



## **LACK OF CYCLING AND PEDESTRIAN FACILITIES AS IMPEDIMENTS TO SUSTAINABLE TRANSPORT IN LAGOS, NIGERIA**

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### **Abstract**

This paper identifies cycling and pedestrian facilities as essential sustainable transport infrastructures. It notes that their non-availability is hindering the shift towards sustainable urban transportation in the Lagos megacity. It first looks at the meaning of sustainable transport and then relates this to the transport situation in Lagos. Some of the problems facing Lagos transport system are highlighted. To address some of these problems, walking and cycling are identified as sustainable transport modes with immense benefits. These benefits include: contributing to healthy environment, promoting health and physical wellbeing of the citizens, promoting choice and social wellbeing, providing economic benefits, as well as promoting social inclusion, which might all accrue to Lagos if the use of the modes is promoted. The discussion closes by making recommendations on ways to promote walking and cycling in Lagos. Some of these recommendations are: promoting land use policies that favour high density, compact urban development, and jobs-housing balance, provision of pedestrian and cycling facilities such as walkways, sidewalks, cycle lanes and pedestrian bridges to promote safety of non-motorised transport (NMT), introduction of pedestrian-only streets to promote human scale urban centres, introduction of traffic management strategies and car restraint policies to discourage car use, introduction of non-obstructive development policy that mandates developers to provide access within and between buildings to reduce walking and cycling distance.

*Keywords: Cycling, land use policies, pedestrian, social inclusion, sustainable transport, traffic management*

## 1.0 Urban transport characteristics

Transportation bridges the gap between people, goods and services (Lagan and McKenzie, 2004). As a result, motorised transport has become the most common form of urban transportation. The physical expansion of the urban centres occasioned by the agglomeration of people in multifunctional urban centres which was facilitated by improved transportation has also resulted in increased car use. Auto dependence has further greatly increased as a result of improvement in technology and general improvement in standard of living (Steg and Gifford, 2008). The situation is observable in all cities of the world. The consequences are however more grave in developing countries where the public transportation system is inefficient. In these places, problems such as traffic congestion, transport-related pollution, and road traffic crashes are more serious. These challenges are what make the transport system unsustainable. A sustainable system is therefore required. In the next section, the concept of sustainability as it relates to transport is described. This is followed by the presentation of the challenges of transport system in Lagos and the need for sustainability in section 3. Section 4 introduces non-motorised transport (NMT) while section 5 discusses the benefits of two well-known NMT modes. In section 6, the need for modal shift to NMT modes is presented together with some necessary infrastructures required for this shift. A short conclusion is presented in section 7 with some recommendations for government and other stakeholders involved in the formulation and implementation of transportation policy for the city.

## 2.0 Sustainable transport

Sustainability is a term conceptualised as having three dimensions: economic, social and environment (Elliot, 2013). The term was brought to limelight as a concept by the popular definition of the World Commission on Environment and Development in her publication titled 'Our common future'. In this publication, sustainable development was described as "*a development that meets the needs of the present without compromising the ability of the future generation to meet their own needs*" ((Brundtland, 1987:43). Ever since its emergence, the term has been adapted to almost all fields of human endeavour, including the transport sector. Thus, sustainable transport is a transport system that meets the following conditions:

- it must be economically viable,
- it must be socially inclusive as well as;
- environmentally friendly.

This description of sustainable transport was emphasised by Rienstra and Banister (2000, pp.171) where they "*view sustainable mobility as a means by which movement of persons and goods is compatible with the strategy of sustainable development*". Similarly, Goodman and Tolley (2001, pp.84), described sustainable transport as "*a transport system that meets the need of the present generation without compromising the ability of the future generations to meet their own needs*". It is therefore appropriate to describe sustainable transport as a transport system that has ecological integrity, economic viability and social equity.

Sustainable transport is however threatened by several factors as earlier mentioned. Of particular interest are those associated with the use of motorised transport, which include the consumption and combustion of petroleum products, the issue of its (petroleum products) continual availability, and the road traffic accidents that result from motorised transport (Steg

and Guilford, 2008; Mohan and Tiwari, 1999). The consumption of petroleum product by motor vehicle is required for vehicle traction. This however results in the emission of dangerous gases and thus a major source of environmental pollution. The consequence is not only detrimental to our most treasured asset - the environment - but also highly toxic to human health (Weatherhead and Andersen, 2006; Steg and Guilford, 2008; Andersen, Schnohr and Schroll; 2000). The health consequences of air pollution are high. Each year, for example, suspended particulate matter (for which car exhaust is a major source) may account for 460,000 premature deaths (Steg and Guilford, 2008).

Similarly, the non-renewable nature of petroleum products arouses the consciousness that its supply may run out one day. The implication is that vehicles running on it would have no fuel to provide power for traction and motorised transport would come to a halt. This unimaginable scenario is a threat to the sustenance of transport and makes imperative the need for an alternative form of transportation in case of depletion.

Equally worthy of note is the high level of accidents and fatalities arising from the use of motorized transport modes. It is reported that road traffic accident is one of the leading causes of death worldwide. Moreover, the use of car constitutes the highest level of danger to pedestrians and cyclists.

Other problems with motorised transport are that it encourages sprawling and ribbon development making it difficult for cities to be served by public transport as well as making NMT unattractive and cumbersome. There are equally evidences of the negative impacts of transport in developing countries on the local community especially the urban poor. Poor and unsustainable transport development ultimately affects local, regional and national economies adversely (Lagan and McKenzie, 2004). While these problems are observable across the world it is particularly serious in developing countries.

### **3.0 Lagos Urban transport**

Lagos, Nigeria is the largest city in sub-Saharan Africa and the sixth largest city in the world (World Bank, 2010). The city, although no longer the administrative capital of Nigeria, still remains the financial, economic and industrial capital of the country (Aderamo, 2012; World Bank, 2010). The Lagos megacity thus has grown beyond the physical boundaries within Lagos State into the neighbouring Ogun State thereby increasing its areal extent. Although it is the State with the smallest land mass in the country, Lagos State is the most densely populated with its population believed to have reached an alarming 25 million inhabitants in the year 2015. The multifunctional nature of Lagos has continued to attract population from all parts of the country leading to over-urbanisation of the city. The demand for mobility to satisfy social and economic needs, amidst other is thus high and increasing. Unfortunately, the economic downturn being witnessed in the country over the last few decades has led to decline in the level of physical infrastructure in the city. In addition, with increasing population, the capacity of the available facilities to support the urban population has also continued to diminish (Aderamo, 2012). Furthermore, issues such as lack of clear and coherent transportation and land use policies as well as weak and disjointed institutional framework contribute to Lagos transport challenges (World Bank, 2010; Abiodun, 1997; Aderamo, 2012; Akinbami and Fadare, 1997; Mobereola, 2006). As a result of these challenges, transport services are not only inadequate but also expensive. Unfortunately, there are no provisions for facilities that support inexpensive, non-motorised transport (NMT)

mode. As indicated by Goodman and Tolley (2001) unless the needs of NMT modes are met, it will be almost impossible to move towards sustainable transport.

#### **4.0 Non-motorised Transport**

Non-motorised transport modes are modes that do not depend on fuel to provide power for vehicle traction. The most important and well known examples are walking and cycling. Walking and cycling have been known to be the most sustainable modes. They however require some facilities. Provision of cycling and pedestrian facilities is one of the most effective methods of reducing traffic and transport related pollution and enhancing the quality of life of the urban residents. Cycling facilities can be defined as “*any facility or infrastructure that supports or enhances the safety of cyclists*”. These include a portion of roadway, shoulder, or right-of-way designed for exclusive or preferential use by cyclists. Pedestrian facilities, on the other hand, refer to “*walkways, sidewalk, paths, pedestrian bridges, and trail for exclusive use of pedestrians*” (Chester County Planning Commission, 2014). The various benefits accruable from walking and cycling are well documented in literature (Steg and Guilford, 2008; Goodman and Tolley, 2001; Mohan and Tiwari, 1999; Pucher and Buehler, 2008.; Andersen et al. 2000).

#### **5.0 Benefits of walking and cycling**

Walking and cycling contribute to achieving sustainable development by providing environmental, health, social, and economic benefits. The Lagos megacity will benefit from these by promoting walking and cycling.

##### *5.1 Contribute to healthy environment*

The earth's environment has been seriously threatened (Weatherhead and Andersen, 2006) by the high level of contamination from the emission of CO<sub>2</sub>, oxides of nitrogen, CFCs and other GHGs. Most of these are products of internal combustion engines such as motorized vehicles (Pucher and Buehler, 2008) and are known to be highly detrimental to human health (Andersen et al. 2000). Transport accounted for 25% of global CO<sub>2</sub> emissions in 2004 and 75% of all transport related emissions are generated by road transport (Woodcock et al., 2009). Walking and cycling, however, do not contribute to the emission of these gases. Also their paths do not necessarily require hard pavements which affect urban water and heat balances resulting in the formation of urban heat island. These make walking and cycling the most environment friendly transport modes.

##### *5.2 Promote health and physical wellbeing of citizens*

Aside the fact that walking and cycling do not contribute to gaseous emissions which are associated with the increasing risk of respiratory tract infections such as pulmonary pneumonia, emphysema and COPDs (UNECE, 2007), a wide range of literature have proven a positive correlation between exercising and physical and mental well-being. Buehler, Pucher, Merom and Bauman (2011) in a comparative study of the contribution of daily walking and cycling to physical activity in US and Germany found that increase in daily walking and cycling among Germans help a considerable proportion of German population to meet their physical activity requirement thereby positively impacting on their level of physical fitness and general wellbeing over the Americans. Evidence of the positive correlation between walking and cycling was also portrayed in the report of the findings of the Copenhagen Centre for Prospective Population studies which found a substantial decrease

in the risk of death among those who spent 3 hours per week commuting to work by bicycle compared to those who did not commute by bicycle (Andersen et al., 2000).

### *5.3 Congestion reduction*

In a city like Lagos, Nigeria where car ownership is considered a measure of economic wellbeing, a high degree of travel are made by single occupant cars leading to high level of congestion on the roads especially during the peak periods. If embarked upon by a considerable percentage of the population, walking and cycling is capable of reducing the level of congestion on the roads.

### *5.4 Promotes choice and social wellbeing*

One of the major aims of present day transport planning in general and those of the European Union in particular is the development of a transport system that promotes choice and ensures that commuters are not constrained in making modal choices (CEC, 2001). Auto-dependence limits commuters' modal choice while promotion of modes such as walking and cycling enable people to have a more varied modal choice. It enables people without the financial capacity to either own a private car or to travel in public transport to travel around the city without feeling constrained. The development of compact urban form with mixed land use and the provision of community facilities within cycling and walking distances will therefore not only give those without a car increased modal choice but also serves as a discouragement to car use.

### *5.5 Economic benefits of walking and cycling*

Walking and cycling will contribute significantly to the economic wellbeing of Lagos in diverse ways. Getting active through walking and cycling are both means of promoting healthy lifestyles and improving the body's metabolism thereby reducing susceptibility to developing diseases associated with sedentary lifestyles. This will lead to reduction in healthcare cost, enhanced productivity, higher quality of life and overall reduction in mortality rate. It will also help in improving national economy by reducing the rate of consumption of fossil fuel thereby reducing the level of dependence on foreign oil which has a positive effect on the country's balance of payment. It will lead to reduction in the carbon footprint and help in reducing income gap (Buehler, Pucher and Kunert, 2009).

Furthermore traffic congestion is one of the most significant consequences of auto dependence which has been found to have drastic effect on the economy. It results in loss of productive man-hour, lateness or missed appointments as well as decline in productivity. Traffic-congestion-induced-stress is another adverse effect that results from auto dependence. Promoting walking and cycling helps in eliminating these adverse effects.

### *5.6 Promotes social inclusion*

Walking and cycling can help in promoting social inclusion by removing the gap between those that have the financial power to own private cars and those that do not. High density compact development in which places of employment, shopping area and community facilities are within walking distances increases good neighbourliness and promote community spirit.

Following from these benefits, efforts directed at encouraging a modal shift to walking and cycling will be useful if these benefits would be enjoyed.

## 6.0 Modal shift from car to walking and cycling

The modal shift from the use of motorised transport to NMT is central to achieving sustainable transport in urban centres. However, one of the key prerequisite to moving towards sustainable transport is the creation of environment that makes walking and cycling conducive and even more attractive than using motorised vehicles. This is emphasised by Goodman and Tolley (2001) who observe that unless the needs of pedestrians and cyclists are met, the shift towards sustainable transport may be impossible. Nevertheless, the acute shortage of road infrastructure and associated cycling and pedestrian infrastructure as well as dilapidated state of road infrastructure in Lagos in general threatens the uptake and safety of NMT. Investments in cycling and walking infrastructure are therefore necessary to achieving this modal shift.

Provision of safe infrastructure for pedestrians and bicyclists may require segregation of road space from motorised traffic and/or reduction in speed of vehicles. Adequately planned, designed, and implemented NMT infrastructure would go a long way in helping to reduce transport related adverse consequences, promote good urban mobility as well as enhance the quality of life of urban residents. Some relevant NMT infrastructures are listed below:

- Dedicated cycle paths;
- Sidewalks and walkways
- Roads with physical and visual separations between cyclists and motor traffic;
- Well-lit roads and cycle paths;
- Painted paths for cyclists at road junctions;
- Dedicated cyclist traffic lights;
- Advanced cyclist stop lines to allow cyclists to be in full view at traffic lights;
- Cycle lanes with car parking restrictions;
- Small roundabouts;
- Wide cycle lanes to avoid open car door accidents;
- Pedestrian malls and car-free zones;
- Shopping villages within cycling distance of new unit and housing developments;
- Cycle networks linking residential areas to schools, shops, and sporting venues;
- Undercover storage facilities and convenient cycle racks near public transport, shops, schools and work areas.

## 7.0 Conclusion and Recommendations

Transport is indicted as one of the highest sources of environmental pollution. Urban development targeting transport sustainability therefore must always seek to develop an integrated transport system that minimises transport contribution to environmental pollution and promote economic sustainability and social inclusion. Walking and cycling meet these criteria. These NMT modes are therefore recommended for Lagos with a view to achieving sustainable transport in the city. The following are suggestions recommended for the government and other stakeholders involved in the formulation and implementation of transportation policy for the city:

- 1) Promote land use policies that favour high density, compact urban development and jobs-housing balance.
- 2) Provide pedestrian and cycling facilities such as walkways, sidewalks, cycle lanes and pedestrian bridges to promote safety of NMT.
- 3) Introduce pedestrian-only streets to promote human scale urban centres.
- 4) Introduce traffic management strategies and car restraint policies to discourage car use. These measures include road taxing, traffic calming, congestion pricing and high parking charges within the city.
- 5) Introduce non-obstructive development policy that mandates developers to provide access within and between buildings to reduce walking and cycling distance.

## References

- Abiodun, J. (1997) **The Challenge of Growth and Development in Metropolitan Lagos**. In Rakodi, C. (ed.) (1997) *The Urban Challenge in Africa: Growth and Management of Its Large Cities*, United Nations University Press.
- Aderamo A. (2012) Urban transportation problems and challenges in Nigeria: A Planner's View. **Prime Journal** 2(3), 198-203
- Akinbami, J. and Fadare, S. (1997) Strategies for sustainable urban and transport development in Nigeria. **Transport policy**. 4(4), 237-245
- Andersen, L., Schnohr, P. and Schroll, M. (2000). All-Cause mortality associated with physical activity during leisure time, work, sports and cycling to work. **Archives of Internal Medicine** 160(11), 1621-1628.
- Brundtland, G. H. (1987). World Commission on Environment and Development (1987) *Our Common Future. World Commission on Environment and Development*.
- Buehler, R., Pucher, J., Merom, D. and Bauman, A (2011) Active travel in Germany and the U.S. : Contributions of daily walking and cycling to physical activity. **American Journal of Preventive Medicine** 41(3), 241-250
- Buehler, R., and Pucher, J. (2009) Sustainable transport that works: Lesson from Germany. *World Transport Policy and Practice*, 15(1), 13-46
- Buehler, R., Pucher, J. and Kunert, U. (2009) Making transport sustainable: Insights from Germany. **Brookings Institution Metropolitan Policy Program**. 1-37
- Chester Planning Commission (2014) *Bicycle and pedestrian facilities: design* <<http://www.landscapes2.org/ToolsElement/Pages/BikePedDesign>>
- Commission of the European communities (CEC)** (2001) *European Transport Policy for 2010: Time to decide*. White paper, Brussels

- Elliot, J (2014) **An Introduction to Sustainable Development**. 4<sup>th</sup> ed. London: Routledge
- Goodman, R. and Tolley, R. (2001) Sustainable Transport: Prospect for walking and cycling in Great Britain. **Geography**. 86(1), 84-86
- Lagan, C. and McKenzie, J.(2004) Sustainable Cities, Sustainable Transport. **Earth Trends**. Online {Available from <http://earthtrends.wri.org>. }
- Mobereola, D. (2006) **Strengthening Urban Transport Institution: A Case of Lagos State**. Sub-Saharan Africa Transport Policy Program (SSATP) Discussion paper No. 5, Affordable Transport services. Washington, DC: World Bank.
- Pucher, J. and Buehler, R. (2008) Making Cycling Irresistible; Lesson from The Netherlands, Denmark and Germany. **Transport Reviews** 28(4), 495-528
- Reinstra, S. and Banister ,D. (2000) Sustainable mobility in the EU. **Built Environment**. 26(3), 170-174
- Steg, L. and Gifford, R. (2008)Sustainable Transport and quality of life. **Obstacle, Trends and Solutions, Building Blocks for sustainable Transport**. (1), 183-202. Emerald Publishing Limited
- Weatherhead, E. and Andersen, S. (2006) The search for signs of recovery of the ozone layer. **Nature** [Online] Available from: doi: 1038/nature04746 [Accessed 13 April 2017]
- Woodcock, J., Edwards, P., Tonne, C.; Armstrong, B., Ashiru, O., Banister, D., Beevers, S., Chalabi, Z., Chowdhury, Z., Cohen, A., Franco, O., Haines, A., Hickman, R., Lindsay, G., Mittal, I., Mohan, D, Tiwari, G., Woodward, A. and Roberts, I.(2009) Public health benefits of strategies to reduce greenhouse-gas emissions: urban land transport. 374, 1930-1943. [Online] Available from: [www.thelancet.com](http://www.thelancet.com) [Accessed 13 April 2017]
- World Bank** (2010) Lagos Urban Transport Project 2 project appraisal document. World Bank, June 2010.
- World Health Organisation (WHO)** (2007) Economic assessment of transport infrastructure and policies: Methodological guidance on the economic appraisal of health effects related to walking and cycling