



# **NIGERIA** **And** **SUSTAINABLE** **TRANSPORTATION**

---

**ISSUES AND AGENDA FOR DEVELOPMENT**

*Edited by*  
**BAMIDELE BADEJO**

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**BAMIDELE BADEJO, PhD, fcit, fnitp**



## FOREWORD



I feel gratefully honoured to write the foreword to this intellectual product. The desire to promote sustainable transportation in the world's most populous black nation, I believe, is among the compelling needs for this publication, aptly titled *Nigeria and Sustainable Transportation: Issues and Agenda for Development*. The book is a reservoir of creditable materials covering wide-ranging themes and issues of premium interest to basic, contemporary and future prospects of transportation development in Nigeria. The variety of themes and topics espoused is undoubtedly a reflection of the multidisciplinary background of the contributors who have deployed their inter-disciplinary expertise in enriching an understanding of the past, the current challenges and future prospects of transportation in Nigeria.

In 39 chapters, the book critically examines a variety of issues relating to Transport and Urban Challenges, Rural and Gender Imbalance, Transport Infrastructure, Logistics Planning and Development, Conceptual and Contextual Issues, Road Transport Policy, Safety, Water, Air and Rail Transportation. There is no doubt, therefore, that this book, aside from its invaluable literary contribution is of great value to students of Transport Studies, Policy Makers and other major stakeholders in the collective quest for better policy formulation and planning for the growth and development of transportation in Nigerian.

It is therefore a strongly-recommended companion for all stakeholders in the industry, particularly at this prime time of policy initiatives targeting transformation in the transportation sector.

**Sen. Idris A. Umar**

Hon. Minister of Transport

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# Urban Transport: Nature, Challenges and Solutions

♦ NWAOGBE, Obioma R; UKAEGBU, S. I. & AJIBOYE, Olarinkoye A. ♦

## Introduction

**Transportation** plays an important role in the political, economic and social development of any society, whether rural or urban. It constitutes the main avenue through which different parts of the society are linked together. As a society grows in terms of population and functions, the need for interaction among its various components also grows, thereby requiring quality and effective transportation system. In the words of Munby (1968), "there is no escape from transport even in the most remote and least developed of inhabited regions". Also, Hailey (1957) opined that "there seems to be no other type of development which can effect so speedily a change in the economic and social conditions of backward nations except transport". In recognition of transport's role the federal, state and local governments in Nigeria have attempted development of the country's transportation system. From the First to the Second, Third and Fourth National Development Plans, the transport sector took 19 per cent, 23 per cent, 22 per cent and 15 per cent correspondingly from the various total capital outlays of the plan periods (Adeyemi, 2001). By the plans major objective, the purpose of the investments on transport was not only to improve rural-urban movement but also to meet the transportation needs of the urban centres. Increasingly, Nigerian economy was becoming city-driven.

Indeed, cities all over the world are turning to growth poles, serving as the functional heartbeat of economic development of nations. They influence development in the social, political and environmental spheres. Cities therefore attract attention of policy formulators and decision makers to ensure that the varying needs of the city dwellers are met. Among the basic needs that have to be met are: access to education, recreational, business and work to highlight a few. This brings transportation challenges. According to Hilling (1997), the acute shortage of means of transportation in the Third World is reflected by the fact that there are 40 per cent fewer buses per head of population while the average number of buses operated per 100,000 of the population is 65. This compares poorly with the United Kingdom where the figure is 90. In Kuala Lumpur, there is only one motorcycle to 15.4 persons, while to every car owner, there are 11.17 citizens lacking such means of mobility (Wahab, 1990). The low-income households in Jamaica fare worse. According to Heraty (1980), where one member of the group owns a car, there are other 49 families without a car while, in Beijing, private car ownership is almost non-existent with 45 per cent of all journeys made on bicycles (Lam, 1992).

Expectedly, a feature of West African cities is the general low rate of car ownership. The regional average is 5-15 per 1,000 population (Barret, 1986). This compares poorly with cities of developed countries that have an average of 20-40 cars per 100 inhabitants



(White, 1990). Nevertheless, individual or family car possession is no yardstick that mobility problem has been eliminated. The fact is that, in developed countries, mobility problems exist, underlined by the recourse of the majority of the populace relying heavily on public transportation (Nash, 1997). It is one of the notable features differentiating the advanced countries from the developing or undeveloped ones. Public transportation offers opportunities. It effectively utilises space besides being more energy-efficient. There is less emission of air-borne pollutants. With public transportation, there is optimisation of land use as regards parking, or, generally, concerning better physical environment of the urban areas (Hilling, 1996). Public transport has also proved an effective tool in combating congestion (Banister, 1998).

With the rapid expansion characterising the city-economy of the developing countries and the implications it holds for undeniable interaction – for business, education, leisure, political administration, to mention a few – the importance of planned transportation service needs no further stressing. People have to move from one point to the other to undertake one activity or another. In other words, accessibility becomes a major question. To put succinctly, city has to provide “the ability to travel quickly, conveniently, comfortably and affordably from one place to another.” The very heart of an effective and efficient transportation planning is designing circulation systems, which maximises accessibility. For Third World countries, the ongoing lesson is that, to be more productive, improving public transport should be one of the most pressing items on their agenda. Urban mass transport offers a major solution to the ever-increasing number of motor vehicles and traffic congestion besetting its cities. However, mass transit does not achieve certain goals easily, such as reduction of travel times, unless combined with measures aimed at improving general traffic flow. It is therefore necessary to implement traffic management measures in consonance with mass transit, so that competition with private vehicles can be minimised while, overall, the best strategy will be provision of intermodal transport system.

## **Examining Transport Policy Objectives**

What are the critical factors that should underlie the formulation of a transport policy that can lead to an efficient and effective public transportation system? At the fore are:

- i. **Accessibility:** The prime objective of every transportation system is to provide the highest level of accessibility to the citizens to enhance the harnessing of economic, social, political, educational, cultural and technological potentials of the society. Accessibility however has two other components. The first relates to the cost of travel, and the second, the travel time spent. To be meaningful, cost of providing transportation service should be minimal relative to the cost of usage by the citizens in order to maximise the opportunity for mobility. It is what has made government exploration of various alternative transportation modes imperative to give the public maximum benefit of choice within the limits of their resources.
- ii. **Travel Time:** Travel time is important to a well-constructed transport system. Travel time is significant in determining mode selection and affects dispersion of urban activities. It impacts on the formulation of urban development patterns. Long



travel times, in fact, may lead to centralisation of activities with the resultant effect of waste of energy and time. This phenomenon is already manifesting in many cities where the sub-urban centres are very far with the consequence that most of the major roads constantly experience heavy traffic congestion. To forestall this unhealthy development, an integrated transportation system should be designed. It would reduce substantially both the travel cost and time.

- iii. **Social Costs:** Besides giving weight to the monetary cost in designing of transportation system, other factors, such as the social cost of the operations of the system are lately coming into the equation. Social cost is beginning to have a wider context that includes air pollution, noise pollution, vibrations, land expropriations, travel accidents ([www.uwtc.tay.ac.uk/post.cfm?2008](http://www.uwtc.tay.ac.uk/post.cfm?2008)), to mention a few. All these play vital roles in weighing the cost-benefit analysis of the each of the transportation modes as regards their operations within the surrounding environment.

Air pollution, land expropriation, and accidents are becoming some of the notorious social costs. Their occurrence tends to exact huge costs on the society. Often, these social costs increase relative to the pace at which the volume of traffic, particularly, road is expanding. The fast development being witnessed in parts of Nigeria like Abuja, Lagos, Ibadan, Calabar, and Kano that is generating higher demand for mobility is precipitating adverse social costs on a daily basis.

- iv. **Accidents:** An objective that cannot be compromised within the framework of a good transport policy is the guarantee of safety of all users of transport facilities irrespective of the transport mode. Safety in transportation is measured in terms of the accidents and/or casualties occurring under a transport mode. It serves little purpose when travellers cannot get to their destinations in one piece.

## Four Characteristics Accounting for Differences in Transport Development

Four characteristics tend to account for the disparity in urban transport development across regions. They are, namely, (i) Income, (ii) Size and size distribution, (iii) Political history, and, (iv) Population Growth Rates. Each is examined briefly.

- i. **Income:** Whether in developing or industrialised countries, vehicle ownership is, primarily, dependent on income. The difference however is that rich countries tend to have more road infrastructure than poor countries. In countries with low and middle per capita incomes, paved roads tend to be undersupplied while the growth of urban road space is slower than traffic volume.
- ii. **Size and size distribution:** As city size and particularly spatial extent, increase, so typically, do average length of commuting, level of traffic congestion, and, environmental impact of road traffic worsen. The precipitates make major cities to be centres where worst problems of poverty are encountered along with the some of the most awful transportation problems ([www.worldbank.org](http://www.worldbank.org)).
- iii. **Political History:** The form that modern cities take inevitably reflects the historical transition of their economic and social systems. A pointer is the notable differences

between former socialist planned cities, many of which had widely-dispersed pockets of high-density residences served by mass transit, and those cities where market forces played a greater role in shaping land use. In particular, the transition economies combine rapidly-increasing motorisation with a rapidly-declining ~~from~~ capability to support their traditionally-extensive public transport systems ([www.worldbank.org](http://www.worldbank.org)).

- iv. **Population Growth Rates:** Rapidly-growing cities are distinct for two reasons. The first is that they appear to have above-average car ownership against the disproportionate national average income levels. Secondly, they tend to have below average proportion of land space devoted to circulation. Together, these two factors generate high congestion ([www.worldbank.org](http://www.worldbank.org)).

## Overview of Urban Transportation

Deteriorating transport conditions associated with urban sprawl and increased motorisation are damaging the economy of large cities. In most developing countries, the urban sector accounts for at least 50 per cent of the Gross National Product (GNP) indeed, as high over 70 per cent in some others. Cities in developing countries often devote 15 to 25 per cent, and sometimes, more than that in their annual budgets to their transport systems. On the other hand, between eight and 16 per cent of urban household income is consumed by transport, with the poorest households in very large cities spending more, not less than, 25 per cent of the family income. The gravity of the situation is reflected in the fact that about one-third of all city infrastructure investment needs is in the transport sector. It is an enormous challenge. Despite recent developments witnessing private-sector involvement in transport infrastructure financing, redressing the problem was yet to be on the right path. The answer would have to be found on the preparedness of the cities themselves or their national governments to fund the identified transport needs through their city or national or specially-arranged budgets (United Nations, 1996).

For the developing countries, the prospect of city or national governments devoting resources to revamp the transport sector appears dim. In the first instance, public revenues are shrinking while lack of prudence in resource-management is compounding the problem. Also, urban population is expanding rapidly with little or no control. In most developing countries, the population is growing at more than per cent per cent annually, far outstripping the rate of provision of facilities. Many of the future population projections are painting a scary picture. As an example, it is estimated that more than one half of the developing world's population will live in cities within the next generation. This implies an increase of two billion more people to be added to the present-day total urban population. Similarly, the number of mega-cities, that is, cities with over 10 million inhabitants, is expected to double, with three-quarters of the bustling cities being in developing countries. The natural implication will be high-density population peri-urban settlement leading to urban sprawl with grave implications for supply of transport services. It is therefore important to explore possibilities of integrating transport system planning with other aspects of city development (United Nation, 1996).



At the moment, many problems beset urban transportation in most developing countries. There is a gross mismatch between demand and supply, inadequate and poor quality infrastructure, coupled with alarming rate of accidents. Issues of mobility, congestion, safety, environmental degradation and other social costs are becoming increasingly important and critical. In most of the cities, motorised road transport is the major mode of transport. Freight and passenger movement are poor, relatively unproductive, leaving the environment polluted. This is the case with Nigerian cities like Lagos, Ibadan, Enugu, Kaduna, Port Harcourt and Abuja. High vehicular population, inadequate transport facilities, the overconcentration of paratransit in some areas, poor traffic management practice, and lack of parking facilities in most areas significantly worsen traffic problems in these cities. The emergent challenge is the necessity for policies that can deliver well-planned transport infrastructure, a comprehensive programme of de-concentration of land use, and introduction of integrated transport system. All these require careful coordination of transport policies within a broader city development strategic plan so that urban transportation can play meaningful role in the economic development of cities in particular, and the nation in general.

### **Fashioning Objectives and Roles for Urban Mass Transit**

Urban mass transit system has become a prerequisite in tackling transportation challenges of cities. This is because of its capability to carry large volume of passengers. It has also proven superior over cars, buses and other contemporary alternatives. The overriding objective an urban mass transit system lies in providing basic accessibility throughout the city along with connecting adjoining districts within the city radius. An important consideration in fashioning an urban mass transit, as a result, would be selecting a system that will deliver transport services that are affordable to the users. Even if one of the considerations is primarily targeting reduction of congestion, especially within the central city, both the middle-class passengers as well as the poor should be able to have access because they, equally, have stakes in contributing to the economic viability of the city. Overall, the strongest points of the urban mass transport system is in providing maximum benefits to the entire community, meeting their social needs of mobility especially of the urban poor and the economically-disadvantaged, and mitigating the often-identified social costs of unplanned city transportation.

Some of the basic elements requiring clear objectives in planning city transportation are:

- i. **Traffic Congestion and Parking Difficulties:** Congestion is one of the most prevalent transportation problems in large urban agglomerations. It is derived from heavy dependence on automobile, which has increased the demand for transport infrastructures. However, supply of infrastructures has often not matched the growth in demand of mobility. This creates the problem of severe disequilibrium with demand far outstripping supply. On the other hand, since vehicles remain most of the time parked, the motorisation of city commuting, again, has led to the expansion of the demand for parking space. Invariably, in most central or business areas, space consumption for parking is a major problem. An urban mass transit system can

address this two-fold problem by reducing the individual need for personal motorisation as a means of inter- and intra-city commuting.

- ii. **Inadequacy of Public Transport:** There must be provision of public transit services in the right quantity and quality. Problems like overcrowdedness during peak hours must be tackled. Appropriate pricing mechanism to make the services financially sustainable must also be worked out. Every mode of the transit system must be able to generate sufficient income to cover its operating and capital costs.
- iii. **Environmental Impact and Energy Consumption:** Pollution, including noise, generated by circulation, is among the serious issues confronting urban transportation. Furthermore, energy consumption by urban transportation has dramatically increased with the precipitate of adverse consequences for the environment. These challenges need to be counteracted to improve the quality of life and even the health of the urban population.
- iv. **Lack of Pedestrian Way:** This is one of the important challenges confronting the urban transport system. The difficulties have dual causes; one, the intense competition between vehicular and human traffic within the limited space of many urban roads, and, two, the blatant lack of consideration for pedestrians in the physical design of urban facilities by the government.
- v. **Loss of Public Space:** Increased traffic has had adverse impact on activities such as community shopping areas, recreational and games centres, thereby eroding community interaction. This has badly affected communal spirit among urban dwellers. Instead, cities have become centres of anonymous citizens rather than places nurturing the humanity of their residents.
- vi. **Accidents and Safety:** The urban traffic that has been expanding rapidly is also commensurate with the discomfiting high incidence of accidents and fatalities whose graphs have been rising higher and higher on daily basis. Accidents also account for a significant proportion of the recurring delays, hold-ups or gridlocks experienced on city roads. The sense or feeling of safety, as far as urban roads are concerned, is low among the residents because of frequent mishaps.

There are, however, a number of challenges which deserve to be taken considered regarding mass transit as an option for urban transportation. They have to do with the fact that:

- i. **Decentralisation:** Urban mass transit systems are not designed to service low-density and scattered urban areas. The greater the decentralisation of urban activities, the more difficult and expensive it becomes to serve urban areas with urban transit. Additionally, decentralisation promotes long-distance trips within the framework of mass transit systems.
- ii. **Fixity:** Transport infrastructures of several urban transit systems, notably rail, subways, and buses are fixed while cities are dynamic entities, with the pace of change on continuum. This implies that travel patterns tend to change and a transit



system, built for servicing a specific pattern, may eventually face *spatial obsolescence*.

- iii. **Connectivity:** Urban mass transit systems are often independent of other modes and terminals. Consequently, it is difficult to transfer passengers from one system to another.
- iv. **Competition:** Given the cheap and ubiquitous road transport, urban transit may face strong competition with loss of patronage both in absolute and relative terms. The higher the level of automobile dependency, the more inappropriate is the level of urban transit service. The public service contemplated may simply be outpaced by the convenience of the automobile. However, changes in energy prices do, in some circumstances, impose a new equilibrium on this competitive relationship.

**Financing and Fare Structures:** Most urban mass transit systems have inelastic fare structure rather than a simple flat rate system. This frequently leads to the unintended consequence of discouraging short trips for which most transit systems are appropriate and encouraging longer trips. With adequate planning through better Information Management System, the possibility exists for transit systems to rotate between inelastic and equitable fare structure.

## Urban Transportation in Nigeria and the Way Forward

Public transportation problems since the last two decades in Nigeria have been serious. The myriad of problems arose from different causes. They included the influx of population into the urban centres; spate of industrialisation; and, the inability of transport facilities to cope with the demand. The problems manifest in several ways: long waiting time for buses; traffic congestion; parking problems; and, the alarming rate of accidents. Publicly owned and managed transport services are inefficient while the private-sector operations are substandard and unorganised.

Two distinct public transport systems can be identified in the country. These are the municipal bus services, provided by the government-owned transport corporations, and, the various para-transit services, provided by private operators. Private operators provide a substantial portion of the services. Those private entrepreneurs operate in an uncontrolled manner and provide erratic and unreliable services (Adeniji, 1983). Usually, they lack clearly-defined routes because they are essentially demand-responsive. A World Bank report (1992) revealed that, as far back as 1980s, more than 98 per cent of all urban public transportation services were under the control of the private operators. They provided the services through taxis, minibuses (*danfo*) and buses (*molue*). This dominance of private commercial operators contrast sharply with the situation obtaining in most cities of the advanced countries where publicly-owned bus services have the monopoly of provision of public transportation services (Nash, 1997; Ludlow, 1980).

Evidently, the level of public investment on the transport sector has consistently been low. The total Federal Government transport expenditure as a percentage of the Gross Domestic Product (GDP), for instance, was a mere 0.2 per cent from 1991 to 1998 against





be treated in isolation, it is important that, within the context of mitigating urban transportation problems in developing countries, as Hoque *et al.* (2002) suggested, some basic requirements deserve urgent attention. Amongst them are the following:

- a. Promoting pedestrian travel, which includes the augmentation of various pedestrian facilities with existing infrastructure;
- b. Enhancing non-motorised traffic, particularly, bicycle, rickshaws for passenger and freight transport;
- c. Encouraging bicycle as an important intra-city transport mode because of its economic benefit of low initial and operating costs;
- d. Improving the mass transit system by examining the various rapid transit options;
- e. Considering urban truck management system that can assist in efficient freight distribution in urban centres;
- f. Putting in place effective traffic engineering, transport planning and transport management practices;
- g. Making urban traffic regulations effective and user-friendly, as in the example of installing legible and visible signs and directions for various road users, and providing constant information on them;
- h. Appointment and training of different cadres of professionals and supporting their competence with knowledge-based by research and exposure to some of the world's best practices in road management;
- i. Expansion of existing transport infrastructure, including paying attention to construction of Bypass/Freeways, installation of traffic control centres, scientific trip planning through the use of information technology, etc.;
- j. Proper planning, regulation, and control of land use as regards future urban development and growth;
- k. Undertaking urban road safety improvements involving road design of educational, enlightening and informational safety programmes including enlisting the support and interest of the community in road safety campaigns;
- l. Focusing on low-cost improvement measures like classifying roads in terms of hierarchy, finding the missing links in road integration, constantly at alert to undertake spot improvement;
- m. Finally, there is obvious need to create a city traffic management authority whose responsibility will entail providing the best road management governance, and which can be held accountable by the public on matters or issues concerning city transportation.

## Conclusion

This chapter has reviewed the major urban transportation problems, the nature, characteristics and factors affecting mobility, highlighting as well, the way forward to sustainable transportation system. It is apparent that continuing rapid rise in urbanisation of many of the Nigerian towns and cities will not lessen the transportation challenges being encountered. Additionally, cities will remain the growth and development poles of the country for a long time to come. The congestion, safety and environmental issues that have become tacked to city-life are not likely to witness any lessening of their effects, at least not in the short or intermediate period of the country's existence. Tackling urban transportation challenges has become one of the major challenges confronting the country. The adverse effects of the deplorable situation are currently felt in all of the old and emerging Nigerian cities , namely Lagos, Ibadan, Enugu, Kaduna, Port Harcourt and Abuja, to mention a few. A pro-active engagement with the numerous challenges is not only desirable but also required to save Nigeria from further agonies in years to come.