Chapter 9
Nigeria

Roger Gorham

Capital city	Land area	Total population	Urban population	GDP per capita	Passenger cars
Abuja	923,768 sq. km	174 million	51% (88 million)	$3,010	31 / 1,000 people

Data source: World Bank
Maps source: d-maps.com

R. Gorham (✉)
The World Bank, Washington, DC, USA
e-mail: rgorham@worldbank.org

D. Pojani, D. Stead (eds.), *The Urban Transport Crisis in Emerging Economies*,
The Urban Book Series, DOI 10.1007/978-3-319-43851-1_9

1 Introduction

Examining urban transport in the Nigerian context requires addressing three layers of complexity. At the most basic level, urban transport, as anywhere in the world, is inherently complex, involving numerous stakeholders, competing objectives, high investment costs, complex interdependencies with land and labor markets, and very unpredictable and hard-to-manage demand–supply interactions.

At another level, the characteristics that define (particularly sub-Saharan) African urbanism compound those complexities exponentially. These include limited ability by both households and governments to pay for, respectively, services and investments; limited capacity to manage and operate urban transport infrastructure services; and dominance of small-scale, informal provision of transport services in most urban contexts.

Distinct characteristics of the political economy of the nation add the third layer of complexity. These include the long-term dominance of the petroleum industry in the national economy, which, among other things, has led to a long-standing policy of petroleum subsidies as well as a decline in the manufacturing sector at precisely the moment when urban populations were growing; inconsistent and at times counter-productive involvement of the Federal government in urban transport; and increasingly persistent security challenges in urban environments, particularly in the Northern part of the country.

2 Urban Land-Use Patterns and Spatial Structure

Urbanization in Nigeria exhibits a few anomalies relative to conditions observed in other countries. International benchmarks suggest that urbanization is often correlated with rising per capita income and per capita GDP, increased manufacturing, and declining poverty rates. Yet Nigerian urbanization does not conform to these trends. In 2014, the urbanization rate in Nigeria was 47 %, the highest in sub-Saharan Africa. Figure 9.1 shows that comparator emerging economies had lower GNI per capita in the year they attained 46 % urbanization. This means that urban Nigerians and their governments have relatively less ability to pay for transport services and infrastructure than international benchmarks at the same rate of urbanization.

In addition, tradable sectors, such as manufacturing, have not developed outside of oil and gas—indeed, manufacturing declined from about 10 % of GDP to just over 2 % of GDP during the 30-year period between 1980 and 2010, while the urbanization rate grew from about 20 % to about 42 % over the same period. Similarly, poverty rates have not declined with urbanization as expected. Figure 9.2 shows Nigeria's urban poverty rate vs. its urbanization rate in relation to other developing countries. Overall poverty rates in Nigeria slightly increased and then stagnated during the period of substantial urbanization beginning in the 1980s, although urbanization processes in other countries are associated with a decline in poverty rates.

A great deal of academic debate rages about the causes of these kinds of anomalous urbanization phenomena—observed not only in Nigeria but also in a number of

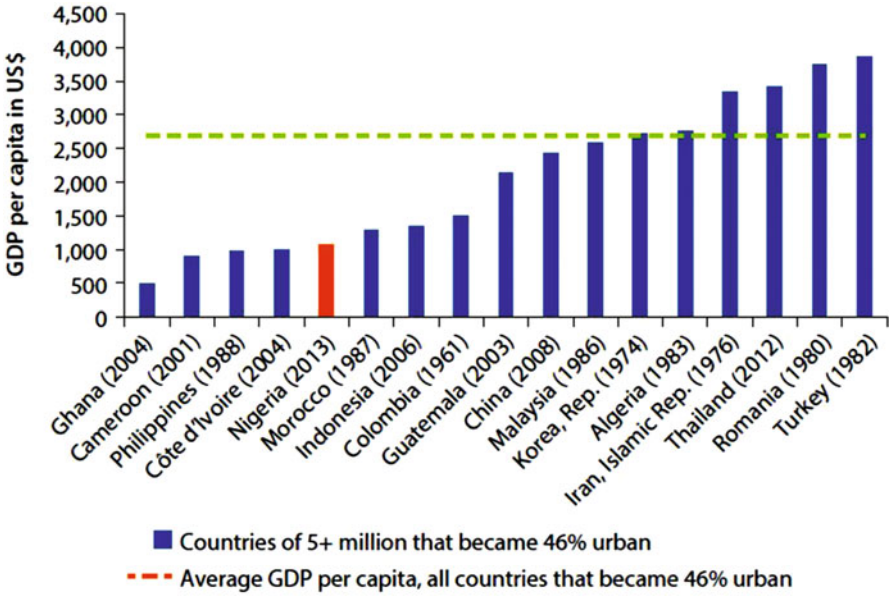

Fig. 9.1 Income at which a country became 46 % urban. Data source: World Bank

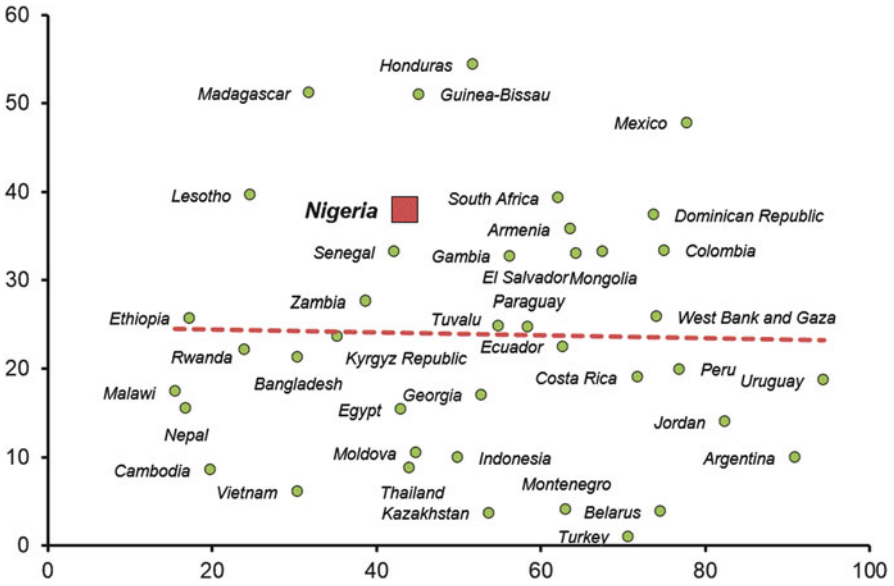

Fig. 9.2 Urban poverty (headcount ratio at national poverty lines as % of urban population) vs. urbanization rate (% of total). Data source: World Bank, 2010. Urban poverty data for Nigeria is from 2003

other sub-Saharan countries (Gollin and Jedwab 2013). However, one key outcome is a very high reliance of urban populations on nontradable services, often highly informal, as a source of livelihood. The Federal Government estimates that across Nigeria, 53 % of the active labor force works in the informal sector, and of these workers, fully 62 % are in business for themselves.

The spatial implications of this labor market phenomenon are important, since informal sector workers involved in the nontradable sector (i.e., domestic service, food service, education, retail, construction, equipment servicing, etc.) tend to carry out their income-generating activities in closer proximity to their homes than labor force participants in the formal or tradable services sectors. For example, a recent study in Lagos found that 40 % of income earners in households in the poorest quintile spent less than 15 min getting to work (New Nigeria Foundation 2012). Nonmotorized trip making in Nigerian cities is quite high in comparison with cities in other regions, and a likely key reason is that such a high proportion of the work force is involved in informal, nontradable service activities, and lives close to the workplace. Even in the gargantuan metropolis of Lagos, walking accounts for 40 % of all daily trips (Lagos Metropolitan Area Transport Authority 2015).

Historically, two distinct cultural traditions in what is now Nigeria have given rise to two distinctive urban patterns. In the north, Muslim Emirates developed walled cities with foundations dating back to the middle ages, drawing their livelihoods on the trans-Saharan trade and the larger Muslim world beyond the desert. These cities tend to be radial in orientation, with the street network emanating from a central Mosque flanking the Emir's palace. Kano and Kaduna are examples. In the south, cities tended to grow more organically, often as agglomerations of older Yoruba and Edo villages dating back centuries. Many cities in the Southwest (Ibadan, for example) grew rapidly beginning in the 1830s onward, when they served as military staging grounds during the Yoruba wars. Cities in the Niger Delta, such as Port Harcourt, grew exponentially in the post-Colonial period with the development of hydrocarbon extraction industries.

In both the North and the South, the more recent parts of the cities are characterized by an absence of sorting and spatial differentiation—that is, the emergence of differentiated and hierarchized land-use patterns cauterized by articulation or spikes in built density—observed in cities elsewhere. Nigerian cities are dense by world standards (Fig. 9.3), but this density is generally not articulated into hierarchical urban centers and subcenters. The two notable exceptions to this tendency toward nonspatial differentiation in Nigerian cities are Lagos and Abuja (the centrally planned, Federal capital, a "new town" on a greenfield site created by government fiat in 1979).

Of all Nigerian cities, Lagos has the highest proportion of workers employed in the tradable sector, including manufacturing, engineering, and finance. Combined with a steady program since the 1970s of road and, more recently, mass transport investments, these forces have driven more differentiation and articulation of mini-agglomerations than in other cities. Differentiated districts in Lagos include Lagos Island (the historic CBD), Victoria Island (the new center for the finance industry), Ikeja (the government center, and formerly the location of the Nigerian Federal government), Apapa (the Port area and surrounding industrial zone), and Lekki (the

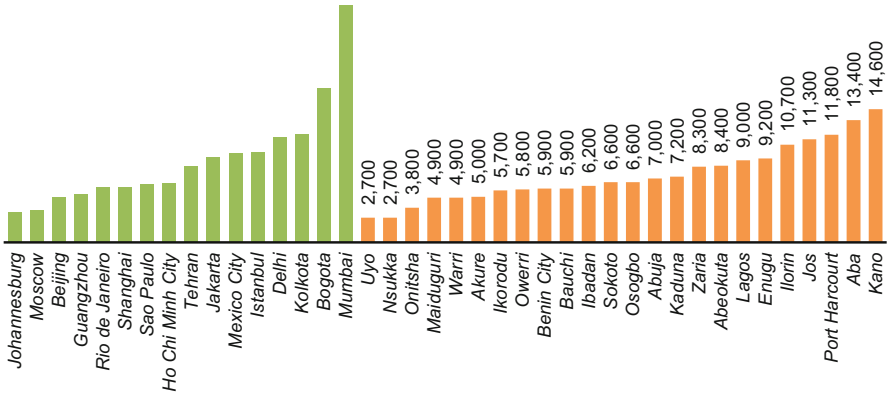

Fig. 9.3 Population density in Nigerian cities (right) compared to other megacities in this volume (left). Data source: Demographia World Urban Areas (2016)

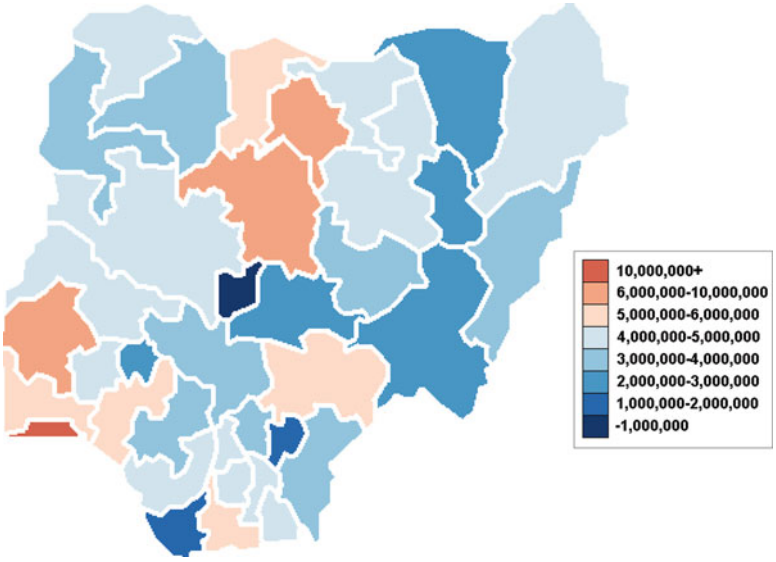

Fig. 9.4 Distribution of population in Nigeria, 2007. Source: Wikimedia

preferred bedroom community for the Lagosian elite). However, outside of these key areas, much of the rest of Lagos also follows the dense but undifferentiated settlement patterns of other Nigerian cities.

Four distinct clusters of population growth define Nigeria's city regions (Fig. 9.4). These comprise: (1) the area around Kano in the north with about nine million people; (2) the greater metropolitan Lagos region in the southwest with about 23 million people; (3) the Southeast Delta states, including Port Harcourt, with about four million people; and (4) the metropolitan cluster around Abuja with about eight million people.

3 Trends in Transport Use and Mobility[1]

Walking is an important mode in Lagos, and many other cities in Nigeria, both because of the structure of urban economies, as mentioned, and because affordability of public transport fares remains a challenge for many urban Nigerian (see later). Motorized urban transport in Nigerian cities is dominated by the small-scale, informal sector, that is, smaller vehicles (mini or midi-buses known locally as *danfo* and *molue*, respectively). These are usually owned by individuals who possess no more than one or two second-hand vehicles, which they rent out to drivers on a daily basis (Kumar and Barrett 2009). Drivers are organized into associations at the city or subcity level, which, in turn, are federated into national unions (Fig. 9.5). The largest and most powerful of these unions is the Nigerian Union of Road Transport Workers (NURTW), which can exert substantial force on politics at both the state and federal levels.

Informality in the delivery of urban transport services has grown exponentially since the collapse of formal, state-run public transport operations, such as the Lagos State Transport Corporation, in the 1980s, paralleling similar developments in cities all over sub-Saharan Africa (Table 9.1). The collapse of the formal bus systems in African cities has been attributed to a vicious cycle of disinvestment associated with nonexistent or stagnant subsidies, fare regulation that prevented fare increases, and growing operating costs, following the nationalization of many urban bus operations in the immediate postcolonial era. In this understanding, the resulting deterioration in service coverage and quality, as well as increased demand from urbanization processes then well underway, fuelled the increase in the use of informal sector operators, which rushed in to fill the growing void, and led to the collapse of the state-owned operations (Kumar and Barrett 2009). However, in the Nigerian context of rapid urbanization and labor market options primarily in the informal, nontradable service sector, it could equally be argued that the growth of small-scale informal sector transport services was inevitable, irrespective of the collapse of the state-owned companies.

Indeed, the three major cities in Nigeria—Kano, Lagos, and Abuja—all have transport operations run by state-owned entities (Kano Line, Lagbus, and Abuja Urban Mass Transport Company, respectively). These services operate alongside the informal services, and in most cases, are swamped by them. For example, in the Lagos metropolitan area (Fig. 9.6), *danfo* and *molue* combined account for about

[1] A note on data limitations. Empirical data on transport and mobility in Nigeria are scarce. Detailed travel demand and transport-use data have been collected over the last three years for Kano, Abuja, and Lagos but the survey results have not been published, and the survey datasets are not publicly available. An unpublished report (Wang 2015) purports to summarize the results of the household travel demand surveys in these three regions, but it has not been possible to independently verify the accuracy of the information reported in that report. Consequently, discussion in this section and the next section is based on whatever piecemeal information can be found, supplemented with cautious reference to Wang's (2015) findings.

Fig. 9.5 Mini-buses (*danfo*) in Lagos. Photo: satanoid (Flickr)

Table 9.1 Modal shares of selected African cities in 2008

City (country)	Large bus	Minibus	Taxi	Motorcycle	Private car	Walk	Other
Abidjan (Cote d'Ivoire)	11	19	29	0	18	22	1
Accra (Ghana)	10	52	9	0	13	12	4
Addis Ababa (Ethiopia)	35	20	5	0	7	30	3
Bamako (Mali)	1	10	5	56	19	n/a	9
Conakry (Guinea)	1	14	6	0	1	78	0
Dakar (Senegal)	3	73	6	6	11	—	1
Dar es Salaam (Tanzania)	0	61	1	1	10	26	1
Douala (Cameron)	10	n/a	13	12	2	60	3
Kampala (Uganda)	0	41	n/a	20	35	n/a	4
Kigali (Rwanda)	1	75	10	0	10	5	0
Kinshasa (DR Congo)	n/a	n/a	n/a	n/a	n/a	High	n/a
Lagos[a] (Nigeria)	10	75	5	5	5	High	0
Nairobi (Kenya)	7	29	15	2	n/a	47	0
Ouagadougou (Burkina Faso)	8	0	n/a	58	14	n/a	20
Average	7	30	8	12	12	37	4

[a]Reported mode shares for Lagos refer to motorized travel only
n/a, no information available
Source: Kumar and Barrett (2009)

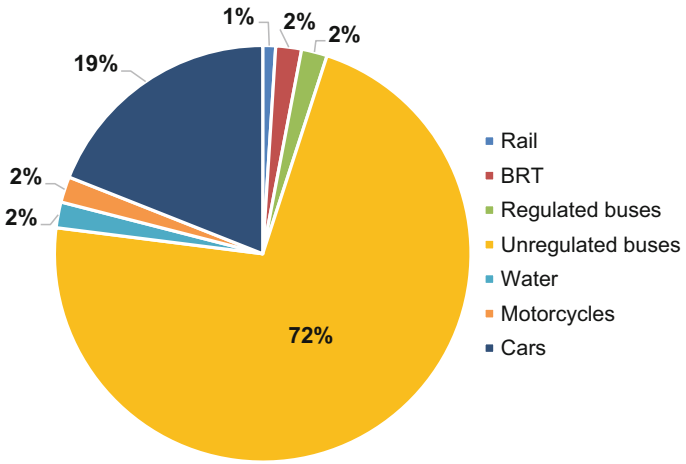

Fig. 9.6 Modal share in Lagos, 2012. Data source: Lagos Metropolitan Area Transport Authority

43 % of all daily trips taken (72 % of motorized trips). Regulated buses—including the full Lagbus network, the Bus Rapid Transit (BRT) line, and the Pilot Bus Franchise Schemes managed by the Lagos Area Metropolitan Transport Authority—together account for just 2 % of trips (4 % of motorized trips) (Lagos Metropolitan Area Transport Authority 2015, personal communication). Informal services account for about 54 % of trips in Kano and 15 % in Abuja (Wang 2015).

One study in Abuja suggests that the comfort level while inside the formal service vehicles is an important reason why ridership is low, at least in Abuja. The study examined services provided by Abuja Urban Mass Transport Company, a state-owned enterprise, and found that, of the four key factors contributing to passenger perception of bus services, comfort was substantially more significant than accessibility, bus stop facilities, or adequacy of services in explaining lack of satisfaction (Nwachukwu 2014).

High demand growth for motorized transport in Nigerian cities has also been accompanying the growth in urban populations generally. The motorization pressures are felt at two extremes of the transport system.

At the upper end of the income distribution, motorization rates are putting substantial strains on the urban road network as a whole. In 2013, private cars accounted for 19 % of all trips in Lagos, although the motorization rate for cars and motorcycles was only 55 % per 1000 persons. In Lagos, and probably many other cities across Nigeria (particularly Abuja), motorization has been growing substantially faster than either population or income (Leigh Fisher and FAO Consulting International 2015). The available data on motorization rates in Nigeria overall suggest it is growing at more than 6 % per year—nearly a doubling of the penetration rate over 12 years (Fig. 9.7).

At the middle and lower ends of the income distribution, there is tremendous pressure for expansion of public transport services, resulting in part from the physical

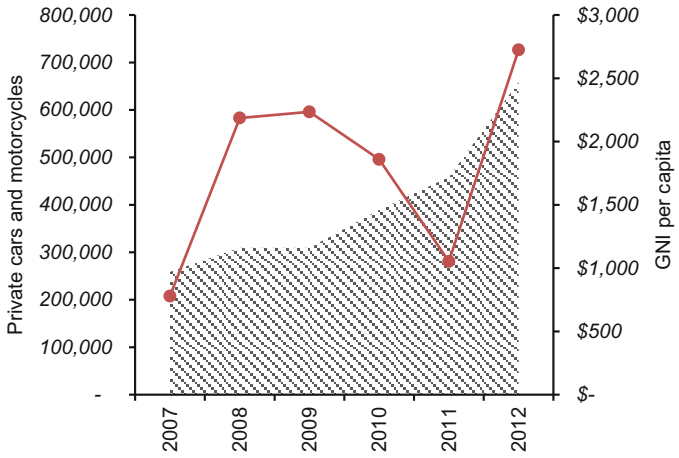

Fig. 9.7 Motorization rate vs. GNI per capita in Nigeria. Data source: World Bank (GNI per capita) and Nigerian Bureau of Statistics (private car and motorcycle licenses issued)

expansion of cities and increasing travel distances. This outward sprawl results in high pressure on the informal sector, which is the only mechanism available to meet this travel demand. Already in Lagos, informal transport accounts for about 43 % of all trips. Estimates in Kano, where motorization rates are substantially lower, suggest that informal transport constitutes more than 55 % of all trips (Wang 2015).

4 Urban Transport Problems

The range of challenges facing the urban transport sector in Nigeria is daunting, all the more so because there is little reliable information about the actual state of urban transport in most cities, and the impact of transport on economic growth, quality of life, or the well-being of the poor. For example, there have been no quantitative assessments regarding the cost of congestion to urban GDP (or GRP, gross regional product) in Nigeria, although anecdotal estimates suggest anywhere from 2 % to 10 % of GRP. Therefore, any enumeration of key urban transport problems results necessarily from a subjective perception, based on professional judgment and experience.

Some of the key problems in most Nigerian cities include: accessibility constraints resulting from a combination of ubiquitous congestion in many cities (particularly in the South); expanding metropolitan boundaries leading to longer trip distances; limited capacity of riders to pay for motorized transport services, thereby constraining the service offer; horrendous road safety performance, which particularly affects pedestrians and other vulnerable users; and deteriorating air quality.

4.1 Accessibility Constraints

Accessibility data for Nigerian cities (e.g., the number of people who can access a threshold amount of employment, social facilities, or markets) are nonexistent. Anecdotally, stories of horrendously long commutes in Lagos and Abuja abound in newspapers. The household travel demand surveys for Lagos, Kano, and Abuja have recorded average travel time by mode—the closest proxy to accessibility that may be available—but even such data may be biased toward longer motorized trips, and toward trips related to activities in the formal sectors (Wang 2015). Average journey times for car drivers in the three cities were reported as 36 min, 38 min, and 54 min, respectively, while journey times for public transport riders were somewhat higher, at 51 min, 51 min, and 56 min.

However, it is unclear whether these numbers reflect a response bias toward people most likely to be traveling. For example, it is plausible that, in Lagos, large proportions of households engaged in nontradable services outside of certain districts (e.g. Ikeja, the CBD, Victoria Island, Apapa, and Lekki) may not travel substantially on a daily basis at all but have not been captured proportionately in the surveys.

Two factors seem to contribute to these high travel times: high levels of traffic congestion (Fig. 9.8) and long distance commutes associated with urban expansion (growth of fringe settlements). A recent study focused on an important commuting corridor from bedroom communities in Nasarawa state to central Abuja found that, on average, congestion added nearly 25 min to the morning commute, with large variations from day to day (Biliyamin and Abosede 2012).

4.2 Public Transport Affordability

The capacity of riders to pay for transport services is limited. The average fare paid in Lagos is about 126 Naira per trip ($0.63),[2] corresponding to a monthly commuting expenditure of about 5400 Naira ($27). These fares are generally not affordable by the lowest quartile: in a survey, 77 % of respondents believed that transport fares were not affordable. About 84 % of commuters in the lowest household income quartile pay less than the average monthly commuting expenditure for the city as a whole. Many of these (38 %) choose to walk to work, either because the public transport fares are too high, or because they work in close proximity to where they live (New Nigeria Foundation 2012).[3]

[2] Author's calculations based on the average public transport distance reported in Wang (2015) and a distance-based formula developed by ALG Transportation Infrastructure and Logistics (2013).

[3] Author's calculations, based on information reported in a socioeconomic study of travel behavior by the poor along the Lagos BRT corridor (New Nigeria Foundation 2012). The most appropriate statistic—combined housing and transport costs as a proportion of total household income—is not available.

Fig. 9.8 Traffic congestion in Lagos. Photo: satanoid (Flickr)

4.3 Road Safety

Road safety is a substantial challenge across Africa, and particularly in Nigeria. In 2013, Africa as a whole had 2 % of global road vehicle fleet, but generated 16 % of road traffic fatalities (World Health Organization 2013). Official statistics on road traffic accidents and injuries are unreliable in Nigeria. However, estimates made by the Global Burden of Disease study found that, in 2010, Nigeria ranked third in absolute numbers of road traffic fatalities in the world, behind only India and China, and ranked fourth in the world in traffic fatality rates, at 47 deaths per 100,000 vehicle kilometers (Global Road Safety Facility and Institute for Health Metrics 2014). In fact, Nigeria had 26 % and 27 % of the amount of traffic fatalities in China and India, respectively, even though it has only 12 % and 13 % of their respective populations.

The majority of this road safety burden is most likely concentrated in Nigeria's cities, since most of the vehicle population is centered in cities, and the bulk of the country's vehicle kilometers traveled occur there. In fact, 44 % of the fatalities in Nigeria involve pedestrians and cyclists (whose concentrations are higher in cities), compared to an Africa-wide average of 38 % (World Health Organization 2013). Indeed, it is highly likely that these fatality rates would be even higher, but for the mitigating effect of very high levels of traffic congestion throughout the day in many Nigerian cities.

4.4 Air Quality

Anecdotally, the air quality in Nigerian cities is poor and deteriorating, but there are no reliable time series, spatially robust data. It is likely that particulate matter constitutes the greatest burden on human health. A study in Lagos in 2007 and 2008 reported that mean ambient concentrations of PM_{10} exceeded the recommended World Health Organization guidelines by substantial margins (during both the wet and dry seasons, though the exceedances during the dry season were particularly high). The largest share of ambient PM_{10} concentrations (about 43 %) were attributable to vehicular emissions (MDS Consortium 2010). A related and parallel study found that motor vehicles in Lagos emitted about 835 kg of PM_{10} per day in 2008, of which 29 % came from trucks and 56 % from buses (SEEMS Nigeria LTD 2010). Across Nigeria, the World Bank estimates that motor vehicle pollution was responsible for 297 deaths in 2010. Combined with road traffic fatalities, motor vehicles are estimated to be the third largest cause of premature death in Nigeria, and the second largest cause of disability-adjusted life years (Global Road Safety Facility and Institute for Health Metrics 2014).

One key driver of poor air quality in Nigeria is the continuing prevalence of two-stroke engines in two-wheeled and three-wheeled vehicles. Imports of two-stroke two-wheelers have been banned since 2011, but the rampant growth of these vehicles prior to 2011 for use in *okada* or *achaba* services—commercial two-wheeled moto-taxis—means that two-stroke two-wheelers will continue to be used for some time since the average age of two-wheelers in Nigeria is only around 5 years (Kaenzig 2013). Two-stroke three-wheelers are now undergoing an exponential expansion, particularly following the efforts of a number of jurisdictions—including Nigeria's three largest cities, Kano, Lagos, and Abuja—to restrict where two-wheelers can go or ban them outright.

5 Urban Transport Governance, Decision-Making, and Financing

The underlying policy and implementation issues that give rise to urban transport problems discussed include some core challenges that many sub-Saharan African countries are facing, not only Nigeria. They include weak local government institutions, a weak national enabling environment, inadequate technical capacity, the prevalence of powerful and, at times unruly, private sector transport operators, and an overreliance on second-hand, often very old cars, trucks, and buses because of weak management of vehicle imports.

5.1 Weak Local Government Institutions

Capacity for planning and implementing effective urban transport policy at local levels in Nigeria is weak, for a number of reasons. First, Nigeria's federal system does not have a level of government that corresponds to the city or the metropolis. The constitution recognizes, in addition to the federal government, 36 States and 774 Local Government Areas. With the exception of Lagos, state boundaries are generally substantially larger than cities or their catchment areas, and Local Government Areas are much smaller, often corresponding to parts of cities. Practically, this means that state governments must oversee the management of urban transport using State Ministries of Transport that are oriented to managing a statewide road network consisting mostly of rural and minor inter-city roads (major intercity roads fall under federal jurisdiction). In this context, much of the formal state urban transport "initiatives" and high-level policy attention tend to focus on extending infrastructure provision, mostly in the form of roads and, secondarily, on managing the formal and informal transit terminals known as "motor parks" which form the basis for the public transport "network."

Services operated on these networks, in turn, are "managed" by the state governments only in the loosest sense. Licenses are issued for routes that are largely developed organically by bus route operators—both formal and informal—on the basis of operator associations affiliated with specific motor parks. In Lagos, this fragmented and largely unregulated approach to bus service provision has unsurprisingly resulted in a bus network that largely fails to respond to the dynamic and complex movement of people within a polycentric city. However, it does respond to the operators' desire to maximize their revenue. As the bus network is largely managed by the informal sector, a bus network has developed that is highly duplicative, operationally inefficient, and presents the user with a disorderly and incoherent interface (Integrated Transport Planning Consultants 2014). This network fragmentation associated with organic, operator-driven, route networks is common all over Nigeria.

A second reason for weak local government institutions is the inability of state governments to attract and retain qualified professionals with specialization in urban transport. Since urban transport expertise requires a fair degree of education and specialization, government salaries are generally too low to be attractive for qualified staff who can find work in the private sector or abroad. The Lagos Area Metropolitan Transport Authority (LAMATA) is the exception which proves the rule. Much of its senior management was recruited from the Nigerian diaspora in London, and that was only possible because political leadership—recognizing the need to recruit highly qualified professionals—established LAMATA as an autonomous authority not bound by the traditional constraints of civil service practices. However, the political leadership in other states has been reluctant to set a similar precedent.

A third reason is a myopic focus on the need for building more transport (primarily road) infrastructure, to the exclusion of other concerns such as transport systems management (e.g., traffic and parking management) and asset management and

maintenance. The African Development Bank estimates that, nationally, spending on routine and periodic maintenance for roads in Nigeria in 2013 was about 10 % of what was required even assuming that the roads were in good condition (African Development Bank 2013). A significant recent example of this focus on new infrastructure to the exclusion of maintenance and management, for example, is the election platform or manifesto of the All Progressives Congress, which won the Presidency, a majority in the Federal legislature, and the governorship of 19 of 28 states in 2015. The manifesto's discussion of transport essentially provides a long list of facilities the party intended to build if elected (with no suggestion of how these will be paid for), but little reflection on institutions, regulatory framework, or priorities (All Progressives Congress 2015). With the exception of one line acknowledging the need for, and committing to, rehabilitation and maintenance, the full focus of the party's efforts—which can be considered as a policy statement by the new ruling party in Nigeria—is articulated as building new infrastructure. Such an articulation conforms to the expectations of Nigerians. The opposition's manifesto was barely distinguishable in this respect (People's Democratic Party 2015).

The reasons for a focus on infrastructure provision are complex but can be related to three key phenomena. The first is the overwhelming prevalence of civil engineers in the professional cadres of state (and federal) level transport institutions. There is a relative dearth of transport planners, economists, and urban development specialists compared with civil engineers. As a result, there is a natural bias toward solutions that involve physical construction of infrastructure. Second, inexperienced political leaders facing constituency pressure to "do something" about urban transport problems such as rampant congestion and travel time variability, often lack the perspective to understand that urban transport challenges are enormous, and their causes are more complex than an inadequate supply of infrastructure. As a result, they put inordinate pressure on bureaucracies to deliver infrastructure. Third, the political economy of large infrastructure projects has a driving logic to it, where all actors pursue rational self-interest. Large infrastructure tends to involve large contracts, which are sources of both patronage and kickbacks for many of the actors involved, at both the political and administrative levels. Therefore, while the public good may best be advanced by emphasizing the maintenance and management of the existing infrastructure, the sum total of the individual interests involved in the sector tends to gravitate toward more and more infrastructure.

5.2 Weak National Enabling Environment

As weak as state governments handling urban transport are, there is even weaker support from the federal government. Indeed, at the federal level, there is somewhat of a "blind spot" regarding urban transport. The Federal Ministry of Transport developed a Nigerian Transport Masterplan in 2006, but this plan was almost entirely silent on the issue of urban transport. Other than a brief discussion of demographic changes and urbanization, the plan's focus was entirely oriented to national

level infrastructure (roads, railways, seaports, inland waterways, aviation, and pipelines). Urban transport was not called out as a subject of national interest, or even as warranting further discussions. Policies governing the way the proposed national infrastructure should interface with urban areas were not included in the plan. Indeed, they were not even acknowledged as an area of further need.

Within the Ministry of Transport, the Ministry of Works, and the Ministry of Lands, Housing and Urban Development there are no units or departments that are tasked specifically with looking after urban transport in a coherent and comprehensive way. As a consequence, the Ministries' decisions can wreak havoc on local urban development. For example, the Transport Secretariat of the Federal Capital Territory had been working with counterparts in neighboring Nasarawa state for a number of years to develop a Bus Rapid Transit line to bring Nasarawa commuters to the Central Business District in Abuja along a heavily trafficked and dense corridor. A number of studies and designs had been completed, in the context of discussions with the African Development Bank for financing the corridor, when the Ministry of Works announced its intention to convert the corridor into a multilane expressway because it was part of the Federal network. If implemented, such a change could fundamentally transform the nature of the corridor and influence land development substantially, potentially putting at risk the viability of BRT service.

However, in the past the federal government has attempted to be involved in urban transport through a number of programs. The longest lived of these in recent experience was the Federal Urban Mass Transit Agency (FUMTA), which began as a program of the Federal Ministry of Transport in 1988, was transferred to the Presidency in 1993 in an effort to boost its effectiveness, but was eventually abandoned around 2002. It had been created in reaction to the collapse of public transport operations discussed earlier. This happened in the context of economic crisis associated with the drop in world petroleum prices beginning in 1986 and a Structural Adjustment Program introduced the same year. Car ownership became increasingly unaffordable, and public transport operators struggled to undertake fleet maintenance, replacement, and expansion. The total vehicle stock declined from 700,000 in 1983 to 350,000 in 1991, and new vehicle registrations declined from 244,000 in 1982 to just 50,000 in 1988 (Nigerian Federal Urban Mass Transit Agency 2001). In response, the federal government raised the price of petroleum (then, as now, controlled by federal government fiat) by 300 % in 1990 (Tayo and Elegbeleye 2014), and introduced FUMTA.

FUMTA's official mandate was intended to cover planning and advising on urban transport projects. However, it never fulfilled this mandate. It initially developed an ambitious mass transit action plan which covered road, rail, and water, but in the end, over its 13-year existence, it was only able to implement a series of bus funding schemes. These resulted in the purchase of just under 4000 buses nationwide. Also, it produced a National Urban Mass Transit Policy in 1998, but this policy was never adopted or implemented (Nigerian Federal Urban Mass Transit Agency 2001). Eventually, FUMTA was abandoned.

More recently, in the wake of civil unrest following efforts by the Jonathan administration to first remove entirely, then reduce, the amount of the petroleum

subsidy, the government created the Subsidy Reinvestment and Empowerment Program, known as SURE-P, using resources saved from the total amount of subsidy payments made. SURE-P is meant to fund two strands of investments, namely, "infrastructure" investments, and "social safety net" investments. Railways, roads, and bridges (including the Abuja heavy rail scheme) are considered part of infrastructure, while bus-based public transport (referred to as mass transport) is considered part of the social safety net. This categorization and language choice is telling. As with the previous FUMTA experience, this effort lacks a coherent and strategic policy approach underlying the efforts. With FUMTA-style bus-funding schemes in mind, the resources dedicated to mass transport (about $54.8 million) were used to establish a Public Mass Transit Revolving Fund Scheme which has been used to purchase a little over 800 buses nationwide.

In the operating environment for public transport in most Nigerian cities, federal programs such as FUMTA and SURE-P amount to little more than a subsidy for rolling stock which, operationally, functions exactly like conventional *danfos* or *molues*. These programs—and similar ones implemented by various states and the Nigerian Urban Development Bank (now the Nigerian Infrastructure Bank)—have no transformational impact on urban transport whatsoever. At best, they marginally increase the supply of buses. More likely, they exacerbate the very problem they presumably are intended to address (although the SURE-P program documentation is such that it is not at all clear what problem it is meant to address).

5.3 Inadequate Technical and Institutional Capacity

An observation has been made that there are not enough bus services in Nigerian cities to meet growing demand. However, in most cities, the operational characteristics of bus networks are arguably as, if not more, significant impediments to having adequate service than the number of available buses per se. Poor road space allocation, inadequate traffic management and enforcement, and a regulatory and fare environment that encourages operators to wait until their buses are full before departing from terminals, increase bus round-trip journey times substantially. It is likely that, addressing these issues would be a more effective means to improve service—and, indeed, increase the likelihood that people with a choice might actually use buses—than just increasing the quantity of vehicles.

Addressing issues of traffic management, enforcement, public transport regulation, and related questions of public transport network planning and development, requires substantial professional capacity, for both planning and implementation. Certainly, Nigeria as a whole has very competent transport professionals capable of undertaking highly specialized and sophisticated tasks (though they may not be available in all markets where they are needed). However, professional capacity refers not only to individual technical capacities to undertake particularly pieces of work but also to institutional capacity, which is the ability of institutions to coordinate the work of professionals within and across public and private entities and

organizations, in order to work efficiently toward a common goal. In the institutional arrangements in most Nigerian states, purchasing new buses is substantially easier to accomplish than managing and enforcing traffic and revising public transport regulations.

5.4 Powerful and Unruly Private (Informal) Sector

Another key challenge to the effective implementation of urban transport policy is the political economy associated with *danfo* operators. The most powerful association of these operators is the Nigerian Union of Road Transport Workers (NURTW), which exerts significant political influence. NURTW was established in 1978 by decree of the then-military government, with a requirement that all commercial drivers (except petroleum tanker drivers) must be members. This means that its membership is large and can exercise substantial political clout. This clout is expressed not only as loyalty to politicians who best reflect the interests of NURTW, but also through political thuggery. In a well-documented case in Ibadan (Oyo state), gangs of NURTW members were hired by rival politicians during the 2007 gubernatorial elections (Human Rights Watch 2008).

Often, this violence at the direction of politicians is linked with brutal conflicts over the control of motor parks—the staging areas from which public transport services are provided. For example, in 2015 Oshodi Motor Park in Lagos erupted in 2 days of gangland-style shootouts, followed by the assassination of a high-level NURTW official (Hanafi 2015; Udom 2015). Therefore, the political economy of these relationships is an enormous challenge to effective governance and regulation of the sector.

6 Proposed Urban Transport Solutions and Implementation Issues

Just as the Federal government lacks a coherent policy on urban transport, it also lacks a concerted policy on vehicle fleet management. Nigeria imports virtually all vehicles (though efforts have been underway for a number of years to boost the assembly of commercial vehicles), of which about two-thirds are second-hand (used) vehicles. While imports of vehicles older than 10 years are not allowed, many second-hand vehicles, once imported, can stay in use for years. The average age of private cars in four Nigerian cities (Ondo, Lagos, Kaduna, and Abuja) is 14 years, while the average age of light commercial vehicles (such as *danfoes* and *molues*) is 24 years (Kaenzig 2013).

The Jonathan administration, in an effort to boost "local production" of motor vehicles, released a National Automotive Industry Development Plan in 2014. The intention is to turn Nigeria into a major assembly hub for international automobile companies. A number of factors would be favorable, including existing manufacturing

capacity, a large labor force, substantial local demand, and strategic location for exports (Federal Government of Nigeria 2014). The plan explicitly targets the market for used vehicles by focusing on low-end, domestically produced vehicles for the first 10 years (National Automotive Council 2014). Among other measures envisioned, importation of vehicles will be subject to an additional 35 % duty—bringing the total import duty to 70 % (National Automotive Council 2014).

If the National Automotive Industry Development Plan is successful, the average age of vehicles on Nigerian roads can be expected to decline over time but there are substantial challenges to the success of this plan, including limited purchasing power within the Nigerian market, and highly unstable electric power supply, which has been a strong deterrent against the development of a stronger manufacturing and tradable services sector in Nigeria in the past (Litwack 2013).

7 Other Country-Specific Issues

Many of the challenges that Nigeria's urban transport sector faces are not unique to Nigeria—they are shared by many sub-Saharan African countries. However, there are a few issues confronting urban transport in Nigeria which are distinctly Nigerian, and largely of the country's own making, through governance decisions taken in the past. The most prominent of these is the country's reliance on enormous fuel subsidies to the price of gasoline from the federal government. A second issue was the government's decision in 1976 to create a new, greenfield federal capital (Abuja) in the geographic center of the country, and subsequent planning and implementation decisions. The first of these affects all urban Nigerians; the second of these creates enormous and unique daily transport challenges for urban populations in and around the federal capital.

7.1 Fuel Subsidies

The federal government has subsidized the price of gasoline since the 1970s. Retail prices are set uniformly throughout the country, below international market prices. (The current price is 97 Naira—about 49¢ per liter.) The fuel subsidy is enormously costly to the Nigerian economy. One study estimates that the federal government spent about 2.7 % of the GDP on the fuel subsidy between 2008 and 2012 (Litwack 2013). The Central Bank of Nigeria and the Federal Inland Revenue Service report that the subsidy consumed 19 % of the entire federal budget in 2011 (Centre for Public Policy Alternatives 2012). Such subsidies are creating distortions by both inflating the amount of travel and the proportion travel that is performed by gasoline vehicles. For example, a 2013 field survey of vehicles in four urbanized states in Nigeria found that half of large buses run on gasoline. This appears to be an effect of gasoline subsidies, since one would normally expect to see large buses running on either diesel or compressed natural gas.

7.2 The Creation of Abuja

Nigeria's second most populous city exhibits a number of urban transport challenges resulting from the decision to develop a greenfield capital city in 1979. Prior to the founding of Abuja, Lagos had functioned as the capital of both Lagos State and the Federal Government of Nigeria. Between 1975 and 2000, Lagos was growing fast: its growth rate was more than 5 % per year in the 1970s, the fastest in Africa. In 1975, a national commission report concluded that Lagos was unable to play the dual role of state and federal capital due to space constraints, and that the city's association with the Yoruba ethnicity made it an inappropriate capital for a multiethnic federal state. The commission recommended the development of a separate capital in an ethnically neutral area in the center of the country (Chima 2012). The search for a new capital began.

Abuja itself was meticulously planned through study of international and Nigerian urban precedents, and attention to detail by an American firm, International Planning Associates, who articulated three principles for its development: (1) a contiguous urban form with a single center and residential and commercial subsectors; (2) local residential communities planned for 3500 to 5000 people, with an emphasis on multifamily housing; and (3) a central public place with large-scale public allocation for public gatherings.

However, the actual city was not developed according to these principles. Rather, it is characterized by intense sprawl and substantial reliance on informal squatter settlements scattered throughout the Federal Capital Territory and neighboring states (Zubair and Ojigi 2015; Chima 2012). There are numerous complex reasons for this sprawl, including: human error with respect to the initial land registry in Abuja; overly strict planning and building codes; unrealistic sequencing of transport infrastructure development vis-à-vis natural town growth rates by the Federal Capital Development Administration; and the siting of Abuja in the very northeast corner of the meticulously controlled Federal Capital Territory, which enabled large numbers of immigrants to the capital to settle in neighboring, less controlled states.

As a result, Abuja is characterized by a high degree of disjointed development. In 2006, nearly 75 % of its land was vacant and the entropy index[4] was 0.93 (Chima 2012). Property rents are among the highest in sub-Saharan Africa, and informal settlements in the neighboring states (and to some degree in the Federal Capital Territory as well, beyond the sight of major highways) have exploded (Zubair and Ojigi 2015). The road system is highly hierarchical, reflecting late twentieth-century traffic engineering sensibilities, and resulting in lack of redundancy, channelization of all traffic, even for short trips, onto a few key facilities. The consequence is arterial congestion (Kulash and Anglin 1990; Alba and Beimborn 2005).

The transportation patterns in Abuja are unlike those seen elsewhere in Nigeria, and, indeed, are quite unique for sub-Saharan Africa. Motorized trips dominate the metropolitan region, both because of the high number of workers involved in formal

[4] A measure of the heterogeneity or fragmentation of land uses characterizing sprawl.

employment through the federal government and related services, and because of the enormous distances they must travel. Among motorized trips, large buses and cars carry nearly 75 % of passengers. The average car trip to work is more than 14 km, while the average public transport trip to work is just under 16 km. Fifty-five percent of all drivers, and 65 % of all public transport passengers travel more than 10 km for each trip (Wang 2015). Traffic congestion in this new city with ample road space is reportedly as bad as in Lagos.

Abuja's challenges reflect decisions taken by the federal government over the course of several decades. Notwithstanding its place as a greenfield city, the capital has not necessarily avoided the fundamental space and traffic constraints that Lagos has. Indeed, it is even more challenged in that there are no obvious ways to improve the traffic congestion situation in Abuja, since the causes are largely a function of land use, urban design, and road/street design. Over time, provision of more and better mass transport solutions, and better street space, traffic, and parking management, might improve the levels of congestion in other Nigerian cities such as Lagos or Kano, but it is unclear whether such measures would noticeably affect Abuja.

One of the ways that the authorities are trying to address the transport challenges in Abuja, which previous public decisions have created, is to invest in a greenfield rail mass transit line. This mass transit line is being developed by the Federal Capital Territory Administration's transport secretariat. The first phase is a 45-km, 12-station segment connecting the Abuja center with the Abuja international airport. Structurally, however, this line is prone to demand risks that are easy to foresee and will prove very challenging to mitigate. First, the Abuja "CBD" developed not as a dense core of walkable streets and contiguous high-rise buildings, as originally envisioned by the planning consultants, but rather as a scattered set of government buildings, hotels, and commercial buildings, each surrounded by extensive parking, and fenced off from the oversized, automobile-scale buildings. The built form of this center is more similar to an "edge city" (Garreau 1991) than a traditional downtown. Therefore, any solution to the question of distribution of rail passengers to their final destination from the CBD terminus will be expensive and likely off-putting for many potential riders.

Second, and more daunting, is the fact that the Abuja CBD functions only as an employment center for the broader metropolitan area. There are no activating uses outside of conventional work times. As a result, train services will be subject to very high peaking, and it is doubtful whether viable services could be run outside of high-frequency in-bound service in the morning peak, and the opposite in the afternoon peak, at least for the foreseeable future. If the train is to relieve congestion, very high volumes of rolling stock will be required to meet this peak demand, which will largely sit idle for most of the day and at weekends. Finally, the outlying communities that the trains are meant to serve are somewhat dense, but even so, most of the Abuja-bound population lives beyond walking distance of train stations, meaning that fares will need to be kept very low, and feeder services will need to be well integrated in order to attract passengers. All of these factors combined mean that the ongoing subsidy level for this rail service will need to be substantial, creating a high burden on public budgets.

8 Conclusion

Urban transport challenges in Nigeria reflect pressures faced by many sub-Saharan African cities. These include: local governments with weak institutions and limited technical capacity and resources to manage noncompliant; atomized, yet politically powerful private sector transport service providers; high demand growth for urban transport services; limited capacity of passengers to pay for services; rapid expansion on the urban fringe; and high rates of motorization, often involving second-hand vehicles imported from elsewhere in the world. The urban transport sector in Nigeria is also facing a range of stressors that are distinctly Nigerian: residual effects of a long-standing policy of petroleum subsidies; the policy choice in the 1970s to create a new greenfield political capital and the unsustainable urban travel patterns that have resulted; and inconsistent, and often incoherent and ill-advised, efforts by federal authorities to become involved in urban transport.

In addition, security disruptions and instability in the north of the country will also place great burdens on the introduction of new urban transport policies, for three reasons. First, the area with the most substantial disruption, the Northeast, already has large cities, such as Maiduguri, with important levels of urbanization. In the current environment, even if some of the institutional and capacity challenges discussed in this chapter could be overcome, it will be difficult to recruit competent transport professionals willing and able to provide services to these cities. Second, the insecurity is already creating a substantial internal refugee challenge, with cities such as Kano and Kaduna as destinations. The influx of populations is exacerbating the challenges these cities are facing. Finally, though development of mass transport must be a key part of the solution to challenges of urban transport, it is also likely to be a logical target of attention for those keen to disrupt civil life for political ends.

Despite the many difficulties of achieving policy change highlighted in this chapter, there are some hopeful, Nigerian-based solutions that could point the way toward more successful urban transport outcomes in the future. Lagos has had some success at building institutional social capacity to accomplish more complex urban transport management functions than it is possible in most other Nigerian states, or indeed, comparable cities elsewhere in sub-Saharan Africa. For example, some efforts have been focused on the creation of the Lagos Area Metropolitan Transport Authority (LAMATA), whose mission was to address weaknesses including, inadequate public transport, weak urban transport management, multiple sector agencies, low cost recovery, low road network density, low efficiency and road safety, environmental quality, and social concerns. A sister agency, the Lagos State Transport Management Authority, was also established to address traffic management and enforcement, but traffic management plays an important role in the thinking underlying LAMATA initiatives too.

LAMATA's accomplishments in a very difficult urban environment, including the development of a highly successful and contextually appropriate BRT line, have been well documented.[5] Among the factors that distinguish LAMATA from efforts

[5] See, for example, Mobereola (2009).

to govern urban transport elsewhere in Nigeria and sub-Saharan Africa are that it is established as a semiautonomous entity, not as a parastatal of a Ministry. It has high operational and organizational standards and operates on the basis of financial independence through a transport fund. It also has a formally defined role and clear vision as an institution established by law, which minimizes jurisdictional ambiguity and overlap with other agencies. LAMATA was given appropriate organizational arrangements with a governing board directly under the governor, to streamline decision-making process and prevent bureaucratic bottlenecks. The organization functions according to a purpose-driven and performance-based operation with a long-term transport master plan (20-year horizon), and key performance indicators and timeline to measure delivery. In addition, LAMATA was set up with the ability to identify and employ competent people to carry out the work through a mix of competitive recruiting process from the private sector and handpicking of competent personnel from ministries to be seconded to the agency. This was in part achieved through a market-competitive salary structure. As a result, it has benefited from leadership stability through several political administrations (World Bank 2016). In conclusion, while technical capacity for urban transport is generally weak in Nigeria, the country has also produced one of the most promising models for improving urban transport capacity in all of sub-Saharan Africa.

References

African Development Bank (2013) An infrastructure action plan for Nigeria—closing the infrastructure gap and accelerating economic transformation. African Development Bank, Tunis, p 80

Alba C, Beimborn E (2005) Analysis of the effects of local street connectivity on arterial traffic. Center for Transport Studies, University of Wisconsin, Milwaukee, p 12

ALG Transportation Infrastructure and Logistics (2013) Consultancy services for the extension of the strategic transport master plan and traffic demand model to cover the mega region: Technical Report on Data Collection, Lagos Metropolitan Area Transport Authority, p 124.

All Progressives Congress (2015) The APC Manifesto. http://www.apcpressreleases.com/the-apc-manifesto/Last. Accessed 15 Apr 2015.

Biliyamin IA, Abosede MBA (2012) Effects of congestion and travel time variability along Abuja—Keffi Corridor in Nigeria. Glob J Res Eng 12(3):9

Centre for Public Policy Alternatives (2012). Nigeria: Fuel Subsidy, DFID, p 63.

Chima CI (2012). Monitoring and modelling of urban land use in Abuja Nigeria, using geospatial information technologies. Doctor of Philosophy, Coventry University.

Federal Government of Nigeria (2014) National automotive council measures to transform the Nigeria automotive industry and attract investment to the sector. Official Gazette Number 21, vol 101. Federal Government of Nigeria. Federal Government of Nigeria, Lagos, p 13.

Garreau J (1991). Edge City: Life on the new frontier. Doubleday, New York.

Global Road Safety Facility and Institute for Health Metrics (2014) Transport for health: the global burden of disease from motorized road transport. World Bank, Seattle, WA, p 39

Gollin D, Jedwab R (2013) Urbanization with and without structural transformation. Society for Economic Dynamics annual meeting 2013. Society for Economic Dynamics, Seoul, Korea.

Hanafi A (2015) Gunmen kill NURTW chief in Lagos. Punch. 12 Mar 2015, Lagos.

Human Rights Watch (2008) Criminal politics: violence, "Godfathers" and corruption in Nigeria. Human Rights Watch Reports. vol 19, New York, p 125.

Integrated Transport Planning Consultants (2014) Development of a bus route network for Lagos State. Lagos Metropolitan Area Transport Authority, Lagos
Kaenzig R (2013) Road transport sector. In: Cervigni R, Rogers JA, Dvorak I (eds) Assessing low-carbon development in Nigeria. World Bank, Washington, DC, p 425
Kulash W, Anglin J (1990) Traditional neighborhood development: will the traffic work? American Society of Civil Engineers, Reston, p 22
Kumar A, Barrett F (2009) Stuck in traffic: urban transport in Africa. In: Foster V (ed) Africa infrastructure country diagnostic. World Bank, Washington, DC, p 85
Lagos Metropolitan Area Transport Authority (2015). Lagos metropolitan area trip mode share numbers for 2012. R. Gorham.
Leigh Fisher and FAO Consulting International (2015) Value of time and transport elasticity study for the megacity region. Lagos Metropolitan Area Transport Authority, Lagos, p 148
Litwack J (2013) Nigeria Economic Report No. 1.
MDS Consortium (2010) Lagos vehicular emission and air quality study. L. M. A. T. Authority. LAMATA, Lagos, p 104
Mobereola D (2009) Lagos bus rapid transit: Africa's first BRT scheme. Urban transport series. Washington, DC, SSATP. Paper No. 9, p 54.
National Automotive Council (2014) Information document on the Nigerian automotive industry development plan Lagos. National Automotive Council, Abuja, p 28
New Nigeria Foundation (2012) Socio-economic baseline survey of transportation from mile 12 to Ikorodu town (BRT Corridor). Lagos Metropolitan Area Transport Authority, Lagos, p 162
Nigerian Federal Urban Mass Transit Agency (2001) Status report of Federal Urban Mass Transit Agency (FUMTA). F. D. o. Transport. Ministry of Transport, Abuja
Nwachukwu AA (2014) Assessment of passenger satisfaction with intra-city public bus transport services in Abuja, Nigeria. J Public Transport 17(1):21
People's Democratic Party (2015) Manifesto of the People's Democratic Party. http://peoples-democraticparty.com.ng/?page_id=72. Accessed 15 Apr 2015.
SEEMS Nigeria LTD (2010) The assessment of emissions from road transport (Oshodi—Obalende via mile 2 and CMS BRT Corridor). Lagos Metropolitan Area Transport Authority, Lagos, p 101
Tayo G, Elegbeleye A (2014) Social and psychological effects of the removal of fuel subsidy on the Nigerian family. Glob J Hum Soc Sci: E 14(1):7
Udom E (2015) Oshodi crisis: Police, NURTW brace for a fight. Daily Independent. Ikeja Independent Newspapers Limited, Lagos
Wang HG (2015) Transport connectivity & urban mobility in Nigeria. Nigeria urbanization review. World Bank, Washington, DC
World Bank (2016) Slum upgrading, involuntary resettlement, land and housing: lessons learned from the experience in Lagos. World Bank, Washington, DC
World Health Organization (2013) Road safety in the WHO African region: the facts 2013. World Health Organization, Geneva
Zubair OA, Ojigi LM (2015) Urbanization: a catalyst for the emergence of squatter settlements and squalor in the vicinities of the federal capital city of Nigeria. J Sustain Dev 8(2):15