestion. On this ground, the positioning of Oguta lake as an inland port can thus be geared to serve the hinterland states of Anambra, Abia, and Enugu states if figures available from Nigeria's inland port statistics data are used as reference point.NPA [4]. Onyemechi et al [5]. The suitability of Oguta Lake District as a free trade zone has also been caught in Adenekan [6] which considers such declaration of free zones by states as a development strategy.

The use of Inland lake ports as a feasible development option particularly for states adjacent to lake districts has also been studied in Texas. Harrison et al [7].However, the transformation of the standard of living of lake side adjacent communities through the establishment of logistics centres was focus the work reported in Young [8].

3.0 METHODOLOGY

The applied method includes the use interview techniques. The Heads of Environment of host communities were interviewed to ascertain the sustainable lake management plan being applied in the region.

Again the level of industrial activities taking place around the lake host communities were also analyzed to assess the level of effluents into the lake in a bid to ascertain the overall sustainability of the lake. Number of vessel activities in the lake was also evaluated as well as an evaluation of the use of the lake as possible transport corridors in achieving overall sustainable transportation for the country.

4. REPORT OF FINDINGS

Two major Nigerian lakes were involved, the Oguta lake Imo state and the lake Chad of Northern Nigeria.

4.1 Oguta Lake Region.

No sustainable management plan was found to be in a written form in Imo state host state of Oguta lake. However in principle sustainability was found to be in existence as existing organizations at the state level were already in place overseeing the overall sustainability of the state environment. The lake is an ox-bow lake with a link to the Orashi river with a direct connection to bays of the Atlantic Ocean. Other lakes attached to the Oguta lake are lakes Mahnin, Osiam and Ehoma. The Oguta lake links the Atlantic Ocean through tributaries of the river Niger. Territories or towns passed by the river include Ebocha, Omoku, Kreigani, Moiyama Okariki, Egbema and Sombreiro River.

4.1.2 Sustainable Development Options for Oguta Lake Region

The region is a community occupied by oil and gas prospecting companies, living together with village farmers whose main source of living are fishing and farming. Sustainability of the lake is therefore of primary importance if the source of living of the village dwellers is to be preserved.

Special lake oil spill management plan should be built by NOSDRA (Nigerian Oil Spill Development Research Agency), the Nigerian government agency in charge of oil spill management. This is necessary to ensure the sustainability of the fish resources in the Oguta lake region. The oil companies operate jetties in the region, while the village dwellers own boats. Effluents from oil spillage for the moment appear to be the major possible problem in the region.

4.1.3 Transport Sustainability Option for Oguta Lake.

The lake is properly connected to the Atlantic

Ocean through dredging stands as a strategic point for the realization of sustainable transportation through balancing of the country's intermodal transport shares. A port rightly located at Oguta lake will influence freight diversion from the presently congested Lagos-Benin-Onitsha highway thus preserving the road for future generations. Short sea shipping in this sense should be encouraged between Lagos port and Oguta lake hinter land port.

4.2 Lake Chad Region

Presently, the lake is being encroached by sand dunes from the desert, thus reducing the size of the lake.

The communities around the lake are farmers and fishermen. Method of fish processing adopted by the fish farmers are crude thus releasing excess greenhouse gases and the nations carbon footprint.

Better fish processing techniques such as solar drying should be encouraged in the region. Tree planting, erection of moles and other anti-desertification techniques should be applied to preserve the boundaries of the lake, as part of the sustainable management plan.

5.0 CONCLUSION

The work suggests that a draft sustainable management plan be produced for Nigerian lakes. Such plan should incorporate all the green sustainable management strategies emphasized in this paper. Also the option of siting a hinterland port at Oguta lake should be adopted as a strategy for achieving sustainable intermodal transportation between Lagos, Western Nigeria and Onitsha, Eastern Nigeria. Sustainable fish processing techniques by the lake regions as well as the adoption of International Maritime Organization's (IMO's) anti-pollution regulations in the lake regions are all recommended.

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